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UNITED STATES PATENT OFFICE

VOL 48 & 49

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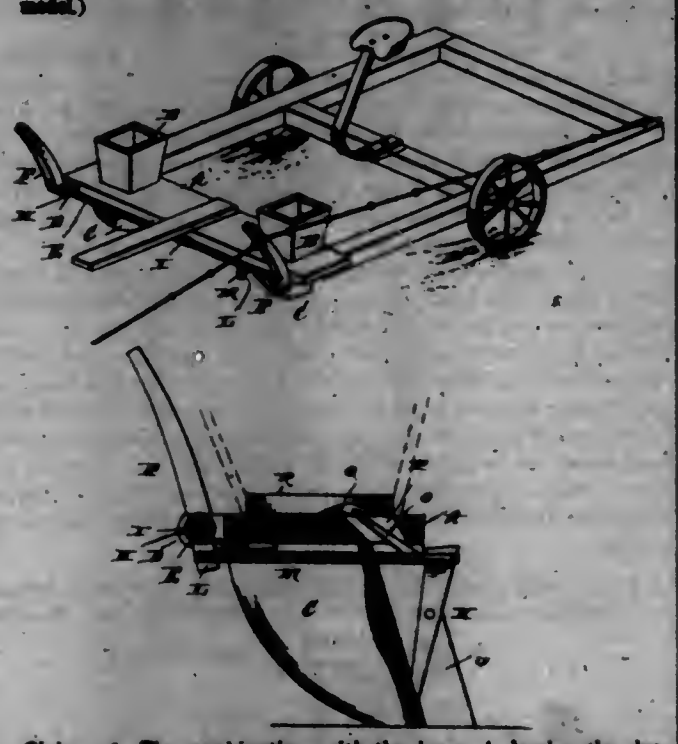
1889

MICRO PHOTO INC
CLEVELAND OHIO

PATENTS

GRANTED SEPTEMBER 3, 1889.

410,140. CHECK-ROW CORN-PLANTER. Gustave L. Rahm, Fall River, Kans., assignor to William R. Case, Darwin S. Remig, and Alonzo F. Dufrees, same place. Filed Mar. 18, 1889. Serial No. 303,714. (No model.)



Claim.—1. The combination, with the beam A, having the slots P, of the vibratory rock-shaft E, journaled on the front side of the beam A and having depending crank-arms, the runners depending from the beam, the valves mounted in the runners, the pitmen extending transversely under the beam and connecting the crank-arms on the rock-shaft with the valves, the seed-disks on the upper side of the beam having ratchet-teeth in their under sides, the pawls pivoted to the pitmen passing through the slots P and engaging the said ratchet-teeth, and the springs secured to the pitmen and bearing on the pawls, as set forth.

2. The combination, with the beam A and the runners, of the bearings on the front side of the beam, one of said bearings having the stops H, the rock-shaft journaled in said bearings and having a radial pin playing between the said stops, the valves mounted in the runners, the pitmen connecting the valves with the rock-shaft, and mechanism for operating said shaft, as set forth.

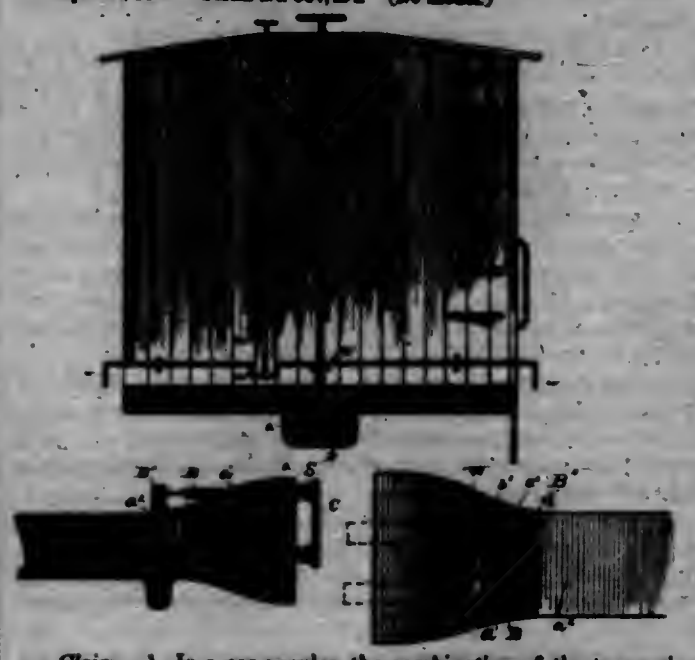
410,141. SEAT FOR HARROW-TEETH. Clarence E. Bement, Lansing, Mich. Filed Mar. 5, 1889. Serial No. 301,964. (No model.)



Claim.—1. The combination, with the beam A, having the openings A', of the holder B, having the angular seat B', the elongated opening B^3, arranged at one side thereof and registering with one of the openings A' and having the notches B^4, arranged at the opposite side of the seat and in the edge of the holder, the tooth C, mounted in the seat, and the binding-staple D, passed through the openings A' B^3 and notch B^4 and provided with binding-nuts D^2, substantially as specified.

2. The combination, with the beam A, having the openings A', of the holder B, having the angular seat B', the elongated opening B^3, arranged at one side thereof and registering with one of the openings A' and having the notches B^4, arranged at the opposite side of the seat and in the edge of the holder, the angular tooth C, mounted in the seat, and the binding-staple D, passed through the openings A' B^3 and notch B^4 and provided with the binding-nuts D^2 and the intermediate notch D^3, for receiving the angular edge of the tooth substantially as specified.

410,142. CAR-COUPLING. John C. Rockenstaff, Dahinda, Ill. Filed Apr. 16, 1889. Serial No. 307,434. (No model.)



Claim.—1. In a car-coupler, the combination of the two spring-actuated bolts, one of which has a catch and the other connected thereto, the bar connecting said bolts, the coupling-pin, and the draw-head provided with apertures and a groove, substantially as described.

2. In a car-coupler, the combination of the two spring-actuated bolts, one of which has a catch and the other connected thereto, the bar connecting the front ends of said bolts, the coupling-pin, the draw-head provided with apertures and a groove, and the horizontal crank-bar connected to the pin, provided with a vertical operating-rod, substantially as described.

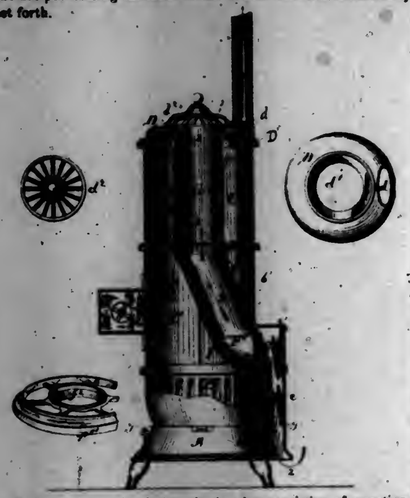
3. The combination, with the draw-head provided with the link-chamber having corresponding vertical grooves in its side walls, of a horizontally and transversely disposed link-supporting plate provided with end lugs vertically movable in said grooves, and a spring or springs disposed under said plate, substantially as set forth.

4. In a car-coupler, the combination of the two spring-actuated bolts B and B', the bolt B having a catch b and the bolt B' connected to a lever B^5, attached to catch b by a chain b^5, the bar C, the coupling-pin W, and the draw-head, with its apertures and groove, substantially as described.

410,143. STOVE. Alpheus H. Blakesley, Rock Island, Ill. Filed July 20, 1888. Serial No. 280,471. (No model.)

Claim.—1. In a stove, a circulating air-chamber separated from and extending to a point over and above the fire-pot, the outer wall

of the fire-pot forming the inner wall of the air-chamber, substantially as set forth.



2. In a stove, a circulating air-chamber consisting of a section E adjacent to and separated from the fire-pot by the fire-pot wall, which forms the inner wall of said section, a section G within the stove, and an inclined section F, connecting the sections E and G, substantially as described.

3. In a stove, a circulating air-chamber consisting of a section E exterior to and adjacent to the fire-pot, the wall of which forms the inner wall of said section, a section G within the stove-body, and an inclined section F above the fire-pot communicating with the section E through an opening in the said stove-body, and also connected with the section G, substantially as described.

4. In combination with a stove-body, an air circulating-chamber consisting of a lower section E, an upper section G, and an inclined section F, connecting the other sections, and having a flange *e* on one end and an enlarged part or collar on the other end, said collar and flange being at substantially right angles to each other, and supporting-rings for the sections F and G, substantially as described.

5. In a stove, the combination, with the cylindrical chamber C, of the top plate, the cover, and the ring D', interposed between the top plate and formed with depending flange and upwardly-extending flange d^3, over which the outer edge of the cap fits, substantially as shown and described.

6. In a stove, the combination, with the sectional cylinder C, the top plate D, and ring D', having vertically-extending flanges, of the ring F' and the rod *b b'*, engaging said rings and serving to hold the rings and sections together, substantially as and for the purpose specified.

7. In a stove, the combination, with the cylinder C in sections, the top plate D, having central openings *d'* and depending flange, and the ring D', formed with the inner concentric ring d^3, of the ring F', formed with the inner concentric ring f^3, the upper section G of the circulating-flue held in said inner rings, and the rods *b b'*, connecting the rings F' and D', substantially as and for the purpose specified.

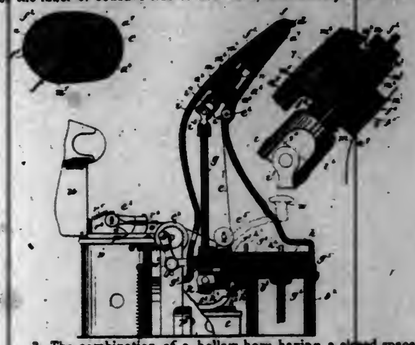
410,144. WOOD-FILLER. GRANVILLE M. BARNES, New Milford Conn. Filed Feb. 27, 1889. Serial No. 301,341. (No specimens.)

Claim.—A compound for wood-filling, containing silex ground in oil in combination with ground meal, in proportions substantially as specified.

410,145. MACHINE FOR SEWING SHOES. HERBERT H. BUTTON, Whitman, Mass. Filed Feb. 25, 1889. Serial No. 301,071. (No model.)

Claim.—1. In a machine for sewing boots and shoes, a pivotally-supported horn having its lower and upper portions inclined with relation to one another, a whirl at the tip of the horn, and actuating shafts therefor in the upper and lower portions of the horn connected by a universal joint at or near the point *x* where the inclination of the horn changes, a shaft extending through the axis of the horn, and gear-wheels g^3 g^4 g^4 g^5, connecting the same with the whirl-operating shafts, substantially as described.

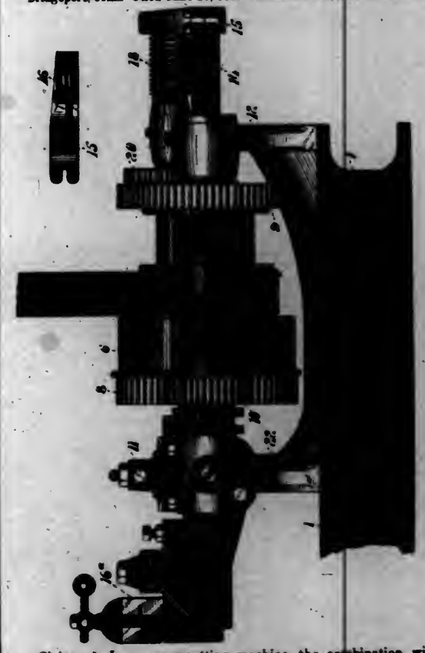
2. In a machine for sewing boots and shoes, a horn to support the sole inside the upper, said horn being inclined downward from its supporting-tip for a portion of its length and turned at an intermediate point at a different angle toward its base, and a movable cover for the inner or concave side of said horn, substantially as described.



3. The combination of a hollow horn having a closed space or chamber extending substantially from its base to its tip, the said horn being provided at its tip with a whirl and at its base with a dry thread and wax receptacle, with a heater having burners below the wax-receptacle and below the base of the horn, and thread-guides contained within the closed space in the horn, whereby the thread passes from the base to the tip of the horn through the interior of said closed space, substantially as described.

4. In a machine for sewing boots and shoes, a horn to support the sole inside the upper, having its upper and lower portions at an angle to one another, combined with a whirl and two actuating-shafts therefor in the upper and lower portions of said horn, respectively, said shafts having their axes inclined to one another and being connected at or near the angle of the horn, the upper one of said shafts being made in two parts, the lower portion of which is restrained from longitudinal movement by a bearing in the horn, and the upper portion of which is provided with a pinion meshing with the whirl and longitudinally adjustable in the lower portion, substantially as described.

410,146. SCREW-CUTTING MACHINE. EDWARD P. BULLARD, Bridgeport, Conn. Filed June 26, 1889. Serial No. 315,469. (No model.)

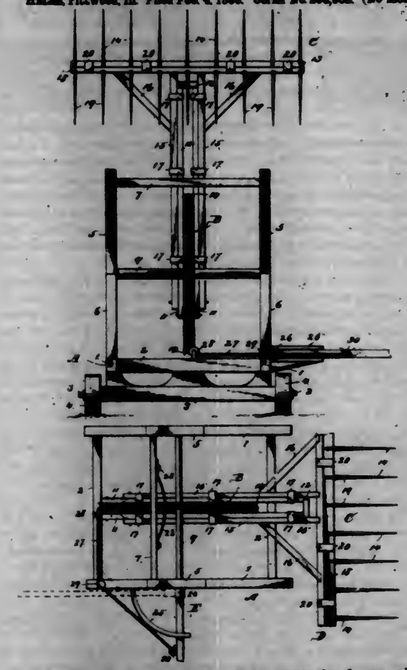


Claim.—1. In a screw-cutting machine, the combination, with the hollow spindle and means for revolving the same, of the back gear quill and the back gears, the leader-screw and means for operating it, the chaser-bar extending through the quill and back-gear standards, and the leader-screw nut and tool-holding devices mounted upon and carried by the chaser-bar, substantially as set forth.

2. In a screw-cutting machine, the combination, with the hollow spindle provided with means, as the chucks, for holding the work therein, of the belt-pulley whereby power is applied to the spindle, the back-gear standards and quill arranged parallel with said spindle, the leader-screw and means for rotating it, the chaser-bar extending through the quill, the leader arm and nut secured upon one end of said bar and adapted to engage the leader-screw, and the tool-post, bracket and carriage secured upon the other end of the chaser-bar, substantially as set forth.

3. In a screw-cutting machine, the combination, with the hollow spindle, the chuck secured thereto, and the belt-pulley whereby said spindle is rotated, of the back-gear standards and the quill carrying the back gears, and the chaser-bar extended through said quill and back-gear standards, said bar carrying the leader-screw nut and the tool-holding device, substantially as specified.

410,147. HORSE HAY-FORK. HARLEY BURGESS and JAMES A. HELMS, Pittwood, Ill. Filed Feb. 4, 1889. Serial No. 298,602. (No model.)



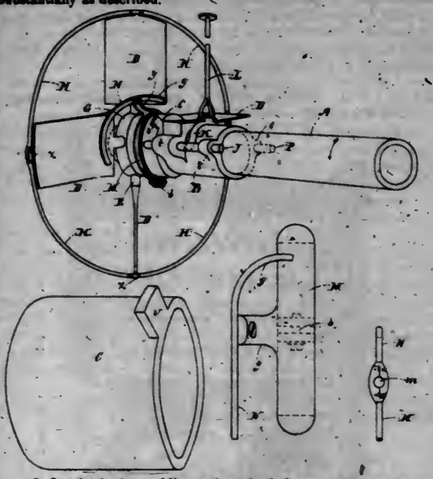
Claim.—1. The combination, with the supporting-frame and the tongue or lever secured to the side of the frame to swing in a horizontal plane, of the grooved pulley mounted on bearings on the side posts of the frame and having rigidly fixed to it the fork-supporting rods, and the fork having rods fixed to its head-rail and passed through sleeves on the rods on the pulley, substantially as described.

2. The combination, with the grooved pulley journaled in uprights on the carriage and provided with fork-supporting rods, of the lifting-fork adjustably supported by rods resting in sleeves on the rods of the grooved pulley, and the dropping-fork journaled on the head-rail of the lifting-fork, substantially as described.

3. The combination, with the grooved pulley journaled in uprights on the carriage and provided with fork-supporting rods, of the lifting-fork adjustably supported by rods resting in sleeves on the rods of the grooved pulley, the dropping-fork journaled to the head-piece of the lifting-fork, and springs adapted to hold the dropping-fork in vertical position, substantially as described.

410,148. FEATHERING PADDLE-WHEEL. ANOS H. CARPENTER, Waterford, Vt. Filed Nov. 3, 1887. Serial No. 254,182. (No model.)

Claim.—1. In a feathering paddle or other wheel, the shaft A, provided with the hollow boss G, in combination with the shafts E, carrying the floats D and provided with the curved portions *f*, said float-shafts being journaled in said boss at right angles to each other and their curved portions disposed within said boss, the members of each pair of said floats being arranged at right angles to each other, substantially as described.



2. In a feathering paddle or other wheel, the quadricircular braces H, in combination with the feathering-floats D, provided with the studs *x*, substantially as set forth.

3. The sliding rods J P, in combination with the box B, fork K, rod L, and sleeve C, mounted on the shaft A and provided with the projection *v*, substantially as described.

4. The cam-bar N, in combination with the sleeve C, provided with the projection *v*, said bar being adjustable on said sleeve, substantially as set forth.

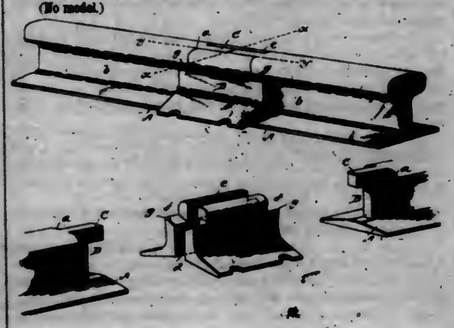
5. The floats D, mounted at right angles to each other on the shaft E, having the curve *f*, said shafts being journaled in the hollow boss G, in combination with the shaft A, means for feathering said floats, and means for reversing the floats, substantially as described.

6. The clasp M, provided with the arm *y*, and bolt and nut *b*, in combination with the cam-bar N and sleeve C, provided with the projection *v*, substantially as set forth.

7. In a device of the character described, the combination of the following instrumentalities, to wit: a main shaft, a box or bearing for said shaft, a hollow boss connected with said shaft, a sleeve mounted on said shaft and provided with a projection, movable rods adapted to engage said projection at opposite sides of said main shaft and serve as stops for said sleeve, a fork and rod or equivalent means for actuating said rods, two shafts curved at their centers and carrying floats at their outer ends, said float-shafts being journaled at right angles in said boss and having their curved portions disposed therein, and a cam mounted on said sleeve and adapted to engage said floats and feather them as the main shaft revolves, substantially as described.

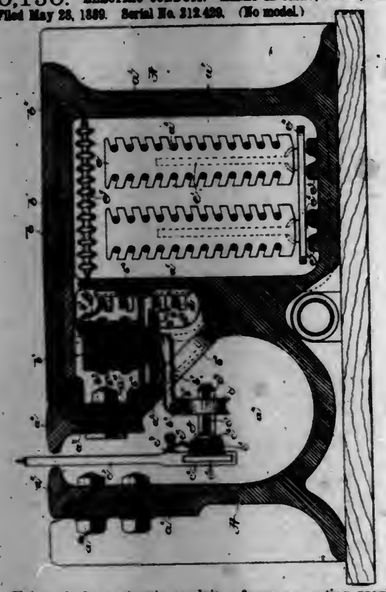
8. In a feathering paddle or other wheel, the feathering-floats D, pivoted at their outer ends to a connecting brace or braces, substantially as described.

410,149. RAILWAY-RAIL JOINT. JOSEPH S. CRABSCOMBE and LORING C. STOCKET, Rosamond, Cal. Filed May 4, 1889. Serial No. 309,606. (No model.)



Claim.—The combination, with the adjacent ends of two railway-rails the tread or flanges of which are cut away, as described, to form the shoulders *a* and the vertical portion *b*, of the connecting-block D, beveled upon its lower face to correspond with the inclined base of the rails, provided at its ends with slots *d*, upon its upper face with a longitudinal recess *e* to receive the projections C of the rail, and having its upright portions formed with a beveled recess *f* and shoulder *g*, substantially as and for the purpose specified.

410,150. ELECTRIC CONDUIT. HENRY A. CRASE, Boston, Mass. Filed May 28, 1889. Serial No. 312,429. (No model.)



Claim.—1. In an electric conduit, a frame or casting provided with a slot-chamber and an accessible chamber communicating therewith, and a power-chamber, substantially as described.

2. In an electric conduit, the combination, with the series of castings or frames, each comprising a slot-chamber, an accessible chamber, and a power-chamber, of means to connect the chambers of adjacent castings, substantially as described.

3. The combination, with an electric conduit having a slot-chamber and an accessible chamber communicating therewith, and a conductor located in said slot-chamber, of a trolley-arm adapted to be inserted into said slot-chamber through the said slot and a trolley-carriage and means to positively secure said trolley-carriage to the trolley-arm within the slot-chamber, the said trolley-carriage being readily detachable from the trolley-arm to permit the carriage to be removed through the accessible chamber and to allow the trolley-arm to be withdrawn from the slot-chamber, substantially as described.

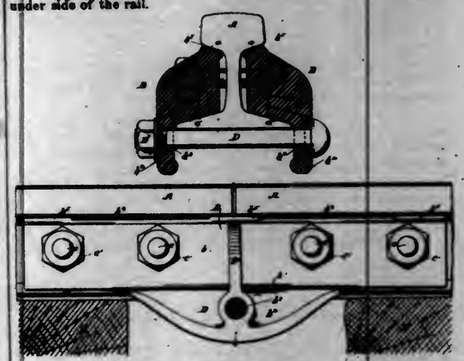
4. The combination, with an electric conduit having a slot-chamber and a power-chamber, of an insulating support in said power-chamber and a supporting-guide, substantially as described, located in the said power-chamber above the insulating-support, substantially as and for the purpose specified.

5. The combination, with an electric conduit having a slot-chamber and a main conductor located therein, and an insulating-support for said conductor, of a feed-wire and an insulating-support for said feed-wire consisting of a trough, an oily barrier therein, and an upright or arm extended upward from said trough, substantially as described.

6. In an electric conduit, the combination, with a support or bar 4, of an insulator consisting of a trough, an oily barrier therein, and a back piece provided with a dovetail slot to enable the said insulator to be slipped over the said bar or support, substantially as described.

410,151. RAIL-JOINT. JOHN W. CLOUD, Buffalo, N. Y. Filed Jan 2, 1889. Serial No. 295,300. (No model.)

Claim.—1. A rail-joint, consisting of two fish-plates B, having upwardly-extending flanges *b*, adapted to fit under the head of a rail and provided with bolt-holes, outwardly-extending flanges *b'*, adapted to extend along and over the rail-base, and downwardly-extending flanges b^3, adapted to extend below the rail-base without coming in contact with it and provided with one or more bolt-holes b^4 at a point or points below the level of the rail-base, in combination with bolts for securing the flanges *b* to the rail and a bolt or bolts passing through the downwardly-extending flanges, said fish-plate flanges b^3 and the bolt or bolts uniting them beneath the rail-base being so constructed and combined as not to press directly or indirectly upon the under side of the rail.



2. As a new article of manufacture, a railway fish-plate having an upwardly-extending flange *b*, adapted to fit beneath the head of the rail and provided with bolt-holes, an outwardly-extending flange *b'*, adapted to lie along and extend beyond the rail-base, and a downwardly-extending flange b^3, adapted to extend below the rail-base without coming in contact with it or passing beneath its edges, and having one or more bolt-holes at a point below the level of said rail-base, all substantially as described, and so as to form with a similar plate a rail-joint of the kind specified.

3. As a new article of manufacture, a railway fish-plate having an upwardly-extending flange *b*, adapted to fit beneath the head of the rail and provided with bolt-holes, an outwardly-extending flange *b'*, adapted to lie along and extend beyond the rail-base, and a downwardly-extending flange b^3, shorter than the flange *b*, adapted to extend below the rail-base without coming in contact with it or passing beneath its edges, and having one or more bolt-holes at a point below the level of said rail-base, all substantially as described, and so as to form with a similar plate a rail-joint of the kind specified.

4. As a new article of manufacture, a railway fish-plate having an upwardly-extending flange *b*, adapted to fit beneath the head of the rail and provided with bolt-holes, an outwardly-extending flange *b'*, adapted to lie along and extend beyond the rail-base, a downwardly-extending flange b^3, shorter than the flange *b*, adapted to extend below the rail-base without coming in contact with it, and having one or more bolt-holes at a point below the level of said rail-base, and a web b^4, connecting the flanges *b* and *b'*, all substantially as described, and so as to form with a similar plate a rail-joint of the kind specified.

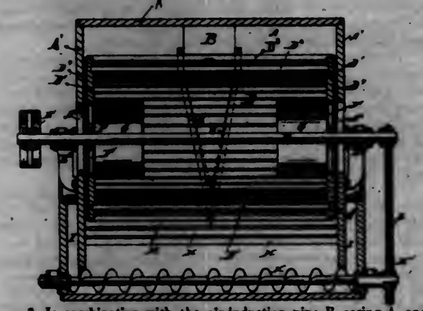
5. As a new article of manufacture, a railway fish-plate having an upwardly-extending flange *b*, having projections b^5, adapted to fit beneath the head of the rail at the center and the ends of the flange, said upwardly-extending flange being provided with bolt-holes, an outwardly-extending flange *b'*, adapted to lie along and extend beyond the rail-base, and a downwardly-extending flange b^3, shorter than the flange *b*, adapted to extend below the rail-base without coming in contact with it, and having one or more bolt-holes at a point below the level of said rail-base, all substantially as described, and so as to form with a similar plate a rail-joint of the kind specified.

6. As a new article of manufacture, a railway fish-plate having an upwardly-extending flange *b*, having projections b^5, adapted to fit beneath the head of the rail at the center and the ends of the flange, said upwardly-extending flange being provided with bolt-holes, an outwardly-extending flange *b'*, adapted to lie along and extend beyond the rail-base, a downwardly-extending flange b^3, shorter than the flange *b*, adapted to extend below the rail-base without coming in contact with it, and having one or more bolt-holes at a point below the level of said rail-base, and a web b^4, connecting the flanges *b* and *b'*, all substantially as described, and so as to form with a similar plate a rail-joint of the kind specified.

410,152. DUST-COLLECTOR. WILLIAM A. COMBELL, Dayton, Ohio. Filed July 2, 1888. Serial No. 278,572. (No model.)

Claim.—1. In a dust-collector, the combination, with the tangential air-induction pipe B and casing A, of a revolving cylinder D, having blades D^2 and independently driven in the direction of the movement of the vertical current, substantially as set forth.

2. In combination with the tangential air-induction pipe B, casing A, provided with openings A^2, and revolving cylinder D, a wedge-formed partition C, interposed between the cylinder and casing, substantially as set forth.



3. In combination with the air-induction pipe B, casing A, and revolving cylinder D, inclined ribs D^2, placed between the heads A' and D' and attached to the latter, substantially as set forth.

4. In combination with the tangential air-induction pipe B, casing A, and revolving cylinder D, the tubular air-escape G, attached to the cylinder and in line with the opening A^2, substantially as set forth.

5. In combination with the tangential air-induction pipe B, casing A, and separation-chamber X, the dead-air chamber I and overlapping gather-boards H, placed between said chambers, substantially as set forth.

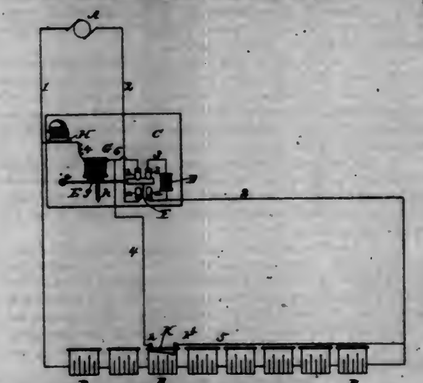
6. In combination with the air-induction pipe B, casing A, revolving cylinder D, and partitions C, holes A^2, formed in the end of the casing, and a dead-air chamber I, substantially as set forth.

7. In combination with the air-induction pipe and the separation-chamber of a dust-collector, the holes A^2, formed in the end A' of the casing, for the escape of the dust, substantially as set forth.

8. In combination with the air-induction pipe and separation-chamber of a dust-collector, the holes A^2, formed in the end A' of the case and cut transversely through the same, substantially as set forth.

9. In combination with the air-induction pipe and separation-chamber of a dust-collector, the revolving cylinder D and openings through the case for the escape of the dust peripherally and at the end, substantially as set forth.

410,153. APPARATUS FOR AUTOMATICALLY CHARGING SECONDARY BATTERIES. STANLEY G. C. CURRIE, Philadelphia, Pa., assignor to the United Electric Improvement Company, Gloucester City, N. J. Filed Nov. 21, 1888. Serial No. 291,442. (No model.)



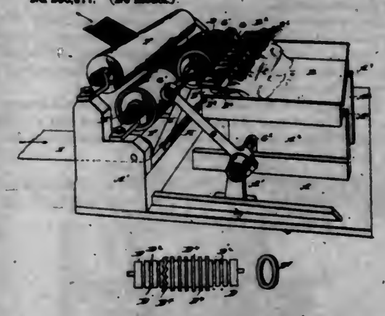
Claim.—1. In an automatic circuit-changer for secondary batteries, the combination of a generator, a secondary battery, a main circuit connecting the same, a circuit-making device arranged above a coil of said battery, an electro-magnetic switch adapted to make and break said main circuit, an electro-magnetic signal, and a resistance-circuit having contact-points adapted to be connected by said switch, the circuit-making device, switch-magnet, and signal being arranged in a branch of the main circuit, all substantially as described.

2. In an automatic circuit-changer for secondary-battery plants, the combination of the generator, the battery, a pair of terminals arranged in the vicinity of said battery and adapted to be electrically connected by spray arising from said battery, and an electro-magnetic switch having its magnet arranged in a branch including said terminals and in a branch circuit containing a resistance and having a spring-retracted armature adapted to alternately close the main-line circuit and said branch circuit, whereby said switch is adapted to automatically break the main circuit between the generator and the battery when the latter has become charged and to automatically complete the main-line circuit when the battery is discharged, substantially as described.

3. In an automatic circuit-changer for secondary-battery plants, the combination, with the generator, battery, and conductors connecting the same, of a circuit-making device, and an electro-magnetic switch adapted to open and close the main circuit and to open and close a branch circuit extending from the magnet of the switch around the contact-points of said main circuit, substantially as described.

4. In an automatic circuit-changer for secondary-battery plants, the combination of a generator A, batteries B B, connected to said generator by a main line and return-conductor 1 2, an electro-magnet G, having a spring-retracted armature-lever E, adapted to open and close contacts *a a* of return-conductor 2, a circuit-making device K, arranged in the vicinity of the batteries B B and in circuit with the magnet G, and a high-resistance circuit 3, having contact-points *b b*, adapted to be closed by said armature-lever and constituting a branch circuit from the magnet-circuit 4 to the return-conductor 2, all constructed and arranged substantially as described.

410,154. MACHINE FOR ORNAMENTING PAPER. CHARLES A. DEAN and FREDERIC E. ROBIE, Boston, Mass. Filed July 21, 1888. Serial No. 280,677. (No model.)



Claim.—1. In a machine for ornamenting paper, a printing-roll comprising a body provided with circumferential grooves, and flexible printing-rings removably fitted in said grooves and projecting beyond the periphery of the body, substantially as described.

2. The combination, with the ink-well and printing-roll, of an ink-conductor of the character described, and compressing means located between the roll and well for compressing said ink-conductor, substantially as and for the purpose specified.

3. The combination, with the printing-roll and ink-well, of the capillary ink-conductor, the transverse bar extending across said conductor between the rolls and well, and means, as the screw-bolt B^4, for pressing said bar downward to compress the conductor, substantially as and for the purpose specified.

4. The combination, with an ink-well, of a conductor of the character described, a slotted clamp, and adjusting-bolts having pins, substantially as specified.

5. The combination of an ink-well, a textile conductor, a printing-roll arranged adjacent to the conductor, and means for adjustably arranging the edge of the conductor at different points along the roll, substantially as specified.

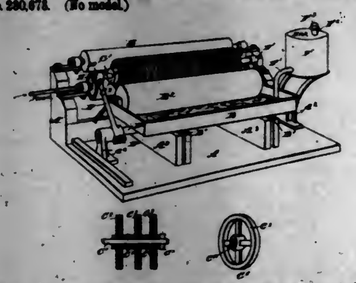
6. The combination of an ink-well, a rotatable printing-roll, and a conductor of the material specified, arranged with one end in the well and the other in contact with the roll, substantially as shown and described.

7. The combination of an ink-well, an impression-roll, a capillary ink-conductor, and a printing-roll mounted in rock-arms, substantially as specified.

8. The combination of an ink-well adapted to contain liquid ink, a conductor arranged therein and projecting therefrom, a printing-roll arranged adjacent to the conductor, and a hollow steam-heated impression-roll, substantially as specified.

9. In a machine of the class described, a movable ink-well, and means, as the spring H, connecting the well with the frame, for maintaining the same in operative contact with the printing-roll thereof, substantially as specified.

410,155. MACHINE FOR ORNAMENTING PAPER. CHARLES A. DEAN and FREDERIC H. ROSER, Boston, Mass. Filed July 21, 1888. Serial No. 280,673. (No model.)



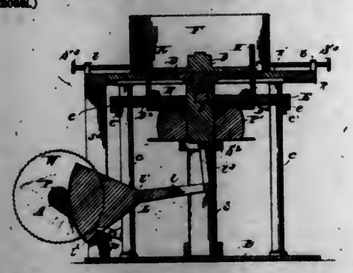
Claim.—1. The combination, with the printing-roll consisting of a shaft and a series of removable wheels and means for holding said wheels to their shaft, of rock-arms carrying bearings for said shaft, substantially as and for the purpose specified.

2. The combination, with the impression-roll and the printing-roll consisting of a shaft and a series of removable wheels on said shaft, of the shaft D^2, parallel with the shaft of the printing-roll, the rock-arms detachably clamped to said shaft D^2, and provided at their ends with bearings in which the shaft of the printing-roll is journaled, and the collar C^x on the shaft of the printing-roll, substantially as and for the purpose specified.

3. In a machine of the class described, the combination of a flexible elastic ink-supplying roll, a printing-roll having its printing-surface variable as to length, and a steam-heated drying and impression roll, said printing-roll revolving in contact with both said ink-supplying and impression rolls, substantially as described.

4. In a machine of the class described, a flexible elastic ink-supplying roll, a steam-heated drying and impression roll, and a rigid printing-roller pivotally mounted between said rolls and in contact with both of them, substantially as specified.

410,156. MACHINE FOR MOLDING WHEELS. ALEXANDER DELANEY, Petersburg, Va. Filed Jan. 24, 1888. Serial No. 297,473. (No model.)



Claim.—1. In a machine for molding pulleys or wheels, the combination, with a molding-table for supporting the flask, in which table is formed an annular slot, of one or more coring-tools revoluble in said slot, substantially as and for the purposes specified.

2. In a machine for molding pulleys or wheels, the combination, with a molding-table for supporting the flask, in which table is formed an annular slot, of one or more vertically-movable coring-tools revoluble in said slot, substantially as and for the purposes specified.

3. In a machine for molding pulleys or wheels, the combination, with a molding-table for supporting the flask, in which table is formed an annular slot, of one or more cutting-tools, and a smoothing and compacting tool revoluble in said slot, substantially as and for the purposes specified.

4. In a machine for molding pulleys or wheels, the combination, with the molding-table for supporting the flask, in which table is formed an annular slot, of one or more cutting-tools, and one or more smoothing and compacting tools of greater thickness than the coring tool or tools, substantially as and for the purposes specified.

5. In a machine for molding pulleys or wheels, the combination, with the molding-table for supporting the flask, in which table is formed an annular slot, of one or more revoluble cutting-tools provided with a vertical cutting-edge, and one or more smoothing and compacting tools tapering from the vertical edges toward the center and of greater thickness at that point than the thickness of the coring tool or tools, substantially as and for the purposes specified.

6. In a machine for molding pulleys or wheels, the combination, with the molding-table for supporting the flask, in which table is formed an annular slot, of a revoluble and vertically-movable tool-carrier, a smoothing and compacting tool, and one or more cutter-tools secured to the carrier, said cutter-tools being adjustable vertically on the carrier relatively to the smoothing and compacting tool, substantially as and for the purposes specified.

7. In a machine for molding pulleys or wheels, a molding-table comprising an outer ring, a disk-pattern having formed thereon one-half of the hub and spokes or radial arms of a wheel or pulley centrally placed in said ring, and an intermediate ring, the inner diameter of which is greater than the diameter of the disk-pattern, whereby an annular slot is formed between the two, in combination with a revoluble coring tool or tools working in said slot, substantially as and for the purposes specified.

8. In a machine for molding pulleys or wheels, a molding-table comprising an outer ring, a disk-pattern centrally placed in said ring and having formed thereon one-half of the hub and spokes or radial arms of a wheel or pulley, and an intermediate ring supported from the outer ring, the inner diameter of which intermediate ring is greater than the diameter of the disk-pattern, to form an annular slot between the two, in combination with one or more revoluble and vertically-movable coring-tools adapted to work in said annular slot, substantially as and for the purposes specified.

9. In a machine for molding pulleys or wheels, a molding-table comprising an outer ring, an axial standard, a disk-pattern detachably connected thereto, and an intermediate ring detachably connected with the outer ring, the inner diameter of which intermediate ring is greater than that of the disk-pattern, in combination with a revoluble tool or tools adapted to move vertically on the axial standard and operate through the annular slot formed between the disk-pattern and the intermediate ring, substantially as and for the purposes specified.

10. In a machine for molding pulleys or wheels, a molding-table comprising an outer ring, centering devices supported from said ring for centering the flask, a standard arranged axially of the ring, a disk-pattern detachably connected with the standard and an intermediate ring detachably connected with the outer ring, the inner diameter of which intermediate ring is greater than that of the disk-pattern, in combination with a tool-carrier adapted to rotate and move vertically on the standard, and coring-tools adjustably connected with said carrier, substantially as and for the purposes specified.

11. In a machine for molding pulleys or wheels, the combination, with the stationary molding-table provided with an annular slot and a revoluble and vertically-movable tool-carrier, the tool or tools of which are adapted to penetrate into and through said slot, of an index for indicating the extent of vertical motion of the tool-carrier, substantially as and for the purposes specified.

12. In a machine for molding pulleys or wheels, the combination, with the stationary molding-table provided with an annular slot and a revoluble and vertically-movable tool-carrier, the tool or tools of which are adapted to penetrate into and through said slot, of a stop or abutment for limiting the upward motion of the tool-carrier, substantially as and for the purposes specified.

13. In a machine for molding pulleys or wheels, the combination, with the stationary molding-table provided with an annular slot and a revoluble and vertically-movable tool-carrier, the tool or tools of which are adapted to penetrate into and through said slot, of a vertically adjustable stop or abutment for limiting the upward motion of the tool-carrier, substantially as and for the purposes specified.

14. The combination, with the slotted molding-table, the standard S, and the revoluble and vertically-movable tool-carrier provided with a segmental cam-face D^2, of the arm E, loosely mounted on the standard, and a coring-tool secured to said arm, substantially as and for the purposes specified.

15. In a molding-machine, a molding-table consisting of an outer fixed ring, a disk-pattern arranged axially of said ring, a support for and with which said pattern is detachably connected, and an intermediate removable ring, the inner diameter of which is greater than the diameter of the disk-pattern, in combination with a revoluble and vertically-movable tool-carrier, and a coring tool or tools detachably connected with and adjustable in radial lines on said tool-carrier, substantially as and for the purposes specified.

410,157. ELEVATING-TRUCK. CLINTON B. DE WITT, Sidney, Ohio. Filed Apr. 20, 1889. Serial No. 308,782. (No model.)

Claim.—1. The combination, in an elevating-truck, of hinge-jointed standards S S S' S', bearing-plates B' B', and tie-rod C, substantially as and for the purpose set forth.

2. In an elevating-truck, the combination of axle A', fixed to lever M L, and to standards S' S', jointed to strut Y Y, and having ratchet R, and a trip-wire s, run from ratchet to a convenient distance from outer end of lever M, substantially as and for the purpose set forth.

3. In an elevating-truck, the combination of strut Y Y, conveying the force from lever-arm L to rear bearing-plate B', and thence through table T to front bearing-plate B', thus securing a perpendicular elevation of the table T, substantially as set forth.



4. The combination, in an elevating-truck, of axles A^x $A^{x'}$, connected by tie-rod e, and joining the standards S S S' S' at their joints J J J J, thereby making the relative distances between said joints constant and firm, substantially as set forth.

5. In an elevating-truck, the combination of axles A A', held to respective positions relative to each other by tie-bars r r, the rear axle carrying rear wheels W W and the rear hinge-jointed standard S S, and the forward one carrying the lever M L and the front hinge-jointed standards S' S', both the lever M L and the hinge-jointed standards S' S' being fixed rigidly to front axle A', all substantially as set forth.

6. In an elevating-truck, the combination of lever-strut Y Y, having assisting-springs S^2 S^2, joining axle A^x to center of strut-arms Y Y, all substantially for the purposes set forth.

410,158. DENTAL INSTRUMENT. ROBERT B. DONALDSON, Washington, D.C. Filed May 24, 1889. Serial No. 311,926. (No model.)



Claim.—1. A dental instrument for removing the pulp and cleaning the canal in the root of a tooth, consisting of a hollow handle, and a shaft held in said handle and adapted to be rotated therein and projected therefrom and carrying at its outer end the cleaning-tool.

2. A dental instrument of the nature described, composed of a handle, and a shaft held in said handle and adapted to be rotated therein and projected therefrom, and having at its outer end the socket for holding the broach or cleaning-tool, which shaft has a flexible section interposed in its length whereby the line of direction of said shaft may be changed from straight to angular.

3. In a dental instrument of the nature described, in combination with the handle, the bracket support or arm secured to said handle and carrying at its outer end the swinging bearing, and shaft held in said handle and swinging bearing, which shaft is adapted to be rotated in said handle and bearing and to be projected from the handle, as and for the purposes described.

4. In a dental instrument of the nature described, in combination, the hollow handle A, bracket support or arm B, with swinging bearing G, and shaft D, having flexible connection H, which shaft is held in said handle and adapted to be rotated therein and projected therefrom, and socket or tool-holder *d*, substantially as described, for the purposes specified.

5. In a dental instrument of the nature described, in combination, the handle, shaft having the socket for the cleaning-tool at its outer end projecting through said handle, and a thumb-screw arranged to project the shaft from the handle.

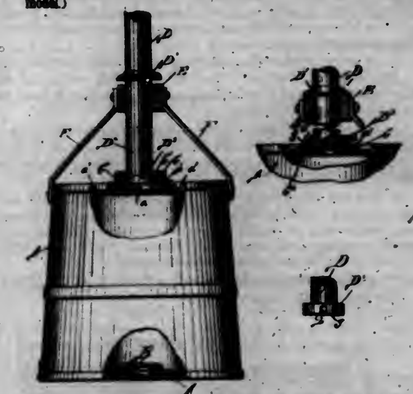
6. In a dental instrument of the nature described, in combination, the hollow handle with screw-threaded rear end, and shaft extending through said handle, and a screw passing through said screw-threaded end of handle and impinging against the end of shaft, substantially as described, for the purposes specified.

7. In a dental instrument of the nature described, the shaft having the socket for the cleaning-tool at its end, and burrs or thumb-nut for operating the same, and an interposed flexible portion whereby said shaft may be rotated and bent at an angle.

8. In a dental instrument of the nature described, in combination, the hollow handle, the shaft with interposed flexible portion, the bracket with swinging bearing for the shaft, the set-screw for projecting the shaft, and socket or tool-holder at the outer end of the shaft.

9. In a dental instrument of the nature described, in combination, the handle, the flexible shaft carrying the cleaning-tool, the swinging bearing for the shaft, the burrs keyed thereon to operate the same, the screw at the outer end of handle to project the shaft, and the set-nut on said screw, all constructed and arranged to operate substantially as described, for the purposes specified.

410,159. CISTERN-CLEANER. JOHN H. DUNCAN and FRANK A. HALE, Syracuse, N. Y. Filed Nov. 26, 1888. Serial No. 291,902. (No model.)



Claim.—1. The combination, in a cistern-cleaner having a lower valve for the admission of refuse and an upper valve, of a movably mounted handle connected to operate the upper valve when the handle is turned, substantially as and for the purpose set forth.

2. In a cistern-cleaner, the combination of the receptacle having a valve in its base, with an aperture or valve in the upper part of the receptacle, a flange-collar above said aperture, and a handle movably mounted in the collar adjacent to said valve and actuated to operate the same, substantially as described.

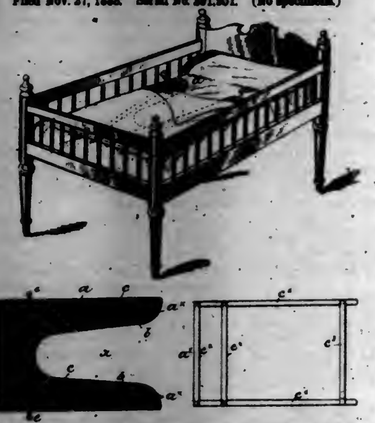
3. In a cistern-cleaner, the combination of the receptacle A, having a valve in its base, with an aperture or opening *a* in the upper part of the receptacle, a collar above said aperture and provided with openings *b*, and the handle movably mounted in the collar adjacent to said aperture and actuated to connect a passage from the opening *a* in the upper part of the receptacle and the opening *b* in the collar, substantially as and for the purpose set forth

4. In a cistern-cleaner, the combination of the receptacle A, having a valve in its base and an aperture or opening *a* in the upper part of the receptacle, a collar G, mounted above said aperture and provided with openings *b*, and a flange G', provided on the collar G, with the handle D, movably mounted in the collar G, the annular shoulder D^x, interposed between the flange G' and the cleaner-receptacle for closing and opening the aperture *a*, substantially as and for the purpose set forth.

5. In a cistern-cleaner, the combination of a receptacle having a valve in its base, and an aperture or valve in its upper part, with the collar G, mounted above said aperture, a handle D, movably mounted in the collar G, adjacent to said aperture, for opening and closing

the same, and a collar E, above the cleaner-receptacle and braced thereto for supporting the movable handle D, substantially as and for the purpose specified.

410,160. RETAINER FOR BED-COVERINGS. DARIUS FARRINGTON, Brooklyn, N. Y., assignor of one-half to Thomas I. Andrews, Rahway, N. J. Filed Nov. 27, 1888. Serial No. 291,951. (No specimens.)



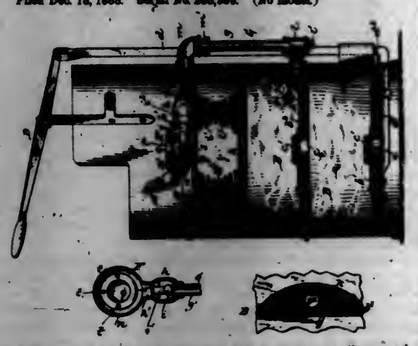
Claim.—1. As a new article of manufacture, a retainer for holding the covering in place on a bed, consisting of a flat thin flexible and elastic U-shaped shield having sufficient stiffness to retain its form, substantially as set forth.

2. As a new article of manufacture, a retainer for the coverings of a bed, consisting of a sheet of flexible but not limp material of the proper dimensions, and longitudinally-extending springs secured to said sheet, substantially as described.

3. As a new article of manufacture, a retaining-shield for the covering of a bed, consisting of a thin flexible sheet of material, as wire-netting, having the U shape described, and springs e e, secured to said sheet and extending longitudinally of the same, as set forth.

4. As a new article of manufacture, a retaining-shield for the covering of a bed, consisting of a sheet of wire-netting of the proper dimensions bound with flexible material and provided with two longitudinally-extending springs arranged in the form of a V, as set forth.

410,161. PORTABLE FORGE. CHARLES HANNEMANN, Buffalo, N. Y. Filed Dec. 16, 1882. Serial No. 208,992. (No model.)



Claim.—1. In a forge, the combination, with a bellows and a tuyere or blast-discharge nozzle, of a blast pipe or passage connecting the bellows with said tuyere or discharge-nozzle, and a check-valve arranged in said passage, substantially as set forth.

2. In a forge, the combination, with a bellows and a tuyere, of a valve-casing connected with said tuyere and provided with an inclined way, a blast pipe or passage connecting said valve-casing with the bellows, and a check-valve arranged in the valve-casing upon said inclined way, substantially as set forth.

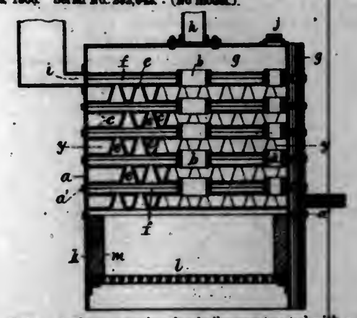
3. In a forge, the combination, with the tuyere and the bellows having a stationary partition b^3, of a blast-pipe connecting the bellows with the tuyere and provided with a horizontal branch or section g^3, entering an opening in the flexible portion of the bellows and secured to the partition b^3, and a block k, fitted over said pipe within the bellows and forming a support to which the flexible portion of the bellows surrounding the pipe is tacked, substantially as set forth.

4. In a forge, the combination, with the bellows and the tuyere, of the valve-casing h and check-valve i, the blast-pipe G, connecting the bellows with said valve-casing and composed of horizontal sections g' g^2, and an upright section g, a T l, connecting the lower horizontal section g^2 with the lower end of the upright section g, an elbow m, attached to the outer end of the upper horizontal section g', and a movable screw thimble or nipple m', attached to the upper end of the upright section g and connecting the latter with the elbow m, substantially as set forth.

5. In a tuyere for forges, the combination, with an annular shell or casing provided in its top with a discharge-opening and in its side with an inlet-opening, of a depending flange or rim surrounding said opening, a cup or receptacle arranged within the annular casing underneath said discharge-opening and depending flange, and a guard or shield arranged on said cup in front of the inlet-opening of the tuyere, substantially as set forth.

6. In a forge, the combination, with the hearth-plate or fire-pan, of a tuyere composed of a lower part n, formed in said hearth-plate and provided with a socket, an upper part n', provided with a discharge-opening o and a depending flange p, and a cup or receptacle q, arranged within the tuyere-casing underneath the discharge-opening o and provided with a stem seated in the socket of the lower part n of the tuyere, substantially as set forth.

410,162. BOILER. JOHN J. HOGAN, New York, N. Y. Filed Dec. 4, 1888. Serial No. 292,642. (No model.)



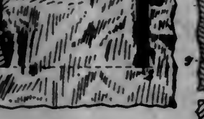
Claim.—1. In a water-heating boiler constructed with a series of flat hollow sections provided with marginal flanges a' and arranged horizontally, with intermediate combustion-chambers, and having vertical gas or smoke passages extending through the sections, the combination, with the several sections, of the central thimbles b, forming a continuous central water-channel, and several series of outer thimbles d, arranged one over another and forming continuous water-channels near the periphery of the sections, the whole arranged and operated as and for the purpose set forth.

2. In a water-heating boiler constructed with a series of flat hollow sections provided with marginal flanges a' and arranged horizontally, with intermediate combustion-chambers, and having vertical gas or smoke passages, formed as slits c, extending through the sections, the combination, with the several sections, of the central thimbles b, forming a continuous central water-channel, and several series of outer thimbles d, arranged over one another and forming continuous water-channels near the periphery of the sections, and the radial water-channels c', formed through the walls of the slits c, the whole arranged and operated as set forth.

3. The combination, in a water-heating boiler, of the series of hollow sections formed with cylindrical shell a and horizontal plate c, and provided with the slits having partitions c' within the water-spaces of the sections, and the radial passages c', formed in the water-spaces by interrupting such partitions, the central thimbles b, and the several series of thimbles d, connecting the several boiler-sections with intermediate combustion-chambers f and forming continuous vertical water-channels, the water-chamber g, connected with the upper thimbles b and d, the discharge-pipe h, applied to the top of the chamber g over the thimble b, the smoke-outlet i, extended laterally from the upper chamber f, and a water-inlet near the bottom of the boiler, the whole arranged and operated substantially as set forth.

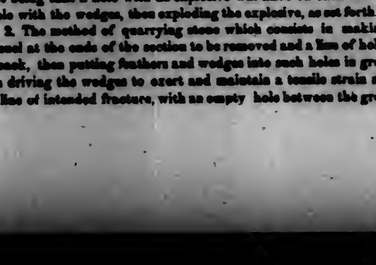
410,163. MICROMETER-GAGE. FRANKLIN SHELDON, New Britain, Conn. Filed May 18, 1888. Serial No. 311,262. (No model.)

Claim.—1. The combination of a case, an anvil, the sliding arm 16, the cam-wheel for moving said arm, the operating-shaft 10, carrying said cam-wheel, devices for moving said shaft, and the pointer or index secured directly upon said operating-shaft and moving therewith, substantially as described, and for the purpose specified.



2. The combination of a case, the spring-actuated shaft, a pointer, cam-wheel, and pinion secured thereto, the sliding arm 16, moved by said cam-wheel, an anvil, the rack 6, and operating-handle for moving said shaft through said pinion, substantially as described, and for the purpose specified.

410,164. TRUCK. EDWARD W. H. HOSKIN, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed June 11, 1888. Serial No. 313,912. (No model.)



Claim.—1. A truck-frame for vehicles, having the side frames and end frames integral, substantially as described.

2. A truck-frame for vehicles, having the side frames and end frames integral, the said side frames and end frames being pressed from a single piece of metal into a box shape, substantially as described.

3. The truck for moving vehicles herein shown, consisting of a single piece of pressed steel having side frames, end frames, and pedestals pressed therein, substantially as described.

410,165. METHOD OF QUARRYING STONE. JOHN H. JACOBS, Marquette, Mich. Filed Oct. 1, 1887. Renewed July 20, 1889. Serial No. 318,188. (No model.)

Claim.—1. The method of quarrying stone which consists in making a channel at the ends of the section to be removed and a line of holes at its back, then putting feathers and wedges into some of the holes and driving the wedges to exert a tensile strain along the line of intended fracture and an explosive into the others, the arrangement being that a hole with an explosive will have on each side of it a hole with the wedges, then exploding the explosive, as set forth.

2. The method of quarrying stone which consists in making a channel at the ends of the section to be removed and a line of holes at its back, then putting feathers and wedges into such holes in groups, then driving the wedges to exert and maintain a tensile strain along the line of intended fracture, with an empty hole between the groups, then putting an explosive into such empty holes and firing the explosive, as set forth.

3. The method of quarrying stone which consists in making a channel at the ends of the section to be removed and a line of holes at its back, then putting at the bottoms of the holes a set of feathers and driving wedges between the feathers, then putting a set of feathers and wedges at the top of the holes, these feathers and wedges being placed into the holes in groups, with an empty hole left between, then putting an explosive into the empty holes and firing it, as set forth.

410,166. MINER'S CANDLESTICK. DAVID B. JAMES, San Francisco, Cal. Filed Feb. 2, 1889. Serial No. 298,982. (No model.)



Claim.—1. In a candlestick for use by miners, the spring-metal frame having a slotted shorter arm and the longer arm provided with a knife-edge, in combination with the loop passing through the slotted arm, substantially as described.

2. In a candlestick for miners' use, the spring-metal frame forming the slotted shorter arm, the longer arm having the pointed extremity, a knife-edge, and a circular notch, and the loop connected to the longer arm, passing through the slotted arm, and provided with a hook, substantially as described.

3. In a miner's candlestick, the metal frame bent at A and having the slotted shorter arm, and the longer arm pointed at E, having a knife-edge G and notch H, and the loop C, passing through the slotted arm, together with its hooked end F, substantially as described.

410,167. CURRY-COMB. FREDERICK G. KENT, Wadsworth, Ill. Filed Dec. 13, 1888. Serial No. 293,449. (No model.)



Claim.—1. In a curry-comb, a blade provided with serrated edges and inclined wings, the edges and wings being adapted to act in conjunction with each other, substantially as set forth.

2. In combination with a curry-comb having a blade provided with serrated edges and having a slot or slots, side wings projecting from the edges of the slot or slots and formed integrally with the blade, substantially as set forth.

3. A curry-comb consisting of a blade having serrated edges and provided with longitudinal slot or slots, and wings projecting from the blade at the edges of the slot or slots, substantially as set forth.

410,168. JOINT FOR CARBON FILAMENTS. HERMANN LEMP, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Sept. 17, 1888. Serial No. 285,044. (No model.)

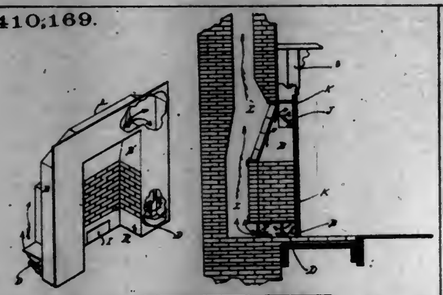


Claim.—The carbon filament and body joined thereto, and a deposit on said filament interposed between the said filament and body, which are out of contact with one another, but connected by the said intervening deposit, substantially as described.

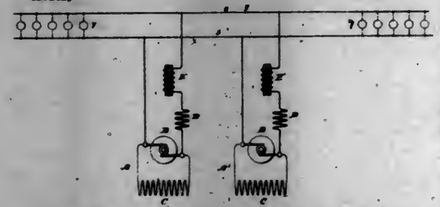
410,169. ATTACHMENT FOR OPEN FIRE-PLACES. DOUGLAS P. LEWIS, Cincinnati, Ohio. Filed Aug. 24, 1888. Serial No. 283,612. (No model.)

Claim.—The heat-radiating attachment for open fire-places described, having openings D and D' at the lower ends and rear side of hollow jambs B and B', which openings are connected directly to the rear with the flue L by means of passages P, formed between the plates that comprise the side walls of the ash-pit R, the jambs of the fire-place, the hearth, and the plates N and N', as hereinbefore described.

410,169.

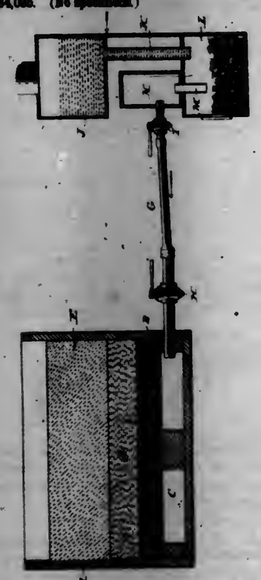


410,170. REGULATION OF COUPLED DYNAMOS. OSBORN P. LOOMIS, New York, N. Y., assignor to the Loomis Electric Manufacturing Company, same place. Filed Apr. 23, 1889. Serial No. 308,355. (No model.)



Claim.—The combination, as hereinbefore set forth, of two or more compound-wound dynamo-electric machines connected in multiple arc to a common supply-circuit, and one or more reactive coils placed in the circuit between said dynamos for regulating the action of one dynamo upon the other, for the purpose described.

410,171. PROCESS OF PREVENTING THE FLOURING OF MERCURY. FREDERIC A. LOCKINGHAM, New York, N. Y. Filed Aug. 23, 1888. Serial No. 284,086. (No specimens.)

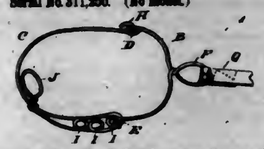


Claim.—1. In the process of amalgamating gold and silver by means of mercury, the application of hydrogen in volume held under pressure and control to a body of mercury and pulp of ores, substantially in the manner and for the purposes set forth.

2. In a process for amalgamating gold and silver by means of mercury, the simultaneous generation of hydrogen in volume by means of acids, water, and metals, and the application of such hydrogen held under pressure and control to a body of mercury and water or the pulp of ores, substantially in the manner and for the purpose described.

3. In the process of amalgamating gold and silver by means of mercury, the application of hydrogen in volume held under pressure and control to a body of mercury and pulp of ores, the hydrogen being distributed upward through the body of mercury and pulp of ores in numerous small streams or particles, substantially as set forth.

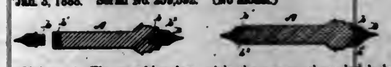
410,172. BAG-TIE. ALBERT MAYFET, Hayesville, Ohio. Filed May 15, 1889. Serial No. 311,250. (No model.)



Claim.—1. In a bag-tie of the character described, the member C, having its free end doubled on itself to form a series of rings I and then extended backward and doubled on itself to form the loop J, in combination with the member B, hinged thereto at one extremity and provided with an engaging hook at its other extremity, substantially as described.

2. The improved bag-tie herein described and shown, consisting of the members B C, constructed of spring-wire, and having engaging eyes forming a hinge, the member B being further provided with a hook E and the loop F, and the member C having the free end of the spring-wire doubled on itself to form a series of rings I, and then extended backward and doubled on itself to form the loop J, adapted to serve as a handle, as set forth.

410,173. WATCH-PIVOT. CHARLES H. MONFORT, Utica, Mich. Filed Jan. 3, 1888. Serial No. 259,592. (No model.)

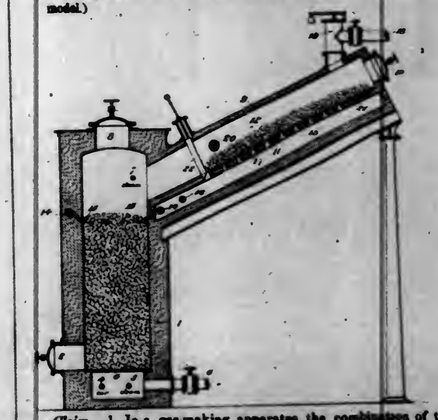


Claim.—1. The combination, with the screw-threaded balance-staff A, of the pivots B, screw-threaded for engagement with the said staff, and having angular heads b^3, substantially as described.

2. The combination, with the staff A, having an orifice, of the pivots B, said staff and pivots being screw-threaded for engagement with each other and together forming a lengthwise-adjustable balance-staff, substantially as described.

3. An extensible balance-staff consisting of a shaft provided at one or both of its ends with a pivot engaged therewith by a screw-thread, substantially as described.

410,174. APPARATUS FOR THE MANUFACTURE OF GAS. FRANK D. MORSE, Zanesville, Ohio. Filed May 15, 1889. Serial No. 310,812. (No model.)



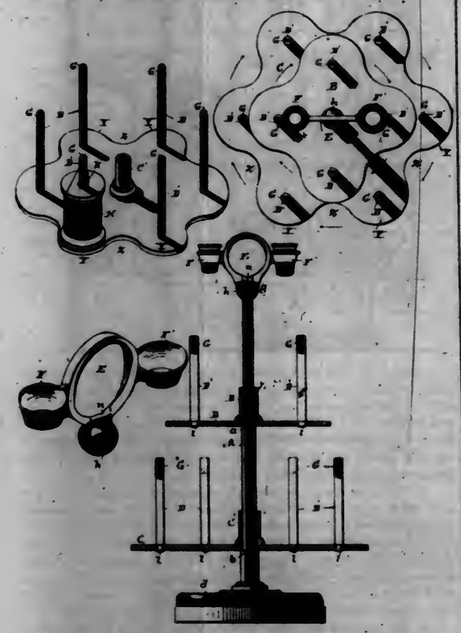
Claim.—1. In a gas-making apparatus, the combination of the generator provided with air and steam pipes, the inclined coking-chamber connected to and communicating with the generator and provided with a perforated diaphragm, a conduit communicating with the generator-chamber and with a space below the said diaphragm and adapted to conduct products of combustion from the generator to the said space, and a cut-off or damper to prevent direct communication from the generator to the upper part of the retort, substantially as set forth.

2. In a gas-making apparatus, the combination of the generator provided with air and steam pipes, the inclined coking-chamber connected to and communicating with the generator and provided with a perforated diaphragm, a conduit communicating with the generator-chamber and with a space below the said diaphragm and adapted to conduct products of combustion from the generator to the said space, a cut-off or damper to prevent direct communication from the generator to the upper part of the retort, and an air-inlet to the retort, substantially as set forth.

3. In a gas-making apparatus, the combination of the generator provided with air and steam pipes, the inclined coking-chamber connected to and communicating with the generator and provided with a perforated diaphragm, a conduit communicating with the generator-chamber and with a space below the retort-diaphragm and adapted to conduct products of combustion from the generator to the said space, a cut-off or damper to prevent direct communication from the generator to the upper part of the retort, an air-inlet to the retort, and a damper or cut-off in the diaphragm, substantially as set forth.

4. In a gas-making apparatus, the combination of the generator provided with air and steam pipes, the inclined coking-chamber connected to and communicating with the generator and provided with a perforated diaphragm, a conduit communicating with the generator-chamber and with a space below the retort-diaphragm and adapted to conduct products of combustion from the generator to the said space, a cut-off or damper to prevent direct communication from the generator to the upper part of the retort, an air-inlet to the retort, a damper or cut-off in the diaphragm, and an outlet for gas from the retort located near the cut-off which excludes direct communication from the generator, substantially as set forth.

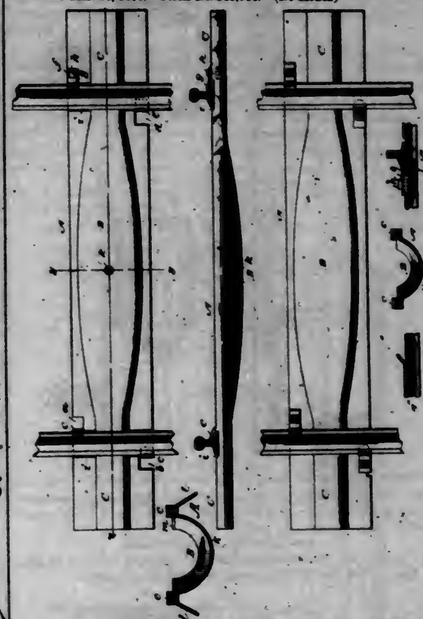
410,175. REVOLUBLE SPOOL-STAND. WILSON-BELA P. MCALISTER, Kansas City, Mo. Filed June 15, 1889. Serial No. 314,454. (No model.)



Claim.—1. The spool-holder having the base, the shouldered shaft rising therefrom, the shelves revolving on the shaft, the lower shelf being of greater diameter than the upper shelf, and said shelves having the radial arms Y and indentations Z, and the pins D', rising from the centers of the radial arms, the pins on the lower shelf having their axes beyond the periphery of the upper shelf, substantially as described.

2. The spool-holder comprising the base having the shouldered shaft rising therefrom, the shelves of unequal diameter on the shaft and having the radial arms and the pins D', rising from the centers thereof, the loop E, attached to the upper end of the shaft and forming a handle, said loop having the rings F F', forming thimble-holders, and having the thread-cutter in its lower side, substantially as described.

410,176. RAILWAY-TIE. JOHN R. MCCARTEY, Kendall Creek, Pa. Filed Mar. 20, 1889. Serial No. 303,983. (No model.)



Claim.—1. A railway-tie consisting, essentially, of a metallic plate formed in its upper side with a longitudinal groove the central portion of which is elliptical.

2. A railway-tie formed in its upper side with a longitudinal groove that increases in width toward the center of the tie, substantially as specified.

3. A railway-tie formed in its upper side with a longitudinal concave groove and with retaining-clips, in combination with a retaining-clip *g*, substantially as described.

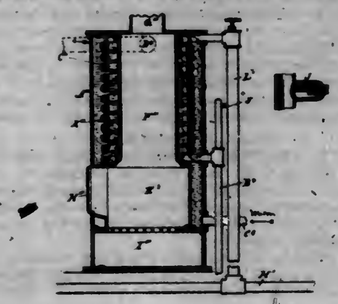
4. A railway-tie formed with transverse grooves *i* and a longitudinal concave groove which gradually increases in breadth and depth toward the center of the tie from points just within the transverse grooves, substantially as described.

5. A railway-tie formed throughout its length with a longitudinal groove that increases in width toward the center of the tie, and having its longitudinal edges terminating in anchoring-flanges, substantially as specified.

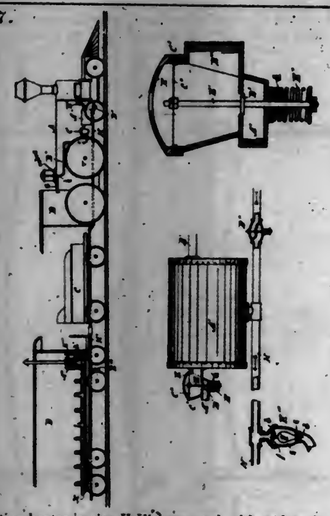
6. A railway-tie formed in its upper side with a longitudinal groove that increases in width toward the center of the tie, and having the rail-seating surface provided with fastening devices and its longitudinal edges turned outwardly and downwardly, substantially as specified.

410,177. SYSTEM FOR HEATING CARS. JAMES F. MCELROY, Lansing, Mich. Filed Mar. 10, 1887. Serial No. 230,340. (No model.)

Claim.—The combination, with the locomotive and the tank A', secured thereto and connected at one end with the exhaust and at the other with the live-steam space of the locomotive-boiler, of a hot-

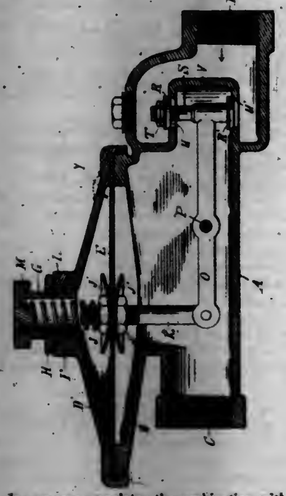


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water-circulating heater, a pipe H H', connected with said tank and heater, a pressure-regulator in the connection between the tank and the live-steam space, and a safety-valve in the pipe H, substantially as and for the purpose specified.

410,178. PRESSURE-REGULATOR. JAMES F. MCELROY, Lansing, Mich. Filed Mar. 1, 1889. Serial No. 301,629. (No model.)



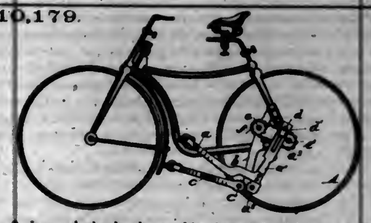
Claim.—In a pressure-regulator, the combination, with the casings A, D, and D', the diaphragm, the pivoted lever O, the valves carried by one end of said lever, and the screw-threaded stem passed through said diaphragm, of the spherical washers on said stem upon opposite sides of the diaphragm, the nuts, the hollow adjusting-bolt, the nut H, and the spring within the hollow nut and bearing on one of the nuts on the stem, substantially as shown and described, and for the purpose specified.

410,179. VELOCIPEDE. OTTO NIEDLANDS, Pforzheim, Baden, Germany. Filed Apr. 4, 1888. Serial No. 306,044. (No model.)

Claim.—1. In a velocipede, the combination of the driving-axle with the sprocket-wheel *d'* rigidly secured thereto, the second sprocket-wheel *c*, driving-levers *a c*, and the backward and forward swinging arm *d'*, substantially as described.

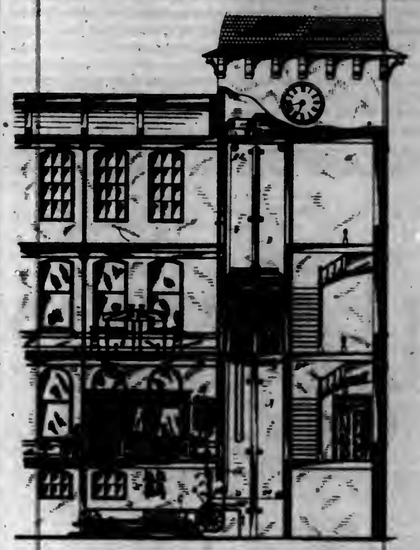
2. In a velocipede, the combination of the lever *d'* with the reciprocating block *d* and chain *f*, which travels over the sprocket-wheels *c d'*, substantially as described.

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3. In a velocipede, the combination of the driving-axle with the sprocket-wheel *d'* rigidly secured thereto, with the chain *f*, sprocket-wheel *c*, arm *d'*, with reciprocating block *d*, driving-levers *a c*, and ratchet-teeth *c'* and *c²*, substantially as described, and for the purpose set forth.

410,180. ELECTRICALLY-CONTROLLED ELEVATOR. CHARLES R. OSBLEY, New York, N. Y., assignor to the Hydraulic Elevator Company, of Illinois. Filed Nov. 22, 1887. Serial No. 255,257. (No model.)



Claim.—1. The combination, with an elevator-car and the mechanism for controlling its movements, of an electro-magnet for actuating said controlling mechanism, a circuit-closer 14 or 15, in circuit with said magnet, and a circuit-closer 19, operated by a moving part of the elevator mechanism to close the circuit through said magnet when the car is in motion and to break the circuit through said magnet when the car is at rest, substantially as described.

2. The combination, with an elevator-car and the mechanism for controlling its movements, of electro-magnets I J, for actuating said controlling mechanism to cause the car to move in opposite directions, a circuit-closer 14 on the car, which is in circuit with both of said magnets, and a circuit-closer 19, operated by a moving part of the elevator mechanism to close the circuit through one of said magnets when the car is in motion and to break the circuits through both of said magnets when the car is at rest, substantially as described.

3. The combination, with an elevator-car and the mechanism for controlling its movements, of electro-magnets I J, for actuating said controlling mechanism to cause the car to move in opposite directions, circuit-closers 15, located at the landings and in circuit with both of said magnets, a circuit-closer 19, operated by a moving part of the elevator mechanism to close the circuit through one of said magnets when the car is in motion and to break the circuits through both of said magnets when the car is at rest, substantially as described.

4. The combination, with an elevator-car and mechanism for controlling its movements, of electro-magnets I J, for actuating said controlling mechanism to cause the car to move in opposite directions, circuit-closers 10 11 upon the car, one of which is in circuit with each magnet, a third circuit-closer 14, which is in circuit with both of said magnets, and a circuit-closer 19, operated by a moving part of the elevator mechanism to close the circuit through one of said magnets when the car is in motion and to break the circuits through both of said magnets when the car is at rest, substantially as described.

5. The combination, with the mechanism for controlling the movements of an elevator, of the cylinder F², and piston F', for actuating said mechanism, an auxiliary-valve apparatus controlling said piston and normally maintained in an open position to allow the water to flow out of the cylinder from either side of the piston, an electro-magnet for actuating said auxiliary-valve apparatus, an electric circuit including said magnet and a circuit-closer upon the car, and a rope or its equivalent connected to operate said controlling mechanism from the elevator-car, substantially as described.

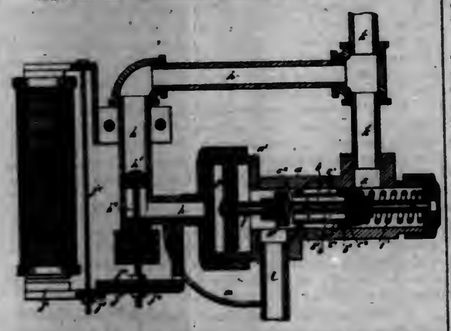
6. The combination, with the mechanism for controlling the movements of an elevator-car, of a cylinder and piston for actuating said mechanism, an auxiliary-valve apparatus controlling said piston and normally maintained in an open position to allow the water to flow out of the cylinder from either side of the piston, two electro-magnets for actuating said auxiliary-valve apparatus to cause the car to move in opposite directions, two electric circuits including said magnets and circuit-closers upon the car, and a rope or its equivalent connected to operate said controlling mechanism from the elevator-car, substantially as described.

7. The combination, with the mechanism for controlling the movements of an elevator-car, of a cylinder and piston for actuating said mechanism, an auxiliary-valve apparatus controlling said piston and normally maintained in an open position to allow the water to flow out of the cylinder from either side of the piston, two electro-magnets for actuating said auxiliary-valve apparatus to cause the car to move in opposite directions, two electric circuits including said magnets and circuit-closers upon the car, a rope connected to operate said controlling mechanism from the elevator-car, and stops 23 upon said rope arranged to be engaged by a moving part of the elevator before the car reaches the limit of its movement in either direction, substantially as described.

8. The combination, with the mechanism for controlling the movements of an elevator, of the cylinder F², and piston F', for actuating said mechanism, an auxiliary-valve apparatus controlling said piston and normally maintained in an open position to allow the water to flow out of said cylinder from both sides of said piston, an electro-magnet for actuating said auxiliary-valve apparatus, and an electric circuit including said magnet and a circuit-closer upon the car, substantially as described.

9. The combination, with the mechanism for controlling the movements of an elevator, of the cylinder F², and piston F', for actuating said mechanism, an auxiliary-valve apparatus for controlling said piston and normally maintained in an open position to allow the water to flow out of said cylinder from both sides of said piston, two electro-magnets for actuating said auxiliary-valve apparatus to cause the car to move in opposite directions, and two electric circuits including said magnets and circuit-closers upon the car, substantially as described.

410,181. ELEVATOR. CHARLES R. OSBLEY, New York, N. Y., assignor to the Hydraulic Elevator Company, of Illinois. Original application filed Nov. 22, 1887, Serial No. 255,257. Divided and this application filed Mar. 9, 1888. Serial No. 266,653. (No model.)

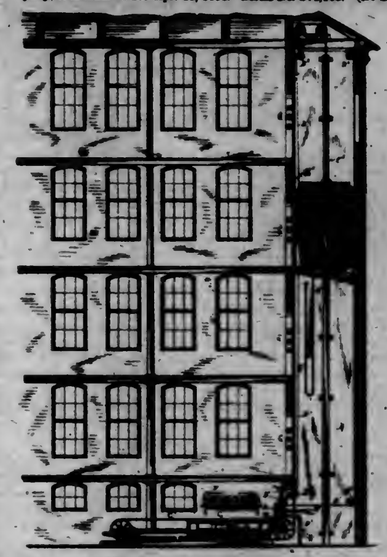


Claim.—1. The combination, with the mechanism for controlling the movements of an elevator, of the cylinder F² and piston F', for operating said mechanism, an auxiliary valve for controlling said piston, which is normally maintained in position to allow the water to flow out of the cylinder, a piston for operating said auxiliary valve, and a primary valve for controlling said last piston, substantially as described.

2. The combination, with the mechanism for controlling the movements of an elevator, of the cylinder F² and piston F', for operating said mechanism, an auxiliary valve for controlling said piston, which is normally maintained in position to allow the water to flow out of the cylinder, a piston for operating said auxiliary valve, a primary valve for controlling said last piston, and a permanently-open exhaust between said last piston and said primary valve, substantially as described.

3. The combination, with the mechanism for controlling the movements of an elevator, of the cylinder F² and piston F', for actuating said mechanism, an auxiliary-valve apparatus controlling said piston and normally maintained in an open position to allow the water to flow out of the cylinder from either side of the piston, pistons for operating said auxiliary-valve apparatus, primary valves for controlling said last pistons, and a rope connected to operate said controlling mechanism from the elevator, substantially as described.

410,182. ELECTRICALLY-CONTROLLED ELEVATOR. CHARLES R. OSBLEY, New York, N. Y., assignor to the Hydraulic Elevator Company, of Illinois. Filed Apr. 18, 1888. Serial No. 271,109. (No model.)



Claim.—1. The combination, with an elevator-car and the mechanism for controlling its movements, of an electro-magnet for operating said controlling mechanism, a circuit-closer 15 or 19 in circuit with the magnet, and a circuit-closer operated by the car to close the circuit through the magnet shortly before the car arrives at a landing, substantially as described.

2. The combination, with an elevator-car and the mechanism for controlling its movements, of an electro-magnet for operating said controlling mechanism, a circuit-closer 15 or 19 in circuit with the magnet, and a circuit-closer operated by the car to close the circuit through the magnet shortly before the car arrives at a landing, and to break the circuit as the car arrives at the landing, substantially as described.

3. The combination, with an elevator-car and the mechanism for controlling its movements, of an electro-magnet for operating said controlling mechanism, a circuit-closer 15 or 19 in circuit with said magnet, a circuit-closer R or R', operated by a moving part of the elevator mechanism to close the circuit through the magnet when the car is in motion and to break the circuit when the car is at rest, and a circuit-closer operated by the car to close the circuit through the magnet shortly before the car arrives at a landing, substantially as described.

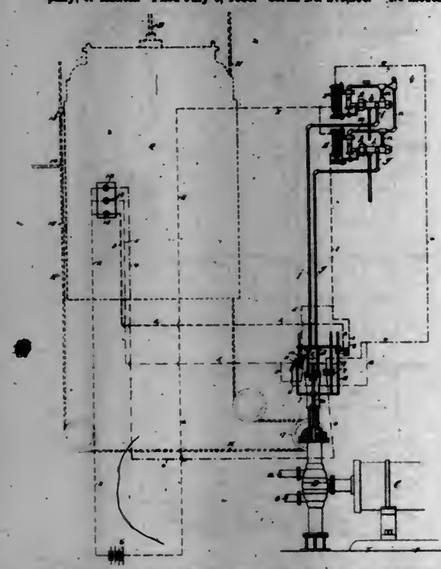
4. The combination, with an elevator-car and the mechanism for controlling its movements, of electro-magnets for operating said controlling mechanism to cause the car to move in opposite directions, a circuit-closer 15 or 19 in circuit with both the said magnets, and a circuit-closer operated by the car to close the circuit through one of said magnets shortly before the car arrives at a landing going down, and through the other of said magnets shortly before the car arrives at the landing going up, substantially as described.

5. The combination, with an elevator-car and the mechanism for controlling its movements, of electro-magnets for operating said controlling mechanism to cause the car to move in opposite directions, a circuit-closer 15 or 19 in circuit with both the said magnets, a circuit-closer operated by the car to close the circuit through one of said

magnets shortly before the car arrives at a landing going down, and through the other of said magnets shortly before the car arrives at the landing going up, and circuit-closers R R', operated by a moving part of the elevator mechanism to close the circuit through one of said magnets when the car is in motion and to break the circuits through both of said magnets when the car is at rest, substantially as described.

6. The combination, with an elevator-car and the mechanism for controlling its movements, of an auxiliary cylinder and piston for operating said controlling mechanism, an electro-magnet for actuating the auxiliary valve, an electric circuit including said magnet and a circuit-closer on the car, and a circulating-passage having a check-valve for permitting the water to circulate from one side to the other of the auxiliary piston, substantially as described.

410,183. ELECTRICALLY-CONTROLLED ELEVATOR. CHARLES R. OGSLEY, New York, N. Y., assignor to the Hydraulic Elevator Company, of Illinois. Filed July 6, 1888. Serial No. 279,206. (No model.)



Claim.—1. The combination, with an elevator-car, its motor, and the main valve for controlling the movements of the motor, of an electro-magnet for controlling the movement of the main valve, an electric circuit for energizing said magnet, and a circuit-closer operated by a moving part of the mechanism to break the circuit through the magnet as the main valve reaches the limit of its working movement, substantially as described.

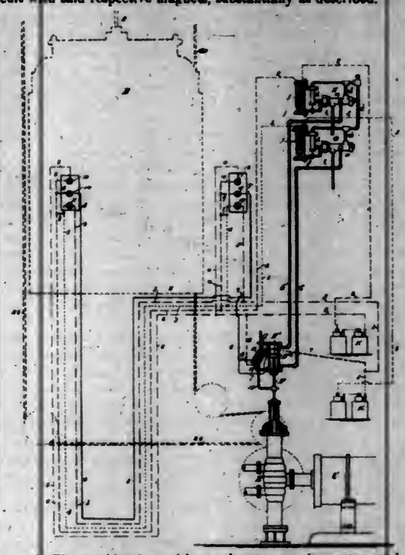
2. The combination, with an elevator-car, its motor, and the main valve for controlling the movements of the motor, of electro-magnets for controlling the movements of the main valve in opposite directions, electric circuits for energizing said magnets, and circuit-closers operated by a moving part of the mechanism to break the circuits through the respective magnets as the main valve reaches the limit of its working movement in opposite directions, substantially as described.

410,184. ELECTRICALLY-CONTROLLED ELEVATOR. CHARLES R. OGSLEY, Yonkers, N. Y., assignor to the Hydraulic Elevator Company, of Illinois. Original application filed Nov. 22, 1887, Serial No. 255,857. Divided and this application filed Jan. 22, 1889. Serial No. 297,127. (No model.)

Claim.—1. The combination, with an elevator-car, its motor, and main valve, of an electro-magnet for actuating said main valve, a circuit-closer upon the car, which is in circuit with said magnet, and circuit-closers at the landings, also in circuit with said magnet, substantially as described.

2. The combination, with an elevator-car, its motor, and main valve for controlling its movements, of an electro-magnet for actuating said main valve, and circuit-closers located at the landings which are in circuit with said magnet, substantially as described.

3. The combination, with an elevator-car, its motor, and main valve for controlling its movements, of electro-magnets for actuating said main valve to cause the car to move in opposite directions, circuit-closers upon the car which are in circuit with said respective magnets, and corresponding circuit-closers at the landings, also in circuit with said respective magnets, substantially as described.



4. The combination, with an elevator-car, its motor, and main valve for controlling its movements, of electro-magnets for actuating said main valve to cause the car to move in opposite directions, and circuit-closers at the landings which are in circuit with said respective magnets, substantially as described.

5. The combination, with an elevator-car, its motor, and main valve for controlling its movements, of an auxiliary valve, an electro-magnet for actuating said auxiliary valve, and an electric circuit including circuit-closers at the landings, substantially as described.

6. The combination, with an elevator-car, its motor, and main valve for controlling its movements, of auxiliary valves for controlling the movements of the main valve in opposite directions, electro-magnets for actuating said auxiliary valves, and circuit-closers at the landings in circuit with said respective magnets, substantially as described.

410,185. COAL-CONVEYER. WILLIAM H. PAGE, Powelton, W. Va. Filed Apr. 15, 1889. Serial No. 307,209. (No model.)

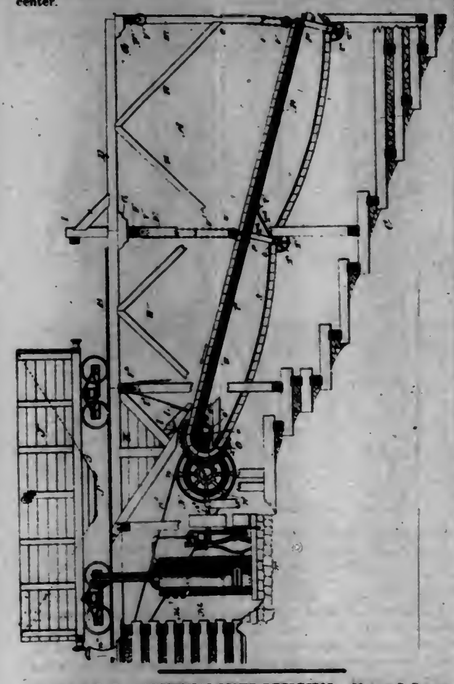
Claim.—1. The combination, substantially as hereinbefore set forth, of the frame-work, the endless apron or conveyer, the end wheels over which it traverses, the girders extending longitudinally beneath the upper side of the apron, the links secured to the girders, the supporting wheels or rollers journaled in the lower ends of the links, and the adjusting devices connected with the upper ends of the links, for the purpose specified.

2. The combination, substantially as hereinbefore set forth, of the frame-work, the endless apron or conveyer, the upper end wheels over which it traverses, the lower end wheels, the vertical guide-rails curved in the arc of a circle from the upper end wheel as a center, and the grooved bearing-blocks of the lower end wheel, adjustable vertically on the guide-rails.

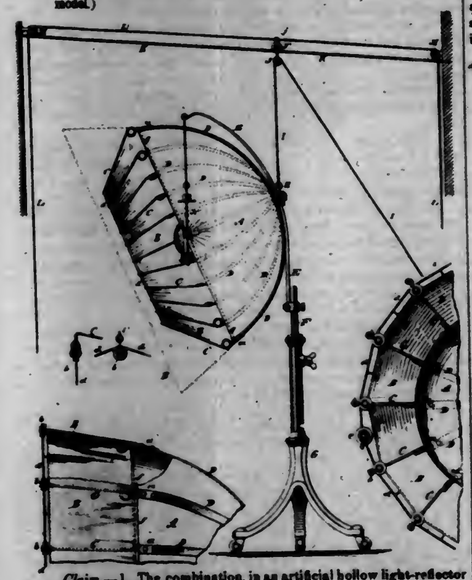
3. The herein-described apparatus, comprising the bed-work, the uprights or standards, the top beams carried thereby, the tracks mounted on the top beams, the hopper at the upper end of the frame-work, the adjustable chute at its lower end, the inclined vertically-adjustable conveyer extending under the top beams, from which it is suspended at each end and intermediately.

4. The herein-described apparatus, comprising the frame-work, the endless apron or conveyer, the wheels at each end thereof which it traverses, the longitudinal girders, the shafts R', mounted in bearings on the girders, the rollers carried by the shafts and on which the apron is supported, the links T', secured to the girders and suspended from pulleys on the frame-work, the shafts T, mounted in the lower ends of the links, and wheels T thereon for supporting the endless conveyer or apron on its lower or returning side.

5. The herein-described apparatus, comprising the frame-work, the endless apron or conveyer, the upper end wheels over which it traverses, the girders, the lower end wheels, the vertical guide-rails at the lower end of the frame-work, and means, substantially such as described, for adjusting the lower end of the apron and the girders along the guide-rails and from the axis of the upper end wheels as a center.



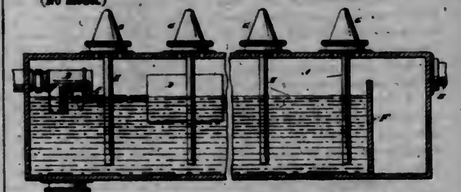
410,186. ARTIFICIAL-LIGHT REFLECTOR. MORRIS R. PARKINSON, New York, N. Y. Filed Mar. 6, 1889. Serial No. 302,173. (No model.)



Claim.—1. The combination, in an artificial hollow light-reflector substantially of the shape of a hemisphere, of an adjustable screen B, attached to and forming part of the reflector A, the curved ribs D D, the band *g* around the periphery of the reflector, and a suitable covering of light material—such as cloth or papier-maché—attached to the outside of the curved ribs D D, and a suitable lining of white material, preferably white cloth or papier-maché, attached to the inside of the curved ribs D D, all as heretofore described.

2. In an artificial-light reflector, the combination of the following parts: the adjustable screen B, attached to and forming a part of a reflector A, the springs C C, the pulleys *b b*, the cord *d*, and the reel *e*, and a suitable covering of light material—such as cloth or papier-maché—attached to the outside of the springs C C, and a suitable lining of white material, preferably white cloth or papier-maché, attached to the inside of the springs C C, all as heretofore described.

410,187. ATOMIZER FOR DAMPENING FABRICS. MICHAEL PARTINGTON, Fall River, Mass. Filed Jan. 18, 1889. Serial No. 296,997. (No model.)

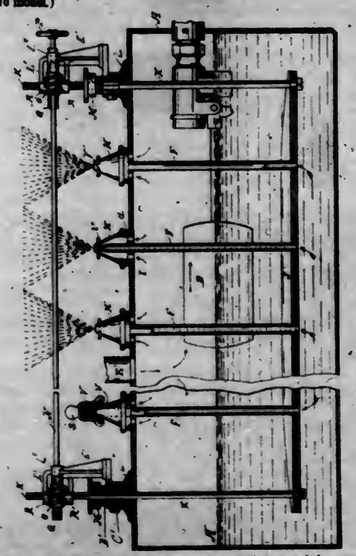


Claim.—1. In a sprinkler, a trough for containing liquid and air under pressure, a sleeve attached to said trough, a tip removably attached to said sleeve, forming a tapering chamber in communication with the air-space in said trough, and a tube, one end of which is to be immersed in said fluid and the other end of which projects outside of said trough, said tube having provision, substantially as described, for enabling it to be raised and lowered through said sleeve while the sleeve remains fixed to regulate the spray.

2. In a sprinkler, a trough for containing liquid and air under pressure, a sleeve attached to said trough, a tip removably attached to said sleeve, provided with a web having a screw-threaded aperture therethrough, said tip forming a tapering chamber in communication with the air-space in said trough, and a tube, one end of which is to be immersed in said fluid and the other end of which projects outside of said trough, said tube being provided with a screw-threaded section taking with the screw-threaded aperture in the said web, whereby it is adjusted, substantially as described.

3. In a sprinkler, a trough for containing liquid and air under pressure, an air-chamber formed at one end of said trough, combined with a tube, one end of which is carried outside of said trough, and a casing having a chamber in communication with the air-space in said trough, and having an opening inclined with relation to the opening in the outside end of said tube, substantially as described.

410,188. ATOMIZER FOR DAMPENING FABRICS. MICHAEL PARTINGTON, Fall River, Mass. Filed Apr. 20, 1889. Serial No. 307,953. (No model.)



Claim.—1. The combination of a trough for containing water and

air under pressure, a plurality of spraying nozzles in communication with the air contained in said trough, a plurality of tubes in communication with the water contained in said trough, an adjustable plate connected with all of said tubes for adjusting the relation of all of said nozzles and tubes simultaneously, and means for raising and lowering said plates, substantially as described.

2. The combination of a trough for containing water and air under pressure, a plurality of spraying-nozzles in communication with the air contained in said trough, a plurality of tubes in communication with the water contained in said trough, said nozzles being provided with a smooth-bore web through which said tubes pass, and means, substantially as described, for raising and lowering said tubes.

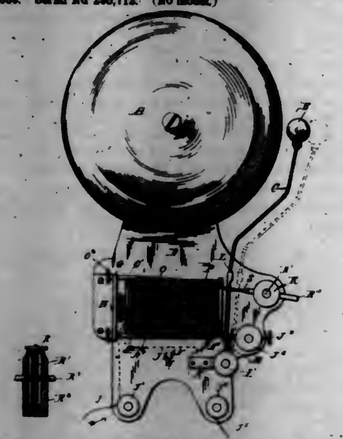
3. The combination of a trough for containing water and air under pressure, a plurality of spraying nozzles in communication with the air contained in said trough, a plurality of tubes in communication with the water contained in said trough, and caps removably attached to said nozzles provided with a packing—such as rubber—for said nozzles, substantially as described.

4. In combination with a trough adapted to contain fluid, spraying-nozzles and tubes, a support for said tubes, an adjustable rod provided with a threaded portion attached to said support, a worm-gear engaging with the threaded portion on said rod for adjusting said tubes, and a worm for operating said gear, substantially as described.

5. In combination with a trough adapted to contain fluid, a plurality of spraying-nozzles and tubes, a plate attached to said tubes supported by a plurality of adjustable rods, each provided with threaded portions, worm-gears engaging with said threaded portions for simultaneously raising and lowering said rods, and a rod provided with worms connecting said worm-gears to cause them to operate together, substantially as described.

6. In combination with a trough adapted to contain fluid, a plurality of spraying-nozzles and tubes, a plate attached to said tubes supported by two adjustable rods, and means for raising and lowering the said rods simultaneously, substantially as described.

410,189. ELECTRIC GONG. JAMES H. PHALAN, Ansonia, Conn., assignor to the Electrical Supply Company, same place. Filed Jan. 7, 1889. Serial No. 295,712. (No model.)



Claim.—1. In an electric bell or gong, the combination of a pivoted armature with a bell-hammer shank secured thereto, a contact-spring on one side thereof, and an elastic stop in the path of such armature and which bears against such contact-spring.

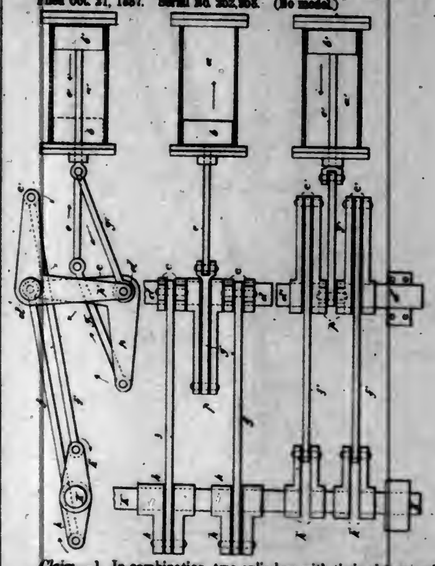
2. In an electric bell or gong, the combination of the pivoted armature with the bell-hammer shank secured thereto, a contact-spring on one side thereof, and an elastic stop on the opposite side of said shank and projecting therefrom and bearing against such contact-spring.

3. In an electric bell or gong, the combination of a pivoted armature with a bell-hammer shank secured thereto, an elastic contact on one side and moving therewith, and an elastic stop in the path of such contact and adapted to engage the same, so that during the motion of the bell-hammer shank the contact will not be broken until the elasticity of the contact and stop has been overcome.

4. In an electric bell or gong, the combination of the pivoted armature with the bell-hammer shank secured thereto, and an adjustable elastic stop in the path of such armature.

5. In an electric bell or gong, the combination of the pivoted armature with the bell-hammer shank secured thereto, an elastic contact on one side thereof, and an adjustable elastic stop in the path of and operating against such contact.

410,190. STEAM-ENGINE. WILLIAM A. PITT, Glastonbury, Conn. Filed Oct. 21, 1887. Serial No. 252,968. (No model.)



Claim.—1. In combination, two cylinders with their pistons and piston-rods, two sets of cranks mounted on independent shafts set in the same vertical plane, each set being placed at right angles to the other, two sets of cranks set on the same plane on the work-shaft and connected therewith, and two intermediate cranks set on the said independent shafts at right angles to each other and to the other cranks and connected with the pistons in the respective cylinders, all arranged in the manner and for the purpose set forth.

2. In an engine, the combination, with two cylinders, their pistons, and piston-rods, of two shafts set in the same vertical plane, two sets of cranks placed at right angles to each other on said shafts and connected with two cranks mounted on a common shaft set on a plane intermediate between the said independent shafts, and two cranks set on the independent shafts and connected with the piston-rods, as set forth.

3. In combination, the cylinders *a a'*, with pistons and piston-rods *b b'* and *c c'*, shafts *d d'*, placed in the same vertical plane, cranks *p p'*, connecting-rods *g g'*, double cranks *e e'*, and double cranks *h h*, with connecting-rods *f f f f*, as set forth.

4. The combination, with two cylinders and their pistons and piston-rods and working-shafts, of two shafts placed one above the other and equidistant from the direct line of motion of the engine, two pairs of cranks set at right angles to each other on said shafts, and intermediate cranks set on the same shafts at right angles to each other and to the aforesaid cranks, and rods connecting the said cranks with the piston-rods and working-shaft, as set forth.

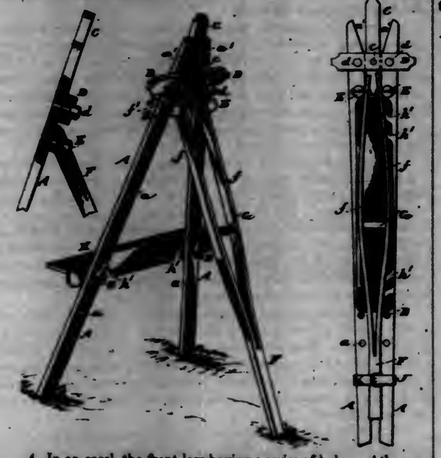
5. In an engine, a leverage consisting of double cranks placed on independent shafts between the piston cross-heads and crank-shaft and connected with double cranks of half-length on the crank-shaft, and cranks interposed between the double cranks and connected with the steam piston-rods, substantially as set forth.

410,191. EASEL. JAMES F. PLUMER, Watertown, N. Y., assignor of one-half to William G. Pierce, same place. Filed Jan. 5, 1889. Serial No. 295,530. (No model.)

Claim.—1. In an easel, the combination, with the front legs and a short piece interposed between their upper ends, of a cross-piece to which the front legs are pivoted, and the spring rear supporting-leg pivoted to the front legs, substantially as specified.

2. In an easel, the front legs and the rear projections or brackets secured thereto, combined with a cross-piece to which the front legs are pivoted and the rear leg divided longitudinally for nearly its entire length to form two parts, said two parts being pivoted at their upper ends to the rear projections or brackets, substantially as specified.

3. In an easel, a rear supporting-leg divided longitudinally for nearly its entire length to form two parts, and a strut interposed between said two parts about midway of their length, for the purpose specified, combined with the front legs, a cross-piece to which said front legs are pivoted, and rear projections or brackets secured to the front legs, and to which the upper ends of the two parts of the rear leg are pivoted, as set forth.



4. In an easel, the front legs having a series of holes and the pegs inserted therein, combined with the rear spring-leg and a shelf having recesses to fit over said pegs, substantially as specified.

410,192. NOZZLE FOR STEEL-LADLES. CHARLES S. PRICE, Johnstown, Pa. Filed May 2, 1888. Serial No. 309,949. (No model.)

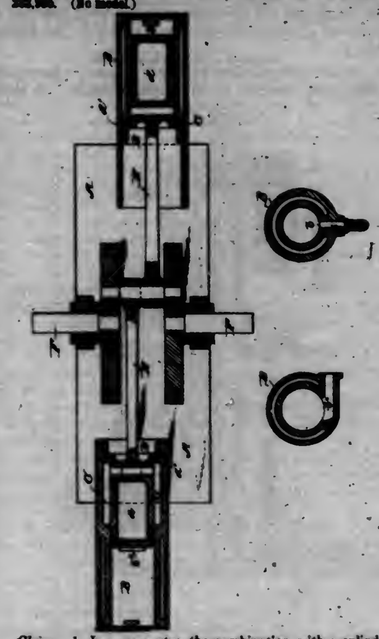


Claim.—1. In a ladle for receiving and pouring hot steel, a refractory nozzle composed of two parts, an outer and an inner part, the inner part being detachably fitted to the outer part by conically-fitting surfaces for the purpose of allowing the inner part to be readily replaced, in combination with a stopper contained within the ladle and operated by means of a rod extending through the molten metal, the said stopper having its bearing upon the outer part of said nozzle, substantially as and for the purpose set forth.

2. In a ladle for containing and pouring molten steel, a nozzle composed of two parts, an outer and an inner part, the outer part being cemented to the refractory lining of the ladle and being provided with an interior conical surface, the inner part being provided with an exterior conical surface adapted to fit the interior conical surface of said outer part, the inner part being also provided with a cylindrical orifice through its center, for the purpose of permitting the passage of a clean solid stream of steel, the upper part of said cylindrical orifice being formed in the form of an inverted cone, for the purpose of converging the molten steel, so that it will form itself into a solid stream while passing through the said cylindrical part of the orifice, in combination with a stopper contained within the ladle and actuated by means of a rod passing through the molten steel contained within the ladle, said stopper being adapted to bear and fit upon the upper portion of said outer part of said nozzle and said stopper when in contact with said outer part of said nozzle not being in contact with said inner part of said nozzle, substantially as and for the purpose set forth.

3. In a ladle for containing and pouring steel, a nozzle composed of two parts, an outer and an inner part, the outer part being cemented to the refractory lining of the ladle, the inner part containing the orifice through which the steel passes and being detachably fitted to the outer part, for the purpose of being readily replaced, in combination with a stopper contained within the ladle and actuated by a rod extending through the ladle adapted to close the passage through which the metal passes while being poured, substantially as and for the purpose specified.

410,193. HYDROCARBON-MOTOR. ARTHUR G. PURDHAS and JOHN R. PRIEST, Auckland, New Zealand. Filed Aug. 16, 1888. Serial No. 282,905. (No model.)



Claim.—1. In a gas-motor, the combination, with a cylinder and piston constructed to operate as a working cylinder and piston and as a pump, of an air-reservoir connected with the admission-port of the cylinder, said reservoir containing water through which air is caused to pass prior to its admission to the cylinder, substantially as described, for the purposes specified.

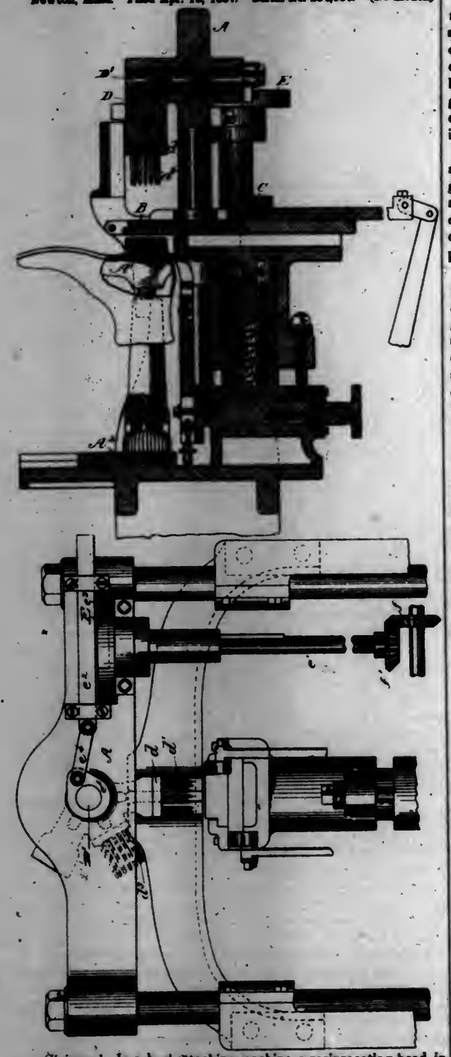
2. In a gas-motor, the combination, with a cylinder and piston constructed to operate as a working cylinder and piston and as a pump, a source of gas-supply, and an air-reservoir containing water through which the air admitted thereto is caused to pass, and a connection between the inlet-port of the cylinder and the gas-supply and air-reservoir, respectively, of a regulating-valve interposed in said connection and adapted to cut off the communication between the inlet-port and gas-supply or between said port and air-reservoir, substantially as and for the purposes specified.

3. In a gas-motor, the combination, with a cylinder and piston constructed to operate as a working cylinder and piston and as a pump, a source of gas-supply, and an air-reservoir containing water through which the air admitted thereto is caused to pass, and a connection between the inlet-port of the cylinder and the gas-supply and air-reservoir, respectively, of a regulating-valve interposed in said connection, said valve being controlled by a moving element of the motor—as the governor, for instance—and adapted to cut off the communication between the inlet-port and gas-supply or between said port and air-reservoir, substantially as and for the purposes specified.

4. In a gas-motor, the combination, with a working cylinder and piston constructed to perform the function of a pump, admission-ports *b* and *c*, for the working and pump portions, respectively, of the cylinder, said ports being in communication with each other and with the source of gas-supply, and check-valves in said communications, of a regulating-valve interposed in the connection between the inlet-ports and gas supply, the valve-casing of which valve is provided with suitable ports in communication with the cylinder and with the gas-supply, respectively, and with said cylinder and the atmosphere, the opening and closing of said ports being controlled by the movements of the valve, for the purposes specified.

5. In a gas-motor, the combination, with a working-cylinder constructed to perform the function of a pump, admission-ports *b c*, for the working and pump portions, respectively, of the cylinder, said ports being in communication with each other and with an air and gas supply pipe, and check-valves V V' in said communications, of a carburetor and air-reservoir, the latter containing water through which the air admitted is caused to pass, and a regulating-valve *i*, whose casing is provided with a port or passage I^3 in communication with the cylinder through the supply-pipe, a port or passage i^4 in communication with the carburetor, and a port or passage i^5 in communication with the air-reservoir, said communications being controlled by the movements of the valve, substantially as and for the purposes specified.

410,194. HEEL-NAILING MACHINE. FREEBORN P. RAYMOND, 2d, Newton, Mass. Filed Apr. 16, 1887. Serial No. 234,966. (No model.)



Claim.—1. In a heel-attaching machine, a reciprocating head, in combination with a block carrying a gang or group of awls, and a block carrying a gang or group of drivers, and a heel-spanker, or any two of them, and a rotating cam having a slide connecting with said blocks for moving them automatically into and out of operative position, substantially as described.

2. In a heel-attaching machine, a block or arm carrying a gang or group of awls, a block or arm carrying a gang or group of drivers, and a block or arm carrying or supporting a heel-spanker, or any two of said blocks or arms, with a rotating cam having a slide connecting with said block or arms and adapted to move said awls, drivers, and spanker, or any two of them, successively into operative position, as and for the purposes described.

3. In a heel-attaching machine, an arm or block supporting a gang or group of awls, an arm or block supporting a gang or group of drivers, and an arm or block carrying or supporting a top-lift spanker, or any two of them, having the slide of a rotary cam in connection therewith and said cam to produce automatic intermittent movement in one direction to bring the said devices successively into operative position, and a continuous automatic return movement, as and for the purposes described.

4. The combination, in a heel-attaching machine, of a reciprocating head, a rotating cam having a slide-arm and an arm or block supporting a gang or group of awls, an arm or block supporting a gang or group of drivers, and an arm or block supporting a heel-spanker, or any two of them, connected with the said slide-arm of the cam to be moved thereby successively into operative position, and vertical guides with which said arms are successively brought into contact or engagement to direct and govern the course of their vertical movement in relation to the work, substantially as described.

5. The combination of a rotating shaft carrying at its upper end a cam E, with said cam, and a block or arm supporting a gang or group of awls, a block or arm supporting a gang or group of drivers, and a block or arm supporting a spanker, and a slide-connection for connecting said arms or blocks with said cams, whereby the movement of the cam is communicated to said arms or blocks, as and for the purposes described.

6. In a heel-attaching machine, the combination of a last or work-support, a templet, a nail-carrier, a reciprocating head, a block or arm carrying a gang or group of awls, a block or arm carrying a gang or group of drivers, and a block or arm supporting a top-lift spanker, or any two of them, connected together and to the slide-arm of a rotary cam, to be simultaneously moved to bring them successively into operative position, with a rotating cam E and slide-arm connected therewith and adapted to provide them with an intermittent movement to bring them into operative position successively in relation to said templet, as and for the purposes described.

7. The combination, in a heel-attaching machine, of a cross-head A, having a plunger *g'*, with the plate or support G, carrying a slide-plate supporting a block carrying a gang or group of awls, a block carrying a gang or group of drivers, and a block carrying a spanker, or any two of them, and a cam E and its connecting slide-arm for moving said arms or blocks successively into position to be engaged and reciprocated by said plunger, substantially as described.

8. The combination, in a heel-attaching machine, of the cross-head, the awls, drivers, and spanker, or either of them, carried thereby, with the lower cross-head m^3, connected with the upper cross-head A, a lever m^2, operated by a cam M, said cam, and the toggle m^4, as and for the purposes described.

410,195. HEEL-NAILING MACHINE. FREEBORN P. RAYMOND, 2d, Newton, Mass. Filed Apr. 16, 1887. Serial No. 234,967. (No model.)

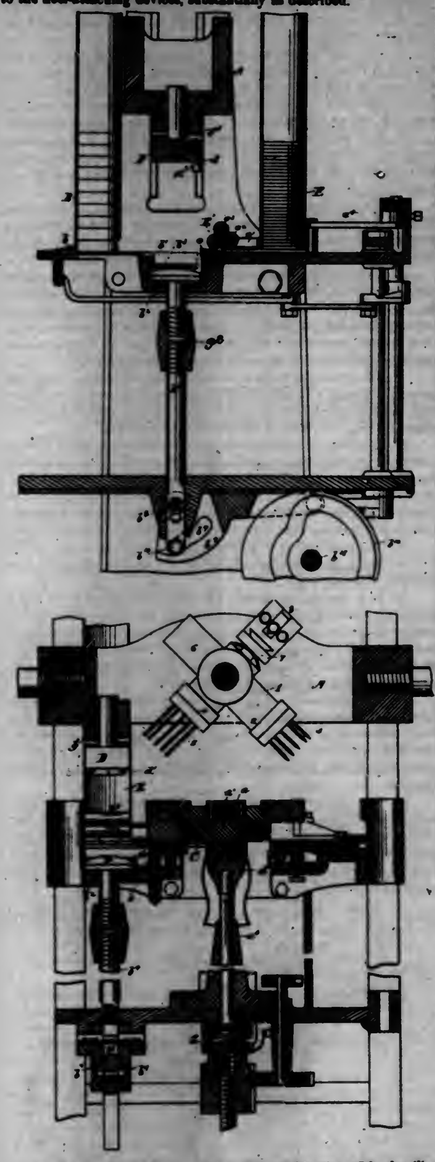
Claim.—1. In an organized heel attaching and compressing machine, the combination of heel-attaching devices comprising a gang of awls, a gang of drivers, a templet, and a heel-support with a heel-press and devices, substantially as specified, for causing the simultaneous operation of the press and of the heel-attaching mechanism, substantially as described.

2. In a heel-nailing machine, the combination of heel-attaching devices, a bed and movable head, substantially as described, for compressing the heel-blank, and a carrier for transferring the compressed heel-blank from the bed to the heel-attaching devices, substantially as described.

3. The combination, in a heel-attaching machine, of heel-attaching devices, a heel-blank holder or pocket *d'*, a bed and a head, substantially as described, movable in relation to the pocket to compress a heel-blank therein, and a transferrer for moving the compressed heel-blank from the pocket or bed to the heel-attaching devices, substantially as described.

4. The combination, in a heel-nailing machine, of the heel-attaching devices, a heel-compressing bed, a head, and a pocket or device, substantially as described, for holding the heel-blank between the bed and head, and a heel-blank-feeding plate or carrier for feeding the heel-blank to the heel-holding pocket or device, and a carrier for transferring the heel-blank from the bed or pocket to the heel-attaching devices, substantially as described.

5. The combination, in a heel-nailing machine, of heel-attaching devices, a bed and a head, substantially as described, between which a heel-blank is adapted to be compressed, a box for holding heel-blanks in stack, a heel-blank-carrying plate for moving the heel-blanks from the box or stack to a position between the bed and the head, and a transferrer for moving the compressed heel-blank from the bed to the heel-attaching devices, substantially as described.



6. In a heel-attaching machine, the combination of heel-nailing devices, a receptacle for holding heel-blanks in stack or quantity, heel-blank-transferring mechanism for transferring the blanks from the receptacle to the attaching devices, and a heel-blank press, substantially as described, between the said receptacle and the said heel-blank-attaching devices to form or mold the heel-blanks in successive order upon their passage to the attaching devices, substantially as described.

7. The combination of the heel-blank-attaching devices, the heel-blank carrier C, the pocket or receptacle *b'*, the bed b^3, a heel-blank press adapted to compress heel-blanks in said pocket, the box B, and the heel-blank carrier *b*, substantially as described.

8. The combination of the pocket or receptacle *b'*, the heel-blank press, substantially as described, the box or receptacle B, and the heel-blank carrier *b*, substantially as described.

9. The combination of the bed and head of a heel-blank press, substantially as described, with the heel-blank receptacle B and the heel-blank carrier *b*, for carrying blanks from the receptacle to a position in the heel-blank press, substantially as described.

10. The combination, in a heel-nailing machine, of heel-attaching devices, a heel-press, a box or receptacle for holding rands, and a carrier for feeding rands therefrom to the press, a box or receptacle for holding blanks, and a heel-blank carrier for feeding the heel-blanks therefrom to the press, substantially as described.

11. The combination, in a heel-nailing machine, of heel-attaching devices, a heel-press, a box or receptacle for holding rands, and a carrier for feeding rands therefrom to the press, a box or receptacle for holding blanks, a heel-blank carrier for feeding the heel-blanks therefrom to the press, and a heel-blank transferrer for carrying the heel-blank and rand from the press to the heel-attaching devices, substantially as described.

12. The combination of the bed and head of the heel-blank press, substantially as described, with the carrier *c* and the carrier *b*, substantially as described.

13. In a heel-press, the head D, having the heel-blank-centering device *d'*, substantially as described.

14. The combination, in a heel attaching and molding machine, of a bed or table having the pocket *b'*, provided with a straight vertical surface against which the rand or section of a heel-blank is adapted to be pressed, with the carrying device *c*, as described, shaped to center the rand or section of the heel against said straight surface, substantially as described.

15. The combination of the bed b^3, the slide-head b^4, and the cam-lever b^7, pivoted at b^8, having a cam-groove b^9, which receives a cam-pin b^{10} upon the slide-head, substantially as described.

16. The combination of the pocket *b'*, the bed b^3, the slide-head b^4, and the adjusting-nut adjustably connecting the bed with the slide-head, substantially as described.

17. The combination of the rand or heel-section carrier plate *c* with the paste or glue applying device for applying glue or paste to its upper surface as it is fed or moved by the carrier-plate, substantially as described.

18. In a heeling-machine, the combination of a feedway through which a rand or heel-section is adapted to be fed, with an apparatus for applying a solution or liquid to the upper surface of said rand or heel-section—such as a roll the operating-surface of which extends into said feedway from above it—as and for the purposes described.

19. In a heel-nailing machine, the combination of the tank *e'* with the rolls e^2 e^3 E', substantially as described.

20. In a heeling-machine, the combination of a rand or heel-section carrier, a pocket or receptacle to which the rands or heel-sections are fed, an apparatus for applying glue or paste to the upper surface of the rand or heel-section—such as a roll—a second carrier for feeding a heel-blank or other heel-section to the said pocket or receptacle, and a heel-press to compress said rand and heel or said sections of the heel together in said pocket, and a heel transferrer or carrier to transfer said compressed heel-blank to the nail-driving devices, and the nail-driving devices, substantially as described.

21. The combination of a carrier for feeding rands or heel-sections to a pocket or receptacle, a paste or glue applying apparatus located to feed paste or glue to the upper surface of the rand or heel-section as it is moved by the carrier, a second carrier for feeding a heel-blank or additional heel-section to said pocket or receptacle, a heel-press to compress said sections in said pocket, a heel-blank transferrer or carrier to transfer said compressed heel-blank from the heel-press to the nail-driving devices, a paste or glue applying apparatus arranged between said heel-press and said nail-driving devices to deliver paste or glue to the said heel-blank, and the nail-driving devices, substantially as described.

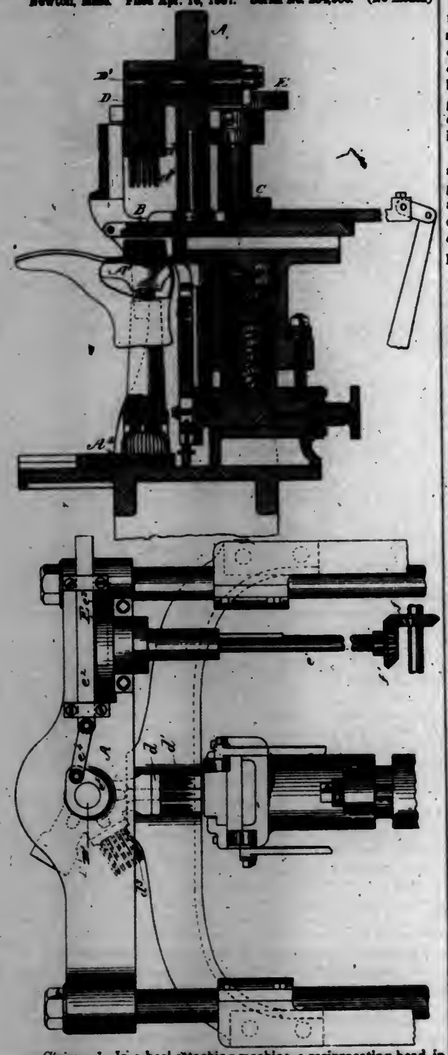
22. The combination of the box or receptacle E, the carrier *c*, the paste, glue, or liquid applying apparatus E', the box or receptacle B, the carrier *b*, the receptacle or pocket *b'*, and a heel-press the bed of which forms the under surface of the said receptacle or pocket, substantially as described.

23. The combination of the box or receptacle E, the carrier *c*, the paste, glue, or liquid applying apparatus E', the box or receptacle B, the carrier *b*, the receptacle or pocket *b'*, a heel-press the bed of which forms the under surface of the said receptacle or pocket, the heel-blank transferrer C, and the nail-driving devices, substantially as described.

24. The combination, in a heel-attaching machine, of a heel-press comprising a bed and head, one of which has a yielding movement in relation to the other, with a transferrer C, for carrying the compressed heel-blank from the press to the heel-attaching devices, and said heel-attaching devices, substantially as described.

5. In a gas-motor, the combination, with a working-cylinder constructed to perform the function of a pump, admission-ports *b c*, for the working and pump portions, respectively, of the cylinder, said ports being in communication with each other and with an air and gas supply pipe, and check-valves V V' in said communications, of a carburetor and air-reservoir, the latter containing water through which the air admitted is caused to pass, and a regulating-valve *i*, whose casing is provided with a port or passage I^3 in communication with the cylinder through the supply-pipe, a port or passage i^4 in communication with the carburetor, and a port or passage i^5 in communication with the air-reservoir, said communications being controlled by the movements of the valve, substantially as and for the purposes specified.

410,194. HEEL-NAILING MACHINE. FREEMAN F. RAYMOND, 2d, Newton, Mass. Filed Apr. 16, 1887. Serial No. 234,966. (No model.)



Claim.—1. In a heel-attaching machine, a reciprocating head, in combination with a block carrying a gang or group of awls, and a block carrying a gang or group of drivers, and a heel-spanker, or any two of them, and a rotating cam having a slide connecting with said blocks for moving them automatically into and out of operative position, substantially as described.

2. In a heel-attaching machine, a block or arm carrying a gang or group of awls, a block or arm carrying a gang or group of drivers, and a block or arm carrying or supporting a heel-spanker, or any two of said blocks or arms, with a rotating cam having a slide connecting with said block or arms and adapted to move said awls, drivers, and spanker, or any two of them, successively into operative position, as and for the purposes described.

3. In a heel-attaching machine, an arm or block supporting a gang or group of awls, an arm or block supporting a gang or group of drivers, and an arm or block carrying or supporting a top-lift spanker, or any two of them, having the slide of a rotary cam in connection therewith and said cam to produce automatic intermittent movement in one direction to bring the said devices successively into operative position, and a continuous automatic return movement, as and for the purposes described.

4. The combination, in a heel-attaching machine, of a reciprocating head, a rotating cam having a slide-arm and an arm or block supporting a gang or group of awls, an arm or block supporting a gang or group of drivers, and an arm or block supporting a heel-spanker, or any two of them, connected with the said slide-arm of the cam to be moved thereby successively into operative position, and vertical guides with which said arms are successively brought into contact or engagement to direct and govern the course of their vertical movement in relation to the work, substantially as described.

5. The combination of a rotating shaft carrying at its upper end a cam E, with said cam, and a block or arm supporting a gang or group of awls, a block or arm supporting a gang or group of drivers, and a block or arm supporting a spanker, and a slide-connection for connecting said arms or blocks with said cams, whereby the movement of the cam is communicated to said arms or blocks, as and for the purposes described.

6. In a heel-attaching machine, the combination of a last or work-support, a templet, a nail-carrier, a reciprocating head, a block or arm carrying a gang or group of awls, a block or arm carrying a gang or group of drivers, and a block or arm supporting a top-lift spanker, or any two of them, connected together and to the slide-arm of a rotary cam, to be simultaneously moved to bring them successively into operative position, with a rotating cam E and slide-arm connected therewith and adapted to provide them with an intermittent movement to bring them into operative position successively in relation to said templet, as and for the purposes described.

7. The combination, in a heel-attaching machine, of a cross-head A, having a plunger *g'*, with the plate or support G, carrying a slide-plate supporting a block carrying a gang or group of awls, a block carrying a gang or group of drivers, and a block carrying a spanker, or any two of them, and a cam E and its connecting slide-arm for moving said arms or blocks successively into position to be engaged and reciprocated by said plunger, substantially as described.

8. The combination, in a heel-attaching machine, of the cross-head, the awls, drivers, and spanker, or either of them, carried thereby, with the lower cross-head m^3, connected with the upper cross-head A, a lever m^2, operated by a cam M, said cam, and the toggle m^4, as and for the purposes described.

410,195. HEEL-NAILING MACHINE. FREEMAN F. RAYMOND, 2d, Newton, Mass. Filed Apr. 16, 1887. Serial No. 234,967. (No model.)

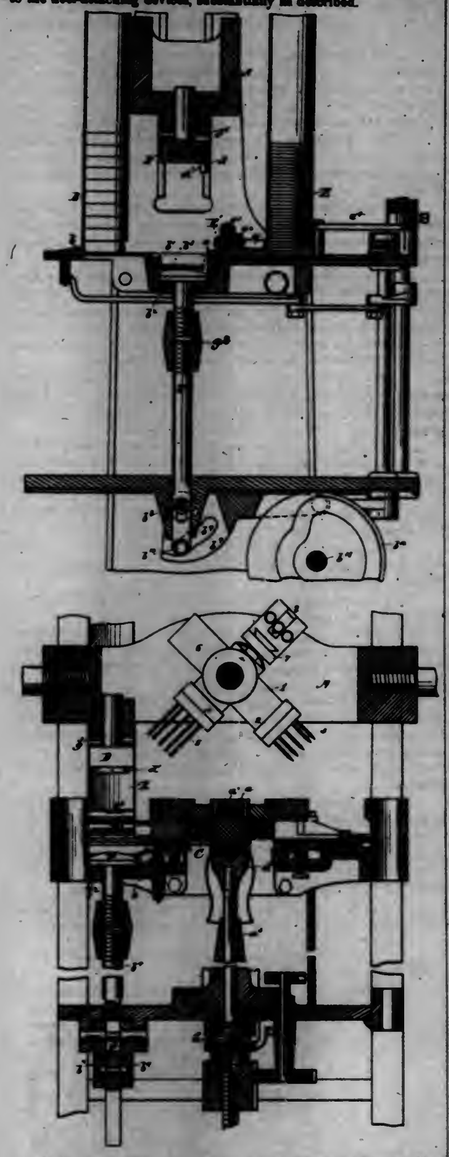
Claim.—1. In an organized heel attaching and compressing machine, the combination of heel-attaching devices comprising a gang of awls, a gang of drivers, a templet, and a heel-support with a heel-press and devices, substantially as specified, for causing the simultaneous operation of the press and of the heel-attaching mechanism, substantially as described.

2. In a heel-nailing machine, the combination of heel-attaching devices, a bed and movable head, substantially as described, for compressing the heel-blank, and a carrier for transferring the compressed heel-blank from the bed to the heel-attaching devices, substantially as described.

3. The combination, in a heel-attaching machine, of heel-attaching devices, a heel-blank holder or pocket *a'*, a bed and a head, substantially as described, movable in relation to the pocket to compress a heel-blank therein, and a transferrer for moving the compressed heel-blank from the pocket or bed to the heel-attaching devices, substantially as described.

4. The combination, in a heel-nailing machine, of the heel-attaching devices, a heel-compressing bed, a head, and a pocket or device, substantially as described, for holding the heel-blank between the bed and head, and a heel-blank-feeding plate or carrier for feeding the heel-blank to the heel-holding pocket or device, and a carrier for transferring the heel-blank from the bed or pocket to the heel-attaching devices, substantially as described.

5. The combination, in a heel-nailing machine, of heel-attaching devices, a bed and a head, substantially as described, between which a heel-blank is adapted to be compressed, a box for holding heel-blanks in stock, a heel-blank-carrying plate for moving the heel-blanks from the box or stock to a position between the bed and the head, and a transferrer for moving the compressed heel-blank from the bed to the heel-attaching devices, substantially as described.



6. In a heel-attaching machine, the combination of heel-nailing devices, a receptacle for holding heel-blanks in stack or quantity, heel-blank-transferring mechanism for transferring the blanks from the receptacle to the attaching devices, and a heel-blank press, substantially as described, between the said receptacle and the said heel-blank-attaching devices to form or mold the heel-blanks in successive order upon their passage to the attaching devices, substantially as described.

7. The combination of the heel-blank-attaching devices, the heel-blank carrier C, the pocket or receptacle *b'*, the bed b^3, a heel-blank press adapted to compress heel-blanks in said pocket, the box B, and the heel-blank carrier *b*, substantially as described.

8. The combination of the pocket or receptacle *b'*, the heel-blank press, substantially as described, the box or receptacle B, and the heel-blank carrier *b*, substantially as described.

9. The combination of the bed and head of a heel-blank press, substantially as described, with the heel-blank receptacle B and the heel-blank carrier *b*, for carrying blanks from the receptacle to a position in the heel-blank press, substantially as described.

10. The combination, in a heel-nailing machine, of heel-attaching devices, a heel-press, a box or receptacle for holding rands, and a carrier for feeding rands therefrom to the press, a box or receptacle for holding blanks, and a heel-blank carrier for feeding the heel-blanks therefrom to the press, substantially as described.

11. The combination, in a heel-nailing machine, of heel-attaching devices, a heel-press, a box or receptacle for holding rands, and a carrier for feeding rands therefrom to the press, a box or receptacle for holding blanks, a heel-blank carrier for feeding the heel-blanks therefrom to the press, and a heel-blank transferrer for carrying the heel-blank and rand from the press to the heel-attaching devices, substantially as described.

12. The combination of the bed and head of the heel-blank press, substantially as described, with the carrier *c* and the carrier *b*, substantially as described.

13. In a heel-press, the head D, having the heel-blank-centering device *d'*, substantially as described.

14. The combination, in a heel attaching and molding machine, of a bed or table having the pocket *b'*, provided with a straight vertical surface against which the rand or section of a heel-blank is adapted to be pressed, with the carrying device *c*, as described, shaped to center the rand or section of the heel against said straight surface, substantially as described.

15. The combination of the bed b^3, the slide-head b^4, and the cam-lever b^7, pivoted at b^8, having a cam-groove b^9, which receives a cam-pin b^{10} upon the slide-head, substantially as described.

16. The combination of the pocket *b'*, the bed b^3, the slide-head b^4, and the adjusting-nut adjustably connecting the bed with the slide-head, substantially as described.

17. The combination of the rand or heel-section carrier plate *c* with the paste or glue applying device for applying glue or paste to its upper surface as it is fed or moved by the carrier-plate, substantially as described.

18. In a heeling-machine, the combination of a feedway through which a rand or heel-section is adapted to be fed, with an apparatus for applying a solution or liquid to the upper surface of said rand or heel-section—such as a roll the operating-surface of which extends into said feedway from above it—as and for the purposes described.

19. In a heel-nailing machine, the combination of the tank *e'* with the rolls e^5 e^6 E', substantially as described.

20. In a heeling-machine, the combination of a rand or heel-section carrier, a pocket or receptacle to which the rands or heel-sections are fed, an apparatus for applying glue or paste to the upper surface of the rand or heel-section—such as a roll—a second carrier for feeding a heel-blank or other heel-section to the said pocket or receptacle, and a heel-press to compress said rand and heel or said sections of the heel together in said pocket, and a heel transferrer or carrier to transfer said compressed heel-blank to the nail-driving devices, and the nail-driving devices, substantially as described.

21. The combination of a carrier for feeding rands or heel-sections to a pocket or receptacle, a paste or glue applying apparatus located to feed paste or glue to the upper surface of the rand or heel-section as it is moved by the carrier, a second carrier for feeding a heel-blank or additional heel-section to said pocket or receptacle, a heel-press to compress said sections in said pocket, a heel-blank transferrer or carrier to transfer said compressed heel-blank from the heel-press to the nail-driving devices, a paste or glue applying apparatus arranged between said heel-press and said nail-driving devices to deliver paste or glue to the said heel-blank, and the nail-driving devices, substantially as described.

22. The combination of the box or receptacle E, the carrier *c*, the paste, glue, or liquid applying apparatus E', the box or receptacle B, the carrier *b*, the receptacle or pocket *b'*, and a heel-press the bed of which forms the under surface of the said receptacle or pocket, substantially as described.

23. The combination of the box or receptacle E, the carrier *c*, the paste, glue, or liquid applying apparatus E', the box or receptacle B, the carrier *b*, the receptacle or pocket *b'*, a heel-press the bed of which forms the under surface of the said receptacle or pocket, the heel-blank transferrer C, and the nail-driving devices, substantially as described.

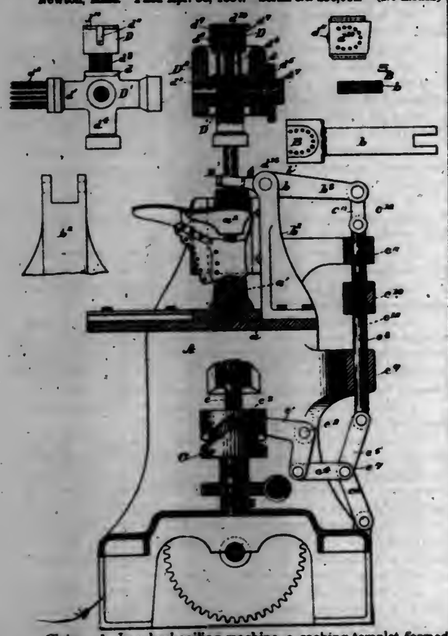
24. The combination, in a heel-attaching machine, of a heel-press comprising a bed and head, one of which has a yielding movement in relation to the other, with a transferrer C, for carrying the compressed heel-blank from the press to the heel-attaching devices, and said heel-attaching devices, substantially as described.

25. The combination, in an organized heel-attaching machine, of a heel-press, heel-attaching devices, the main shaft of the machine, and levers and cams in connection with the main shaft, whereby the heel-press and heel-attaching devices are simultaneously operated upon separate or independent heels, substantially as described.

26. The combination, in a heel-attaching machine, of a heel-press, the heel-attaching devices, the main shaft of the machine, and connecting mechanism, substantially as specified, and a heel-blank transferrer for carrying the compressed heel-blank to the heel-attaching devices, whereby the heel-blank is compressed simultaneously with the attachment of another compressed heel-blank, and a transferrer actuated to move a compressed heel-blank into position for attachment to the next boot or shoe to be heeled, substantially as described.

27. The herein-described method of forming and attaching heels, consisting in simultaneously and automatically feeding two or more sections of a heel-blank to a predetermined point, applying an adhesive substance to a part of said sections, uniting them by pressure, automatically transferring the completed heel to an attaching device, and finally securing the heel to the sole, as set forth.

410,196. HEEL-NAILING MACHINE. FREDERICK P. RAYMOND, 2d, Newton, Mass. Filed Apr. 30, 1887. Serial No. 236,611. (No model.)



Claim.—1. In a heel-nailing machine, a rocking templet formed on or supported by a pivoted lever, plate, or jaw and provided thereby with a movement to and from the last or work-support, as and for the purposes specified.

2. In a heel-nailing machine, the combination of a last or work-support with a rocking templet B, mounted on or formed in a pivoted plate, lever, or support, and said pivoted plate, lever, or support adapted to have movement imparted to its end to cause the templet to be moved toward and from the last or work-support, as and for the purposes specified.

3. In a heel-nailing machine, the combination of the last or work-support, a rocking-templet B, mounted upon or formed in the end of a lever, and a cam connected with the end c^9 of the said lever, as and for the purposes specified.

4. The combination, in a heel-nailing machine, of the last or work-support, a templet B, mounted upon a lever, pivoted plate or support b, the cam C, and intermediate connecting mechanism, comprising the lever c^7, the toggle c^8, connected with and operated by the lever, the slide bar or block c^9, and a link connecting the slide-block with the end of the said lever or support b, as and for the purposes specified.

5. The combination, in a heel-nailing machine, of the lever b, supporting at its end a templet having an arm b^3, the slide-block c^9, operated substantially as specified, and an intermediate adjustable connection between the slide-block and the end of the lever, substantially as described.

6. The combination of the lever b, supporting at its front end the templet B, the slide-block, and means, substantially as shown, for varying the line or point to which the templet B is moved, as and for the purposes specified.

7. The combination, in a heel-nailing machine, of a lever b, the templet B, supported thereby, the slide-head c^9, and the connection between the slide-head and the lever, comprising the parts c^{11} c^{12} having oppositely-arranged screw-threads formed upon their contiguous ends, and an adjusting-nut c^{10}, as and for the purposes described.

8. The combination, in a heel-nailing machine, of the rocking templet B, having the movement in relation to the last or work-support specified, the last or work-support, and nail-driving devices, substantially as described.

9. The combination, in a heel-attaching machine, of a rocking templet B, pivoted to have movements in relation to the last or work-support imparted to it, substantially as specified, the last or work-support, and the nail-carrier D, substantially as described.

10. The combination, in a heel-attaching machine, of a rocking templet provided with a movement relative to the last or work-support, substantially as specified, the last or work-support, a gang or group of awls, the nail-carrier, and a gang or group of drivers adapted to be moved successively into operative position in relation to the templet, and then to be operated, substantially as specified.

11. The combination, in a heel-attaching machine, of a rocking templet provided with movements in relation to the last or work-support, as specified, said last or work-support, the nail-carrier D, and the gang or group of drivers d^3, substantially as described.

12. In a heel-attaching machine, the combination, with a suitable automatic nail-supplying apparatus, of a nail-carrier D, movable in the arc of a vertical ellipse from the nail-supplying apparatus to the point of driving, and whose holes are open when in its highest position and closed during the remainder of its rotation by devices set forth, and held closed until the time of driving, as described.

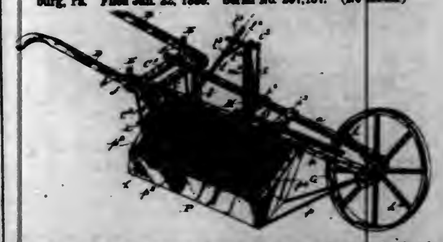
13. The combination, in a heel-attaching machine, of the rotary nail-carrier D, the slide-plate d^{10}, spring d^{11}, and projection d^{12}, substantially as described.

14. In a heel-nailing machine, a rotary nail-carrier D, having a horizontally-moving slide-plate for covering and uncovering the nail holes or apertures therein, controlled in its movements by mechanism as set forth, and adapted to be automatically opened when in its highest vertical position, automatically closed during its rotation, and again opened at the time of delivering, as described.

15. The combination of a reciprocating head D^2, carrying a rotary head D', the nail-carrier D, movable in relation to the arm d of the rotary head, as specified, the drivers d^3, and the slide-plate d^{10}, having a vertical and rotary movement and adapted to be moved to cover and uncover the holes of the carrier D, as and for the purposes specified.

16. The combination, in a heel-attaching machine, of the reciprocating head D^2, the rotary head D', carried thereby, an arm d, supporting a gang or group of drivers d^3, a nail-carrier D, carried by said arm d, its hole-covering plate d^{10}, adapted to be moved to uncover its holes to receive and discharge nails, and a suitable automatic nail-supplying apparatus, substantially as specified.

410,197. POTATO-BUG CATCHER. GEORGE F. RATHBUN, Myersburg, Pa. Filed Jan. 22, 1889. Serial No. 297,137. (No model.)

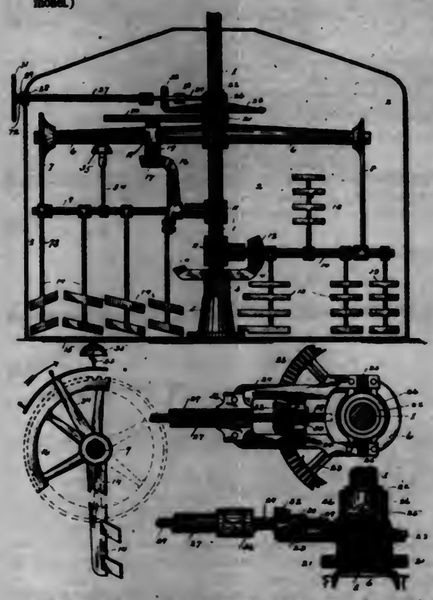


Claim.—1. An apparatus for catching potato-bugs and other insects, consisting of a one-wheeled vehicle provided with handles, and a standard rising from the center of the vehicle and extending over to one side thereof, in combination with a brush pivoted to said standard, a spring and lever mechanism connected with pins on the single wheel of said vehicle and with said brush, and an open box secured to one side of the vehicle, whereby when said vehicle is pushed along as a wheelbarrow the said lever mechanism will be operated by said wheel to strike by successive blows the brush extending over the vines and knock the insects into said box, substantially as herein described.

2. The frame-work of the vehicle, composed of two longitudinal arms, in combination with a support consisting of the legs b, top cross-pieces c c', the piece c extending over the tops of the said arms and bolted to the legs b, the said cross-piece c' in rear of the piece c and extending under the arms a, and to which the said arms are secured, the diagonal braces c^3, for connecting the cross-piece to said legs, the handles D D, secured to the cross-piece c, legs E E, attached to said cross-piece c', provided with holes and pins to adjust the handles as to height, and a wheel supported between said arms, all substantially as shown, and for the purpose described.

3. In combination with the frame-work of the vehicle provided with handles, a single wheel the spokes of which are provided with pins h, the central standard I, the brush L, the bar l, pivotally connecting the said brush and standard, the lever O, pivoted centrally to a cross-piece on the frame-work, adapted at one end to engage with the pins on the wheel, and provided at the other end with a spring o' to hold it in place, a rod M, provided with a spiral spring m', and secured at one end to the said lever O and at the other end to the said bar l', whereby when the wheel is rotated the said lever O coming in contact with the pins in said wheel, one end is raised and the other end depressed, and the bar l' and the lever M, operated by the springs to throw the brush one way, and when said lever O is released it and the lever M, operated by the springs, throw the brush in the opposite direction, whereby the brush is operated to give quick, sharp, successive blows against the vines, substantially as and for the purpose described.

410,198. MASH-MACHINE AND GRAIN-REMOVER. GEORGE KERNOCK, Allegheny, Pa. Filed Jan. 28, 1889. Serial No. 297,808. (No model.)



Claim.—1. In a mash-machine and grain-remover, the combination consisting of the central shaft 1, the beam 6, secured thereto and having suspended thereto in suitable bearings 7 11 the grain-moving shaft 9, the arms with oblique paddles 14, attached to said shaft 9, and the stationary arm 73, having oblique paddles 14 arranged opposite to those on shaft 9, the segmental bevel-wheel 16, attached to the shaft 9, the bevel-pinion 17, meshing with the wheel 16, the toothed wheel 20, operating on the same shaft 19 with the bevel-pinion 17, and meshing with a pinion 21, loosely journaled on the driving-shaft 1, the bevel-wheel 23, secured to the said pinion 21, and the bevel-pinion 32, mounted in a frame 24 and capable of being thrown into or out of gear with the bevel-wheel 23 by means of the sliding shaft 29, and a clutch 72 for the purpose of locking the bevel-pinion 32 to prevent the same from revolving, substantially as and for the purpose set forth.

2. In a mash-machine, the combination of a vertical rotary shaft carrying a horizontal beam, an axially-turning shaft 9, suspended from said beam and carrying a series of paddles, a short vertical counter-shaft journaled on said horizontal beam and geared to the shaft 9, mechanism, substantially as described, for rotating the counter-shaft and the shaft 9, the knockers carried by the shaft 9 to rotate therewith, and a bell on the horizontal beam in the path of said knockers, all arranged and combined for service substantially as described.

3. In a mash-machine, the combination, with a vertical power-shaft and a mash-tub, of a pinion fitted loosely on said shaft, a horizontal frame 24, pivoted on an extended hub of said pinion and having a tubular arm which is fixed at its outer end to the mash-tub, a horizontal shaft supported in said tubular arm and having a pinion which meshes with the loose pinion, a horizontal beam, a horizontal shaft 9, supported by said beam, and gearing intermediate of said horizontal shaft and the loose pinion, substantially as described.

4. The combination of a vertical rotary shaft carrying a horizontal beam, a horizontal axially-turning shaft 9, suspended from said beam by stationary bearings and having the arms and paddles, a vertical counter-shaft journaled on the horizontal beam and geared to the horizontal shaft 9, a toothed wheel 21, fitted loosely on the vertical rotary shaft and gearing with the counter-shaft, and an endwise-movable shaft having a pinion adapted to gear with said wheel 21 to rotate the latter, substantially as and for the purpose described.

5. A mash-machine and grain-remover such as described, consisting of the central driving-shaft 1, having a beam 6 attached thereto, the two horizontal shafts 9 10, supported thereby and by the driving-shaft 1, the stationary bevel gear-wheel 4, the pinion 12, attached to the shaft 10, the mash-paddles 13, secured to the said shaft 10, the paddles 14, arranged in an oblique position on the shaft 9, the bevel-wheel 16, meshing with a pinion 17, mounted on the beam 6, the toothed wheel 20, meshing with a pinion 21, loosely journaled to the driving-shaft 1, and said pinion 21 having an upwardly-extending hub 22, to which is secured the bevel-wheel 23 and collar 26, the frame 24, journaled to the said collar 26 and supported at the other end by the tube 27, the shaft 29, extending through the said tube 27, having a bearing 30 in the frame 24, and having a bevel-pinion 32 meshing with the bevel-wheel 23, the clutch 72, for locking the pinion 32, and the wheel 31, secured to one end of the shaft 29 as a means of operating the apparatus automatically and by hand, substantially as described.

6. The combination of a vertical rotary shaft carrying a horizontal beam, a horizontal axially-turning shaft 9, supported by said beam and vertical shaft and carrying the mash arms and paddles, a vertical counter-shaft journaled on the beam and geared at its lower end directly to said shaft 9, and mechanism, substantially as described, for rotating the counter-shaft and horizontal shaft 9 on their axes, substantially as and for the purpose described.

7. The combination of a vertical rotary shaft carrying a horizontal beam, a horizontal axially-turning shaft supported by said beam and vertical shaft and carrying the mash arms and paddles, a vertical counter-shaft journaled on the beam and geared to the horizontal shaft, a stationary frame arranged above the beam adjacent to the vertical shaft, an endwise-movable shaft supported at its inner end in said stationary frame, and gearing intermediate of said endwise-movable shaft and the counter-shaft, substantially as and for the purpose described.

8. The combination of a vertical rotary shaft carrying a horizontal beam, a horizontal shaft 9, supported by said beam and vertical shaft and having the arms and paddles, a vertical counter-shaft geared to the shaft 9 and journaled on the horizontal beam, a toothed wheel fitted on said vertical shaft and geared to the counter-shaft, a stationary frame arranged adjacent to the vertical shaft and said toothed wheel, and an endwise-movable shaft fitted in said frame to gear with the toothed wheel and adapted to be locked against rotation by a suitable locking device, substantially as and for the purpose described.

9. The combination, with a vertical power-shaft, a horizontal beam carried by said shaft, and a horizontal axially-turning shaft 9, supported by said beam and vertical shaft and having the paddles, of a vertical counter-shaft journaled on said beam and geared with the shaft 9, a pinion loosely fitted on the vertical rotary shaft and geared to the counter-shaft, and mechanism, substantially as described, for rotating said pinion independently of the vertical driving-shaft or from the latter, substantially as and for the purpose described.

10. The combination, with a vertical power-shaft, a horizontal beam carried by said shaft, and a horizontal axially-turning shaft 9, supported by said beam and vertical shaft and having the paddles, of a vertical counter-shaft journaled on said beam and geared to the horizontal shaft 9, a pinion fitted loosely on the vertical power-shaft and geared to the counter-shaft, and a shaft geared to said pinion for rotating the latter, substantially as and for the purpose described.

11. The combination, with a vertical power-shaft, a horizontal beam carried by said shaft, and a horizontal axially-turning shaft 9, supported by said beam and vertical shaft and having the paddles, of a vertical counter-shaft journaled on said beam and geared to the horizontal shaft 9, a pinion fitted loosely on the vertical power-shaft and

geared to the counter-shaft, and a shaft and connections between the latter shaft and the vertical rotary shaft to automatically rotate the same, the pinion, the counter-shaft, and the horizontal shaft 9, all arranged and combined for service substantially as described, for the purpose set forth.

12. The combination, with a vertical power-shaft, a horizontal beam carried by said shaft, and a horizontal axially-turning shaft 9, supported by said beam and vertical shaft and having the paddles, of a vertical counter-shaft journaled on said beam and geared to the horizontal shaft 9, a pinion fitted loosely on the vertical power-shaft and geared to the counter-shaft, and a shaft geared to said pinion and having a clutch mechanism, and gearing intermediate of the vertical power-shaft and the clutch mechanism of the last-named shaft, all arranged and combined for service substantially as described.

13. The combination, with a vertical power-shaft, a horizontal beam, and a horizontal shaft 9, supported by said beam and vertical shaft and carrying the mash arms and paddles, of a vertical counter-shaft journaled on the beam and geared to the horizontal shaft 9, a pinion fitted loosely on the vertical power-shaft to gear with the counter-shaft and having a tubular extension or sleeve, another wheel fitted on said extension or sleeve, and a shaft geared to this last-named wheel for rotating the same, and the pinion to drive the counter-shaft, substantially as described.

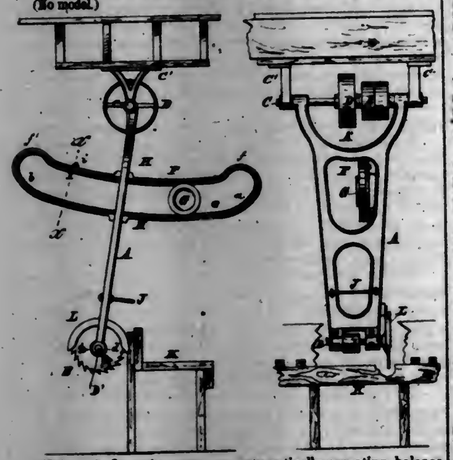
14. The combination, with a vertical power-shaft, a horizontal beam, and a horizontal shaft 9, supported by said beam and vertical shaft and carrying the mash arms and paddles, of a vertical counter-shaft journaled on the beam, a pinion fitted loosely on the vertical power-shaft, a horizontal stationary frame loosely connected at its inner end to the vertical power-shaft and rigidly connected at its outer end to the mash-tub, and a horizontal shaft supported in said stationary frame and geared to the pinion, substantially as and for the purpose described.

15. The combination of a vertical power-shaft carrying a horizontal beam, a pinion fitted loosely on the shaft and having a tubular extension, a wheel fitted on said tubular extension or sleeve, a horizontal stationary frame fitted loosely around said sleeve of the pinion above the hub of said wheel and rigidly connected at its outer end to the mash-tub by a tube, a shaft journaled in said frame and its tube, a horizontal shaft 9, carrying the mash arms and paddles, and a counter-shaft geared to the pinion and the shaft 9, substantially as and for the purpose described.

16. The combination of a vertical power-shaft carrying a horizontal beam, a horizontal frame loosely connected at its inner end to said power-shaft, an arm or tube rigidly connected to the opposite end of said frame and the mash-tub to support the horizontal frame in a stationary fixed position, a horizontal shaft journaled in said frame, a pinion fitted loosely on the vertical power-shaft and geared to said horizontal shaft, a shaft 9, carried by the beam and the vertical power-shaft and having the mash arms and paddles, and a vertical counter-shaft intermediate of the loose pinion and the shaft 9, all arranged and combined substantially as and for the purpose described.

410,199. AUTOMATIC BALANCING DEVICE FOR SWING-SAWS.

JOHAN ROSS, Buffalo, N. Y. Filed Nov. 23, 1888. Serial No. 292,053. (No model.)



Claim.—1. In swing-saws, an automatically-operating balance consisting of the pendent saw-frame, a curved track secured to said frame, and an automatically-shifting weight operating upon said track, as and for the purpose set forth.

2. In swing-saws, an automatically-operating balance for the saw-frame, consisting of an automatically-shifting weight arranged upon a curved track having stops for said weight to limit its travel, said track being attached to and operating in combination with the swinging frame, as and for the purpose stated.

3. In swing-saws, an automatic balance for the swinging frame, consisting of an automatically-shifting weight operating upon a curved track having curved end stops, as stated, said curved track being secured to the swinging frame and operating in combination therewith, as and for the purpose specified.

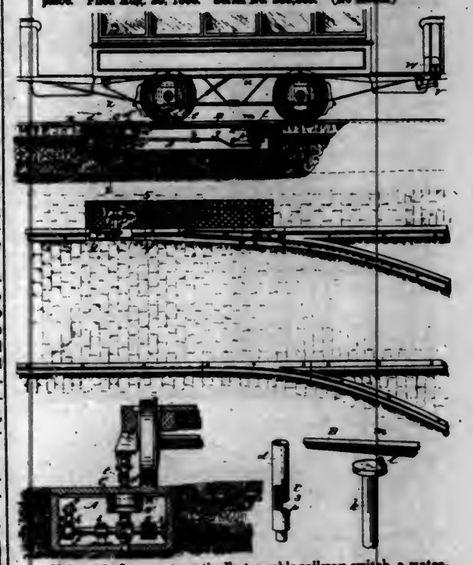
4. In swing-saws, the combination, with the swinging frame, of the curved track-frame F, having the gap, as described, and the rolling weight, said gap being provided with the inset I, as set forth.

5. In swinging saws, the combination, with the pendent saw-frame, of the curved track-frame having circular track-weight and curved end stops, as stated.

6. In swing-saws, the combination, with the swinging saw-frame, of the track-frame having the web *e*, the weight G, having the groove *g*, and the removable inset I, secured by a bolt *i*, as stated.

410,200. AUTOMATIC RAILWAY-SWITCH.

ROBERT C. ROWELL, Boston, Mass., assignor to the Rowell American Switch Company, same place. Filed Aug. 26, 1888. Serial No. 283,305. (No model.)



Claim.—1. In an automatically-movable railway-switch, a water-tight casing enveloping and containing the switch-operating devices, and provided with packing-boxes through which the externally projecting or actuating parts of the mechanism operate, substantially as described, and for the purpose specified.

2. In an automatically-movable railway-switch, one or more upwardly-projecting actuating-plungers connected with switch-operating levers *e* by elastic bearings, substantially as described, and for the purpose specified.

3. In a railway-switch, a rotating spindle having a disk upon its upper end provided with a crank-pin thereon, combined with a slotted switch-rail to be operated thereby, substantially as described.

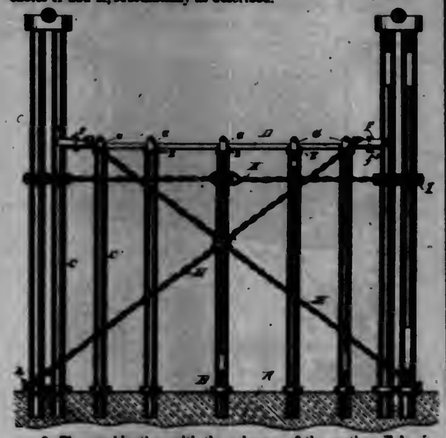
4. In an automatically-movable railway-switch, the combination of one or more upwardly-projecting actuating-plungers having elastic bearings upon the intermediate switch-operating mechanism, and a rotary spindle provided with a crank-pin at its upper end engaging with a switch-rail, substantially as described.

410,201. REST FOR SUSPENSION-BRIDGES.

EDWIN H. RENTON, Mountain Spring, Tex. Filed Apr. 1, 1889. Serial No. 305,589. (No model.)

Claim.—1. In a bridge-bent, the combination, with vertically-arranged columns, of a cross-bar uniting the inner columns, and obliquely-arranged cable-braces for giving rigidity to the bent, substantially as described.

2. The combination, with the outer columns, of the inner columns, the castings E on the latter, the cross-bar D on the castings, the saddles G, resting on the castings and bar, the yokes F on the ends of the bar, the clasps I on the outer columns, and the twisted-wire brace-cables H and K, substantially as described.

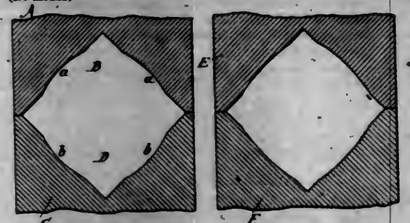


3. The combination, with the columns, of the castings E, having extension *e* and lugs *d'*, the bar D, resting on the castings, the saddles G, having flanges *g* on their under sides which fit over the bar and between the lugs on the casting, and the yokes F, substantially as described.

4. The bridge-bent composed of a series of hollow columns united by wire braces and a cross-bar on the top of the central column, substantially as described.

410,202. ROLLS FOR THE MANUFACTURE OF SQUARE PIPE.

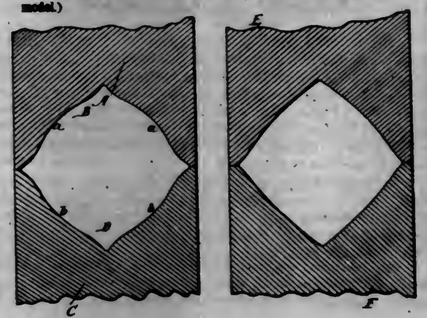
WILLIAM B. SANFORD, Kewanee, Ill., assignor to the Hazlan Steam Heater Company, same place. Filed June 7, 1888. Serial No. 276,810. (No model.)



Claim.—A pair of rolls each having in its face a groove that is concaved between the straight portions that constitute the four corners of the pass between said rolls, substantially as and for the purpose specified.

410,203. METHOD OF MAKING SQUARE METAL PIPE.

WILLIAM B. SANFORD, Kewanee, Ill., assignor to the Hazlan Steam Heater Company, same place. Filed July 23, 1889. Serial No. 318,623. (No model.)



Claim.—The mode of making square tubes from round tubes, which consists in passing a round tube, unsupported internally, through rolls, which, by their impact upon said round tube, will gradually mold the tube into a square form, substantially as described.

410,204. PYROXYLINE COMPOUND.

CHARLES R. SCHUPPIANS, Adams, Mass., assignor to the American Xylonite Company, New York, N. Y. Filed Oct. 14, 1886. Serial No. 216,373. (No specimens.)

Claim.—1. In the manufacture of pyroxyline compounds, a varnish or plastic composition consisting of nitro-cellulose in conjunction with propylic alcohol, substantially as described.

2. In the manufacture of pyroxyline compounds, a varnish or plastic composition consisting of nitro-cellulose, in conjunction with isobutylic alcohol, substantially as described.

410,205. PYROXYLINE VARNISH.

CHARLES R. SCHUPPIANS, Xylonite, Mass., assignor to the American Xylonite Company, New York, N. Y. Filed Dec. 20, 1888. Serial No. 294,155. (Specimens.)

Claim.—In the manufacture of pyroxyline compounds, a varnish or plastic compound consisting of nitro-cellulose in combination with anthraquicone and alcohol, substantially as described.

410,206. PYROXYLINE VARNISH.

CHARLES R. SCHUPPIANS, Xylonite, Mass., assignor to the American Xylonite Company, New York, N. Y. Filed Dec. 20, 1888. Serial No. 294,156. (Specimens.)

Claim.—As a solvent or converting agent for the conversion of plastic compounds having pyroxyline as a base, isovaleric aldehyde or its derivatives, amylidon-dimethyl ether and amylidon-diethyl ether, substantially as described.

410,207. PYROXYLINE COMPOUND.

CHARLES R. SCHUPPIANS, Xylonite, Mass., assignor to the American Xylonite Company, New York, N. Y. Filed Dec. 20, 1888. Serial No. 294,157. (No specimens.)

Claim.—In the manufacture of pyroxyline compounds, a varnish or plastic composed consisting of nitro-cellulose in conjunction with alpha or beta naphthol in alcoholic solution, substantially as described.

410,208. PYROXYLINE VARNISH.

CHARLES R. SCHUPPIANS, Xylonite, Mass., assignor to the American Xylonite Company, New York, N. Y. Filed Dec. 20, 1888. Serial No. 294,158. (Specimens.)

Claim.—In the manufacture of pyroxyline compounds, a varnish or plastic compound consisting of nitro-cellulose in conjunction with acetate of glycerine, substantially as described.

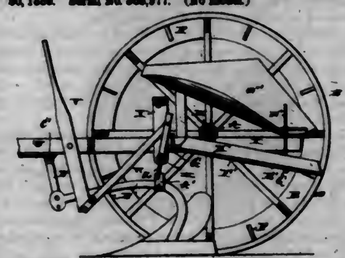
410,209. PYROXYLINE COMPOUND.

CHARLES R. SCHUPPIANS, Xylonite, Mass., assignor to the American Xylonite Company, New York, N. Y. Filed Dec. 20, 1888. Serial No. 294,159. (No specimens.)

Claim.—In the manufacture of pyroxyline compounds, a varnish or plastic compound consisting of nitro-cellulose, in conjunction with palmitine or its described equivalent, stearine, in alcoholic solution, substantially as described.

410,210. POTATO-DIGGER.

OLE SIMON, Arkdale, Wis. Filed Mar. 20, 1889. Serial No. 303,977. (No model.)

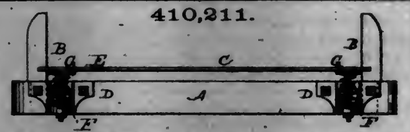


Claim.—In a potato-digger, the combination of a transporting-wheel having a broad tread or flange equipped on its inner periphery with flights or elevating-buckets, a plow arranged to turn the soil over upon the flange of said wheel, a chute extending under the upper portion of said flange, a shaking-screen pivoted to the front part of the frame and extending rearwardly under said chute, a shaft extending transversely over said screen and having radial arms or agitators, and operating mechanism for the said shaking-screen and agitator-shaft geared to one of the supporting-wheels of the machine, substantially as and for the purpose herein shown and specified.

410,211. WAGON-SPRING.

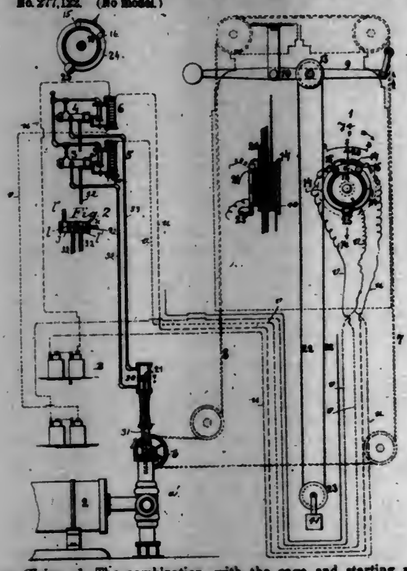
BENJAMIN SMITH, Mechanicsburg, Ohio. Filed Apr. 13, 1889. Serial No. 306,998. (No model.)

410,211.



Claim.—In combination with a wagon-bolster having standards, the brackets D, having flanges for bolts and annular recesses, spiral coils F, front and rear, cross-plates G G, and bar C, connecting said plates and engaging said standards, substantially as shown and described.

410,212. ELEVATOR. RUDOLPH C. SMITH, Yonkers, N. Y., assignor to Otis Brothers & Company, same place. Filed June 14, 1888. Serial No. 277,122. (No model.)



Claim.—1. The combination, with the cage and starting and stopping device and controlling electro-magnets of an elevator, of circuits including said magnets and extending to the cage, and a circuit-breaker in two parts, one connected with an operating-handle within the cage and the other connected with the stopping and starting device to be moved with the latter to break the circuit as the said device attains its desired position, substantially as described.

2. The combination, with the cage, stopping and starting device, and controlling electro-magnets of an elevator, of electric circuits including said magnets, a circuit-breaker consisting of two parts movable about a common center, one capable of being moved by the attendant and the other connected to move with the stopping and starting device, substantially as described.

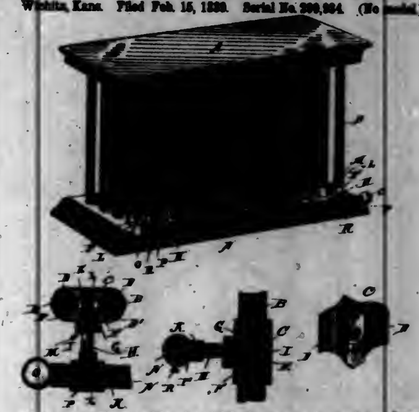
3. The combination, with the cage, stopping and starting device, and controlling-magnets and circuits of an elevator, of two disks, one carrying two contacts in each circuit with one of the magnets, another carrying a contact in circuit with both magnets, arranged, substantially as described, to permit the latter contact to be brought into connection with either of the former, one of the disks being connected with the stopping and starting device to move therewith, substantially as set forth.

4. The combination, with the controlling-magnets of an elevator, of a circuit-breaker in circuit with said magnets and consisting of two disks, one carrying two contacts 15 16, and the other carrying a contact 18, and with a peripheral non-conducting material cut away to permit the contact 15 or 16 to meet the contact 18 at one point on the revolution of either disk, substantially as set forth.

5. The combination, with the cage, stopping and starting device, its pulley *b*, the controlling electro-magnets and circuits, of a circuit-breaker in the cage consisting of independent disks carrying contacts, and a cable passing round a drum connected with one of said disks, round guide-pulleys, and round the pulley *b*, substantially as set forth.

6. The circuit-breaker combined with the cage and stopping and starting device of an elevator, and consisting of two parts, one provided with an operating-handle, the other provided with a pointer and connected with the stopping and starting device to move therewith, substantially as set forth.

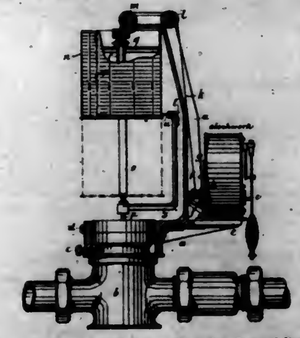
410,213. FOOT-REST FOR STEAM-RADIATORS. JACOB A. SOHN, Wichita, Kans. Filed Feb. 15, 1889. Serial No. 300,204. (No model.)



Claim.—1. The combination, with the steam-pipes, of the clamps C and F, the rods or arms H, passed through the latter and screwed to the inner clamp C, the washer L, screwed on the said rods or arms and bearing against the outer clamp F, the coupling attached to said rods or arms, and the tube or rod N, supported in the said couplings, substantially as described.

2. The combination of the clamps C F, having the two vertical grooves on their inner sides adapted to engage the front and rear faces of the steam-pipes of the radiator, the rods or arms H, having the screw-threads I, for the purpose set forth, the washers L, the couplings attached to the rods or arms H and having the set-screws R, and the tube or rod N, adapted to be secured in the said couplings, substantially as described.

410,214. APPARATUS FOR RECORDING AUTOMATICALLY THE FLOW OF WATER, &c. HENRY H. SPORTON and ERNEST WEBB, Enfield, County of Middlesex, England. Filed Apr. 2, 1889. Serial No. 305,676. (No model.)



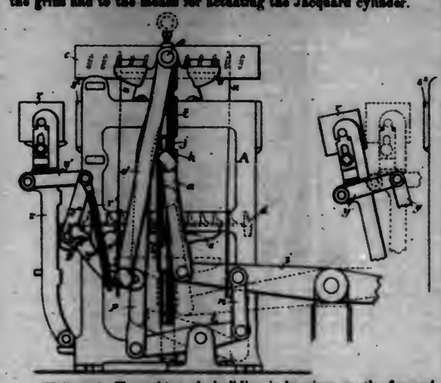
Claim.—1. Apparatus for recording the flow of liquid through fluid-meters, comprising a non-revolving drum or cylinder adapted for carrying a diagram-paper surrounding the same and to be moved lengthwise on an axial support, a clock mechanism for actuating said drum, and an arm carrying a pencil attached to one of the index-spindles of the meter, whereby when the meter is operated the pencil will be caused to travel around the cylinder and over the paper, substantially as shown and described.

2. The combination of the frame *a*, a clock having a barrel carrying a cord, a drum *x*, suspended from the said cord, and a pencil-carrier *s*, adapted to be secured to one of the index-spindles of a fluid-meter and to be moved around the said drum, all substantially as and for the purposes described.

3. In recording apparatus for fluid-meters, the combination of a gravitating diagram-carrier, a clock-work, and a cord connecting the carrier to the clock-work, substantially as set forth, the weight of the carrier serving to assist in operating the clock-work, and the latter serving to control the movements of said carrier, all as and for the purpose described.

410,215. JACQUARD ATTACHMENT FOR LOOMS. THOMAS W. STAFFORD and SAMUEL D. BARNEY, Providence, R. I., assignors to the George W. Stafford Manufacturing Company, same place. Filed Feb. 14, 1889. Serial No. 300,225. (No model.)

Brief.—The invention relates to the means for lifting and tilting the griffs and to the means for actuating the Jacquard cylinder.



Claim.—1. The guide-rods *j*, sliding in bearings on the frame A, and having pivotal bearings at their upper ends, the griff *c*, the table *e*, the cam *f*, and means for adjustably securing it to the said table, in combination with frame A and guide-roll *b*, secured thereto, and means for moving said rods *j* up and down in their bearings, substantially as specified.

2. In combination with the swinging frame *v* and end frame A, having a stud secured therein, a knee-lever made in two parts, both of which are pivoted on said stud and are formed to engage one with the other to give a positive movement to the swinging frame outwardly, and the spring *o'*, attached to the two parts of the said lever, whereby the lower part may make its downward movement if the frame *v* should be impeded in its inward movement, a link *y'*, a bar *o'*, and means to actuate said bar, substantially as and for the purpose set forth.

3. The combination, with the griff *c*, plate *a*, rod *j*, rod *p*, and needle-beam *l*, of lever *i*, a connection *n*, pivoted to one end of the needle-beam *l* and to the lever *i* at a point between its fulcrum and its inner end for the movement of said griff *c*, and the plate *d'*, plate or rest *d*, box *h*, and the connection *a*, pivoted to the inner end *i* and to the box *h* for the movement of the plate or rest *d*, substantially as herein set forth.

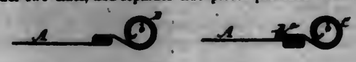
410,216. DOOR-KNOB ATTACHMENT. CHARLES H. STELLER, Milwaukee, Wis. Filed Apr. 6, 1889. Serial No. 306,268. (Model.)



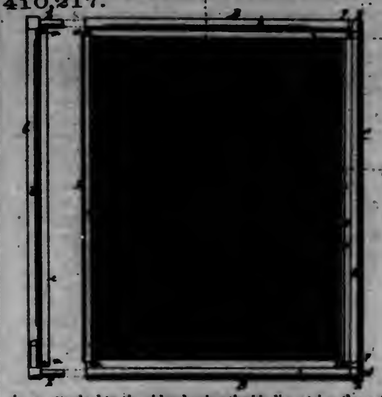
Claim.—In a door-knob attachment, the combination, with the knob-shank F and spindle C, provided with a series of retaining notches I, of the cam-lever E, pivoted eccentrically to said shank F, the eccentric bearing of said cam-lever being located between the cam-supporting pivot and the retaining-notches of said spindle, and adapted to engage in one of the notches of and act as a wedge between the retaining-pivot and said spindle, substantially as and for the purpose specified.

410,217. WINDOW-SCREEN. DRAPER STONE, Pittsford, N. Y. Filed Jan. 30, 1889. Serial No. 298,066. (No model.)

Claim.—The screen herein described, consisting of a wire net, end pieces seamed to two of the sides, separate binding-strips seamed to the other two sides, and separate side pieces provided with corner-

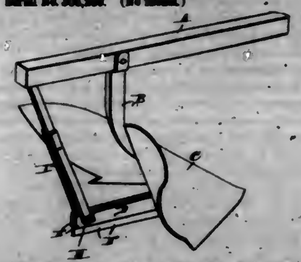


410,217.



pieces attached to the sides, having the binding-strips, the outer edges of the end and side pieces being rolled up in tubular form, as shown and described, and for the purpose specified.

410,218. PLOW. IRA W. SYLVESTER, Palmetto, La. Filed Apr. 23, 1888. Serial No. 308,269. (No model.)



Claim.—In a double plow, the combination of the standard carrying the mold-board, the lister-plates secured to and extending rearwardly from the foot of said standard, the guide-plate having a cutting-edge and mounted adjustably between said lister-plates, and the adjusting-brace connecting the heel ends of the latter with the plow-beam, substantially as set forth.

410,219. INKSTAND. RICHARD S. TRAIN, Oak Park, Ill. Filed Oct. 6, 1888. Serial No. 287,377. (No model.)



Claim.—1. The herein-described inkstand, having a body formed from a single sheet of metal, and having an appropriate opening for the ink-well and a suitable cover, substantially as described.

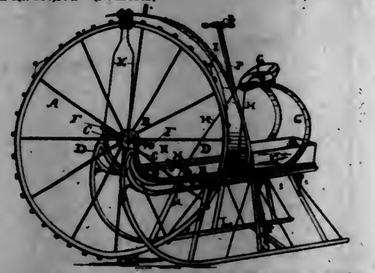
2. An inkstand having its body formed from a single sheet of metal, with a central ink-well opening and projections integral with the body to serve as pen-racks, and a suitable cover, substantially as described.

3. An inkstand having the body formed from a single sheet of metal and provided with projections adapted to confine the side portions of the body, and a suitable cover, substantially as described.

4. An inkstand having the body formed from a single sheet of metal and provided with a central opening for an ink-well, and having slotted turned-down portions adapted to furnish a bearing for a cover, and a cover having plates adapted to said slots, substantially as described.

5. An inkstand comprising a pyramidal body formed from a single sheet of metal, and having a suitable ink-well opening and a hinged cover, substantially as described.

410,220. SLED-PROPELLER. JOHN D. THOMAS, Petoskey, Mich., assignor of one-half to Amos H. Tyler, same place. Filed Oct. 9, 1888. Serial No. 287,904. (No model.)

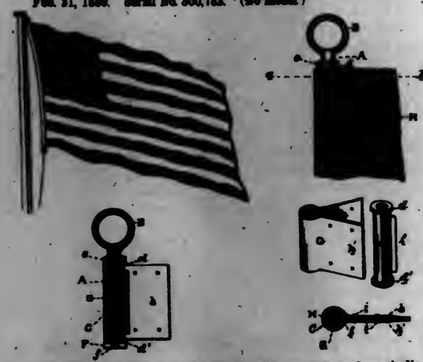


Claim.—1. The combination, with a sled, of the propeller-frame consisting of the arms D, removably secured upon the upper rails of the sled, and having upturned forward spring ends D' terminating in bearings C, and propeller-wheel A *a*, having crank-axle B journaled in said bearings C of the spring-arms D', as described, for the purposes specified.

2. The combination, with the frame of the propeller, of the shield attached to and forming part thereof, and the brace-rods adapted to be secured to the knees of the sled to support the forward end of the shield over the wheel, substantially as specified.

3. The combination, in a sled-propeller, with the sled and arms D, removably secured upon the top rail of the sled and having the forward upturned spring-arms D' terminating in bearings C, of the body E, seat G, supported upon spring standards G', propeller-wheel A *a*, having crank-axle B journaled in the ends of the spring-arms D', and brake-lever P, with cross-head R, all constructed and arranged to operate as described, for the purposes specified.

410,221. SWIVEL FOR FLAG-HALYARDS. HENRY B. THOMPSON, Philadelphia, Pa., assignor to Isabe Townsend, same place. Filed Feb. 21, 1889. Serial No. 300,732. (No model.)



Claim.—1. A swivel for flag-halyards, consisting of a spindle or axis provided with an eye or opening for the rope and inverted to rotate within a barrel or tube attached to the material of the flag, substantially as and for the purpose specified.

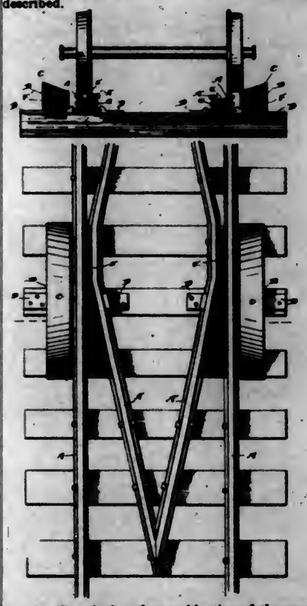
2. In a swivel for flag-halyards, the spindle A, provided with an eye or ring B, shoulder *c*, stem or pin *f*, and washer F, in combination with the barrel C, flanges *d d'*, lug *l*, clamp G, and rivets *i i*, substantially as shown and described.

410,222. RAILROAD ROLLING-STOCK RERAILING DEVICE AND BRIDGE-GUARD FOR SAFETY. DORR B. TILDEN, Cleveland, Ohio. Filed May 1, 1889. Serial No. 309,203. (No model.)

Claim.—1. In a rerailing device, the rerailing-frog B, being placed clear of the rail A, having its bearing-surface inclined toward the rail, as herein described, and having its upper bearing-surface higher than the top of the rail, substantially as and for the purpose described.

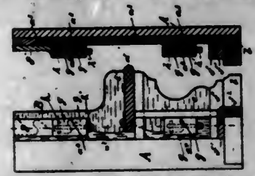
2. In a rerailing device, the combination of the rerailing-frog B, placed clear of the rail and inclined, as herein described, with rail A and guard-rails A' A', substantially as and for the purpose described.

3. In a rerailing device, the combination of the frog B with the fastening-plate D and rails A and A' A', substantially as and for the purposes described.



4. In a rerailing device, the combination of the rerailing-frog B with the plate D, rails A and A', lifter E, and bolt G, substantially as shown, and for the purposes described.

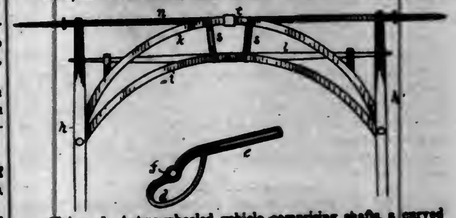
410,223. DIVISIBLE UPRIGHT PIANO. WILHELM UHLARK, New York, N. Y. Filed Aug. 20, 1888. Serial No. 283,315. (No model.)



Claim.—1. An improved divisible upright-piano case, the front section of which is shorter than the rear section, and which, when the sections are placed together, rests on the feet of the rear section.

2. An upright-piano case divisible into longitudinal sections and provided with beveled pieces, (having a series of inclined planes,) lock blocks or brackets with screws and nuts, as described, for the purpose specified.

410,224. TWO-WHEELED VEHICLE. WILLIAM J. WATSON, Decatur, Ill. Filed Feb. 15, 1889. Serial No. 300,003. (No model.)

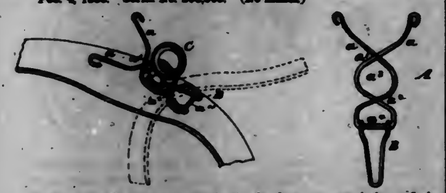


Claim.—1. A two-wheeled vehicle comprising shafts, a curved axle, a truss-brace connecting the shafts and axle and carrying a whiffletree, a circle-bar carrying a seat over the axle and connecting pivotally with the shafts, and a spring on the axle under the circle-bar, as set forth.

2. A two-wheeled vehicle comprising shafts, a curved axle, a truss-brace connecting the shafts and axle and carrying a whiffletree, a circle-bar carrying the seat, a spring on the axle carrying the rear part of the circle-bar, and stirrup-bars longitudinally adjustable on the ends of the circle-bar and pivotally connected with the shafts, as set forth.

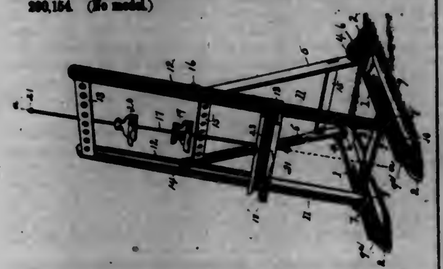
3. A two-wheeled vehicle comprising shafts *h h'*, curved axle *n*, truss-brace *i k s s*, connecting the shafts and axle and carrying whiffletree *l*, the circle-bar *b*, carrying seat *a*, the spring comprising parts *m*, *m'*, *m''*, and *o*, supporting the circle-bar and seat from the axle, and the stirrup-bars having loops *d d'* and slotted portions *e e'*, the said stirrup-bars being pivotally connected with the shafts and adjustably connected with the ends of the circle-bar, as set forth.

410,225. REIN-HOLDER. EDWARD WILSON, Hallsville, Ill. Filed Feb. 4, 1889. Serial No. 298,868. (No model.)



Claim.—A line, strap, or rein-tie for harness, consisting of the spring-wire A, made with elastic jaws *a a*, crossed at *a' a''* to form the expansible and contractible loop *a*², and provided with the hinged loop-piece B, whereby said tie may be used in the manner set forth.

410,226. EASEL. JAMES H. WHITE, Bennington, Vt., assignor of one-half to William C. Ball, same place. Filed Nov. 6, 1888. Serial No. 290,154. (No model.)



Claim.—1. An easel comprising a base, a vertically-slotted upright or frame removably pivoted thereto, a brace pivoted to said base and adjustably connecting said base or support and frame, and a thumb-screw connecting said brace and frame and adapted to clamp said brace and hold the frame in its adjusted position.

2. An easel comprising a slotted base, a frame or upright adapted to be removably pivoted at its lower end within said slots and having a vertically-slotted rear portion, a frame-brace pivotally connected at its bottom portion to said base, and means, as a thumb-screw, for adjustably connecting said frame and base in either vertical or angular position.

3. An easel comprising a base having open-ended slots respectively in its front portion and also rearwardly thereof, a frame having on its lower end one or more horizontally-extending pins or studs adapted to enter either of said slots, as desired, and to constitute journals for supporting said frame in either a vertical or angular or closed position upon said base, hooks pivoted to said base and adapted to engage said journals and hold the frame respectively in its adjusted and folded positions, a frame-brace pivotally secured at its lower end to said base, and a clamp or clamps for adjustably connecting the upper end of said frame-brake and frame together in their adjusted positions, and work-supports adjustably attached to said frame, substantially as and for the purpose set forth.

4. In an easel, the combination of a base, a frame having removable and adjustable pivotal bearing upon said brace, and a brace pivotally secured at its lower end to said base and adapted at its upper end to hold said frame in either vertical, angular, or parallel position upon and relatively to said base.

5. In an easel, the combination of a base, a frame pivotally connected to said base, a vertical rod secured to said frame, and shelves or work and tool supports carried by said rod and adapted to be vertically adjusted in position thereon.

6. An easel comprising a suitable frame, a vertical rod supported thereon, work-supporting devices having curved or flanged outer edges, a material-holding tray having vertical division-walls therein, provided with curved or dish-shaped upper edges to serve as rests for brushes and the like, said work and material supports having guide-bearing on said rod, as explained, and clamps for adjustably clamping said work and material supports in position upon said rod, substantially as set forth.

7. An easel having a base, a frame pivoted thereto, a brace pivotally attached at its lower end to said base and having adjustable connection at its upper end to said frame, a vertical rod supported on said frame, sleeves vertically adjustable upon said rod, and one or more shelves pivoted to said sleeves.

8. An easel comprising a base or support, a frame having pivotal connection with said support, a brace pivotally connected with said base and having adjustable connection with the frame to permit of the angular adjustment thereof, and the folding together of said base, frame, and brace, a vertical rod attached to said frame, sleeved work and material supports mounted upon said rod with capability of vertical adjustment thereon, and clamping devices for holding said work and material supports in adjusted position.

9. An easel comprising a base or support, a frame having pivotal connection therewith, a pivotal brace adjustably connected with said frame to permit of the angular adjustment thereof and also of the folding together of said base, frame, and brace, a vertical rod attached to said frame, material and work supports or clamps vertically adjustable upon said rod, and shelves having loose bearing upon the vertical rod.

10. An easel comprising a base or support, a frame having pivotal connection therewith, a pivotal brace adjustably connected with said frame to permit of the angular adjustment thereof and also of the folding together of said base, frame, and brace, a vertical rod attached to said frame, material and copy or work supports or clamps vertically adjustable upon said rod, and work-gripping fingers pivotally attached to the material-support and also to one or more of the work-supports.

410,227. STEAM-BOILER. JAMES R. WILSON, Reston, Pa., assignor of one-half to Frank Wilson, same place. Filed July 3, 1889. Serial No. 316,425. (No model.)



Claim.—1. The combination, with the casing A', of the detachable covering-plate a^5, having exit-opening for the products of combustion, and the pendent vertically-detachable boiler B, having central vertical imperforate interiorly-unobstructed dividing-chamber *b*, extending from front to rear of the combustion-chamber, and provided with the series of right and left horizontal water-tubes b' and b^2, extending to the walls of such combustion-chamber, whereby the interior space is divided centrally into two vertical right and left upwardly discharging chambers.

2. The combination, with the casing A', and with its detachable covering-plate, provided with smoke-exit opening, of the pendent upwardly-detachable boiler B, having central rectangular closely-fitting chamber *b*, extending from the front to rear of the interior space and dividing the same into two separate right and left chambers, which discharge upwardly, and provided with horizontal water-tubes b' and b^2, extending from the central chamber across the separated parts of the combustion-space, the supply-pipe b^3, extending through the casing at one side thereof, and the return-pipe b^4, extending through the casing at the opposite side thereof.

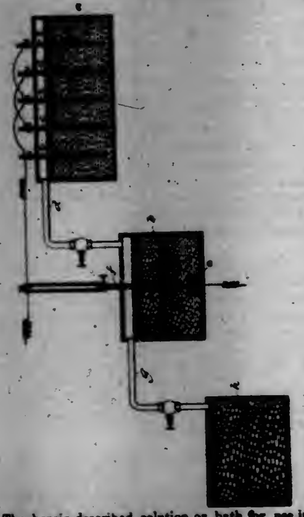
3. The combination, with the casing A', having vertical ways in the front and rear walls thereof, extending from the top of the wall downwardly and terminating in seats a^6 and a^7, of the boiler B, having projecting lugs B^2 and B^3, adapted to the vertical ways and to the seats a^6 and a^7.

4. The pendent upwardly-detachable steam-generator B, having central imperforate dividing-chamber *b*, right and left outwardly-closed horizontal water-tubes b' and b^2, and superposed superheating-chamber or steam-drum B', in combination with the inclosing-casing A', the combustion-chamber of which is of like horizontal area with the boiler and its tubes, and with the detachable covering plate or cap a^5 of such casing.

5. In a steam-boiler, the combination, with an inclosing-casing

which is provided with a detachable covering-plate and with supporting bearings or seats, of a boiler which is provided with projecting lugs which engage the supporting-bearings in the casing, whereby the boiler in its entirety is rendered vertically removable and replaceable.

410,228. SOLUTION FOR USE IN SEPARATING METALS FROM THEIR ORES. JACOB C. WHEWELL, Medford, Mass., assignor to the Electric Gold and Silver Chlorination Company, Kittery, Me. Filed Nov. 3, 1888. Serial No. 289,919. (Specimens.)



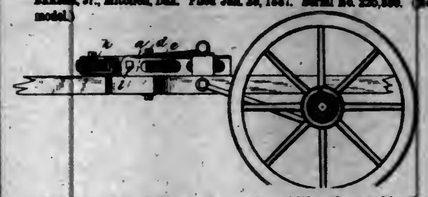
Claim.—The herein-described solution or bath for use in separating metals from their ores, consisting of chlorine in solution, sodium chloride, ammonium chloride, hydrochloric acid, and bichloride of mercury, as set forth.

410,229. HEATING-STOVE. CHARLES C. AUGUSTINE, Philadelphia, Pa., assignor to Steel, Van Rossum & Co., same place. Filed June 7, 1889. Serial No. 313,499. (No model.)



Claim.—In combination, the fire-pot, the dome, the inner and outer concentric cylinders, the ring interposed between the fire-pot and the dome and cylinders, said ring being constructed with flanges for seating the cylinders and dome and with flues inclining upwardly and outwardly to the smoke-space between the cylinders, with a horizontal flange extending between the seat-flanges c' c^2, said flange being inclined on its upper side to the flues and constituting the bottom of the smoke-space and having also an exit-opening X therein, the flue-sheets on either side of the opening, and the feed-door located in the fire-pot below the ring and the ports thereof, substantially as described.

410,230. SPRING DRAFT ATTACHMENT FOR VEHICLES. HIRAM BARBER, Jr., Mitchell, Dak. Filed Jan. 30, 1887. Serial No. 226,899. (No model.)



Claim.—1. In a draft attachment for vehicles, the combination, with the pole, of the tubular casing adapted to slide thereon, provided with a hook or clevis at its forward end and longitudinal slots in its top and bottom, a vertical bolt passing through the slots and the pole and provided at its upper end with a head and at its lower end with a nut, and the coiled spring interposed within the casing between its rear end and the fixed vertical bolt, whereby the spring is compressed when the casing is moved longitudinally forward on the pole, substantially as specified.

2. In a draft attachment for vehicles, the combination, with the pole, of the tubular casing adapted to slide longitudinally thereon and provided with the longitudinal slots in its top and bottom, the headed bolt passing downward through the slots in said casing and through the pole and secured by a nut on its lower end, the spring interposed between the bolt and the closed end of the casing, and the clasp or band g, secured to the pole and extending over the casing as a guide for its longitudinal movement, substantially as described.

3. In a draft attachment for vehicles, the combination, with the pole, of the tubular casing provided with the slots b c in its top and bottom, the rigid bolt d in the pole projecting through the slots in the casing, the clasp or band g, secured to the pole and extending over and around the casing, the hammer-strap connecting the head of the bolt and the fixed band g, and the coiled spring within the casing between its closed end thereof and the fixed bolt, substantially as specified.

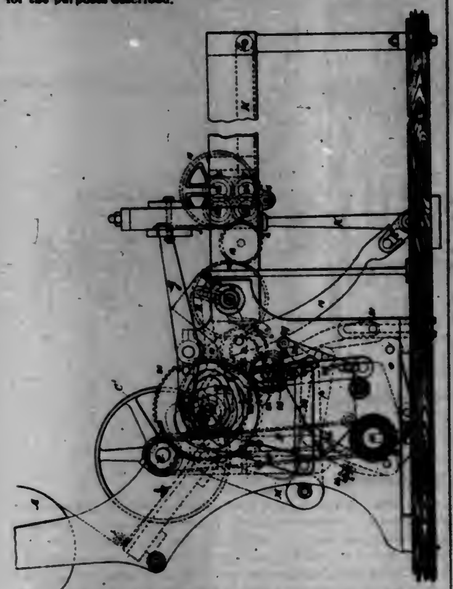
4. In a draft attachment for vehicles, the tubular casing a, provided with longitudinal slots in its top and bottom, the headed bolt d, projecting through the slots of the casing and through the pole and provided with a nut on its lower end for securing the casing to the pole, whereby it is adapted to move longitudinally back and forth thereon, the band g, secured to the pole and surrounding the casing as a guide to its longitudinal movement, the strap i, connecting the head of the bolt d with the band g, the coiled spring within the casing and bearing against its rear end, and the core f within the coil, having its head resting against the fixed bolt d, all combined and arranged substantially as and for the purpose described.

410,231. CIGARETTE-MACHINE. AMBROSE R. ROSS, London, England. Filed Sept. 3, 1886. Serial No. 294,403. (No model.) Patented in England July 8, 1887, No. 9,042.

Claim.—1. The combination, with the driving-shaft b and means for continuously rotating the same, of the eccentric and rod 10, transmitting motion therefrom, the pawl 9 and its carrying-lever actuated by said rod, the ratchet wheel, 8, intermittingly turned by said pawl, gearing driven by said wheel, comprising the large spur-wheel 11, on the same axis as the ratchet-wheel and fast therewith, the idle spur-wheel 12, large spur-wheel 13, pinions 14 15, and double-width pinion 16, as shown, the tobacco-feed rollers h h^2, driven by said gearing, and endless tobacco-feed band H, driven by said roller A, and the tobacco-pressing rollers h^3 h^4, substantially as described.

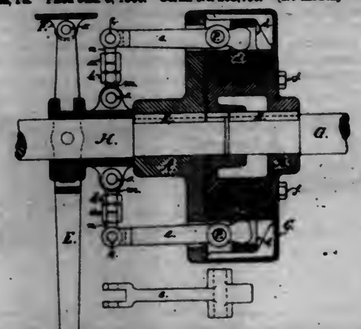
2. In combination with an endless cigarette-rolling band G, means for rotating the same, and suitable supporting, tightening, and right-forming devices, the pressing-roller 27, the bell-crank 28, carrying said roller, the bell-crank M, carrying said bell-crank 28, the cams 32 33, means for rotating said cams, and lever connections transmitting motion from the respective cams to the respective bell-cranks, substantially as described, for the purpose set forth.

3. In combination with an endless cigarette-rolling band G, means for rotating the same, and suitable supporting, right-forming, and pressing devices, the tightening-roller L, located at the side of the band opposite that on which the cigarette is discharged, and means for carrying, actuating, and adjusting said roller, comprising rocking levers l, in which the roller is mounted, a bell-crank N, which rocks said levers, and a set-screw 34, which is carried by one of these parts and adjusts said levers relatively to said bell-crank, substantially as and for the purposes described.



4. The combination, with the driving-shaft b and means for continuously rotating the same, of the segmental wheels 25 26, of different diameters, carried by said shaft, the pair of pinions 24, meshing both of said wheels successively, the rollers 22 23, carried by said pinions, and the endless cigarette-rolling band G, driven by said rollers, whereby said band is given an especially-accelerated motion at the moment when the cigarette is to be discharged, substantially as described.

410,232. FRICTION-COUPLING. RICHARD C. DURCHSLER, Philadelphia, Pa. Filed Jan. 8, 1889. Serial No. 296,708. (No model.)

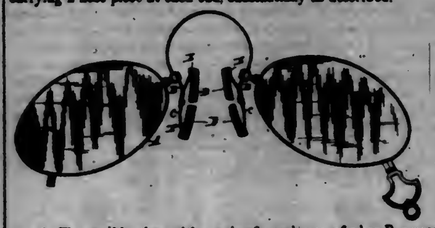


Claim.—The friction-coupling consisting of the hub B, adapted to be secured to shaft G, said hub being provided with annular V-shaped grooves upon its periphery, the hubbed plate A, adapted to be secured to shaft H, the levers c, fulcrumed in said plate A, the wedges d, provided with V-shaped projections and with yokes d', the adjustable toggle-links m n, and the sleeve D, all arranged to operate substantially as set forth.

410,233. EYEGLASSES. JOHN L. BORDEN, Philadelphia, Pa. Filed Mar. 28, 1889. Serial No. 304,462. (No model.)

Claim.—1. Eyeglasses having duplex nose-pieces attached to a carrier having a central connection with the eyeglasses and adjustable at right angles to the lenses, substantially as described.

2. The combination, with a pair of eyeglasses, of a bar B, a nose-piece carrier adjustably connected at its center with said bar B and carrying a nose piece at each end, substantially as described.



3. The combination, with a pair of eyeglasses, of a bar B, a nose-piece carrier adjustably connected to said bar B and having nose-pieces flexibly connected to each of its ends, substantially as described.

4. The combination, with a pair of eyeglasses, of a bar B, a spring attached thereto, and a nose-piece at each end of the spring, substantially as described.

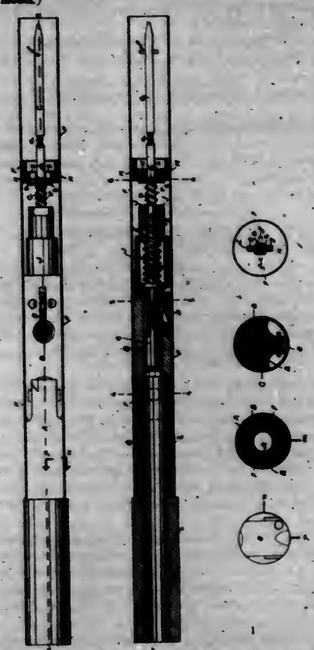
5. The combination, with a pair of eyeglasses, of a bar B, a carrier C, and nose-pieces D, pivotally attached to each end of the carrier, substantially as described.

410,234. SPECTACLE-CASE. WILLIAM W. BEILHART, Indiana, Pa. Filed Dec. 3, 1888. Serial No. 292,479. (No model.)



Claim.—In a spectacle-case, the shell having the longitudinal swell portions, the depressed portions at the sides thereof, and the longitudinal partition having the soft lining and having the extended end, substantially as specified.

410,235. FIRE-ARM. DANIEL A. DRAPER, East Cambridge, and ALFRED TORES, Malden, Mass. Filed Jan. 30, 1889. Serial No. 298,152. (No model.)

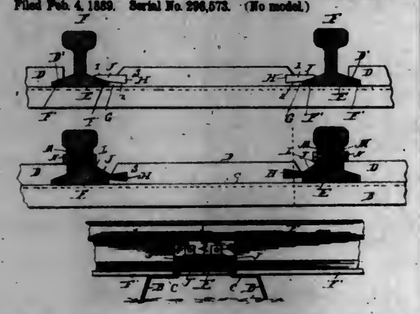


Claim.—1. The combination, with a barrel A, a breech-block B to open and close the barrel, and having a firing-pin C, a spring E, to actuate said firing-pin, and a trigger D, all substantially as described, of an extension G of the firing-pin, having a projection f, and a sleeve

F, having a partition H, to slide on and to abut against the projection *f* of said extension, substantially as described, for the purpose specified.

2. The combination, with a barrel A, a breech-block B to open and close the barrel, and having a firing-pin C, a spring E, to actuate said firing pin, and a trigger D, all substantially as described, of an extension G of the firing-pin, and which is of polygonal shape in cross-section, and has a projection *f* and a depression *a* between said projection *f* and the firing-pin, and of a sleeve F, having a partition H, with a hole *b* to fit said extension and its projection *f*, and to slide and rotate on said extension and to abut against and pass over its projection *f*, substantially as described, for the purposes specified.

410,236. RAILWAY-TIE. ALVAN B. FITCH, Franklin Grove, Ill. Filed Feb. 4, 1889. Serial No. 298,573. (No model.)



Claim.—1. In a railway-tie, the combination of the base-plates C, exterior cap D, provided with the recess D', interior cap S, provided with recess H, and the key J, provided with the flange or ledge L, substantially as shown, and for the purpose described.

2. The combination of the downwardly-divergent flanges B, the horizontal base-plates C, exterior cap D, provided with recess D', adapted to fit the outer rail-flange, interior cap S, provided with recess H, a suitable key J, provided with a level upper surface 1 and a lower beveled surface 2, and adapted to be received and held in said recess H, and rail F, provided with flanges F', substantially as shown, and for the purpose described.

3. The combination of the tie A, provided with lateral flanges B, base-plates C, outer cap D, provided with recess D', inner cap S, provided with recess H, rail F, provided with flanges F', and key J, provided with flange L, substantially as shown, and for the purpose described.

4. The combination of the tie A, provided with the lateral flange B, base-plates C, outer cap D, provided with recess D', inner cap S, provided with recess H, rail F, provided with lateral flanges F', key J, provided with flange L, fish-plates M, and transverse bolts N, substantially as shown, and for the purpose described.

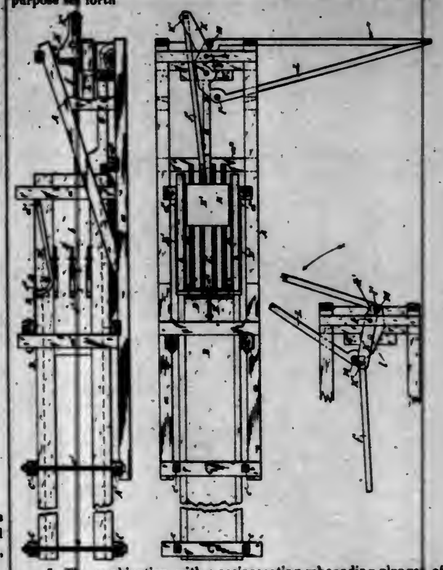
410,237. HAY-PRESS. JOHN H. GARDNER, Dalton, Ga. Filed Apr. 20, 1889. Serial No. 307,980. (No model.)

Claim.—1. The combination, with the press-chamber, of the folder at the top of the press-chamber, the long folder-arms pivoted to the press-chamber sides in line with the folder and having downwardly-bent guide portions bearing against the sides of the press-chamber, and a flat spring secured to the top of the press-chamber and bearing downwardly upon the folder, substantially as and for the purpose set forth.

2. The combination, with a press-chamber provided with longitudinal bars at its bottom and a frame supporting the said press-chamber and provided with a cross-sill under the ends of said bars, of a reciprocating rebounding plunger provided with a projecting buffer-bar sliding on said sill, and a downwardly-extending guide at the bottom of the buffer-bar between the said longitudinal bars of the press-chamber, and a buffer-block secured to the supporting-frame for the said buffer-bar to strike against, substantially as and for the purpose set forth.

3. The combination, with a press-chamber, and a frame supporting the said press-chamber, of a reciprocating rebounding plunger provided with a projecting buffer-bar at its lower part, said bar being adapted to slide upon a cross-sill of the frame and keep the plunger-face vertical, and a buffer-block secured to the said frame for the buffer-bar to strike against, substantially as set forth.

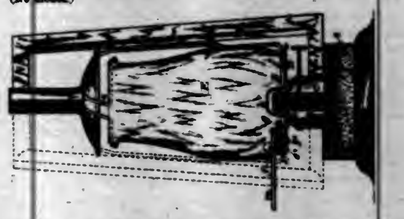
4. The combination, with a reciprocating rebounding plunger, of the push-lever provided with a short rearwardly-projecting limb and mounted on a vertical shaft, the pitman pivoted to the plunger and to the said lever, and an operating-lever pivoted between the said shaft and the plunger and provided with projections bearing against the said push-lever and its short limb, substantially as and for the purpose set forth



5. The combination, with a reciprocating rebounding plunger, of the bifurcated push-lever mounted on a vertical shaft and provided with a short rearwardly-projecting limb, the pitman pivoted to the plunger and to the said lever, and an operating-lever pivoted between the said shaft and the plunger and provided with vertical anti-friction rollers bearing alternately against the opposite sides of the push-lever and running along them, whereby the power of the operating-lever upon the plunger is increased during the stroke of the plunger, and adapted to strike against the said limb near the ends of the strokes of the operating-lever and throw the push-lever over the center, substantially as set forth.

6. The combination, with a press-plunger having its rear end higher than its face, of a top for the plunger, consisting wholly of a single plate of spring metal secured to the said higher rear end of the plunger and extending forwardly over the face-plate in a normally-horizontal straight line, substantially as set forth.

410,238. LAMP OR LANTERN LIGHTING DEVICE. LEWIS GERHARDT, Washington, D. C. Filed Dec. 11, 1888. Serial No. 293,263. (No model.)

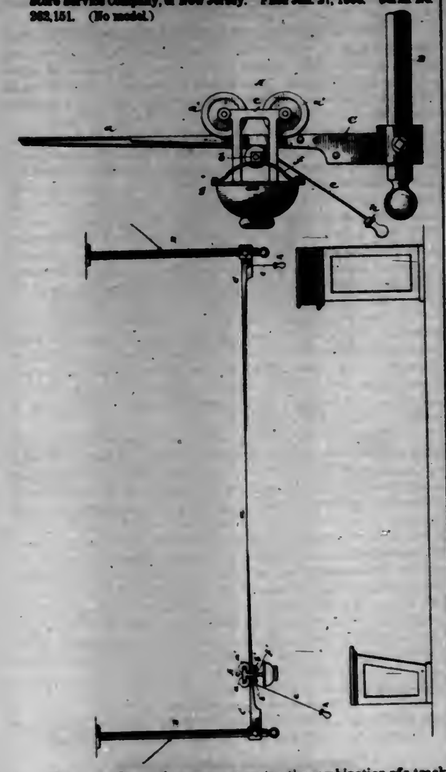


Claim.—1. A lamp-burner in which one of the chimney-retaining springs is provided with an enlarged portion adapted to cover an aperture formed in the chimney or globe, in combination with a chimney or globe provided with an aperture in the side and adapted to be turned, substantially as described.

2. The combination of an oil-reservoir, a lamp-burner and its glass globe provided with a perforation therein on the same level with said burner, a frictional plate secured at both of its ends to the globe-supporting plate of the burner, and a shutter secured to said supporting-plate, substantially as and for the purpose described.

3. The combination of a chimney or globe having a perforation in the side thereof with a lamp-burner having one of its chimney or globe retaining springs provided with a disk or enlarged portion and with a roughened plate secured at both ends to the burner, substantially as set forth.

410,239. STORE-SERVICE APPARATUS. JOHN H. GOSSELLOW, Troy, N. Y., assignor, by mesne assignments to the Lamson Consolidated Store Service Company, of New Jersey. Filed Jan. 27, 1888. Serial No. 262,151. (No model.)



Claim.—1. In a cash-carrier apparatus, the combination of a track having a wedge-formed extension, a propelling-cord below the track, and a carriage movable on the said track and having in its frame below the track a yielding roller to bind on said extension and constructed to receive the propelling-cord, substantially as set forth.

2. The combination, with the track of a store-service apparatus, of a wedge-shaped arm constituting a terminal extension of the track, a carrier provided with upper wheels running upon the track and with a lower yielding roller, and a propelling-cord extending between the track and the lower wheel, substantially as set forth.

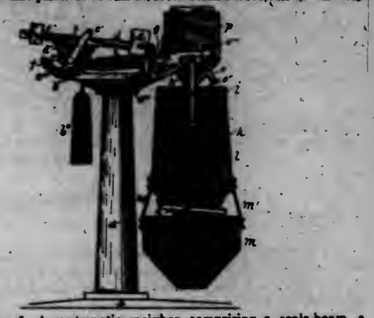
3. The combination, in a cash-carrier apparatus, of a wedge-shaped arm, a track, a propelling-cord, and a carriage provided with a yielding roller arranged to bear upon the arm, substantially as and for the purpose set forth.

410,240. WRENCH. HENRY HARRISON, New Haven, Conn. Filed Nov. 22, 1888. Serial No. 291,521. (No model.)



Claim.—The handle A, having the side rabbets *p* and the socketed leg *c*, combined with the jaw B, having the parallel bars *a*, provided in their edges with the grooves terminating in the shoulders *h*, as described, said bars fitting and secured by their outer end portions in said handle-rabbets, the sliding jaw having a longitudinal screw-socketed shank *x*, said shank being of H shape in cross-section engaging and movable on said parallel jaw-bars, and an operating-screw engaging said sliding jaw screw-socket provided with the enlarged thumb-rim *l*, confined against endwise movement between said handle-lug and bar-shoulders and provided with the axial stud-bearing in the said handle-lug socket, substantially as described.

410,241. AUTOMATIC GRAIN-WEIGHER. CHARLES J. HARTLEY, Decatur, Ill., assignor of two-thirds to John K. Warren and Bradford K. Durbin, same place. Filed Jan. 30, 1889. Serial No. 298,041. (No model.)



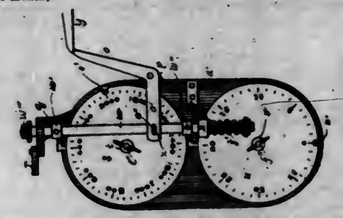
Claim.—1. An automatic weigher comprising a scale-beam, a weighing-receptacle supported from an end of the scale-beam, and a weight-beam acting on the opposite end of the scale-beam and having two fulcrums at different distances from said end, as and for the purpose set forth.

2. An automatic weigher comprising a weighing-receptacle supported from an end of a scale-beam, a weight-beam acting on the opposite end of the scale-beam and having two fulcrums at different distances from said end, a supply-hopper, and a partial closure for the hopper adapted to operate at the time the weight-beam shifts from one fulcrum to the other, as and for the purpose set forth.

3. In automatic weighers, in combination, the scale-beam *b*, the weighing-receptacle *l*, dependent from the scale-beam, the weight-beam *d*, fulcrumed in frame *c* and resting on the scale-beam, and frame *c*, embracing the weight-beam and pivoting on the permanent pivot *c'*, as and for the purpose set forth.

4. In automatic weighers, in combination, hopper *p*, having contracted outlet *p'*, compartment *w*, having contracted outlet *w'*, spout *u*, adapted to swing under outlet *w'*, and swinging partition *t* in outlet *p'*, having arm *t'* presented to the spout, as and for the purpose set forth.

410,242. REGISTER AND AUTOMATIC STOP. CHARLES J. HARTLEY, Decatur, Ill., assignor of two-thirds to John K. Warren and Bradford K. Durbin, same place. Filed Feb. 11, 1889. Serial No. 299,599. (No model.)



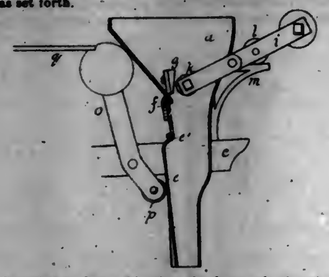
Claim.—1. A stop for registers comprising the graduated and numbered disks, the disks rotatingly adjustable on the disks, numbered to correspond with the disks, but in the reverse direction, and having peripheral notches at the zero-points, and a longitudinally-movable bar having catches adapted to the notches and resting ordinarily on the peripheries of the disks, as set forth.

2. A stop for registers comprising the graduated and numbered disks, the disks rotatingly adjustable on the disks, numbered to correspond with the disks, but in the reverse direction, and having peripheral notches at the zero-points, a longitudinally-movable bar traversing the faces of the disks, and catches movable on the bar and adapted to the notches of the disks, as set forth.

3. In register-stops, in combination, disks *s* and *u*, rotatingly adjustable and having notches *s'* and *u'*, bar *w*, longitudinally movable in brackets *q* and *z*, catch-arms *w'* and *w''*, adjustable on the bar, spring *x'*, tending to draw the bar downward, and lever *o o'*, connected with the bar, as set forth.

410,243. AUTOMATIC GRAIN-WEIGHER. CHARLES J. HARTLEY, Decatur, Ill., assignor of two-thirds to John K. Warren and Bradford K. Durbin, same place. Filed May 17, 1889. Serial No. 311,107. (No model.)

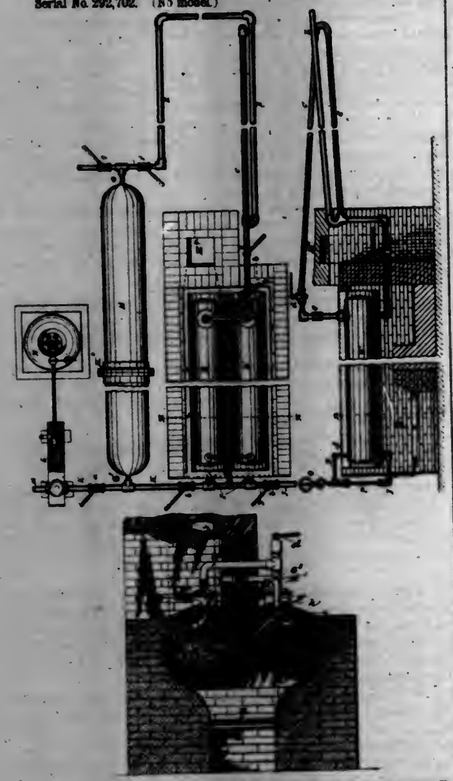
Claim.—1. In weighers, in combination, the beam supporting the weighing-receptacle, the hopper having the swinging side, the arm on the swinging side carrying the adjustable incline, and the weighted lever resting ordinarily on the beam and acting intermittently on the incline, as set forth.



2. In weighers, in combination, the hopper having the swinging side, the weighted arm having the extension adapted to the lower end of the swinging side, and the trip-bar to hold the weight in unstable equilibrium, as and for the purpose set forth.

410,244. APPARATUS FOR DISTILLING ANHYDROUS AMMONIA.

JOSEPH E. HOLMES, Washington, D. C., assignor to the American Automatic Refrigerating Company, Richmond, Va. Filed Dec. 5, 1888. Serial No. 292,702. (No model.)



Claim.—1. The combination of the water-tank A, the furnace R, the stills B B, located in the tank, the vapor-eduction pipe C, connected to the drip-pipe D, said drip-pipe and inlet-pipe K, provided with stop-cocks *b* and *b'*, substantially as and for the purpose described.

2. In combination, the transferring-receptacle H, having a movable diaphragm, the pipe K, provided with the stop-cocks *a* and *b*, the pipe E, the pump L, and the stills B B', as and for the purposes described.

3. In combination, the transferring-receptacle H, the pipe K, vapor-pipe E, provided with the stop-cock *f*, and suitable tanks, holders, or mains communicating with pipe E by a pipe having stop-cock *g*, all as and for the purposes described.

4. The combination of a still, the receptacle provided with a flexible diaphragm, pipes connecting the still with the receptacle on each side of the diaphragm, and stop-cocks, whereby the pressure of gas or vapor in the still can at times desired be made to discharge liquid from the receptacle into the still, substantially as and for the purposes described.

5. The combination of a still, a receptacle divided by a sack-like flexible diaphragm, a pipe communicating with the still and also with the receptacle on one side of the diaphragm, a second pipe communicating with the upper part of the still and with the receptacle on the opposite side of said diaphragm, and stop-cocks and inlets and outlets, substantially as set forth, whereby the still and the receptacle can be filled with ammonia-water and ammonia simultaneously delivered from the other side of the diaphragm, and whereby also ammonia-water can be subsequently expelled from the receptacle and the receptacle simultaneously filled with ammonia on the opposite side of the diaphragm.

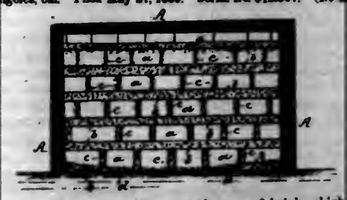
6. The combination, with a holder or receptacle for anhydrous ammonia, of stills, a pump, and a transferrer, as H, the latter being connected with the pump and stills by pipes to receive water from or discharge it into either still, and also to receive ammonia from a still and simultaneously with its reception of water to discharge said ammonia into a holder in a refrigerator or elsewhere without loss of pressure, substantially as specified.

7. The combination, with a holder or receptacle for anhydrous ammonia and with one or more water-vessels connected by pipes having suitable cocks to receive alternately spent ammonia from a vessel for expanding the same, and connected by similar pipes having cocks with stills, of said stills, a pump, and a transferrer, as H, the latter being connected with the pump and stills by pipes to receive water from or discharge it into either still, and also to receive ammonia from a still and simultaneously with its reception of water to discharge said ammonia into a holder in a refrigerator or elsewhere without loss of pressure, substantially as specified.

8. In a distilling apparatus, the combination of a tank or boiler, a still, and a pipe or conduit, the still being located in the water-space of the boiler and the pipe communicating with the steam-space of the boiler and passing through the interior of the still, whereby the latter can be externally heated by water and internally by steam, substantially as set forth.

410,245. PROCESS OF BURNING BRICK.

JAMES M. JAMESON, Los Angeles, Cal. Filed May 27, 1889. Serial No. 312,307. (No model.)



Claim.—The process in the manufacture of brick which consists in placing a layer of fuel—such as coal, brea, or crude petroleum—upon the floor of the kiln, which floor of the kiln is made to incline toward the center, placing a layer of brick in zigzag rows, each brick and row being slightly separated to form interstices between the brick, filling such interstices with similar fuel used to form the first layer, and covering the brick with said fuel to form a bed for the second layer of brick, again placing a layer of brick in zigzag rows, with interstices between the brick and rows, upon the second bed of fuel, again filling such interstices with fuel and forming a third bed of fuel, and so on, alternately forming a bed of fuel and layer of brick in zigzag rows with interstices between the same until the top of the kiln is reached, the interstices between the brick in each succeeding layer decreasing in width as the pile approaches the top of the kiln, where they disappear, as and for the purposes described and shown.

410,246. MACHINE FOR FOLDING AND STITCHING THE EDGES OF CANVAS.

BURR A. KENNEDY and JOHN P. STEWARD, Chicago, Ill. Filed June 26, 1888. Serial No. 278,161. (No model.)

Claim.—1. The bed or table and the two folding mechanisms at opposite sides, in combination with the intermediate pressure-plate, the rolls beyond said plate, and the two sewing-machines beyond the rolls, whereby the machine is adapted to fold, press down, and finally stitch down the two edges of the fabric.

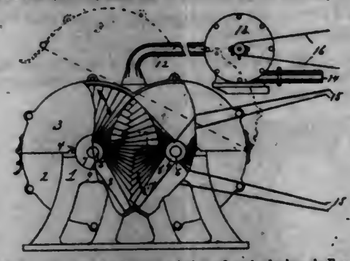
2. In combination with the table, the overlying plate F to act on top of the fabric, its sustaining-arms, the folding-plates f^1, and the folding-plate *g*, overreaching the end of plate F, as shown.



3. In a machine for folding and stitching the opposite edges of a fabric simultaneously, the combination of a supporting bed or table, a folding mechanism and a sewing mechanism at each side of the table, and a feed mechanism located between the folding and the sewing mechanisms and extending across the path of the fabric from side to side, whereby the fabric is advanced equally at the two sides and the feed devices of the sewing-machines relieved from labor.

410,247. APPARATUS FOR ATOMIZING SOLID SUBSTANCES.

SMITH W. KIESER, Denver, Colo., assignor of two-thirds to Charles H. Abbott and Sidney McClanahan, same place. Filed Apr. 16, 1889. Serial No. 307,394. (No model.)



Claim.—1. A pulverizer consisting of an inclosing shell or casing, two shafts mounted to rotate therein, and a series of fingers or beaters on and projecting from each shafts and arranged thereon spirally, the pitch of the spiral on one shaft being different from that on the other shaft, and the fingers or beaters on one shaft passing on rotation through the inter-finger spaces of those on the other shaft, substantially as set forth.

2. The combination of the inclosing case or shell, two shafts mounted to rotate therein parallel to each other, and the fingers or beaters 8, constructed in pairs projecting from a hub 9 and inclined or tapered on their opposite edges 17 and on their faces 18, said fingers or beaters being arranged spirally on the shafts, the pitch of the spiral on one shaft being twice that of the spiral on the other shaft, substantially as set forth.

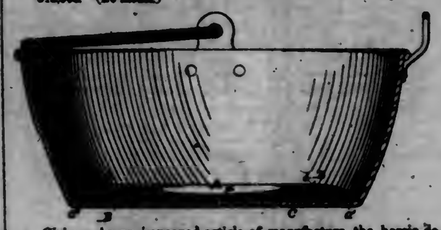
3. The combination of the shell or casing made in two parts pivotally or detachably secured together and having inlet and outlet openings at opposite ends, two shafts mounted to revolve within the shell or casing and parallel to each other, the series of beaters or fingers arranged spirally thereon, the pitch of the spiral on one shaft being different from that on the other, and an exhaust apparatus connected to the outlet, substantially as set forth.

4. The combination of the shell or casing formed of the parts 2 3, the shafts arranged to rotate therein and parallel to each other, the fingers or beaters 8, formed in pairs and projecting each pair from a hub 9 and arranged spirally on the shafts, the pitch of the spiral on one shaft being different from that on the other, the exhaust 12, and pipe 12, connecting such fan to the outlet 11, substantially as set forth.

5. The combination, with the shafts 5 6, each having the spirally-arranged series of beaters or fingers 8, the pitch of the spiral on one shaft being different from that on the other, of a casing having the contour in cross-section of the intersecting circles described by such beaters or fingers when rotated, substantially as set forth.

410,248. FALSE BOTTOM FOR BOILING KETTLES, PANS, &c.

THEODORE A. KNEISEL, Kansas City, Mo. Filed June 6, 1889. Serial No. 313,202. (No model.)



Claim.—As an improved article of manufacture, the herein-described false bottom for culinary vessels, the same struck from sheet metal and having a central concavity or depression surrounded by a raised and rounded rib *b*, which is provided with a series of perforations B, and a depending outwardly-flared flange *c'*, the lower edge of which is slightly below the plane of the lowest point of the central depression, all arranged substantially as and for the purpose specified.

410,249. ROAD-SCRAPER.

MARY P. LOMONT, Fort Wayne, Ind., administratrix of Francis T. Lomont, deceased. Filed Jan. 31, 1889. Serial No. 298,302. (No model.)

Claim.—1. The combination, in a road-scraper, of the draft-bars, the scraper having the plates or ears connected to and adapted to slide on the draft-bars, and the rearward-extending brackets or guides secured to the scraper and engaging the draft-bars, substantially as described.

2. The combination, in a road-scraper, of the draft-bars, the pivoted scraper, the racks guided on the scraper and having the pins or keys adapted to engage openings in the draft-bars, and the gear to operate the said rods, substantially as described.

3. The combination, in a road-scraper, of the draft-bars, the scraper connected thereto and adapted to oscillate thereon, the levers E', connected to the draft-bars, the hand-levers, and the links connecting the same to the levers E', substantially as described.

4. In a road-scraper, the combination of the main frame having the depending pivot-shaft A^1, the scraper pivotally connected to the said shaft and adapted to move vertically thereon, the draft-bars connected to the scraper and forming guides and support for the same, and the levers connected to the draft-bars and adapted to raise and lower them, substantially as described.

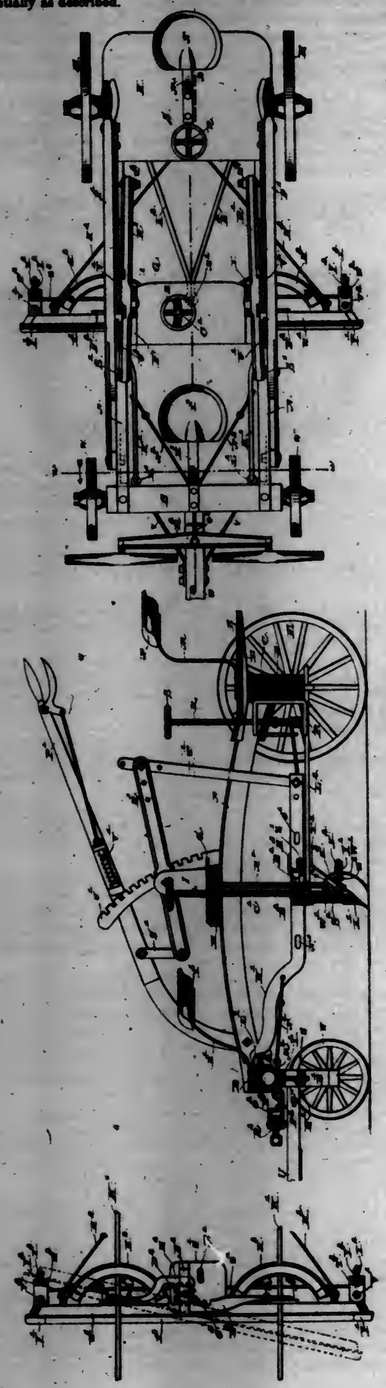
5. The combination, in a road-scraper, of the main frame having the depending pivotal shaft, the scraper pivoted thereon, the draft-bars connected to and forming the guides and supports for the scraper, the levers to raise and lower the draft-bars, the shaft journaled in bearings on the scraper and having the pinion and the racks engaging said pinion, and having the keys or pins to engage openings in the draft-bars, for the purposes set forth, and means, substantially as described, to adjust the scraper, substantially as set forth.

6. The combination, in a road-scraper, of the main frame having the depending central pivotal shaft, the draft-bars, the scraper pivoted on the depending shaft and connected to the draft-bars, and the bounds or braces connecting the lower ends of the pivotal shaft to the rear trusk, for the purpose set forth, substantially as described.

7. In a road-scraper, the combination, with the scraper having the ears or brackets on its rear side, of the pivotal bolts in said ears or brackets, the plows or shovels loosely connected to the upper ends of said pivotal bolts, the springs bearing on the plows or shovels, and the transverse rods connecting the same, for the purpose set forth, substantially as described.

8. The combination, with the scraper having the ears or brackets on its rear side, of the pivotal bolts in said ears or brackets, the plows or shovels loosely connected to the upper ends of said pivotal bolts, the eyebolts engaging the pivotal bolts and extending rearward to the plows or shovels, the adjusting-nuts on said eyebolts, and the springs

bearing against the adjusting-nuts and against the plows or shovels, substantially as described.

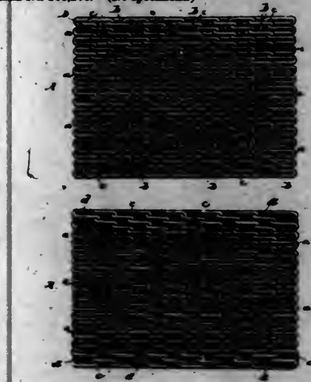


9. The combination, with the scraper, of the plows or shovels flexibly connected thereto and having the extended points at their inner lower corners, for the purpose set forth, substantially as described.

10. In a road-scraper, the combination, with the frame and its truck, the latter provided with a tongue, of the scraper-bar suspended loosely by the frame, a hammer-strap mounted on the draft-bar and connected to the whiffletree, and links for connecting the hammer-strap directly to the scraper-bar in rear of its connection with the frame, substantially as specified.

11. In a road-scraper, the combination, with a main scraper-blade, of detachable scraping-blades arranged in rear thereof, and means for adjusting the same to and from the main blade, substantially as specified.

410,250. WIRE BELTING. THOMAS MIDDLEY, Beaver Falls, Pa., assignor of one-half to James R. Emerson, same place. Filed Apr. 6, 1889. Serial No. 306,276. (No specimens.)



Claim.—1. Wire belting composed of intertwined transverse sections of elongated helices, the ends of one section being bent back into the body of an adjacent section and crossing the ends of said sections longitudinally on the edges of the belting, substantially as described.

2. Wire belting composed of intertwined transverse sections of elongated helices, having the ends of the sections bent back into the body of the belting and the interstices on the edges filled with rubber, substantially as described.

410,251. WIRE BELTING. THOMAS MIDDLEY, Beaver Falls, Pa., assignor of one-half to James R. Emerson, same place. Filed July 15, 1889. Serial No. 317,537. (No model.)



Claim.—1. Wire belting composed of layers of intertwined transverse sections of coiled spring-tempered wire, having the ends of adjacent sections interlocked at the edge of the belt, substantially as described.

2. Wire belting composed of a plurality of layers of intertwined transverse sections of coiled wire, having the edges of the belting formed of interlocked ends of the sections in one layer with the ends of the sections in an adjacent layer, substantially as described.

3. Wire belting composed of a plurality of layers of intertwined transverse sections of coiled wire, the edges of the belting having a plurality of separate longitudinal layers or rows of interlocked ends of the sections of which the belting is composed, substantially as described.

410,252. CUSPIDOR. PARKER I. PERRY, Oakland, Cal., assignor of one-half to R. P. M. Crosby, same place. Filed May 23, 1888. Serial No. 311,886. (No model.)

Claim.—1. As an improved article of manufacture, the herein-described cuspidor, the same comprising a cylindrical body B, a funnel F, carried by the upper end thereof, and a receiver R, pivoted within the body on a transverse axis, substantially as described.

2. As an improved article of manufacture, the herein-described



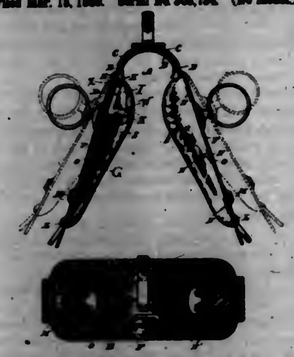
cuspidor, the same comprising a cylindrical body B, having its lower end open, a funnel F, mounted on the upper end of said body, an oval receiver R, arranged within the body with one of its longer sides adjacent to the sides of said body, and pivots at the ends of said receiver connecting it with said body, substantially as described.

3. As an improved article of manufacture, the herein-described cuspidor, the same comprising a cylindrical body B, having its lower end open, a funnel F, mounted on the upper end of said body, an oval receiver R, arranged within the body with one of its longer sides adjacent to the side of said body, pivots at the ends of said receiver connecting it with said body, a spring-tongue T, carried by the body and having a depression *t* near its free end, and a rib *r* at one side of the receiver adapted to engage said depression to hold the parts in their normal positions, substantially as described.

4. As an improved article of manufacture, the herein-described cuspidor, the same comprising the cylindrical body B, having its lower end open, a funnel F, mounted in the upper end of said body and having a reduced lower open end, perforated loops L, attached to the inner side of the body near its lower end, and an oval receiver R, arranged within the body with one of its longer sides adjacent to the side of the body, said receiver having studs S at its ends near its lower edge adapted to pivotally connect it with the body, substantially as described.

5. As an improved article of manufacture, the herein-described cuspidor, the same comprising a cylindrical body B, having its lower end open, a funnel F, mounted on the upper end of said body and having a reduced lower open end, a downwardly-projecting flange J, surrounding said lower open end, an oval receiver R, arranged within the body with one of its longer sides adjacent to the side of the body, the other free side projecting to a point beyond said flange, and pivots at the ends of said receiver connecting it with said body, substantially as described.

410,253. HARNESS-SADDLE. JOSEPH I. RICHARDS, Pentwater, Mich. Filed Mar. 18, 1889. Serial No. 303,734. (No model.)



Claim.—1. The combination, in a harness-saddle, of an arched plate mounted upon a foundation of leather having its opposite ends extended downward, a metallic pad provided with a bracket upon its inner side and having a threaded aperture, a perforated metallic plate, an outer covering over the plate and downwardly-extending ends of the leather foundation, and a terret having a threaded shank arranged to pass through said cover, plate, and end and to screw into the threaded aperture in the bracket, whereby these parts are clamped together, in the manner and for the purpose described.

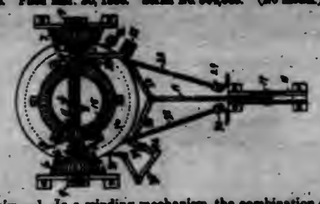
2. In a harness-saddle, the combination of a metal pad, a bracket located upon the inner side of the pad, a perforated metallic plate forming a seat for the pad, a saddle provided with downwardly-extending ends overlapping said plate, and a terret provided with a threaded shank passing through said ends and plate and screwing into a threaded aperture in the bracket, all arranged and adapted to operate substantially as described.

3. In combination with a saddle-tree mounted upon a leather foundation having downwardly-extending ends, a terret provided with a threaded shank, a metallic pad having a threaded bracket upon its inner side, a perforated metallic plate forming a seat for the pad, said plate being provided with an eye upon its lower end to receive a buckle, and an extension upon the lower end of the pad, which extension is arranged to be fastened down upon the outside of the saddle, in the manner and for the purpose described.

4. In a harness-saddle, a metallic pad provided with a threaded bracket upon its inner side, a perforated metallic plate forming a seat for the bracket, and integral flaps arranged along the edges of the pad, whereby it is riveted to the saddle, in combination with a terret having a threaded shank arranged to pass through the perforation in said plate and to engage the threaded aperture in the pad-bracket, in the manner and for the purpose set forth.

5. In a harness-saddle, a metal pad provided with devices for securing it to the under side of the saddle, and having its lower end bent over and fastened down upon the outside of the saddle, in the manner and for the purpose described.

410,254. WINDING MECHANISM. SAMUEL S. EMERSON, Denver, Colo. Filed Mar. 20, 1889. Serial No. 304,023. (No model.)



Claim.—1. In a winding mechanism, the combination of a shaft, gear-wheels loose thereon, a gear-wheel rigid thereon, a main driving-wheel meshing with the loose gear-wheels, a clutch mechanism on such shaft for locking and unlocking the loose gears to and from the shaft, means for operating such clutch mechanism, a winding-drum, and a gear-wheel thereon meshing with the gear-wheel rigid on the shaft, substantially as described.

2. In a winding mechanism, the combination of a shaft, gear-wheels loose thereon, a gear-wheel rigid thereon, a main driving-wheel meshing with the loose gear-wheels, a clutch mechanism sliding on such shaft and at will locking one loose gear to and unlocking the other from the shaft or disconnecting both therefrom, a brake, means for operating the clutch mechanism and applying the brake in the intermediate position thereof, a winding-drum, and a gear-wheel thereon meshing with the loose gear-wheels, substantially as set forth.

3. The combination of a shaft, gear-wheels loose thereon, a gear-wheel rigid thereon, a main driving-wheel meshing with the loose gear-wheels, a clutch mechanism sliding on the shaft, a winding-drum, and a gear thereon meshing with the gear rigid on the shaft, the shaft and winding-drum and its gear being located in planes parallel to the plane of and immediately beneath the main driving-wheel, substantially as set forth.

4. The combination of main driving-wheel 4, shaft 8, loose gears thereon, rigid gear 11, winding-drum 16, with gear 15, the clutch mechanism sliding on the shaft, the collar on the clutch mechanism, the angled lever 20 21 21, rod 19, and lever 17, substantially as set forth.

5. The combination of the main driving-wheel, the transverse shaft, loose gears thereon, a gear rigid thereon, a winding-drum having a gear meshing with the gear rigid on the shaft, a clutch mechanism sliding on the shaft, means, as described, for moving such clutch mechanism, a brake adapted to take on the winding-drum, and a lever 35, connected to and adapted to operate such brake, and a lever connected to the clutch mechanism for operating or moving such first lever, substantially as set forth.

410,255. RING-SPINNING FRAME. WILLIAM R. SHARPLES, Fall River, Mass. Filed Aug. 20, 1888. Serial No. 284,147. (No model.)



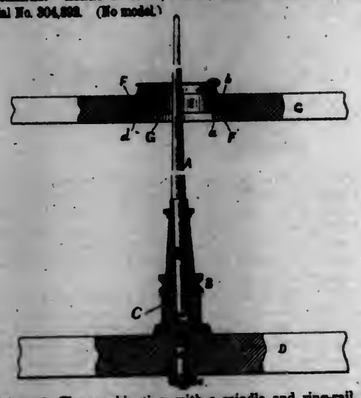
Brief.—The invention relates to the construction of the separator-plates and to the means for retracting them to allow the rail to rise.

Claim.—1. The combination, with the ring-rail and its rings, of a series of separators, each composed of the plate portion *m* and a rib portion *m'*, projecting laterally from the plate portion, and having its edge inclined, as described, between the points 3 4, the said separators being located above the rings, whereby both the plate and rib portions can act upon the threads, and a support for the separators, substantially as set forth.

2. The combination, with the ring-rails, the lifting-rods, the levers J J, rock-shafts J', the arms K, and the connecting-rod L, of a series of separators, the crank-arms O, for supporting the separators, a lever P, connected with the separators, and a block R, located on the rod L, for engaging the lever P and moving the separators rearwardly, said block having an inclined plane *r* and face *r'*, substantially as set forth.

3. The combination, with the ring-rail, the lifting-rods, the levers J, rock-shafts J', arms K, and connecting-rod L, of a series of separators, crank-arms O, for supporting the separators, a lever P, connected with the separators, a block R, located on the rod L, for engaging the lever P and moving the separators backward, said block having an inclined plane *r* and face *r'*, and means, substantially as described, for returning the separators to normal position, substantially as set forth.

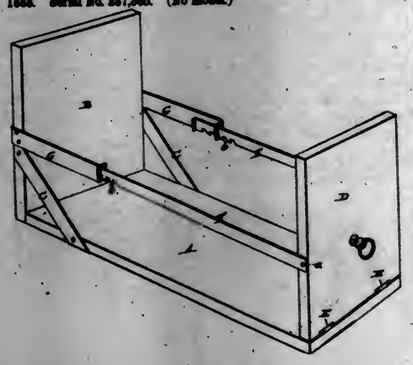
410,256. **FLEXIBLE SUPPORT FOR RINGS OF RING-SPINNING MACHINES.** HENRY F. SHAW, Boston, Mass. Filed Mar. 26, 1889. Serial No. 304,892. (No model.)



Claim.—1. The combination, with a spindle and ring-rail, of a ring surrounded by a rubber spring, which contacts with the said ring and ring-rail, so as to form a flexible connection between the same, as and for the purposes set forth.

2. The combination, with a spindle, ring-rail, and ring, of a flexible ring-support interposed between the said ring and ring-rail, whereby the said ring is permitted to move horizontally about the axis of the spindle or its proper center of rotation, so as to coincide with any gyratory motion which may be imparted to the spindle while in motion.

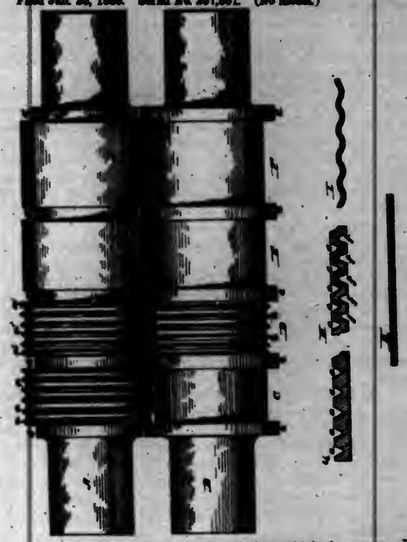
410,257. **FILE-BOX.** ISRAEL S. SMITH, Sr., Washington, D. C., assignor of one-half to Charles M. Martin, same place. Filed Oct. 6, 1888. Serial No. 287,205. (No model.)



Claim.—1. In a file-box, the base-board and the two end boards, one fixed rigidly thereto and the other hinged thereto, in combination with the side bars connecting said end boards and serving also to retain the papers in position, each side board consisting of a slotted portion G, attached to one of the end boards, and of a toothed portion F, attached to the opposite board.

2. In a file-box, the base-board, the rigid end board rising therefrom, and the arm G, rigidly attached to said end board and having the laterally-bent and slotted ends, in combination with the end board D, hinged to the base-board, and the toothed side bars F, pivoted at one end to the board D and extended at the opposite end through the arms G, as shown.

410,258. **ROLLS FOR ROLLING BARS INTO SHEETS.** EDWIN D. WASSELL, Pittsburg, Pa., assignor to Ann Isabell Wassell, same place. Filed Jan. 26, 1889. Serial No. 297,861. (No model.)



Claim.—1. The rolls herein described, in which the upper roll in the first pass is provided with a series of bead-like projections and the lower roll is a plain cylinder, the second pass having projections corresponding with those of the first pass for holding the bar, and bead-like projections on the lower roll for corrugating the bar, and a pass or passes having plain surfaces on both rolls for distending the bar laterally, substantially as set forth.

2. The rolls herein described, in which the upper roll in the first pass is provided with a series of bead-like projections and the lower roll is a plain cylinder, the second pass of the same width as the first, and the upper roll having projections like those of the first pass for holding the bar, and bead-like projections on the lower roll alternating with or intermediate of the projections on the upper roll for corrugating the bar, and a pass or passes for flattening and distending the bar laterally, substantially as set forth.

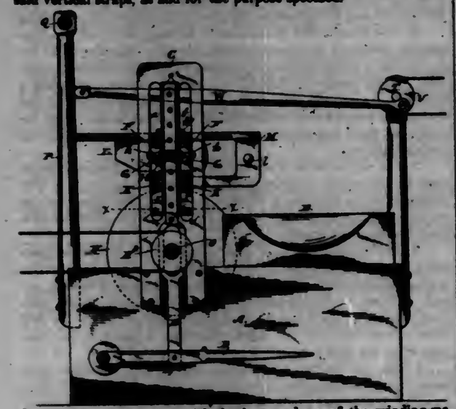
410,259. **MACHINE FOR GRINDING AND POLISHING CUTLERY.** HENRY A. AXTELL, Turner's Falls, Mass. Filed Dec. 19, 1888. Serial No. 294,066. (No model.)

Claim.—1. In a machine for grinding and polishing cutlery, the combination, with the grindstone having a motion away from the operator, of the knife-holder, substantially as described, supported on a suitable carriage and moved away from the operator by the motion of the stone, and the vibrating tongue moved by suitable means from the source of power to return the holder toward the operator, as set forth.

2. The knife-holder formed with a head, hand-holes, and two limbs, one long and one short, adapted to straddle the rollers of the carriage, the longer adapted to enter into an opening of the capping-block and extend within reach of the vibrating tongue, and the shorter serving as a flat base to receive the knife to be ground, substantially as set forth.

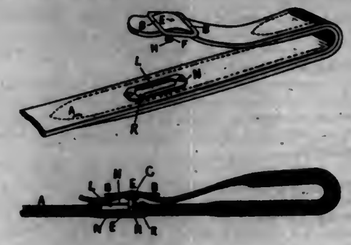
3. The combination, with the carriage for the knife-holder, formed as set forth, and the movable journal-blocks cushioned upon suitable springs, of the metal straps, the bars adjustably fixed thereto by pins and bearing upon the ends of the shafts of the knife-holder carriage,

and the foot-levers pivoted to the base of the box and hinged to the said vertical straps, as and for the purpose specified.



4. The combination, with the box or base of the grinding-machine and opposite uprights provided with vertical slots, of blocks, as described, fitting in said slots and adjustably clamped to said uprights, movable blocks fitting in the slots of said uprights, forming journal-bearings for the shafts of the knife-holder carriage, springs, as bearings, fixed between the said fixed bearings and the said movable bearings, and the carriage formed of two shafts journaled in the said movable bearings, side pieces collared on said shafts, and a capping-piece provided with an opening for a guide-rod of the knife-holder, and spools encircling the said carriage-shafts, substantially as and for the purpose set forth.

410,260. **FASTENING FOR REINS.** CHARLES H. BAGLEY, Boston, Mass. Filed Feb. 5, 1889. Serial No. 299,743. (No model.)



Claim.—A rein-fastening consisting of the loop-frame B, having a cross-bar C, provided on one side with a stud E and on the opposite side with a stud F, having a head H, and the rein A, provided with slotted plates N, adapted to receive the said stud F, as shown and described, as and for the purposes set forth.

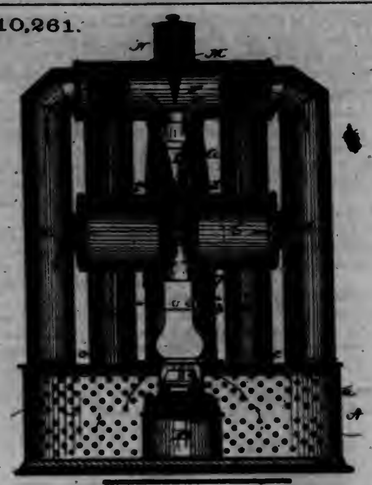
410,261. **HOT-AIR FURNACE.** JAMES BAKER, St. Louis, Mo. Filed Oct. 24, 1888. Serial No. 289,057. (No model.)

Claim.—1. A hot-air furnace having a lamp or burner located in the base, a central flue arranged around the lamp or burner, said flue communicating with the base and with horizontal drums, an inverted cone or deflector O, located above the central flue, and the pipes K, communicating with the horizontal drums and with the base, substantially as described.

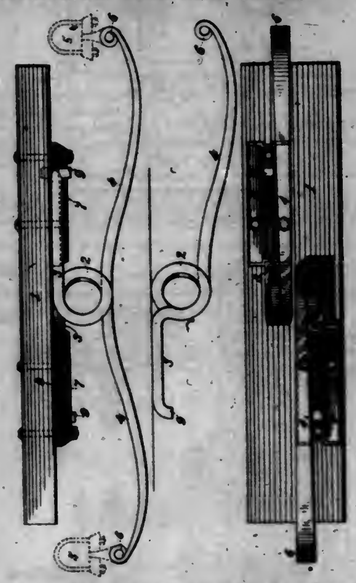
2. A hot-air furnace having a lamp or burner located in the base, a central flue arranged around the lamp or burner receptacle, a central tapering pipe arranged within the flue and provided with an extension parallel with the central flue, an inverted hollow cone secured to and above the central flue, the pipe K, and the horizontal drums, the central flue and pipes communicating with the drums and base, substantially as described.

3. A hot-air furnace having a base in which the lamp or burner is placed, a central flue arranged around the burner, said flue communicating with the base, horizontal drums with which the flue communicates, pipes communicating with the base and with the drums, and pipes communicating with the upper drum and having openings near the base for the discharge of air, substantially as set forth.

410,261.



410,262. **VEHICLE-SPRING.** GEORGE RAIDEMEIER, Allegheny, Pa. Filed Dec. 13, 1888. Serial No. 293,492. (No model.)



Claim.—1. A vehicle-spring consisting of a coil provided with tangential arms, one of said arms being straight, in combination with a box constructed to fit said arm and clamp it to the vehicle-body, substantially as set forth.

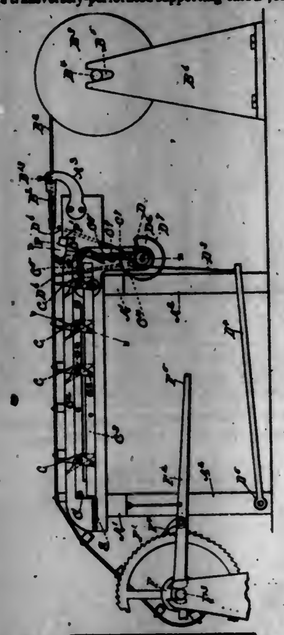
2. A vehicle-spring consisting of a coil provided with tangential arms projecting outwardly in the same direction, one of said arms being provided with a toe or projection, in combination with a box constructed to clamp one of said arms to the vehicle-body, substantially as set forth.

410,263. **WIRE-FENCE MACHINE.** ALBERT G. BUTTS, Brunswick, N. Y. Filed Mar. 27, 1889. Serial No. 304,990. (No model.)

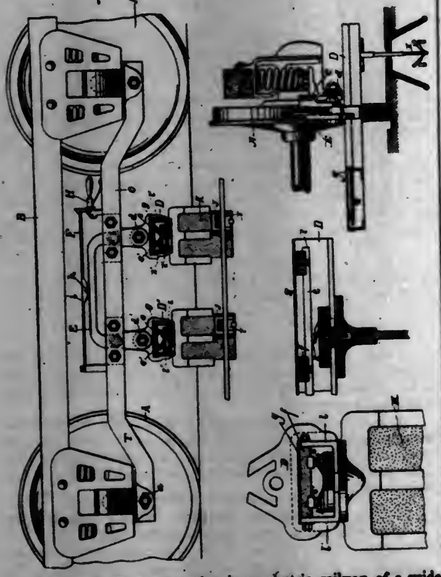
Claim.—1. In a wire-fence machine, the combination, with a supporting-frame of picket-stops C, pivotally secured upon opposite sides of such frame, spring-controlled stop-connecting slats C^3, spring-controlled detent-lever C^5, tripping-lever C^6, and treadle-actuated tripping-cam, substantially as described.

2. In a wire-fence machine, a tension device consisting of a guide-

block having in its body part oppositely-inclined ways B^9 and B^9 for the wire, open at their point of junction near the center of the block, and closed at the ends B^{10} and B^{11} of the block, one end B^{10} being provided with the transversely-perforated supporting-ears B^7, substantially as described.



410,264. ELECTRIC-RAILWAY PLOW. FRANCIS O. BLACKWELL, New York, N. Y. Filed Mar. 5, 1888. Serial No. 301,850. (No model.)



Claim.—1. The combination, in an electric railway, of a guide upon a vehicle and a conductor-slide extending along the guide, with a contact device comprising a traveler, and an exposed contact in circuit with the conductor of the contact device, said traveler and contact occupying the same positions relatively to each other upon the contact device as do the guide and slide upon the vehicle, whereby, when the contact device is placed in position on the guide, the conductor-slide will be engaged by the contact, substantially as described.

2. The combination, in an electric railway, of a transverse mechanical guide and an insulated conducting-slide extending along the guide, with a contact device for maintaining the electrical connection, with a supply-conductor inclosed in a slotted conduit comprising a traveler and a contact in circuit with the conductor of the contact device, the traveler and contact being so located as to engage the guide and slide, respectively, and maintain traveling electrical connection therewith.

3. The combination, in an electric railway, of a transverse guide upon a vehicle and a conducting-slide extending along the guide, with a contact device carrying a traveler and an exposed contact which engage the guide and slide, respectively, when the contact device is placed in operative position.

4. The combination, in an electric railway, of a transverse guide and a plow movable along the same, having contact-shoes for maintaining the electrical connection, with line-conductors of opposite polarity inclosed in a slotted conduit, with two exposed contacts, insulated from each other, carried by the plow and in circuit with said shoes, respectively, and two conducting-slides engaged by said contacts when the plow is placed in operative position.

5. The combination, in an electric railway, of a transverse guide and a contact device having a traveler movable along said guide, with a conductor-slide and a contact carried by the traveler and engaging the slide when the plow is in place.

6. The combination, in an electric railway, of a traveler connected to a contact device and a guide embracing the same, with an independent conductor within the guide and a traveling electrical connection between the said conductor and the contact device.

7. The combination, in an electric railway, of a transverse guide with an insulated conductor extending along the guide and protected thereby, and a contact device movable along said guide and maintaining a traveling electrical connection with said conductor.

8. The combination, in an electric railway, of an electrically-propelled vehicle and a bared conductor thereupon, with the contact device for taking current from the supply-conductor, and a traveling spring electrical connection between the contact device and conductor upon the vehicle.

9. A plow adapted to extend into a slotted conduit for engagement with a supply-conductor therein, having a spring-contact at its upper end in circuit with the conductor of the plow and adapted to engage a fixed conductor upon the car.

10. A contact device adapted to complete the circuit between a line-supply conductor and an electrically-propelled vehicle, comprising an insulated conductor, and an exposed spring-contact for engagement with a conductor upon the car when the contact device is connected to the vehicle.

11. A contact device for an electric railway, consisting of a traveler forming a mechanical connection with an electrically-propelled vehicle, permitting movement of the contact device relatively to the vehicle, and a spring-contact maintaining a constant electrical connection between a conductor carried upon the vehicle and the contact device, respectively.

12. A contact-plow adapted to extend into a slotted conduit for engagement with a supply-conductor, comprising the conducting-core, the protecting-sheath therefor, and the traveler and spring contact, the last two being adapted to maintain a traveling mechanical and electrical connection with the car, substantially as described.

13. The combination, in an electric railway, with a transverse guide and a contact device movable along said guide, of an independent conductor extending along the guide, and a spring-contact carried by the contact device and engaging said conductor.

14. The combination, with an electrically-propelled vehicle, of a hollow transverse guide for the traveler of a contact device, having on its inside an insulated conductor-slide, and having an opening for the connection leading to the contact device.

15. In an electric railway, the transverse guide consisting of the two angle-irons secured together, in combination with a contact device free to travel along said guide.

16. The transverse guide consisting of the two L-shaped angle-irons placed with their lower flanges facing each other, and a cover for the upper end of said guide, in combination with a contact device free to travel along said guide.

17. In an electric railway, the combination of a transverse guide and a contact device having a traveler engaging said guide, with an insulated conductor extending up through the said head for establishing the electrical connection with the car-circuit.

18. The combination of the plow-shank, and a contact-shoe pivoted thereto, with a spring-plate between the shoe and shank normally holding the shoe in engagement with the line-conductor.

19. The combination, in a plow for maintaining traveling electrical connection with a supply-conductor inclosed in a slotted conduit, of a shank and a contact-shoe pivoted thereto at a point within the conduit, with a spring-plate connected to the shoe and shank, respectively, and holding the shoe in engagement with the supply-conductor.

20. The combination, with the plow-shank extending into a slotted conduit, and a contact-piece pivoted to the shank and movable relatively thereto, of an independent spring-plate between the shank and contact-piece, holding the latter in engagement with the supply-conductor.

21. The combination, in an electric railway, of the plow-shank, and the contact-shoe I with the spring-plate J, substantially as described.

22. The combination, in a contact device for electric railways, of an insulated conducting-core and a contact-shoe connected thereto and in circuit therewith, with a spring-plate holding the contact-shoe in engagement with the supply-conductor and forming an auxiliary conducting-connection between the shoe and the core.

23. The combination, in an electric railway, of a plow-shank and contact-piece having a movable connection therewith, with a spring-plate connected to the plow and bearing at its free end upon the moving contact-piece, whereby the latter is held in engagement with the supply-conductor.

24. The combination, in a contact device for use upon electric railways, of a plow-shank extending through a slotted conduit, and a hinged contact-piece, with a spring-plate holding the contact-piece normally at an angle to the shank.

25. The combination, in an electric railway, of a plow-shank extending into a slotted conduit and a hinged contact-shoe standing normally at an angle to the shank, but free to move in either direction, with a spring-plate between the plow-shank and shoe, tending to hold the shoe in its normal position.

26. The combination of a conduit and a contact device extending into the conduit, with a yielding catch normally holding the contact device in operative position, but adapted to give way automatically on meeting an obstruction, with means for disengaging the members of said catch at will, whereby the contact device may be operated without having to overcome the tension of said catch.

27. The combination of a conduit, a contact device extending into the conduit, and a spring-catch therefor normally holding the contact device in operative position, with means for maintaining the said catch under tension and for releasing it from tension at will, whereby the contact device when desired may be operated without having to overcome the tension of said catch.

28. The combination, in an electric railway, of a contact device and a spring-catch normally holding the contact device in its operative position, with a latch for the spring-catch.

29. The combination, in an electric railway, with a contact device, of a spring-catch therefor located so as to engage the contact device automatically when the latter is in operative position, and a latch for the spring-catch.

30. The combination, in an electric railway, of a movable contact device and a keeper normally holding the same in operative position, said keeper consisting of a spring-plate engaging the contact device and a latch engaging the free end of said plate.

31. The combination, in an electric railway, of two contact-plows extending into a slotted conduit and having free independent lateral movement to conform to irregularities in the slot, with a common catch normally holding both plows in operative position, but adapted to give way when either plow strikes an obstacle.

32. The combination, in an electric railway, of the two transverse guides connected together so as to have a common movement, with a contact device free to travel along each guide, and a yielding catch normally holding the contact devices in their operative positions, but adapted to give way on striking an obstacle.

33. The combination, in an electric railway, of the contact devices, the movable transverse guides, and a link joining the guides, with a spring-catch connection between said link and the vehicle, whereby the contact devices are normally held in operative position.

34. The combination, in an electric railway, of a truck-frame independent of the spring-supported car-body, an inclosed supply-conductor, and a contact device for engagement therewith, with a spring-catch connection between the contact device and truck-framing, normally holding the contact device in operative position, but adapted to give way on meeting an obstruction.

35. The combination, with a truck-framing joining the opposite axles of the car and outside the wheels, with a transverse guide supported by said framing, and a contact device free to travel along said guide.

36. The combination, with a truck-framing joining the axles of a railway-truck and having a loose connection therewith, of the contact devices carried by the framing.

37. The combination, in an electrically-propelled vehicle, of the spring-supported car-body, and a truck-framing independent of the car-body, joining the opposite axles of the truck and having a yielding connection therewith permitting the come and go of the framing, with electrical apparatus supported on the said truck-framing.

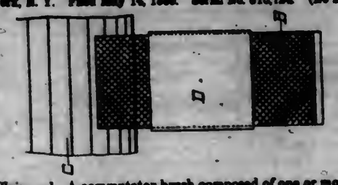
38. The combination, with a framing joining the axles of a railway truck and having a slotted connection therewith permitting the come and go of the framing, of a transverse guide connected to said framing and a contact device free to travel along said guide.

39. The combination of a bar attached to the journal-boxes below the axles of an electrically-propelled vehicle, with a transverse guide below and supported by said bar and a contact device free to travel along said guide.

40. The combination of a conduit, and a supply-conductor therein, with an electrically-propelled vehicle, a frame-bar above the axles but extending downward and attached to the under sides of the journal-boxes, a transverse guide attached to said bar, and a contact device free to travel along said guide.

41. In an electric-motor truck, the combination, with a curved side bar attached to a journal-box of the truck below the journal, of a contact device for engagement with a supply-conductor in a conduit below the said side bar, whereby the side bar does not interfere with the free movement of the contact device.

410,265. COMMUTATOR-BRUSH. FRANCIS O. BLACKWELL, New York, N. Y. Filed May 14, 1889. Serial No. 310,794. (No model.)



Claim.—1. A commutator-brush composed of one or more layers of wire-gauze, having the individual wires in a line diagonal to the axis of the commutator.

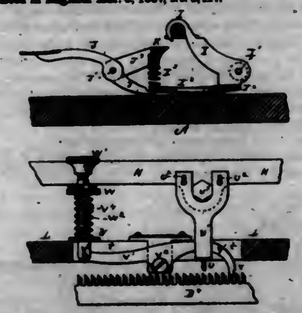
2. A commutator-brush made up of two or more layers of wire-gauze, fastened together at their rear ends and provided with a surrounding sleeve.

3. A commutator-brush made up of two or more layers of wire-gauze, secured together at their rear ends and having the individual wires in a line diagonal to the axis of the commutator.

4. A commutator-brush made up of a number of layers of wire-gauze, secured together at their rear ends and surrounded by a sliding sleeve.

5. A commutator-brush made up of a number of layers of wire-gauze, having their forward ends placed in contact with the commutator and their rear ends secured together.

410,266. TYPE-WRITING MACHINE. BENJAMIN I. BLOUNT, Somerville, DANIEL B. KIMBALL, Boston, JAMES H. CORBIN, Somerville, and BENJAMIN DOLE, Lynn, assignors to the Boston Type Writer Company, Boston, Mass. Filed Feb. 28, 1887. Serial No. 229,094. (No model.) Patented in England Mar. 5, 1887, No. 3,417.



Claim.—1. In a type-writer, a guide-plate held normally in a raised position from the carriage by means of supporting-arms pivotally secured to said carriage, said guide-plate being adapted to be swung down upon the paper to be operated upon near the printing-bar, substantially as and for the purpose described.

2. The combination of the movable feed-roll d', provided with the gear-wheel F', the vertically-stationary feed-roll c, provided with the gear-wheel F, the carriage B, the gear-wheel E, the lever F', pivoted to the carriage, spring c^5, pawl P, spring P', and the arm H, provided

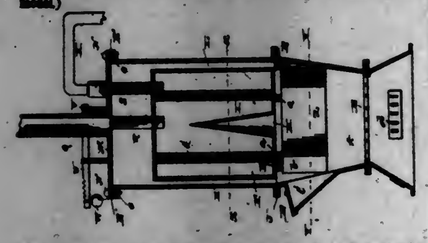
with the stop-pin H^3, said arm being pivotally secured to the carriage and adapted to swing horizontally, whereby said stop-pin may be swung into and out from a corresponding perforation H^2 in the carriage for varying the spacing between the lines, substantially as set forth.

3. In a type-writer, the combination, with the carriage B, of the frame I^2, provided with the spring I^3, said frame being farther provided with the arms I, supporting the roll i' and pivotally secured to the carriage, and with the lever J, pivotally secured to the frame of said carriage, substantially as and for the purpose described.

4. In a type-writer, the combination, with the beveled toothed rack D^4 on the carriage, of beveled pawls U V, for actuating said rack, substantially as and for the purpose set forth.

5. In a type-writer, the combination of the beveled toothed rack on the carriage, the pawl U, adjustably supported by the frame N, the pawl V, lever V', and adjustable spring-bolt V^4, substantially as and for the purpose hereinbefore described.

410,267. STEAM-GENERATOR. HARDY M. CLARK, JAMES TAYLOR, and JAMES B. HENSHAW, Manning, Iowa; said Taylor assignor to said Clark and Henshaw. Filed Apr. 16, 1888. Serial No. 307,479. (No model.)

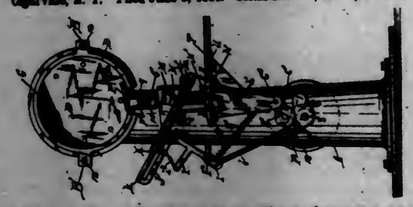


Claim.—1. In a steam-generator, the combination of an annular fire-box or furnace provided near its upper end with inwardly-extending lugs or brackets, a vertical tubular boiler mounted upon the said brackets, and an annular water-chamber arranged within the fire-box and connected with the bottom of the boiler by means of vertical tubes, substantially as and for the purpose set forth.

2. In a steam-generator, the combination of an annular furnace or fire-box having an inclined chute provided with a suitable lid or door, and provided near its upper edge with inwardly-extending lugs or brackets, a vertical tubular boiler mounted upon the said brackets, an annular water-chamber arranged within the fire-box, suitably connected with the bottom of the boiler, and having an opening in its front side registering with the inclined feed-chute of the fire-box, and a shell or casing attached to the upper side of the furnace or fire-box and enveloping the boiler, substantially as herein described, and for the purpose set forth.

3. In a steam-generator, the combination of an annular furnace or fire-box having an inclined feed-chute, an annular water-chamber arranged within said fire-box and having an opening to register with the said chute, a vertical tubular boiler mounted upon lugs or brackets at the upper end of the fire-box and suitably connected with the annular water-chamber, a shell or casing attached to the upper side of the furnace or fire-box and enveloping the boiler, a cover secured detachably to the said shell or casing and having an upwardly-extending smoke-stack, and steam-pipes and try-cocks extending from the boiler respectively through the top and sides of the casing, substantially as and for the purpose set forth.

410,268. CIGAR-BUNCHING MACHINE. JOHN W. COVERTRY, Cigarville, N. Y. Filed June 9, 1888. Serial No. 276,636. (No model.)



Claim.—1. The combination, with a stationary hopper or receptacle for the tobacco, having an inclined side and a revolving vertical side, of a charge-gage and a cut-off between the hopper and gage, whereby the feed from the hopper into the charge-gage is automatically determined by the revolving side, substantially as and for the purpose set forth.

2. The combination of a feed-hopper secured rigidly to the frame of the machine and having an inclined side, with a rigidly-mounted charge-gage connected therewith and opening into the hopper, a revolving section carrying stirrers forming one side of the hopper and carrying a cut-off for closing the opening between the hopper and charge-gage, substantially as and for the purpose set forth.

3. The combination, in a cigar-machine, of a feed-hopper, a charge-gage, a revolving side extending over the charge-gage provided with a cut-off, and a slot located in relation to each other so that the cut-off stops the feed from the hopper into the charge-gage and the slot opens the charge-gage to discharge its contents, substantially as and for the purpose set forth.

4. The combination, in a cigar-machine, of a combined feed-hopper and charge-gage, the hopper having an inclined side flaring upward from the opening in the charge-gage, and a vertically-arranged revolving side forming a moving side wall for both the hopper and charge-gage, the aforesaid moving side having a projecting cut-off extended in line with the top of the charge-gage, and a slot or cut-out below the cut-off, whereby the feed from the hopper into the charge-gage may be cut off and the charge-gage simultaneously opened to remove the charge, substantially as and for the purpose set forth.

5. In combination, the hopper H, having charge-gage G', inclined side E', vertical rotating side D, having pins p, cut-off F, slot F', and the shaft 2, for rotating the side D, all substantially as and for the purpose set forth.

6. The combination, in a cigar-machine, of a hopper and charge-gage, the hopper having a revolving side provided with a cut-off for the feed into the charge-gage and an exit for the tobacco from the gage, an oscillating spreader-tube N for receiving the charge, a plunger for forcing it into a pocket in the apron, and means, substantially as described, for rolling the charge into a bunch in the apron and applying the binder, substantially as set forth.

7. The combination of the hopper provided with the charge-gage, means, substantially as described, for cutting off the feed between the hopper and the gage, an oscillating receptacle M, a discharge-passage N, connected to the receptacle M, the plunger K, operating through the discharging-passage N, with a forming device for molding the charge into a bunch and applying the binder, all constructed and operating substantially as and for the purpose set forth.

8. The combination of the receptacle M and tube N, pivoted to the standard A, the tube N having the spring discharge-gate n, the plunger K, and operating levers I J, having suitable connections to transmit motion to the plunger, substantially as and for the purpose set forth.

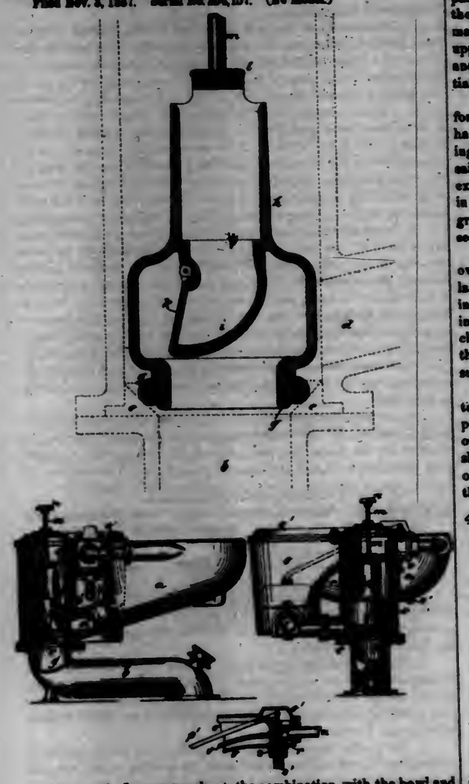
9. The combination, with the table T, the independent journal bearings or levers U, secured at or near their rear extremities to the table T, with their forward extremities free, and the bunching-rollers r r, spaced apart from each other and journaled at their opposite ends in the free extremities of said independent journal bearings or levers U, of the rocking table having the recess E, an apron A, carried by the rocking table and passing over both of the bunching-rollers r r, and means for approximating either or both of the journal bearings or levers U to the rocking table or changing the plane of the rollers, whereby the shape and size of the bunch may be varied, substantially as and for the purpose set forth.

10. The combination, with the apron A, the central portion of which is of uniform thickness in cross-section and the edges of which are folded or re-enforced with ribs r' r' for preventing the tobacco from spilling, and the rocking table carrying the apron A and having the recess E, of the bunching-rollers r r, spaced apart from each other and arranged beneath the apron A, the independent journal bearings or levers U, mounted in which are the opposite extremities of the rollers r r, and means for approximating either or both of the journal-bearings to the rocking table or changing the plane of the rollers, whereby the shape and size of the bunch may be varied, substantially as and for the purpose set forth.

11. The combination, with the independent journal bearings or levers U, bunching-rollers r r, spaced apart from each other and having their opposite extremities journaled in said journal bearings or levers, the apron A, passing over the rollers r r, the rocking table carrying the apron A and having the recess E, and means for approximating either or both of the journal-bearings to the rocking table or changing the plane of the rollers, whereby the shape and size of the bunch may be varied, of the clamp O, the bracket k', and the adjusting-screw l', substantially as and for the purpose set forth.

12. The combination of the table T, provided with the beveled inner edge, independent journal bearings or levers U, and bunching-rollers r r, located opposite to the beveled edge of the table, said rollers being spaced apart from each other and journaled at their opposite extremities in said independent journal bearings or levers U, with the apron A passing over the bunching-rollers, and the rocking table carrying the belt A and having the recess E, and means, substantially as described, for approximating either or both of the journal-bearings to the rocking table or changing the plane of the rollers, whereby the shape and size of the bunch may be varied, substantially as and for the purpose set forth.

410,269. WATER-CLOSET. HUGH H. CRAMER, New York, N. Y. Filed Nov. 3, 1887. Serial No. 254,157. (No model.)



Claim.—1. In a water-closet, the combination, with the bowl and a valve controlling the discharge thereof, of a float-chamber communicating at the base with the base of the bowl, with a check-valve in the communicating passage opening outwardly from the float-chamber, a float in said float-chamber, and a water-supply valve governed by said float discharging into the bowl and into said float-chamber, substantially as set forth.

2. In a water-closet, the combination, with a bowl, a discharge-pipe, and a valve or plunger between the two, of a chamber inclosing said plunger and communicating with the bowl, a float-chamber distinct from the bowl and plunger-chamber, a passage between the base of the float-chamber and plunger-chamber, a check-valve in said passage opening toward the plunger-chamber, and a float-valve in the float-chamber discharging into the bowl and the float-chamber, substantially as herein set forth.

3. The combination, in a water-closet, with a bowl and a valve controlling the discharge thereof, of a float-chamber communicating at the base with the base of the bowl, a check-valve in said communication opening outwardly from the float-chamber, a float in said float-chamber, a supply-valve governed by said float, and two discharge-jets from said valve of different volumes, the main jet discharging directly into the bowl and the minor jet into the float-chamber, substantially as and for the purpose set forth.

4. In a water-closet of the described class, the combination, with the separate float-chamber having no direct connection with the bowl, but communicating therewith through a passage at the base having a check-valve, with a float in said chamber, and a supply-valve controlled thereby having a main discharge-pipe u, connected to the bowl, and minor pipe v, prolonged into the body of the float-chamber, substantially as and for the purpose set forth.

5. In a plunger-closet, a hollow plunger formed with a trapless overflow-passage through it, in combination with a gravity check-valve closing said passage to exclude sewer-gas, and which valve alone is interposed between the soil-pipe and the exterior air, whereby the retention in said passage of water to constitute a water seal is prevented, substantially as set forth.

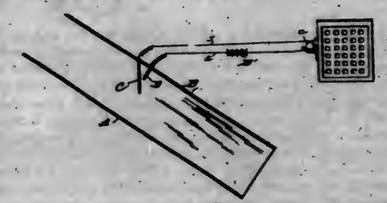
6. In a plunger-closet, a hollow plunger formed with an overflow-passage within it extending directly downward to the lower part of the plunger, bending laterally therein and terminating in an approximately vertical seat, in combination with a check-valve hinged at its upper edge seating against said seat by gravity to exclude sewer-gas and opening freely to permit the escape of overflow-water, substantially as set forth.

7. In a plunger-closet, the combination of a hollow plunger formed with an enlarged base and a contracted upper portion and having an overflow-elbow fastened within its enlarged base and forming a downward continuation of the contracted upper portion, whereby said upper portion and elbow constitute a trapless overflow-passage extending down from the top of the plunger and terminating laterally in an approximately vertical seat within the enlarged base, and a gravitating check-valve consisting of a hinged flap seating against said seat, substantially as and for the purpose set forth.

8. In a plunger-closet, a hollow plunger formed with a trapless overflow-passage extending directly downward within it and thence laterally and terminating in an approximately vertical seat, with an inclined surface opposite said seat and adapted to deflect the descending water laterally toward said seat, in combination with a gravity check-valve adapted to close against said seat and to be opened by the impact of the descending water deflected by said inclined surface, substantially as set forth.

9. A plunger in a plunger water-closet comprising an overflow-tube slightly curved at its lower end so that the opening is out of perpendicular, a flap-valve hinged at its upper sides and covering said opening, said opening being sufficiently inclined to permit the valve to shut by gravity, and an enlargement around the lower end of the overflow-tube to hold the packing and fill the seat at the bottom of the plunger-chamber.

410,270. SIGNAL. WILL H. DENNIS, Columbus, Ind. Filed Aug. 4, 1888. Serial No. 281,942. (No model.)



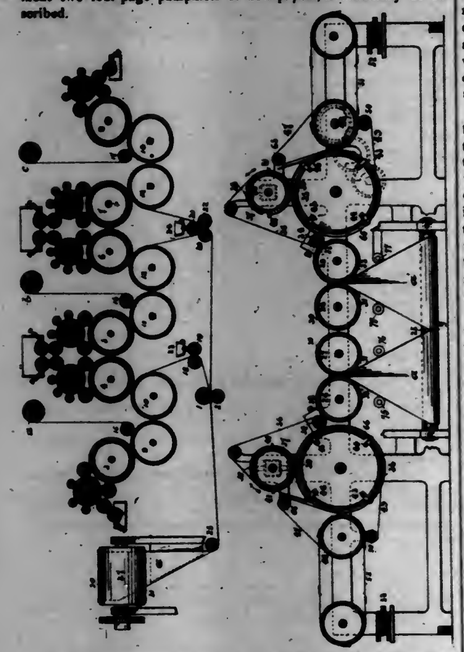
Claim.—In combination with an inclined spout, a plate freely suspended from the upper side of said spout above the normal current of the flowing material, so as not to be moved thereby, the stop or pin D, projecting into said spout, so that the plate may swing into contact therewith, a bell or indicator, and connections whereby the contact of the plate and stop will operate the bell or indicator, substantially as described.

410,271. ROTARY PRINTING-MACHINE. JOSEPH L. PIRE, Jersey City, N. J. Filed Oct. 27, 1886. Serial No. 216,293. (No model.)

Claim.—1. In combination, the form and impression cylinders adapted for printing separately the two webs a and b, so that each shall contain four pages abreast upon each side, rollers whereby said webs are brought together so as to register, a knife whereby they are split longitudinally along the central margin, rollers at right angles to the printing-cylinders, whereby each longitudinal half of the split web is folded longitudinally, the knife whereby the same is severed transversely, two duplicate pairs of cylinders 35 and 37, whereby each pair of the split webs is received once folded, each of said pairs of cylinders being provided on one member of the pair with grippers adapted to grip four thicknesses of paper and upon the other member of the pair with tucking projections and impaling-pins, substantially as described.

2. In a rotary printing-machine adapted for printing four pages abreast on the web, in combination, the form and impression cylinders, a knife whereby said web is split longitudinally on the central margin, two pairs of rollers at right angles with the cylinders for folding each half of the split web longitudinally, and so arranged that the bite between each pair of folding-rollers is opposite the point of the delivery-roller where the margin to receive the fold passes over, and a knife for severing each longitudinal half of the split web, whereby the web received from the printing-machine is, without reversing, divided, fold-

ed, and severed so as to produce simultaneously and by direct movement two four-page pamphlets or newspapers, substantially as described.



3. In combination with a rotary printing-machine adapted for printing four pages abreast upon the web, a folding-machine having in combination the roller 25, arranged at the bottom thereof, the folding-rollers 26 27 and 28 29 at right angles with the roller 25, and having their axes in substantially the same horizontal plane above the roller 25, a knife to sever that portion of the web which is folded by each pair of folding-rollers, mechanism whereby the longitudinally-folded halves of the web are conducted over the folding-rollers 26 and 29 toward opposite ends of the folding-machine, mechanism whereby the cuts from the longitudinal halves of the web are delivered, respectively, at opposite ends of the folding-machine, substantially as described.

4. In a rotary press, in combination, the impression-cylinders, the form-cylinders, the page-forms so arranged upon the form-cylinders as to print four pages abreast upon the web, those upon one longitudinal half of the web being the inverse of those upon the other, a knife whereby the web is split longitudinally on the central margin, the folding-rollers at right angles with the printing-rollers, whereby each half of the split web is folded longitudinally, knives whereby each half of the web is severed transversely, mechanism whereby the halves of the web are conducted from the folding-rollers, respectively, to the right and to the left of the press, and mechanism whereby each cut is folded transversely, substantially as described.

5. In a rotary press adapted for printing a plurality of webs, in combination, the form-cylinders located in a horizontal row, the impression-cylinders located in a second horizontal row beneath the first, the rollers whereby the several webs are brought together and conveyed to the folding mechanism, rollers located substantially on a level with the printing-cylinders and at right angles thereto, whereby the webs are folded longitudinally, knives whereby the folded webs are severed transversely, mechanism whereby the webs are conveyed horizontally to the side of the machine, and mechanism whereby each cut on the webs is folded transversely, substantially as described.

6. In combination, the form and impression cylinders adapted for printing a plurality of webs, the rollers by which said webs are collected one upon another, the rollers by which said collected webs are folded longitudinally, and a knife by which the same are severed transversely, the said folding-rollers and transversely-severing knife being located at right angles with the printing-rollers, whereby the webs, having been printed and collected, make only one change in the direction of feed while being printed, folded, and cut, substantially as described.

7. In combination, the form and impression cylinders adapted to print a plurality of webs, the rollers parallel thereto, by which said webs are collected, the knife by which said webs are split longitudinally, the folders at right angles with the printing-cylinders, whereby each half of the webs is folded longitudinally, the rotary knives parallel with said folders, whereby each half of the webs is severed transversely, and mechanism whereby the cuts from the respective halves of said webs are delivered to the right and to the left of the machine, substantially as described.

8. In combination, the cylinders 35 and 37, the grippers mounted upon the former, the projections mounted upon the latter and adapted to tuck the paper into the jaws of the grippers, pins also mounted on the cylinder 37 and adapted to impale the forward edge of the paper, whereby the forward edge is held so long as it is traveling in advance of the portion tucked within the jaws of the gripper, and by which it is released when pulled by the grippers in the opposite direction to that in which the cylinder 37 revolves, and the tapes 49 and 47, whereby the paper is received upon being released from the grippers, the whole being so arranged that the paper while undergoing the operation of folding and delivering is under constant control of the parts named to avoid clogging of the machine, substantially as described.

9. In combination, the cylinder 35, the grippers mounted thereon, the cylinder 37, the tucking projections and impaling-pins mounted thereon, the severing-cylinders 26 and 27, and the tapes 36, passing between the cylinders 35 and 37 and adapted to hold the paper upon the surface of the latter as it passes to the tucking operation, the severing-knife, the grippers, the tucker, and the impaling-pins being so arranged on their respective cylinders and the motions of said cylinders being so timed that the paper is impaled upon the pins just behind each cut of the severing-knife and the tucker and grippers operate upon the paper half-way between every two cuts, substantially as described.

10. In combination, the cylinder 35, the grippers mounted thereon, the cylinder 37, the tucker and impaling-pins mounted thereon, the cylinder 48, the tapes 49, passing around the cylinder 35 in contact with the cylinder 48, and the tapes 47, passing around the cylinder 48 and in contact with the cylinder 35, substantially as described.

410,272. MANUFACTURE OF PENS. JOHN T. FOSTER, Arlington, N. J. Filed Mar. 7, 1888. Serial No. 302,212. (No model.)



Claim.—1. The improvement in the art of making pens which consists in striking the nib portion of the blank with a punch in order to compact it and impart elasticity, whereby the operation of hammering the nibs is avoided.

2. The improvement in the art of making pens which consists in cutting out the blank to the proper outline and subsequently striking the nib portion thereof with a punch in order to compact it and impart elasticity, whereby the metal is rendered more dense without being spread laterally.

3. The improvement in the art of making pens which consists in roughening the nib portion of the blank by striking it with a punch having a roughened surface.

4. The improved process of making gold and other analogous pens which consists in, first, rolling the strip; second, stamping out the blanks; third, pointing the blanks with iridium; fourth, rolling them down to the proper thickness; fifth, cutting them out to exact outline; sixth, striking the nib portion of the blank with a punch in order to compact the metal and impart elasticity; seventh, raising to curved shape; eighth, slitting and grinding, and, ninth, polishing.

5. The improvement in the art of making pens which consists in roughening the nib portion of the blank by striking it with a punch having its surface formed with projections, whereby corresponding indentations are formed in the blank, thereby compressing the metal, imparting elasticity to the pen, and avoiding the necessity of the process of nibbing or stoning.

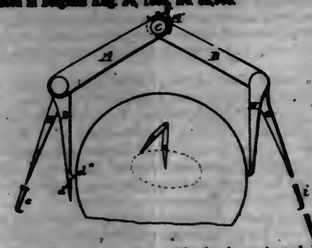
6. A metallic pen the surface of the nibs of which is roughened by indentations at intervals, the metal at each indentations being displaced and of greater density than elsewhere.

410,273. UMBRELLA OR PARASOL. EDWIN R. GARD, London, England. Filed July 11, 1887. Serial No. 243,940. (No model.) Patented in England June 20, 1885, No. 7,088, and Sept. 17, 1886, No. 11,814.



Claim.—In the construction of umbrellas and parasols, the combination, with the cover and ribs, of sheet-metal clips D, of inverted-U shape in cross-section and having oblique ends, the angle at one end being less than at the other end to form projecting points 5, there being holes for the sewing that unites the clips to the umbrella or parasol cover, said clips being adapted to be sprung over the umbrella-rib and to be removed therefrom by raising the projecting points and springing said clips off, substantially in the manner and for the purpose set forth.

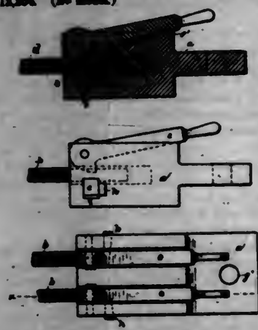
410,274. CALIPERS AND DIVIDERS. WALTHER GLEISER, Geneva, Switzerland. Filed Mar. 14, 1888. Serial No. 267,207. (No model.) Patented in Belgium Aug. 24, 1888, No. 83,008.



Claim.—1. The combination, with the bars A and B, pivoted together, of the legs pivoted to the outer ends of the bars A and B, and sockets having lateral projections and adapted to fit upon the ends of the legs, substantially as set forth.

2. The combination, with the bars A and B, pivoted together, of the pairs of legs pivoted to the outer ends of the bars A B, one pair of said legs having permanent lateral projections, and sockets with points or lateral projections and adapted to fit upon the ends of the other pair of legs, substantially as set forth.

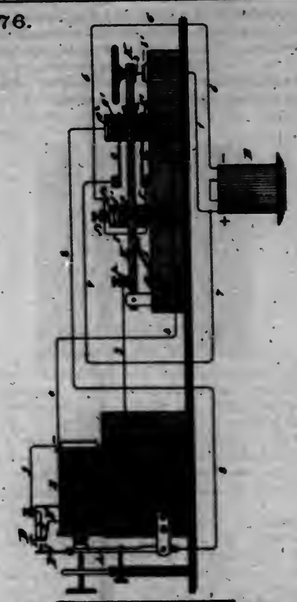
410,275. CLUTCH FOR HOOK. REUBEN HARTMAN, Akron, Ohio, assignor to the Akron Iron Company, same place. Filed May 27, 1889. Serial No. 312,264. (No model.)



Claim.—1. In a clutch for drawing metal rods, a holder or frame, in combination with a hinged lever and a bar, each formed with an edge to enter the rod on opposite sides of the latter, substantially as described.

2. In a clutch for drawing metal rods, a holder or frame, in combination with a hinged lever and an adjustable bar, each formed with an edge to enter the rod, the lever being adapted on lifting the same to allow the rod to enter the holder, and the latter formed and adapted to arrest the lever when the edge of the latter has sufficiently entered the rod, substantially as described.

410,276.



410,277. SEWING-MACHINE. THOMAS C. HARRIS, Troy, N. Y., assignor to T. C. Harris & Co., same place. Filed Sept. 27, 1887. Serial No. 250,535. (No model.)



Claim.—1. In a sewing-machine, the rotary looping-hook, the stationary bobbin-support, and the intermediate bobbin, as usual, in combination with the central reciprocating spindle adapted to enter the bobbin and serve as its sole support, and suitable operating mechanism, substantially as shown, acting to thrust the spindle into and withdraw it from the bobbin during each rotation of the hook.

2. In a sewing-machine, the rotary looping-hook, the bobbin, and the stationary bobbin-support, in combination with a spindle to enter the bobbin, its sustaining-slide, and the cam and spring to actuate the slide at each rotation of the hook.

3. In combination with the looping-hook, its shaft, and the cam thereon, the rock-shaft, the brush carried at one end of said shaft, the cam-actuating arm at the other end of said shaft, and the spring.

4. In a sewing-machine, the rotary looping-hook, the needle and the peripherally-acting brush at the lower part of the hook to retain the needle-thread loop, as usual, and the freely-movable brush-support, in combination with mechanism, substantially as described, for moving said brush to and from the hook at each rotation of the latter.

410,278. HATCHWAY. EMILE J. HERMAN, St. Louis, Mo., assignor to the Safety Hatch Door Company, same place. Filed Sept. 1, 1888. Serial No. 284,361. (No model.)

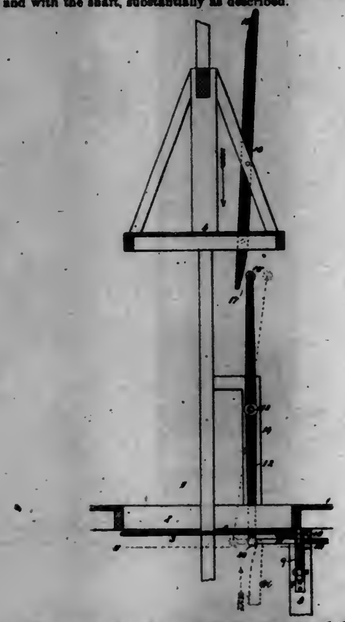
Claim.—1. The combination of a car 4, the bar 16, secured thereon, the horizontal door 3, having vertical shaft 7, the rock-bar 12, with which the bar 16 engages, pivoted to the side of the elevator-well, and the sliding bar 11, connected with the lower end of the rock-bar and with the shaft, substantially as described.

2. The combination of a car 4, the bar 16, secured thereon, having end inclines 17 and 18, the horizontal doors 3, having a vertical shaft 7, the rock-bar 12, with which the bar 16 engages, pivoted to the side of the elevator-well, and the sliding bar 11, connected with the lower end of the rock-bar and with the shaft, substantially as described.

410,278. METHOD OF NEUTRALIZING THE RESIDUAL MAGNETISM IN ELECTRO-MAGNETS. FREDERICK HAMMESEN and OTTO HAMMESEN, Philadelphia, Pa., assignors to themselves and Oscar Sostman, New York, N. Y. Filed Sept. 13, 1888. Serial No. 177,482. (No model.)

Claim.—The method herein described of neutralizing the residual magnetism in electro-magnets, which consists of the following steps: first, sending a current in one direction through an electric circuit and the coils of an electro-magnet in the same; secondly, sending a current of the same strength, but of the reverse direction, through said circuit, so as to neutralize completely the residual magnetism in the cores of the electro-magnet, and, thirdly, interrupting the circuit automatically by the action of said reversed current as soon as the neutralization of the residual magnetism in the cores has taken place, substantially as set forth.

3. The combination of a car 4, the bar 16, secured thereon, the horizontal door 3, having vertical shaft 7, the rock-bar 12, with which the bar 16 engages, pivoted to the side of the elevator-well, the journal-boxes 8 8 for the shaft, the closing spring 9, coiled around the shaft, and the sliding bar 11, connected with the lower end of the rock-bar and with the shaft, substantially as described.

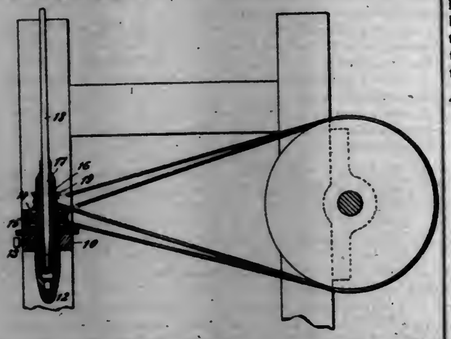


4. The combination of a car 4, the bar 16, secured thereon, the horizontal door 3, having vertical pivot 7, provided with a rack-segment 10, the rock-bar with which the bar engages pivoted to the side of the elevator-well, and the sliding rack-bar 11, connected with the lower end of the rock-bar and with the rack-segment on the shaft, substantially as described.

5. The combination of the car 4, provided with the bar 16, having the end inclines 17 18, the rock-bar 12, pivoted to the side of the elevator-well, the door 3, short vertical shaft 7, journal-boxes 8, spring 9, rack-segment 10, and rack-bar 11, substantially as described.

410,279. SUPPORT FOR SPINNING-SPINDLES. JOHN J. HEYWOOD, Fall River, Mass., assignor of one-half to Francis Seymour, Paterson, N. J. Filed Nov. 12, 1886. Serial No. 218,708. (No model.)

Brief.—The object of the invention is to distribute the friction caused by the revolution of the spindle, so that the spindle can be run at higher speed.



Claim.—1. The combination, with a hollow supporting-case, of a spindle-bearing provided with a whirl, which bearing is stepped into said case and is capable of revolving therein, as described, and a spindle extending down into and stepped within said bearing and provided with a whirl, substantially as set forth.

2. The combination, with the rail of a spinning-frame, of a hollow supporting-case secured thereto, a bearing having a whirl and stepped into said case, so as to revolve therein, as described, a spindle provided with a whirl and extending down into and stepped within said bearing, a driving-band common to the two whirls, and means, substantially as described, for driving the band, substantially as set forth.

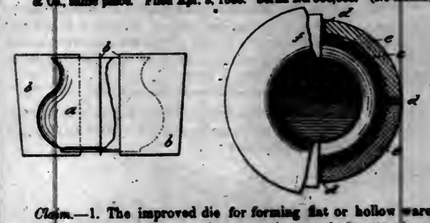
3. The combination, with the supporting-case 12, of a spindle-bearing 14, stepped into said case and having a whirl 15 and an upwardly-extending sleeve 16, and the spindle 18, extending down through said sleeve and whirl and stepped at its lower end into said bearing and having a whirl 19, surrounding the sleeve 16, substantially as set forth.

4. The combination, with the hollow supporting-case 12, of the bearing 20, stepped therein, the spindle-bearing 14, stepped within the bearing 20, and the spindle 18, having a whirl and extending down into and stepped within the bearing 14, substantially as set forth.

5. The rotating or live spindle and the tube containing bolster and step bearings for the spindle and provided with a whirl whereby the said tube may be rotated, combined with a case or holder for the tube and a step for the tube, substantially as set forth.

6. The spindle, the bearing-tube provided with a whirl, and a step for the tube, combined with means to rotate the said spindle and bearing-tube, substantially as set forth.

410,280. DIE FOR FORMING FLAT OR HOLLOW WARE. ARTHUR R. HOBSON, Hartford, Conn., assignor of one-half to I. J. Hobson & Co., same place. Filed Apr. 9, 1889. Serial No. 306,603. (No model.)



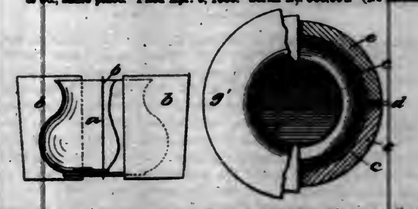
Claim.—1. The improved die for forming flat or hollow ware, provided with a working-face consisting of a metal electrotypic reproduction of a hand-made or hand-ornamented pattern, and a backing composed of a metal fusible at a lower temperature than the metal of the working-face, all substantially as described, and for the purpose specified.

2. The improved die for forming flat or hollow ware, provided with a working-face consisting of a metallic electrotypic reproduction of a hand-made or hand-ornamented pattern, and a metallic backing to support and hold the metallic face, substantially as described, and for the purpose specified.

3. In combination, a shaped die having a working-face consisting of a metallic electrotypic reproduction of a hand-made or hand-ornamented pattern, and a metallic backing to support and hold the working-face, a quantity of liquid—as water—held in a hollow blank placed within the die, and a press adapted to exert pressure upon the said liquid, all substantially as described, and for the purpose specified.

4. An improved die consisting of the several die-sections, each having the working-face of a metallic electrotypic reproduction of a hand-made or hand-ornamented pattern, the radially-extending integral flanges, and a metallic backing fusible at a lower temperature than the working-face of the die, all substantially as described, and for the purpose specified.

410,281. DIE FOR FORMING FLAT OR HOLLOW WARE. ARTHUR R. HOBSON, Hartford, Conn., assignor of one-half to I. J. Hobson & Co., same place. Filed Apr. 9, 1889. Serial No. 306,604. (No model.)

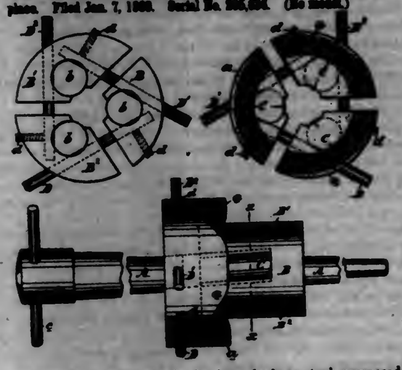


Claim.—1. The within-described method of making a sectional die having a working-face and integral flanges formed by the electro-deposition of metal, that consists in, first, making a pattern; second, dividing the outer surface of the pattern into a number of sections by projecting feathers of thin metal, and, third, suspending such pattern in an electro-bath and changing from time to time the position of the axis of the work or pattern with reference to a vertical line or plane, all substantially as described.

2. The method of making a sectional die by the electro-deposition of metal, that consists in providing a pattern having projecting feathers and changing at intervals the position of said pattern in the bath with reference to a vertical line or plane while the bath is active, all substantially as described.

3. As an improved article of manufacture, a sectional die having its working-face formed by the electro-deposition of metal with radially-extending integral flanges, between which are the parting planes of the sections, all substantially as described.

410,282. PIPE-EXPANDER. JOHN JARDINE and PETER JARDINE, Hespeler, Ontario, Canada, assignors, by direct and mesne assignments, to Andrew Bell Jardine, James Jardine, and Peter Jardine, all of same place. Filed Jan. 7, 1889. Serial No. 295,694. (No model.)



Claim.—In a tube-expander having a body or stock composed of radially-converging sections B B' B², each having a swage-roller C, the equiangularly-arranged bars D D' D², connecting said sections expansively, as and for the purpose set forth.

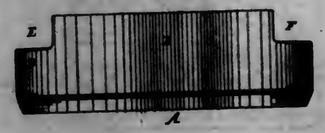
410,283. FENCE-WIRE TIGHTENER. THOMAS W. JENKINS, Sherman, Tex., assignor of one-half to Charles F. Davis, same place. Filed May 15, 1889. Serial No. 310,898. (No model.)



Claim.—1. The herein-described wire-tightener, formed of a single piece of material and consisting of the intermediate shank portion L, bent at an angle at one end to form a plain crank which is adapted to be journaled in the fence-post, and having a notch or aperture to receive the fence-wire, the other end being bent at an angle in the same direction as the crank and terminating in a curved wire-embracing hook, substantially as described.

2. The combination, with a fence-post provided with an opening and a wire crossing the same, of the herein-described tightener consisting of the intermediate shank L, terminating at its rear in a crank J at a right angle to the shank, mounted in the opening and provided with an opening through which the wire is passed, and at its other end bent at a right angle to the shank and crank and terminating in a hook adapted to engage the wire, substantially as specified.

410,284. SOLE-CUTTING DIE. JAMES B. KEANEY, Milford, Mass. Filed May 25, 1889. Serial No. 312,096. (No model.)



Claim.—The cutting-die A, of less height at its end or toe and heel portions B and C on its back than in its middle portion D, whereby are formed the openings or notches E and F, as set forth.

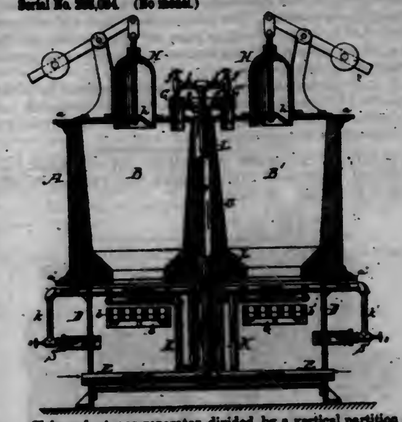
410,285. MOLD FOR TUBULAR ARTICLES. JACOB KUNZE, Pittsburg, Pa., assignor, by mesne assignments, to the Kunze Manufacturing Company, same place. Filed Mar. 5, 1889. Serial No. 301,970. (No model.)



Claim.—1. A mold for tubular articles, having, in combination, a matrix provided at its ends with core-seats and open at one end, the matrix and core-seats being formed in the same body of sand, a core having centering prints or bearings at each end, the print at the upper end serving as a cope to close the matrix, a runner extending entirely through the body of sand containing the matrix from the upper to the under faces thereof, and gates formed in the under side of the body of sand containing the matrix and connecting the runner and matrix, substantially as set forth.

2. A mold for tubular articles, having, in combination, a series of two or more matrices, each provided at its end with core-seats and open at one end, the matrices and core-seats being formed in one body of sand, a series of two or more cores having centering-prints at their ends, the upper ends or prints of the cores serving as copes to close the matrices, a centrally-arranged runner extending entirely through the body of sand containing the matrices from the upper to the under faces thereof, and gates formed in the under side of the body of sand containing the matrices and connecting the runner and matrices, substantially as set forth.

410,286. APPARATUS FOR MANUFACTURING NON-LUMINOUS HEATING-GAS. ARTHUR KITSON, Philadelphia, Pa. Filed Dec. 8, 1888. Serial No. 293,694. (No model.)



Claim.—1. A gas-generator divided by a vertical partition into two fuel-chambers and having a connecting base-chamber, in combination with a steam and air injector connecting with the top of each fuel-chamber, an air-heating pipe arranged in the generator and connecting with such injectors, and a gas-take-off pipe also leading from the top of each chamber, for the purpose described.

2. In combination with a gas-generator containing two fuel-chambers and a connecting base-chamber, the steam generating and superheating coils located in the base-chamber between the grates of the fuel-chambers, and pipes connecting such coils with steam and air injectors, one for each fuel-chamber, as and for the purpose described.

3. The gas-generator divided by a vertical partition of refractory material into two fuel-chambers and having a connecting base-chamber in combination with an air-heating pipe, and a steam-superheating pipe extending through the dividing-partition and connecting with

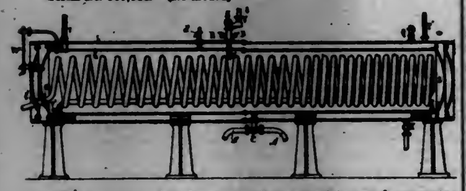
injectors discharging into the tops of the furnaces, as and for the purpose described.

4. In combination with a gas-generating furnace, the steam and air heating pipes or coils located in the ash-chamber and wall of the generator, and both connecting with a blast-injector arranged to discharge into the fuel of the generator, as and for the purpose described.

5. In combination with the two-chambered generator and a connecting base-chamber, the steam and air blast injector connecting with such base-chamber, and a steam and air blast injector connecting with the top of each fuel-chamber of the generator, whereby the fuel may be blasted either up or down and the current passed from one chamber to the other in either direction for uniformly heating and consuming the fuel, and a mixed gas simultaneously generated from air and steam.

410,287. APPARATUS FOR THE PASTEURIZATION OF BEER.

WILLIAMS KUHN, Clermont-Ferrand, France. Filed Apr. 20, 1889. Serial No. 308,011. (No model.)



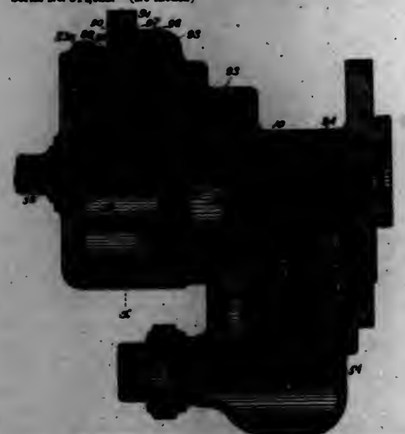
Claim.—1. A series of apparatus for pasteurizing, each apparatus comprising a receptacle for the liquid to be treated, a coil in length and diameter nearly equal to the corresponding dimensions of the receptacle in which it is placed, and a pressure-gage and thermometers for said receptacle, the several apparatus having their lower parts connected by pipes with valves or stop-cocks and their upper parts similarly connected, and the first at least of the series being provided with a safety-valve, substantially as described.

2. A series of three apparatus for pasteurizing, each apparatus comprising a receptacle for the liquid to be treated, a coil in said receptacle approximating in length and diameter the corresponding dimensions of the receptacle, a pipe and stop-cock for admitting air or gas under pressure into the receptacle, and a pressure-gage and thermometers for said receptacle, the several receptacles being connected with one another at their lower parts by pipes with valves or cocks and at their upper parts by pipes similarly provided, and the first apparatus of the series being further provided with a safety-valve, substantially as described.

3. A pasteurizing apparatus comprising an elongated horizontal receptacle, a helical coil extending lengthwise of said receptacle and having the convolutions more closely set toward the outlet end of the coil, substantially as described.

410,288. RELEASING ATTACHMENT FOR AUTOMATIC AIR-BRAKES.

ELLSWORTH J. LEWIS, Warrenton, Ohio. Filed June 20, 1889. Serial No. 314,922. (No model.)



Claim.—1. In an automatic brake mechanism, the combination, with a triple valve, of a discharge-passage for air under pressure from an auxiliary reservoir to the atmosphere, and a supplemental-valve mechanism actuated by pressure from a brake-pipe and controlling said discharge-passage, substantially as set forth.

2. In an automatic brake mechanism, the combination, with a triple valve, of a movable abutment which is subject to variations of brake-pipe pressure on opposite sides, a relief-valve controlling a discharge-passage for air under pressure from an auxiliary reservoir to a discharge-valve, and located in position to be unseated by movement of the abutment, a discharge-valve controlling a passage for air from the relief-valve opening to the atmosphere, and a disk actuated by pressure delivered by the relief-valve and adapted to unseat the discharge-valve, substantially as set forth.

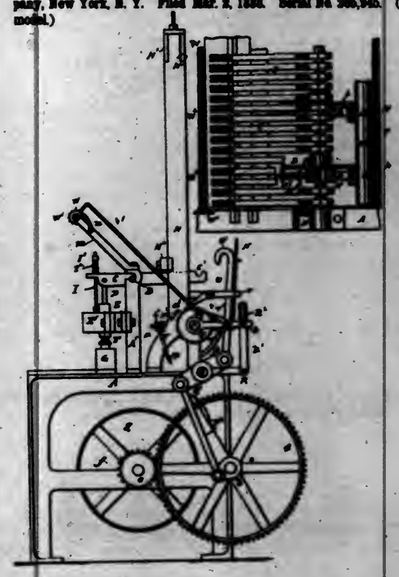
3. In an automatic brake mechanism, the combination, with a triple valve, of an abutment-chamber communicating at one end with a main air or brake pipe, a supplemental reservoir communicating with the opposite end of said chamber, an abutment fixed upon a stem and fitted to move in said chamber, a charging groove or passage establishing communication between opposite sides of the abutment, a relief-valve controlling a passage for air from an auxiliary reservoir to a discharge-valve, said relief-valve being located in position to be unseated by the movement of the abutment stem, a discharge-valve controlling a passage from the relief-valve to the atmosphere, and a disk subject to pressure delivered by the relief-valve and bearing against the discharge-valve, substantially as set forth.

4. In an automatic brake mechanism, the combination, with a triple valve, of a supplemental reservoir adjoining and exterior to the drain-cup of the triple valve, an abutment-chamber closed at its outer end and fitting an opening in the supplemental reservoir, a port leading from the drain-cup to the abutment-chamber, a port leading from the abutment-chamber to the supplemental reservoir, a valve-chamber and a disk-chamber located on the outer and inner ends of the head of the abutment-chamber, respectively, a relief-valve controlling an opening or port from the valve-chamber to the piston-chamber, a piston fitted to work in the abutment-chamber and having a stem which bears against the stem of the relief-valve, a discharge-valve fitting freely on the abutment-stem and controlling ports leading from the abutment-chamber to the atmosphere, a passage leading from the triple-valve-piston chamber to the relief-valve chamber, and a disk fitted to work in the disk-chamber and bearing against the discharge-valve, substantially as set forth.

5. An abutment-chamber having a closed top adapted to be fixed upon a drain-cup, an internal disk-chamber and external valve-chamber integral with its body, and ports leading from the abutment-chamber and valve-chamber, respectively, to openings on the face of its top, which abuts against the drain-cup casting, said openings being adapted to communicate with a triple-valve-piston chamber and with a supplemental reservoir, respectively, substantially as set forth.

410,289. MACHINE FOR MOLDING BUTTONS.

WILLIAM F. NILES, Jersey City, N. J., assignor to the Vulcanite Manufacturing Company, New York, N. Y. Filed Mar. 2, 1888. Serial No. 265,945. (No model.)



Claim.—1. In a machine for making buttons or other articles, the combination, with molds, of plungers, levers for pressing down the plungers, springs connected with said levers, a rock-shaft provided with a hook-bar for drawing down the outer ends of the levers in raising the plungers, and mechanism, substantially as shown and described, for shifting the hook-bar, substantially as set forth.

2. In a machine for molding buttons or other articles, the combination, with a series of plungers, of pivoted levers acting on the same, springs acting on the levers, a series of hook-arms which act on the levers, and mechanism for swinging the hook-arms toward the ends of the levers, substantially as shown and described.

3. In a machine for molding buttons or other articles, the combination, with a series of plungers, of levers acting on the same, springs acting on the levers, a rock-shaft carrying hook-arms which can act on the levers, a shaft operated from the rock-shaft and provided with wheels having cam teeth or projections, levers mounted to swing on the shaft carrying the wheels provided with the cam projections, on which levers the cam projections can act, said levers having springs acting on the hook-arms on the rock-shaft and moving them toward the ends of the levers connecting with the plungers, substantially as shown and described.

4. In a machine for molding buttons or other articles, the combination, with plungers, levers connected with the same, hook-arms acting on the levers, and springs acting on the levers, of the levers L, mounted loosely on the shaft K and adapted to act on the hook-arms, and wheels mounted on the shaft K and provided with cam teeth or projections that act on the levers L, substantially as shown and described.

5. In a machine for molding buttons or other articles, the combination, with plungers, levers acting on the same, and springs acting on the levers, of the shaft K, the levers L, mounted loosely on the same and carrying sliding bolts M, the cam-wheels K' on the shaft K, and springs secured to the levers and acting on the hook-arms, substantially as shown and described.

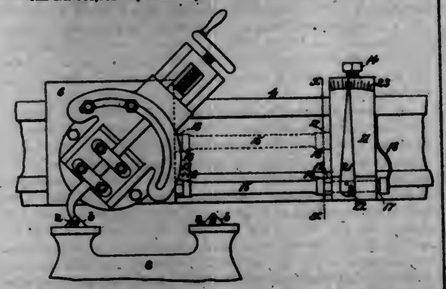
6. In a machine for molding buttons or other articles, the combination, with plungers, levers acting on the same, springs acting on the levers, and hook-arms adapted to act on the levers, of the shaft K, the levers L, mounted loosely on the same and operated by cam-wheels on the shaft K, said levers L being adapted to act on the hook-arms, the ratchet-wheel U on the end of the shaft K, and a pick-arm and pawl for revolving said ratchet-wheel from the shaft that operates the hook-arms, substantially as shown and described.

7. In a machine for molding buttons or other articles, the combination, with a series of groups of plungers, of levers acting on the plungers, a rock-shaft provided with a hook-arm for each group of levers, an indicator-shaft provided with a mark for each group of levers, and gearing for operating the indicator-shaft from the same mechanism that operates the hook-arms, substantially as shown and described.

8. In a machine for molding buttons or other articles, the combination, with a series of groups of plungers, of levers acting on the plungers, a rock-shaft having a hook-arm for each group of levers, a shaft carrying cam-wheels, levers actuated by said cam-wheels and mounted on the shaft carrying the latter, which levers act on the hook-arms, gearing for driving the shaft carrying the cam-wheels from the rock-shaft, an indicator-shaft provided with a mark for each group of plungers, and mechanism for operating the indicator-shaft from the shaft carrying the cam-wheels, substantially as set forth.

410,290. DEVICE FOR SETTING THE TOOL-CARRIERS OF PLANERS.

JOSEPH W. RISE, Allegheny, Pa. Filed June 24, 1889. Serial No. 315,222. (No model.)



Claim.—1. The combination of a planer cross-head, a tool-carrier mounted thereon, a reference-block adjustably mounted on the cross-head, and a gage-bar, substantially as set forth.

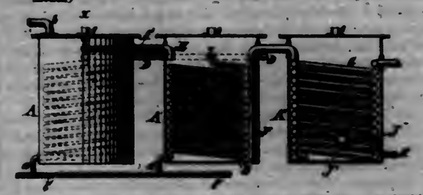
2. The combination of a planer cross-head, a tool-carrier mounted thereon, a reference-block adjustably mounted on the cross-head, a gage-bar, and supports on the tool-carrier and block for supporting the gage-bar, substantially as set forth.

3. The combination of a planer cross-head, a tool-carrier mounted thereon, a reference-block adjustably mounted on the cross-head, a gage-bar, and supports or sockets on the tool-carrier and block for supporting the gage-bar, the support or socket on the reference-block being yieldingly mounted therein, substantially as set forth.

4. The combination of a planer cross-head, a tool-carrier mounted thereon, a reference-block adjustably mounted on the cross-head, a gage-bar, supports or sockets on the tool-carrier and reference-block for supporting the gage-bar, the support or socket on the reference-block being yieldingly mounted therein, and an index-finger operated by the yielding support or socket, substantially as set forth.

410,291. APPARATUS FOR EXTRACTING GREASE FROM WATER.

HENRY PEDAR, New York, assignor of one-half to Enoch Rutzler, Brooklyn, N. Y. Filed Apr. 4, 1889. Serial No. 306,077. (No model.)

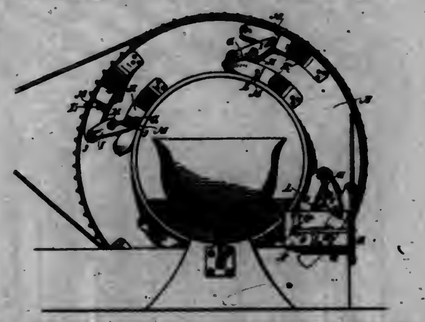


Claim.—1. The combination, with a series of tanks, one of which is provided with an inlet for waters of condensation, of coils of pipe arranged in said tanks, a supply-pipe common to all said coils for conveying cold water thereto, an outlet-pipe for said cold water communicating with all said coils, pipe communications between said tanks for conveying waters of condensation from one to the other, and a pipe communicating with all said tanks for conveying away grease therefrom, substantially as described, whereby a constant circulation of water is maintained through said coils to cool the waters of condensation in the tanks and from one of said tanks to another to convey the waters of condensation to said tanks successively.

2. The combination, with a series of tanks, one of which is provided with an inlet for waters of condensation, of coils of pipe arranged in said tanks, a supply-pipe common to all said pipes for conveying water thereto, an outlet-pipe for said cold water communicating with all said coils, pipe communications between said tanks for conveying waters of condensation from one to the other, a pipe communicating with all said tanks for conveying away grease therefrom, a heating-tank, a pipe for conveying waters of condensation from the last of the tanks first named to the heating-tank, a steam-coil in said heating-tank for heating the water therein, and a pipe for conveying away the heated water from the heating-tank, substantially as described, whereby a constant circulation of water is maintained through the coils in the first-named tanks in order to cool the waters of condensation, and through all of said tanks from one to another in order to convey the waters of condensation to said tanks successively, substantially as specified.

410,292. CONCRETE-MIXING MACHINE.

ERNEST L. RAMSOME, San Francisco, Cal. Filed Nov. 16, 1888. Serial No. 291,081. (No model.)



Claim.—1. In a concrete-mixing machine, a hollow rotating drum with the hinged or swinging transverse lifting flanges or shelves on the inner surface of its periphery, in combination with lever-arms fixed to the outer ends of their fulcrum-shafts, and the pins and perforated

locking-springs, whereby they are held in their position, substantially as herein described.

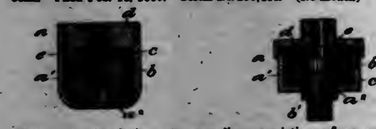
2. In a concrete-mixing machine, a hollow rotating drum, in combination with hinged or swinging flanges or shelves upon the inner surface of its periphery, the transverse arms or levers fixed to their fulcrum-shafts, and the springs adapted to engage and hold the opposite ends of the transverse arms, and having the shoulders or stops M, substantially as and for the purpose herein described.

3. In a concrete-mixing machine, the hollow rotating drum, with the hinged or swinging transverse flanges or shelves upon the inner surface of its periphery, and the transverse arms fixed to the outer ends of their fulcrum-shafts, in combination with springs having one end fixed to the side of the drum and the other ends lying beneath the ends of the transverse arms, said springs being inclined away from the side of the drum from their point of attachment to the abrupt shoulders M, substantially as herein described.

4. In a concrete-mixing machine, the hollow rotating drum, the hinged or swinging transverse flanges or shelves upon the inner surface of the periphery, the transverse lever-arms, with locking-pins J, and fixed to the fulcrum-shafts of said flanges exterior to the drum, and the springs K, with the outward inclination from their point of attachment, in combination with the pins P and Q and the mechanism for advancing said pins alternately, whereby they move over the inclined surfaces of the springs and gradually force them out of engagement with the locking-pins J, substantially as herein described.

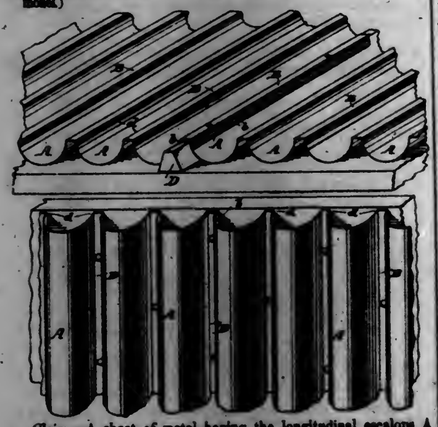
5. In a concrete-mixing machine, the hollow rotating drum, with the adjustable lifting shelves or flanges mounted upon fulcrum-shafts within the periphery of the drum, and the transverse levers fixed to the fulcrum-shafts exterior to the side of the drum, having locking-pins at opposite ends to engage with corresponding holes in the inclined springs K, which are fixed to the side of the drum and which have the abrupt shoulders M, as shown, in combination with a lever having pins upon opposite sides of its fulcrum, which may be advanced alternately, so as to engage the inclined surfaces of the springs and force them backward so as to release the locking-pins and allow the shelves to be turned, substantially as herein described.

410,293. PIPE-COUPLING. FREDERICK C. ROCKWELL, Hartford, Conn. Filed Feb. 11, 1889. Serial No. 299,411. (No model.)



Claim.—An insulating pipe-coupling consisting of an exterior shell *a'*, partly closed at one end, containing an integral mass of insulating composition *c*, which surrounds on all faces and firmly holds a parallel-sided nut *b* of greater diameter than the smaller opening through the shell, and a threaded cap *d*, closing the larger end of the shell, substantially as described, and for the purpose specified.

410,294. METALLIC ROOFING, SIDING, &c. LOMBLEY I. SAGENDORPH, Cincinnati, Ohio. Filed May 13, 1889. Serial No. 310,613. (No model.)



Claim.—A sheet of metal having the longitudinal escalops A formed therein, and the flat ridge-caps B, connecting said escalops, the latter lying entirely below the plane of said cap portions, the sides of each sheet terminating in a flat cap having an overlapping flange *b*, substantially as set forth.

410,295. PROCESS OF MAKING BETA-NAPHTHOL CARBONIC ACID. RUDOLF SCHMITT, Dresden, assignor to Dr. F. von Heyden Nachfolger, Radebeul, Saxony, Germany. Filed June 22, 1889. Serial No. 315,232. (No specimens.)

Claim.—The process of manufacturing a beta-naphthol carbonic acid of a melting-point of 216° Celsius, consisting in producing the reaction of carbonic acid upon the alkaline salts of the beta-naphthol under pressure and at a temperature of 200° to 250° Celsius, substantially as herein set forth.

410,296. BARBER'S CHAIR. HANS A. SOMMERSLOTH, New York, N. Y., assignor to Selig Litzman, same place. Filed Apr. 13, 1889. Serial No. 307,111. (No model.)



Claim.—The combination, with a supporting-frame, of a seat pivoted to the same, a pendent rod hinged to the front part of the seat-frame, a clamping-cheek applied to the front of the supporting-frame, cam-levers pivoted to lugs of the cheek, pivot-links applied to the ends of the cam-levers, a foot-lever fulcrumed to the rear part of the supporting-frame, a connecting-rod pivoted to the pivot-links and the foot-lever, and a spiral spring secured to the lug of the cheek and the front end of the connecting-rod, substantially as set forth.

410,297. TWISTING AND DOUBLING MACHINE. JAMES W. SHEPHERD, WILLIAM AYRTON, and RALPH CLEGG, Longsight, near Manchester, County of Lancaster, England. Filed Apr. 19, 1887. Serial No. 235,303. (No model.) Patented in England Jan. 30, 1886, No. 1,283, and in France Dec. 6, 1886, No. 180,102.

Brief.—The object of the invention is to improve the construction of doubling and twisting machines wherein the yarn or thread is given two turns of twist for every turn of the spindle employed.

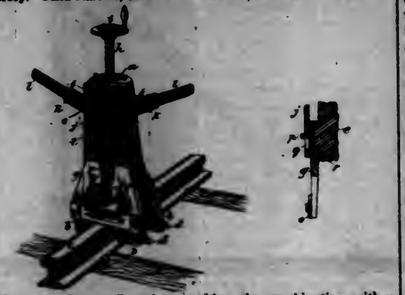


Claim.—1. The combination of parts herein described, by means of which more than one turn of twist is caused to be imparted to the sliver, yarn, or thread operated upon during each revolution of the spindle employed, which combination of parts consists in a spindle, such as *a*, provided with a tube or passage, such as *g*, a disk, such as *k*, or equivalent therefor, a tube, such as *e*, a cradle or frame, such as *f*, provided with a ring, such as f^6, and curved edge, such as f^3, all constructed, arranged, and operating substantially in the manner and for the purposes hereinbefore set forth.

2. The combination of parts herein described, by means of which more than one turn of twist is caused to be imparted to the sliver, yarn, or thread operated upon during each revolution of the spindle employed, which combination of parts consists in a spindle *a*, provided with a tube or passage, such as *g*, disk, such as *k*, or equivalents therefor, tube, such as *e*, cradle or frame, such as *f*, provided with guides *o* and *o'*, and pins or pegs, such as *m*, all constructed, arranged, and operating substantially in the manner and for the purposes hereinbefore described.

3. The combination of parts by means of which the sliver, yarn, or thread twisted or doubled, or twisted and doubled, is caused to be wound upon the spindle upon which the cop is to be wound at or about the same rate as it is delivered by the drag or draw roller employed, which combination of parts consists in faller-wire, such as 62, faller-shaft, such as 64, spindles, such as 61, counter faller-wires, such as 65, arms, such as 63, arms, such as 66, arm, such as 134, rod, such as 135, arm, such as 136, part such as 137, catches, such as 103 and 104, levers, such as 105 and 106, rod, such as 107, rod, such as 109, rod, such as 108, provided with a tooth, such as 116, rod, such as 110, provided with a tooth, such as 117, brackets, such as 111, catches or pawls, such as 114 and 115, ratchet-wheels, such as 112 and 113, shaft, such as 81, provided with screw-threads, such as 81*, a strap-guide, such as 82, a strap, such as 80, cone-drums, such as 69 and 79, bevel-wheels, such as 70 71 73, wheels, such as 74 and 75, shaft, such as 76, tin drum, such as 77, arm, such as 120, provided with a tooth, such as 126, spring, such as 127, cam, such as 124, disk, such as 129, arms, such as 131 and 133, cam, such as 132, bevel-wheels, such as 78* and 79*, shaft, such as 78*, bevel-wheel, such as 78*, wheel, such as 68*, wheel, such as 125*, wheel, such as 125, wheel, such as 124, bevel-wheel, such as 100, bevel-wheel, such as 99, worm, such as 98, and worm-wheel, such as 97, all constructed, arranged, and operating substantially in the manner and for the purposes hereinbefore described.

410,298. RAIL-SAWING MACHINE. EDWARD C. SMITH, Brooklyn, N. Y., assignor to the Smith Portable Rail Saw Company, of New Jersey. Filed June 27, 1888. Serial No. 278,264. (No model.)



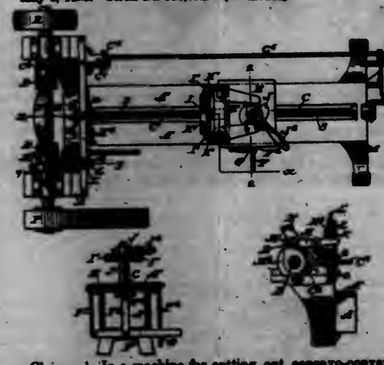
Claim.—1. In a rail-sawing machine, the combination, with a supporting-frame having a sliding carriage, of an oscillating frame connected to said carriage carrying a saw adapted to have a horizontal movement, and suitable mechanism for imparting a feeding motion to said saw, as set forth.

2. In a rail-sawing machine, the combination, with the stationary frame supporting a movable carriage and means for raising and lowering said carriage, of an oscillating frame pivoted to said carriage and having a pin-and-slot connection with a saw-frame arranged to move horizontally in ways formed on said sliding carriage, as set forth.

3. In a rail-sawing machine, the combination of a movable carriage, feeding mechanism, a rocking frame, saw-carrying frame connected to said rocking frame, the saw-frame being guided by horizontal ways on the carriage, as set forth.

4. In the herein-described rail-sawing machine, a rocking frame, a saw connected to the lower end of said frame and moved by said frame, and mechanism for operating said frame vertically, combined with mechanism to move said saw horizontally, as set forth.

410,299. MACHINE FOR CUTTING OUT CONCAVO-CONVEX SHELLS OR DISHES. CHARLES BROWNING, New York, N. Y., assignor to William J. Hiss and William P. Smithers, both of same place. Filed May 8, 1889. Serial No. 310,092. (No model.)



Claim.—1. In a machine for cutting out concavo-convex shells, the combination, with the curved revolving knife and with the intermittently-moving carriage by which the log to be cut is fed to the knife, of the clamping-block made to engage the front end of the log and the mechanism whereby said clamping-block is closed intermittently upon the log to bind and hold it during the cutting-stroke of the knife, substantially in the manner and for the purpose herein set forth.

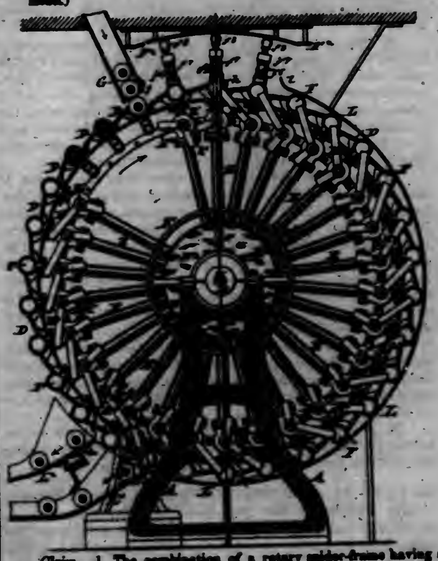
2. The combination, in a machine for cutting concavo-convex shells from a log of wood, with the cutting-knife and the revolving shaft carrying said knife, of the fixed supporting-block mounted in front of the knife to form a seat for the log, the clamping-block moving to and from the fixed block in the same vertical plane to close down upon the interposed log, the pivoted lever attached to said block, a cam upon the knife-shaft, and mechanism intermediate the cam and lever, whereby the lever and block are depressed by the action of the cam to clamp the log while the knife is sweeping over its end, substantially in the manner and for the purpose herein set forth.

3. The combination, in a machine for cutting concavo-convex shells from a log of wood, with the cutting-knife and the revolving shaft carrying said knife, of the fixed supporting-block mounted in front of the knife to form a seat for the log, the clamping-block moving to and from the fixed block in the same vertical plane to close down upon the interposed log, the pivoted lever attached to said block, a spring automatically lifting the lever and block, a cam upon the knife-shaft, mechanism intermediate the cam and lever, whereby the lever and block are depressed by the action of cam to clamp the log while the knife is sweeping over its end, and mechanism for moving the log intermittently toward the knife when the clamping-block is lifted, substantially in the manner and for the purpose herein set forth.

4. The combination of the knife-shaft, the curved knife carried thereby, the log-supporting block fixed in front of the knife, the movable clamping-block mounted over the supporting-block in the same vertical plane, the cam on the knife-shaft operating mediately to depress the clamping-block during the sweep of the knife across the log held between the two blocks, the carriage moving to and from said blocks, the endless screw rotating in fixed bearings under the carriage, the detachable nut carried by the carriage to engage the screw, and the eccentric on the knife-shaft geared mediately to said screw to produce an intermittent rotation thereof at each revolution of the knife after it has completed its cutting-stroke, substantially in the manner and for the purpose herein set forth.

5. The combination, with the revolving knife, the log-supporting block fixed in front of the knife, and the carriage moving to and from the fixed block, of the endless screw under the carriage, the mechanism by which said screw is geared to the knife-shaft in manner to produce an intermittent rotation of the screw, the lever pivoted to the carriage to extend transversely under the screw, the catch carried by the carriage to uphold the free end of the lever, and the sectional nut carried by said lever into engagement with the screw when upheld by the catch, whereby the log to be cut may be adjusted in front of the knife independently of the screw and automatically fed forward by its action, substantially in the manner and for the purpose herein set forth.

410,300. MACHINE FOR TESTING TIN CANS. RICHARD SPRINGELLER, New York, N. Y. Filed Oct. 24, 1888. Serial No. 288,690. (No model.)



Claim.—1. The combination of a rotary spider-frame having a series of supporting-baskets for the cans to be tested, hollow jaws at

one side of the same, spring-actuated presser-jaws at the opposite side of the buckets, and spring-actuated pusher-rods acting on the shanks of the presser-jaws for applying or releasing the presser-jaws from the cans, substantially as set forth.

2. The combination of a rotary spider-frame having a series of supporting-buckets for the cans to be tested, hollow jaws applied to one side of the cans, radial tubular arms connecting the hollow jaws with a suction apparatus for establishing a vacuum in the cans, spring-actuated presser-jaws acting on the bottom of the cans, and spring-actuated pusher-rods acting on the shanks of said presser-jaws, substantially as set forth.

3. The combination of a series of supporting-buckets for the cans to be tested, radial tubular arms connected to a suction apparatus, hollow jaws at the outer ends of said arms, and valves in said arms for establishing, retaining, or interrupting the vacuum in the cans, substantially as set forth.

4. The combination of a series of supporting-buckets for the cans to be tested, hollow jaws at the side of the same, presser-jaws at the other side of the same, a chute for supplying the cans to the buckets, and discharge-chutes for conducting off, respectively, the leaky and sound cans, substantially as set forth.

5. The combination of a series of supporting-buckets for the cans to be tested, hollow jaws at one side, and spring-actuated presser-jaws at the opposite side of the same, spring-catches for releasing the presser-jaws from the cans, and a guard-band for conducting the bad cans to the discharge-chute, substantially as set forth.

6. The combination of a supporting spider-frame provided with a series of can-supporting buckets for the cans to be tested, a second spider-frame formed of as many tubular arms as there are buckets, hollow jaws at the outer ends of said tubular arms, valves in said arms, elbow-levers attached to the spindles of said valves, and stationary pins for actuating the elbow-levers, so as to establish, retain, and discontinue the vacuum in the cans, substantially as set forth.

7. The combination of a rotary spider-frame provided with a series of buckets for the cans to be tested, spring-actuated presser-jaws supported by said spider-frame, spring-actuated pusher-rods engaging the shanks of said jaws, and a stationary cam for operating said pusher-rods and applying the presser-jaws to the cans, substantially as set forth.

8. The combination of a rotary spider-frame having can-supporting buckets, each bucket being provided with a can-releasing spring-catch, spring-actuated presser-jaws having fixed beveled catches for engaging said spring-catches, spring-actuated pusher-rods guided in brackets of the spider-frame, and a stationary cam arranged concentric to the axis of the spider-frame, substantially as set forth.

9. The combination of a rotary spider-frame having supporting-buckets for the cans, spring-actuated presser-jaws applied to the bottom of the cans, a second spider-frame formed of radial tubular arms connected to a suction apparatus, hollow jaws at the outer ends of said arms, and supply and discharge chutes for the cans, substantially as set forth.

10. The combination of a rotary spider-frame having supporting-buckets for the cans to be tested, a second spider-frame formed of radial tubular arms communicating with a hollow supporting-shaft, the latter being connected to an air-suction apparatus, valves in said tubular rods, elbow-levers applied to the spindles of said valves, and stationary pins adapted to engage the elbow-levers of the valves, so as to set the same for establishing communication with the air-suction apparatus or with the atmosphere, substantially as set forth.

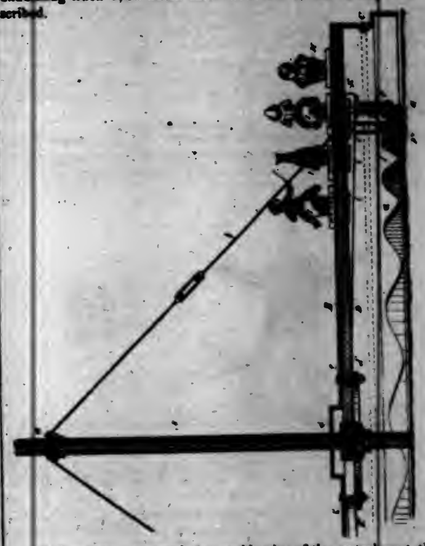
11. The combination of a rotary spider-frame having series of can-supporting buckets, a second spider-frame formed of radial tubular arms, a hollow shaft connected to an air-suction apparatus, hollow jaws at the outer ends of the tubular arms, valves in said tubular arms, elbow-levers applied to the spindles of said valves, stationary pins for setting said valves, a concentric guard-band extending around part of the spider-frames for retaining and guiding the leaky cans, a supply-chute at the upper part of the apparatus, and two inclined chutes at the lower part of the same for discharging, respectively, the leaky and good cans, substantially as set forth.

12. The combination of the presser-jaws, spring-actuated shanks secured to said jaws and provided with beveled heads, spring-actuated pusher-rods having beveled ends adjoining the heads of said shanks, and stationary cams for actuating said pusher-rods, substantially as set forth.

13. In a can testing machine, a hollow jaw provided with an elastic annular face-cheek and a central tubular screw-plug for holding the elastic cheek in position, substantially as set forth.

410,301. MERRY-GO-ROUND. WALKER C. TYLER, San Francisco, Cal. Filed Apr. 27, 1889. Serial No. 308,880. (No model.)

Claim.—1. In a merry-go-round, the rotating platform and the series of swinging radial arms carried thereby, in combination with the seats I, pivoted at one end to one of said arms and at the other end to another of said arms, the wheels carried by said arms, and the undulating track G, on which said wheels travel, substantially as described.



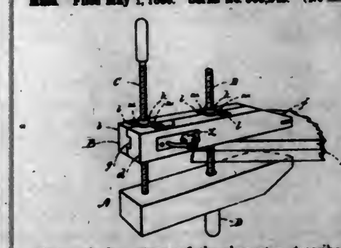
2. In a merry-go-round, the combination of the central mast, the rotating platform supported thereby, the radial beams of said platform, the series of swinging radial arms carried by said beams, the series of seats connected with the swinging arms, the wheels carried by the beams and the arms, and the level track and the undulating track on which said wheels travel, all arranged and adapted to operate substantially as described.

410,302. PRINTING-PRESS. FREDERICK VAN WYE, Scarsdale, N. Y. Filed June 22, 1888. Serial No. 277,900. (No model.)



Claim.—In a printing-press of the class described, having a stationary roller-frame and a moving hinged bed and revolving ink-disk, the combination, with the said bed and ink-disk, of form-rollers, as *a*, *b*, and *c*, and rider-rollers, as *a'*, *b'*, and *c'*, arranged in pairs, the former placed vertically above the latter and lifted thereby.

410,303. HAND SCREW-CLAMP. GILBERT A. WATTERSON, Quincy, Mass. Filed May 1, 1889. Serial No. 309,243. (No model.)



Claim.—1. In a clamp of the character described, a fixed jaw, fulcrum-screw, and clamping-screw, in combination with a movable jaw provided with screw-openings and divided longitudinally into two sections hinged together at one end, a clamping-lever for fastening said sections together, and a spring for separating them when released, substantially as described.

2. In a clamp of the character described, a fixed jaw, fulcrum-screw, and clamping-screw, in combination with a movable jaw having screw-openings and divided longitudinally into two sections hinged together at one end, a rod secured in one section and projecting through an opening in the opposite section, a cam-lever pivoted to the free end of said rod, and a spring for separating said sections, substantially as described.

3. In a clamp of the character described, the combination of a fixed jaw, fulcrum and clamping screws, a movable jaw having screw-openings and divided longitudinally into sections tongued and grooved on their inner faces and hinged together at one end, a coiled spring disposed in a chamber in said jaw and acting expansively to force its sections apart, a rod secured in one section and projecting through an opening in the opposite section, a cam-lever pivoted to said rod, and guide-collars for said screws provided with slotted arms working on pins in the movable jaw-sections, substantially as described.

4. In a hand screw-clamp, the jaw A and screws C D, in combination with the jaw B, comprising the hinged sections *b d*, the collars *k*, having the slotted arms *l*, working on pins *m*, and mechanism, substantially as described, for locking said sections together.

5. In a hand screw-clamp, the jaw A and screws C D, in combination with the jaw B, comprising the hinged sections *b d*, tongued and grooved at *g* and provided with screw-openings *h i*, chamber *p*, and opening *v*, the spring *q* in said chamber, the rod *r*, projecting through the opening *v*, the cam-lever *x*, pivoted to said rod, and the collars *k*, having the slotted arms *l* working on pins *m*, substantially as described.

410,304. VEHICLE-CURTAIN FASTENER. JOHN WATTERS, Springfield, Ohio. Filed Aug. 24, 1888. Serial No. 283,035. (No model.)



Claim.—1. In a curtain-fastener, the combination, with the body thereof, an annular shoulder within the back thereof, and a strip of spring metal extending diametrically to the body, resting at its ends upon the said shoulder, and prevented from turning or moving around by contact with the body, of a head fitted upon the outer side of the body and having a shank which extends radially through the body and the spring and is enlarged at its inner end.

2. A curtain-fastener consisting of the following devices: a span or struck-up metallic body having integral prongs, an annular shoulder, a central hole, and depressions in the outer face of the body near said hole, a strip of spring metal extending diametrically to the body and resting at its ends upon the said shoulder and prevented from turning by contact with the body, and having a central hole, a head wide in one direction and thin in the other at its outer end, and a neck and a shouldered shank rotatably fitted to said hole, and projections on said shoulder of the shank to fit said depressions, the shank being upset at the end, for the purpose described.

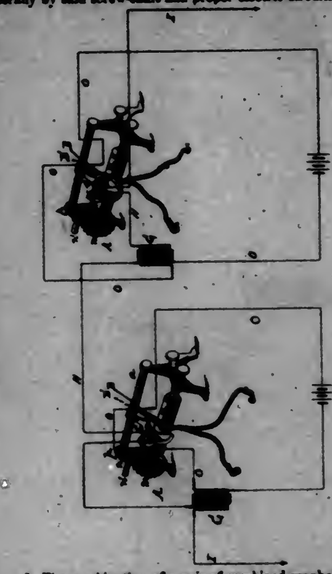
410,305. TELEGRAPHOPHONE. MALONE WHELAN, Nashville, Tenn., assignor, by direct and mesne assignments, to the World Telegraphone Company, of West Virginia. Filed Sept. 12, 1888. Serial No. 285,202. (No model.)

Claim.—1. The combination of a graphophone with an additional stylus resting in the groove made by the graphophone-stylus and closely behind said stylus, and electric connections containing contacts varied by the additional stylus and extending to a suitable receiver.

2. In a combined telephone and graphophone, the combination of an impression-cylinder with a diaphragm having a stylus arranged upon one side and an electro-magnet upon the other side arranged in circuit extending from the transmitter to a distant instrument, and an additional stylus controlling the contacts in a primary circuit, the secondary of which extends to the receiver of the distant instrument.

3. In a combined telephone and graphophone, the combination of a diaphragm, an impression-cylinder, and a stylus between the diaphragm and impression-cylinder, and an electro-magnet upon the other side of the diaphragm in a circuit with and controlled by the transmitter of the distant instrument, and an additional stylus varying the contact of the electrodes in a circuit extending to the receiver of the distant instrument.

4. In a combined graphophone and telephone instrument, the combination of an impression-cylinder and a suitable screw-shaft with suitable gearing for connecting said cylinder to the shaft with a diaphragm carrying one stylus and an additional stylus, both movable laterally by said screw-shaft and proper electric circuits.



5. The combination of a pair of combined graphophone and telephone instruments located at different stations, each instrument comprising an impression-cylinder, two styli laterally movable on a single screw, a diaphragm carrying one stylus and an electro-magnet upon its opposite side, suitable electric circuits, and gearing connecting the screw and cylinder.

6. The combination of two graphophones, each provided with a diaphragm having a magnet and a stylus and two arms, one above another, one arm having a stylus underneath and a contact-point on top, the other arm having a contact-point underneath and resting on the other contact-point, and a contact-point on top and a diaphragm against the bottom of which the second contact-point rests, with an electric circuit, the two arms being in circuit, as set forth.

410,306. SELF-CLOSING FAUCET. GEORGE WEDELL, Denver, Colo. Filed Dec. 8, 1888. Serial No. 293,288. (No model.)

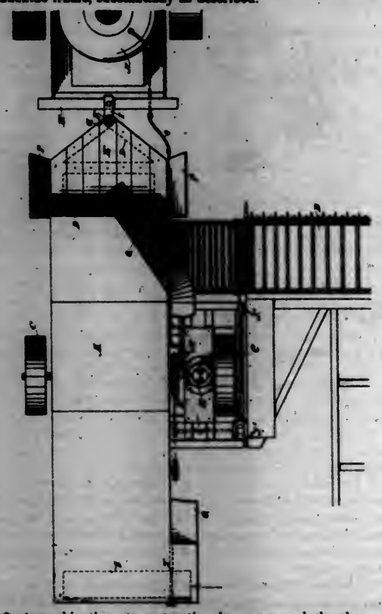


Claim.—In a self-closing faucet, the combination of the casing A, extended upwardly to form the chamber J and having an interior shoulder M, a valve-stem located entirely therein and having the rim I, with one or more notches I', a valve at the lower end thereof, the washer K, diaphragm L, collar N, the cap B, having the double-inclined oppositely-disposed cams in its interior, and the rod D, having a shoulder at its inner end with cams corresponding to and coacting with those in the cap, substantially as set forth.

410,307. COMBINED HARVESTER AND THRASHER. DANIEL BEEZ, San Leandro, Cal. Filed Nov. 22, 1888. Serial No. 291,869. (No model.)

Claim.—1. In a combined steam traction harvester and thrasher, the combination of a header with a reciprocating sickle at the front and carrying belt by which the cut straw is transferred to the thrashing-cylinder, a thrashing-machine mounted upon a frame with wheels, by which it is supported, and a hinge joint or connection whereby the

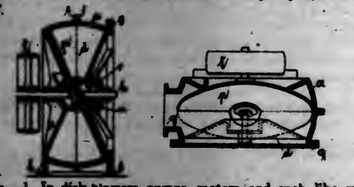
header is united to the side of the thrashing-machine frame, and an engine mounted upon a platform at one side of the thrashing-machine frame, with connections to drive the header and thresher, and a steam-supply pipe leading from it to the forward end of the thrashing-machine frame, in combination with a traction-engine with a pivoted connection, whereby the rear of the traction-engine may be connected to or disconnected from the front of the thrashing-machine frame, and a flexible pipe connecting the boiler of the traction-engine with the steam-supply pipe of the engine which is carried upon the thrashing-machine frame, substantially as described.



2. A combination steam traction harvester and thrasher comprising a cutting, thrashing, and cleaning mechanism supported upon wheels, so as to be drawn about the field, a traction-engine with a jointed connection, whereby it may be united with or disconnected from the front of the thrashing-machine, a supplemental engine mounted upon a platform at the side of the thrashing-machine, with connections therefrom to drive the heading and thrashing mechanism, and having a steam-supply pipe leading from it to the front of the thrashing-machine frame, and a flexible connection between said pipe and the boiler of the traction-engine, substantially as and for the purpose herein described.

3. A combined steam traction harvester and thrasher having an extension and receptacle at the front end of the thrashing-machine frame, a jointed connection upon the front of said frame, whereby it is connected with or disconnected from a traction engine, a carrier Q, the front end of which delivers into the receptacle at the front end of the thrashing-machine, and a supplemental carrier S, receiving straw from the main straw-carrier of the thrashing-machine and delivering it upon the carrier Q, substantially as described.

410,808. DISK-PUMP. JOHN BOWER, Sheffield, County of York, England. Filed Mar. 20, 1888. Serial No. 268,907. (No model.) Patented in England Apr. 21, 1887, No. 5,794; in Belgium Feb. 18, 1888, No. 6,000; in France Feb. 24, 1888, No. 183,943, and in Germany May 12, 1888, No. 44,317.



Claim.—1. In disk-blowers, pumps, motors, and such like machines, the collar *i*, rigidly attached to the shaft *h*, rotating in bearings coaxial with the conical cylinder ends *c* and *d* and inclined to said shaft at the angle the side of the cones form with their axis, in combination with the disk *p*, attached to hemispherical bosses *m n*, with cylindrical recesses turned into them coaxially with the disk *p*, in which recesses the collar *i* works, the spherical cylinder *e*, and partition-plate *q*.

2. In disk-blowers, pumps, motors, and such like machines operated by means of a straight shaft with an inclined collar rigidly attached thereto and rotating in recesses of the bosses of the disk, ball-bearings for reducing the friction between said collar and bosses.

410,809. STEAM-BOILER. SETH BRAGGINS, Rochester, N. Y. Filed May 9, 1888. Serial No. 310,195. (No model.)



Claim.—1. A steam-generator having hollow sections connected to form a pipe, said sections being formed with circular faces, respectively concave and convex, as shown, to allow of a rotating movement, for the purpose set forth.

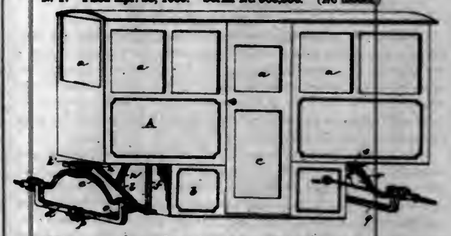
2. In a steam-boiler, a central body, in combination with hollow sections arranged to form pipes at the side of said central body, and connecting-tubes for said sections and central body, substantially as shown.

3. A sectional steam-boiler having hollow sections connected to form a pipe, one section having convex ends and the adjacent section having concave ends, substantially as shown and described.

4. A steam-generator having hollow sections connected at their ends, said sections being formed with circular faces, respectively concave and convex, and having the shell or wall at the ends made thicker than at the middle parts thereof, substantially as described.

5. A steam-boiler consisting of a hollow base, hollow pedestals, a central body and side pipes, the latter being formed of sections each connected with said central body, the pedestals being placed beneath various ones of said side pipes and forming communications for water between said side pipes and base, substantially as shown.

410,810. WHEELED VEHICLE. WILLIAM H. CRAPSEY, Sherburne, N. Y. Filed Apr. 23, 1889. Serial No. 308,336. (No model.)



Claim.—1. A bar adapted to be applied to the bottom of a vehicle-body and provided with clevises, combined with a bar pivoted thereto and adapted to be connected to a spring, a draft-bar adapted to be connected to an axle, and interposed braces, substantially as described.

2. A bar adapted to be applied to a vehicle-body and provided with clevises, a bar pivoted in the upper one of said clevises and adapted to be connected to a spring, a brace attached to or formed with the said pivoted bar and pivoted in the lower clevis, and a draft-bar pivotally connected with the lower clevis and adapted to be applied to an axle, substantially as described.

3. A bar adapted to be applied to a vehicle-body and provided with clevises, a bar pivoted in the upper clevis, a brace pivoted in the lower clevis and connected to the upper bar, and a draft-bar pivotally connected with the lower clevis, combined with a spring to which the upper bar is rigidly affixed, and an axle bearing the spring, and to which the draft-bar is pivoted, substantially as described.

4. A wheeled vehicle having a drop-body and provided with a front running-gear composed of a bar attached to the bottom of the vehicle substantially midway between its sides and provided with clevises, a bar pivoted in one of said clevises and connected to a spring, a draft-bar connected to the axle, and a brace interposed between the upper bar and the draft-bar and pivoted to the body-bar, substantially as described.

5. The combination, with the spring and axle, of a bar *k*, rigidly affixed to the spring, a piece *m*, also rigidly affixed to the spring and

to the bar *k*, a draft-bar *o*, hinged or pivoted to the axle, a body-bar *f*, adapted to be attached to a vehicle-body, and a brace interposed between the draft-bar and the bar *k*, substantially as and for the purpose described.

6. In a drop-body vehicle, the rear running-gear composed of a spring rigidly attached to the body and side draft-irons pivoted to the axle and pivoted to the body of the vehicle, substantially as described.

7. The combination, with the axle and spring, of the draft-irons *t*, the boxes *u*, and the springs *v*, and nuts *v'*, interposed between the boxes and the draft-irons to prevent rattling of the latter, substantially as described.

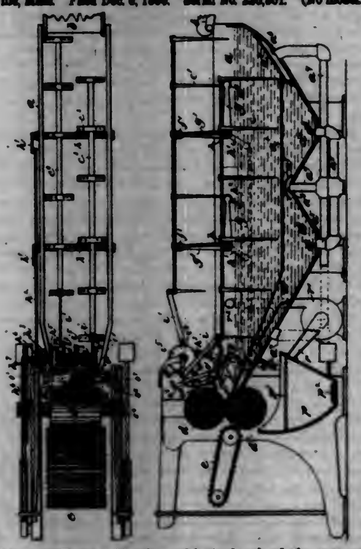
8. A wheeled vehicle having a drop-body and provided with a front running-gear composed of a bar attached to the bottom of the vehicle substantially midway between its sides and provided with clevises, a bar pivoted in one of said clevises and connected to a spring, a draft-bar connected to the axle, and a brace interposed between the upper bar and the draft-bar and pivoted to the body-bar, and a hind gear rigidly attached to the body, substantially as described.

410,811. EXPANSION-DRILL. MATTHEW T. CHAPMAN, Anvers, Ill. Filed July 11, 1887. Serial No. 244,201. (No model.)



Claim.—A drill-tube D, provided with a head C, in combination with a coupling A, slotted to receive the head C and loosely mounted on the tube D, and blades B, pivoted in the coupling A and having inclined upper ends, whereby the blades are expanded by the weight of the drill rod or tube, substantially as specified.

410,812. WOOL-WASHING MACHINE. HENRY W. CHURCH, Grafton, Mass. Filed Dec. 6, 1886. Serial No. 220,801. (No model.)



Claim.—1. The combination, with the bowl, of the two sets of agitating-forks connected with longitudinal frame-pieces, rock-shafts, and supporting-arms for said longitudinal frame-pieces, a crank and pitman for operating the said longitudinal frame-pieces, and the actuating-cam and connections for oscillating said rock-shafts, the delivering-rake, and oscillating guides therefor, and an actuating-shaft for said delivering-rake and guide, and gearing connecting said shaft with the crank-shaft that actuates the main fork proportioned to give the delivering-rake actuating-shaft double the rotary speed of the main fork-actuating shaft, substantially as described.

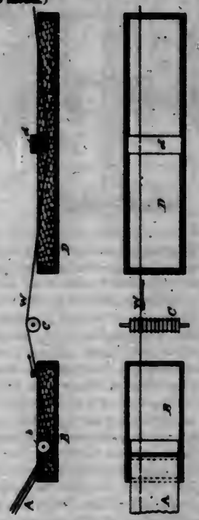
2. In a wool-washing machine, the bowl provided with a false bottom, and having depressions in the space below said false bottom and discharge-passages from said depressions, and inlet passages through the elevated part of the bottom at the side of said depressions and deflectors over the mouths of said inlet-openings, substantially as described.

3. The combination, with the bowl, of the two agitating devices operating side by side in said bowl, the rock-shafts and supporting-arms for said agitating devices, and actuating mechanism for said rock-shafts and agitating devices, whereby the former are oscillated and the latter are simultaneously reciprocated on said supporting-arms, substantially as described.

4. The combination of the delivering-rake with an oscillating guide upon which said rake is longitudinally movable, a rotating shaft provided with a cam that oscillates the said guide, and with a crank connected with said rake for producing its reciprocating movement on said guide, substantially as described.

5. In a wool-washing machine, a bowl and squeezing-rollers, through which the washed material is delivered, combined with a settling-basin into which the liquid removed from said rollers is received, said basin being provided with a screen near its top and an outlet-passage near the top of said settling-basin, and pump connected therewith having a delivery-pipe entering the main bowl near the top thereof, substantially as described.

410,813. PROCESS OF CONTINUOUSLY ANNEALING AND PLATING WIRE. JOHN GRIFFIN, Johnstown, Pa., assignor to the Cambria Iron Company, of Pennsylvania. Filed Feb. 14, 1889. Serial No. 300,281. (No model.)



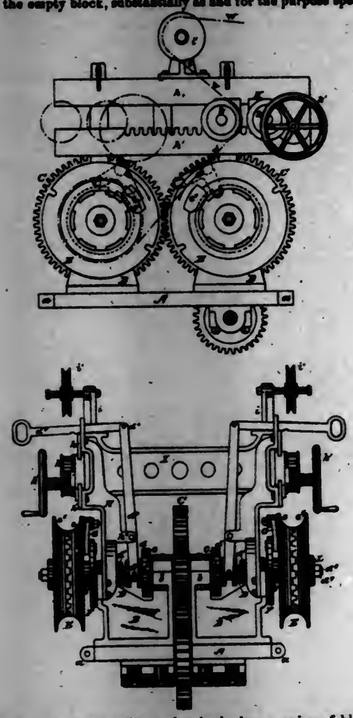
Claim.—1. In the art or process of annealing and plating wire by a continuous operation, the improvement which consists in first passing the wire through a suitable red-hot annealing bath or furnace, thence through a conduit filled with non-oxidising gas, thence through a bath of water, thence through a bath of acid, and thence through a bath of molten zinc or other plating metal, substantially as specified and set forth.

2. In the art or process of annealing and plating wire by a continuous operation, the improvement consisting in the following steps: first, passing the wire through an annealing-furnace or its equivalent; second, through a bath of water; third, through a bath of cleansing-acid, and, finally, through a bath of molten plating metal, substantially as specified and set forth.

410,814. APPARATUS FOR COILING GALVANIZED WIRE. JOHN GRIFFIN, Johnstown, Pa., assignor to the Cambria Iron Company, of Pennsylvania. Filed Apr. 22, 1889. Serial No. 308,173. (No model.)

Claim.—1. In a bench for coiling galvanized wire, a series of blocks arranged in pairs, one pair for each wire, a clutch on each

block for starting and stopping the same, and a shearing and clamping mechanism attached to each block, whereby, when the coil is completed upon one block, the empty block may be started and the shearing mechanism will automatically sever the wire and clamp the end to the empty block, substantially as and for the purpose specified.



2. In a bench for coiling galvanized wire, a series of blocks on axes parallel to each other, arranged in pairs, one pair for each wire, a swinging arm pivotally attached to each block having at its swinging end a projection extending partly across the block and carrying on this projection a shear-blade, a pocket arranged in the block in which the said projection is adapted to swing, one edge of the said pocket being fitted with a shear-blade adapted to register with the before-mentioned shear-blade, and mechanism to automatically swing the before-mentioned arm simultaneously with the starting of the block for the purpose of shearing off a wire which is being coiled on the other block, and which is being led onto the other block in such direction that it will pass between the two said shear-blades, substantially as and for the purpose set forth.

3. In a bench for coiling galvanized wire, the combination of a series of blocks arranged in pairs, one pair for each wire, a movable shear-blade carrying projection to each block adapted to move into and recede from a pocket in the block, a shear-blade attached to the edge of said projection, a shear-blade attached to the edge of said pocket adapted to register with the aforesaid shear-blade for the purpose of severing a wire which may be brought between them, the movable projection being somewhat smaller than the pocket for the purpose of allowing room for a wire between the projection and the walls of the pocket and for the purpose of clamping the end of the wire firmly between the projection and the walls of the pocket, and mechanism for moving the projection into the pocket automatically and simultaneously with the starting of the block, substantially as and for the purpose specified.

4. In a bench for coiling galvanized wire, a series of blocks arranged in pairs, one pair for each wire, a bell-crank lever pivotally connected at the outer portion of each block, one arm of the bell-crank lever carrying a projection which extends partially across the face of the block, a shear-blade fitted in this projection, a pocket located in the block adapted to receive the projection, a shear-blade fitted to the side of the pocket for the purpose of registering with the other shear-blade to sever a wire, an arm of the before-mentioned bell-crank lever extending inwardly and having fitted to its end a stud or its equivalent, a fixed disk located concentrically with the block, so that its periphery is in contact with the said stud when the bell-crank lever is in such position that its projection is closed into the said pocket, and a notch formed in the said disk adapted to receive the said stud when the bell-crank lever is in such position that its projection is opened outward from the said pocket for the purpose of severing and clamping a wire simultaneously with the starting of the block, in a manner substantially as has been specified and set forth.

5. In a bench for coiling galvanized wire, a series of blocks arranged in pairs, one pair for each wire, each block being provided with a cutting and clamping device, whereby the wire-coiling operation may be shifted from one block to another without stopping the running wire, in combination with a device for changing the direction of the wire as it is being paid onto the blocks, consisting in a traversable wire-carrying sheave for the purpose of so directing the wire onto one of the blocks that it will be in proper position to be operated upon by the severing and clamping arrangements on the other block, substantially as and for the purpose set forth.

6. In a bench for coiling galvanized wire, a series of blocks arranged in pairs, one pair for each wire, each block being provided with a cutting and clamping device, whereby the wire-coiling operation may be shifted from one block to the other without stopping the running wire, in combination with a device for changing the direction of the wire as it is being paid onto the block, consisting in a carriage located above said blocks, free to slide in guides, and provided with wire-carrying sheaves for the purpose of so directing the wire onto one of the blocks that it will be in proper position to be operated upon by the severing and clamping arrangement of the other block, substantially as and for the purpose set forth.

7. In a bench for coiling galvanized wire, a series of blocks, each block being composed of a fixed and removable half, the removable half having a large central opening on which inwardly-projecting lands are formed, in combination with a clamp for holding said removable half, said clamp being of circular shape and having outwardly-projecting lands to reach over and bear against the inwardly-projecting lands of said removable half, the notches between the said lands being greater than the lands themselves for the purpose of allowing the removable half to be removed when the said clamp is turned so that its lands register opposite the notches of said removable half, and a stud attached to the block-shaft, extending through said clamp, and provided with a nut bearing against said clamp, by means of which said clamp may be made to bear firmly against said removable half when said removable half is in its attached position, substantially as and for the purpose specified.

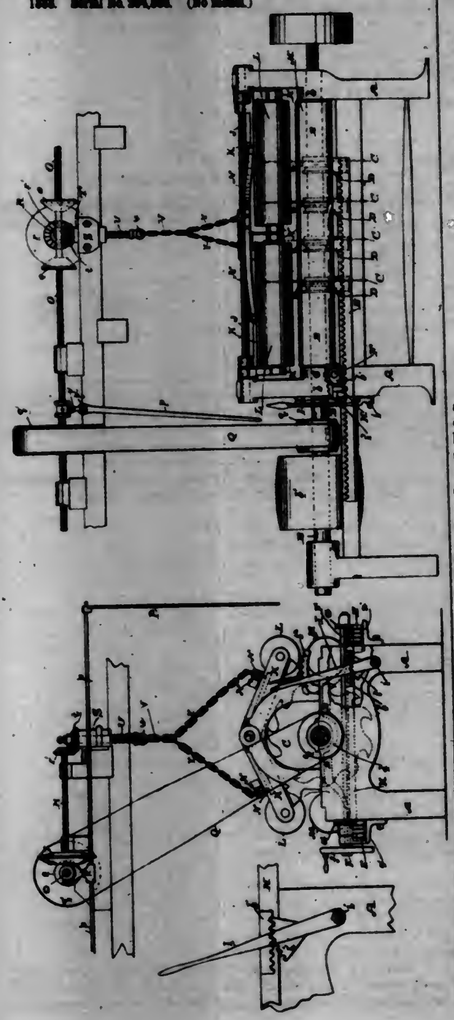
8. In a bench for coiling galvanized wire, a series of blocks arranged in pairs, one pair for each wire, in combination with a pocket on each fixed half of the blocks for the purpose of receiving a movable cutting and clamping projection, said pocket extending past the center joining-line of said block, and a pocket formed in the removable half of the block of size great enough to contain the pocket of the fixed half of the block, substantially as and for the purpose set forth.

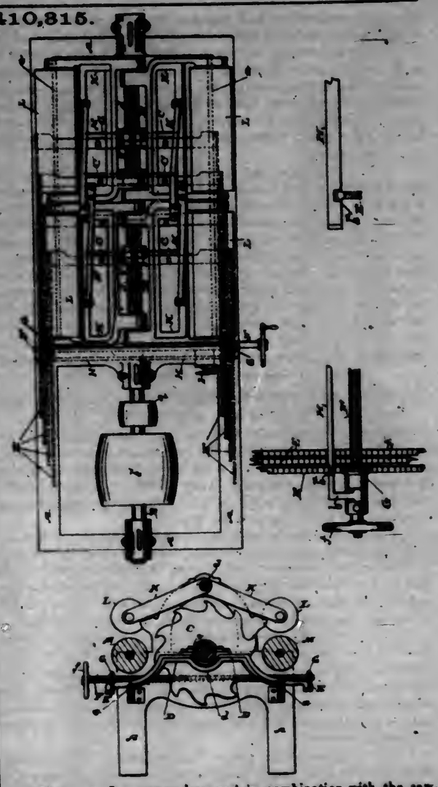
9. In a bench for coiling galvanized wire, the combination of a series of blocks arranged in pairs, one pair for each wire, driven by a series of spur-gearing meshing with each other, so that adjacent blocks will run in opposite directions, the said driving-gear having formed with it large journaled hubs, on the face of each hub being a clutch, short block-shafts entering each of the said hubs and free to turn thereon, sliding clutches splined on each of said shafts adapted to engage with the clutches on the said driving-gears, a bearing for each of said shafts outside of said splined clutch, a fixed half of a block attached to each of said block-shafts outside of said last-mentioned bearing, a circular disk attached to the frame-work of the bench on the inside of each block, its periphery being concentric with the block, a bell-crank lever pivotally connected to the outer edge of the fixed half of each block, a stud formed on one arm of said bell-crank lever adapted to pass around the periphery of the said disk or to engage in the notch cut in the periphery of said disk, an arm attached to said bell-crank lever extending in a general direction nearly tangential to said block, a projection on the end of said last-mentioned arm extending partially across the face of said block, a shear-blade fitted in the edge of said projection, a pocket formed in the fixed half of the block adapted to receive the said projection when the said bell-crank lever is in such position that its said stud will rest on the periphery of the said fixed disk, a shear-blade attached to the edge of said pocket adapted to register with the before-mentioned shear-blade for the purpose of severing a wire, the said pocket extending outward past the center line of the block, a removable half to each of said blocks, a pocket in said removable half adapted to embrace and contain the extending walls of the aforesaid pocket in the fixed half of the block, the removable half of the block being provided with a large central opening adapted to nearly fit a

concentric rib formed with the fixed half of the block, the part of the removable half of the block which nearly comes in contact with the said concentric rib of the said fixed block being formed by lands with intermediate notches, a circular clamping-piece having a bored central portion which loosely fits an externally-turned portion of the extending hub of the said fixed block, this clamping-piece being fitted at its outer edge with lands and notches for the purpose of engaging with the said removable half of the block and for the purpose of being readily disengaged by turning through a small arc, thus permitting the lands of the said clamping-piece to come opposite the notches of the said removable half of the block, a stud fastened in the end of each block-shaft, extending through each of said clamping-pieces, and having a nut on its outer end for tightening and loosening the said clamping-piece upon the removable half of the block, slides located above said blocks, carriages adapted to move on said slides in a direction longitudinal to the bench, wire-deflecting sheaves carried on studs attached to said carriages, two sheaves being attached to each carriage, and racking mechanism for moving the carriages on said slides for the purpose of changing the direction of the wire, all arranged substantially as specified, and for the purpose set forth.

410,815.

410,815. GANG-EDGER. FRANCIS W. COOK, San Francisco, Cal., assignor of one-half to H. P. Gregory & Co., same place. Filed Dec. 28, 1888. Serial No. 294,002. (No model.)





Claim.—1. In a gang-edger, and in combination with the saw-arbor and the independent saws movable thereon, the transversely-disposed brackets or shifter-bars, each engaging at its middle the collar of one of the saws, the series of independent movable racks attached to each end of the brackets or shifter-bars, and a rotary sliding shaft mounted transversely of the machine and carrying a pinion on each side, adapted by the sliding movement of the shaft to be thrown into gear with different racks of the series, whereby the saws may be independently shifted on the arbor, substantially as herein described.

2. In a gang-edger, and in combination with the saw-arbor and the independent saws movable thereon, the transversely-disposed brackets or shifter-bars, each engaging at its middle the collar of one of the saws, the series of independent movable racks attached to each end of the brackets or shifter-bars, the rotary sliding shaft having a pinion on each side, adapted by the sliding movement of the shaft to be thrown into gear with different racks of the series to shift their saws, the sliding bar connected with the shaft, and a lever for moving the bar to slide the shaft, substantially as herein described.

3. In a gang-edger, and in combination with a saw-arbor and the independent saws movable thereon, the transversely-disposed brackets or shifter-bars, each engaging at its middle the collar of one of the saws, the series of independent movable racks attached to each end of the brackets or shifter-bars, the rotary sliding shaft having a pinion on each side adapted by the sliding movement of the shaft to be thrown into gear with different racks of the series to shift their saws, the sliding bar connected with the shaft and having a rack, the pivoted lever having a segmental gear engaging the rack for moving the bar and shaft, and the quadrant for controlling the lever, substantially as herein described.

4. In a gang-edger, and in combination with a saw-arbor and a saw movable thereon, a transversely-disposed bracket or shifter-bar engaging the saw-collar, a movable rack on each side attached to each end of the shifter-bar, a rotary shaft having pinions engaging the racks for moving them, and a sliding bar adapted by its movement to engage and relieve the teeth of the racks, whereby they are locked and released, substantially as herein described.

5. In a gang-edger, and in combination with the saw-arbor and the independent saws movable thereon, the transversely-disposed

brackets or shifter-bars, each engaging the collar of one of the saws, the series of independent movable racks attached to each end of the brackets or shifter-bars, the rotary sliding shaft having a pinion on each side, adapted by the sliding movement of the shaft to be thrown into gear with different racks of the series to shift their saws, and the sliding bar engaging the teeth of the racks and locking them and grooves or ways in the bar in line with the pinions of the shaft to permit the movement of those racks engaged by the pinion, substantially as herein described.

6. In a gang-edger, and in combination with the saw-arbor and the independent saws movable thereon, the transversely-disposed brackets or shifter-bars, each engaging the collar of one of the saws and mounted and adapted to slide on fixed tracks in the frame of the machine, the series of independent movable racks attached to each end of the brackets or shifter-bars, the rotary sliding shaft having on each side a pinion adapted by the sliding movement of the shaft to be thrown into gear with different racks of the series to shift their saws, the sliding bar connected with and adapted to move the shaft, said bar engaging the teeth of the racks and having grooves or ways in line with the pinions of the shaft, and a lever and intermediate connections for moving the sliding bar, substantially as herein described.

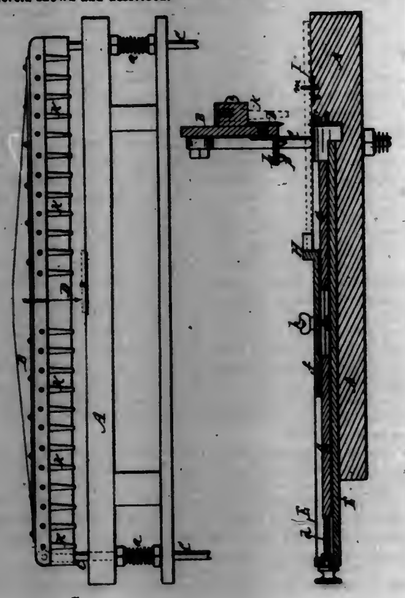
410,816. MACHINE FOR MARKING SOLES. PATRICK COX, Rochester, N. Y. Filed Dec. 24, 1888. Serial No. 294,426. (No model.)

Claim.—1. In a sole-marking machine, the combination of the bed, the vertically-movable gate, the marking-blade attached to the gate, a heel-gage attached to the bed in rear of said gate and serving as a stop to the heel, and a side gage attached to the bed in front of said gate and serving as a stop to the side of the sole, as shown and described, and for the purpose specified.

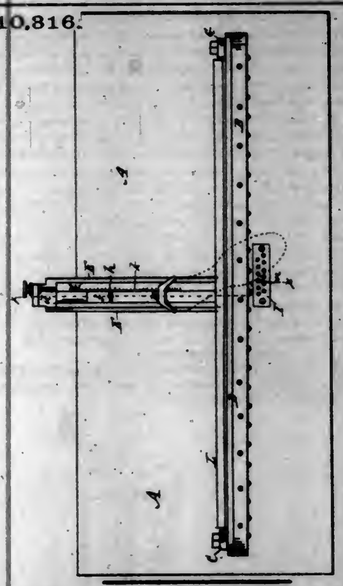
2. In a sole-marking machine, the combination of the bed, the vertically-movable gate, the marking-blade attached to the gate, the sliding gage adjustable forward and backward on the bed, the heel-gage in the sliding gage adapted to receive the heel of the sole, and the side gage adjustable to different positions to receive the side of the sole, as shown and described, and for the purpose specified.

3. In a sole-marking machine, the combination, with a vertically-movable gate carrying a marking-blade, and a series of pricking-points and stamps, of a sliding gage adjustable transversely of the bed toward and from the gate to adapt the device to different sizes of soles, and a heel-gage adjustable forward and back in the sliding gage to adapt the same to the adjustment of the sliding gage, as herein shown and described.

4. In a sole-marking machine, the combination of a bed, a vertically-movable gate, and a bar attached to the gate provided with prick-points that mark the tack-holes on the sole, and rubber pads surrounding the prick-points for throwing the sole off when pricked, as herein shown and described.



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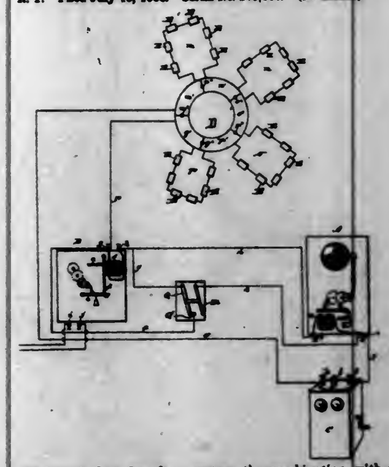


410,817. APPARATUS FOR MOLDING SPRING-HEELS OF SOLES. PATRICK COX, Rochester, N. Y. Filed Dec. 24, 1888. Serial No. 294,426. (No model.)



Claim.—The mold for spring-heels of soles, consisting of the lower die C and upper die D, connected by spring E, and the adjustable gage G, passing into the cavity of the lower die and serving as a stop to the heel of the sole, as and for the purpose specified.

410,818. FIRE-ALARM SYSTEM. WILLIAM L. DENIS, Rochester, N. Y. Filed July 13, 1888. Serial No. 279,807. (No model.)



Claim.—1. In a fire-alarm system, the combination, with a normally-closed but uncharged main circuit and an alarm included therein rendered operative by a current, of a series of current-generators located in a shunt of the main circuit, a readily-fusible joint controlling the main circuit between the ends of the shunt, operating when melted by heat to break the main circuit, substantially as described.

2. In a fire-alarm system, the combination, with a normally-closed but uncharged main circuit, and an alarm included therein rendered operative by an electrical current, of a series of current-generators, each located in a shunt of the main circuit, a readily-fusible joint interposed in the main circuit between the ends of the shunt, operating when melted by heat to break the main circuit, substantially as described.

3. In a fire-alarm system, the combination, with a normally-closed but uncharged main circuit, and an alarm included therein rendered operative by an electrical current, of a series of magneto-generators, each located in a shunt of the main circuit, motors for operating said generators and stops for holding said motors in check, fusible joints holding said stops in position to arrest the motors, said joints being included in the main circuit, substantially as described, whereby upon the melting of the joint the generator will be allowed to operate and the main circuit between the ends of the shunt be broken, as set forth.

4. In a system such as described, the combination, with an uncharged closed main circuit, of a series of current-generators arranged to be separately and independently included therein, an alarm in said circuit rendered operative by a current, a signal-box in another circuit embodying an alarm operating to send a predetermined signal, and an electro-magnet in the main circuit for operating said signal-box, whereby upon the charging of the main line the alarm will be sounded and a signal sent by the box, substantially as described.

5. The combination, with a closed main circuit, of a series of current-generators adapted to be separately and independently included therein, an alarm included in said circuit, a second circuit and a signal-box arranged to send a signal over the same, an electro-magnet controlling the signal-box normally in the main circuit, a shunt around said electro-magnet, and a manually-operated switch for controlling said shunt, substantially as described.

6. In a system such as described, the combination, with an uncharged closed main circuit, of a series of current-generators adapted to be included therein, an alarm in said circuit, a second circuit, a signal-box included therein controlled by an electro-magnet, the latter normally in the main circuit, a shunt around said alarm and electro-magnet, a switch controlling said shunt, a current-generator and alarm, (such as the magneto and its bell,) and a switch for placing the latter in the main circuit, substantially as described.

7. The combination, with the closed but uncharged main circuit, of a series of current-generators adapted to be separately and independently included therein, an alarm in said circuit, a signal-box arranged in a separate circuit controlled by an electro-magnet normally in the main circuit, a shunt around said magnet, and a manually-operated switch controlling said shunt, substantially as described.

8. The combination, with the closed main circuit, of a series of devices included in the main circuit for changing its electrical condition, an alarm in the main circuit, a signal-box arranged to send a signal over another circuit and controlled by an electro-magnet, the latter normally in the main circuit, a shunt around the alarm and electro-magnet, a switch controlling said shunt, a current-generator and alarm, (such as the magneto and its bell,) and a switch for placing the latter in the main circuit, substantially as described.

9. In a fire-alarm system, the combination, with a normally-closed but uncharged main circuit, and an alarm included therein rendered operative by an electrical current, of a series of magneto-generators with the coils of each located in a shunt of the main circuit, motors for operating said generators held in check by readily-fusible connections, said connections forming part of the main circuit, substantially as described, whereby upon the fusing of the connection the generator will be allowed to operate and the main circuit between the ends of the shunt broken, as set forth.

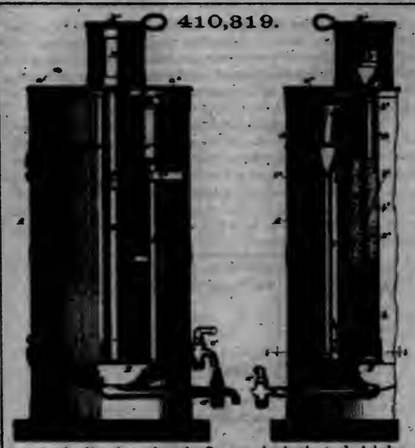
410,819. OIL-FILTER. DAVID R. ELLIS, Chicago, Ill. Filed Feb. 26, 1889. Serial No. 301,515. (No model.)

Claim.— 1. The combination of the tank A, filter-tube B within the tank, oil-supply tube B', and a conduit or conduits leading from the top of the tube B to the lower part of the tank A for conducting the oil which rises through the filtering material in said tube B to a point below the water-line in the tank.

2. The combination, with a tank A, filter-tube B, supply-tube B', and filtering material occupying the space between the tubes B and B', of a second tube C, its interior open-bottomed tube C', the pipe delivering from the upper end of the tube B in the top of the tube C and that leading from the top of the tube C to a point below the water-line of the tank, substantially as described.

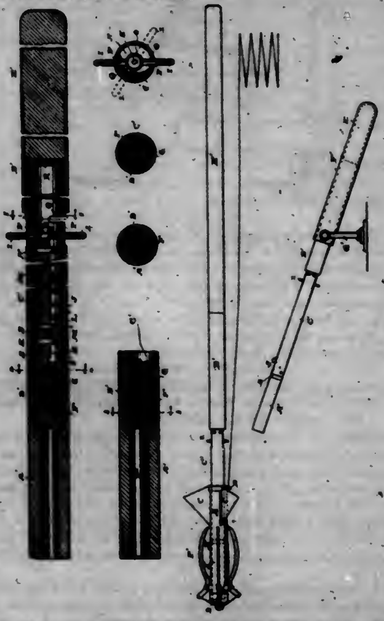
3. The combination, with the tank A, tubes B and C, the interior tubes B' and C', and the pipe leading from the tube B to the tube C', of

410,819.



the pipe leading from the tube C to a point in the tank A below the water-line thereof, and the external faucet leading respectively from the bottom of the tube B, from the bottom of the tank A, and from the tank A above the water-line, substantially as described.

410,820. GUN FOR THROWING EXTERNALLY-APPLIED PROJECTILES. STEPHEN H. EMMES, London, England. Filed Oct. 22, 1888. Serial No. 288,767. (No model.)



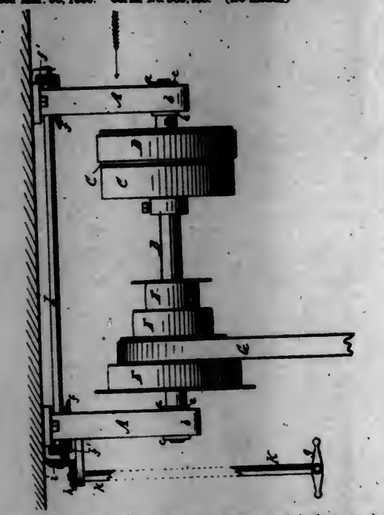
Claim.—1. In combination with a thimble-shaped projectile having an axial guide-bore, a gun having a short cylindrical powder-tube, a firing-device tube, and coupling devices uniting said tubes end to end, all of which are externally fitted to said guide-bore, a suitable stock to which said firing-device tube is attached, inclosed axial firing devices, and a suitable cocking and firing trigger, the latter projecting near the stock end of said firing-device tube, whereby the gun is adapted to carry an externally-applied projectile longer than the powder-tube, substantially as hereinbefore specified.

2. In combination with a powder-tube having the socket part of an interrupted screw-joint at its rear end, a breech-block provided with the plug part of such joint and having its front recessed to admit the base of the cartridge-shell, substantially as hereinbefore specified.

3. In combination with a powder-tube, a firing-device tube in line therewith, an axial hammer-rod within the latter, a detached axial firing-pin provided with a recoil-spring, a combined breech-block and coupling-piece having a shouldered axial bore at its front end, and a chambered rear end, the latter capped to form a central rear guide for the firing-pin, substantially as hereinbefore specified.

4. In combination with a breech-loading powder-tube, a breech-block, and a firing-device tube in line with each other, an axial firing-pin and a recoil-spring therefor within the breech-block, an axial hammer-rod in rear thereof having a collar fast thereon, a suitable trigger connected with its rear end, spiral striking and recoil springs behind and in front of said collar, respectively, and diaphragm-disks fast within the firing-device tube to coact with the springs last named, substantially as hereinbefore specified.

410,821. BELT-TIGHTENER. FRANK R. HYDE, Rochester, N. Y. Filed Mar. 30, 1889. Serial No. 305,495. (No model.)



Claim.—In a belt-tightener, the combination of the hangers A A, provided with ways *b b*, the boxes *a a*, resting loosely in the hangers, the counter-shaft B, resting in said boxes and provided with pulleys, the screw-shafts H H, screwing into the boxes, the longitudinal shaft I, located above the hangers, the gears *f f* and *f' f'*, connecting the longitudinal shaft and screw-shafts, the hand-shaft K, and the gears *h i*, connecting the hand-shaft and longitudinal shaft, as shown and described, and for the purpose specified.

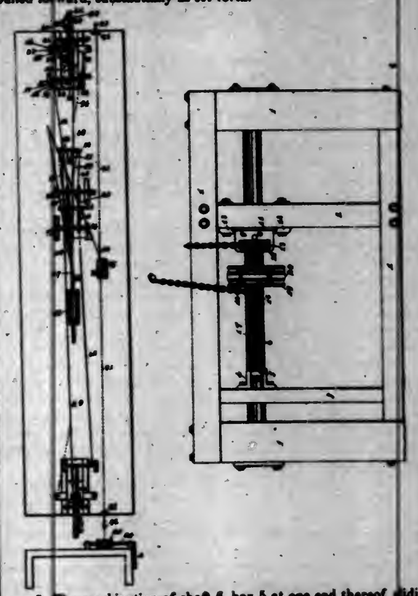
410,822. AUTOMATIC BRAKING AND COUPLING MECHANISM FOR RAILWAY-CARS. WILLIAM KRAMP, Central City, Colo. Filed Oct. 1, 1888. Serial No. 286,922. (No model.)

Claim.—1. The combination of the main axle of a car, a band-wheel located thereon, a shaft above such axle, a pivoted box for one end of such shaft, a sliding box for the other end of such shaft, a band wheel or pulley on such shaft, an endless belt or chain passing over both pulleys and loose thereon when the said shaft is in its lower position; a chain attached to such shaft for connecting it to a brake-lever, and a connection from the shaft or its sliding box to means for raising the shaft into operative position, substantially as set forth.

2. The combination of the shaft 6, the pivoted box 5, supporting one end thereof, the sliding box 7, supporting the other end thereof, the base 11, supported and sliding in grooved ways, the box 7, attached to such base 11 and through which axle 17 passes, the axle 17, the wheel 18 thereon, the wheel 19 on shaft 6, the belt 20, passing over said wheels, the chain 16, secured to the shaft, and means for moving the sliding box 7 and the end of the shaft, substantially as set forth.

3. The combination of the shaft 6, the pivoted box 5, the sliding box 7, the axle 17, band-wheels 18 and 19, chain belt 20, chain 16, for connecting shaft 6 to a brake-lever, a spring, and a connection from the spring to the sliding journal-box, the spring acting normally to lift the sliding journal-box and throw the shaft 6 into position to set and keep set a brake mechanism, substantially as set forth.

4. The combination of the shaft 6, the box 5 at one end thereof, the sliding journal-box 7 at the other end thereof, the main axle 17, band-wheels 18 and 19, belt 20, chain 16, attached to the shaft and adapted to connect it to a brake-lever, a spring, a connection from the spring to the sliding box, the spring acting normally to lift the sliding box and throw shaft 6 into operative position to set the brakes, a reciprocating draw-bar or coupling-bar, and a connection therefrom to the spring, whereby the stress of the latter is taken from the sliding box and the brakes thrown off when the draw or coupling bar is pulled forward, substantially as set forth.



5. The combination of shaft 6, box 5 at one end thereof, sliding journal-box 7 at the other end thereof, band-wheels 18 and 19, belt 20, chain 16, for connecting shaft 6 with a brake-lever, spring 38, rod 46, with head 47, connection 15 therefrom to the sliding journal-box 7, the coupling or draw bar 26, the housing or box 28 therefor, the spring 38, and a connection 48 from the coupling or draw bar at the front of the car to the head of the rod 46, substantially as set forth.

6. The combination of the shaft 6, box 5 at one end thereof, sliding journal-box 7 at the other end thereof, band-wheels 18 and 19, belt 20, chain 16, for connecting shaft 6 with a brake-lever, spring 38, rod 46, with head 47, connection 15 therefrom to the sliding journal-box 7, a sliding coupling or draw bar 26, acted on by spring 38 in the box or housing 28, lever 50, a connection 49 from one end thereof to the draw or coupling bar at the rear of the car, and a connection 52 from the other end of the lever 50 to the spring-acted-on rod 46, substantially as set forth.

7. The combination of the shaft 6, box 5 at one end thereof, sliding journal-box 7 at the other end thereof, band-wheels 18 and 19, belt 20, chain 16, for connecting shaft 6 with a brake-lever, rod 46, acted on by spring 38, connection 15 therefrom to the sliding journal-box 7, a sliding bumper or buffer head, and rods 90 and 53, the rock-shaft 55 and lever-arms 57 58, and a connection from one lever-arm at the front of the car to the spring-acted-on rod 46, substantially as set forth.

8. The combination of the shaft 6, box 5 at one end thereof, sliding journal-box 7 at the other end thereof, band-wheels 18 19, belt 20, chain 16, for connecting the shaft 6 to a brake-lever, rod 46, acted on by spring 38, connection 15 therefrom to the sliding journal-box 7, a sliding bumper or buffer rod 53, rock-shaft 55, lever-arms 57 58, a lever 64, a connection from one end thereof to the lever-arm 57 at the rear of the car, and a connection from the other end thereof to the spring-acted-on rod 46, substantially as set forth.

9. The combination of two buffer or bumper heads and bars, one at either end of a car, and each having a bar or rod 53, rock-shaft 55, and lever-arms 54 57, the sliding bar 59, with catches or lugs 69 70, the sliding bar 60 with catches or lugs 67 68, the pivoted levers 71 73, and the connections, as set forth, whereby as one bumper is pushed in the other is caused to be thrown out, substantially as set forth.

10. The combination of the draw-bar or coupling-bar 26, the spring 38 around the rear of the stem thereof, the box or housing 28, the stop-arm 39, the beveled extension-head 30 of the bar 26, and the latch-head 31, pivoted to the bar 26, substantially as set forth.

11. The combination of the draw or coupling bar 26, having the beveled side extension head 30, the bevel-headed latch 31, pivoted to or in the bar 26, the stop-arm 39, the spring 38, the box or housing 28, and the rubber bumper 36 within the box or housing, substantially as set forth.

12. The combination of the draw or coupling bar 26, having the inclined side head extension 30 and the lug or washer 37 at its rear end, the bevel-headed latch 31, pivoted to or in the bar 26, the stop-arm 39, the box or housing 29, inclosing the rear portion of bar 26, and the spring 38 around such portion of the bar and within the box or housing, substantially as set forth.

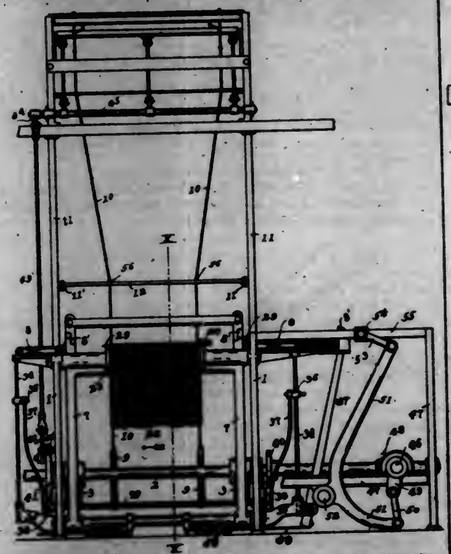
13. The combination of the draw or coupling bar 26, having the inclined side head extension 30 and the lug or washer 37 at its rear end, the bevel-headed latch 31, pivoted to or in the bar 26, the stop-arm 39, the box or housing 29, inclosing the rear portion of the bar 26, the spring 38 around such portion within the box or housing, a wheel 42 on the bar 26, and a chain 43 therefrom to the spindle of an ordinary hand-brake wheel or to a lever, substantially as set forth.

14. The combination of the shaft 6, box 5 at one end thereof, sliding journal-box 7 at the other end thereof, band-wheels 18 19, belt 20, chain 16, for connecting the shaft 6 to a brake-lever, the vertical pivoted lever 76, the spring-catch 77 therefor, a connection therefrom composed of chains 80 and 81 from the opposite ends thereof, and chains 82 and 15 to the sliding journal-box 7, and the train-chain 91, supported beneath the car and having snap-hooks 92 at its ends and having a link passing over the lower end of the lever 76, substantially as set forth.

15. The combination of the shaft 6, box 5 at one end thereof, sliding journal-box 7 at the other end thereof, band-wheels 18 19, belt or chain 20, chain 16, for connecting the shaft 6 to a brake-lever, the vertical pivoted lever 76, the spring-catch 77, chains 80 81 from the opposite ends of lever 76, the chains 82 and 15, connecting them to the sliding box 7, the train-chain 91, supported beneath the car and having end connectors 92 for uniting a series of such chains and connected about its center to the lever 76, the spindle 84 on the tender or engine, the drum 83 thereon, to which the end of the series of chains 91 may be attached, and means for rotating the drum and spindle, substantially as set forth.

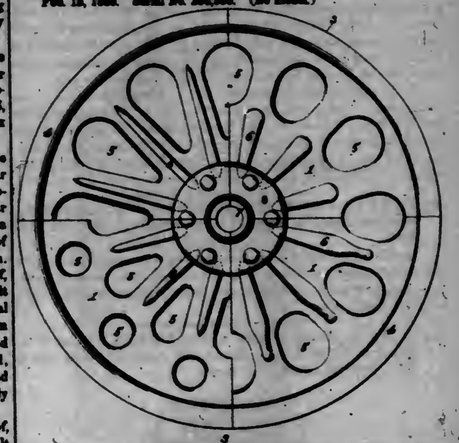
410,823. PILE-FABRIC LOOM. RICHARD B. LOTHE, Worcester, Mass., assignor of one-half to the Knowles Loom Works, same place. Filed Oct. 1, 1888. Serial No. 286,868. (No model.)

Brief.—By employing a fixed comber-board and a movable shuttle-box in place of a movable comber-board and a fixed shuttle-box, less power is required to shift the warp, a large portion of which is allowed to remain in the center of the shed, and at the same time the strain and friction on the warp is correspondingly reduced.



Claim.—In a loom, the combination, with the jacquard and har ness-frames, and means for operating the same, and the lay, filling, drop-box, and wire mechanisms, of a fixed comber-board, for the purpose stated, substantially as set forth.

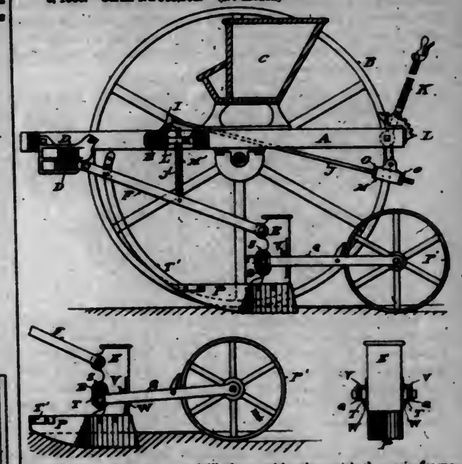
410,824. CAR-WHEEL. HENRY F. MANN, Allegheny, Pa. Filed Feb. 15, 1888. Serial No. 263,982. (No model.)



Claim.—1. A wrought-iron or steel car-wheel having, in combination, a single web, a tread connected at its outer edge to said web, and a flange re-enforced by a fold of metal, portions of the metal of the web being removed for the purpose of lessening the weight of the wheel, substantially as set forth.

2. A wrought-iron or steel car-wheel having, in combination, a web, a tread connected at its outer edge to said web, and a flange, portions of the web being removed for the purpose of lessening the weight of the wheel, the edges of the holes formed by the removal of the metal being turned at an angle to the web, substantially as set forth.

410,825. GRAIN-DRILL. PERHAM P. MANN, Springfield, Ohio, assignor to P. P. Mast & Company, same place. Original application filed Feb. 16, 1888, Serial No. 263,131. Divided and this application filed June 8, 1889. Serial No. 313,562. (No model.)



Claim.—1. In a grain-drill, the combination, with the main frame, a hoe, and a runner upon which the hoe is mounted, a bar connecting the hoe with the said frame, and an adjustable connection for the forward end of the runner to change its inclination, of a grain and soil packing wheel and its connecting-bars, and devices to depress the wheel and the runner.

2. In a grain-drill, the combination, with a hoe and a runner upon which it is mounted, the same being connected with the frame of the machine, and devices to depress the hoe into the ground, of a grain and soil packing wheel and its connecting-bars pivotally attached

to the hoe, and a lateral projection on the hoe above and below said bars, the one to transfer the pressure on the hoe to the wheel, and the other to lift the wheel with the hoe.

3. In a grain-drill, the combination, with a hoe and a runner upon which it is mounted, a beam connecting the hoe with said frame, and a bar adjustably connecting the forward end of the runner with said beam, of a grain and soil packing wheel and its connecting-bars pivotally attached to the hoe, and a lateral projection on each side of the hoe above and below said bars, the one to transfer the pressure on the hoe to the wheel, and the other to lift the wheel with the hoe.

4. In a grain drill, the combination, with the main frame, a hoe and a runner upon which the hoe is mounted, a bar connecting the hoe with the said frame, and an adjustable connection for the forward end of the runner to change its inclination, of a grain and a soil packing wheel and its connecting-bars pivotally attached to the hoe, and devices to depress said wheel by the depression of said hoe.

410,326. FIRE-EXTINGUISHING COMPOSITION. CHARLES MAYR, Springfield, Mass. Filed Sept. 23, 1887. Serial No. 251,260. (No specimens.)

Claim.—A charge for a fire-extinguisher, consisting of a mixture of the following ingredients: water, sulphuric acid, nitrite of soda, and an organic amide, like acetamide, in the proportions substantially as herein specified.

410,827. WATCH-BARREL. CHARLES H. METLAR, New York, N. Y., assignor to Mathey Brothers, Mathey & Co., same place. Filed June 8, 1889. Serial No. 313,545. (No model.)

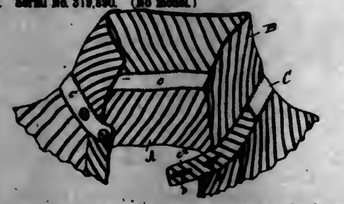


Claim.—1. The combination, with the arbor F, spring and spring-barrel A, of a secondary-spring barrel C, surrounding the arbor F, and a spring 6, within the barrel C and connected at its ends with the hub on the arbor F and with the spring-barrel, substantially as set forth.

2. The combination, with the arbor F, of the mainspring and spring barrel A, for giving motion to the time mechanism in a watch, the hub 5, surrounding the winding-arbor F, the secondary barrel C, and gear D, also surrounding the arbor F, and the spring 6, connected at one end to the hub 5 and having a projecting end that catches into notches in the interior of the secondary barrel C, substantially as set forth.

3. The combination, with the winding-arbor F, mainspring and spring-barrel A, around such arbor, of the secondary spring and spring-barrel C, also around the arbor F, a wheel H, having a central opening setting over the square end of the arbor, and a circular hub entering a hole in the watch plate or bridge, and a pawl for holding such wheel H, substantially as set forth.

410,328. SHIRT. SIMON MILLER, Philadelphia, Pa. Filed Aug. 6, 1888. Serial No. 319,890. (No model.)

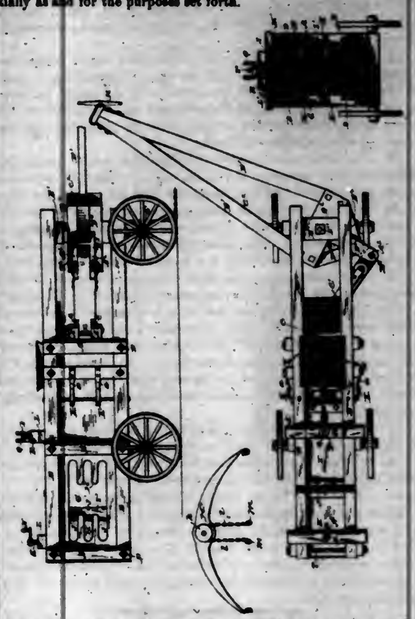


Claim.—A shirt composed of woolen material, having intermediate of the upper end of the body and the collar an inelastic band C, connected at its opposite edges to said collar and body by rows of stitches, in combination with supplementary button hole tab C^3, overlying and extending outwardly beyond one end of the inelastic band, said tap being composed of the same material as the shirt, as and for the purpose intended, substantially as described.

410,829. HAY-PRESS. CHARLES DE W. MCNEILL, Goliad, assignor of one-half to Francis E. Hunt, Victoria, Tex. Filed Nov. 13, 1888. Serial No. 290,768. (No model.)

Claim.—1. The combination, with the press-chamber having an adjustable top, of the block R, provided with pins bearing against different parts of the top, the cross-timber L', having apertures for the passage of the pins of the block R, the screw P, passed through said cross-timber and block, and the nut Q, applied to the end of said screw to regulate the pressure of said block and its pins, substantially as and for the purposes set forth.

2. The combination, with the adjustable top of the spring connected to and suspending said top, and the screws for adjusting the top, one of said screws being located at the discharge end of the tie-box and the other located over or adjacent to the feed-box, substantially as and for the purposes set forth.



3. The combination, with the plunger formed with jaws and the main lever, of the toggle-lever connected at one end with the main lever and at the other end formed with a longitudinally-slotted tongue and shoulders above and below the tongue, said slot being of a length and said shoulders located at a point with reference to the slot to permit the end of the tongue and the shoulders to bear against the plunger at three points in the compression of the hay, and a bolt passing through the slot and securing the said lever to the plunger, substantially as and for the purposes set forth.

4. The combination, with the plunger and main lever, of the toggle-lever having a tongue formed with a slot permitting a longitudinal play of the lever, a bolt passing through the slot and connecting the toggle-lever and main lever together, friction-rollers mounted above and below the tongue, and a roller mounted between the end of the tongue and the main lever, said rollers being located, substantially as described, to form three yielding points of contact between the toggle-lever and main lever at their adjacent ends when brought together, substantially as and for the purpose set forth.

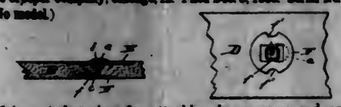
410,330. TOOL FOR APPLYING SEALING-WAX. WILLIAM A. PORTERFIELD and JOHN R. SHANNONHOUSE, Jr., Bellaire, Ohio. Filed May 9, 1888. Serial No. 310,140. (No model.)



Claim.—The herein-described tool for use in applying sealing-wax, the same consisting of the head B; having its base portion thickened in order to retain the heat, and having an extension or shank

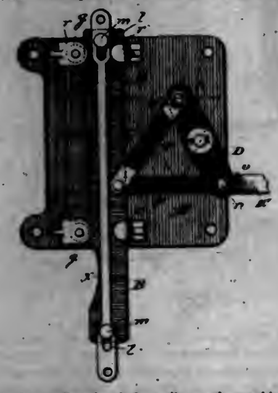
and handle, as described, and having formed in its upper face a substantially pear-shaped chamber D, communicating with the free end of the head by means of a narrow triangular outlet-passage E, substantially as described, and for the purpose specified.

410,331. FASTENING FOR ICE-CREEPERS. WILLIAM W. PRESTON and EDWARD F. PRESTON, Bismarck, Mich., assignors to the Preston Ice Creeper Company, Chicago, Ill. Filed Dec. 3, 1888. Serial No. 292,590. (No model.)



Claim.—A fastening for attaching ice-creepers and analogous articles, consisting of a malleable nail having a large neck *b*, long enough to pass through the creeper and enter the body of the rubber, and a flat blade *c*, in combination with the washer F, having a central bar *f*, around which the nail may be clinched, said washer bearing upon the rubber immediately around the nail, substantially as set forth.

410,332. RAILROAD-SWITCH APPLIANCE. ISHAM RANDOLPH, Englewood, Ill. Filed Apr. 20, 1889. Serial No. 308,066. (No model.)



Claim.—1. In a railroad-switch appliance, the combination, with a suitable supporting-base, of a reciprocating bar B and a toggle-lever device comprising arms *p* and *p'*, pivoted to the said bar, and a pivoted bar D, joining the said arms at their free ends, substantially as and for the purpose set forth.

2. In a railroad-switch appliance, the combination of a base A, a reciprocating bar B, and a toggle-lever device comprising arms *p* and *p'*, pivoted to the said bar and having elongated openings *o* in their free ends, and a bar D, pivoted near its center and having studs near its opposite extremities extending into the elongated openings *o*, substantially as and for the purpose set forth.

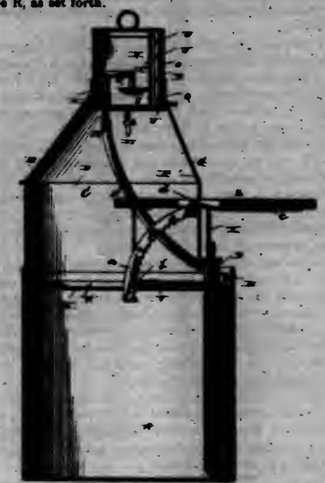
3. In a railroad-switch appliance, the combination of a base A, having guides *r* and *r'*, a reciprocating laterally-recessed bar B, confined between the guides, and a toggle-lever device comprising pivotally-connected arms *p* and *p'*, pivoted to the bar B, and a bar D, pivoted near its center and joining the said arms at their free ends, substantially as and for the purpose set forth.

4. In a railroad-switch appliance, the combination, with a suitable supporting-base, of a reciprocating bar B, a toggle-lever device comprising arms *p* and *p'*, pivoted to the said bar, and a pivoted bar D, joining the said arms at their free extremities, and a bar I, confined on the bar B and having limited longitudinal play thereon, substantially as and for the purpose set forth.

410,333. MEASURING-VESSEL. WALTER S. REYNOLDS, Clayton, Del. Filed Jan. 4, 1889. Serial No. 295,302. (No model.)

Claim.—1. The oil-tank having the perforated top and the dome C erected thereon, the measuring-vessel supported at the upper end of the dome, the pipe-connections between the measuring-vessel and the tank, the pump B within the latter, and the supporting-table Z, attached permanently to the perforated top of the tank and inclosed within the dome below the measuring-vessel, as set forth.

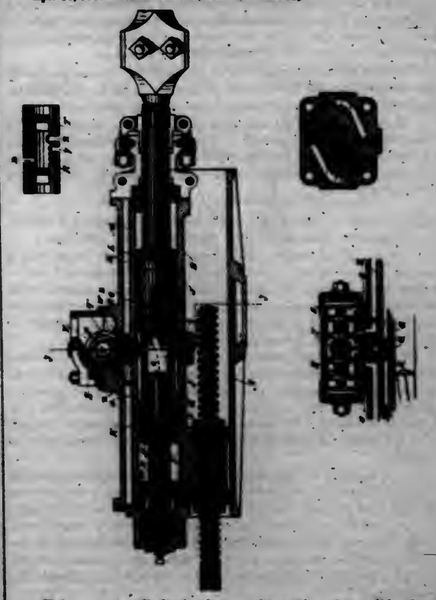
2. The combination, with the oil-tank and the dome therefor, of the pump, the measuring-vessel supported by the dome and having a short tube depending from its bottom, the flexible tube extending between the said short tube and the pump, the pipe R, arranged within the measuring-vessel and communicating with the tube depending from the bottom of the same, and the strainer secured on the end of the pipe R, as set forth.



3. The combination of the measuring-vessel having a slot in its side provided with a transparent cover, the vertical perforated partition arranged within the vessel adjacent to the slot, the inlet-tube and discharging-faucet in the bottom of the vessel, and the pipe R within the vessel, leading from the inlet-tube and provided with a strainer, as set forth.

4. The improved measuring device herein described and shown, comprising a tank, a pump in the tank, a supporting-table on the tank, a measuring-vessel supported by the tank above the said table, the pipe R in the measuring-vessel, having a strainer on its end, flexible connections between the pump and the measuring-vessel, the discharge-faucet L in the bottom of the measuring-vessel, and a transparent gage in the side of the measuring-vessel, as specified.

410,334. ROCK-DRILL. EDWARD A. REX, San Francisco, Cal. Filed Apr. 15, 1889. Serial No. 307,320. (No model.)



Claim.—1. A cylinder having a reciprocating piston, slides fitted into guides upon opposite sides of the cylinder, so that a line drawn

through the axis of the cylinder will pass through the center of the sides, central channels through the guides, and bolts passing through said channels and securing the heads to the cylinder, substantially as herein described.

2. In a rock-drill, the cylinder having a piston reciprocating and rotating therein, the non-rotating reciprocating sleeve fitted between the heads of the piston, said sleeve being made in a single piece and having a series of cam grooves or slots formed longitudinally in different parts of its surface, and a threaded follower for retaining the sleeve in place, substantially as herein described.

3. In a rock-drill, the reciprocating rotating piston, the non-rotating sleeve having the longitudinal cam groove or channel, in combination with the threaded follower for retaining the valve in place, the reciprocating main valve, and the intermediate supplemental claw or valve having a stem or shank which engages the cam-groove of the sleeve, whereby the valve is moved transversely to the movement of the piston, substantially as herein described.

4. In a rock-drill, the cylinder and reciprocating piston, the valve-chamber and sleeve fitted in said chamber having slots or openings corresponding with the ports which connect with the end of the cylinder, in combination with a hollow cylindrically-balanced valve reciprocating within the sleeve transversely to the movement of the piston, and an auxiliary claw or valve having a valve-stem which receives motion from the reciprocating piston and transmits it to the main valve, substantially as herein described.

5. In a rock-drill, the reciprocating piston having a fixed head at one end, a non-rotating sleeve fitted to said piston, and a screw-threaded follower N, whereby the sleeve is retained in place and wear between the ends of the sleeve and the piston-heads may be compensated, substantially as herein described.

410,335. STEERING ATTACHMENT FOR BICYCLES. WILLIAM R. SANBORN, Boston, Mass. Filed June 8, 1889. Serial No. 313,613. (No model.)



Claim.—1. In a bicycle of the character described, the springs *f*, having one end secured at a common point on the saddle F, their opposite ends being secured to the handle-bar H, respectively, at points equidistant from the fork D, substantially as described.

2. In a bicyle provided with the post E, fork D, and handle H, the clamps *p* on said handle, and the springs *f*, having the chains *k*, connecting said posts and clamps, substantially as described.

3. In a bicyle of the character described, two coiled springs of equal tension secured at one end of the saddle and provided with chains on their opposite ends for adjustably securing them, respectively, in two clamps on the handle-bar equidistant from the fork, substantially as described.

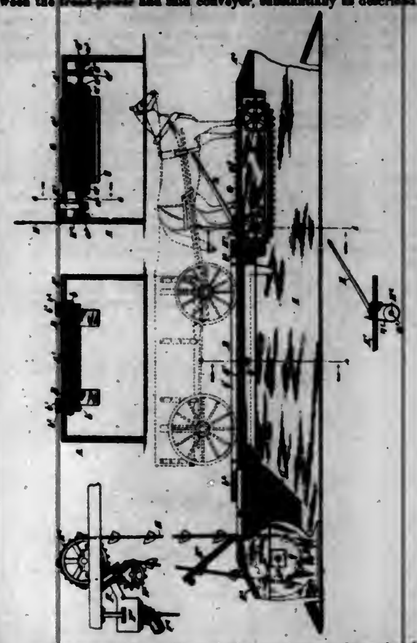
410,336. GRAIN DUMP AND ELEVATOR. MARION P. SMILEY, Chicago, Ill. Filed May 7, 1888. Serial No. 273,094. (No model.)

Claim.—1. A dumping and elevating apparatus comprising a wagon-dump, a hopper located in position to receive material from a wagon upon the dump, an elevator adapted to receive material from the hopper, and a tread-power located in position to be operated by the horses attached to the wagon upon the dump and adapted to actuate the elevator, substantially as described.

2. A dumping and elevating apparatus comprising an elevated platform, a wagon-dump therein, a hopper located beneath the floor of the platform adjacent to the dump, an elevator adapted to receive material from the hopper, and a tread-power supported upon the platform and in position to be operated by the horses attached to a wagon upon the dump and adapted to actuate the elevator, substantially as described.

3. A dumping and elevating apparatus comprising a wagon-dump, a hopper located in position to receive material from a wagon upon the dump, an elevator adapted to receive material from the hopper, a tread-power for actuating the elevator located at a point in front of and adjacent to the dump and in position to be operated by the horses attached to a wagon upon the dump, and a second or auxiliary tread-power also adapted to actuate the elevator, substantially as described.

4. The combination, with a dumping and elevating apparatus embracing a wagon-dump, a hopper, an elevator located in position to be operated by the horses attached to a wagon upon the dump, and a tread-power, of a grain-bin having a conveyer extending from the lower part of the bin to the elevator, and operative connections between the tread-power and said conveyer, substantially as described.



5. The combination, with a platform and wagon-dump therein, of an elevator, a tread-power for actuating the same mounted in the platform in position to be operated by the horses attached to the wagon upon the dump and having pivotal connection with the latter, and means attached to the thread-power for adjusting the latter and holding the same at a desired angle, substantially as described.

6. The combination, with a platform and wagon-dump therein, of an elevator, a tread-power for actuating the same pivotally supported at one end upon the platform in position to be operated by the horses attached to a wagon upon the dump, and a counterbalance-weight attached to the frame of the tread-power, substantially as described.

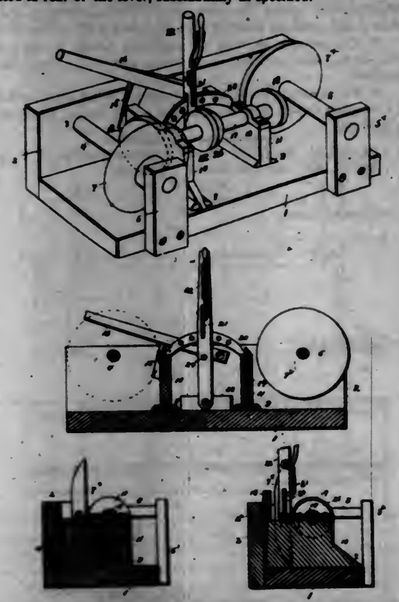
7. The combination, with a wagon-dump and an elevator, of a tread-power located in position to be operated by the horses attached to a wagon upon the dump, and which tread-power is pivotally supported at its forward end and provided at its rear end with a shaft provided with a sprocket-wheel, and a driving-belt trained over said wheel and the driving-pulley of the elevator, substantially as described.

8. The combination, with an elevated platform, wagon-dump therein, an elevator, and a tread-power for actuating the same located upon the platform adjacent to the wagon-dump and in position to be operated by the horses attached to a wagon upon the dump, of movable guards located at the sides of the tread-power, substantially as described.

9. The combination, with an elevated platform, a wagon-dump therein, an elevator, and a tread-power for actuating the same located adjacent to the wagon-dump and in position to be operated by the horses attached to a wagon upon the dump, of guards located at the sides of the tread-power, stationary supports for said guards, and a plurality of pivoted links connecting the said guards with the said supports, substantially as described.

410,337. MECHANISM FOR GOVERNING THE FEED OF SAW-MILLS. HORATIO B. STRONG, Wilkesville, Ohio. Filed Apr. 19, 1889. Serial No. 307,778. (No model.)

Claim.—1. In a feed mechanism, a counter-shaft and a feed-shaft parallel therewith, each provided with friction-disks, in combination with parallel sliding blocks, a set-screw for adjusting one of the blocks, and a wedge adapted for insertion between the end of the other block and a fixed part of the frame-work, a reciprocating shaft mounted in boxes on the blocks and provided with friction-pulleys engaging the disks, and a grooved collar fixed thereon between its bearings, and a lever pivotally connected with the base and provided with an arm constructed to engage said shaft and provided with a spring-bolt, and a curved adjusting-bar having perforations engaged by the bolt and located in rear of the lever, substantially as specified.



2. The combination, with the base 1, having the wall 2, the shafts 4 and 6, and their supports 5 and 5°, the disks 7 and 7°, mounted on their respective shafts, and adjustable blocks 10 and 11, having the reciprocating shaft 17, carrying the friction-pulleys 18 and 19, and the lever 15, pivoted to the wall and provided with the wedge-shaped arm 16, adapted for insertion between the end of the block 10 and the wall 2, substantially as specified.

3. In a mechanism of the class described, opposite shafts provided with friction-disks, in combination with an intermediate reciprocating shaft at an angle to the opposite shafts provided with friction-pulleys adapted for contact with the disks, and means, substantially as described, for reciprocating said shaft, the sliding block 10, for supporting the intermediate shaft, and the lever with a wedge adapted to be inserted between the end of the block and fixed part of the frame-work, for the purpose set forth.

410,338. TOASTER. FREDERICK W. ULLRICH, Cleveland, Ohio. Filed Apr. 23, 1888. Serial No. 272,161. (No model.)



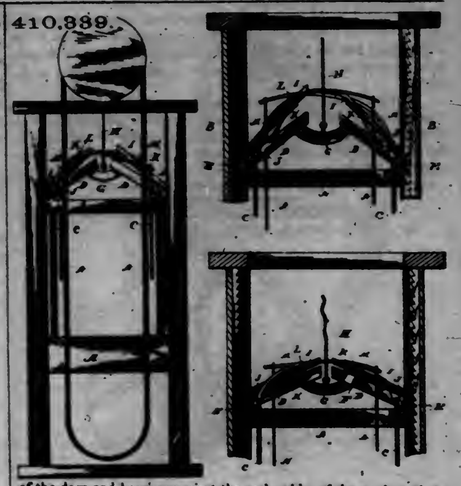
Claim.—1. In a toaster, the plate A, having one or more grooved flanges B, and a wire frame D, provided with handle H, constructed and combined, substantially as and for the purpose specified.

2. In a toaster, the combination, with plate A, having one or more grooved flanges B, and the frame D, of the cross-bar E, for supporting the frame D above the plate A, as and for the purpose specified.

410,339. SAFETY DEVICE FOR ELEVATORS. NATHAN WALKER, Norwich, Mass. Filed May 6, 1889. Serial No. 309,808. (No model.)

Claim.—As an improvement in elevators, the combination of the elevator-car, the rods C, rising therefrom, the dogs pivoted on the upper ends of said rods, the link connecting the inner ends of the said dogs, the pawls pivotally mounted on the upper sides of the dogs and having bearings L on their sides, the springs secured on the upper sides of the dogs and bearing against the under sides of the pawls, and the levers M, pivoted on the rods C and resting on the bearings L, and having cords N depending from their free ends, as specified.

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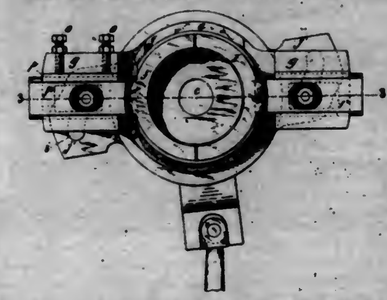
410,340. BALE-TIE BUCKLE. SAMUEL J. WEBB, Minden, La. Filed Dec. 3, 1888. Serial No. 292,553. (No model.)



Claim.—1. A bale-tie buckle formed on the arc of a circle and provided with slightly-curved side prongs and a central wedge-shaped prong having a longitudinal ridge and a recess in its under surface and arranged above the plane of the side prongs, substantially as specified.

2. The herein-described bale-tie buckle, formed in a single piece and consisting of the body portion 1, formed on the arc of a circle and provided with the opposite slightly tapered and recessed side prongs 4 and the central wedge-shaped and recessed prong 2, having the ridge 3' and terminating in a plane above the side prongs, substantially as specified.

410,341. CAN-HEADING MECHANISM. EDWIN E. ASHELL, Malden, Mass. Filed Jan. 14, 1889. Serial No. 296,945. (No model.)



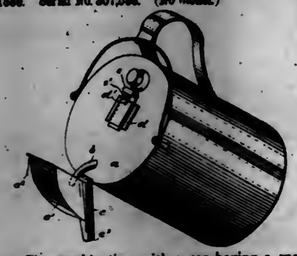
Claim.—1. A jaw-movement for can-heading mechanisms, consisting of the combination, with a head *a*, having a circular recess *b*, with an enlargement or offset *d* in its upper or outer edge, said head having also the wings *g*, provided with guideways, of the sliding jaws movable in said guideways and provided with studs or bolts, said jaws extending above or outside of said offset, and a cam-ring surrounding said head and having wings provided with cam-slots entered by said studs or bolts, substantially as described.

2. A jaw-movement for can-heading mechanisms, consisting of the combination, with a head *a*, having a circular recess *b*, with an enlargement or offset *d* at its upper or outer edge, said head having also the wings *g*, provided with guideways, of the sliding jaws movable in said guideways and provided with studs or bolts, said jaws extending above or outside of said offset, the ring or collar *k*, rigid

with said head and having wings provided with guiding-slots receiving said stud or bolts, and a cam-ring *j*, arranged between the wings of said head and the said collar and having wings provided with cam-slots, through which the said studs or bolts pass, substantially as described.

3. The combination, with the head *a*, having the circular recess *b*, provided with the offset *d*, and having also the wings provided with guideways, of the sliding jaws movable in said guideways and extending over said offset, the studs or bolts *h*, adjustably secured to the shanks of said jaws, and the cam-ring *j*, having wings provided with cam-slots receiving said bolts, substantially as described.

410,842. OIL-CAN. ALBERT A. ARNOLD, Jacksonville, Fla. Filed Apr. 17, 1889. Serial No. 307,588. (No model.)

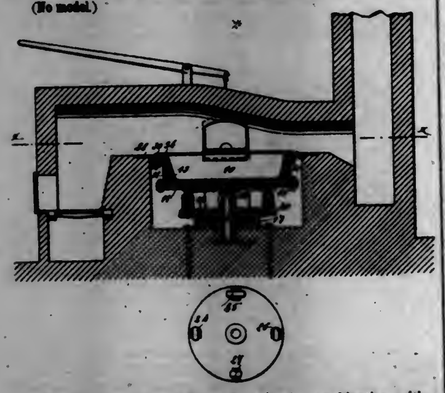


Claim.—1. The combination, with a can having a spout, of an inverted funnel *c*, surrounding the spout and hinged to the can in front thereof, and a fastening for the funnel, substantially as set forth.

2. An oil-can provided with a concave top having an aperture *a'*, a spout *b*, and an inverted funnel *c*, surrounding the spout and hinged to the can in front thereof, and a slide for fastening the funnel, whereby the can may be used to pour from with its funnel fastened or unfastened, and the drippings from the funnel will run through aperture *a'* into the can, substantially as set forth.

3. The combination, with an oil-can having an apertured concaved top and provided with a fixed spout projecting from said concave top, of a funnel-like auxiliary spout hinged to the can adjacent to the fixed spout to be swung over the latter to form a shield therefor or away from the same to form a funnel, a keeper secured to the can-top and having an aperture in alignment with the one in said top, and a slide held by said keeper for engaging and fastening the hinged spout and having an aperture to register with the aperture in the top and keeper, substantially as described.

410,843. UNDULATING FURNACE HEARTH OR BASIN. ANTHONY BARKER, Pittsburg, Pa. Filed Dec. 19, 1888. Serial No. 294,076. (No model.)



Claim.—1. In an undulating furnace, the combination, with a basin or hearth, of a central post or standard upon which the hearth is free to turn, a revolvable disk, and wheels of unequal diameter carried thereby and arranged to bear against the under side of the hearth, substantially as described.

2. In an undulating furnace, the combination, with a hearth formed with a central boss or projection having a concave central recess, of a cam-faced flange surrounding said boss, a post or standard entering the recess of the central boss, a revolvable disk, and wheels carried by said disk and arranged to bear against the cam-faced flange, substantially as described.

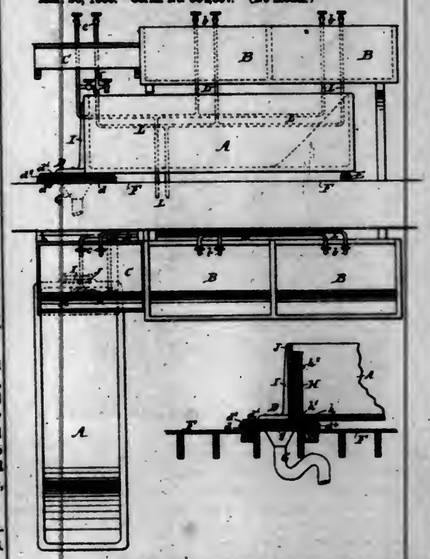
3. The combination, with a hearth supported by a central standard and a means for tilting the hearth, of swinging aprons or flanges mounted to bear against the outer edge of the hearth-flange, substantially as described.

4. The combination, with a hearth, of a central supporting post or standard, a means for undulating the hearth, swinging aprons or flanges bearing against the outer face of the hearth-flange, and an asbestus fold arranged about the hearth, substantially as described.

5. The combination, with an undulating hearth or basin, of a swinging fore-plate arranged in connection therewith, substantially as described.

6. The combination, with a non-revolvable tilting hearth or basin, of a swinging fore-plate resting against one edge thereof, substantially as described.

410,844. BATH-TUB. HUGO P. BRUNNER, New York, N. Y. Filed Mar. 26, 1889. Serial No. 304,997. (No model.)



Claim.—1. A bath-tub swivel-hinged at one end next its waste-outlets, the hinge of the tub having an outlet in its upper movable plate communicating with the tub, and provided in its lower plate or part with an outlet communicating with the waste-pipe, with which the tub-outlet coincides only when the tub is swung outward for use, substantially as herein set forth.

2. The combination, with a bath-tub, of a base-plate *d*, having a waste-outlet *g* and set at one end of the tub, a plate *d'* on the base-plate, a retaining-plate d^3, holding the plate *d'* to the plate *d*, said plate *d'* having a hole *h* registering with the outlet *h'* of the tub, and provided also with an upright lug, to which the end of the tub is connected, substantially as herein set forth.

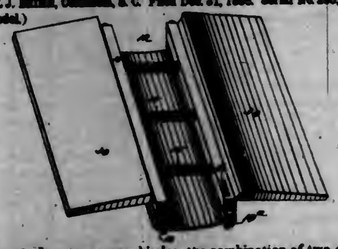
3. A bath-tub swivel-hinged at one end next its waste-pipe connection and having an outlet *h'*, the hinge having a base-plate provided with a waste-outlet *g*, and a movable disk-plate held to the tub and provided with a hole *h*, registering with the tub-outlet *h'* and adapted to register with the waste-outlet *g* when the tub is swung outward for use, and an overflow-pipe fitted detachably to the outlets *h h'* in the tub and hinge-plate, substantially as herein set forth.

410,845. IMPLEMENT FOR DEHORNING CATTLE. JOHN S. BIXBY and ALBERT BLANCHARD, Rolfe, Iowa. Filed Feb. 12, 1889. Serial No. 299,619. (No model.)

Claim.—1. In a dehorning implement, the combination, with a body provided with a fixed blade at one extremity, a keeper, and a lever pivoted at or near the lower end, of a blade pivoted upon the said body, capable of moving upon the fixed blade when closed, and provided with an integral arm at the lower end, a curved guide-arm secured to the pivoted blade and blade-arm, said arm passing through the keeper upon the body, and a link connecting the extremity of the blade-arm and the lever, all combined for operation substantially as shown and described.

2. In a dehorning implement, the combination, with a body provided with a fixed blade at the upper end, a keeper, and a lever pivoted at or near the lower end, of a second blade pivoted upon the said body, adapted when closed to contact with the fixed blade, said pivoted blade having at its pivotal point a longitudinal slot and being provided with an arm integral with the lower end, a curved guide-arm integral with the pivoted blade and blade-arm, said arm passing through the keeper of the body and having straight surfaces *c* and *c'* and a circular surface *d*, and a link connecting the outer extremity of the blade-arm and the lever, substantially as described, whereby a shearing or sliding movement is imparted to the pivoted blade as it approaches the fixed blade, as set forth.

410,846. TEMPORARY BINDER. GEORGE A. BLACKBURN and DANIEL J. REESE, Columbia, S. C. Filed Dec. 31, 1888. Serial No. 295,050. (No model.)



Claim.—1. In a temporary binder, the combination of two cases having covers hinged thereto, a backing adjustably connected to the cases, and adjustable binding-strips extending from one case to the other, substantially as described.

2. In a temporary binder, the combination of cases, covers hinged thereto, rollers mounted in the cases, a back connected to the rollers, binding-strips, and a means for adjusting said binding-strips, substantially as described.

3. In a temporary binder, the combination, with cases, of shafts or rollers mounted therein, leaves hinged thereto, a flexible back connected to the rollers, binding-strips, a roller to which said strips are connected, and a means for locking the roller to place, substantially as described.

4. In a temporary binder, the combination, with cases, of covers hinged thereto, rollers mounted therein, springs arranged in connection with the rollers, a flexible back connected to the rollers, binding-strips connected at one end to one of the cases, a shaft arranged in the other case, the binding-strips being connected to this shaft, a ratchet carried by the shaft, and a pawl mounted in the case and arranged to engage the ratchet, substantially as described.

410,847. VEHICLE-WHEEL. JAMES W. BROOK, Lynchburg, Va. Filed Apr. 3, 1889. Serial No. 305,814. (No model.)



Claim.—1. The combination, with the core A, of a metallic hub formed of sections encircling said core, said sections provided with inwardly-extending projections adapted to bite into said core, metal bands adapted to be shrunk over the outer ends of said core-sections, whereby said sections are secured in place upon the core, and spokes cast integral with said hub-sections, substantially as and for the purpose described.

2. An improved metallic vehicle-wheel formed of sections, each section consisting of a hub portion B' and spokes D, cast integral with said hub portion, and a metal felly-section C, secured upon the ends of the spokes, substantially as shown and described.

3. An improved metallic wheel formed of sections, each section comprising a hub portion B', a felly-section C, and spokes D, connecting said felly-section and hub portion, said felly-section, hub portion, and spokes cast integral, substantially as and for the purpose described.

4. The combination, with the hub portions B' and the spokes D, cast integral therewith and provided with projecting portions *d'* *d'* at their outer ends, of the metallic felly-section C C, adapted to fit over said projections *d'*, and means for securing said sections C to the spokes, substantially as shown and described.

5. The combination, with a metallic wheel formed of sections, each section consisting of a hub portion B', spokes D, and a felly-section C, cast integral with each other, said felly-sections forming a continuous supplemental felly, of a wooden felly formed in sections, said sections adjusted on said supplemental felly, so as to break joints, and means for securing said wooden and metal felly-sections together, substantially as shown and described.

6. The hereinbefore-described improvement in vehicle-wheels, formed of sections comprising a central apertured core A, metallic sections B', each formed with a hub portion B, hollow spokes D, hub-sections C C, and projections d^3 d^3, formed integral therewith, a wooden felly formed in sections arranged about said metal felly-sections, so as to break joints, a tire, and means for holding said hub-sections together, all arranged substantially as and for the purpose described.

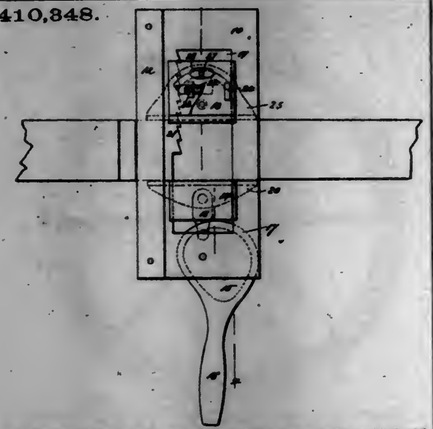
410,848. DADO-GUIDE. WILLIS S. CORNWOX, Binghamton, N. Y. Filed Sept. 15, 1888. Serial No. 285,502. (No model.)

Claim.—1. A dado-guide consisting in the body or frame 10, having one longitudinal edge formed or provided with a straight-edge or guide 12, an adjustable head-block 13 in said slot at one end, a sliding tail-block in the opposite end of the slot, a pivoted cam for reciprocating said tail-piece, a jaw pivoted to freely turn on the under side of the tail-piece, a jaw pivoted to turn freely on the lower face of the head-piece and provided with a segmental slot concentric with its pivot, and an adjusting-screw whereby, when the tail-jaw is set at the desired angle against the material, the head-jaw will, when forced against the material, adjust itself to said angle, substantially as set forth.

2. The combination, with the base or body having a straight-edge or guide along one longitudinal edge, of longitudinally-adjustable head and tail pieces thereon having horizontally-turning clamping-jaws the ends of which lie wholly within the plane of the outer face of said straight-edge, substantially as set forth.

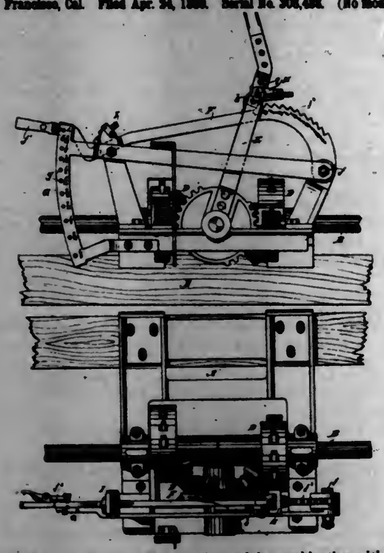
3. The combination, with a frame 10, having a longitudinal slot through it from its upper to the lower face, a rack on one wall of the slot, the head-piece 13, sliding in the slot and having a transverse catch engaging the rack, the jaw 25, pivoted to the lower side of the head-block and having a curved slot, and a screw 27, extending up through

410,348.



said slot and block to the upper side of the frame and provided with a thumb-nut, of the tail-piece 14, sliding in the opposite end of the slot and provided with a stud 18 on its under side, the cam-lever pivoted to the frame and having a rib engaging the stud to positively throw the tail-block in either direction, and the jaw 20, secured to the tail-block, substantially as set forth.

410,349. SAW-MILL SET-WORKS. FREDERICK W. COOK, San Francisco, Cal. Filed Apr. 24, 1888. Serial No. 308,492. (No model.)



Claim.—1. In saw-mill set-works, and in combination with the vibrating set-lever, the pivoted swinging set-bar having a series of shoulders or stops, a fixed rack for limiting and defining the movement of the set-bar, and a stop on the set-lever for coming in contact with any of the shoulders or stops of the set-bar, according to the position of said bar, substantially as described.

2. In saw-mill set-works, and in combination with the vibrating set lever, the pivoted swinging set-bar having the series of shoulders or stops, the fixed rack having a series of holes corresponding with the shoulders or stops of the set-bar, a pawl on the end of the set-bar adapted to engage the holes of the fixed rack, and a stop on the set-lever for coming in contact with any of the shoulders or stops of the set-bar, according to the position of said bar, substantially as described.

3. In saw-mill set-works, and in combination with the set-lever having a forked or divided lower portion, the pivoted swinging set-bar passing through said lower portion of the set-lever and having a series of shoulders or stops, the fixed rack for limiting and defining the movement of the set-bar, and a stop-block between the members of the lower portion of the lever for coming in contact with any of the shoulders or stops of the set-bar, according to its position, substantially as described.

4. In saw-mill set-works, and in combination with the vibrating set-lever having a stop-block, the pivoted swinging set-bar having a series of shoulders or stops with which the stop-block of the lever is adapted to come in contact, the fixed rack for engaging the end of the set-bar and limiting and defining its movement, and the pivoted swinging stop-piece on the lever adapted to be thrown down to come in contact with the shoulders or stops of the set-bar to provide for the saw-kerf, substantially as described.

410,350. DOUGH-MACHINE. GEORGE H. CROSS, St. Johnsbury, Vt. Filed May 22, 1889. Serial No. 311,749. (No model.)

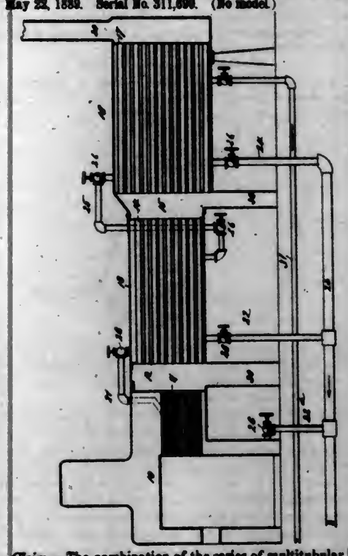


Claim.—1. The combination, with the frame 1, of the box 2, having the perforated bottom 3, the sliding frame 3 4, the lever 7, centrally pivoted to the end of the box 2, the rod 9, connecting the sliding frame and one end of the lever, and an operating-rod 11, substantially as set forth.

2. The combination, with the frame 1, of the box having a perforated bottom, the sliding frame, the centrally-pivoted lever, the rod connecting the frame and lever, an operating-rod, and the coiled spring, substantially as set forth.

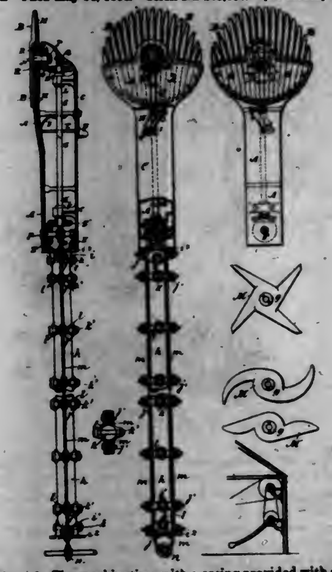
3. The combination, with the frame 1, of the box having the perforated bottom and the inner side cleats, the sliding frame, the centrally-pivoted lever, the rod connecting the frame and lever, the coiled spring, a foot-pedal, and the rod connecting the lever and pedal, substantially as set forth.

410,351. BOILER. CHARLES J. DAVIDSON, Sioux City, Iowa. Filed May 22, 1889. Serial No. 311,690. (No model.)



Claim.—The combination of the series of multitubular boiler-sections 10, 13, and 16, the cross-sectional area of the second being greater than the first, and the third section greater than the second, the upper pipes 21 and 25, which connect the said sections, the lower pipes 22 22ª 24 and blow-off pipe 23, connected, as specified, and the feed-pipe 31, which leads to the third or largest boiler-section, as shown and described.

410,352. ANIMAL-SHEARS. ROBERT DIXON, Sydney, assignor to Tottenham Lee Richardson, Murrurundie, near Hyegan, New South Wales. Filed May 31, 1888. Serial No. 276,067. (No model.)



Claim.—1. The combination, with a casing provided with a comb, of a revolving cutter, a flexible arm secured to and projecting from the casing, a pulley in the casing, an endless belt traveling around the flexible arm and passing around the pulley, and intermediate mechanism between the pulley and cutter, substantially as described.

2. The combination, with a casing provided with a comb, of a revolving cutter, a grooved pulley in the casing, intermediate mechanism between the pulley and cutter, a flexible arm projecting from the casing, guide-rollers arranged on the flexible arm, and an endless belt passing around the said pulley and traveling around the flexible arm under the guide-rollers, substantially as described.

3. The combination, with a casing provided with the blades or teeth B, of the revolving cutter M, the bevel gear-wheel O on the journal of the cutter, the longitudinal shaft G, provided with the bevel gear-wheels F F', the transverse shaft F, provided with the bevel gear-wheel E and pulley D, and the belt *m*, passing around the said pulley, substantially as herein shown and described.

4. The combination, with the lower part A of the casing, the revolving cutter M, the gear-wheel O on the journal of the cutter, and the transverse shaft F, provided with the gear-wheel E, of the upper hinged part C, provided with the bearings L, and the shaft G, journaled in the said bearings and provided with the gear-wheels F F', substantially as herein shown and described.

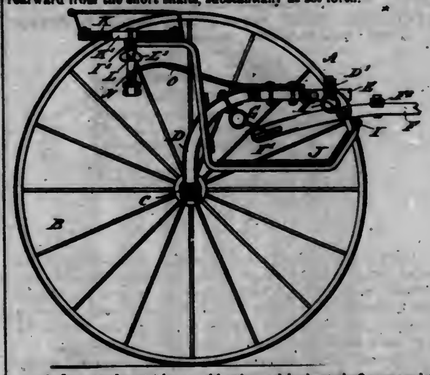
5. The combination, with a casing provided with a comb, a revolving cutter, a pulley, and intermediate mechanism between the pulley and cutter, of a flexible arm secured to the casing, guide-rollers carried by the said arm, an endless belt passing around the pulley and traveling around the flexible arm under the guide-rollers thereof, and a flexible covering for the said arm, guide-rollers, and belt, substantially as described.

410,353. ROAD-CART. BENET W. DOOLITTLE, Garden Grove, Iowa. Filed Dec. 28, 1888. Serial No. 294,945. (No model.)

Claim.—1. In a road-cart, the combination, with the short shafts secured at their lower rear ends to the axle and curved upward and forward therefrom, of the long shafts pivoted near their rear ends to the forward upper ends of the short shafts, and a spring connecting the rear ends of said long shafts with the under sides of the short shafts, substantially as set forth.

2. In a road-cart, the combination, with the short shafts curved downward at their rear ends and secured to the shaft, a cross-piece uniting the said shafts, of the long shafts pivoted near their rear ends to the forward upward ends of the short shafts, transverse coiled springs G connecting the rear ends of the long shafts with the under sides of the short shafts at their bends, substantially as set forth.

3. The combination, with the short shafts curved upward and forward from the axle, a cross-piece connecting their front ends, and the springs H, secured to the said cross-piece, of the foot-rest and seat-supporting bars I, supported at their forward lower ends by the said springs H, the upper ends of the bars being projected rearward beyond the axle, and supporting-springs for said upper ends projecting rearward from the short shafts, substantially as set forth.



4. In a road-cart, the combination, with short shafts secured to the axle and long shafts pivotally connected with the said short shafts, of rearwardly-extending springs secured to the said short shafts, a transverse spring connected with the ends of the said shaft-springs, a seat supported on the said transverse spring, bars connected with the said seat and supporting the platform, and springs connected with the said bars at their front ends and secured to the front ends of the said short shafts, substantially as shown and described.

5. In a road-cart, the combination, with short shafts secured to the axle and long shafts pivotally connected with the said short shafts, of rearwardly-extending springs secured to the said short shafts, a transverse spring connected with the ends of the said shaft-springs, a seat supported on the said transverse spring, bars connected with the said seat and supporting the platform, springs connected with the said bars at their front ends and secured to the front ends of the said short shafts, and bolts passing through longitudinal slots in the said seat for adjusting the said seat, substantially as shown and described.

410,354. SUPPORT FOR SPINNING-SPINDLES. GEORGE O. DRAPER, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed June 5, 1889. Serial No. 313,178. (No model.)



Claim.—A sleeve-whirl spindle and a supporting-case, combined with a lateral bearing having a ball-like portion located out of the line of the band-pull, and having an enlargement or stop thereon of a diameter to substantially fill the space in the said supporting-case, the said stop being located at one side of the line of band-pull opposite that where the said ball-like portion contacts with the supporting-case, substantially as described.

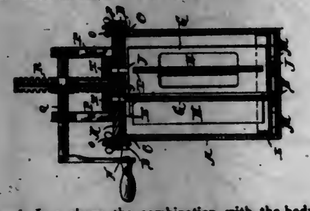
410,355. SUPPORT FOR SPINNING-SPINDLES. GEORGE O. DRAPER, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed June 15, 1889. Serial No. 314,485. (No model.)



Claim.—The combination, with a supporting-case having a curb, a bolster-bearing, and an oil-hole, and a sleeve-whirl spindle having an extension 2 below the band-groove, the diameter of the said extension being as great as that of the sleeve-whirl at the lower end of the band-groove, of an annulus or ring *a*, adapted to be lifted verti-

cally outside the said extension up to and across the band-groove, thereby uncovering the space between the lower end of the whirl and the cover of the supporting-case, the lower end of the said annulus or ring entering the said curb, to operate substantially as described.

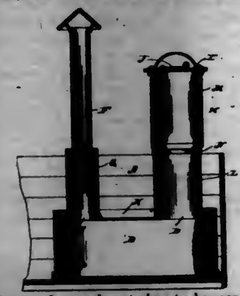
410,856. CHURN. MORVEN R. FAKES, Carbondale, Ill. Filed Apr. 10, 1889. Serial No. 306,654. (No model.)



Claim.—1. In a churn, the combination, with the body, of the parallel rotary dashers arranged therein, each consisting of the longitudinally-slotted blade G, having a post at its lower end stepped in the bottom of the body, the blade H, inserted through the slot in the blade G, and the wedge I, inserted through the slot between the end of the same and the end of the blade H, as specified.

2. In a churn, the combination of the body, the parallel rotary dashers arranged within the body, each consisting of a longitudinally-slotted blade having a post at its lower end stepped in the bottom of the body, and a solid blade detachably secured in the slotted blade, and the strainer carried by the lower ends of the dashers, as set forth.

410,857. HEATER FOR STOCK-WATERING TANKS. CHARLES FREDERICK, York, Nebr. Filed Mar. 21, 1889. Serial No. 304,212. (No model.)



Claim.—A heater for stock-watering tanks, consisting of the casing provided with a vertical flange on its upper face around the edge, and having openings D E in its upper face, the smoke-stack rising from the opening E, the cylindrical casing or reservoir arranged around the lower portion of the smoke-stack and extending above the sides of a tank, the magazine composed of the section N, rising from the opening D, and provided with a flange or bend, and the section M, resting upon the flange or bend and the damper, substantially as described.

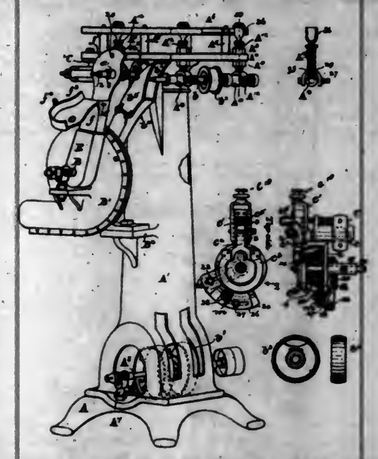
410,858. HEEL-TRIMMING MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Feb. 13, 1889. Serial No. 300,574. (No model.)

Claim.—1. In a heel-trimming machine, the block c', the carriage c^3, and its rand-guard composed of a band of thin sheet metal dished and bent around, substantially as shown and described, and attached only at its opposite ends to the said carriage, combined with the supporting-yoke, in which the said carriage slides to operate, substantially as described.

2. In a heel-trimming machine, the combination, with the heel-trimming cutter, its shaft, and the edge-rest n, of supports for the said edge-rest, whereby it may be adjusted not only radially toward and from the center of the said shaft, but also in the arc of a circle about the said shaft, substantially as described.

3. In a heel-trimming machine, the fixed arm 20 and the radially-adjustable extension 23, combined with a shoe 26, made adjustable thereon in the arc of a circle described about the center of the said cutter-shaft, and with a rest, as n, for the edge of the heel, substantially as described.

4. In a heel-trimming machine, the block c', the independent sliding yoke 4 therein, a carriage movable in the said yoke, and a rand or counter guard attached to the said carriage, combined with the spring c^4, carried by the said yoke and acting upon the said carriage to keep it normally pressed toward the said cutter, substantially as described.



5. In a heel-trimming machine, the block c', the independent sliding yoke 4 therein, a carriage movable in the said yoke, and a rand or counter guard attached to the said carriage, combined with the spring c^4, carried by the said yoke and acting upon the said carriage to keep it normally pressed toward the said cutter, and with an adjusting-screw to act upon the said yoke, substantially as described.

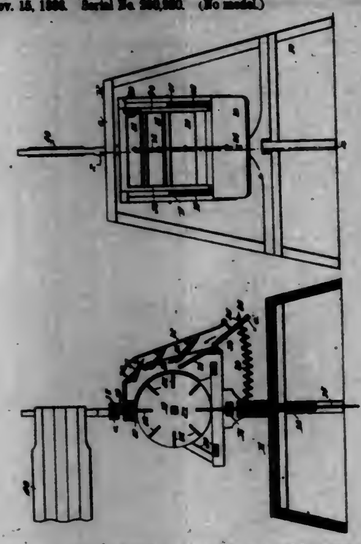
6. In a heel-trimming machine, the combination, with the column supporting the trimming mechanism, of a rotary shaft carrying a rotary cutter, bearings for the said shaft, and a work-table A^5, arranged horizontally above and parallel to the shaft carrying the cutter, substantially as described.

410,859. APPLIANCE FOR CONTROLLING AND PREVENTING FIRE IN BUILDINGS. ANDREW J. GOODRICH, Forville, Ill. Filed May 1, 1888. Serial No. 272,607. (No model.)



Claim.—The combination of a structure having outward-swinging closures normally held open, a spring connected to the structure at the hinged edge of each closure and connected to the closure at or near its outer or free edge, said closure opening against the tension of the springs, a separate wire or cable connected to each closure beyond its hinged edge, and guide-pulleys therefor, the cords or cables being grouped at their depending ends at a suitable point on the outside of the structure, substantially as set forth.

410,860. WINDMILL. BENJAMIN F. HAM, CHESTER, KANS. Filed Nov. 15, 1888. Serial No. 290,980. (No model.)

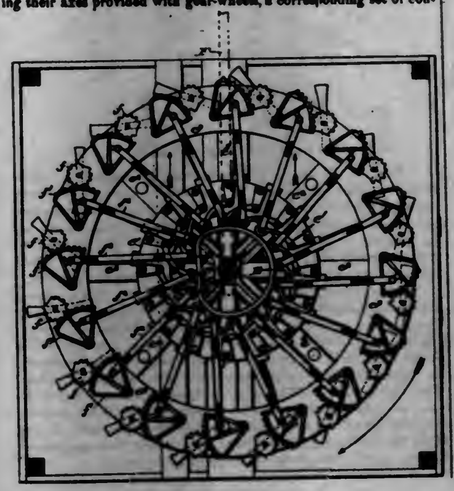


Claim.—1. In a windmill, the combination, with a supporting-frame, a revoluble frame mounted therein, a horizontal crank-shaft in the frame, a wind-wheel on the said shaft, and a vane carried by the revoluble frame, of a shutter-case at one side of the revoluble frame, a series of swinging shutters in said case, and a pivoted spring-pressed regulating-plate connected to the shutters, and a deflecting-plate above the regulating-plate and behind the lowermost shutter, substantially as herein shown and described.

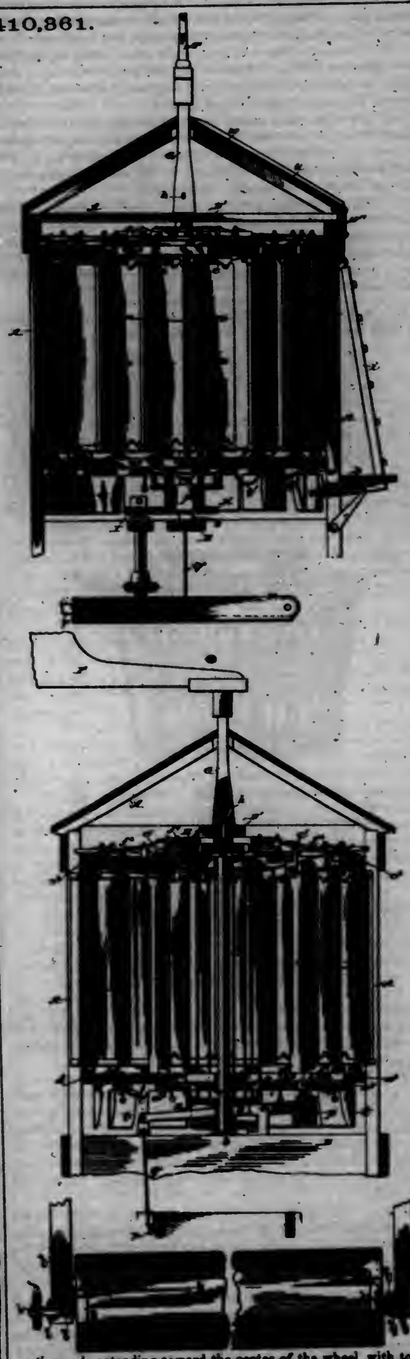
2. In a windmill, the combination, with the revoluble frame and a horizontal wind-wheel journaled in the said frame, of the shutter-case 30 at one side of the frame, the shutters 31, mounted in the case, the apertured regulating-plate 33, pivoted to the frame below the shutters, the deflecting-plate 37, the rod 32, pivoted to the shutters and to the regulating-plate, the rod 35, projecting through the regulating-plate 33, and the spring 34, surrounding the rod, substantially as herein shown and described.

410,861. WINDMILL. SOLOMON HARBAUGH, Geneva, Nebr. Filed June 15, 1888. Serial No. 277,261. (No model.)

Claim.—1. The combination, in an upright wind-wheel, of a series of vertical vanes pivoted in a circular row between the heads and having their axes provided with gear-wheels, a corresponding set of connecting-rods extending toward the center of the wheel, with toothed gears at their end engaging with the gear-wheels, friction-rollers arranged at the inner ends of the connecting-rods, a central cam resting in the horizontal plane of the connecting-rods and bearing against the



410,861.



rollers, and a guiding-tail connected to and automatically adjusting the position of the cam, substantially as shown and described.

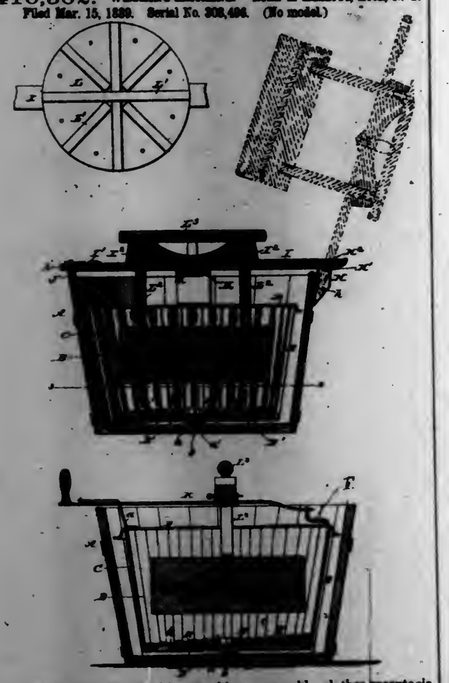
2. The combination, with the upright wheel having vertical pivoted vanes and gearing, substantially as described, for changing their angles, of a series of stops arranged to drop behind the vanes and lock them in inoperative position, as set forth.

3. In a wind-wheel having upright pivoted vanes, the combination, with said pivoted vanes, of a series of elastically-hinged deflector-blades *l*, provided with arms *l'*, adapted to bear against the edge of the vane and throw it more obliquely to the wind to automatically regulate the wheel, substantially as described.

4. The combination, with the upright wheel and its central shaft C, of the cam E, having a central bushing of wood forming a bearing for the central shaft, and a hollow hub E', the attached mast G, having oil-duct therein leading to the central shaft, and the guiding-tail rigidly attached to said mast, substantially as and for the purpose described.

410,862. WASHING-MACHINE. LUKE L. KELLOGG, Leon, N. Y.

Filed Mar. 15, 1889. Serial No. 303,496. (No model.)



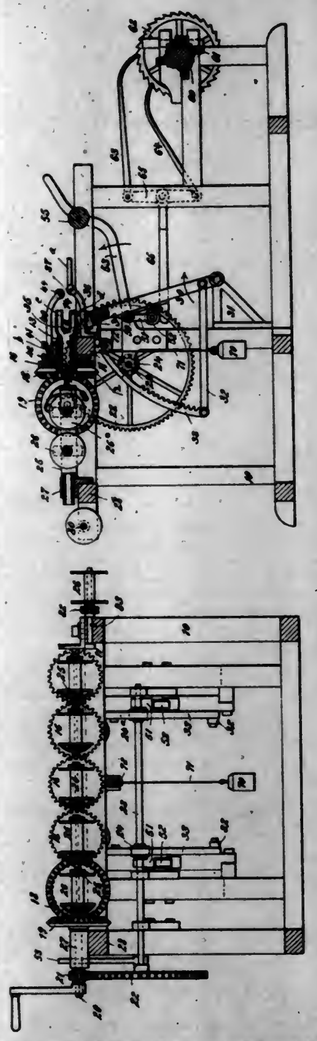
Claim.—1. In a washing machine, a movable clothes-receptacle having on its bottom a series of sections decreasing in thickness from one edge to the other and formed with the parallel grooves, substantially as set forth.

2. In a washing-machine, the combination, with an outer receptacle A, of the clothes-receptacle B, having on its bottom the series of grooved sections E, having its sides formed of the series of inclined V-shaped strips C, with the narrow spaces left between their adjacent edges, and having the inwardly-bent hook F, and the opposite handle-brace G, the cross-bar I, and the operating-handle K, centrally pivoted to the cross-bar and having the end aperture *k*, substantially as set forth.

3. In a washing-machine, the combination of an outer tub, the clothes-receptacle having the bottom stud, the V-shaped side strips, the grooved bottom sections, and the top hook and handle-brace, the cross-bar, the operating-handle pivoted to the cross-bar, and the follower, substantially as set forth.

4. The combination of the outer tub provided with the slotted bracket having the removable pin and the stop, and the opposite stud, the clothes-receptacle having the bottom stud, the V-shaped side strips, the grooved bottom sections, and the top hook and handle-brace provided with the catch, the cross-bar having the thumb-piece at its end, the pivoted operating-handle, and the ribbed follower, substantially as set forth.

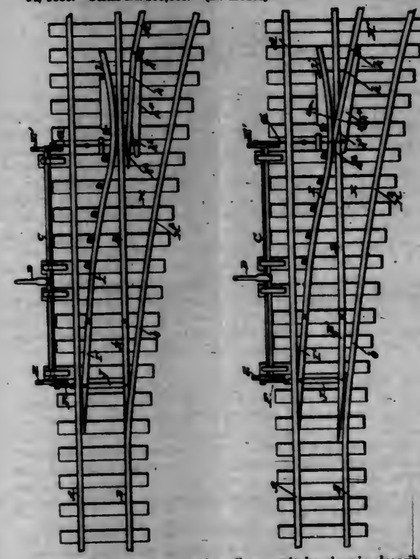
410,868. FENCE-BUILDING MACHINE. JOHN B. KELLY, Sherman, Tex. Filed June 20, 1888. Serial No. 314,910. (No model.)



Claim.—1. In a fence-building machine, the combination, with a series of twisters and a means for revolving the same, of fixed jaws mounted to extend in advance of the twisters, jaws pivotally mounted above the twister-shafts, set-screws constituting stops, said screws being arranged in advance of the pivotal supports of the jaws, set-screws arranged to the rear of the pivotal supports, and elastic blocks against which said rear set-screws bear, substantially as described.

2. In a fence-building machine, the combination, with a series of twisters, of intermeshing gears carried by the twisters, a driving or crank shaft, a bevel-gear loosely mounted thereon and arranged to engage a bevel-gear carried by one of the twisters, a ratchet carried by the crank-shaft, a pawl carried by the loosely-mounted bevel-gear, said pawl being arranged to engage the ratchet, a transverse shaft 23, a gear 22, a pinion carried by the crank-shaft and arranged to engage the said gear 22, pinions 24 and 24', carried by the shaft 23, arms 30, upwardly-extending projections connected to said arms, and racks 33, also connected to the arms and arranged for engagement with the pinions 24 and 24', substantially as described.

410,864. RAILWAY-SWITCH. WALTER H. KNIGHT, Beardman, Fla., assignor of one-half to William H. Smith, same place. Filed Feb. 14, 1889. Serial No. 300,003. (No model.)



Claim.—The improvement in railway-switches herein described, consisting of the main line having section B', the side track having section A, provided with portion A^2 and shoulder A^3, the intermediate rail I, having section I' and extension *i*, the bar or beam J, the main shaft having crank-like portions, and the rods for connecting such portions with the sections to be operated, substantially as set forth.

410,865. HAND-PROPELLER FOR BOATS. JAMES S. LAMAR, Valdosta, Ga. Filed May 15, 1889. Serial No. 310,982. (No model.)



Claim.—1. A hand-propeller for boats, consisting of a vertically-disposed frame secured to the boat, provided with longitudinal extending horizontal arms, swinging bars pivotally supported from the outer ends of said longitudinal arms, and paddles secured to the lower ends of said bars, substantially as shown and described.

2. The combination, with socketed bracket-plates secured to the boat-body and projected over the sides thereof, of a vertically-extending frame supported in said socketed plates, said frames provided with forwardly-extending horizontal members, swinging bars supported at their upper ends from said horizontal members, and paddles secured to the lower ends of said bars, substantially as and for the purpose described.

3. In a hand-propeller, the combination, with the supporting-frame C, provided with horizontal members C^3, of the arms H H, pivotally supported on said arms C^3, said arms H provided with bearing-yokes H' at their upper ends, swinging bars supported at their upper ends in said yokes H', and paddle-blades secured to the lower ends of said bars, substantially as and for the purpose described.

4. In a hand-propeller, the combination, with the supporting-frame C, provided with horizontal members C^3, and adjustable clips D, secured upon said members C^3, of arms H H, pivotally supported on said clips D, provided at their outer ends with bearings or yokes H', the swinging bars G G, supported at their upper ends in said bearings H', and paddles secured to the lower ends of said bars, substantially as and for the purpose described.

5. The combination, with frames C C, formed of vertical arms C' C', provided with rack-sections C^3 C^3 and horizontal members C^3 C^3, and adjustable clips D D, secured upon the outer ends of the members C^3 C^3, of the arms H, pivotally secured near their upper ends to the said clips D, the forward ends provided with yokes or bearings H', said arms H extended downwardly and rearwardly and adapted to engage the racks C^3, swinging bars G, supported at their upper ends in the bearings H', and paddles secured to the lower ends of said bars, all arranged substantially as and for the purpose described.

6. The combination, with the supporting-frames C C, and the arms H H, pivotally secured to the outer ends of the members C' C' of said frames C, of the swinging arms G G, journaled at their upper ends to the outer ends of the arms H, and the paddles reversibly secured to the lower ends of said bars, substantially as shown and described.

7. The combination, with the main frame and the arms H, pivoted to the horizontal members of said frame, said arms provided with stirrup-like bearings H' at their outer ends, of the swinging bars G, provided with lateral lugs at their upper ends engaging the stirrup-bearings H', and the paddles secured to the lower ends of said bars, substantially as and for the purpose described.

8. In a hand-propeller, the combination, with the paddle-bars G G, having the bearings G' G' and the spring-catches L L at their lower ends, of the rounded shafts J, carrying the paddles at their lower ends, journaled in said bearings, and having projecting handles at their upper ends engaging the latches L, substantially as and for the purpose described.

9. The combination, with the shafts journaled to the lower ends of the supporting-arms G G, formed with beveled rear edges and provided with the stops j^3, of the paddles formed each of two blades hinged at their inner ends to the shafts, substantially as shown and described.

10. The combination of the shafts journaled at the lower ends of the swinging bars G G, said shafts provided at their lower ends with paddles formed each of two blades hinged at their inner ends to the shafts, the springs secured to the shafts and bearing against the blades to normally force them partially open, and the stops formed on the shafts to limit the outward movement of said blades, substantially as shown and described.

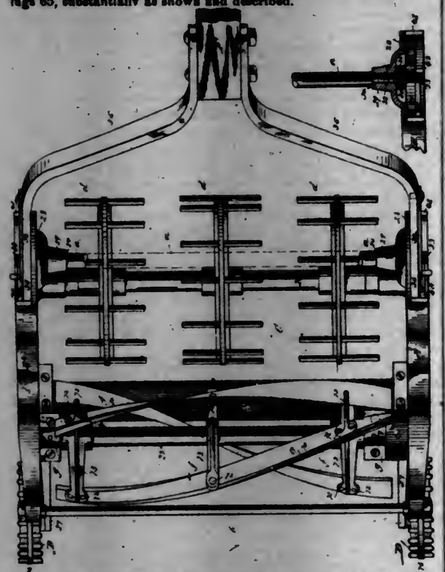
11. In a hand-propeller, the combination of the supporting-frame, the pivotal arms H, secured thereto, as shown, said arms provided with bearings H' at their outer ends, the swinging arms G G, carrying the propeller-blades at their lower ends and journaled at their upper ends in the bearings H', and provided with spring-supports O O near their lower ends, the handle-bar N, provided with flattened ends *n n*, engaging the supports, and bands P P, disposed on the ends of said bar to each side of the supports, substantially as and for the purpose described.

410,866. LAWN-MOWER. WALDO A. LOUD, Springfield, Mass. Filed Sept. 25, 1888. Serial No. 286,260. (No model.)

Claim.—1. The combination, with the cheek-plates A A^3, provided with the chambered faces 30 and bored hubs 29, of the brace-rod *a*, shouldered near each end, its end portions outside of said shoulders being screw-threaded, and the said brace-rod disposed between said cheek-plates abutting by its shoulders against the inner ends of said hubs, its outer ends passing outwardly through and beyond said hubs, and also the nuts which are screwed on said ends of the brace-rod and disposed within the said chambered faces of the cheek-plates, the said ends of the projecting brace-rod forming pivotal studs for the engagement of the handle-forks, substantially as shown and described.

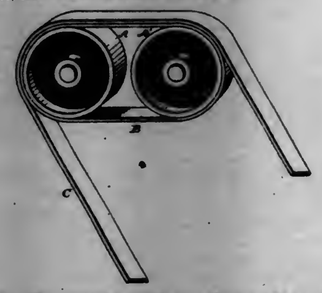
2. In a lawn-mower having opposing cheek-plates, the combination, with the stationary cutter-bar and cutter-blade and the revolving cutter and its shaft, of the cheek-plate bearings for the revolving cutter-shaft, each consisting of the web 59, surrounding the chamber, comprising two semicircles of different areas and the opposing laterally-extending recesses 63, the semi-annular bearing-block 64, having the end lugs 65, loosely disposed in the larger semicircular portion of the said chamber and in the said recesses 63, the set-screws 67 67,

screwing through the opposing walls of one of the said recesses and against one of the legs 65, and a single set-screw 68, screwing through one wall of the other recess and against the top of the other of said legs 65, substantially as shown and described.



3. In a lawn-mower having opposing cheek-plates, the combination, with the truck-holder arms supported from said cheek-pieces, each provided with the hollow boss 78, of the truck having the bore of its hub of greater diameter than that of the said boss and provided with the annular oil-groove 86 and the duct 85, leading thereto from the end of the hub, the bushing-sleeve fitting on said boss and within said truck-hub, the inner and outer circular peripheries thereof being eccentric to each other, the washer covering the end of the boss, the sleeve, and truck-hub, and the bolt 83, passing through said boss and washer, resting by its head against the outer face thereof, and the nut 84, all substantially as shown, and for the purposes described.

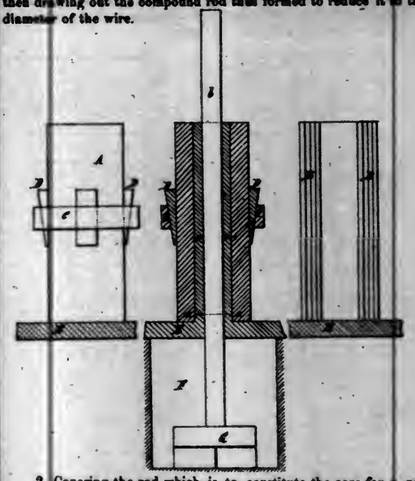
410,367. BELT-GEARING. JOHN A. LOGAN, Chetopa, Kans. Filed July 31, 1888. Serial No. 281,545. (No model.)



Claim.—The combination, with two adjacent pulleys and the belt B, passed around said pulleys, of the main driving-belt C, passing over the belt B and in contact with it at the points where it passes around both pulleys, substantially as set forth.

410,368. MANUFACTURE OF WIRE. EDOUARD MARTIN, Paris, France. Filed July 30, 1889. Serial No. 319,137. (No model.) Patented in France Apr. 7, 1885, No. 168,133; in Belgium Oct. 30, 1885, No. 70,866; in England Nov. 2, 1885, No. 13,307; in Italy Dec. 17, 1885, XIX. 19,074, VIII, 51; in Spain Mar. 6, 1886, No. 5,431, and in Austria-Hungary July 2, 1886, No. 9,804 and No. 32,977.

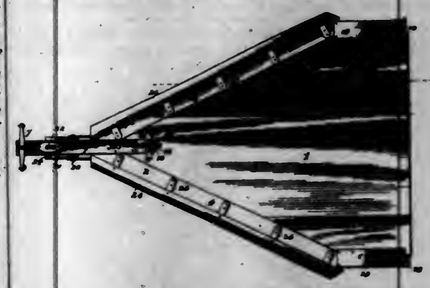
Claim.—1. Covering the rod which is to constitute the core for a part only of its length with an envelope of more ductile metal, and then drawing out the compound rod thus formed to reduce it to the diameter of the wire.



2. Covering the rod which is to constitute the core for a part only of its length with an envelope of more ductile metal, and then drawing out the compound rod thus formed by passing it in alternately opposite directions through successive drawing-rolls to reduce it to the diameter of the wire.

3. Casting on the rod which is to constitute the core for a part only of its length an envelope of more ductile metal, and then drawing out the compound rod thus formed to reduce it to the diameter of the wire.

410,369. CORNSTALK-CUTTER. JAMES D. MERRIS, Ottawa, Ohio. Filed Apr. 20, 1889. Serial No. 308,087. (No model.)



Claim.—1. A machine for cutting cornstalks, consisting of a triangular frame having a horizontal platform secured thereto, a single transverse axle secured to the rear end of said triangular frame and having at its ends the rear carrying-wheels, the knife-bars fixed to the inclined sides of said triangular frame, a draft-bar fixed to the apex of said triangular frame and arranged in line with the longitudinal center of the machine, and a single depending caster-wheel swiveled to the draft-bar in the line of the draft of the machine and being free to turn in any direction on the draft-bar, whereby the machine is maintained in proper relation to the line or row of cornstalks when cutting against a single row by the swiveled caster-wheel, as herein described.

2. A machine for cutting cornstalks, comprising a triangular frame having a horizontal platform secured thereto, a series of plates fixed to the inclined sides of said frame, the knife-bars removably bolted to said plates, a single transverse axle secured to the rear end of the machine and having the rear carrying-wheels at its ends, a single draft-bar secured to the apex of said frame in line with the longitudinal center of the machine, and provided with a vertical central slot, a vertically-adjustable bar fitted in said slot and having means for rigidly securing itself to the draft-bar, and a caster-wheel swiveled on the bar in line of the draft of the machine and being free to turn in a horizontal direction on said bar, substantially as and for the purpose described.

410,370. WATCH-MOVEMENT BOX. GERHARD A. MOESSER and ALBERT G. MOESSER, Allegheny, assignors of one-half to Augustus H. Estey, Pittsburg, Pa. Filed Aug. 24, 1888. Serial No. 283,614. (No model.)



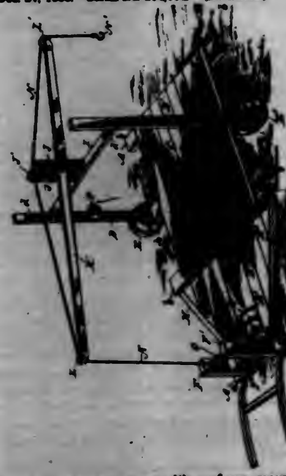
Claim.—1. An improvement in cases for watch works or movements, which consists in a glass case made of two parts which are adapted to be fitted together, the interior of the case being shaped conformably to the shape and size of the works to be contained therein, substantially as and for the purposes described.

2. An improvement in cases for watch works or movements, which consists in a glass case made of two parts which are adapted to be fitted together, the interior of the case being shaped conformably to the shape and size of the works to be contained therein, the top and bottom of the case being flat and transparent and the periphery being circular, substantially as and for the purposes described.

3. An improvement in cases for containing the works or movements of watches, which consists in a glass case made of two parts provided with screw-threads, whereby they may be fitted together, the interior of the case being shaped conformably to the size and shape of the works to be contained therein, substantially as and for the purposes described.

4. An improvement in cases for containing the works or movements of watches, which consists in a glass case made of two parts provided with screw-threads, whereby they may be fitted together, the interior of the case being shaped conformably to the size and shape of the works to be contained therein, and a gasket interposed between the parts at the bases of the screw-thread, substantially as and for the purposes described.

410,371. CORN-CUTTER. BENJAMIN F. MOORE, Ivanhoe, Kans. Filed Dec. 27, 1888. Serial No. 294,604. (No model.)

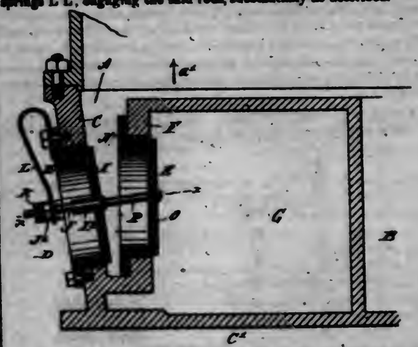


Claim.—1. A corn-cutter comprising a frame mounted on wheels and provided with two platforms, the front platform being triangular and in a different plane from the rear one, knives secured to the sides of the forward triangular platform, standards projecting from the frame, an adjustable beam connecting the standards, a lever pivoted on the beam and provided with guide-pulleys, a windlass at the front of the frame, and a rope secured to the windlass and passing over the guide-pulleys of the lever, substantially as described.

2. In a corn-cutter, the combination, with a frame mounted on wheels and provided with oblique cutters at its forward end and a windlass at the forward end of the frame, of the standards D D', secured to the frame, the beam I, adjustably secured to the standards and provided with the posts J, carrying guide-rollers J', the lever K, pivoted between the said posts and provided with the guide-rollers L L', and the rope N, secured to the windlass and passing over the said guide-pulleys, substantially as herein shown and described.

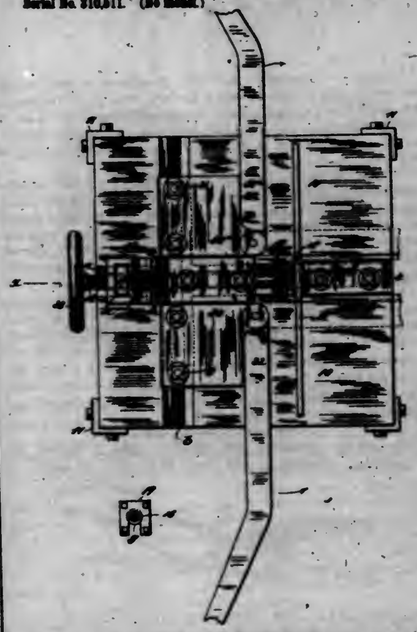
410,372. VALVE-HEAD FOR BLOWING-ENGINES. CALVIN L. HOOSE, Lebanon, Pa. Filed Oct. 15, 1888. Serial No. 288,102. (No model.)

Claim.—1. In a valve-head for blowing-engines, the combination, with the casing B and the discharge-box G, of the inlet-valve I, provided with the rods J, the discharge-valve O, provided with the rod P, the bridge K, through which the rods J and P project, and the springs L L', engaging the said rods, substantially as described.



2. In a valve-head for blowing-engines, the combination, with the casing B, the discharge-box G, and the valve-seats H N, fitted in the rims of the said casing and box respectively, of the inlet-valve I, provided with hub I', and the rods J, having nuts J', the discharge-valve O, provided with the rod P, having nut P', the bridge K, secured to the valve-seat H, and the springs L L', engaging the rods J and P, substantially as herein shown and described.

410,373. MACHINE FOR FORMING BEAM-STRAPS. HENRY McDOWALL and ROBERT POTTER, New York, N. Y. Filed May 13, 1889. Serial No. 310,511. (No model.)



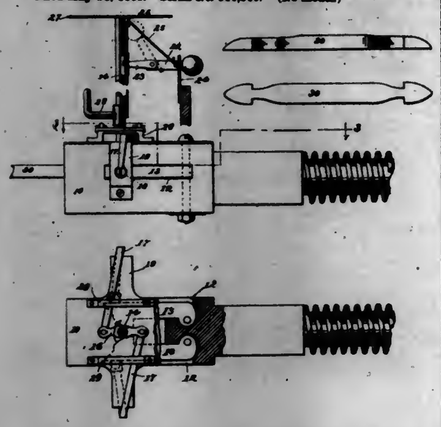
Claim.—1. In an apparatus for forming beam-straps, the combination, with a base-plate formed with a longitudinal and a transverse groove, of a forming-block 12, a block 14, a clamping-screw which passes through said block 14 and engages a nut arranged in a recess formed in the block, a clamping block or head 18, connected to the screw 16, and pivotally-mounted bending-levers, substantially as described.

2. In an apparatus for forming beam-straps, the combination, with a base-plate, of an adjustably-mounted block 12, a clamping block or head 18, an adjustably-mounted clamping-screw, and bending-levers, substantially as described.

3. In an apparatus for forming beam-straps, the combination, with an adjustable forming-block 12, of a clamping-block and adjustably-mounted bending-levers, substantially as described.

4. In an apparatus for forming beam-straps, the combination, with a bed-plate, of a forming-block 12, held thereto, adjustably-mounted bending-levers, a block 14, formed with a central bore, bolts 15, formed with apertures *f*, a clamping-screw 16, which passes through the bore of the block 14 and through the apertures of the bolts 15, and a clamping-block connected to the clamping-screw, substantially as described.

410,874. CAR-COUPLING. JONAS P. MCDOWELL, Peoria, Iowa. Filed May 21, 1889. Serial No. 311,509. (No model.)

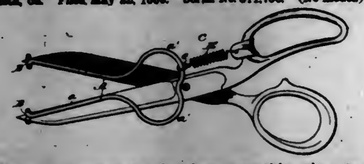


Claim.—1. The combination, with a draw-head, of jaws pivotally mounted therein, a shaft extending upward from the draw-head, a lever carried by the shaft, rods 17, connected to the lever, links 18, to which the rods are connected, said links being connected to the jaws, and springs 20, arranged in connection with the jaws, substantially as described.

2. In a car-coupler, the combination, with a draw-head, of jaws pivotally mounted therein, a shaft stepped upon the draw-head and extending upward therefrom, a latch carried by the shaft, a keeper with which the latch engages, a lever carried by the shaft, rods connected to the lever, links to which the rods are connected, connections between the links and the jaws, brackets 19, and springs 20, substantially as described.

3. In a car-coupler, the combination, with a draw-head, of jaws pivotally mounted therein, a shaft extending upward from the draw-head, a lever carried by the shaft, rods connected to the lever, links to which the rods are connected, connection between the links and the jaws, springs arranged in connection with the jaws, a latch carried by the shaft, a keeper which the latch engages, a cord or chain connected to the latch, and a lever-arm 28, arranged at the lower end of the shaft, substantially as described.

410,875. SCISSORS ATTACHMENT. JAMES H. NORRELL, Augusta, Ga. Filed May 22, 1889. Serial No. 311,738. (No model.)



Claim.—1. An attachment for scissors, comprising a bow the arms of which are adapted to extend in use alongside the scissor-blades, and having the free ends of its arms provided with openings adapted to receive the points of the scissor-blades, substantially as set forth.

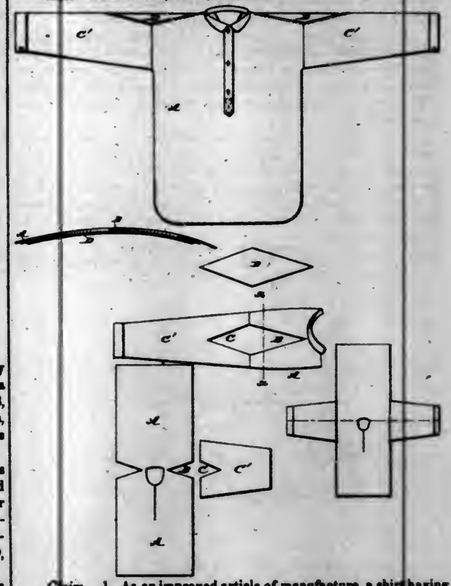
2. The combination, with scissors, of the bow which is arranged alongside the same and has its free ends provided with openings to receive the points of the scissor-blade, and whose rear portion is provided with seats *a' a'*, a hook for attachment to the ring of the scissor-handle, and a connection between said hook and bow, such connection engaging one of the seats *a' a'*, substantially as shown and described.

3. The herein-described attachment for scissors, which is adapted for use alongside the latter, and consists of the bow A, the arms of which extend alongside of and close to the edges of the blades, and a fastening for securing it to the handle-ring of the scissors, substantially as shown and described.

4. The attachment for scissors, consisting of the following parts: the bow adapted to be used alongside the scissors, as described, a hook for engaging the handle-ring of the scissors, and a spring forming an elastic connection between said bow and hook, as specified.

5. The combination, with scissors, of the bow which is arranged alongside thereof, with its arms extended close to the edges of the blades, and has the free ends of its arms provided with openings and its rear portion provided with seats *a' a'*, the hook for engaging the handle-ring of the scissors, and the spring connecting said hook and bow, substantially as shown and described.

410,876. SHIRT. ELI OPPENHEIM, Baltimore, Md. Filed July 12, 1889. Serial No. 317,260. (No model.)



Claim.—1. As an improved article of manufacture, a shirt having openings of greater length than width extending from opposite sides of the neck-opening into the sleeves and similarly-shaped gussets or pieces stitched to the edges of said openings, substantially as set forth.

2. As an improved article of manufacture, a shirt the body of which at the shoulders is formed with V-shaped shoulder openings, similar openings in the sleeves registering therewith at their wider ends and forming together diamond-shaped openings, and diamond-shaped pieces or gussets stitched to the edges of said openings, substantially as set forth.

410,877. GRAIN-GRADER. GEORGE H. RICH, Geneva, Ill. Filed Mar. 14, 1888. Serial No. 267,162. (No model.)

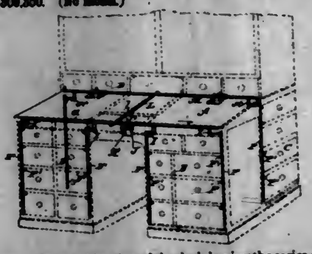


Claim.—1. The grading-cylinder E, composed of separate rings spaced apart at suitable distances and provided with internal flanges having hubs supported thereon inside of the inner portion of the rings proper, and the rods L, passing through said hubs, whereby a clear space for the passage of the grain is formed between the said rods and the internal surface of the cylinder, substantially as and for the purpose specified.

2. The grading cylinder E, composed of separate rings provided with internal flanges having hubs supported on their inner edges, the rods L, passing through said hubs, the rings being spaced on the rods L at varying distances apart, and separate hoppers Q, as and for the purpose specified and shown.

3. The combination, with the grading-cylinder E, composed of separate rings having intermediate spaces, of the shaft O, arranged parallel to said cylinder, and the roller N, mounted on said shaft and composed of separate sections having openings for said shaft of greater diameter than the diameter of the shaft, substantially as and for the purpose specified.

410,878. DEVICE FOR LOCKING A SERIES OF DRAWERS. JARED H. ROSSHEAVER, TUTS, ALTA, W. Va. Filed May 3, 1889. Serial No. 309,350. (No model.)



Claim.—1. The combination of the desk having the series of drawers B, formed with the locking-recesses E, the locking-rods F, having the projections F', the horizontal rod G, adapted to be slid to each side, and the connecting centrally-pivoted levers I, substantially as set forth.

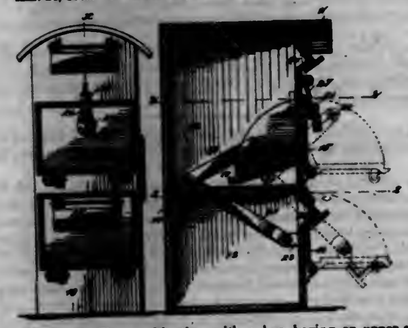
2. The combination of the desk having the series of drawers B, formed with the locking-recesses E, the locking-rods F, having the projections F', and the horizontally-sliding rod G, having the recessed casting J, substantially as set forth.

3. The combination of the desk having the series of lower front drawers B and side drawers C, formed, respectively, with the locking-recesses E and O, the front and side locking-rods F and P, having the projections F' and P', respectively, the lower horizontally-sliding rod G, the upper horizontally-sliding rod M, the centrally-pivoted lever L, pivotally connecting the upper and lower horizontal rods G M, and the centrally-pivoted levers I, substantially as set forth.

4. The combination of the desk having the series of lower drawers B, side drawers C, and top drawers D, formed, respectively, with the locking-recesses E, O, and D', the front and side locking-rods F and P, having the projections F' and P', respectively, the lower horizontally-sliding rod G, the upper horizontally-sliding rod M, having the projections M', the centrally-pivoted lever L, pivotally connecting the upper and lower horizontal rods G M, and the centrally-pivoted levers I, connecting the horizontal and the locking rods, substantially as set forth.

5. The combination, with a desk having a hinged top provided with the staple, and drawers formed with the locking-recesses, of the locking-rods having the projections, and the horizontal rod having the recessed casting and the locking-hook, substantially as set forth.

410,879. LETTER-BOX. DAVID ROSENTHAL, Hudson, N. Y. Filed Mar. 26, 1889. Serial No. 304,820. (No model.)



Claim.—1. The combination, with a box having an upper and lower compartment each provided with an opening in its side, of hinged doors closing the said openings, and rods pivoted together and to the said doors, whereby both doors will be simultaneously opened or closed, substantially as described.

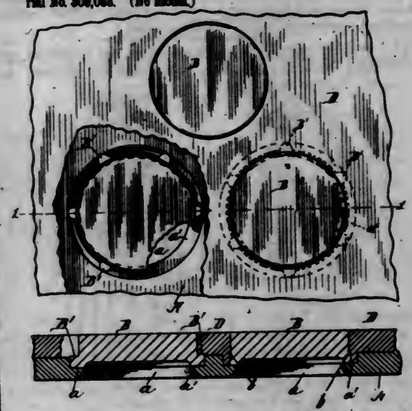
2. In a letter-box, the combination, with a body divided into compartments, each compartment provided with an opening covered by a hinged door, of panels secured to the inner face of the upper door, and a link-connection between one panel of the upper door and the inner face of the lower door, substantially as shown and described, whereby the movement of the upper door will control the movement of the lower door, as set forth.

3. In a letter-box, the combination, with a body divided into compartments by a partition provided with a slot at one side, and each compartment having an opening covered by a hinged door, of panels secured to the inner face of the upper door, links or connecting-rods pivoted to each other and to the panel of the upper door and the inner face of the lower door, the lower link extending upward in the box through the slot in the partition, all combined for operation, substantially as shown and described.

4. In a letter-box, the combination, with a body divided into compartments by a transverse partition having a slot in one side, each compartment provided with an opening covered by a hinged door, of panels secured to the upper door and provided with stop-lugs at one end, a link or connecting-bar pivoted to one of the panels of the upper door, a second link or connecting-rod pivoted to the upper link and to the inner face of the lower door, said lower link provided with a weighted lower extremity and extending upward through the slot in the partition, all combined for operation, substantially as shown and described.

5. A letter-box divided into two compartments, each compartment provided with an opening covered by a hinged door, and a connection between the upper and the lower door, whereby the upper door controls the movement of the lower one, substantially as and for the purpose specified.

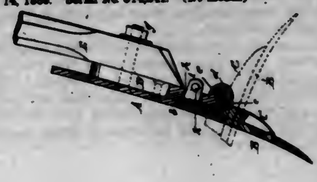
410,880. VAULT-LIGHT. CHRISTIAN H. ROSS, Chicago, Ill., assignor to the Detroit Iron Works, same place. Filed Apr. 30, 1889. Serial No. 308,966. (No model.)



Claim.—1. The combination, with the bed-plate A, having light-hole *a*, provided with circular ledge or flange *a'* of the glass B, having a body portion of less diameter than the main diameter of the light-hole, but greater than its contracted diameter, said glass being provided at its margin with radial projections to bear against the side wall of the light-hole, substantially as and for the purposes specified.

2. The combination, with the bed-plate A, having light-hole *a*, with flange or ledge *a'*, of the glass B, having a body portion of a diameter less than the main diameter of the light-hole *a*, but greater than its reduced diameter, said body portion being provided with radial projections B', to bear against the side wall of the light-hole, and shoulder *b*, and the filling D, of cement or the like, substantially as and for the purposes specified.

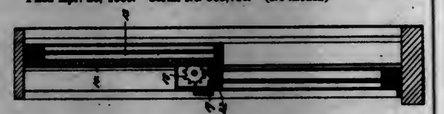
410,881. SHOVEL FOR PLOWS. WILLIAM L. SEXTON, Scranton City, assignor of one-half to Daniel Barrow, Grahm County, Iowa. Filed June 14, 1889. Serial No. 314,341. (No model.)



Claim.—1. In shovels for plows or cultivators, the shovel-blade constructed of upper and lower divided sections hinged together and held in position by a break-pin, as set forth.

2. In shovels for plows or cultivators, the shovel constructed of upper and lower sections A B, in combination with the re-enforcing hinge-pieces C D, secured to the backs of said sections and constructed to form a hinge at the back of the lower one B of said sections, having its axis in transverse relation with the length of the shovel, also a locking attachment above the hinge adapted to receive a transverse break-pin through it, substantially as shown and described.

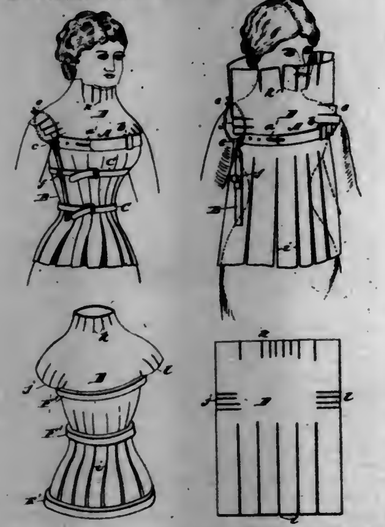
410,882. SASH-FASTENER. HARRISON STAGER, Valencia, Kans. Filed Apr. 26, 1889. Serial No. 308,710. (No model.)



Claim.—1. In a window-sash fastener, the combination, with the rack 14, of a spur-wheel 18, traveling upon said rack, a rock-shaft 19, journaled within a bearing provided with a slot 21, a pin or dog 22, carried upon said rock-shaft and working in the slot, the end of the shaft being provided with a suitable handle 20, whereby the rock-shaft may be turned to bring the pin or dog into engagement with the teeth of the spur-wheel, substantially as shown and described.

2. The combination, with the upper and lower sash of a window-frame and a rack vertically secured to the upper sash, of a casing secured to the lower sash, a spur-wheel journaled in the said casing in front of the said rack, and a rock-shaft or rod capable of lateral movement and of sufficient length to contact with the teeth of the rack journaled below the spur-wheel and provided with an integral stop-pin or dog, said dog being adapted to contact with the teeth of the wheel, substantially as shown and described.

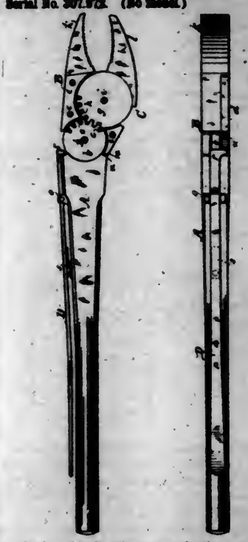
410,883. METHOD OF PRODUCING GARMENT PATTERNS AND MODELS. EDWARD STAHL, Prescott, Ariz. Filed Mar. 22, 1889. Serial No. 304,326. (No model.)



Claim.—1. The process herein described of forming a basque to be used as a pattern for cutting garments, which process consists in applying stiffened pattern material, slashed at its edges, to the figure, shaping the strips to the figure, and securing the same by stiffening material, and then cutting the basque to remove it from the body, substantially as described.

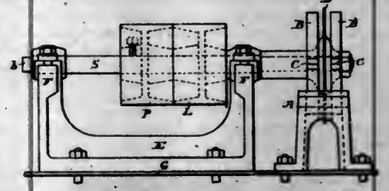
2. The process herein described of forming a basque and model from the same, which process consists in applying pattern material, slashed at its edges, to the body, shaping the strips and stiffening and securing the same, then cutting the basque from the figure, staying the same with surrounding supports shaped to fit the basque, and finally molding plastic material in the interior of the basque, substantially as described.

410,884. WRENCH. CHARLES A. SWANSON, Marshall, Minn., assignor to himself and Charles Lundenberger, same place. Filed Apr. 20, 1889. Serial No. 307,972. (No model.)



Claim.—In a self-adjusting wrench, the combination, with the pivoted handle A and its attached circular rack *b*, of the stationary jaw B, connected with said handle by its pivot *f* and provided with a rack-like or serrated portion *u*, the movable jaw C, having a mutilated pinion *g* arranged to engage with said circular rack, the pivot *i*, connecting the pinion portion of the movable jaw with the jaw B, and the lever D, fulcrumed on the handle provided with a tooth *r*, arranged to engage with the rack-like or serrated portion *u* of the jaw B, and the spring *s*, controlling said lever, essentially as and for the purposes herein set forth.

410,885. MACHINE FOR CUTTING COCOANUT-SHELLS. JOHN H. VAVASSEUR, Uxbridge, County of Middlesex, England. Filed Feb. 22, 1889. Serial No. 301,491. (No model.) Patented in England Aug. 3, 1888, No. 11,354.



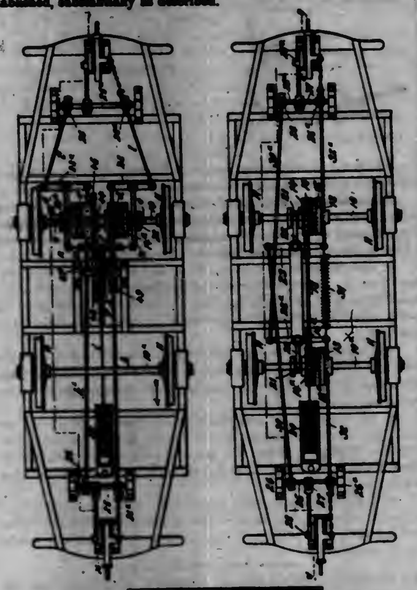
Claim.—In a sawing or cutting machine, the combination of a saw or cutter and a rest and guard provided with a notch, as C, whereby the depth of cut of such tool is governed and varied, substantially as set forth.

410,886. CAR BRAKE AND STARTER. ANNE M. VERNON and STEPHEN M. YEATES, Dublin, Ireland. Filed May 8, 1889. Serial No. 310,014. (No model.)

Claim.—1. In a car brake and starter, the combination, with the car-platform and truck-axles 10 10ª, and the ratchet clutch-sections 12 12ª and 14 14ª, mounted, respectively, fast and loose on said axles, of the chains 16 and 16ª, wound on the loose sections, the spring 30, connected with one of said chains, the pivoted horizontal levers 28 28ª, having yokes that connect them with said sliding sections, the spring 31, connecting said levers, the hand-levers 26 26ª, pivoted and working in a vertical plane through the car-platform, and means for locking them, the connecting-rods 30 32 30ª 32ª 25 25ª, and shafts 27 27ª, arranged intermediate of said hand and horizontal levers, all substantially as shown and described, and operating as specified.

2. In a car brake and starter, the combination, with the axles, of clutch-sections rigidly mounted thereon, other clutch-sections held to slide and to turn upon the axles, levers carrying yokes which engage

the sliding clutch-sections, a spring which acts to throw the clutch-sections into engagement, a spring 30, connections between the spring 30 and the sliding clutch-sections, a transverse shaft provided with arms, connections between the yoke-carrying levers and said arms, levers which extend to within reach of the driver, and draw-bars, connection between the levers, draw-bars, and the transverse shaft being established, substantially as described.



410,887. COVERING FOR COTTON-BALES. ROBERT M. WALSH, New Orleans, La. Filed May 14, 1889. Serial No. 310,736. (No model.)



Claim.—1. A cotton-bale covering consisting of metallic sheets having marginal wooden strips attached thereto on the inside of the sheets, so as to lie against the cotton, the edge of one sheet being secured to the wooden re-enforced edge of the other sheet by nails driven through and anchored in the wood, substantially as shown and described.

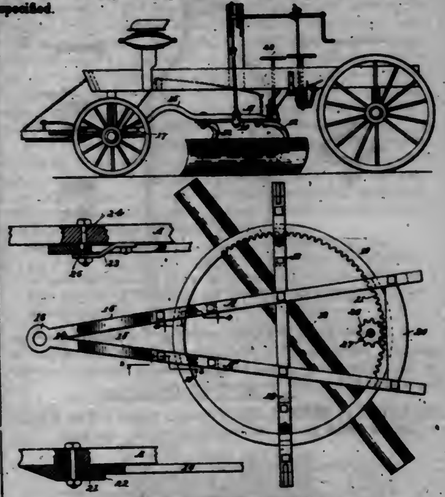
2. A cotton-bale covering consisting of an upper metal sheet and a lower metal sheet, both extending beyond the sides and ends of the bale, one of them being provided with wooden strips at its edges on the inner side thereof, and removable intermediate metal sheets having wooden strips at one edge, the said sheets being connected about the bale by nails driven through the metal edge of one sheet into the wood re-enforced edge of the other sheet, substantially as shown and described.

410,888. ROAD-GRADER. HERBERT H. WALWORTH, Hillsdale, Mich. Filed June 15, 1889. Serial No. 314,262. (No model.)

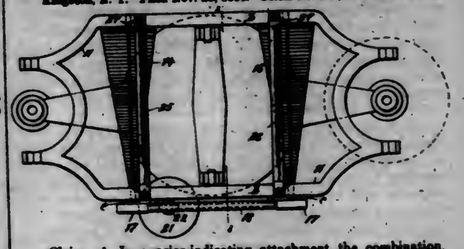
Claim.—1. A support for the scrapers of road-graders, consisting of a bifurcated draw-bar, one or more supporting-beams attached to the members of the draw-bar, brackets secured to the under surface of each of the said beams, and a ring supported by the said brackets, substantially as shown and described.

2. In a support for the scrapers of road-graders, the combination, with a bifurcated draw-bar, one or more beams projected from the members of the said draw-bar, and brackets attached to the under side of each beam, of a ring supported by the said brackets and held to turn thereon, substantially as shown and described.

3. In a support for the scrapers of road-graders, the combination, with a bifurcated draw-bar, a beam or beams extending from the members of the said draw-bar, and brackets attached to the under face of each beam, of a ring provided with an inner toothed peripheral surface supported by the said brackets and held to turn thereon, curved arms projected from the under face of the ring, and a scraper-blade attached to the said arms, and means, substantially as shown and described, for turning the ring in its bearings, as and for the purpose specified.



410,889. PRICE-INDICATING ATTACHMENT FOR WEIGHING SCALES. LOUIS I. WARD, West Shokan, assignor to Hewitt Brice, Kingston, N. Y. Filed Nov. 28, 1888. Serial No. 291,662. (No model.)



Claim.—1. In a price-indicating attachment, the combination, with a revolvable indicator divided longitudinally into a number of sections, said sections being proportionately divided, of a strip divided into numbered sections, a counterbalancing-weight, and connections, substantially as described, between the indicator and weight, whereby when the weight is moved the indicator will be turned, as and for the purpose stated.

2. The combination, with indicators divided, substantially as described, of numbered strips arranged in connection with said indicators, pulleys carried by the indicator-journals, a belt carried by the pulleys, a weight, and a beam, the weight being connected to one length of the belt, substantially as described.

3. In a price-indicating attachment, the combination, with indicators divided longitudinally into sections, the sections of one indicator being divided proportionately from 1 to 99 and the sections of the other indicator being divided proportionately from 2 to 100, strips divided into sections which correspond with the indicator-sections, the sections of one of the strips being numbered from 1 to 99 and the sections of the other strip from 2 to 100, pulleys carried by the indicator-journals, a belt carried by the pulleys, and a weight connected to the belt and suspended from a beam, substantially as described.

4. In a price-indicating attachment, the combination, with indicators 14 and 15, of strips 25 and 26, wires 27, pulleys 17, carried by the indicator-journals, a belt 18, arranged in connection with the pulleys, a beam 20, a weight suspended from said beam, and connections between one length of the belt and the weight, substantially as described.

410,890. POISON-GUARD. HENRY B. WEAVER, Burlington, N. J. Filed Dec. 11, 1888. Serial No. 293,365. (No model.)

Claim.—1. A poison-guard for a bottle, having horizontal prongs extending beyond the stopper of the bottle, and depending spurs adapted

to engage with the stopper to keep the said guard in place, substantially as described.



2. A poison-guard for a bottle, consisting of a plate having prongs and spurs, and the piece D, of suitable flexible material, adapted to be clinched by said spurs, and having an adhesive coating on its under face, substantially as and for the purpose set forth.

410,891. STOVE OR FURNACE DOOR. SIMEON L. WEBB, Wilmington, Del. Filed Feb. 11, 1889. Serial No. 299,353. (No model.)

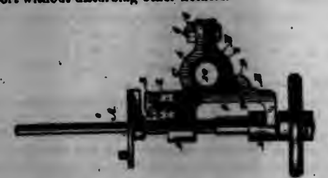


Claim.—1. A stove-door provided with a chamber open front and back and of substantially the full size of the doorway, in combination with a wire screen extending across the front of said chamber, and a series of connected butterfly-valves behind said screen and within said chamber and opening and closing the same, whereby when said valves are closed an air-space is left between said valves and said wire screen, and when said valves are open the chamber is open throughout its entire width, substantially as described.

2. A stove-door provided with an air-passage extending therethrough, with a valve opening and closing said passage, with a sliding bar operating said valve, with a front plate having a slot, and with an operating device exterior to the front plate having a rotating stem connected with said sliding bar through said slot, said stem being elliptical or cam-shaped in cross-section and having its greatest diameter longer than the width of said slot, substantially as set forth.

410,892. SPINDLE-HOLDER FOR SPINNING-MACHINES, &c. ALONZO W. ALLEN, Philadelphia, Pa. Filed Feb. 1, 1889. Serial No. 298,385. (No model.)

Brief.—The object of the invention is to provide a spindle-holder of improved construction, whereby the holder may be removed from its support without disturbing other holders.

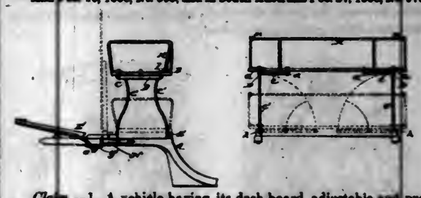


Claim.—1. A spindle-holder having its frame, consisting of the bearings 1, ears 2, upright 4, arm C, with recessed under face, and foot D, formed in one piece, and the removable arm E, said foot D and arm E forming in connection with a screw or bolt in said arm C a clamp for sustaining the holder on the beam or support, substantially as described.

2. A spindle-holder having an arm which is removably fitted to the frame of said holder and a stationary arm opposite to said removable arm, the two arms embracing the beam or support and being clamped thereon by the screw or bolt, substantially as described.

3. The frame of a spindle-holder, having an arm, such as C, and a foot D, in combination with a removable arm E, which is connected with said foot by means of a lip 7, and with said arm by means of a screw or bolt 6, substantially as described.

410,893. CONVERTIBLE SEAT FOR VEHICLES. WILLIAM T. ARMIT and WILLIAM ARMIT, Sydney, New South Wales. Filed Dec. 4, 1886. Serial No. 282,082. (No model.) Patented in New South Wales Dec. 21, 1887, No. 401; in Victoria Feb. 15, 1888, No. 5,637; in Queensland Feb. 16, 1888, No. 388, and in South Australia Feb. 27, 1888, No. 976.



Claim.—1. A vehicle having its dash-board adjustable and provided with a vertically-adjustable seat, substantially as described.

2. A vehicle having its dash-board hinged and provided with a vertically-adjustable seat, substantially as described, whereby the dash-board is made to serve as a foot-board when the seat is elevated and a back to the seat when the latter is lowered, as set forth.

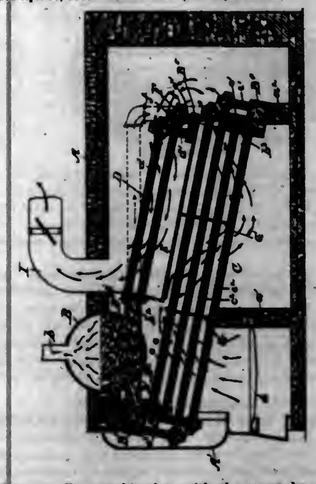
3. The combination, with the body of a vehicle, of a seat connected to the body just in rear of the dash-board by collapsible knuckle-joints, whereby the seat may be raised or lowered and held in the same vertical plane, whether raised or lowered, substantially as described.

4. The combination, with the body of a vehicle, of a seat, the arm *c*, pivoted to the seat, the limb *c'*, pivoted to the body, and the transverse bar D, pivoted to the arm and limb, substantially as herein shown and described.

5. The combination, with the body of a vehicle, of a seat, the arm *c*, pivoted to the seat, the limb *c'*, pivoted to the body, the transverse bar D, pivoted to the said arm and limb, and a catch-bolt secured to the said bar and engaging the seat, substantially as herein shown and described.

6. The combination, with a vehicle-body, of a dash-board hinged to the body and a spring-catch secured to the body and engaging the dash-board to hold it in a vertical position, substantially as herein shown and described.

410,894. STEAM-BOILER. GEORGE H. ABBE, South Bend, Ind. Filed Apr. 16, 1888. Serial No. 270,881. (No model.)



Claim.—1. The combination, with the steam-drum B, of the transverse water-chambers B' and B², connected thereto, the water-chambers B³ and B⁴, arranged at the rear of the combustion-chamber, the inclined groups C and D of water-tubes, connecting, respectively, the chambers B' B³ and B² B⁴, and the circulating-pipes F and H, connecting the rear water-chambers with each other and with the steam-drum, substantially as and for the purposes specified.

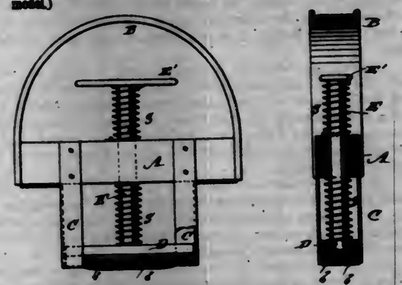
2. The combination, with the water-chamber B', having water-leg B⁵, and the water-chamber B³, having water-leg b^5, of the water-tubes *c*, connected to the water-leg B⁵, the short tubes *c'*, arranged at right angles thereto and connected to the water-chamber B³, the water-tube c^3, connected to the chamber B³ and its water-leg b^5, and the short tubes c^4, arranged at right angles thereto and connected to the water-chamber B' and its water-leg B⁵, substantially as and for the purposes specified.

3. The combination, with the upper and lower water-chambers, of the water-tubes connecting the two, and each consisting of a long inclined tube and a short tube arranged at right angles thereto, the horizontal series of said tubes being alternately arranged, as described, so that each tube extends clear through to the front or rear, substantially as and for the purposes specified.

4. The combination, with the steam-drum, of the lower group C of water-tubes, above the front portion of which the steam-drum is arranged, the upper or auxiliary group extending rearward from the steam-drum, a baffle-plate arranged between the two groups and extending from the front water-chamber to the rear water-chamber of the upper group, and a second baffle-plate closing the space between the front water-chamber of the upper group and the casing, substantially as and for the purposes specified.

5. The combination, with the water-tubes, each composed of two sections arranged at right angles to each other, said tubes being arranged in alternate horizontal series, so that each tube extends clear through to the front or rear, of the four-way unions or couplings connecting the two sections of each tube and provided with screw-plugs to close the apertures opposite the ends thereof, substantially as and for the purposes specified.

410,895. MAILING DEVICE FOR NEWSPAPERS, &c. LORIAN P. BARDWELL, Pratt, Kans. Filed July 17, 1888. Serial No. 280,126. (No model.)

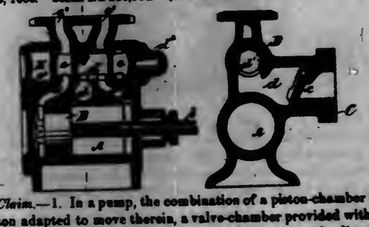


Claim.—1. In a device for applying addressed slips to newspapers and the like, the combination of an apertured bar, slip-holders projecting downwardly from the bar and having recessed inner faces and closed ends, a rod working in the aperture of the said bar, a follower on the lower end of the said rod and working in the recesses of the holders and a spring for pressing the follower downward, substantially as described.

2. The herein-described device for applying addressed slips to newspapers and the like, consisting of the apertured bar A, provided with the handle B, the slip-holders C, secured to the bar and having recessed inner faces and closed ends, the rod E, working in the aperture of the bar and provided with the handle E' on its upper end and the follower D on its lower end, and the springs S, surrounding the rod between the handle E' and bar and said bar and follower, as specified.

3. The within-described hand mailing device, consisting of a cross-piece or body A, the attached slip holders and guides C C, recessed on their inner faces and having closed outer or lower ends, the follower D, with its guide-rod E, one or more springs S, operating to force said follower outward, and the handle B, for use substantially as specified.

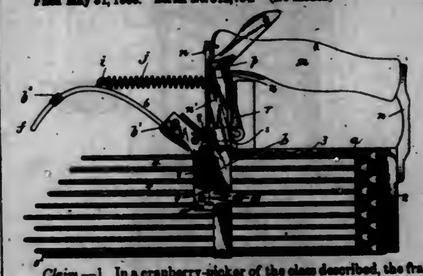
410,896. PUMP. FERDINAND RAUBE, Brooklyn, N. Y. Filed July 19, 1888. Serial No. 280,364. (No model.)



Claim.—1. In a pump, the combination of a piston-chamber with a piston adapted to move therein, a valve-chamber provided with two outlet or discharge openings and corresponding passages leading from said piston-chamber, and a cup-valve, also provided with two discharge-openings and adapted to move in said valve-chamber and connect one or the other of the discharge-openings therein with corresponding passages leading from said piston-chamber, said cup-valve being further provided with a cavity having an opening adapted to connect successively with a port through which the oil or other liquid is supplied and the passage leading to piston-chamber and not connected with an outlet-opening, said valve and piston-chamber being further connected by channels at each end, whereby the cup-valve is given a reciprocating motion by means of the pressure of the oil forced through said channels under successive strokes of said piston, and the passages leading to and from said valve-chamber are opened and sealed and equal quantities of oil discharged, substantially as described.

2. In a pump, the combination of the piston-chamber A, with piston adapted to move therein, valve-chamber with port *d*, having discharge-openings d^2 d^3, channels d^4 d^5, and passages *d'* *d'*, and cup-valve D, provided with passages *e e*, cavity *d'*, having an opening therein, and guiding-stem d^6, adapted to move in socket in head of valve-chamber, arranged and operating substantially as described.

410,897. CRANBERRY-PICKER. BENJAMIN F. BEE, Harwich, Mass., assignor, by direct and mesne assignments, to Erastus Small, same place, and Abel D. Makepeace and George F. Baker, Barnstable, Mass. Filed May 31, 1889. Serial No. 312,704. (No model.)



Claim.—1. In a cranberry-picker of the class described, the frame or receptacle composed of the back piece, the side and bottom rods attached at their rear ends to said back piece and free or unattached at their forward ends, and the transverse ligature engaged with said rods at a point intermediate of their attached and free ends, as set forth.

2. In a cranberry-picker, the combination, with a series of wire rods or teeth and a rigid piece, to which the rear ends of said rods or teeth are attached, of a transverse ligature connecting said rods or teeth at a point intermediate of their attached and free ends, as set forth.

3. The combination of the back piece 2, the top piece 3, the parallel side and bottom rods attached to said back piece, and the continuous ligature engaged with all of said rods and attached at its ends to the top piece, as set forth.

4. The combination, with the parallel rods, of the ligature composed of the sheet-metal strip perforated to receive said rods and bent to embrace the sides of said rods, as set forth.

5. The combination, with the frame or receptacle having the side rods 4 and bottom rods 5, of the rake or comb composed of the teeth 6 and head 7, the downwardly-projecting lugs 8 8, attached to the ends of the head and projecting downwardly into the space inclosed by the rods 4 5, and the blocks 9 9, secured to the side rods 4 and connected by pivots 14 with the lugs 8, as set forth.

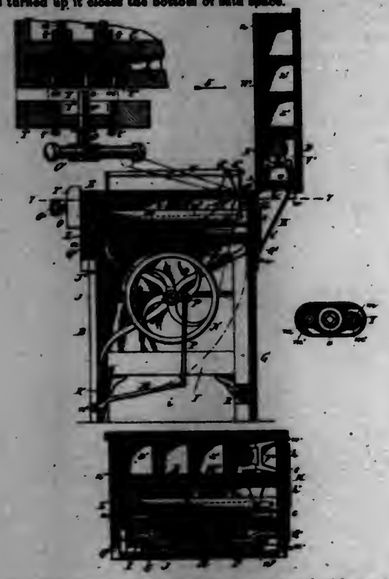
6. The combination of the frame or receptacle having the side rods and the connecting-ligature, the blocks 9, perforated to receive one or more of said rods, means for engaging said blocks with the rods and ligature, and the rake or comb-head having downwardly-projecting lugs pivoted to said blocks, as set forth.

7. The combination of the frame or receptacle having the handle *m*, the rock-shaft *p*, journaled in ears or brackets attached to said receptacle, and provided with a thumb-lever *q*, arranged in suitable proximity to said handle, the rake or comb pivoted to said frame, the downwardly-projecting arm *r*, affixed to the rock-shaft, and the link *s*, connecting the lower end of said arm with the comb-head.

410,898. COMBINED WORK-BENCH AND TOOL-CABINET. HUDSON BOGARDUS, Newark, N. J., assignor to the Bogardus New Art Company, same place. Filed Sept. 12, 1887. Serial No. 249,579. (No model.)

Claim.—1. The combination, with a chest C, constructed with a space or cavity F beneath it, of a folding base B, consisting of a single back board, two opposite end boards, and a pair of front boards, all hinged to the chest with their pivotal axes in different horizontal planes, and adapted to be turned up into said space and to occupy different superposed planes therein.

2. The combination, with a chest C, constructed with a space F beneath it, of a folding base B, consisting of front boards hinged at their tops to the chest and adapted to be turned up into said space, end boards hinged at their tops and adapted to be turned up into said space in a plane beneath that occupied by the front board, and a back board hinged to said chest on a pivotal axis in a lower plane than that of the front and end boards, and adapted to be turned up in a plane beneath that occupied by the end boards, and having a length and height equal to the length and breadth of the space F, whereby when thus turned up it closes the bottom of said space.



3. The combination, with a chest C, constructed with a space F beneath it, of a folding base B, consisting of front boards hinged at their tops and adapted to be turned up into said space, a vertically-sliding board L, entering said chest and to which said front boards are hinged, end boards hinged at their tops and adapted to be turned up beneath the front boards, and a back board hinged to said chest and adapted to be turned up beneath the end boards and to close the bottom of said space.

4. The combination, with a chest C, constructed with a space F beneath it, of a folding base B, consisting of front boards, end boards, and back board hinged at their tops and adapted to be turned up into different superposed planes, and a bracket Q, pivoted to said chest, standing normally in a vertical transverse plane between said end boards, and adapted to be turned up into said space F, and a fastening for uniting the free end of said bracket to one of said front boards when it is turned down.

5. The combination, with a chest C, constructed with a space F beneath it, of a folding base B, consisting of front boards, end boards, and a back board hinged at their tops and adapted to be turned up into different superposed planes, a bracket Q, pivoted to said chest, standing normally in a vertical transverse plane, and adapted to be turned up into said space F, a belt-wheel N, mounted on said bracket, a treadle M, pivoted in the space between the front boards and the pitman P, the said treadle being adapted to be turned into the plane of the front boards in the opening between them.

6. The combination, with the chest C, constructed with a space F beneath it, of a folding base B, consisting of front boards J J, having a space K between them, end boards, and a back board hinged at their tops and adapted to be turned up into different superposed planes, with the front boards in the upper plane, a bracket Q, pivoted to said chest on a transverse axis within the width of said opening, standing normally in a vertical transverse plane, and adapted to be turned up into said space F, and of a length not exceeding the width of the opening, and the belt-wheel N, mounted on said bracket, whereby when said bracket and front boards are turned up they may occupy the same plane, the bracket entering said opening between the front boards.

7. The combination, with a chest C, of a folding base B, consisting of front boards, end boards, and a back board hinged at their tops and adapted to be turned up into different superposed planes, and fastening devices applied to the respective boards at their junction with one another in the right angle formed at their junction, and consisting each of a rotary hook R, pivoted to the part which comes edgewise against the other, and an escutcheon R', let into the other part and receiving said hook when the latter is turned to project beyond the edge of the part to which it is pivoted.

8. The combination of two chests C and D, hinged together, with a handle-bar S, mounted on two posts, one of them swiveled to one chest and the other entering a lock in the other chest, and the said lock adapted to engage said post, whereby the two chests are held closed together through the medium of said handle-bar, which forms a tie bridging over the joist between them.

9. The combination of two chests C and D, hinged together, with a handle-bar S, mounted on two posts, one of said posts swiveled to one chest and the other entering a socket in the other chest, and a lock applied to the latter chest and consisting of levers pivoted to the lock-case and adapted to engage shoulders on said post, a spring for drawing said levers into engagement with said post, and the lock-case provided with a key-hole arranged for the insertion of a key to displace said levers, and thereby release said post.

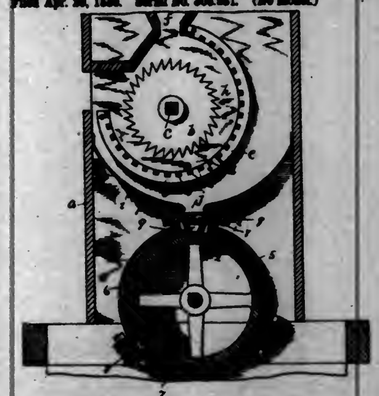
10. The combination, with two chests hinged together, of a handle-bar mounted at one end on a swiveled post, connected to the upper chest, and adapted to be turned from a vertical to a horizontal position, and having a post at its other end adapted to enter sockets in the chest in either position, and the said sockets formed in the respective chests, whereby the handle may be turned to one position to fasten together the two chests and as a handle for lifting them and to the other position to form a handle for turning up the upper chest.

11. The combination of two chests C and D, hinged together, with a lid E between them, a lathe V, having projecting feet at one end, and sockets having overhanging plates let into the said lid and into a compartment in one of said chests and adapted to engage said feet when the lathe is mounted on said lid for use or stowed away in said compartment, and screws for fastening the opposite end of the lathe in either position.

12. The combination of chest C, its hinged lid E, base B, belt-wheel N, sheaves c' c', mounted behind the hinges of said lid, and a lathe V, adapted to be fastened to said lid with its cone-pulleys in line with said sheaves, whereby a belt from said wheel N may be carried over said sheaves to said cone-pulleys.

13. The combination of two chests C and D, hinged together, with a lid E between them, the upper chest adapted to be turned back to a vertical position and formed with pigeon-holes for receiving drawers or boxes, a board W', fitting into said chest and adapted to close the fronts of said pigeon-holes, and fastenings for holding said board in place.

410,399. CORN SHELLER AND GRINDER. NICHOLAS DRESSMAN, Boston, Mass., assignor of one-half to Leroy P. Lawrence, same place. Filed Apr. 20, 1888. Serial No. 271,231. (No model.)



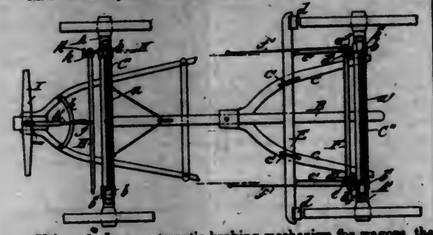
Claim.—1. The grinding-cylinder having peripheral ribs which are transversely slotted to form double-ended teeth, each tooth having two operative ends, whereby the cylinder is adapted to operate while rotating in either direction, combined with the concave having correspondingly-slotted ribs alternating with the ribs of the cylinder, as set forth.

2. The combination, with the cylinder, of the concave composed of the detachably-connected sections, each provided with ribs, which are transversely slotted to form double-ended teeth, each tooth having two operative ends, the detachable connection of the sections enabling either section to be reversed and make either of the ends of its teeth the acting ends, as set forth.

3. The combination of the grinding-cylinder, the adjustable concave composed of sections 5 6 7 and having the receiving-opening 9 and the discharge-opening v, and means for simultaneously adjusting the diameter of the concave and the width of the opening 9, said means consisting in the bolts q, connecting the sections at opposite sides of the opening 9, and the springs s, interposed between the sections in said opening.

4. The combination of the casing a, the shelling devices consisting of the saws b, a shaft c, journaled in the casing supporting the saws, and the concave grating attached to the casing under the saws, the grinding-cylinder, a shaft A, supporting said cylinder and journaled in the casing below the shaft c, the concave inclosing the said cylinder and having a receiving-opening 9 in its upper portion, and a discharge-opening v in its lower portion, means, substantially as described, for simultaneously rotating the shafts c and A, and the partitions i i under the grating of the sheller separated by an opening j, which is located over the receiving-opening of the concave, as set forth.

410,400. AUTOMATIC WAGON-BRAKE. JAMES W. ESTEP, Alth, Ohio. Filed May 20, 1889. Serial No. 312,092. (No model.)



Claim.—1. In an automatic braking mechanism for wagons, the combination of the body mounted upon rollers exteeding nearly the whole length of and traveling upon the upper surfaces of both front and rear bolsters, the rock-shaft carried by the body and its connections with the brake-shoes and doubletree, all the parts being constructed and arranged as shown and described, so that a forward movement of the body applies the brakes and a light movement of the doubletree forces back the body and releases them.

2. In an automatic braking mechanism for wagons, the shaft H, levers K and k, the arms g, the bar g', and the cross-piece h, in combination with the body of a wagon sliding longitudinally on its running-gear, all arranged and operating substantially as shown and described, and for the purpose specified.

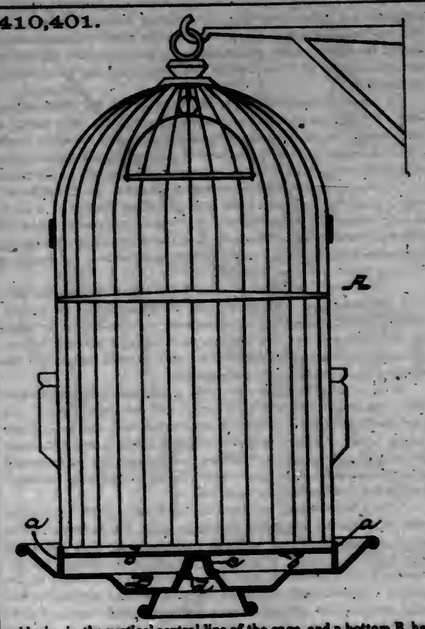
3. In an automatic brake for vehicles, the combination of the bolster, the wear-plates C', turned up at each end and secured to the top of said bolsters, the roll a, its ends bearing against the turned-up part of said plates, and the bifurcated standards b, secured to the bolster and forming a stop to prevent the roll from leaving the wearing-plate, substantially as shown and described.

410,401. BIRD-CAGE. CHARLES H. GRIFFIN, Rockdale, Tex. Filed May 1, 1889. Serial No. 309,186. (No model.)

Claim.—As a new and improved article of manufacture, a bird-cage having the base-band a, to which the lower ends of the cage-wires are secured, a diametrically-bracing wire b, secured at its ends to the said band a, an inverted interiorly screw-threaded cap c, secured to

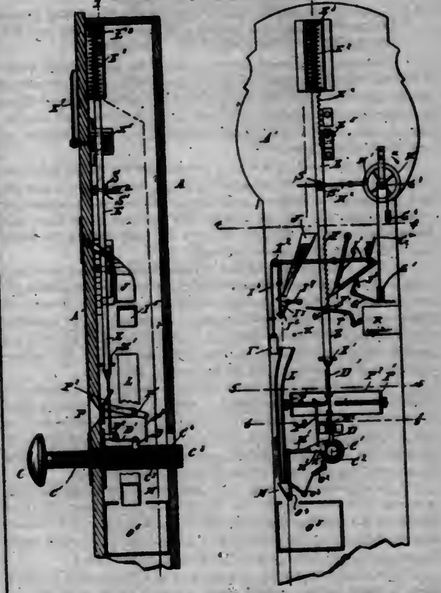


410,401.



said wire in the vertical central line of the cage, and a bottom B, having a screw d, adapted to enter the cap c, as specified.

410,402. COIN-OPERATIVE BLOW-TESTING MACHINE. HENRY COOPER, Brooklyn, and JAMES P. O'BRIEN, New York, assignors, by direct and mesne assignments, of one-half to Bernard Van Leer, New York, N.Y. Filed Apr. 13, 1888. Serial No. 270,511. (No model.)



Claim.—1. In a coin-controlled blow-testing machine, the combination, with a tubular guide having a cross-slot, a sliding shank having a punching-head and a cross-slot to register with that in the tubu-

lar guide, and shank retracting and indicating devices, as stated, of a balance-lever, a locking-bolt operated thereby to enter the registering slots in the tubular guide and shank, and a coin-receptacle carried by the balance-lever to withdraw the bolt when weighted, substantially as described.

2. In a coin-controlled blow-testing machine, the combination, with a fixed guide and sliding punching-head shank, each having a locking-shoulder, of a pivotal balance-lever, one arm of which forms a bolt to engage the locking-shoulders of the guide and shank, and a coin-receptacle carried by the balance-lever, substantially as described.

3. In a coin-controlled blow-testing machine, the combination, with a punching-head, its guide, and retracting device, of a head-locking device, a balance-lever, and a coin-receptacle supported thereby to release the said locking device, said coin-receptacle having a movable bottom and means for moving said bottom and dumping the coin, substantially as described.

4. In a coin-controlled blow-testing machine, the combination, with a punching-head, its guide, and retracting device, of a head-locking device, a balancing coin-receptacle, and connections to release the said locking device, said coin-receptacle having a movable bottom, and operating connections between the said movable bottom and the punching-head, substantially as described.

5. In a coin-controlled blow-testing machine, the combination, with a punching-head shank, its guide, and retracting device, of a shank-locking device, a balancing coin-receptacle to operate the said locking device, a tripper carried by the said shank, a movable arm in the path of said tripper, and connections between the said arm and the coin-receptacle, whereby the receptacle is dumped when the shank is retracted, substantially as described.

6. In a blow-testing machine, the combination, with a punching-head, its guide, and retracting device, an index, and an index-operating mechanism connected with the punching-head, of a self-acting index-restraining catch, a catch-tripping device consisting of a fly-wheel and drum revolving together, cables winding reversely on the drum, a weighted catch-tripper on one cable end and a greater or less weight on the other cable end, and a striker operated from the punching-head to spin the fly-wheel, substantially as described.

7. In a coin-operative blow-testing machine, the combination of a closed case having a signal-window, a movable double sign, bearing both a warning and a signal, arranged to appear alternately at the window, a punching-head, its retracting-spring, a hand-locking bolt, a balancing coin-receptacle in operative connection with the bolt, and a connection between the double sign and the bolt, the whole adjusted and arranged to operate substantially as described.

410,408. MACHINE FOR CUTTING BOARDS FROM LOGS. THOMAS S. CRANE, East Orange, N. J., assignor to Edward Bradley, New York, N.Y. Filed Apr. 20, 1888. Serial No. 307,941. (No model.)

Claim.—1. In a wood-slicing machine, the combination, with a knife-carriage reciprocated to cut intermittingly, of a reciprocating steam piston-rod attached directly to such carriage, a knife-beam movable upon the carriage transverse to the piston-rod, and mechanism movable with the carriage for reciprocating the knife-beam, as and for the purpose set forth.

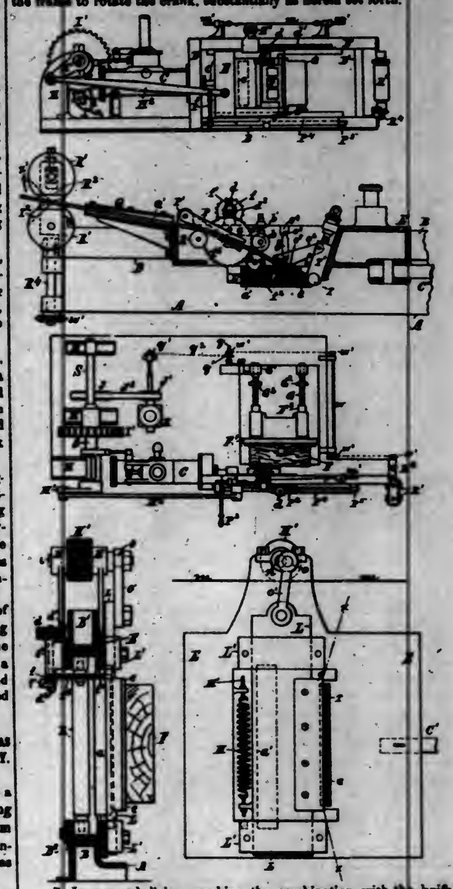
2. In a wood-slicing machine, the combination, with a knife-carriage reciprocated to cut intermittingly, of a reciprocating steam piston-rod attached directly to such carriage, an adjustable presser-roll sustained upon the carriage parallel with the edge of the knife, and mechanism movable with the carriage for reciprocating the knife-beam, as and for the purpose set forth.

3. In a wood-slicing machine, the combination, with a knife-carriage reciprocated to cut intermittingly, of a reciprocating steam piston-rod attached directly to such carriage, an adjustable presser-roll sustained upon the carriage transversely to the path of the carriage, a knife and knife-beam movable upon the carriage parallel with the presser-roll, and mechanism movable with the carriage for reciprocating the knife-beam, as and for the purpose set forth.

4. In a wood-slicing machine having a reciprocating knife-carriage with the edge of the knife in a vertical position, the combination, with a presser-roll upon the carriage sustained transversely to the path of the carriage, of a knife and knife-beam movable vertically parallel with the presser-roll, and a spring to counterbalance the weight of the knife-beam, substantially as herein set forth.

5. In a machine having a reciprocating knife-carriage, the combination, with the carriage, of a knife and knife-beam movable thereon and a rotating shaft journaled in bearings upon the knife-carriage and provided with a crank and connections to the knife-beam to reciprocate the latter, as and for the purpose set forth.

6. In a machine having a reciprocating knife-carriage movable upon a frame having parallel ways, the combination, with the carriage, of a knife and knife-beam movable thereon, a rotating shaft journaled in bearings upon the carriage, a crank upon the shaft, and connections to the knife-beam to reciprocate the same, and a wheel upon the shaft making a rolling contact with a stationary fixture upon the frame to rotate the crank, substantially as herein set forth.



7. In a wood-slicing machine, the combination, with the knife and an adjustable presser sustained adjacent to the same, of straightening rolls or devices upon the carriage and delivery-rolls *a* and *b*, rotated upon the carriage for drawing the board from the grip of the knife and presser and propelling it through the straightening devices, substantially as herein set forth.

8. In a wood-slicing machine, the combination, with the knife and an adjustable presser sustained adjacent to the same, of straightening rolls or devices upon the carriage and delivery-rolls *a* and *b*, arranged between the straightening devices and the edge of the knife and rotated upon the carriage for drawing the board from the grip of the knife and presser and propelling it through the straightening devices, substantially as herein set forth.

9. In a wood-slicing machine having a reciprocating knife-carriage, the combination, with the knife, of delivery-rolls mounted upon the knife-carriage for drawing the board from the knife, a discharge-channel to direct the board from the carriage in a given path, and a movable plate upon the knife-carriage adapted to throw the board from the carriage or into such discharge-channel, as and for the purpose set forth.

10. In a wood-slicing machine having a reciprocating knife-carriage, the combination, with the knife, of delivery-rolls mounted upon the knife-carriage for drawing the board from the knife, a discharge-channel to direct the board from the carriage in a given path, and rolls upon the frame adjacent to the carriage at the end of its stroke to draw the board from such discharge-channel by their rotation, substantially as herein set forth.

11. In a wood-slicing machine having a reciprocating knife-carriage, the combination, with the knife, of delivery-rolls mounted upon the knife-carriage for drawing the board from the knife, discharge mechanism, as the trough Q, to discharge the board from the carriage in a given path, and rolls upon the frame to take the board from such discharge mechanism, one or more of such rolls being segmental in form to clear the board in a given position and rotated an even number of times for each stroke of the knife, substantially as herein set forth.

12. In a wood-slicing machine, the combination, with the knife and the stay-log, of a feed-screw, a locking-cam rotated with the same and held in a fixed position during the cut of the knife, a bolt or latch for holding the same from rotating, and a dog operated to retract the bolt at each movement of the knife, substantially as herein set forth.

13. In a wood-slicing machine, the combination, with the knife and the stay-log, of a feed-screw, a feed-spindle adjacent to the same, change-wheels for connecting the screw and spindle, and a locking-cam rotated with the same and held in a fixed position during the cut of the knife, and a spring-bolt applied to the cam and actuated substantially as herein set forth.

14. In a wood-slicing machine, the combination, with the knife and the stay-log, of a feed-screw, a locking-cam rotated with the same, a bolt or latch for holding the same from rotating, a friction-clutch having one part rotated continuously, another part connected by suitable gearing with the locking-cam and operating to rotate the same when engaged, a clutch-lever for engaging the friction-clutch to drive the locking-cam, and means, as the cam *k'*, for actuating the clutch-lever once for each stroke of the knife, as and for the purpose set forth.

15. In a wood-slicing machine, the combination, with a reciprocating knife-carriage, of a knife, an adjustable presser sustained adjacent to the same, delivery-rolls upon the carriage for drawing the board from the grip of the knife and presser, and a wheel upon the carriage connected with such rolls and making a rolling contact with a stationary fixture upon the frame to rotate such rolls, substantially as herein set forth.

16. In a wood-slicing machine, the combination, with a reciprocating knife-carriage, of a knife, an adjustable presser sustained adjacent to the same, delivery-rolls upon the carriage for drawing the board from the grip of the knife and presser, a wheel upon the carriage making a rolling contact with a stationary fixture upon the frame, and a pawl-and-ratchet connection from such wheel to the delivery-rolls to actuate the same in one direction only, substantially as herein set forth.

17. In a wood-slicing machine, the combination, with a reciprocating knife-carriage, of a knife, an adjustable presser sustained adjacent to the same, delivery-rolls upon the carriage for drawing the board from the grip of the knife and presser, a toothed wheel upon the carriage meshing with a stationary rack upon the frame, and a pawl-and-ratchet connection from such wheel to the delivery-rolls to actuate the same in one direction only, substantially as herein set forth.

410,404. PROCESS OF DYEING ARTIFICIAL SILK. HILAIRE DE CHARDONNET, Besançon, France. Filed June 28, 1888. Serial No. 277,895. (No specimens.) Patented in France Jan. 27, 1888, No. 188,304, and in England Apr. 9, 1888, No. 5,270.

Claim.—The process of dyeing artificial silk and other pyroxyline compounds, which consists in, first, denitrating the artificial silk or pyroxyline compound by immersion for a few hours in a bath of nitric acid; second, washing the denitrated material, and, third, dipping the same in a dyeing-bath, substantially as set forth.

410,405. REEL OR SWIFT. HERMAN RIPLE, Belleville, Ill. Filed May 9, 1889. Serial No. 310,120. (No model.)

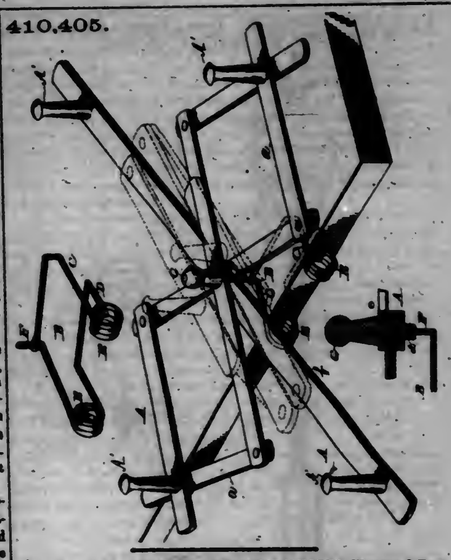
Claim.—1. The combination of a reel having a central pin with an opening therein and a clamping device with a standard adapted to fit in said opening, and provided with jaws adapted to embrace a table or support, substantially as described.

2. A reel consisting of slats pivotally connected, a screw-pin for clamping the same in position, the said pin having an opening therein, and a holder having a standard adapted to enter said opening and provided with jaws adapted to embrace or grip a table or support, said parts being combined substantially as described.

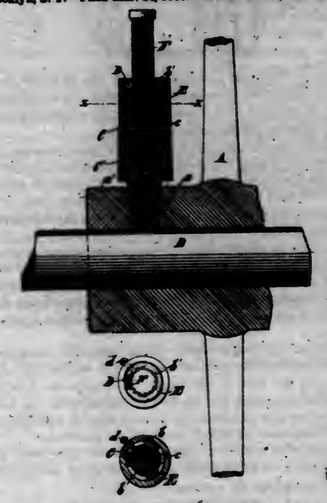
3. A reel consisting of slats pivotally connected at their ends and centers, a cross-slat, and a screw-pin with an opening therein, in combination with a holder having a standard adapted to be inserted in said opening in said screw-pin, and having jaws adapted to embrace or grip a table or support, substantially as described.

4. A reel consisting of slats pivotally connected at their ends and centers, a cross-slat, and a screw-pin with an opening therein, in combination with a clamping device having a standard adapted to fit in said opening in the screw-pin, substantially as described.

410,405.



410,406. LUBRICATOR FOR LOOSE PULLEYS. WILLIAM J. FAIR, Brooklyn, N. Y. Filed Mar. 14, 1888. Serial No. 303,209. (No model.)

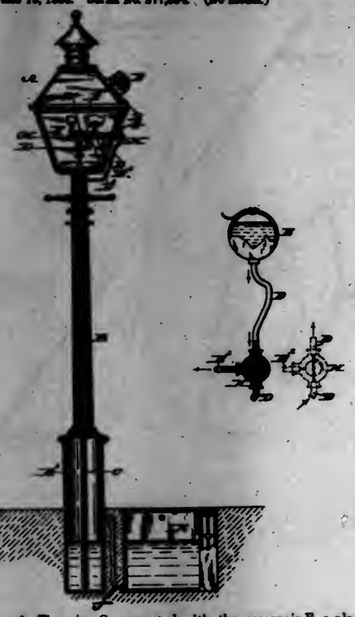


Claim.—1. In a lubricator for loose pulleys, the combination, with a case in which is contained a stick of lubricating material, of a weight surrounding said case and provided internally with a rack, a pinion on said case engaging said rack, and a follower bearing upon said stick of lubricating material and provided with a rack also engaging said pinion, substantially as specified.

2. In a lubricator for loose pulleys, the combination, with a case for containing a stick of lubricating material, of a weight surrounding said case and provided internally with a rack, a pinion on said case engaging said rack, a follower provided with a rack also engaging said pinion, and a stop on said case for engaging the rack on the weight, substantially as specified.

3. In a lubricator for loose pulleys, the combination, with a case for containing a stick of lubricating material, of a weight surrounding said case and provided internally with a rack, a pinion on said case engaging said rack, a follower also provided with a rack engaging said pinion, a stop on said case, and a pin or projection on said weight adapted to contact with said stop to prevent a too extended outward movement of said weight, substantially as specified.

410,407. VAPOR-LAMP. PETER J. FITZGERALD, Sharon Hill, Pa. Filed June 19, 1888. Serial No. 277,554. (No model.)



Claim.—1. The pipe C, connected with the reservoir E, a place of supply of fluid under pressure, and a chamber connected therewith, the branch D, with the cock H, and the pipe E', with the cock G, combined and operating substantially as described.

2. A supply-tank adapted to contain liquid under pressure, a chamber connected by a pipe with said supply-tank, a supply-pipe leading from said chamber and having a two-way cock therein, a reservoir connected with said supply-pipe, and a pipe leading from said cock and having a cock and burner, said parts being combined substantially as described.

3. The tank K, adapted to contain liquid under pressure, a chamber connected with said tank, the pipe C, leading from said chamber and having the branch pipe D, with the two-way cock therein, the reservoir E, communicating with the said branch pipe D, and the pipe E', with cock H and burner F, said parts being combined substantially as described.

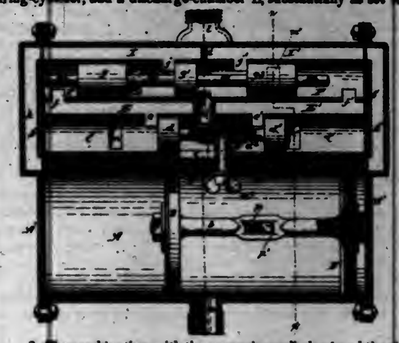
4. The tank K, in combination with a separate chamber, the post B, the pipe C, leading from said chamber and to said post, the branch pipe D, having the cock H, the reservoir E, supported by a frame connected with the post B, and the pipe E', leading from the two-way cock H and provided with the cock G and burner F, said parts being combined substantially as and for the purpose described.

5. A lamp with a reservoir above the flame of the same, the said reservoir having a coating of asbestus on the upper surface thereof, substantially as and for the purpose set forth.

410,408. PISTON METER. WILLIAM T. FOX, Rochester, N. Y. Filed Feb. 21, 1888. Serial No. 264,757. (No model.)

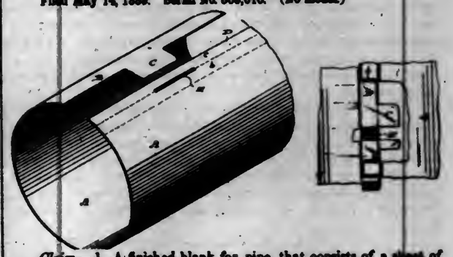
1. The combination, with the measuring-cylinder A and pistons B B', of a primary-valve chamber C, connected with the measuring-cylinder, sliding valves d d', arranged in the valve-chamber C and having arms d^3 projecting into the measuring-cylinder and actuated by the pistons B B', chambers or passages E E', communicating with the primary-valve chamber C, a secondary-valve chamber F, communicating with the primary-valve chamber C and the passages E E', sliding valves g g' g^3, arranged in the secondary-valve chamber F and operated by the pressure of the liquid, chambers I I', communicating with said secondary-valve chamber, ports k k', connecting said channels with opposite ends of the measuring-cylinder, and a discharge-chamber L, communicating with the secondary-valve chamber F, substantially as set forth.

2. The combination, with the measuring-cylinder A and the duplex pistons B B', of a primary-valve chamber C, connected with the measuring-cylinder and provided with relief-openings n n', sliding valves d d^3, arranged in the valve-chamber C and having arms d^3, actuated by the pistons B B', chambers or passages E E', communicating with the primary-valve chamber C, a secondary-valve chamber F, communicating with the primary-valve chamber C and the passages E E' and having liquid-escape openings m m', sliding valves g g' g^3, arranged in the secondary-valve chamber F and operated by the pressure of the liquid, channels I I', communicating with said secondary-valve chamber, ports k k', connecting said channels with opposite ends of the measuring-cylinder, and a discharge-chamber L, substantially as set forth.



3. The combination, with the measuring-cylinder A and the pistons B B', of the valve-chamber C, provided with detachable end walls S and communicating with the cylinder A by an opening c, sliding valves d d', arranged in the valve-chamber C and connected by a valve-rod d^2, and arms or projections d^3, arranged in the cylinder A and attached to a shank projecting through the opening c and detachably secured to the valve-rod, substantially as set forth.

410,409. SHEET-METAL PIPE. HENRY L. GATES, Milwaukee, Wis. Filed May 14, 1889. Serial No. 309,610. (No model.)



Claim.—1. A finished blank for pipe, that consists of a sheet of metal having one longitudinal edge thereof provided with one or more lateral tongues and the opposing edge double folded to form an outwardly-open groove throughout its length and slotted at the rear of the groove coincident with said tongue or tongues, substantially as set forth.

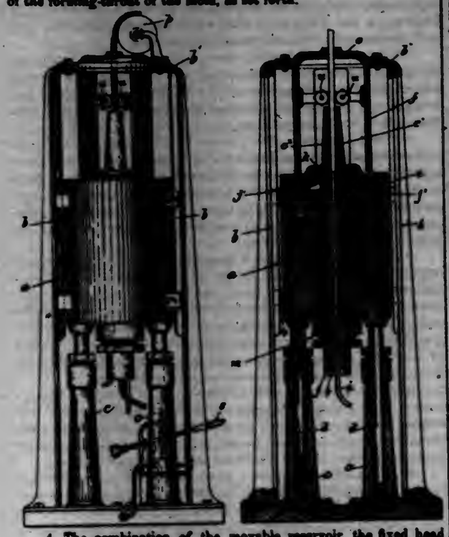
2. A sheet-metal pipe-joint having one longitudinal edge thereof folded to form an outwardly-open groove throughout its length, a slot or slots cut out of the metal at the rear of the groove, the opposing edge seated in said groove, and a tongue or tongues projected from the latter edge through said slot or slots and bent back, substantially as set forth.

410,410. APPARATUS FOR APPLYING SHEATHS TO ELECTRICAL CONDUCTORS. CHARLES G. GOODWIN, Malden, assignor of one-half to Peter B. Wiley, Wakefield, Mass. Filed Mar. 30, 1889. Serial No. 305,408. (No model.)

Claim.—1. The combination of the movable reservoir, fixed guides therefor, a motor whereby the reservoir may be moved upon said guides, a fixed head having a mold communicating with the interior of the reservoir, a guide for an electrical conductor below said mold, and rigid lateral supports connecting the upper end of said guide with the fixed head, whereby the upper end of the guide and an electrical conductor therein are kept at the center of said mold, as set forth.

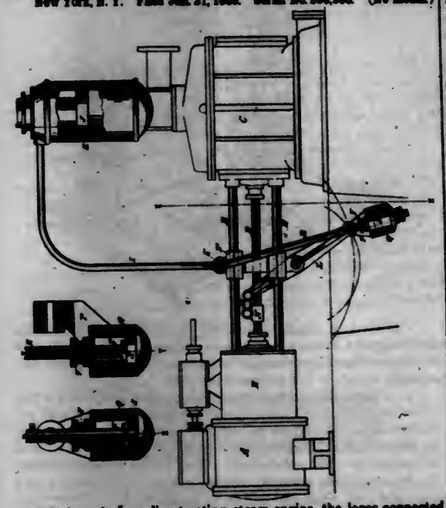
2. The combination of the fixed supporting-frame having vertical guides b b, the reservoir a, fitted to slide on said guides, means for elevating said reservoir, the fixed head c, fitted in said reservoir and having the mold c', and the tube j, having the guide j' within the reservoir, said guide being formed and arranged to keep a conductor passing therethrough at the center of the forming-throat of the mold, as set forth.

3. The combination of the fixed supporting-frame having vertical guides b b, the reservoir a, fitted to slide on said guides, a stuffing-box in the bottom of said reservoir, means for elevating said reservoir, the fixed head c, fitted in said reservoir and having the mold c', and the tube j, having the guide j' within the reservoir and passing through the stuffing-box in the bottom of the reservoir, said guide being formed and arranged to keep a conductor passing therethrough at the center of the forming-throat of the mold, as set forth.



4. The combination of the movable reservoir, the fixed head having the mold c', the tube j, having the guide j' within the reservoir, and means for circulating water in said tube, as set forth.

410,411. DIRECT-ACTING STEAM-ENGINE. JOHN A. GRONDIN, New York, N. Y. Filed Jan. 21, 1889. Serial No. 296,963. (No model.)



Claim.—1. In a direct-acting steam-engine, the lever connected at one end with the main piston-rod and pivotally supported, so that its other end may be moved in the arc of a circle, combined with the hollow lever pivotally secured at one end, so that its other end may be moved on a different arc of a different circle from that described by the first-mentioned lever, a piston secured on said end, and a pipe leading from a source of pressure to said hollow lever, the said arcs of the circles crossing each other at each side of a given point, substantially as set forth.

2. In a direct-acting steam-engine, the lever connected at one end with the main piston-rod and pivotally supported, so that its other end may be moved in the arc of a circle, the hollow lever pivotally secured at one end, so that its other end may be moved on a different arc of a different circle from that described by the first-mentioned lever, and the piston on said last-mentioned end, combined with a pressure-box receiving the piston on the end of said hollow lever and in pivotal connection with the first-mentioned lever connected with the piston-rod, the hollow lever being connected with a source of pressure and having outlets within said pressure-box, substantially as and for the purposes set forth.

3. In a direct-acting steam-engine, the lever connected at one end with the main piston-rod and pivotally supported, so that its other end may be moved in the arc of a circle, combined with the hollow lever pivotally secured at one end, so that its other end may be moved in a different arc of a different circle, and carrying a piston, the pressure-box in pivotal connection with the first-mentioned lever and receiving the said piston, and the pipe leading from the accumulator to the hollow lever, the end of the hollow lever having openings within said pressure-box, and the said arcs of said circles crossing each other at each side of a definite point, substantially as set forth.

4. In a direct-acting steam-engine, the lever L, connected at one end with the piston-rod and pivotally supported, so that its other end may be moved in the arc of a circle, combined with the hollow lever R, fulcrumed at one end eccentrically to the lever L, so as to move in a different arc of a different circle, and being in communication with a source of pressure, the piston on the end of said hollow lever, and the pressure-box receiving said piston, the hollow lever having outlets within said pressure-box, and said arcs of said circles crossing each other at each side of a definite point, substantially as set forth.

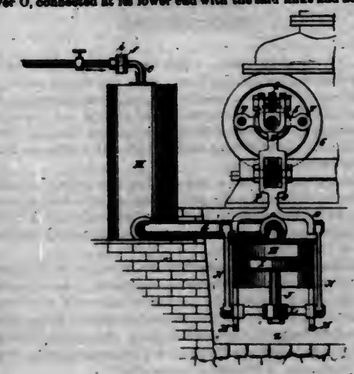
5. In a direct-acting steam-engine, the pivotally-secured lever connected at one end with the piston-rod by the link, combined with a lever carrying a piston on its free end and fulcrumed to move simultaneously with but on a different line from the first-mentioned lever, the pressure-box to receive said piston, and a source of pressure communicating with said pressure-box, the lines of movement of said levers crossing each other at each side of a definite point in the stroke of said piston-rod, substantially as and for the purposes set forth.

6. In a direct-acting steam-engine, the pivotally-secured lever connected at one end with the main piston-rod, combined with the pivotally-secured lever moving on its pivot simultaneously with the first-mentioned lever, but describing at its end a different line of movement, and carrying a piston, the pressure-box receiving said piston and connected to move with said levers, and a source of pressure in communication with the interior of said pressure-box, substantially as set forth.

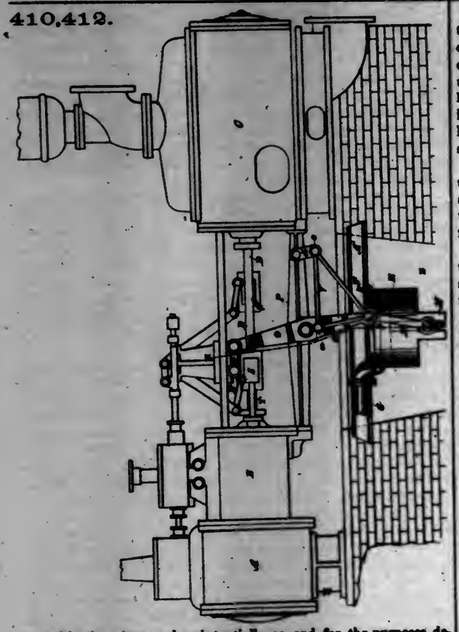
7. The accumulator K, formed in the air-chamber above the water-cylinders C of the pump and provided with differential pistons, combined with a pipe leading to means for resisting the movement of the piston-rod during one portion of its stroke and assisting said movement during the latter portion of its stroke, said pipe containing a column of water through which the pressure of the pistons is transmitted, substantially as set forth.

410,412. STEAM-ENGINE. JOHN A. GRONDIN, New York, N. Y. Filed Feb. 8, 1888. Renewed May 16, 1889. Serial No. 310,993. (No model.)

Claim.—1. In combination with a direct-acting steam-engine, the auxiliary cylinder E, open to the atmosphere at one end and closed at the other end, and there forming a vacuum, the piston and piston-rod for the auxiliary cylinder, cross-head L, links N, and the rocking lever O, connected at its lower end with the said links and at its upper



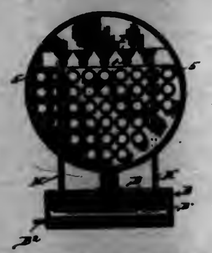
410,412.



end with the piston-rod, substantially as and for the purposes described.

2. In combination with a direct-acting steam-engine, the auxiliary cylinder E, open to the atmosphere at one end and closed at the other end, and there forming a vacuum, the piston I, rod J, cross-head L, guides M, links N, and the rocking lever O, pivoted at its lower end to said links and at its upper end connected with the piston-rod of the engine, substantially as and for the purposes described.

410,418. FEED-WATER PURIFIER FOR STEAM-BOILERS. HENRY HAGUEY, Topeka, Kans., assignor to the Hackney Steam Boiler Improvement Company, of Illinois. Filed Apr. 2, 1889. Serial No. 305,765. (No model.)



Claim.—1. The combination, with a steam-boiler, of a series of open sediment-troughs extending from end to end of said boiler, a delivery-chamber connected to said troughs and communicating therewith, a discharge-chamber connected to said troughs and communicating therewith, a feed-water-delivery pipe leading into said delivery-chamber, and a blow-off pipe leading from said discharge-chamber, substantially as described.

2. The combination, with a steam-boiler, of a series of troughs having upwardly-expanded walls, and having sediment-pockets communicating with the contracted portions of said walls, and suitable means for delivering the feed-water into said troughs, substantially as described.

3. The combination, with a steam-boiler, of a series of sediment-troughs having upwardly-expanded walls, and having sediment-pockets connected with the contracted portions of said walls, a delivery-chamber at one end of said troughs, a discharge-chamber at the opposite end of said troughs, a feed-water-delivery pipe communicating with said delivery-chamber, and a blow-off pipe communicating with the discharge-chamber, substantially as described.

4. The combination, with a steam-boiler, of a series of sediment-troughs having expanded upper walls, and having sediment-pockets connected to the contracted bottoms of said walls, a delivery-chamber connected to the front ends of said troughs and having openings communicating with the upper portion of said troughs, a discharge-chamber connected with the opposite ends of said troughs and having openings communicating with the sediment-pockets, a feed-water pipe leading into said delivery-chamber, and a blow-off pipe leading from said discharge-chamber, substantially as described.

5. The combination, with a steam-boiler, of a series of sediment-troughs, a delivery-chamber connected with the ends of said troughs, and a discharge-chamber connected with the opposite ends of said troughs, said delivery and discharge chambers being provided with flanges E for sustaining said troughs, substantially as described.

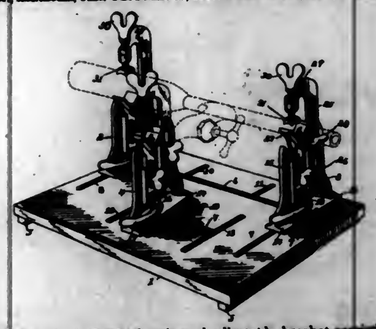
6. The combination, with a steam-boiler, of a series of sediment-troughs extending from end to end of said boiler in its upper portions, suitable means for delivering the feed-water into said troughs, suitable means for removing the sediment from said troughs, a mud-drum communicating with the boiler at its lower portion, and suitable circulating-pipes connecting said mud-drum with the upper portion of the boiler, substantially as described.

7. The combination, with a steam-boiler, of a series of sediment-troughs extending from end to end thereof in its upper portion, a delivery-chamber connected to said troughs and having openings communicating therewith, a discharge-chamber connected to the opposite ends of said troughs and having openings communicating therewith, a mud-drum, a pipe connecting said mud-drum with the lower portion of the boiler, and suitable circulating-pipes leading from said mud-drum to the delivery-chamber, substantially as described.

8. The combination, with a steam-boiler, of a sediment-trough having upwardly-expanded walls, and having a sediment-pocket connected with said walls at their contracted portions, and suitable means for delivering the feed-water to said trough, and suitable means for withdrawing the sediment therefrom, substantially as described.

9. The combination, with a steam-boiler, of a sediment-trough having upwardly-expanded walls, and having a sediment-pocket communicating with the lower contracted portion of said walls, and having also a V-shaped false bottom, and suitable means for delivering the feed-water into said trough, and suitable means for withdrawing the sediment therefrom, substantially as described.

410,414. PLUMBER'S ADJUSTABLE BRACKET. PERRY B. HALL, Sr., Ashtabula, Ohio. Filed June 19, 1889. Serial No. 314,802. (No model.)



Claim.—1. A plumber's universal adjustable bracket consisting, essentially, of a common base-board and a set of brackets adjustable on said base-board both longitudinally and transversely thereof, substantially as and for the purpose described.

2. A plumber's universal adjustable bracket comprising a horizontal base-board and a set of brackets adjustable longitudinally and transversely on the base-board, each bracket having means for clamping the same in a fixed position on the base-board, and with a clamp for holding the work, substantially as and for the purpose described.

3. A plumber's universal adjustable bracket comprising a base-board and a set of brackets adjustable longitudinally and transversely thereon, each bracket having a pipe-rest and an adjustable clamp arranged to hold the work between itself and the pipe-rest, substantially as and for the purpose described.

4. A plumber's universal adjustable bracket comprising a base-board having the longitudinal and transverse slots and a set of adjustable brackets, each having a vertical bolt which passes through one of the slots, and a clamp-lever pivoted on the bolt and having a cam-surface arranged to lift the bolt when said lever is turned to one position, substantially as and for the purpose described.

5. A plumber's universal adjustable bracket comprising a slotted base-board and a set of adjustable brackets, each having a slotted base, a headed bolt passing through said base of each bracket and one of the slots in the base-board, and a clamp-lever fitted on the bolt and having a cam-surface which rides against a corresponding surface on the base of the bracket when the lever is turned into a position parallel with the base, substantially as and for the purpose described.

6. A plumber's universal adjustable bracket comprising a horizontal base-board and a set of adjustable brackets, each bracket having a vertically-adjustable pipe-rest and an adjustable clamp which overhangs the pipe-rest, substantially as and for the purpose described.

7. A plumber's universal adjustable bracket comprising a horizontal base-board and a set of adjustable brackets, each bracket having a pipe-rest formed with a rigid V-shaped jaw, and a clamp which overhangs the jaw of said pipe-rest, substantially as and for the purpose described.

8. A plumber's universal adjustable bracket comprising a horizontal base-board and a set of adjustable brackets, each bracket having its shank or standard provided with two ways, a vertically-slotted pipe-rest fitted in one of the ways and having a rigid jaw, a vertically-slotted clamp fitted in the other way, and thumb-screws for holding the pipe-rest and clamp at any desired vertical adjustment on the bracket, substantially as and for the purpose described.

9. A plumber's universal adjustable bracket comprising a horizontal base-board and a set of adjustable brackets, each bracket having a pipe-rest provided with a rigid jaw, a clamp having an overhanging end, and an adjusting-screw fitted in the overhanging end of the clamp and carrying a binding-plate arranged to contact with the work fitted in the jaw, substantially as described.

410,415. APPARATUS FOR EXTRACTING SULPHUROUS ACID. EMIL HERMITE, Southsea, O. S., and MAX SCHRODER, Neumühl, Germany. Filed Sept. 13, 1888. Serial No. 285,712. (No model.) Patented in Germany Jan. 15, 1888, No. 36,161, and Nov. 23, 1883, No. 27,531, and in England May 30, 1883, No. 2,621.



Claim.—1. In an apparatus for separating sulphurous acid from furnace and other gases, a heater for the acidulated water composed of a series of horizontal chambers connected alternately at opposite ends, and a series of intermediate chambers divided by leaden beams into channels, through which the hot fluid passes in a counter-current to the flow of the acidulated water, substantially as set forth.

2. In an apparatus for separating sulphurous acid from furnace and other gases, the preliminary heater composed of a series of horizontal compartments or chambers connected alternately at opposite ends, and a series of intermediate spaces or chambers divided by transverse lead beams into channels which are also connected alternately at opposite ends, and inlet and outlet pipes at the ends of both sets of chambers, so that the acidulated water ascends through one series of chambers, while the hot water descends through the intermediate chambers in a direction at right angles to the flow of acidulated water, substantially as set forth.

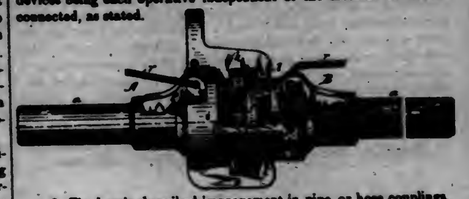
410,416. GARMENT-PROTECTOR. PETER B. HAMBURY, Philadelphia, Pa., assignor to HENRY S. HAMBURY, same place. Filed June 10, 1889. Serial No. 313,702. (No model.)



Claim.—A garment-protector consisting of a piece of soft rubber, having at its bottom a bead solid with said piece, and a core in said bead, substantially as described.

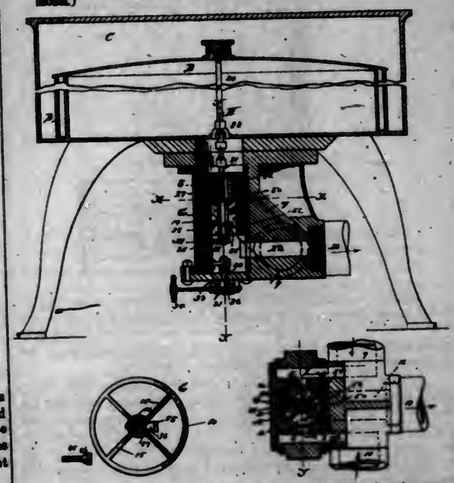
410,417. COUPLING FOR HOSE OR PIPE. OLIVER P. HIX, Rockland, Me. Filed Nov. 12, 1888. Serial No. 290,502. (No model.)

Claim.—1. The herein-described improvement in pipe or hose couplings, comprising the two members having inclined or wedge-shaped meeting ends, the collars secured on said members at their ends, the gaskets or packing-rings, the rings or bushings for securing said gaskets to said collars, and the locking devices connected to each of said members, and constructed and arranged to engage and become locked with the other member, substantially as set forth, said locking devices being each operative independent of the member to which connected, as stated.



2. The herein-described improvement in pipe or hose couplings, comprising the members having overlapping wedge-shaped ends, and provided with shoulders or collars, the collars *c*, bearing against said shoulders or collars, the gasket secured to the ends of said collars *c*, the rings *i*, having the projecting arms engaging said collars *c*, the apertured lugs formed on the pipe, and the cords connected to said arms, substantially as set forth.

410,418. GAS AND AIR MIXER AND GOVERNOR. CHARLES F. HOYT, Springfield, Mass. Filed Mar. 19, 1888. Serial No. 267,502. (No model.)



Claim.—1. The combination, with a circular vertical casing provided with lateral inlet-ports in communication with gas and air supply conduits, and having an outlet-port leading therefrom, a vertically-movable gas-receiver in communication therewith, and an inclosing-tank, of a valve-stem hung from said movable gas-receiver and vertically movable therewith, and a tubular valve secured thereto, provided in its walls with ports arranged to register with said casing-ports, a forked radial arm secured to said valve-stem, an arbor having a bearing in the bottom of the casing provided at its inner end with a radial arm having a vertical post engaging the said forked arm, and at its outer end provided with a sector-gear, and a worm having bearings on said casing, engaging with said sector, all substantially as and for the purpose described.

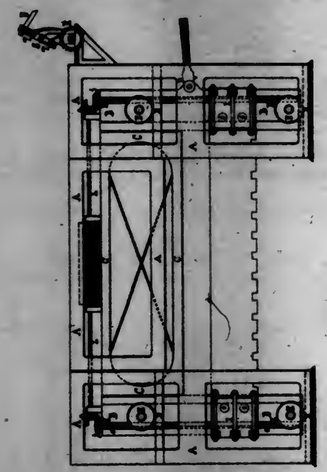
2. The combination, with a circular vertical casing provided with lateral inlet-ports in communication with gas and air supply conduits and having an outlet-port leading therefrom, a vertically-movable gas-receiver in communication therewith, and an inclosing-tank, of a valve-stem made in sections and connected by a universal joint hung from said movable gas-receiver and vertically movable therewith, a tubular valve secured thereto, provided in its walls with ports arranged to register with said casing-ports, a forked radial arm secured to said valve-stem, an arbor having a bearing in the bottom of the casing, provided at its inner end with a radial arm having a vertical post engaging the said forked arm, and at its outer end provided with a sector-gear, and a worm having bearings on said casing engaging with said sector, all substantially as and for the purpose described.

3. In a device for mixing gas and air, the valve herein described, comprising a tubular outer portion provided with ports, an axial hub, and intermediate arms, and having a longitudinal kerf through the outer wall and said hub and provided in said hub with screw-holes

with flaring ends, and one or more screws provided inside their heads with taper portions, substantially as and for the purpose described.

4. In a device for mixing gas and air, the valve herein described, comprising a tubular outer portion provided with ports, an axial hub, and intermediate arms, and having a longitudinal kerf through the outer wall and said hub, and provided in said hub with screw-holes with flaring ends and in its outer wall with one or more apertures in radial alignment with said screw-holes, and one or more screws provided inside their heads with taper portions, substantially as and for the purpose described.

410,419. STONE-SAWING MACHINE. THADDEUS A. JACKSON, New York, N. Y. Filed Sept. 6, 1888. Serial No. 284,911. (No model.)



Claim.—1. In a stone-sawing machine, a saw-sash constructed of three parts—namely, two rectangular hollow uprights or heads connected at the top by a single deep brace, and combined with a saw-blade carried on one side of the sash and movable therefrom, in the manner and for the purpose substantially as specified.

2. In a stone-sawing machine, a saw-sash, together with a saw-blade carrier consisting of a single right-angled plate embracing the back outer corner of the sash-upright, having suitable recesses and lugs for saw-buckles, and provided with anti-friction rollers or equivalent means to prevent friction in movement up and down against the uprights, in combination with a stone-saw, all constructed and operated substantially as specified.

3. A stone-sawing machine consisting of a saw-sash composed of two single rectangular uprights or heads opposite each other and connected between their tops by a single deep brace, in combination with a stone-saw buckled in saw-blade carriers each consisting of a single right-angled plate embracing the back outer corner of the sash upright or head, and having anti-friction rollers between such contact, together with means for raising and lowering such blade-carriers and saw-blade, all supported in suitable outside frame-work and constructed and operated substantially as specified.

4. In a stone-sawing machine, a saw-sash constructed with hollow uprights or heads, each provided with projecting shoulder or corner and abutting recess, in combination with a saw-blade on one side of said sash, substantially as specified.

5. In a stone-sawing machine, a saw-sash adjustable horizontally and transversely to its length by means of shouldered axles supporting the sash and provided with reciprocally-adjustable nuts on each side of such sash, as and for the purpose substantially as specified.

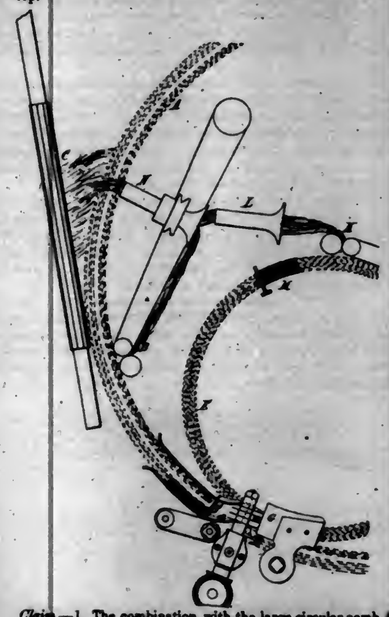
6. In a stone-sawing machine, for raising and lowering the blade on the sash, and in combination with each upright or head of such sash, a perpendicular revolving feed-shaft provided with suitable key-way and loose worm, with a key or feather working in such keyway, such worm meshing with a perpendicular rack on the sash-upright, as and for the purpose substantially as specified.

7. In a stone-sawing machine, in combination with and for operating the upright feed-shafts by bevel-gears, a horizontal shaft provided with a gear as broad as the length of the stroke of the saw, in sliding contact and meshing with a pinion on another horizontal shaft parallel with the first and operated through bevel-gears and a ratchet-wheel by a rock-arm and two pawls connected to the crank-shaft, all combined and co-operating in the manner and for the purpose substantially as specified.

8. In a stone-sawing machine, an upright saw-sash, combined with the saw-blade carried on one side thereof and movable perpendicularly thereupon, substantially as specified.

410,420. MACHINE FOR COMBING WOOL, &c. FREDERIC G. LAMER, St. Acheul-lez-Amiens, France. Filed May 3, 1888. Serial No. 90,946. (No model.) Patented in France Mar. 7, 1881, No. 141,322, and in England Mar. 16, 1881, No. 1,126.

Brief.—The object of the invention is to increase the production of "top."



Claim.—1. The combination, with the large circular comb A and the small circular comb E, of the horizontal drawing-off rollers C, the vertical drawing-off rollers D-K, and the tweedlers L N, substantially as described.

2. The combination of the large circular comb A, the small circular comb E, the oblique trough F, sun-wheels H, knives R, and dabbing-brush G, located at the junction of said combs, the horizontal drawing-off rollers C, the vertical drawing-off rollers D K, the tweedlers L N, and the knives M, substantially as described.

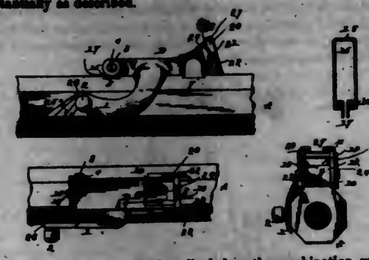
410,421. BOTTLE-STOPPER. HENRY LIEBTWARDT, Jr., and CHRISTIAN F. RACHLER, Philadelphia, Pa. Filed June 20, 1889. Serial No. 314,922. (No model.)



Claim.—In a bottle-stopper, the combination of a central stem, a rigid lower end section on the end of the stem, a movable upper non-flexible section, an interposed elastic expansible section, means, substantially as described, on the upper end of the stem to force the upper section down on the elastic section to expand the same, said upper end section having a recess in its upper face around the stem, an expansible elastic section filling and projecting above the recess and embracing the stem, and a metallic washer interposed between said section and said means for expanding the stopper, for the purpose set forth.

410,422. GUN-SIGHT. BENJAMIN LOSS, Boulder, Colo. Filed Feb. 15, 1889. Serial No. 300,084. (No model.)

Claim.—1. In a gun-sight, the combination of the sight-carrier, a sight-piece pivoted therein and provided with a forwardly-curved reduced portion, and a spring exerting a downward pressure on the sight-piece, and having the rear portion thereof seated in the angle formed between the forward reduced portion and the rear enlarged portion of the sight-piece, whereby when the sight-carrier is raised the sight-piece will be forced out and raised simultaneously therewith, substantially as described.

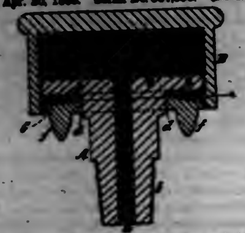


2. In a gun-sight of the described class, the combination, with the hinged sight-carrier provided with a rear opening and having a suitable operating-lever, of the movable or tilting slide disposed beneath the sight-carrier in the recess thereof and having a sight-notch on its outer end, and the vertically-adjustable horizontal wires passing transversely through the opening in the sight-carrier, substantially as set forth.

3. The combination of a gun-barrel having a graduated scale on the side thereof, a sight-carrier lever pivoted on the said barrel, a sight-piece pivoted within the carrier and provided with a forwardly-curved reduced portion, a spring for exerting a downward pressure on the sight-piece, and having the rear portion thereof seated in the angle formed between the forward reduced and rear enlarged portions of the sight-piece, whereby when the carrier is raised the sight-piece will be forced out and raised simultaneously therewith, and a lever on the carrier having an indicator moving over the said scale, substantially as described.

4. In a gun-sight of the described class, the combination, with the carrier having a rear opening, of the slotted plates located upon each side of the rear portion of sight-carrier and provided with a series of perforations equidistances apart, the set-screws working within the slots of the adjustable slides or plates, and the horizontal wires passing through the perforations across the rear opening formed in the carrier, said wires having their ends secured to the set-screws, substantially as set forth.

410,423. GREASE-CUP. RICHARD LOEWENHERZ, Cincinnati, Ohio, assignor to the Lambertstown Brass Manufacturing Company, same place. Filed Apr. 20, 1889. Serial No. 307,990. (No model.)



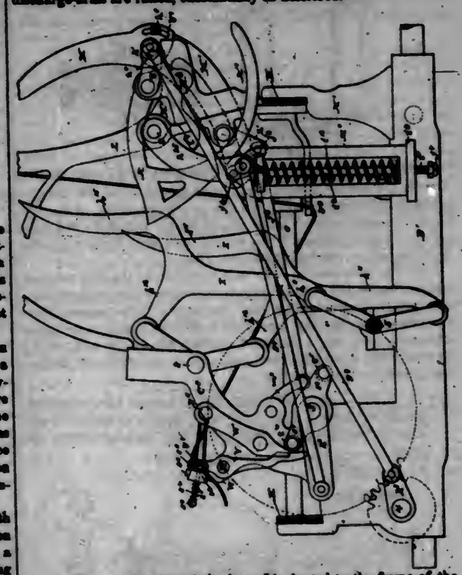
Claim.—The grease-cup herein described, consisting, essentially, of the interiorly-threaded cup B, the hollow standard or stem A, having the exteriorly-threaded disk *c*, the expansible packing *c*, and the adjustable screw-connected washer C, for forcing the expansible packing outward into the threads of the cup B, whereby to enable the screw-joint between the cup and the standard-disk to be kept tight without disturbing the relative positions of said parts and without disconnecting the cup as a whole, substantially as described.

410,424. GRAIN-BINDER. SAMUEL D. MASON, Mississaugy, Ohio, assignor to Mary Maddin, Barrie, Ontario, Canada. Filed July 16, 1888. Serial No. 171,282. (No model.)

Claim.—1. The combination of the needle, the swinging link on the needle-shaft, the compressor adjustable on the link, a toggle-brace for supporting the compressor in its elevated position, a set-off mechanism operated by the accumulated gavel, and a positively-operated ejector having a projection which contacts with the said toggle-brace and breaks the same to permit the descent of the compressor, substantially as set forth.

2. The combination, with the compressor carried by an arm or link suspended from a shaft, of a movable support for holding the arm or link in its elevated position, and an ejector carrying a projection in line with said support, arranged to make contact therewith to displace the same as the ejector is raised, substantially as described.

3. The combination, with the compressor carried by an arm swinging upon the shaft, of toggle-levers arranged to support the arm or link in its elevated position, and ejector-arms provided with a projecting finger arranged to make contact with one of said levers as the discharge-arms are raised, substantially as described.



4. The combination of the lever L', pivoted to the frame of the binder, the longitudinally-slotted compressor-arm connected therewith, a stopping and starting mechanism also connected therewith and including a spring-clutch device, and a spring connected with the lever and with a fixed part of the binder and arranged to resist by its tension the movement of the compressor beyond a certain point, substantially as set forth.

5. The combination, with a compressor having a longitudinally-slotted arm and the stopping and starting mechanism, of the lever L', pivoted to the binder-frame and engaging with the slotted arm of the compressor and connected with the stopping and starting mechanism, the frame M^3, hung from the said lever, provided with a cross-bar, a headed rod supported in a bearing on the binder-frame and extending into the frame M^3, and a spring arranged between the head of the said rod and the cross-bar of the frame M^3, and arranged to resist by its tension the movement of the compressor beyond a certain point, the said headed rod having a limited sliding movement in its bearing prior to the compression of the spring, substantially as described.

6. The combination of the compressor having the slotted arm M', the lever L', the frame suspended from said lever, a headed rod $5'$, passing through a fixed lug P, and provided with a stop j^3 beyond said lug to permit a limited amount of lost motion, and a spring interposed between the head of the rod and the frame, and the tripping mechanism connected with the lever L', substantially as described.

7. The combination of the ejector, the shaft supporting the same, a mutilated gear-pinion driving said shaft having two series of gear-teeth separated by intervening delay-sheet, and the wheel J, having two series of gear-teeth j j', and intervening delay-surfaces, whereby the ejector is first raised to discharge the bundle, is then held in its elevated position, and is then returned to its normal position below the binder-table, substantially as and for the purpose set forth.

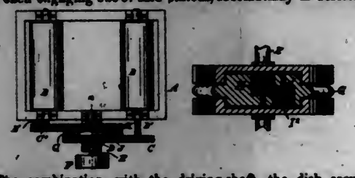
8. The combination, in a tension device of a grain-binder, of the cord-clamp, the vibrating cord-drawing lever arranged in proximity to the clamp, and an arm which vibrates the lever to draw the cord and which subsequently opens the clamp, substantially as set forth.

9. The combination of the stationary cord-clamping jaw, movable jaw, pivoted lever V, carrying the movable jaw, spring arranged to close the jaws, cord-drawing lever W', and revolving arm arranged to strike first the lever W', and the lever V, substantially as set forth.

410,425. COMPENSATING GEARING. ROBERT S. MATTHEWS, Rochester, N. Y., assignor of one-half to James Shellington, same place. Filed Mar. 14, 1889. Serial No. 303,260. (No model.)

Claim.—1. The combination, with the driving-shaft, the disk secured thereto, and the two intermeshing pinions carried by the disk,

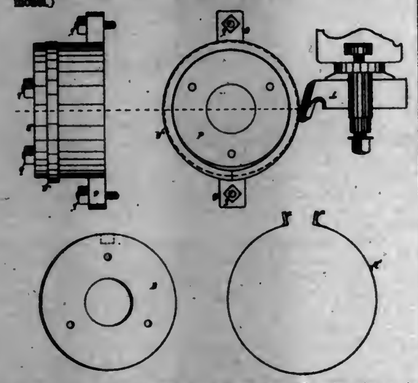
with their outer ends projecting in different planes, of the two gears mounted loosely on the shaft on opposite sides of the disk, with the teeth of each engaging one of said pinions, substantially as described.



2. The combination, with the driving-shaft, the disk secured thereto, and the two intermeshing pinions carried by the disk and projecting from the periphery of the disk in different planes, of the two gears mounted loosely on the shaft, one on each side of the disk, having the recessed sides and the internal gear-teeth for co-operating with the pinions, substantially as described.

3. The combination, with the driving-shaft, the disk secured thereto, having the recesses in opposite sides near the periphery communicating with each other, and the pinions in the recesses intermeshing and having their outer ends in different planes, of the gears mounted loosely on the shaft, one on each side of the disk, having recessed sides, and the internal gear-teeth co-operating with the pinions, substantially as described.

410,426. MODE OF CONSTRUCTING SPRING PACKING-RINGS. FOSTER M. METCALF, Battle Creek, Mich., assignor of one-half to William Andrus, same place. Filed June 19, 1889. Serial No. 314,874. (No model.)

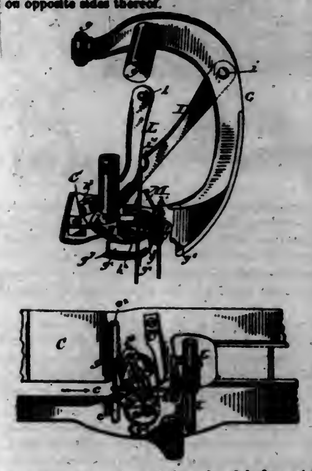


Claim.—1. In the manufacture of spring packing-rings for use in engines, pumps, and analogous machines, the flexible compression-clasp A', provided with projecting end portions *a a*, whereby the ring is closed and held, while its annular substance is left free to find such irregular form as its normal diameter and differing degrees of expansibility and elasticity of its substance shall determine, irrespective of the flexible clasp, and so held while being clamped in the lathe-chuck, for the purpose of turning the outer surface of said ring to a true circle concentric with the bore of the cylinder in which it is to be used, thereby correcting said irregularities, substantially as and for the purposes set forth, illustrated, and described.

2. In the manufacture of spring packing-rings for use in the cylinders of pumps, engines, and analogous machines, a clasp or means for forcibly bringing the ends of the expansible ring together, whereby its annular substance is free to assume such oval or irregular form as the larger normal diameter or differing degrees of elasticity thereof shall seek or determine, and so held and clamped in the lathe-chuck, while the said irregularities shall be corrected by turning the outside surface of said ring to a true circle, exactly concentric with the bore of the cylinder, substantially as set forth.

410,427. GRAIN-BINDER. LEWIS MILLER, Akron, Ohio. Filed July 17, 1888. Serial No. 280,169. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the knotter-shield having a cord-receiving slot therein, a fixed cord-guiding finger projecting athwart said slot, a frame mounted on the shield, a tying-bill rotating spindle in front of and above said slot, a driving-shaft mounted in bearings in said frame, a cam and gear wheel rotated by said shaft, gearing actuating the tying-bill intermittently, an elbow-lever vibratable laterally by the cam and gear wheel, the pivot on which said lever rocks, a cord-guiding foot carried by the elbow-lever, the sliding jaw of the cord-holder vibratable athwart the plane of the cord-slot and pivoted on the elbow-lever, and the cord-clamp pivoted on the frame and vibratable with the sliding jaw, whereby the cord is carried laterally past or in advance of the tying-bill on opposite sides thereof.



2. The combination, substantially as hereinbefore set forth, of a knotter-shield having a cord-slot therein, a frame mounted on the shield, the elbow-lever pivoted outside (or on the stubble side of) the knotter, a cord-guiding foot mounted on the said elbow-lever projecting underneath the knotter and vibratable intermittently across the plane of the cord-slot, a sliding jaw pivoted on the elbow-lever and vibratable transversely athwart the plane of the cord-slot, a cord-clamp pivoted on the frame and vibratable in contact with and in the same plane as the sliding jaw, and a guide-horn on the frame over which the sliding jaw traverses to carry the cord laterally toward the knotter-spindle.

3. The combination, substantially as hereinbefore set forth, of a knotter-shield having a cord-receiving slot therein, a knotter-frame, an elbow-lever pivoted thereon outside or on the stubble side of the knotter-shaft, a cord-guiding foot on said elbow-lever extending under the knotter and vibratable intermittently across the cord-slot, a cord-holder sliding jaw pivoted upon and moving intermittently and coincidently with the elbow-lever, a cord-clamp pivoted on the frame bearing on the sliding jaw and vibratable coincidently therewith, a spring pressing the clamp against the sliding jaw, and mechanism actuating the knotter and elbow-lever.

4. The combination, substantially as hereinbefore set forth, of a knotter-shield having a cord-receiving slot therein, a knotter-frame, a tying-bill rotating on a spindle at one side of and above said slot, a driving-shaft mounted in bearings in said frame, a cam rotated by said shaft, gearing actuating the tying-bill intermittently, an elbow-lever vibratable laterally and intermittently across the cord-receiving slot, a pivot on which the elbow-lever vibrates, a cord-guiding foot carried by the elbow-lever, a cord-holding sliding jaw movable coincidently with the cord-guiding foot, the pivot on which the sliding jaw rocks carried by the elbow-lever, the cord-clamp, the pivot on which the cord-clamp rocks, and a spring insuring the engagement of the sliding jaw and cord-clamp during all their vibrations, as specified.

5. The combination, substantially as hereinbefore described, of a knotter-shield having a cord-receiving slot therein, a fixed guide-finger projecting across the slot, a cord-guiding foot, a cord-supporting finger vibratable across the slot and over the guide-finger, a knotter rotating over the foot, a yielding or elastic guide-bar behind and within the circuit of the knotter over which the cord is laid by the cord-holder to insure its entrance between the jaws of the knotter, and the sliding jaw and clamp moving parallel with the guide-bar.

6. The combination, substantially as hereinbefore set forth, of a knotter-shield having a cord-receiving slot therein, a fixed guide-finger therein, a cord-supporting foot vibratable across the slot in advance of the knotter, a knotter rotating over the foot, a cord-holder consisting of a sliding jaw and clamp vibratable with the foot but behind the knotter, a binder-arm which lays the cord in the holder, and the actuating mechanism.

7. The combination, substantially as hereinbefore set forth, of the vibratable elbow-lever, its foot, the recess g^3 therein, the cord-holder sliding jaw, its pivot on the elbow-lever, the clamp, its pivot, and the spring pressing it against the lever.

8. The cord-carrier herein described, consisting of the combination of the elbow-lever, the sliding jaw pivoted thereon, its cord-holding notch *i'*, the support over which it slides mounted on the knotter-frame, the cord-clamp and its actuating-spring pivoted on the frame, the trough-shaped foot of the clamp fitting over the sliding jaw, and the cord-holding offset *P* on the clamp, whereby the cord is clamped and carried toward the knotter-spindle.

9. The combination, substantially as hereinbefore set forth, of the elbow-lever, the cord-guiding foot, the knife fixed thereon, the sliding jaw pivoted on the elbow-lever, and the spring-clamp on the frame, the foot, the knife, the sliding jaw, and clamp all vibratable in parallel planes, whereby the knife is caused to slide past the cord as it is carried toward the knotter and to sever it on the back-stroke after its strands have been seized by the tying-bill.

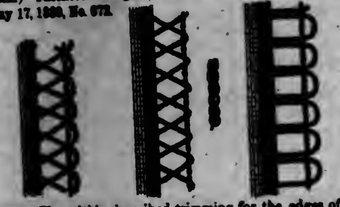
10. The combination, substantially as hereinbefore set forth, of a knotter, a cord guide and support vibratable laterally athwart the cord-slot in advance of the knotter, and a sliding jaw and clamp constituting a laterally-vibratable cord-carrier in rear of the knotter, whereby the cord is positively forced toward the knotter on both sides thereof.

11. The combination, substantially as hereinbefore set forth, of the pivoted vibratable cord guiding and supporting foot, the sliding jaw of the holder pivoted thereon, and the clamp pivoted on the frame and bearing on the sliding jaw, and all three vibrating in parallel planes athwart that of the cord-slot.

12. The combination, substantially as hereinbefore set forth, of a knotter-shield having a cord-slot terminating in an enlarged opening, a knotter revolving thereover, and a yielding or elastic overhung cord-guide in rear of the enlarged opening (supported at one end only traversed by the open jaws of the knotter and adapted to yield to the strain on the cord.

13. The combination, substantially as hereinbefore set forth, of the knotter, the laterally-vibratable cord-holder, and the interposed bridge or cord-guide in rear of the enlarged opening over which the strands are laid by the holder and from which they are swept by the knotter-jaws.

410,428. TRIMMING FOR THE EDGES OF FABRICS. JOSEPH D. MOSLEY, Philadelphia, Pa. Filed Aug. 24, 1888. Serial No. 283,611. (No specimens.) Patented in England Jan. 1, 1889, No. 43, and in Switzerland May 17, 1889, No. 672.



Claim.—1. The within-described trimming for the edges of fabrics, said trimming consisting of a row of stitches formed on the fabric adjacent to the edge of the same, a row of stitches beyond the edge of the fabric, and a thread carried back and forth between the two rows of stitches and incorporated with each, substantially as specified.

2. The within-described trimming for the edges of fabrics, said trimming consisting of a row of stitches formed on the fabric adjacent to the edge of the same, a second row of stitches parallel therewith, but some distance beyond the edge of the fabric, and one or more threads carried back and forth between the two rows of stitches and incorporated with each of the same, but looped beyond the outer row of stitches so as to form a scalloped edge on the trimming, all substantially as specified.

410,429. TRANSPORTING-PACKAGE FOR FRUIT. JOSEPH T. MOTT, Brooklyn, N. Y. Filed Apr. 20, 1889. Serial No. 307,891. (No model.)



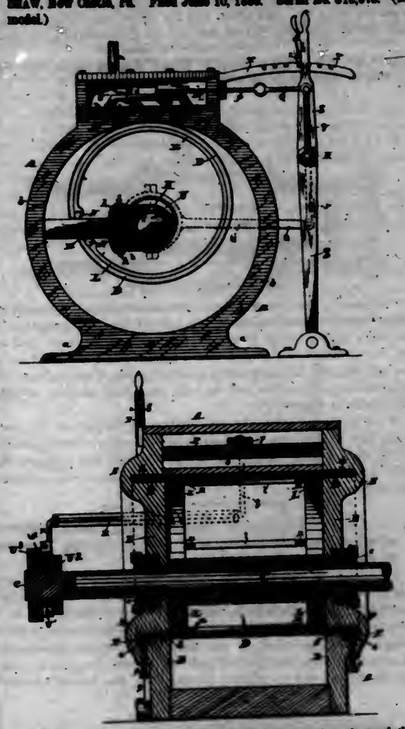
Claim.—1. The herein-described transporting-package for fruit, consisting of a case C, having inclined sides and ends and a cover, a series of boxes A of equal dimensions, each having inclined sides and ends and arranged in two tiers in said case, with a removable partition interposed between the tiers, the boxes in the upper tier lying transversely to those in the lower tier and breaking joints therewith, and the walls of the boxes in each tier adjacent to the walls of the case being parallel thereto, as set forth.

2. The herein-described transporting-package for fruit, consisting of a case C, having inclined sides and ends and a cover, its walls being provided with ventilating-apertures, a series of boxes A of equal dimensions, each having inclined sides and ends and arranged in two tiers in said case, with a removable partition interposed between the tiers, the boxes in the upper tier lying transversely to those in the lower tier and breaking joints therewith, and the walls of the boxes in each tier adjacent to the walls of the case being parallel thereto, as set forth.

410,430. PROCESS OF MAKING STEEL DIRECT FROM THE ORE BY THE USE OF NATURAL GAS. WILLIAM F. M. MCCARTY, Hagerstown, Md., assignor of part to Sarah C. Ashton and Herman Dudley Walbridge, Washington, D. C. Filed May 31, 1889. Serial No. 311,993. (No specimens.)

Claim.—The process which consists in first introducing powdered ores, combined with a basic flux, into the upper portion of a shaft-furnace, and there subjecting them to the action of a flame of natural gas; second, passing them downward into the bosh of the furnace and there subjecting them to the action of a blast of natural gas; third, passing the fused ore into the crucible of the furnace and there subjecting it to the action of jets of natural gas and hydrocarbon oil, and finally, conveying the reduced metal into a vacuum-chamber, whereby the gases are removed from the metal, substantially as described.

410,431. ROTARY ENGINE. JOHN MCCAMEY and CHARLES P. SHAW, New Castle, Pa. Filed June 10, 1889. Serial No. 313,675. (No model.)



Claim.—1. The combination of the casing having channeled side plates, the main shaft and piston, and the sleeve resting in the channels of said side plates with the adjustable shoes supporting said sleeve, substantially as described.

2. In a rotary engine, the combination of the casing and the rotating sleeve eccentrically mounted therein with the packing-rings in said sleeve and the rods and springs separating said rings, all substantially as and for the purpose specified.

3. The combination, in a rotary engine, of the casing, the piston therein, and the inlet and outlet ports leading thereinto with the valve-chest, the slide-valve therein, the rock-shaft R, connected to said valve, and the adjustable lever S, supporting said rock-shaft, all substantially as specified.

4. The combination of the casing, the rotatable sleeve therein eccentric to the shaft, the piston hung on said shaft and projecting through a slot in said sleeve, with the packing-rollers for said piston carried in said sleeve, and the packing-rings L L, all substantially as specified.

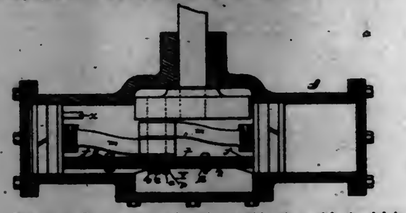
5. The combination of the casing, the main shaft, the rotatable slotted sleeve in said casing eccentric to said shaft, with the packing-rings in said sleeve, the springs and rods for separating the same, the piston hung on said shaft and projecting through the slot in said sleeve, and the packing-rollers for said piston within said sleeve, all substantially as described.

6. The combination of the casing, the rotatable sleeve therein eccentric thereto, and the concentric piston, substantially as described, and the inlet and outlet ports with the valve-chest, the valve therein, the rock-shaft R, connected to and operating said valve, the eccentric loosely mounted on the main shaft operating said rock-shaft, and the adjustable pivoted lever S, supporting said rock-shaft, all substantially as described.

7. The combination of the casing, the rotating sleeve eccentrically mounted therein, and the packing-rings in said sleeve with the adjustable shoes supporting said sleeve and the piston projecting through said sleeve, all substantially as and for the purpose described.

8. The combination, in a rotary engine, of the casing, the inlet and outlet ports, the rotatable sleeve eccentrically mounted in said casing, the packing-rings in said sleeve, and the piston and main shaft with the valve-chest, the slide-valve therein, the rock-shaft connected to said valve, the eccentric on the main shaft and the connections between the same and rock-shaft, and the lever supporting said rock-shaft and the adjusting devices therefor, all substantially as set forth.

410,482. STEAM-ENGINE. ROBT T. MCKAIN, Racine, Wis. Filed May 6, 1889. Serial No. 309,980. (No model.)

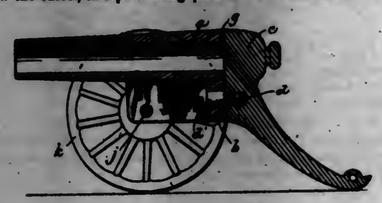


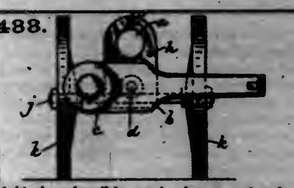
Claim.—1. In a steam-engine, the combination, with the driving eccentric and arms having segmental racks, of the pistons engaged by said racks having wings or guides, the overlapping piston rods or bars, one of which is provided with a lug and the other a slot to receive said lug, the adjusting-screw carried by one of the rods and engaging the lug of the other, and the bolts connecting said bars or rods, substantially as described.

2. In a steam-engine, the combination of the pistons, the overlapping bars or rods, one having a lug and the other a slot to receive said lug, the set-screw carried by one of the bars and engaging the lug on the other, and the bolts connecting said rods or bars, substantially as described.

410,483. TOY CANNON. GEORGE W. HAM, Chelsea, assignor of one-half to E. H. Hunt, Reading, Mass. Filed Jan. 22, 1889. Serial No. 297,113. (No model.)

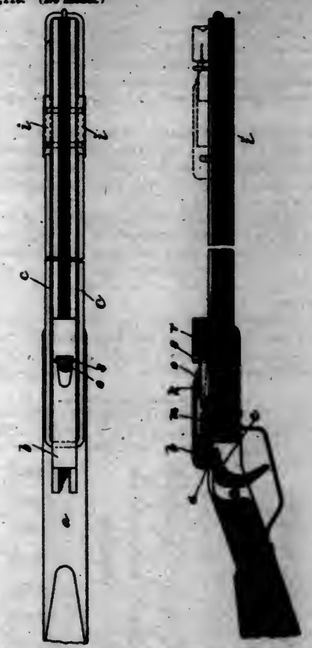
Claim.—In an improved toy cannon, the combination, with the barrel provided with a vent and having at its rear end a downwardly-projecting flange which is flush with the rear end of the barrel, of a breech-block and trail formed in a single piece, said piece having a close bearing on said flange and on the rear end of the barrel, and the screw or pivot connecting the breech-block and trail to the flange at a point below the barrel, said pivot being parallel with the barrel, whereby





the breech-block and trail is permitted to move in a lateral direction or at right angles to the barrel, substantially as shown and described.

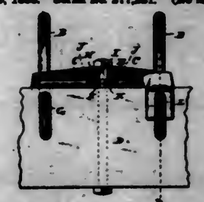
410,484. TOY GUN. GEORGE W. HAM, Chelsea, assignor of one-half to E. H. Hunt, Reading, Mass. Filed Jan. 22, 1889. Serial No. 297,119. (No model.)



Claim.—1. In a toy gun of the class described, the combination of the stock, the spring-impelled carrier supported by the stock and having a longitudinal cavity and a cap-supporting anvil, and a hammer sliding loosely longitudinally in said cavity, and a stop to arrest said carrier on its forward throw, substantially as and for the purpose specified.

2. In a toy gun, the combination of the stock, the carrier having a cap-supporting anvil, the impelling-spring connecting the carrier with the stock, a stop or stops on the stock, whereby the carrier is arrested, and a loose hammer located in a cavity in the carrier, as set forth.

410,485. RIGHT-ANGLE TOOTH-HOLDER. LEONARD W. O'BRIEN, Bellevue, Ohio, assignor to the Fremont Cultivator Company, same place. Filed June 18, 1888. Serial No. 277,261. (No model.)

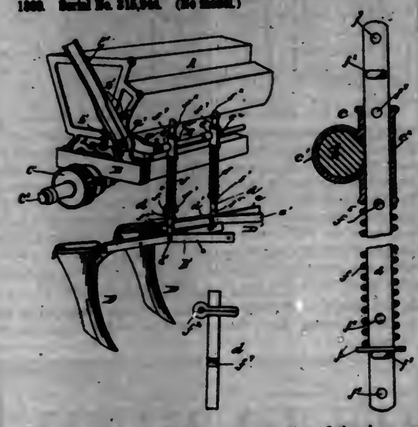


Claim.—1. A tooth-holder provided with a longitudinal recess communicating with an opening at an angle thereto, in combination with a perforated rake-head to which said holder is secured, said holder provided with guard-lugs extending down along the sides of the perforation in the rake-head, for the purposes specified.

2. The combination of a head provided with a perforation for the tooth, said perforation being large at one end and small at the other end, a tooth provided with a swooping curved portion located between said perforation and the tooth-holder, and a tooth-holder rigidly secured to the head and holding the tooth in place, substantially as and for the purposes specified.

3. The combination of the head having a perforation large at one end and small at the other end, with a tooth having a curved portion between said perforation and its fixed end and having a portion at its upper end bent to engage with a tooth-holder, and a tooth-holder having vertically-extending flanges or lugs forming a friction-bearing for the sides of the tooth and secured to the head at the large end of the perforation in the head, substantially as and for the purpose specified.

410,486. GRAIN-DRILL. FRANK B. PARKHAM, Springfield, Ohio, assignor to the Superior Drill Company, same place. Filed June 20, 1888. Serial No. 278,044. (No model.)



Claim.—1. In a grain-drill, the combination of the shoes and the pressure-bar, bearing-supports on said pressure-bar, links passing through said bearing-supports and attached to said hoes, and springs between said bearing-supports and hoes, substantially as specified.

2. The combination of the hoes and pressure-bar, the links attached to said hoes, springs on said links, and an adjustable collar below said springs on said links, and bearing-support journaled on said pressure-bar, through which said links pass, substantially as specified.

3. In a lifting device for grain-drills, the combination, with a lifting-bar, of a bearing-support journaled on said lifting-bar and a vertical sleeve for the lifting-links, and adjustable stops on said links above and below said bearing-support, substantially as specified.

4. In a grain-drill, lifting-links attached to the shoes or hoes, a lifting-bar adapted to be raised and lowered on the supporting-frame, bearing-supports on said lifting-bar adapted to form a variable connection between said bar and links, substantially as specified.

5. In a grain-drill, the lifting-links attached to the shoes or hoes, a lifting-bar adapted to be raised or lowered on the supporting-frame, and bearing-supports on said lifting-bar to form a variable connection between said links and bar, said bearing-supports being each provided with vertical and longitudinal sleeves to form bearings for the links and bar, respectively, said links and sleeves being joined together in close proximity, so as to bring the strain as close as possible to the centers of said bar and links, substantially as specified.

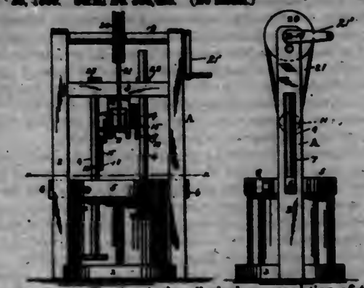
6. In a grain-drill, the combination of the hoes or shoes and their drag-bars and a movable bar arranged transversely across and above said drag-bars, lifting-links pivotally secured to said drag-bars, bearing-supports on said lifting-bar and connected to said links, springs on said links, and adjustable stops above and below said bearing-supports, substantially as specified.

7. The combination, in a grain-drill, of the shoes or hoes and their drag-bars, said drag-bars being attached at different points to the main frame to provide for a zigzag adjustment thereof, lifting-links pivotally secured to said drag-bars, a lifting-bar above said drag-bars, bearing-supports journaled on said lifting-bar, and lifting-links forming a connection between the same, substantially as set forth.

8. The combination, in a grain-drill, of the shoes or hoes and their drag-bars, lifting-links pivoted to said drag-bars, adjustable collars on said links, springs above said collars, a lifting-bar above said drag-bars, bearing-supports journaled on said lifting-bar and having a sleeve portion for said links above said springs, and adjustable stops on said links above said bearing-supports, substantially as specified.

9. The combination, in a grain-drill, of the shoes or hoes and their drag-bars, lifting-links pivoted to said drag-bars, adjustable collars on said links, springs above said collars, a lifting-bar above said drag-bars, bearing-supports connecting said links and lifting-bar, rocking arms attached to said bar, and a lifting-lever adapted to operate said lifting-bar, substantially as specified.

410,487. CHURN. JOHN W. PARKER, Milton, W. Va. Filed Mar. 26, 1889. Serial No. 304,633. (No model.)

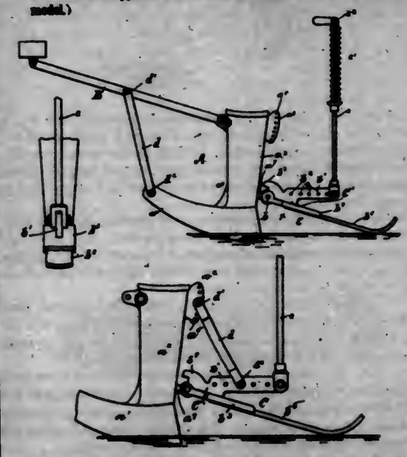


Claim.—1. The herein-described churn, consisting of the base, the uprights rising therefrom, having the slots in the sides thereof, the sectional cover, one of the sections thereof having wings fitting in said slots, the cross-piece having the dovetailed recesses therein, the dovetailed bearings fitting in said recesses, the dasher-shafts fitting in said bearings, the plates connected to said shafts, the double cranks connected to said plates, the shaft and pulley for operating the cranks, the hanger for the pulley-shaft, and the driving-band pulley and shaft, all arranged and adapted to operate substantially as and for the purpose described.

2. In a churn, the combination of the uprights having slots therein, the cover having wings fitting in said slots, the dasher-shafts, plates, and double crank for operating the same, the cross-piece having dovetailed recesses to receive the dasher-shafts, and the dovetailed bearings fitting in said recesses, substantially as described.

3. In a churn, the combination of the driving-shaft and driving-pulley, the driving-cord, the pulley and double cranks, the plates, the dasher-shafts connected to the plates, the cover having wings, and the uprights having slots to receive the wings, substantially as described.

410,488. GRAIN-DRILL. CHARLES R. PARKER and FRANK B. PARKHAM, Springfield, Ohio, assignors to the Superior Drill Company, same place. (Original application filed Oct. 30, 1888. Serial No. 289,638. Divided and this application filed May 6, 1889. Serial No. 309,986. (No model.)



Claim.—1. In a grain-drill, a presser-foot pivoted to the shoe or hoe and provided with a lower runner and an upper bearing-support, and a connection from said bearing-support to the lifting mechanism, substantially as described.

2. In a grain-drill, a presser-foot having a lower flexible runner,

an upper bearing-support, and a stop projection to limit the upward movement of said bearing-support, substantially as specified.

3. The combination, with a grain-drill, of a presser-foot pivoted to a shoe or hoe and having a flexible runner and an upper bearing-support, a connection from said bearing-support to the raising and lowering mechanism, and means for adjusting said connection along said bearing-support, substantially as specified.

4. The combination, in a grain-drill and with the shoes or hoes, of a series of presser-feet—one for each shoe or hoe pivoted thereto—said presser-feet each being provided with a lower flexible runner and an upper bearing-support, a connection from each of said presser-feet to the raising and lowering mechanism, and means for connecting said presser-feet rigidly to the shoes or hoes, substantially as specified.

5. The combination, with a grain-drill shoe, of a presser-foot having a flexible runner and an upper bearing-support, a series of openings in said bearing-support to connect the raising and lowering mechanism, a stop on said presser-foot, and means, substantially as described, for connecting said presser-foot rigidly to the said hoe or shoe in different positions of adjustment, substantially as specified.

6. The combination, with a grain-drill shoe having a backwardly-extending flange with a series of openings therein and a boss or projection on the same side with said flange, of a presser attachment pivoted to said boss or projection having a lower flexible runner and upper bearing-support, said bearing-support being provided with a series of openings adapted to be connected by a link-connection to the respective openings in said flange, substantially as specified.

7. The combination, with a grain-drill shoe or hoe, of a presser-foot pivoted thereto, said presser-foot being provided with a lower flexible runner and an upper bearing-support, a connection from said bearing-support to the raising and lowering mechanism, said connection being provided with an elastic or yielding portion adapted to exert a pressure on said presser-foot, substantially as specified.

8. The combination, with a grain-drill hoe having a backwardly-extending flange with a series of openings therein, of a presser-foot pivoted to said hoe and provided with a lower flexible runner, and an upper bearing-support having a series of openings adapted to be connected by a link to the openings in said flange, a stop on said presser-foot, and a yielding connection from said bearing-support to the raising and lowering mechanism, substantially as specified.

9. The combination, with a grain-drill shoe or hoe, of a pressing attachment having a bearing-support pivoted to said shoe and a flexible runner connected to said bearing-support, said runner being convex in cross-section on its bottom surface, substantially as specified.

410,439. COAT-HOLDER. WILLIAM D. G. PATTISON, Boston, Mass., assignor to Charles H. Lowell, trustee, same place. Filed Feb. 13, 1888. Serial No. 263,760. (No model.)



Claim.—1. A coat-holder composed of separable jaws at the outer ends of pivoted levers *b b'*, and a plate with which one of said levers is pivotally engaged and on which the other lever is movable, the arrangement being such that the jaws are automatically closed by their own weight and opened by an outward and upward pull on the upper jaw, as set forth.

2. In a coat-holder, the combination of separable jaws, pivotally-connected levers supporting said jaws, a plate with which one of said levers is pivotally connected and on which the other lever is movable, and means for supporting the lever of the upper jaw at different heights, as and for the purpose specified.

3. In a coat-holder, the combination of the upper and lower jaws, the levers *b b'*, carrying said jaws, said levers being crossed and pivoted together at *c*, and the plate *e*, to which the lever *b'* is pivotally connected, and on which the lever *b'* is movable, as set forth.

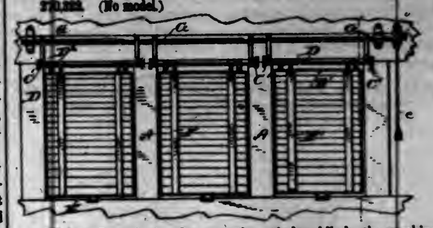
4. In a coat-holder, the combination of the upper and lower jaws, the levers *b b'*, carrying said jaws, said levers being crossed and pivoted together at *c*, and the plate *e*, to which the lever *b'* is pivotally connected, and on which the lever *b'* is movable, and an adjustable rest *g* to support the lever *b'* at different heights, as set forth.

5. The combination, with the jaws *a a'* and crossed pivoted levers *b b'*, of the plate *e*, to which the lever *b* is pivoted, the rest *g*, hinged to said plate, and the bar or stop *i*, adapted to support said rest in different positions, as set forth.

6. The combination of the elongated jaws *a a'*, having concave inner edges, the levers *b b'*, to which said jaws are affixed, and the supporting-plate, to which one of said levers is pivotally secured and on which the other lever is movable, as set forth.

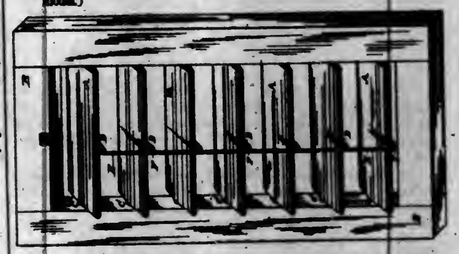
7. In a coat-holder, the combination of the jaws *a a'*, the pivotally-connected levers *b b'*, supporting said jaws, and the plate *e*, having ears to which the lever *b* is pivotally connected, the lever *b'* bearing on said plate without engagement therewith, whereby the levers and jaws may be turned upwardly out of the way, as set forth.

410,440. DEVICE FOR OPERATING WINDOW-BLINDS, &c. WILLIAM H. PAULDING, Peekskill, N. Y. Filed Apr. 11, 1888. Serial No. 270,222. (No model.)



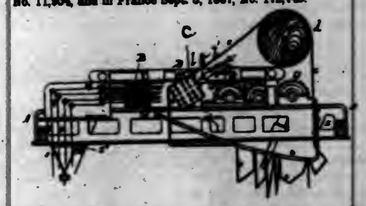
Claim.—In a device for operating window-blinds, the combination of a spring-actuated roller located adjacent to the upper part of the window, a series of independent auxiliary rollers parallel with the main roller, bands for connecting the auxiliary with the main roller, whereby motion may be imparted to each of the auxiliary rollers by the rotation of the main roller, window-shades or blinds below the auxiliary rollers, hoisting-cords connected at their lower ends to the cross-bar of the blinds and at their upper ends to the auxiliary rollers, tapes secured to the supporting-slats and passing around the auxiliary rollers, and means, substantially as described, for releasing the spring-roller to cause it to raise the blind, substantially as described.

410,441. WINDOW BLIND OR SHUTTER. WILLIAM H. PERKINS, Cleveland, Ohio. Filed Oct. 18, 1886. Serial No. 215,909. (No model.)



Claim.—In a window-blind, the combination, with pivoted slats A, having staples D arranged in a line at right angles to the slats, of the wire E, formed with loops F, formed all on one side of the wire, substantially as and for the purpose described.

410,442. SHEDDING MECHANISM FOR LOOMS. EDUARDO PONT, Barcelona, Spain. Filed Mar. 6, 1888. Serial No. 266,288. (No model.) Patented in Spain May 3, 1887, No. 10,739; in England Sept. 3, 1887, No. 11,954, and in France Sept. 5, 1887, No. 179,749.



Claim.—1. The combination, with a perforated movable needle-guide bar, bar C, and devices for operating said bars, of needles passing through the guide-bar, rods Q, over which the needles pass at the rear, rods Q', located to the rear of and below rods Q, and cords O, secured to rear ends of the needles and passed around bars Q and Q', in the manner and for the purpose set forth.

2. The combination, with a reciprocating card-bar having squared faces, spring-actuated pawls at the ends thereof, the one at one end being mounted on one side of the bar and the one at the other end being mounted on the opposite side of the bar, and cords for withdrawing each pawl from engagement with the bar, of needles, a perforated movable needle-guide bar through which the needles pass, rod Q, over which the needles pass at the rear, rods Q', located to the rear of and below rods Q, and cords O, secured to the rear of the needles and passed around bars Q and Q', in the manner and for the purpose set forth.

410,443. TRUNK FOR COTTON-CLEANING APPARATUS AND THE LIKE. JAMES G. POTTER, Pawtucket, R. I. Filed June 17, 1888. Serial No. 314,888. (No model.)



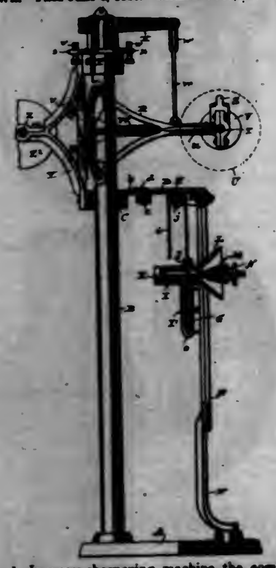
Claim.—1. A trunk for cleaning cotton or the like, consisting of a passage for the material to be cleaned, a grated bottom for said passage, and a dust-chamber below said grated bottom divided into a series of separate dust-receptacles by partitions movable so as to convert at will the series of separate receptacles into a continuous chamber or passage, substantially as and for the purpose hereinbefore set forth.

2. A trunk for cleaning cotton or the like, consisting of a passage for the material to be cleaned, a grated bottom for said passage, a dust chamber or passage below said grated bottom, and hinged partitions or gates which when dropped divide said dust chamber or passage into separate dust-receptacles, and which when raised close up toward or against the grated bottom, substantially as and for the purposes hereinbefore set forth.

3. A trunk for cleaning cotton and the like, comprising a passage for the material to be cleaned, a grated bottom for said passage, a dust chamber or passage below said grated bottom, movable partitions in said dust-chamber, whereby the chamber can be converted into a series of separate dust-receptacles at will, an air-supply opening above the grated bottom, and a door or gate for closing the outlet end of the passage for the material to be cleaned, substantially as and for the purposes hereinbefore set forth.

4. A trunk for cleaning cotton and the like, comprising a passage for the material to be cleaned, a grated bottom for said passage, a dust chamber or passage below the grated bottom, hinged partitions for converting said chamber into a series of separate dust-receptacles, and partition actuating devices outside of the trunk, substantially as and for the purposes hereinbefore set forth.

410,444. SAW-SHARPENING MACHINE. ARGOST F. RADANT Wausau, Wis. Filed June 6, 1889. Serial No. 313,247. (No model.)



Claim.—1. In a saw-sharpening machine, the combination of a pivoted frame, a transverse track-bar vertically adjustable on the frame, and a saw-carriage laterally adjustable on the track-bar, substantially as set forth.

2. In a saw-sharpening machine, the combination of a pivoted frame having vertical sides provided with guides, bolts arranged in the guides, a transverse track-bar supported on the bolts, set-nuts arranged on said bolts to impinge against the track-bar, a crank-shaft journaled in the frame, sprocket-wheels carried by the shaft and chains passed over the sprocket-wheels and connected to the track-bar, and a saw-carriage laterally adjustable on said track-bar, substantially as set forth.

3. In a saw-sharpening machine, the combination of a rectangular frame having a depending goose-neck pivoted to a suitable base, a segmental plate connected to the upper side of the frame, a guide for this plate, a transverse track-bar vertically adjustable on said frame, and a saw-carriage laterally adjustable on the track-bar, substantially as set forth.

4. In a saw-sharpening machine, the combination of a pivoted frame having the greater portion thereof on one side of its pivot-point, a counter-balance for the frame, a track-bar vertically adjustable on said frame, and a saw-carriage laterally adjustable on the track-bar, substantially as set forth.

5. In a saw-sharpening machine, the combination of a pivoted lever, a yoke having rearwardly-extended arms linked to the lever, a revoluble shaft having its bearings in the yoke, a grinding-wheel carried by the shaft, segments connected to said yoke to center on the shaft, and tracks for the segments, substantially as set forth.

6. In a saw-sharpening machine, the combination of a pivoted lever, a yoke having rearwardly-extended arms linked to the lever, a revoluble shaft having its bearings in the yoke, a grinding-wheel carried by the shaft, segments connected to said yoke to center on the shaft, tracks for the segments, and anti-friction rollers arranged on said yoke-arms to travel on said segment-tracks, substantially as set forth.

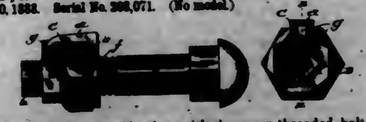
7. In a saw-sharpening machine, the combination of a pivoted lever, a yoke having rearwardly-extended arms linked to the lever, a revoluble shaft having its bearings in the yoke, a grinding-wheel carried by the shaft, toothed segments connected to said yoke to center on the shaft, and racks arranged to engage the segments, substantially as set forth.

8. In a saw-sharpening machine, the combination of a pivoted lever, adjustable stops for the lever, a yoke having rearwardly-extended arms linked to the lever, a revoluble shaft having its bearings in the yoke, a grinding-wheel carried by the shaft, segments connected to said yoke to center on the shaft, and tracks for the segments, substantially as set forth.

9. In a saw-sharpening machine, the combination of a pivoted lever, a yoke having rearwardly-extended arms linked to the lever, a shaft having its bearings in the yoke, a grinding-wheel and a pulley carried by the shaft, segments connected to said yoke to center on the shaft, tracks for the segments, suitably-arranged brackets, a drive-shaft having its bearings in the brackets, and a pulley arranged on the drive-shaft for belt-connection with the pulley on the shaft that carries said grinding-wheel, substantially as set forth.

10. In a saw-sharpening machine, the combination of a base, a standard connected to the base, a collar arranged on the standard and provided with a flange having a segmental guide, a frame having a depending goose-neck pivoted to said base and a top plate arranged to work in the segmental guide, a track-bar vertically adjustable on the frame, a saw-carriage laterally adjustable on the track-bar, a pivoted lever supported on said standard, a yoke having rearwardly-extended arms linked to the lever, a revoluble shaft having its bearings in the yoke, a grinding-wheel carried by the shaft in line with the goose-neck pivot, segments connected to said yoke to center on the shaft, and tracks for the segments, substantially as set forth.

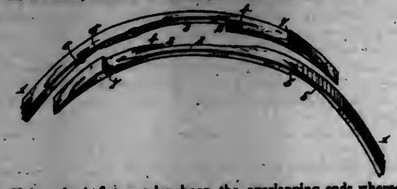
410,445. NUT-LOCK. ANDREW KERR, Lawrence, Kans. Filed Dec. 10, 1888. Serial No. 293,071. (No model.)



Claim.—1. The combination, with the screw-threaded bolt having angularly-reduced end and a nut, of a wrench-shaped locking-bar C, consisting of two jaws *c c*, with right-angular shank *d*, the said jaws being adapted to embrace the angular end of the bolt and provided with a locking tooth or dog *g*, as and for the purpose described.

2. The combination, with the screw-threaded bolt A, having angularly-reduced end *a*, and a nut B, with recess *f*, of the wrench-shaped locking-bar C, having jaws *c c*, with tooth or dog *g*, and the right-angular shank *d*, with flange or lip *e*, substantially as shown and described.

410,446. FLAT WOODEN HOOP. JOHN F. RICH, Summertown, assignor of two-thirds to Luther L. Frierson, Mount Pleasant, Tenn. Filed Feb. 11, 1889. Serial No. 299,431. (No model.)



Claim.—1. A flat wooden hoop, the overlapping ends whereof are provided with lapping notches extending partly across the width of the hoop, forming transverse edges, each of which has a chamfer upon its external face, substantially as described.

2. A wooden hoop having its overlapping ends notched, and provided upon one or both ends with shoulders on the inner face of the hoop, said shoulders engaging the oppositely-formed shoulders near the ends of the lapped portions and upon the outer faces thereof, said shoulders being so located that when engaged the transverse edges of the lapping notches are held out of contact or engagement with each other, substantially as described.

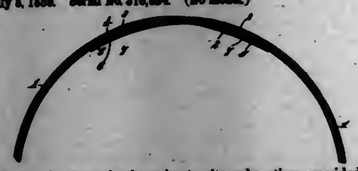
3. A wooden hoop having the lapping notches 2, each provided with a chamfer 4 on its back or external face, and provided with transverse locking-shoulders upon the inner face of said hoop, engaging with oppositely-formed transverse shoulders upon the outer faces of the engaging ends, said shoulders being so located that the radial or bursting strain shall be substantially removed from the lapping notches 2, substantially as described.

4. A wooden hoop for barrels, casks, and similar purposes, the same having lapping notches 2, the wood being chamfered off upon the external faces of the lapping portions adjacent to said notches, said lapping portions being provided upon their inner faces with transverse shoulders extending entirely across the inner face of the hoop and adapted to engage with opposite shoulders on the external face of the lapping ends, the latter being tapered to lie in the recesses 6 beyond the transverse shoulders, substantially as described.

5. A flat wooden hoop having notches 2, the wood being beveled or chamfered on the exterior faces 4, the lapping portions being provided with interior locking-notches 5 and exterior notches 7, the wood of the extremities of the hoop being cut away to lie in recesses 6, adjacent to the shoulders 5, and the wood of the outer faces of the lapping ends being removed adjacent to the exterior shoulders to permit the engagement thereof with the interior shoulder without increase of thickness, substantially as described.

6. A wooden hoop having notches 2, edges 3, interior shoulders 5, exterior shoulders 7, recesses 6, and tapered extremities lying in said recesses, substantially as described.

410,447. FLAT WOODEN HOOP. JOHN F. RICH, Summertown, assignor of two-thirds to Luther L. Frierson, Mount Pleasant, Tenn. Filed July 8, 1889. Serial No. 316,894. (No model.)

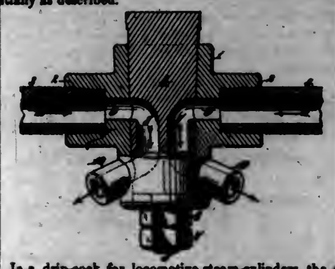


Claim.—1. A wooden hoop having its end portions provided with lapping notches cut in the edges and provided upon one or both lapped portions with an angular shoulder, the recess adjacent to the same being provided with notches or corrugations, while the engaging extremity of the hoop has an opposite shoulder and a tapered or beveled end provided with notches or corrugations engaging those in the said recess, substantially as described.

2. A wooden hoop having a lap-notch 2 in each extremity and provided with a shoulder 3 in each lapping portion, formed by a recess having notches or corrugations 4, the ends of the hoop being provided with opposite shoulders 7 and tapered or beveled extremities having notches or corrugations 6, substantially as described.

410,448. DRIP-COCK FOR LOCOMOTIVE-CYLINDERS. HENRY H. ROGUE, Wilmington, Del. Filed Apr. 11, 1889. Serial No. 306,854. (No model.)

Claim.—1. In a drip-cock for locomotive steam-cylinders, the combination, with the drip-pipes leading from opposite ends of said cylinders, of a centrally-located drip-cock having two separate and easily-distinguished outlets and a valve by which communication between both drip-pipes and both outlets may be simultaneously made, substantially as described.

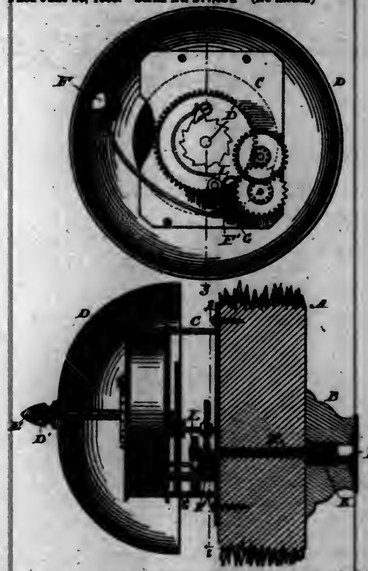


2. In a drip-cock for locomotive steam-cylinders, the combination, with the drip-pipes entering opposite ends of the steam-cylinder, of a drip-cock having two separate and divergent outlets, a valve of slightly-tapering form having a stem passing the bottom of the valve-casing and receiving a draft or set nut and a jam-nut, and means for operating the valve to open the discharge from both ends of the steam-cylinder simultaneously, substantially as described.

3. In a drip-cock for locomotive steam-cylinders, the combination, with the pipes leading from the ends of the steam-cylinder, of a valve having two downwardly-directed outlets, a valve by which both outlets are opened at the same time, and a lever operating the valve and having a stop-pin running in a recess in the valve-casing to control the throw of the lever, substantially as described.

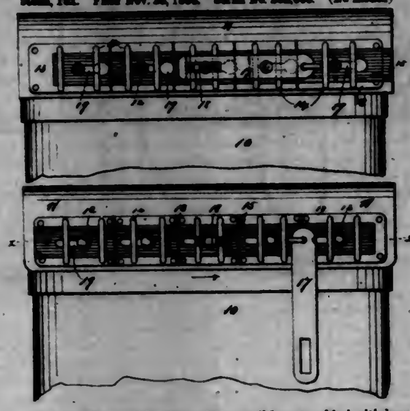
4. In a drip-cock for locomotive steam-cylinders, the combination, with a valve-casing having opposite wings, of pipes tapped into said wings and entering the ends of the steam-cylinder, a tapered valve or plug lying in said casing and having a threaded stem passing through its end, and receiving-nuts, one to set the valve and the other to lock the set-nut, a lever mounted upon the valve and provided with a stop-pin running in a way in the valve-casing, and means for operating said lever, whereby discharge is given to both ends of the steam-cylinder at the same time, the valve-casing being provided with two downwardly-turned diverging outlets, which in one position of the valve register with passages therein communicating at their other ends with the drip-pipes entering the opposite ends of the steam-cylinder, substantially as described.

410,449. DOOR-BELL. ALBERT F. ROCKWELL, Jacksonville, Fla. Filed June 20, 1888. Serial No. 277,894. (No model.)



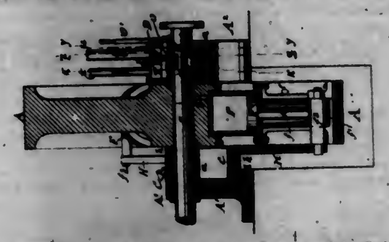
Claim.—In a door-bell mechanism secured within a building, the combination of a spring push-button to be operated from the outside, a bell-wire and bell-crank levers connecting the spring push-button with the alarm-bell mechanism, a push-rod provided with a retracting-spring and connected with the bell-wire, and a stop upon the inner end of the push-rod for engagement or disengagement with the tappet of the alarm mechanism, all arranged substantially as set forth.

410,450. MAIL-BAG FASTENING. JAMES A. ROOSEVELT, Hempstead, Tex. Filed Nov. 26, 1888. Serial No. 292,066. (No model.)



Claim.—The combination, with a mail-bag provided with headed studs and apertures adapted to receive said studs, of a closing-flap, also apertured to receive the studs, a slide provided with key-hole slots adapted to receive the studs and protected by metallic plates, staples or loops secured to the flap overlapping the slide and serving as a guide for the same, a hasp pivotally secured to the slide between two adjacent staples, whereby the motion of the slide is limited, and a staple or bow 18, carried by two of the staples and adapted to engage with the hasp 17, substantially as and for the purpose described.

410,451. STEAM-ENGINE. FERDINAND S. ROTHMAN, Plainfield, N. J. Filed Oct. 12, 1888. Serial No. 287,916. (No model.)



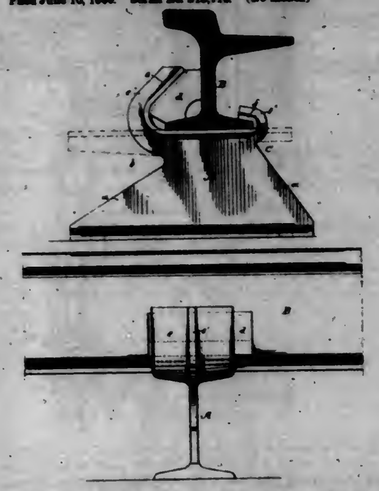
Claim.—1. The combination of a central shaft, radial cylinders mounted on said shaft, a fly-wheel concentric to said shaft, guide-rails connecting the cylinders and fly-wheel, cross-heads connected to the piston-rods of the cylinders, a stationary eccentric surrounding the shaft, and strap-rods applied to the stationary eccentric outside of the plane of the fly-wheel and pivoted to the cross-heads, substantially as set forth.

2. The combination of supporting-standards having bearings, a central shaft supported on said bearings, a stationary eccentric surrounding said shaft and forming a part of one of the standards, radial cylinders mounted on said shaft, a fly-wheel concentric to said shaft, guide-rails connecting the cylinder and fly-wheel, cross-heads connected to the piston-rods of the cylinders, and strap-rods applied to the stationary eccentric and pivoted to the cross-heads outside of the plane of the fly-wheel, substantially as set forth.

3. The combination, with a central shaft having longitudinal channels and ports, of cylinders mounted radially on said shaft, a fly-wheel extending around said cylinders, guide-rails connecting the cylinders and fly-wheel, cross-heads for the piston-rods, a stationary eccentric surrounding said shaft, strap-rods pivoted to the cross-heads and applied to said eccentric, a steam-chest having a transverse partition forming a live-steam and an exhaust chamber, annular steam-channels around the shaft, abutments in said channels, and a cylindrical reversing-valve having ports at right angles to each other, substantially as set forth.

4. The combination of a central shaft having longitudinal channels and ports, cylinders mounted on said shaft, a fly-wheel concentric to said shaft, guide-rails connecting the cylinders with the fly-wheel, cross-heads for the piston-rods guided in said rails, a stationary eccentric located outside of the fly-wheel and surrounding the central shaft, strap-rods pivoted to the cross-heads and applied to the eccentric, a steam-chest having a transverse partition forming a live-steam and exhaust chamber, annular steam-supply and exhaust channels communicating with the ports and channels in the shaft, a cylindrical reversing-valve having steam-supply and exhaust ports at right angles to each other, abutments located in the annular supply-channel at the upper and lower part of the same, a cut-off valve having longitudinal bars located in the steam-supply channel, and mechanism for setting said cut-off valve, substantially as set forth.

410,452. RAIL-CHAIR. EDWARD SAWER, Philadelphia, Pa., assignor to William Wharton, Jr., and Company, (Incorporated,) same place. Filed June 10, 1889. Serial No. 313,716. (No model.)



Claim.—1. A rail-chair made from a beam or shape, having a web and a top plate or flange, and having the web partly severed and that portion of the top plate or flange thus freed bent so as to form a rail-retaining lip, substantially as specified.

2. A rail-chair made from a beam or shape, having a web and top plate or flange, and having the web partly severed and that portion of the top flange thus freed bent over in the direction of the length of the beam, so as to form a rail-retaining lip, substantially as set forth.

3. A rail-chair made from a beam or shape, having a web and base and top plate or flange, and having the web partly severed and that portion of the top plate thus freed bent so as to form a rail-retaining lip, substantially as specified.

4. A rail-chair made from a beam or shape, having a web and top plate or flange, and having the web severed at a point some distance below the top flange and the portion of the top flange with adhering web thus freed bent to form a rail-retaining lip with outer strengthening-rib, substantially as specified.

5. A rail-chair made from a beam or shape, the outer portions of the top plate and portions of the web being bent upward to form ribbed retaining-lugs for the rail, substantially as described.

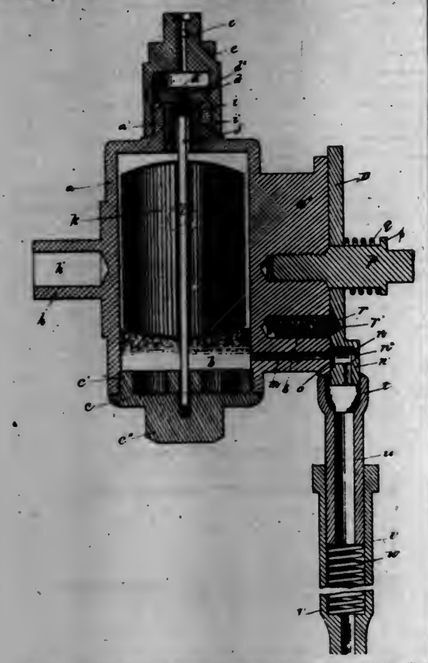
6. A rail-chair made from a beam or shape, having a web and top plate or flange, and having the web partly severed and that portion of the top flange thus freed bent to form a rail-retaining lip, the web extending diagonally outward from said lug toward the base, substantially as set forth.

7. The combination of a rail-chair made from a beam or shape and having lips or lugs *e* and *f*, the lug *e* extending a certain distance above the foot of the rail, with a wedge *d* bearing against the web and flange of the rail and against the inner face of the retaining-lug *e*, substantially as specified.

410,453. AUTOMATIC OIL-FEEDER FOR OIL-STOVES. ABNER G. BARNEBY, Titan, assignor of one-half to the Lacasta Car Company, Lacasta, N. H. Filed Mar. 14, 1889. Serial No. 303,294. (No model.)

Claim.—1. In an automatic oil-feeder, the combination of an oil-chamber having inlet and outlet passages, a valve for said inlet-pas-

sage, a float within the chamber controlling said valve, and a movable plate having a plurality of outlet-passages adapted to coincide interchangeably with the outlet-passage, as set forth.



2. In an automatic oil-feeder, the combination of an oil-chamber having inlet and outlet passages, an automatic valve to control the admission of oil to said chamber, a rotary plate or dial properly connected to said chamber and provided with a plurality of outlet-passages, and a latch or detent, whereby said plate may be held with either of its passages in register with the outlet-passage of the chamber, as set forth.

3. In an automatic oil-feeder, the combination of an oil-chamber having inlet and outlet passages, an automatic valve controlling the admission of oil to said chamber, a movable plate having a plurality of outlet-passages adapted to coincide interchangeably with the outlet-passage of the oil-chamber, and disks removably inserted in the outlet-passages of said plate and provided with apertures of different sizes, said apertures regulating the outflow of oil from the chamber, as set forth.

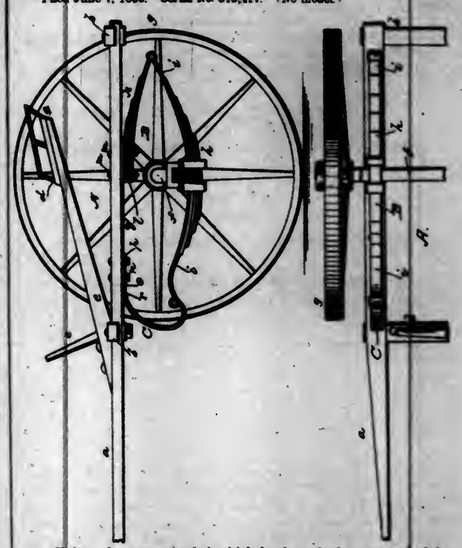
4. The oil-chamber having the inlet and outlet passages, the float-supported inlet-controlling valve, and the pipe or conduit arranged above the outlet-passage, whereby air is admitted to the chamber and an undue accumulation of oil therein is prevented, as set forth.

5. The oil-chamber having the oil-inlet, the float-supported valve, and the boss or projection in which is formed the oil-outlet, combined with the plate or dial pivotally connected to said boss and having a plurality of outlet-passages adapted to register interchangeably with the outlet-passage of the chamber, and a series of notches corresponding in number and arrangement with said outlet-passages, and a spring-pressed bolt or latch in said boss adapted to engage either of said orifices, as set forth.

6. The oil-chamber having the oil-inlet, the float-supported valve, and the boss or projection in which is formed the oil-outlet, combined with the plate or dial pivotally connected to said boss and having a plurality of outlet-passages adapted to register interchangeably with the outlet-passage of the chamber, each of said passages having a removable apertured disk inserted in a countersunk seat in the inner side of said plate, and a spring whereby said plate is pressed against said boss, as set forth.

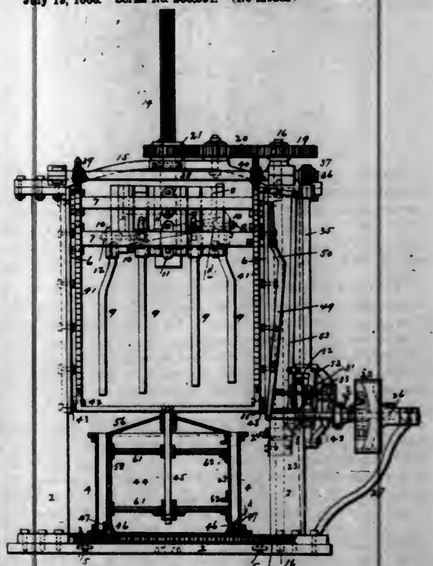
7. The combination, with the oil-chamber having the inlet and outlet passages and the automatic inlet-controlling valve, of the cup located on a spring-supported tube or conduit, forming a part of the conduit that conducts the oil from the chamber to the lamp, said cup being adapted to be depressed to show the feeding of the oil, as set forth.

410,454. TWO-WHEELED VEHICLE. EDWARD P. SETTLES, BENJAMIN F. SETTLES, and WILLIAM H. SETTLES, Jr., Mount Sterling, Ky. Filed June 7, 1889. Serial No. 313,417. (No model.)



Claim.—In a two-wheeled vehicle having a body composed of the shafts *a a*, united by cross-bars both front and rear, the inclined seat-bars *c*, and also a cranked axle *f*, the combination of the side springs B, each composed of a lower compound semi-elliptic spring clipped directly to said axle, the upper compound leaf-spring *k*, pivoted to the rear spring *k* and bolted rigidly to the shaft directly over the axle, and the single-leaf C-spring also bolted to the shaft and pivoted to the front curved extension *i* of the lower spring *k*, all constructed and adapted to operate as shown and described.

410,455. TILE-MACHINE. WILLIS D. SHERMAN, Omaha, Nebr., assignor to the Union Hydraulic Drain Tile Company, same place. Filed July 19, 1888. Serial No. 280,391. (No model.)



Claim.—1. In a tile or pipe machine, the combination, with a base-piece, of hollow columns secured thereto, a revoluble table upon the base, a cross-piece secured to the tops of the columns, a vertical shaft within one of the columns, tamping mechanism between the columns, gear-wheels on the vertical shaft for operating the tamping mechanism and table, and a driving-pulley for operating the vertical shaft.

2. In a tile or pipe machine, the combination, with a base-piece, of vertical columns secured thereto, a table upon the base, a shaft across the top of the machine, a sprocket-wheel upon each end of the shaft, a cross-piece between the columns, a core suspended from the cross-piece, and two chains from the cross-piece over the sprocket-wheel.

3. In a tile or pipe machine, the combination, with a base piece, of vertical columns secured thereto, a table upon the base, tamping mechanism above the table, a vertical shaft, and mechanism connecting the shaft and tamping mechanism, a bevel-wheel upon the shaft, a hollow shaft journaled in one of the columns having a bevel-wheel at one end and a clutch at the other, a shaft within the hub, and a drive-pulley upon the shaft.

4. In a tile or pipe machine, the combination, with a base-piece, of a table journaled thereon, tamping mechanism above the table, two clutches, one of which controls the rotary movement of the tamping mechanism and the table, and the other one controls the vertical movement of the tamping mechanism, and two systems of levers for operating the clutches.

5. In a tile or pipe machine, the combination, with a base-piece, of vertical columns secured thereto, a table upon the base, a cross-piece between the columns, a core suspended from the cross-piece, a shaft at the tops of the columns, two sprocket-wheels, and a spiral gear upon the shaft, a vertical shaft at the side of one of the columns, the upper end of which is provided with a worm-gear, a bevel-wheel upon the lower end of the vertical shaft, two clutch bevel-wheels engaging with the bevel-wheel upon the end of the shaft, a clutch-wheel engaging with said two bevel-wheels, and a handle for operating the clutch-wheel.

6. In a tile or pipe machine, the combination, with a base-piece, of vertical columns secured thereto, a table upon the base, tamping mechanism above the table, a clutch at the side of the machine, a bell-crank lever pivotally secured to the side of the column above the clutch, a rod at the side of the column, the lower portion of which is pivotally connected with one arm of the lever, and two stops or levers secured to the ends of the rod.

7. In a tile or pipe machine, the combination, with a base-piece, of vertical columns secured thereto, a table upon the base, tamping mechanism above the table, a clutch at the side of the machine, a slide-bar, one end of which engages with the clutch and the other end projects beyond the inner face of the column at that side, a lever pivoted to the side of the column, the lower end of which engages with the slide-bar and the upper end is bent or inclined, and a stop upon the tamping mechanism.

8. In a tile or pipe machine, the combination, with a table, of a core, the adjoining edges of the shell of which are inclined, a wedge-shaped block, two cross-pieces secured to the block, two pairs of stops secured to the inner side of the shell opposite the inclined edges, and a rod passed up through the cross-pieces and through the top of the core.

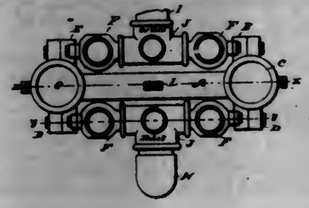
9. In a shell for tile or pipe machines, the combination, with the body of the shell, of rings secured thereto, the middle one of which is provided with a groove upon its under side.

10. The combination, with a shell for tile or pipe machines, of pins or legs at one end.

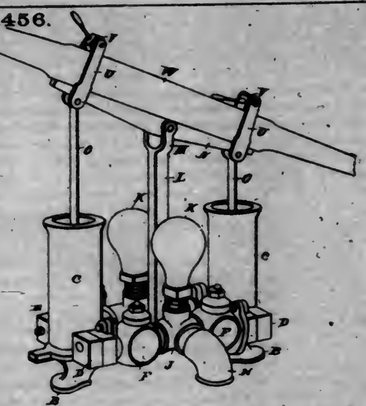
410,456. PUMP. FREDERICK W. SEVILL, Galion, Ohio. Filed Apr. 20, 1889. Serial No. 307,961. (No model.)

Claim.—1. In a pump, the combination of the base, the cylinders mounted upon the same and having lateral extensions provided with entrance and exit channels, the valve-chambers connecting said channels, respectively, with the suction and exit pipes, and the air-chambers extending upwardly from the T-couplings, which connect the suction and exit pipes with the valve chambers or casings, substantially as and for the purpose herein set forth.

2. In a double-acting force-pump, the standard L, having the

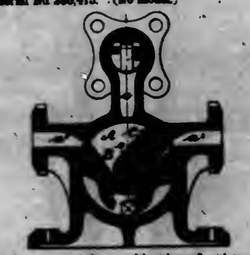


410,456.



walking-beam N pivoted thereto, combined with the handle W, the cylinders C C, the piston O, and the cam-levers V, carried by the rods of the pistons to clamp against the handle W and bind not only the handle and walking-beam together, but also connect the pistons thereto, as set forth.

410,457. PUMP. ALFRED SIEBERT, New York, N. Y. Filed July 19, 1888. Serial No. 280,413. (No model.)



Claim.—1. In a pump, the combination of a piston-chamber having two discharge-passages leading therefrom, and an intermediary port through which the oil or other liquid is admitted, a valve within said chamber provided with outer rounded sides bearing against the inner sides thereof and adapted to receive an oscillating motion and open and seal said discharge-passages, a wing-piston bearing upon said valve and against the inner wall of said chamber, and a piston-rod adapted to operate said piston, whereby an oscillating motion is given said valve and the liquid discharged, substantially as described.

2. In a pump, the combination of a piston-chamber having two discharge-openings leading therefrom, and an intermediary port through which the oil or other liquid is admitted, a valve mounted upon trunnions and provided with outer rounded sides, and end pieces having bearings against the inner wall of said chamber, said valve being adapted to receive an oscillating motion and open and seal said discharge-passages, a wing-piston bearing upon said valve and against the inner surface of said chamber, and a piston-rod adapted to operate said piston, whereby an oscillating motion is given said valve and the oil discharged, substantially as described.

410,458. PUMP. ALFRED SIEBERT, New York, N. Y. Filed July 19, 1888. Serial No. 280,414. (No model.)



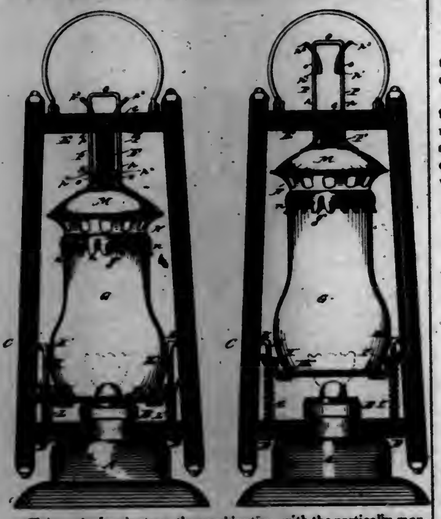
Claim.—1. In a pump, the combination of a piston-chamber provided with two discharge-passages and intermediary inlet port or ports, a cylinder having openings in its sides and adapted to move

back and forth within said chamber and connect said openings with the discharge-passages and inlet-ports, and a piston provided with a rod adapted to operate the same within said cylinder, whereby both piston and cylinder are given a reciprocating motion and the oil or other liquid admitted and discharged, substantially as described.

2. In a pump, the combination of a piston-chamber provided with two discharge-passages and intermediary inlet port or ports, a cylinder having openings in its sides and adapted to move back and forth within said chamber and connect said openings with the discharge-passages and inlet-ports, and a piston provided with a rod adapted to operate the same within said cylinder, said chamber being further provided with channels and connections between said discharge-passages and inlet port or ports and adapted to render said pump single-acting, substantially as described.

3. In a pump, the combination of a piston-chamber provided with two discharge-passages and intermediary inlet port or ports, a cylinder having openings in its sides and adapted to move back and forth within said chamber and connect said openings with the discharge-passages and inlet-ports, a piston provided with a rod adapted to operate the same within said cylinder, and an equalizing-pipe connecting the ends of said chamber, whereby the oil admitted therein and without said cylinder is allowed to flow back and forth, substantially as and for the purpose set forth.

410,459. TUBULAR LANTERN. Orrin M. Smith, Philadelphia, Pa., assignor to William Grange, same place. Filed Mar. 17, 1888. Serial No. 267,544. (No model.)

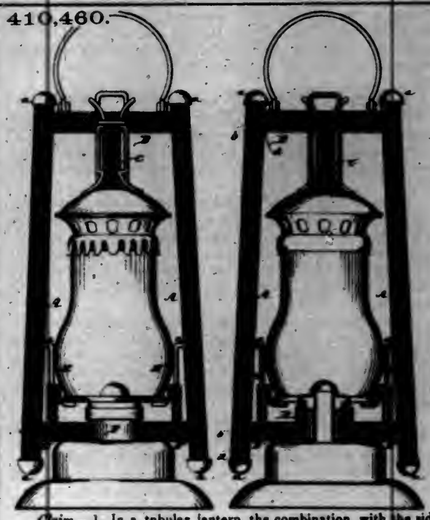


Claim.—1. In a lantern, the combination, with the vertically-movable air-plate H and the globe G, of the dome M, having a depending flange N, with spring-fingers *n n*, grasping bead *g* on said globe, substantially as described.

2. In a lantern, the combination, with the dome M, spring-catches P P, the horizontal tube E, and the staples *e e*, with which said catches engage, of the depending flange N, the spring-fingers *n n* on said flange, and the globe G, having bead *g* engaging with said fingers, substantially as described.

410,460. TUBULAR LANTERN. Orrin M. Smith, Philadelphia, Pa., assignor to William Grange, same place. Filed Mar. 19, 1888. Serial No. 267,732. (No model.)

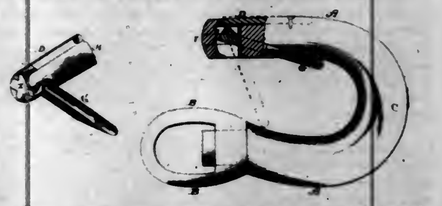




Claim.—1. In a tubular lantern, the combination, with the side tubes A A, having notches *d d*, of the horizontal tubes having their ends beveled and projected into said notches, substantially as described.

2. In a tubular lantern, the combination, with the vertical or side tubes A A and the horizontal tubes secured thereto, of the bracing-rods B E, the lower ends of which project through the walls of the said horizontal tubes and are soldered thereto, and which have laterally-bent upper ends which project through and are soldered to the walls of the said vertical or side tubes, substantially as described.

410,461. HOOK. Ferdinand Splittstoser, North Branch, Minn. Filed Apr. 29, 1889. Serial No. 309,000. (No model.)



Claim.—1. The combination of a hook having a recess formed in its top and a recess formed in its end, and the casting placed in the recess in the end of the hook, with the spring placed in the top of the hook, and the latch provided with a projection upon one end, against which the free end of the spring bears, whereby the spring serves to hold the latch either in an open or closed position, substantially as described.

2. The combination of the hook having a longitudinal recess formed in its top and a horizontal and vertical recess formed in its end, with the casting shaped to fit and placed in the end recesses, the spring placed in the top recess with its rear end rigidly secured therein, and the latch placed in the horizontal recess and provided with a projection upon its upper end, against which the free end of the spring bears, substantially as shown and described.

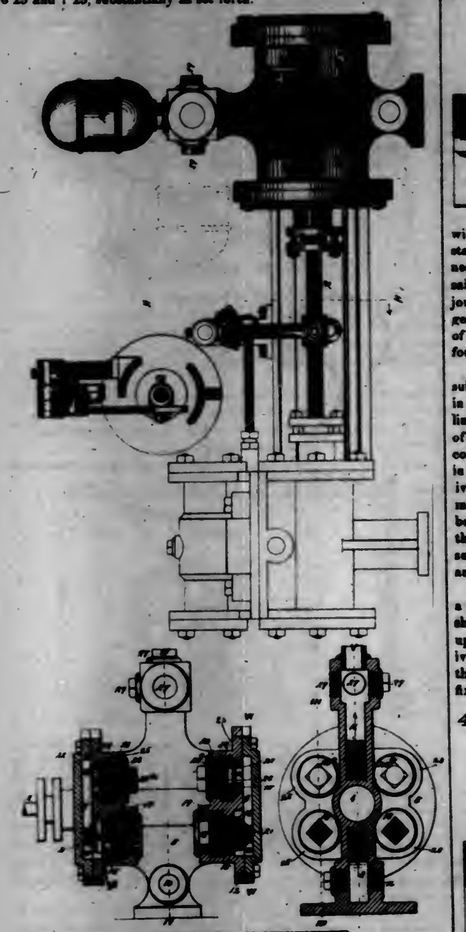
410,462. PUMP. Frank Steinmann, St. Louis, Mo. Filed Dec. 15, 1888. Serial No. 293,693. (No model.)

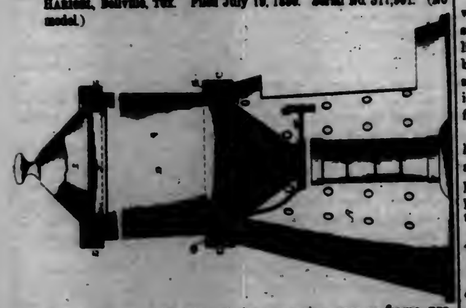
Claim.—1. In a pump, the combination, with the cylinder 4 and piston 3, of the flange 12, having ports therethrough, chambers 6 7 at the ends of said cylinder communicating therewith and with said ports, the inlet and outlet chambers 8 9, the chambers or heads 25, connecting said chambers 8 9 at both ends with the chambers 6 7, removable plugs having valve-stems secured in the rear of said heads or chambers 25, and the valves 13 14, situated on said stems and guarding the ports in said flanges 12, substantially as set forth.

2. In a pump, the combination, with the cylinder 4 and piston 3, of the chambers 6 7 at the ends of said cylinder, the inwardly-projecting heads or chambers 25, the flanges 12, dividing said chambers 25 from the chambers 6 7 and having ports forming communication between said chambers 6 and 25 and 7 and 25, the inlet and outlet

chambers 8 9, extending between the heads or chambers 25 and each communicating with said heads at its opposite ends, removable screw-plugs in the inner ends of said heads 25, the stems 17 and 24, projecting from said plugs, the rings 15, secured in the flanges 12 and having arms 16, connected to stems 17, and spring-actuated valves on said stems 17 24, adapted to close the ports between said chambers 6 25 and 7 25, substantially as set forth.

410,463. GUNPOWDER-CANISTER. John J. Stopple and Emil Harsem, Bellville, Tex. Filed July 19, 1889. Serial No. 317,991. (No model.)





Claim.—The combination of the supporting case or frame provided with an opening through one side and a supporting-flange at its top, with a powder-can supported by such flange and provided with a conical lower end closed by the spring-actuated perforated slide, and a cover provided with concentric flanges which seat themselves within and without the upper edge of the can-body, substantially as shown and described.

410,464. HAND-STAMP. Daniel C. Stover, Prospect, Ill. Filed Mar. 5, 1889. Serial No. 302,011. (No model.)

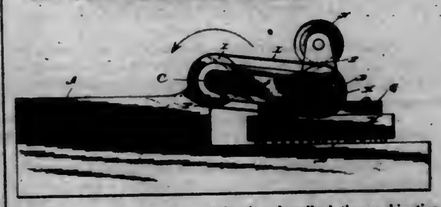


Claim.—1. In a machine of the class described, the combination, with a suitable support and an inking-surface, and a paper-support stationary with reference thereto, of a type-carrying block, links connecting said block with said support, two gears rigidly fastened to said block and said support, respectively, and a third gear loosely journaled to one of said links and engaging and connecting said fixed gears, said gears being adapted to automatically govern the position of said block upon its axis, substantially as and for the purpose set forth.

2. In a machine of the class described, the combination, with a suitable bed provided with inking and paper-supporting surfaces lying in parallel planes to a type-carrying block connected with said bed by links permitting oscillation of the block about the axis of connection of the links with the bed and rotation of the block about the axis of connection of the links with the block, of gears of equal diameter lying in the same plane and rigidly attached to said bed and block, respectively, and a third gear journaled to one of said links at a point intermediate between the centers of said stationary gears, said third gear being of the same diameter as the other two and in engagement with them both, whereby the successive planes of position of the working-surface of the block shall be parallel to each other, substantially as and for the purpose set forth.

3. The combination, with the bed having an inking-surface A and a paper-supporting surface A', of a shaft B, journaled in the bed, the shaft B' and links L L', connecting it with the shaft B, the plate C, hung upon the shaft B', the gears G G'', centered on the shafts B B', respectively, and rigidly fastened to the bed and the plate C, respectively, and the intermediate gear G', journaled to the link L' and connecting the fixed gears G G'', substantially as and for the purpose set forth.

410,465. HAND-STAMP. Daniel C. Stover, Prospect, Ill. Filed Mar. 6, 1889. Serial No. 302,091. (No model.)



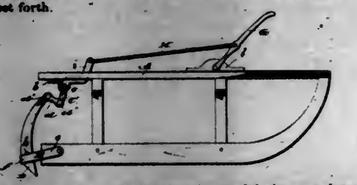
Claim.—1. In a machine of the class described, the combination, with a stationary support and an inking-pad and paper-supporting surface stationary with reference thereto, of a type-carrying block, links connecting the block with said support and pivoted to both the block and the support, two pulleys rigidly fastened to said block and said support, respectively, a band connecting said pulleys and governing the motion of one of them with reference to the other, and means for preventing all slipping of said band upon either pulley.

2. The combination, with the base, the swinging block, and the links connecting the base and block, of pulleys lying in the same plane and rigidly fastened to said base and block, respectively, and the band passing about said pulleys and connected with each of them at one point by means adapted to prevent the slipping of the band, substantially as and for the purpose set forth.

410,466. SLED-BRAKE. John P. Tabor, Henrietta, Wis. Filed June 20, 1889. Serial No. 314,955. (No model.)

Claim.—1. The combination, in a sled-brake, of the vertically-curved dogs pivotally hung at each side and each provided with an enlarged head forming a horizontal shoulder, and a horizontal yoke pivotally connected to each runner and having a vertical perforation

for the passage of a dog-shank, and a beveled key passing through a perforation in the latter to clamp the yoke on the shoulder, substantially as set forth.



2. The combination, with the slotted top, of the hangers depending therefrom, a shaft bearing therein and provided with integral arms, vertically-curved dogs pivotally connected by links with said arms, horizontal yokes pivotally connecting the dogs and runners, and arm *i*, pivoted in the slot of the top and connected to the end of said shaft, and consisting of inclined end and central portion, located as described, and a rod connecting said arm *i* and an operating-lever, said rod and lever being adapted to be thrown on a dead-center, substantially as set forth.

410,467. FELLY-BOILER. JOHN W. TAMPLIN and BENJAMIN F. HOLT, Hanna City, Ill. Filed June 15, 1889. Serial No. 314,352. (No model.)



Claim.—In a device for the purpose described, the combination, with the lamp-chamber, its hinged door, and the tank above the lamp-chamber, of the guard secured to the wall of the tank above the hinges of the said door, whereby said guard forms the triple function of protecting the hinges, a stop for the door, and a shield to prevent overflowing oil from entering the lamp-chamber, substantially as shown and described.

410,468. REACTIVE AND INDUCTION COIL. ELIHU THOMSON and EDWIN W. RICE, Jr., Lynn, Mass. Filed Apr. 6, 1887. Serial No. 233,949. (No model.)



Claim.—1. An electric coil provided with an iron sheath which covers the inner side thereof closely and is divided externally into sections, between which are air-openings communicating with the space between the sheath and coil.

2. An electric coil provided with an iron-wire sheath divided into sections at the external portion of the coil and separated therefrom by an air-space, as and for the purposes described.

3. The combination, with an electric coil and its supporting-base, of the separating blocks or feet F F, whereby free access of air to the bottom of the coil may be permitted, as and for the purpose described.

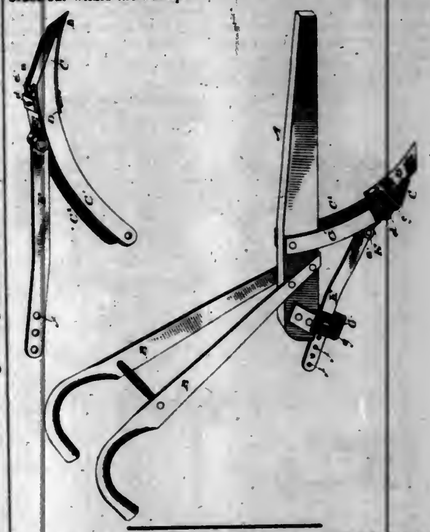
4. The combination, with the primary or secondary conductors, of the interposed separating-blocks *e e*, as and for the purpose described.

5. The combination, with an electric coil, of an iron sheath separated from the coil by an air-space and having openings, as and for the purpose described.

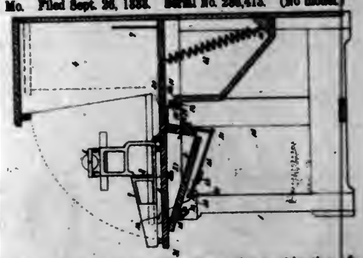
6. The combination, with an electric coil, of an iron sheath wound loosely at center and divided externally, so as to partly expose the coil to air.

410,469. PLOW. JAMES O. THOMAS and BURWELL O. HILL, Greenville, Ga. Filed Feb. 13, 1889. Serial No. 300,337. (No model.)

Claim.—The combination, substantially as hereinbefore set forth, of the narrow deep plow-beam, the bifurcated curved shank embracing at its upper end the plow-beam and hinged thereto, the flat, narrow, upwardly-curved brace-bar hinged to the curved shank at its lower end, the backwardly-inclined stirrup or downhanger secured on each side of the plow-beam at its rear end and through which the curved brace-bar extends, and devices for adjustably securing the brace-bar within the stirrup.



410,470. TYPE-WRITER CABINET. CHARLES H. TYLER, St. Louis, Mo. Filed Sept. 26, 1888. Serial No. 286,413. (No model.)



Claim.—1. In a type-writer cabinet, the combination of a receptacle and a door for the receptacle which serves as a base or support for the machine when the latter is in using position, said door being on a forward incline when closed, substantially as and for the purpose set forth.

2. In a type-writer cabinet, the combination of a receptacle for receiving the machine when not in use, a door to the receptacle which serves as a base or support for the machine when the latter is in use, and a double-acting spring connecting the door to a fixed object, substantially as and for the purpose set forth.

3. In a type-writer cabinet, the combination of a receptacle for receiving the machine when not in use, a door to the receptacle which serves as a base or support for the machine when the latter is in use, a lower extension on the door, and a double-acting spring secured by one end to the extension of the door and by the other to the body of the cabinet, substantially as and for the purpose set forth.

4. In a type-writer cabinet, the combination of a receptacle for receiving the machine when not in use, a door to the receptacle, a jointed table secured to the door, arms 20 and 22, connected to the table and hinged together, and inclined ways upon which the outer ends of the arms 22 move as said door is opened and closed, substantially as and for the purpose set forth.

5. In a type-writer cabinet, the combination of a receptacle for receiving the machine when not in use, a door to the receptacle which serves as a base or support for the machine when the latter is in using position, a table secured to the door and made in two portions hinged together, arms 20 and 22, and brackets 24, forming inclined ways having horizontal extensions 25, substantially as and for the purpose set forth.

6. In a type-writer cabinet, the combination of a receptacle for receiving the machine when not in use, a door to the receptacle which forms a base or support for the machine when the latter is in using position, a table secured to the door, arms 20 and 22, inclined ways for

receiving the outer ends of the arms, springs 27, and set-screws 28, substantially as and for the purpose set forth.

7. In a type-writer cabinet, the combination of a receptacle for receiving the machine when not in use, a door to the receptacle which serves as a base or support for the machine when the latter is in using position, a jointed table secured to the door, arms 20 and 22, hinged together, connecting-bar 23, securing the bars 22 together, projections 33 on the outer ends of the arms 22, and brackets 24, forming inclined ways, substantially as and for the purpose set forth.

8. In a type-writer cabinet, the combination of the receptacle for receiving the machine when not in use, a door to the receptacle which serves as a base or support for the machine when the latter is in using position, a jointed table secured to the door, arms 20, arms 22, pivoted to the latter, brackets 24, and stops 26, fixed to the brackets, substantially as and for the purpose set forth.

410,471. BUGGY-SPRING. JOHN D. WHIPPLE, Excelsior Springs, Mo. Filed June 20, 1889. Serial No. 315,007. (No model.)



Claim.—1. The vehicle-spring comprising the saw-horse-like disposed bars or members, the curved plates connecting said bars at one end to the side bars upon their under sides, the rod serving as a common pivoting-rod for the members or bars, and the short rods connecting said members or bars with the vehicle-bottom, substantially as specified.

2. The combination of the vehicle-bottom, the side bars, the springs comprising the crossing-bars, the pivoting-rod, the short rod connecting said bars to said bottom, the keepers guiding the upper ends of said bars, and the proximately V-shaped spring-plates connected to said bars, substantially as set forth.

410,472. RAILROAD-RAIL AND WHEEL THEREFOR. CHARLES WHITE, Washington, D. C. Filed Apr. 24, 1889. Serial No. 308,379. (No model.)



Claim.—1. A flanged car-wheel having a compound flange adjacent to its tread, said flange consisting of a solid annular shoulder *b*, and rounded teeth or cogs D, forming, with the shoulder *b*, the flange of the wheel, substantially as set forth.

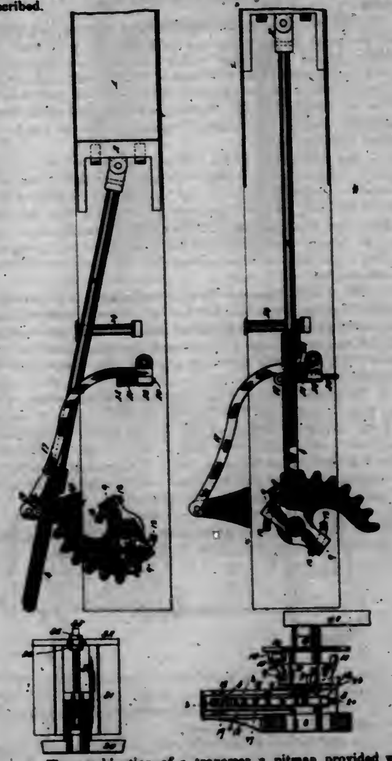
2. The combination, with the flanged car-wheel constructed as described, of the grooved rail provided with a flat or smooth face and longitudinal groove adapted to receive the flange of the wheel, said groove having equidistant transverse ribs adapted to engage the flange-teeth of the wheel, substantially as and for the purpose set forth.

410,473. RAILING-FRAME. HENRY L. WHITMAN, St. Louis, Mo. Filed Feb. 5, 1889. Serial No. 298,708. (No model.)

Claim.—1. The combination of a traverser, a pitman provided with a rack, a power-shaft, an oscillating rack-segment loosely mounted on the shaft and meshing with the pitman-rack and having a projection, a pivoted lever engaging the segment projection at one end, and a press projection against which the other end of the lever impinges, substantially as described.

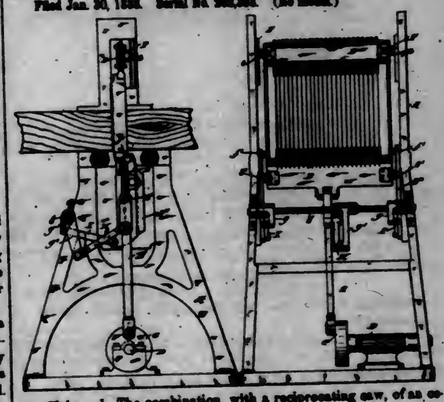
2. The combination of a traverser, a pitman provided with a rack, a power-shaft having a cross-piece rigidly secured thereto, provided with a pivoted lever, and an oscillating rack-segment loosely mounted on the shaft and meshing with the pitman-rack, having a projection with which the lever engages, substantially as described.

3. The combination of a traverser, a pitman provided with a rack, a power-shaft having a cross-piece rigidly secured thereto, provided with a pivoted lever, an oscillating rack-segment loosely mounted on the shaft and meshing with the pitman-rack, having a projection with which one end of the lever engages, and a press projection on which the other end of the lever impinges, substantially as described.



4. The combination of a traverser, a pitman provided with a rack, a power-shaft having a cross-piece rigidly secured thereto, provided with a pivoted lever formed with a lower end 12 and upper end 13, an oscillating rack-segment loosely mounted on the shaft and meshing with the pitman-rack, having a friction-roller with which the lower end of the lever engages, and a friction-roller on the press, on which the upper end of the lever impinges, substantially as described.

410,474. SAW-MILL. HENRY D. WISNER, East Saginaw, Mich. Filed Jan. 30, 1888. Serial No. 262,982. (No model.)



Claim.—1. The combination, with a reciprocating saw, of an ec-

oillating mechanism whose parts are connected or adjusted, in the manner described, to move the lower portion of the saw to a position in advance of the upper portion, and to maintain it in such position or increase the advance, as described, during the whole time that the saw is in engagement on the downstroke, as and for the purpose described.

2. The combination, in a saw-mill, of a reciprocating gate or sash moving at its upper end in a fixed slide and at its lower in a movable slide, in combination with an oscillating mechanism, substantially such as described, connected to the lower slide and adjusted or proportioned in proper manner to cause the lower portion of the saw to be in advance of the upper portion during its whole time of engagement on the downstroke of the sash or gate, as and for the purpose described.

3. The combination, with a reciprocating gate or sash in a saw-mill, of a vibrating or oscillating lower gang-slide, and an oscillating mechanism connected therewith and proportioned or adjusted so as to move the lower gang-slide in a forward direction after the reciprocating mechanism passes the quarter on the downstroke, and to continue the forward movement of the lower portion of the saw against the feed of the material during substantially the entire downstroke of the sash or gate.

4. The combination, with the oscillating gang-slide in a saw-mill, of a link H, connected at one end with a crank-arm upon the rock-shaft which oscillates the slide, and at the other end joined with the pitman E at a point above the horizontal line passing through the point of connection with the crank-arm when the pitman is at the quarter or its downstroke.

5. The combination, with the reciprocating gate or sash, of an upper slide located, as set forth, to cause the saws to stand in vertical line at the moment of engagement of the downstroke, a lower oscillating slide, a rock-shaft, a main pitman, and a pitman H, connected to the rock-shaft and to the main pitman in the manner described, so as to maintain the lower part of the saw in an advanced position after the pitman passes the quarter on the downstroke.

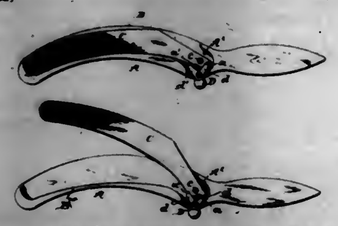
410,475. STRIKING APPARATUS. FRANK A. WIDGER, Lynn, Mass. Filed Apr. 9, 1889. Serial No. 306,695. (No model.)



Claim.—1. In a striking apparatus, the combination of a hollow bag of yielding material, an elastic or resilient standard supporting said bag, and a base or pedestal having a socket in which said standard is vertically adjustable, as set forth.

2. The combination of the flexible bag, the resilient supporting-standard, and a base having re-enforcing springs bearing on said standard, as set forth.

410,476. COMBINED CRUMB-BRUSH AND SCRAPER. BRIDGET M. WOODARD, Manchester, N. H. Filed May 4, 1885. Serial No. 164,320. (Model.)

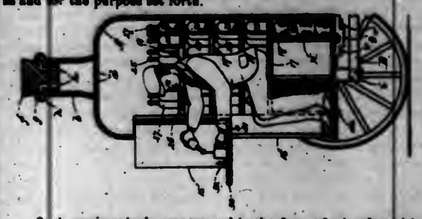


Claim.—A crumb-brush provided with a recess in its back, in combination with a scraper pivoted within said recess and provided with recesses *a a'*, and a pivoted locking-catch having projections which engage said notches, whereby the scraper is projected from and closed within the recess in the brush, all substantially as described, and for the purposes specified.

410,477. CARRIAGE-BODY. FREEMAN H. YOUNG and FRANK R. THOMPSON, Lowell, Mass. Filed May 9, 1889. Serial No. 310,126. (No model.)

Claim.—1. A carriage-body constructed in the shape of a bottle and provided in its wall with hinged doors, substantially as and for the purpose set forth.

2. A carriage-body constructed in the form of a bottle, provided with a neck and stopple having ventilated ducts therethrough, and two sets of hinged doors in the rear wall of said body, substantially as and for the purpose set forth.



3. A carriage-body constructed in the form of a bottle and having doors in its walls, in combination with an ice-chest in said body provided with an elongated detachable cover forming a seat and provided with air-openings, substantially as described.

4. A carriage-body constructed in the form of a bottle having a neck and stopple provided with ventilation-ducts, two sets of hinged doors in the wall of said body, a counter adjustable on said doors, and an ice-chest formed in said body and provided with an elongated detachable cover, substantially as described.

5. A carriage-body constructed in the form of a bottle and provided interiorly with an ice-chest and bottle-shelves having openings and two sets of hinged doors in its rear wall, said body being suspended by hangers from springs on the axle of a wheel-truck, substantially as described.

6. In a device of the character described, a body constructed in the shape of a bottle having a neck and stopple, openings from the body into said neck, ducts through said stopple and neck, hinged doors in said body, a counter detachably secured thereto, an ice-chest within the body provided with a detachable elongated cover having air-openings, and a series of shelves having openings registering with those in said cover, substantially as described.

7. The body A, having the openings *d*, neck *b*, stopple *f*, and ducts *h*, in combination with the hinged doors 15 and 16 and the counter 30, detachably secured thereto, substantially as described.

8. The body A, provided with the doors 15 and 16, in combination with the chest H, having the cover 17, provided with openings 18, and the shelves 19, provided with the openings 20, substantially as described.

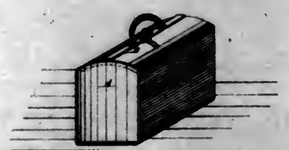
9. The body A, provided with the doors 15 and 16, in combination with the wheels B, axles *i q*, brace D, and springs *k*, and the hangers *l*, secured to said body and springs, substantially as described.

10. The wheels B and axles *i q*, connected by the brace D, in combination with the springs *k r*, bottle-shaped body A, suspended from the springs *k* by hangers *l*, and the seat C, secured to said body and spring *r* by the frame *t*, substantially as described.

11. In a device of the character described, the combination of the body A, provided with doors 15 and 16 and counter 30, the chest H, having the cover 17, the shelves 19, provided with openings 20, and the hangers *l*, for suspending said body on the springs of a wheel-truck, substantially as described.

12. The carriage-body A, constructed in the shape of a bottle, having neck *b* and stopple *f*, provided with the openings *d h*, the doors 15 and 16, the counter 30, detachably secured thereto by hooks 31 and 32, the chest H and cover 17, having openings 18, and the shelves 19, having the openings 20, substantially as and for the purpose set forth.

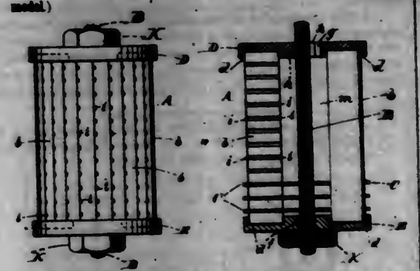
410,478. FRAME FOR TRAVELING-BAGS. OTTO ESSER, Jersey City, N. J. Filed May 20, 1889. Serial No. 312,540. (No model.)



Claim.—1. A frame for traveling-bags having single jaws, the whole of one jaw being entirely flat while the side parts of the other jaw are also flat, and the outer part of the latter having only a slight upward bend for the purpose of overlapping the outer part of the first jaw, substantially as set forth.

2. The combination, with the body of a traveling-bag, of single jaws, one of which is entirely flat, the second jaw having its side parts also entirely flat, and the outer part with only a slight upward bend to overlap the outer part of the first jaw, the jaws being hinged to the end braces of the frame by means of transverse hinge-rods, substantially as set forth.

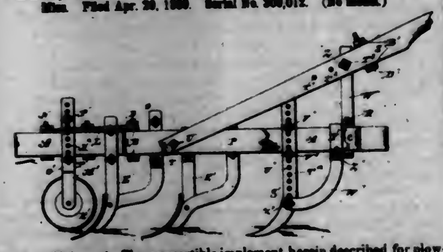
410,479. PROCESS OF MAKING METALLIC BRUSHES. DANIEL J. ARMS, Boston, Mass. Filed Dec. 6, 1888. Serial No. 292,972. (No model.)



Claim.—1. The improved process of making metallic brushes, which consists in constructing a mold from separable plates provided with slots, inserting metallic bristles through said slots so that they project into the interior of the mold, filling said mold with molten metal, which hardens around the inner ends of said bristles and forms the body of the brush, and then removing said plates, whereby the bristles are left projecting from said body, substantially as described.

2. The improvement in the art of constructing metallic brushes, which consists in inserting metallic bristles through slots formed in a mold composed of separable pieces and filling the mold with molten metal, wherein said bristles are secured when the metal has cooled and the mold is removed.

410,480. PLOW OR CULTIVATOR. HUGH G. ANDERSON, Duncan, Miss. Filed Apr. 20, 1889. Serial No. 308,012. (No model.)



Claim.—1. The convertible implement herein described for plowing, harrowing, and the like, comprising the central beam A, the cross-bars, the pivotal bolts D E, connecting the centers of the cross-bars to the beam A, the semicircular bars having the similarly-shaped slots and having their ends pivoted to the front cross-bar, the parallel beams P K, having their ends pivotally bolted to the cross-bars, the handles adapted to be attached to the center or outer bars, the brace-arms having their inner ends lapped and adjusted on cross-bars and handles, and the bar A', having its ends pivotally attached to the handles, substantially as described.

2. In a convertible implement for plowing, harrowing, and the like, the combination of the pivoted handles having the adjusting-openings T' T' T' and the openings T' T' at right angles thereto, the bar A', to connect the handles, having the pairs of extended arms B' at its ends, provided with the openings C, to register with the openings T' T', for the purpose set forth, and the brace-arms having their upper ends vertical and plane, adapted thereby to lie flush against either the inner or outer sides of the handles, and provided with the adjusting-openings T, to register with the openings T' T' T', substantially as described.

410,481. PACKING AND REFRIGERATING VESSEL. JAMES BARKER, Columbia, assignor of one-half to LUTHER L. FREEMAN, Mount Pleasant, Tenn. Filed Feb. 7, 1889. Serial No. 299,068. (No model.)

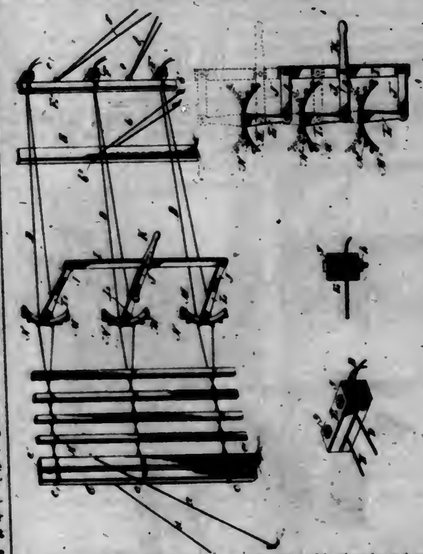
Claim.—1. In a package-receptacle, the containing-vessel having an inclined top wall portion, and a neck rising therefrom and provided with a movable cover, said vessel having a rigidly-attached and outwardly-projecting perforated flange, which, in connection with the inclined top of the vessel, constitutes an annular water-trough below the neck, in combination with the surrounding envelope having a tight cover, and an antiseptic material packed between the vessel and envelope, and on the top of which packing the rigidly-attached inclined flange bears, substantially as described.

2. A packing-refrigerator consisting of a containing-vessel having a perforated trough at its upper portion and a stationary neck located above the trough and provided with a cover, an envelope surrounding the vessel and having a tight cover, a foraminous screen closely fitting the body of the vessel below the trough, and an antiseptic substance placed under the vessel and between the sides of the envelope and the foraminous screen, substantially as described.



3. In a packing-receptacle, the combination, with a containing-vessel having an annular trough at its top portion, of a surrounding envelope having an antiseptic material packed in the space intervening between it and the vessel, a perforated turret-shaped ventilator on the perforated bottom of the can, and an annulus inclosing the perforations in the vessel's bottom, the floor of the envelope having ventilating-openings within said annulus and drip-openings outside the same, substantially as described.

410,482. FENCE-MACHINE. WILLIAM S. BARKER, Troy, Ohio. Filed July 15, 1889. Serial No. 317,697. (No model.)



Claim.—1. The twister-frame combined with the pivoted arms and the segmental heads at the outer ends of said arms provided with holding-jaws, substantially as described.

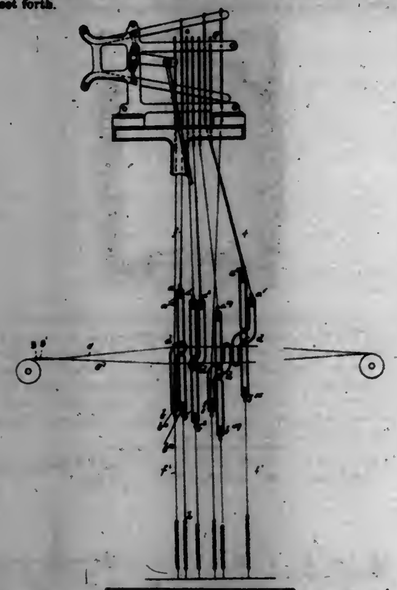
2. The combination, with the twister-frame and the pivoted arms thereon, of the segmental heads on the outer ends of said arms, and provided with a plurality of holding-jaws extending in opposite directions from the center of the heads, substantially as and for the purpose specified.

410,483. HEDDLE FOR WEAVING GAUZES. JOHN H. BENTLEY and THOMAS W. BENTLEY, Paterson, N. J. Filed Aug. 14, 1888. Serial No. 174,397. (No model.)

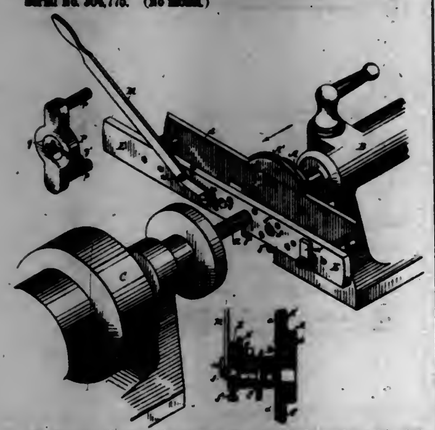
Brief.—By this arrangement of heddles the crossing of the warps is brought to the rear of all the heddles instead of between the deep heddles and the ordinary heddles, as is the case with the customary arrangement.

Claim.—In a loom for weaving gauze, the combination of four full heddles and four half-heddles for one pair of warp-threads, wherein,

as described, the first and third sets of full and half heddles work in unison in connection with one thread, and the third and fourth sets work in unison in connection with the other; substantially as shown and set forth.



410,484. MACHINE FOR CUTTING SCREW-BLANKS AND SCREWS. JOHN P. BERKHOLS, Philadelphia, Pa. Filed Mar. 26, 1889. Serial No. 304,776. (No model.)



Claim.—1. The combination, in a screw-blank-cutting tool, of the base portion and a slide adapted to slide thereon and carrying a plate on which are mounted cutting-tools, substantially as and for the purpose described.

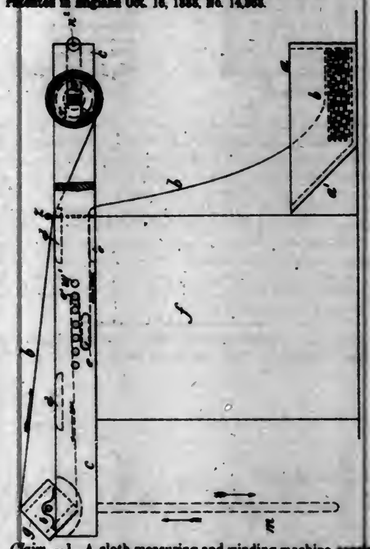
2. The combination of the base portion and a slide adapted thereto, said slide carrying a plate having a series of orifices for the insertion of the rod to be cut, with posts secured to the rear of the plate and carrying cutting-tools for reducing portions of the blank, substantially as described.

3. The combination of the base portion having undercut ways with a slide adapted to said ways and having a plate carrying the screw-cutting tool, with a series of orifices in said slide, and a pin carried by the base portion and adapted to one or other of said orifices, substantially as described.

4. The combination of the tail-stock of the lathe, the base-plate carried thereby and having a plate provided with the screw-blank cutters, the head-stock carrying the rod from which the screw-blanks are to be formed, and a handled lever pivoted to the cutter-carrying plate and carrying a cutting-tool for severing the rod, substantially as specified.

5. The combination of the tail-stock, the plate carried thereby and provided with screw-blank cutters, a screw-threading die, a carrier therefor, having arms which engage with the edges of the plate and hold the die-carrier in position thereon, and the head-stock of the lathe carrying the rod to be formed into screws, substantially as specified.

410,485. CLOTH-MEASURING MACHINE. BENJAMIN B. BOSS, London, England. Filed Mar. 11, 1889. Serial No. 302,902. (No model.) Patented in England Oct. 16, 1888, No. 14,963.



Claim.—1. A cloth measuring and winding machine consisting of a cloth-roll box, side bars connected by an upper pair and a lower pair of transverse cloth-supporting boards, a polygonal measuring frame or box having an axle provided with a flattened extension, and a measuring-chain passing around and moved by such flattened extension, substantially as described.

2. A cloth measuring and winding machine consisting of side bars, upper and lower cloth-supporting boards connecting the side bars, a polygonal measuring-frame having an axle provided with a flat extension, and the measuring-chain passing around and moved by the flat extension, substantially as described.

3. A cloth measuring and winding machine consisting of the side bars *c*, having upper and lower cloth-supporting guide-boards *d d'* and *e e*, a tension-bar *d'*, adjustable along the length of the side bars between the upper and lower guide-boards, a polygonal measuring-frame *g*, and the winding-axle *n*, substantially as described.

4. A cloth measuring and winding machine consisting of the cloth-roll box *a*, the side bars *c*, having upper and lower transverse cloth-supporting guide-boards *d d'* and *e e* and a series of sockets between the upper and lower guide-boards, a tension-bar *d'*, capable of adjustment to any of the sockets, a polygonal measuring frame or box *g*, having an axle provided with an extension *h'*, the measuring-chain *m* on the extension, and the winding-axle *n*, substantially as described.

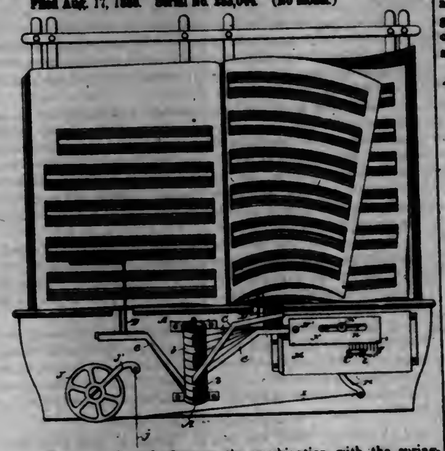
5. The combination, with the flattened continuous axle *n*, provided with two sliding clamps x^2, of the two wedges *x*, laid lengthwise on the flattened axle and clamped at their ends thereupon by the sliding clamps, substantially as described.

6. The combination, with the side bars *c* and the flattened axle *n*, journaled in the side bars and continuous from one to the other of said bars, of two wedges *x*, extending along and supported by the flattened axle, and means for detachably clamping the ends of the wedges upon the axle, substantially as described.

7. The combination, with the frame *c* and measuring-box *g*, of the flat winding-axle *n* and bearings for the ends of the axle, each bearing consisting of a sectional plate *r r*, having a slot *o* and a circular seat *r'*, and a disk *p*, fitted to and revolving on said circular seat and provided with a diametrical recess or slot *o'*, receiving the flat axle, substantially as described.

8. The combination, in a cloth-measuring machine, of the side bars *c*, the revolving plate-bearings *p*, mounted in said side bars and having slots *o'*, and the flattened winding-axle *n*, having clamps x^2, slidable along the axle, substantially as described.

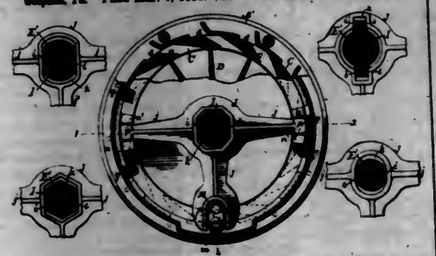
410,486. LEAF-TURNER. MARIANO BOTELLA, Mexico, Mexico. Filed Aug. 17, 1888. Serial No. 283,044. (No model.)



Claim.—1. In a leaf-turner, the combination, with the spring-actuated arms having fingers to turn the leaves, of the block having a recess to receive the projecting ends of said arms—the projections thereof extending beyond the fingers—and the sliding rack resting partly over said recess and said ends of the arms, the propelling-pawl engaging said rack and itself actuated by suitable means, a spring pressing upon said rack, and a retaining-pawl for said rack, the same being arranged for operation, substantially as set forth.

2. In a leaf-turner, the combination, with the leaf-turning arms, of a slide provided with a rack, a pivoted lever for actuating the rack, a pawl for preventing the retrograde movement of the slide, and an actuating device for temporarily depressing said pawl to permit the setting of the device, substantially as set forth.

410,487. TURBINE WATER-WHEEL. HENRY BROOMELL, Philadelphia, Pa. Filed Mar. 7, 1889. Serial No. 302,264. (No model.)



Claim.—1. The combination, in a turbine water-wheel, of a gate-ring, with an operating-yoke therefor, having arms acting on said ring, said yoke being pivoted at the center, but being free to move transversely in respect to the axis of the pivot, substantially as and for the purpose set forth.

2. The combination, in a turbine water-wheel, of the gate-ring, an octagonal pivot-block, a gate-operating yoke having arms acting on said gate-ring, and having a central octagonal opening larger in one direction than the pivot-block, and mechanism for turning said yoke, substantially as specified.

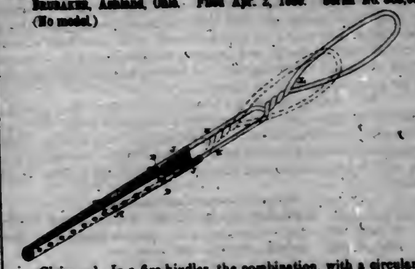
3. The combination, in a turbine water-wheel, of the gate-ring, the octagonal pivot-block, the operating-yoke having arms acting on the ring, and an octagonal opening receiving the block, but larger in one direction than the latter, and a yoke-operating shaft having an arm acting upon an arm of the yoke, substantially as specified.

4. The combination, in a turbine water-wheel, of a gate-ring having lugs or bearings, with an operating-yoke having arms fitting loosely between said lugs or bearings, said yoke being pivoted at the center, but free to move transversely in respect to the axis of the pivot, substantially as and for the purpose set forth.

5. The combination, in a turbine water-wheel, of the base and curb, the cap having a depending sleeve, the wheel-shaft passing through said sleeve, the gate-ring, and the gate-operating yoke loosely pivoted to the sleeve and having arms acting on the gate-ring, and an arm by which it is operated, substantially as specified.

6. The combination, in a turbine water-wheel, of the cap having a depending sleeve, with a collar mounted thereon, the gate-ring, the gate-operating yoke loosely pivoted on the collar and having an operating-arm, and arms for acting on the gate-ring, substantially as and for the purpose set forth.

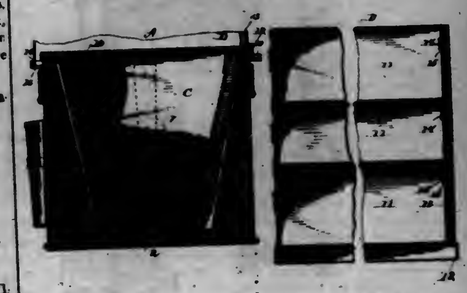
410,488. FIRE-KINDLER. ANDREW BEHRAKER and WILLIAM H. BEHRAKER, Ashland, Ohio. Filed Apr. 2, 1889. Serial No. 305,667. (No model.)



Claim.—1. In a fire-kindler, the combination, with a circular or tubular body for holding an absorbent material, having its inner end formed into a holder or a guide, of a handle which has its inner end fitting and freely sliding within the guide and its end beyond the guide provided with a stop, whereby the device is extensible and the movement of the handle limited, substantially as described.

2. In a fire-kindler, the combination of the tubular body A, in which the absorbent is placed, and which is provided with the turned-in parts or corners D, and with a circular portion at its inner end having its edges formed into holders or guides, with the handle, substantially as described.

410,489. CULINARY UTENSIL. WILLIAM J. BURNETT, Huron, Dak. Filed Aug. 13, 1888. Serial No. 282,560. (No model.)



Claim.—1. The combination, with a culinary utensil, of a superheating-chamber, a feed-pipe of uniform diameter leading thereto, and an exhaust-pipe leading therefrom, the latter pipe being of decreasing diameter from the bottom to the top and terminating in a jet-orifice, substantially as described.

2. In a cooking utensil, the combination of the casing, a hopper-shaped receptacle fitting therein, having a fixed and a false bottom forming a superheating-chamber, a pipe of uniform diameter for conveying steam from the said receptacle to the superheating-chamber, and a pipe of diminishing diameter for conveying steam from the superheating-chamber, the upper end of the said pipe terminating in a jet-orifice, substantially as and for the purpose specified.

3. In a cooking utensil, the combination of the casing, a hopper-shaped receptacle fitting therein, having a fixed and a false bottom forming a superheating-chamber, an oven on the casing, and a pipe of uniform diameter leading from the hopper-shaped receptacle to the superheating-chamber, and a pipe of diminishing diameter, having its upper end terminating in a jet-orifice, leading from the said chamber and connecting with the oven, substantially as described.

4. In a cooking utensil, the combination of the casing, a hopper-shaped receptacle fitting therein, having a fixed and a false bottom forming a superheating-chamber, an oven on the casing, a pipe of uniform diameter leading from the hopper-shaped receptacle to the superheating-chamber, a pipe of diminishing diameter leading from the said chamber and connecting with the oven, and a filling-pipe

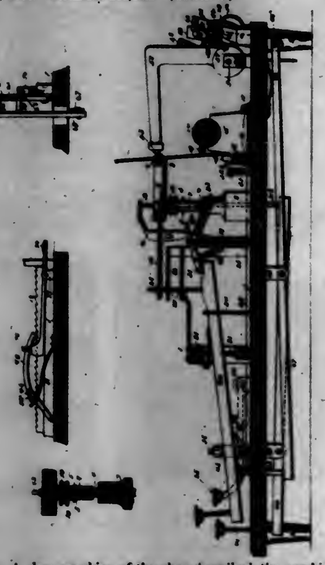
extending through the casing and hopper-shaped receptacle, substantially as described.

5. In a cooking utensil, the combination of the casing, a hopper-shaped receptacle fitting therein, having a fixed and a false bottom forming a superheating-chamber, an oven on the casing provided with a series of compartments, a pipe secured within the oven and connecting with said compartments, and a pipe of diminishing diameter, having its upper end terminating in a jet-orifice, leading from the superheating-chamber and connecting with the pipe in the oven, substantially as and for the purpose specified.

6. In a cooking utensil, the combination of the casing, a hopper-shaped receptacle fitting therein, having a fixed and a false bottom, an oven on the casing provided with a series of compartments having openings at their rear ends, a pipe secured within the oven, a series of nozzles secured thereto and engaging the openings in the compartments, and a pipe connecting with the false bottom and with the pipe in the oven, substantially as described

7. In a cooking utensil, the combination of the casing having a flange on its upper end, a hopper-shaped receptacle fitting therein, a filling-pipe connecting with the receptacle, an oven resting on the flange and provided with a series of compartments, a cover fitting over the said oven, and an escape-pipe in the cover, substantially as described.

410,490. TYPE-WRITING MACHINE. WILLIAM CABOON, Jr., Little Rock, Ark., assignor of one-half to E. L. Lefèvre, same place. Filed July 27, 1888. Serial No. 281,212. (No model.)



Claim.—1. In a machine of the class described, the combination of a standard mounted on the base and centrally bored, a spindle loosely mounted in the same, a type-segment provided with a sleeve mounted upon the spindle and adapted to rotate therewith, and a spring-arm having a pin bearing upon the top of said spindle, substantially as specified.

2. In a machine of the class described, a type-segment mounted upon a spindle and a curved arm projecting from the spindle, in combination with a slotted arm, a rock-shaft connected with the curved arm, and a key-lever for operating said rock-shaft, substantially as specified.

3. In a machine of the class described, a type-segment provided with a projecting arm and mounted upon a spindle having a projecting curved inclined arm, in combination with a rock-arm having a slot adapted to operate the curved arm, and a key-lever adapted to operate the rock-arm, and a stop to be projected in the path of the arm of the segment, substantially as specified.

4. In a machine of the class described, a pivoted platen provided with an impression end, an impelling-spring, and with cams, in combination with a spring-pressed pawl having a finger for locking over one of said cams, and a releasing-arm, and a key-lever for operating said arm, substantially as specified.

5. In a machine of the class described, a pivoted platen having a spring arranged in rear thereof and provided with cams, in combination with a locking-pawl having a finger adapted to take over one of said cams and provided with curved portions at each side of its finger, and a releasing-arm pivoted at one side of the locking-pawl and provided with a pin adapted to ride in the curved portion of the locking-pawl and release the same from the platen, substantially as specified.

6. In a machine of the class described, a pivoted platen provided with cams, a locking-pawl for the same, and a releasing-arm arranged at one side of the pawl, in combination with a releasing-arm lever and a ball for operating said lever provided with a key, substantially as specified.

7. In a machine of the class described, a pivoted spring-pressed platen provided with a pin and rearwardly-projecting cams, a spring-pressed locking-pawl provided with curved faces, and an intermediate finger for taking over one of the cams, in combination with a releasing-arm having pins, one for liberating the platen from connection with the locking-pawl and one for contact with the rearwardly-projecting pin of the platen, whereby the latter is returned to a locked position, substantially as specified.

8. In a machine of the class described, the standard 3, centrally bored, having the spindle 4 mounted therein, provided with the arm 35, in combination with the bail 31, rock-shaft 30, the rock-arm 33, slotted, as at 34, and connected to said arm, and the key-lever 20, substantially as specified.

9. In a machine of the class described, the platen 52, mounted in standards 55, notched, as at 57, having the spring 56, arms 73, and cams 58 and 59, in combination with the locking-pawl 60, having the spring 64, curved faces 60 and 63, and finger 61, and the releasing-arm 69, having the pins 70 and 71 for operating the same, substantially as specified.

410,491. BODY FOR DRAYS. HOMER W. CASE, South Bend, Ind. Filed July 11, 1889. Serial No. 317,153. (No model.)



Claim.—1. The herein-described dray-body composed of metallic and wooden bars arranged alternately in the longitudinal plane of the body, for the purpose and substantially as specified.

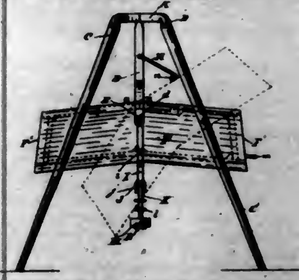
2. A dray-body composed of metallic flanged bars and wooden bars laid alternately and united, substantially as and for the purpose specified.

3. In a dray-body, the combination of longitudinal metallic I-bars and longitudinal wooden bars arranged alternately, with the devices for binding the same together laterally, all substantially as specified.

4. The combination of the wooden bars, the metallic bars laid alternately therewith and projecting at rear beyond the ends of the wooden bars, and the rod or bolt passing through the projecting ends of the metallic bars, substantially as and for the purpose specified.

5. The herein-described dray-body, composed of wooden bars and metallic I-shaped bars arranged alternately and parallel with the length of the body, said metallic bars projecting at rear beyond the wooden bars, with the devices for binding said bars together laterally, and the bolt passing through the projecting ends of said metallic bars, for the purpose and all substantially as set forth.

410,492. CHURN. SAMUEL D. CHERRY, Seneca, S. C. Filed May 4, 1889. Serial No. 309,622. (No model.)



Claim.—1. The combination, with a hanger having depending arms embracing the churn-body and the body having top and bottom inclined downwardly from center to ends and inwardly-inclined ends and the transverse angular ribs therein of the pendulum-rod removably connected to the body and having adjustable weights, substantially as specified.

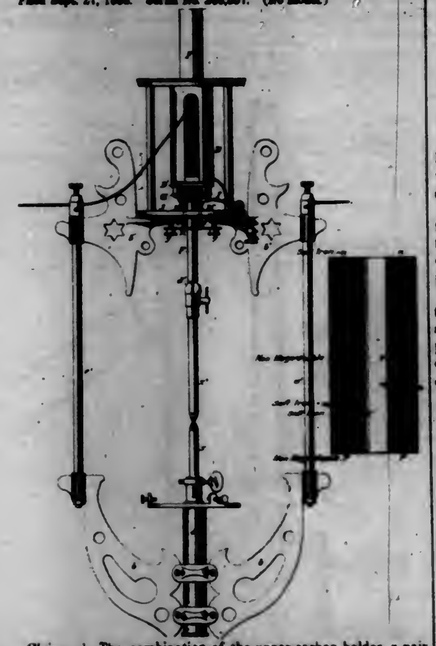
2. The combination of the body having its top and bottom inclined upwardly from both ends to the center and inwardly-inclined ends, the transverse angular ribs at the corners thereof, the central angular rib on its bottom, and the two angular ribs on its top at each side of the door-opening, with the pendulum removably connected to the bottom of the body having bottom and intermediate weight-catches and the weights thereon, all substantially as specified.

3. The combination of the body F, having its bottom and top inclined upwardly from ends to center, the transverse ribs *c*, A, and H therein, and the door thereof, with the U-shaped iron I secured thereto, the pendulum-rod connected to said iron, the weights thereon, and the hanger D, having arms *d d*, provided with key-slots, all substantially as described.

4. The combination of the folding support A and hanger D, suspended therefrom, with the body F, having inclined top and bottom, the angular ribs A A and H H, secured transversely therein, the iron I, embracing the body and having trunnions on its ends engaging the hanger, and a depending loop, and the pendulum loosely engaging said loop, all substantially as and for the purpose specified.

5. The combination of the support A, composed of arms B and hinged legs C, and the hanger D, suspended therefrom, having arms *d d*, provided with key-slots *e e*, and the body F, having its top and bottom inclined upwardly from ends to center, the transverse angular ribs *c* A A H H therein, and inclined ends F', with the iron I, embracing the body, having trunnions *i*, depending loop J, the pendulum-rod K, engaging said loop and having weight-catches L and *l*, and the weights on said rod, all substantially as and for the purpose specified.

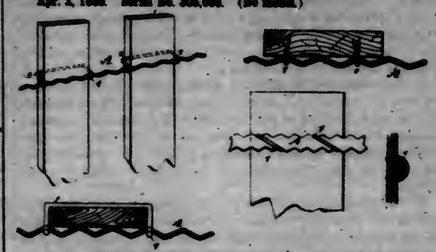
410,493. ELECTRIC-ARC LAMP. ROBERT L. COUSE, Camden, N. J., assignor of one-half to William P. Anderson, Philadelphia, Pa. Filed Sept. 27, 1888. Serial No. 286,567. (No model.)



Claim.—1. The combination of the upper-carbon holder, a pair of gripping-levers therefor, the upper arms of said levers having gripping-jaws for engaging with the rod and having inclined or flaring outer faces, a magnet having an armature with closing-plate for engaging with said inclined outer faces of the levers, a carrier for said levers, and stops for engaging with the lower arms of the levers and limiting the descent of the same, substantially as specified.

2. The regulating-magnet consisting of an inner tubular shell, an outer shell having openings in opposite sides, so that it forms a horse-shoe-magnet, a piece of magnetizable metal connecting the inner and outer shells at the top, and the wire wrapping interposed between the inner and outer shells, substantially as specified.

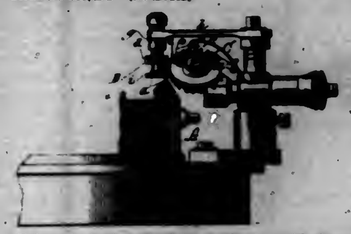
410,494. FENCE. JAMES H. CRANE, Mounds Junction, Ill. Filed Apr. 2, 1889. Serial No. 305,993. (No model.)



Claim.—1. In a fence, the combination, with a cable transversely crimped or corrugated throughout its length and pickets, of a series of loops for securing each picket to the cable, the said loops embracing the cable in the depressions thereof, substantially as set forth.

2. In a fence, the combination, with a wire transversely crimped or corrugated throughout its length, of removable staples or loops embracing the cable at the depressions thereof and passing around the pickets, substantially as set forth.

410,495. KNITTING-MACHINE. JOHN H. CRANE, Lake Village, N. H., assignor to J. H. Crane & Co., same place. Filed Jan. 28, 1887. Serial No. 225,454. (No model.)

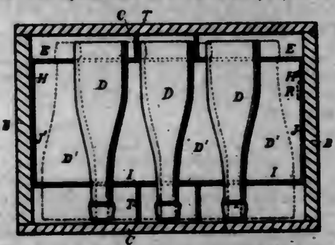


Claim.—1. A wing-wheel in combination with the needles of a knitting-machine, and an oppositely arranged or counter-feeding-in wheel or burr, substantially in the manner and for the purpose herein specified.

2. The combination of the needles *a a* of a knitting-machine, a feeding-in wheel C, having plates *c c* in pairs, substantially as specified, and a wing-wheel D, having wings *d d*, meshing with the plates of the said feeding-in wheel or burr, substantially as and for the purpose herein specified.

3. The combination of the needles *a a* of a knitting-machine, a feeding-in wheel C, having plates *c c*, in pairs or groups, substantially as specified, a wing-wheel D, having wings *d d*, meshing with the plates of the said feeding-in wheel, and the gear-wheel *i* on the spindle of the wing-wheel and meshing with the needles of the needle-cylinder, substantially as and for the purpose herein specified.

410,496. PACKING-CASE FOR BOTTLES. SIMEON G. CURTISS, Rochester, N. Y., assignor to the Curtiss Brothers Company, of New York. Filed Apr. 26, 1889. Serial No. 308,503. (No model.)



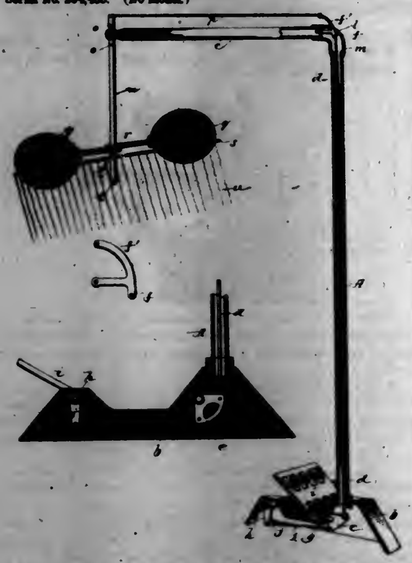
Claim.—1. The combination, with the packing-case, of the perforated partition E, formed in one piece with the flanges F F' H H', and the perforated partition I, formed in one piece with the flanges J J' L L', the said partitions being arranged parallel with each other at suitable distances from the top and bottom of the case, and one set of the flanges extending inward on opposite sides of the case until they meet, and the other set outward to the top and bottom of the case respectively, substantially as described.

2. The combination, with the packing-case, of the perforated partitions E I, arranged parallel to each other at suitable distances from the top and bottom of the box and having bent flanges extending along opposite sides of the case until they meet, and the centrally-located supports T, adapted to prevent the partitions from bending outward, substantially as described.

3. The combination, with the packing-case, of the removable partitions E I, extending parallel to each other at suitable distances from the top and bottom of the case, and having perforations adapted to support the bottles in reversed positions, and provided with integral flanges at their opposite extremities extending in opposite directions along the sides of the case until they meet, substantially as described.

4. The combination, with the packing-case, of the removable partitions E I, extending parallel to each other at suitable distances from the top and bottom of the case and having perforations adapted to support the bottles in reversed positions, and provided with integral flanges at their opposite extremities extending in opposite directions and interlocking at their meeting edges, substantially as described.

410,497. PORTABLE FAN. WILLIAM H. CURTICE, Louisville, Ky., assignor to the Portable Fan Company, same place. Filed Dec. 24, 1888. Serial No. 294,485. (No model.)



Claim.—1. The combination, with a hollow base, a hollow standard, and an arm projecting from the upper end of said standard, of a foot-treadle mounted on the base, a link and lever located within the base and connected to the treadle, a rod located within the standard, and a fan supported by the projecting arm and connected to the rod, substantially as set forth.

2. The combination, with a base, a hollow standard detachably connected thereto, and a laterally-projecting arm detachably secured to the standard, of a treadle, a rod located within the hollow standard and operated by the treadle, and a fan actuated by said rod, substantially as set forth.

3. The combination, with a hollow base, a hollow standard secured thereto, and an arm projecting from said standard, of a treadle mounted in the base, motion-transmitting devices consisting of a crank, link, and lever, located within the base, a lever located within the laterally-projecting arm and provided with a projecting portion extending through a slot in said arm, a rod located within the standard and connected to the motion-transmitting devices in the base and to the lever in the laterally-projecting arm, a fan pivoted to the free end of said arm, and a link connecting the lever and fan, substantially as set forth.

410,498. TUBULAR CONDUCTOR FOR ELECTRIC RAILWAYS. LEO DAFT, Plainfield, N. J. Filed Jan. 7, 1886. Renewed May 4, 1889. Serial No. 272,264. (No model.)

Claim.—1. An electrical conductor consisting of a tube, composed of two sections having projections on one side clamped together and separated at the opposite edges to form a longitudinal slot, substantially as set forth.



2. An electrical conductor consisting of two flanged sections, with the flanges clamped together and the opposite edges separated and adapted to receive and retain a traveling contact-piece, substantially as set forth.

3. A tubular electrical conductor provided at one side with a longitudinal slot and at the other with a longitudinal rib for attachment to the support, substantially as set forth.

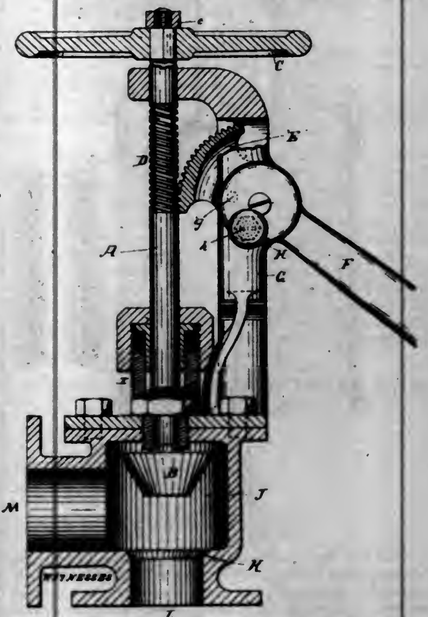
4. A conductor consisting of two sections having flanges *f f e e*, substantially as and for the purpose set forth.

5. The combination, with a tubular electrical conductor, of a support provided with clamping-jaws engaging between them a rib or projection upon the conductor and clamping devices which permit them to be opened without being disconnected from each other, substantially as set forth.

6. The combination, with the conductor, of a traveler provided with a cylindrical body, lateral shank, and curved supporting contact-springs arranged longitudinally and secured to the said body at or near their centers only, and having their ends free so as to be in constant contact with the conductor, substantially as and for the purpose set forth.

7. The combination, with the tubular conductor having a slot at one side, of a traveler or contact-piece within the conductor provided with a lateral shank and springs connected thereto at or near the center and free at the ends, and forming a yielding support for the traveler and of a length greater than twice the diameter of the conductor, whereby the traveler is prevented from cramping and conforms to inequalities of the interior of the conductor, substantially as described.

410,499. SCREW AND SLIDE VALVE. DE LEON DAVIS, San Antonio, Tex. Filed Apr. 27, 1889. Serial No. 308,806. (No model.)



Claim.—1. In a valve, the main casing provided with a valve-seat and having a vertical arm rigidly secured thereto, in combination with a geared sector operated by a hand-lever and a valve-stem and valve, all constructed and combined to operate substantially as and for the purpose specified.

2. In a combination slide and screw valve, the valve-casing and valve-seat and vertical perforated arm having a geared sector provided with a stop for holding it rigidly in place when used as a nut, in combination with a valve-stem screw-threaded between its ends and provided with a valve, substantially as and for the purpose specified.

3. In a valve of the character described, the combination of a valve-casing and a pivoted lever-arm and geared sector and a vertical arm perforated at the top with a screw-threaded valve-stem extending through the perforation in the arm and provided with a stuffing-box outside the valve-casing, substantially as and for the purpose specified.

410,500. CORN-HARVESTER. LEWIS A. DAVIS, Delaware, Ohio, assignor to the Delaware Corn Harvester Company, same place. Filed Dec. 28, 1888. Serial No. 294,672. (No model.)



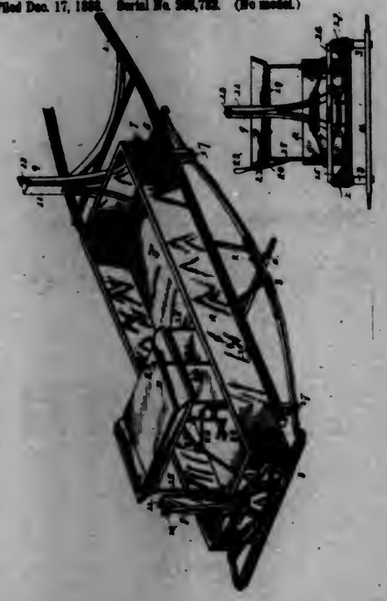
Claim.—1. The combination, with the platform and the swinging jib, of the pivoted levers, the operating-lever, and the toggle-levers connecting the operating-lever with the said jib, substantially as described.

2. The combination, with the platform, the swinging jib, and the bars G and G', of the operating-lever connected with the jib, and the rod I, connecting the said lever with one of the said bars, substantially as shown.

3. The combination of the platform, the swinging jib, the bars connecting the jib with the platform, the operating-lever, the toggle-levers connecting the operating-lever with the said jib, the slotted rod connected with the operating-lever, and the pin projecting from one of the bars and working in the slot of the said rod, substantially as set forth.

4. The herein-described corn-harvester, composed of the platform having knives on its front end arranged obliquely to the line of draft of the machine, the runners, the vertically-adjustable wheels, the swinging jib, the operating-lever, the toggle-levers connecting the jib with the said lever, the slotted rod connected with the lever, and the pin projecting from one of the jib-supports and working in the slot of said bar, substantially as described.

410,501. ROAD-CART. WILLIAM R. DUNN, Stuart's Draft, Va. Filed Dec. 17, 1888. Serial No. 293,732. (No model.)



Claim.—1. In a road-cart, the combination of the body, the body-springs, standards secured to the body-springs and extending above the body, and standards secured to the body and having a pivotal connection with the standards on the body-springs, substantially as described.

2. In a road-cart, the combination of the body-springs, the standards secured thereto, and the body pivotally connected to the said standards, substantially as described.

3. In a road-cart, the combination of the body-springs, the standards secured thereto, the body, and the standards secured to the body and pivotally secured to the standards on the body-springs, substantially as described.

4. The combination, with the shafts, of a U-shaped brace secured thereto, bow-shaped springs secured to the said brace and to the axle, and cross-pieces secured to the ends of the bow-shaped springs for carrying the body-springs, substantially as described.

5. In a road-cart, the combination of the body-springs, the A-shaped standards secured thereto, provided with openings at their upper ends, the body, and standards secured to the body and having arms at their upper ends for engaging the openings in the A-shaped standards, substantially as described.

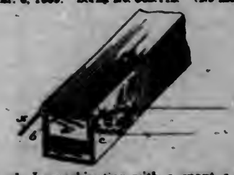
6. In a road-cart, the combination of the axle, the bow-shaped springs secured thereto, the cross-pieces secured to the said springs, the body-springs on the cross-pieces, the standards on the body-springs, and the body pivotally connected to the said standards, substantially as described.

7. In a road-cart, the combination of the axle, the bow-shaped springs secured thereto, the cross-pieces secured to the said springs, the body-springs on the cross-pieces, the standards on the body-springs, the body pivotally connected to the said standards, and the coiled springs secured to the shafts and body, substantially as described.

8. In a road-cart, the combination of the axle, the bow-shaped springs secured thereto, the shafts above the said springs, and the stops secured to the shafts and passing around the bow-shaped springs, substantially as and for the purpose specified.

9. In a road-cart, the combination of the seat, a rack-plate secured thereto, a locking-arm the lower end of which is provided with a crank, a jointed rod secured to the seat and to the body of the cart, and a rod connecting the said jointed rod and crank on the locking-arm, whereby when the locking-arm is moved the seat will be elevated or depressed, substantially as described.

410,502. SIGNAL FOR MILLS. WILL H. DONNER, Columbus, Ind. Filed Mar. 6, 1889. Serial No. 302,112. (No model.)



Claim.—1. In combination with a spout, a plate pivoted within the same, an arm *f*, extending to the outside connected to or forming a part of said plate, and an electric circuit including an alarm, the movement of said arm *f* being adapted to close the said circuit and sound the alarm, substantially as described.

2. In combination with a spout, a plate pivoted within the same, an arm *f*, extending to the outside, an electric circuit including an alarm, the said circuit being closed by the movement of said arm, and an extension *x* outside the spout and in connection with the pivotal plate, whereby the position of said plate is indicated by the position of the said extension, substantially as described.

410,503. BLOW-PIPE. LORENZO DOBE, Gloversville, N. Y. Filed July 11, 1888. Serial No. 279,611. (No model.)



Claim.—1. In a burner, the combination of the reservoir provided with a suitable inlet-tube and the independent combustion-tube provided with air-supply openings G G, and communicating with the

reservoir through small apertures arranged out of the plane of the said air-supply openings, substantially as specified.

2. In a burner, the combination of the reservoir, the independent combustion-tube provided with air-supply openings G G and communicating with the reservoir through the perforations M M, which are arranged out of the plane of the openings G, and the air-pipe tip passing longitudinally through the combustion-tube between the said perforations M M, and extending to the end of said tube, substantially as specified.

3. In a burner, the combination of the reservoir, the combustion-tube communicating with the reservoir through the perforations M M, which are arranged, respectively, above and below the center of the said combustion-tube and provided on opposite sides with air-supply openings G G, the air-pipe affixed to the reservoir and provided with a tip which passes through the upper end of the reservoir, passes between the perforations M M, and extends concentrically through the combustion-tube nearly to its outer end, and the flexible tube connected to the blow-pipe and provided with a suitable mouth-piece, substantially as specified.

4. In a burner, the combination, with a suitable base or support A, provided on its upper side with the registering bearings B B, of the horizontal inlet-tube mounted in the said bearings, the reservoir arranged perpendicular to the inlet-tube, the combustion-tube communicating with the upper end of the reservoir and having an air-pipe tip arranged longitudinally therein, and the sprag bearing against the under side of the inlet-tube and adapted to hold the same in the desired position, substantially as specified.

5. The base A, provided with bearings B B, combined with a transverse tube C, mounted in the said bearings, the combustion-tube communicating with the reservoir, and the blow-pipe connected to the combustion-tube, substantially as specified.

410,504. ATTACHMENT FOR GAS-STOVES. BENTON G. DOSCH and FRANK C. SAWHILL, Allegheny, Pa. Filed Aug. 10, 1887. Renewed Feb. 19, 1889. Serial No. 300,466. (No model.)



Claim.—The combination, with an attachment for gas-stoves, consisting of an inverted box or hood, of a longitudinal damper hinged at its upper edge to the back of the top plate of the attachment, and a handle in the back of the top plate, the lower end of which is provided with a horizontal arm adapted to engage with the damper when the upper end of the handle is operated.

410,505. CIRCULAR-KNITTING MACHINE. JAMES I. BOX, Kutztown, Pa. Filed Dec. 22, 1887. Serial No. 258,716. (No model.)

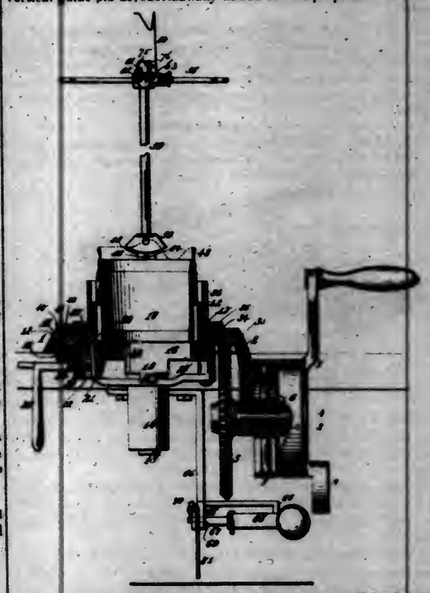
Brief.—The objects of the invention are to provide improved means for securing and vertically adjusting the needle-cylinder to vary the length of the stitch without stopping the machine, and to provide a novel thread-carrier.

Claim.—1. The combination of the frame or bed having a depending guide-pin, a needle-cylinder, a horizontal arm or bar having a cam on its under surface and provided at one end with a sleeve for engaging said guide-pin, and at its other end with a solid unsplit ring for supporting the needle-cylinder, and a lever acting on said cam to raise and lower the needle-cylinder and its support, substantially as described.

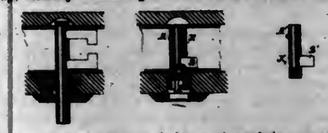
2. The combination, with the needle-cylinder, cam-cylinder, and loose cam-cylinder gear, of an adjustable thread-carrier mounted on said gear, said thread-carrier comprising an arm 53, provided with a perforation 54, and an indentation 55 on each side of said perforation, the pivoted plate 51 having a stud 56 to engage said perforation or indentations, and the spring 57, substantially as described.

3. The combination of the frame 1, the cam-cylinder 35, the needle-cylinder 18, the solid vertically-movable ring 16, for supporting the needle-cylinder, said ring being provided with recessed annular flange 17, slot 22, and lug 26, the sliding segmental clamp 20, having shank 21, the spring 23, and the thrust-pin 24, substantially as described

4. The combination of the main frame 1, provided with concentric flanges and an annular chamber between the flanges, an annular gear running in said chamber, a cam-cylinder bearing on the frame and loosely connected with the gear, a vertically-movable horizontal bar 15, having a ring 16, and provided on its under side with the cam-surface 27, the needle-cylinder 18, resting on the ring, a horizontally-swinging lever 28, pivoted at one end to the main frame to engage the cam-surface for raising and lowering the horizontal bar, its ring and the needle-cylinder, and provided at or near its other end with a vertical guide-pin 29, substantially as and for the purposes set forth.

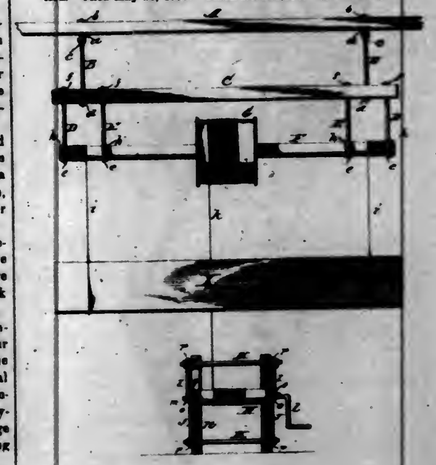


410,506. KEY-HOLE GUARD. FRIEDRICH RICHE, Sebnitz, Saxony, Germany. Filed Aug. 8, 1888. Serial No. 282,263. (No model.)



Claim.—A removable key-hole guard consisting, essentially, of a sleeve having a pair of peripheral slots extending partially around the same, and a core loosely located and adapted to rotate in said sleeve and provided with a pin extending through one of said slots and with a key-bit extending through the other slot, the outer end of the core being formed to receive a key to turn the same, substantially as described.

410,507. HOISTING APPARATUS. WILLIAM T. FAIN, Lead Hill, Ark. Filed May 21, 1889. Serial No. 311,557. (No model.)



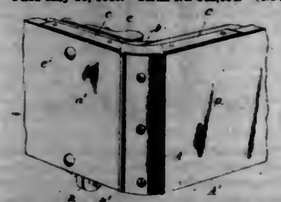
Claim.—1. In a hoisting apparatus, the combination, with a suitable windlass, of a beam C, connected to a support by hanger-rods B and the eyebolts *e*, and the roller F, suspended from the beam and carrying drum G, and the hoisting-ropes passing around the roller and drum, substantially as and for the purpose set forth.

2. In a hoisting apparatus, the beam C and means for suspending it from a suitable object, in combination with the hangers D E, connected to the beam and provided with rings *e*, to serve as bearings, the roller F, having its ends supported by the rings of the hangers and carrying drum G, the ropes extending around the roller and drum, and a suitable windlass to which the rope of the drum is connected, substantially as and for the purpose specified.

3. In a hoisting apparatus, the combination, with a suitable windlass, of the frame for supporting the same, consisting of the supporting-rods I J, having eyes on their ends, and the horizontal brace-rods K, having their ends passing through the eyes of the supporting-rods, substantially as and for the purpose specified.

4. In a hoisting apparatus, the hanger-rods B and eyebolts *e*, as a means for supporting the beam C, the hangers D E, having the rings *e*, and the roller F, carrying drum G, in combination with the windlass H and the frame for supporting same, consisting of the horizontal brace-rods K and the supporting-rods I J, having eyes at their ends, substantially as and for the purpose set forth.

410,508. WAGON-BODY CORNER. HORACE S. FAIRBANKS, Racine, Wis. Filed May 29, 1889. Serial No. 312,651. (No model.)



Claim.—1. The wagon body or box and corner iron or piece having a rounded or convex outer surface and connected to a cleat or post adapted to be fitted at the corner-joint of the body or box, substantially as set forth.

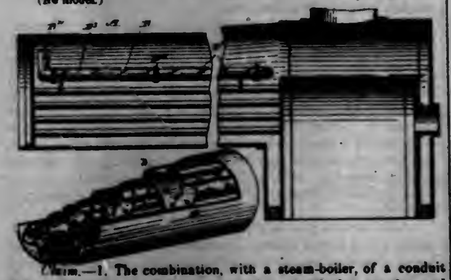
2. The corner piece or iron having a rounded or convex outer surface and an inner curved or concave surface and its securing-cleat, substantially as set forth.

3. The corner piece or iron having an outer rounded or convex surface and an inner concave surface and the post or cleat having one side edge beveled or chamfered and the opposite side edge rabbeted, substantially as set forth.

4. The combination, with the corner-piece, the end gate, and panel of the vehicle-body, of the bracket secured to the cleat of the said corner-piece and having at each end an offset or plate, one plate or offset entering a recess or gain in the edge of the bottom frame and having a hinge-connection with said frame, the offset or plate at the other end of the bracket having a hook-and-eye connection with the end-gate, substantially as set forth.

5. The combination of the corner piece or iron having an outer rounded or convex surface, the post or cleat having one side edge beveled and the opposite side edge rabbeted, and the square or bevel ended panels fitting the cleat or post, one of said panels entering the rabbet of said post or cleat and the corner iron or piece, substantially as set forth.

410,509. WATER-PURIFIER AND SCALE-ARRESTER. BENJAMIN F. FIELD, Chicago, Ill. Filed Mar. 28, 1889. Serial No. 305,123. (No model.)



Claim.—1. The combination, with a steam-boiler, of a conduit B, located within the boiler, connected to the feed-water pipe, and having a discharge pipe or orifice within the boiler, said conduit being provided with a series of tubes arranged within and extending longitudinally thereof, substantially as described.

2. The combination, with a steam-boiler and a conduit B, horizontally disposed within the boiler and connected to the feed-pipe at one end and provided with a discharge-pipe at the opposite end above the water-line, of a series of corrugated tubes open at both ends and contained one within another, said tubes being longitudinally disposed within the conduit B, substantially as described.

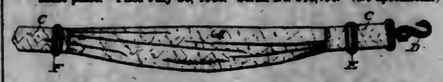
3. In combination with a steam-boiler and the feed-pipe thereof, a conduit B, connected to the feed-pipe and provided with a discharge above the water-line, said conduit being composed of a series of separate pipes or sections detachably secured together, and one or more of said sections provided with a series of open-ended corrugated tubes held in position within and longitudinally of the section by a transverse bolt, with spacing devices for holding the several tubes separated, substantially as and for the purpose set forth.

4. The combination, substantially as described, with the boiler and feed-pipe, of the sectional conduit B, composed of a series of outer pipes or sections provided with non-scaling surfaces and a series of removable internal tubes or plates composed of materials, such as iron or steel, for which the scale-forming materials contained in the water manifest an affinity, as and for the purpose set forth.

5. The combination, with a steam-boiler and with the feed-water pipe, of a conduit B, provided with a discharge-pipe, opening within the boiler, said conduit being composed of an outer tube and a series of inner tubes arranged one within another and disposed longitudinally of the outer tube, said inner tubes being open at both ends and perforated, as and for the purpose set forth.

6. In a conduit for conveying and heating the water and delivering the latter into a boiler, an outer tube and a series of inner tubes arranged one within another, said inner tubes being composed of corrugated and perforated plates open at both ends and held in place within the outer tube, a transverse bolt passing through all of the tubes, with devices interposed between the inner tubes to hold them apart, substantially as and for the purpose set forth

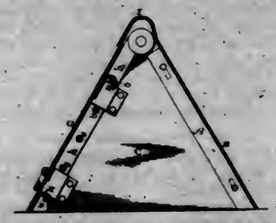
410,510. COMBINED SASH AND BELT. THOMAS J. FLAGG, New York, N. Y., assignor to himself, Henry C. Flat, and Thomas R. Clark, same place. Filed July 26, 1889. Serial No. 318,750. (No specimens.)



Claim.—1. As a new article of manufacture, the combined sash and belt constructed substantially as described, of a central sash gathered and secured at its ends to comparatively narrow strips, serving as a continuation thereof and having suitable detachable fastening devices to unite them.

2. The combination, with the end belt-pieces C C, formed of comparatively narrow strips and provided with detachable devices for uniting them, of the interposed wide sash-piece A, left free and full in the middle and gathered in folds at each end for attachment to said narrower belt-pieces C C, substantially in the manner and for the purpose herein set forth.

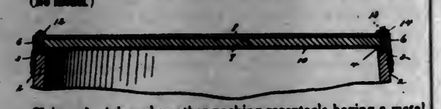
410,511. FOLDING COOP. PATRICK FOGARTY, Oxford, Ohio, assignor of one-half to Owen McCoy, same place. Filed May 13, 1889. Serial No. 310,522. (No model.)



Claim.—1. In a folding coop, the combination of the hinged end pieces, the back secured thereto having its upper end curved over the top of the coop and left open at the ends for ventilation, with the triangular end pieces, and the rods or slats connecting the front end pieces and forming the front of the coop, substantially as described.

2. In a folding coop, the combination of the end pieces hinged together at their upper ends, the back secured thereto having its upper end curved over the top of the coop and left open at the ends, the triangular end pieces, the rods or slats connecting the front end pieces, and the removable metallic plate provided with hooks for catching over the rods, and which closes the front of the coop at night, substantially as described.

410,512. COVER FOR PACKING-VESSELS. LUTHER I. FRIERSON, Mount Pleasant, Tenn. Filed Feb. 5, 1889. Serial No. 298,760. (No model.)

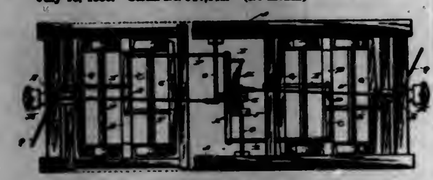


Claim.—1. A barrel or other packing-receptacle having a metal hoop or binding flush, or nearly so, with its edge, metallic plates fastened to said hoop and bent inward over the same to lie in recesses in the edge, said plates receiving headed bolts, and a cover having apertures and bolts extending through the same, and means engaging said bolts for forcing the cover against the edge of the receptacle, substantially as described.

2. A barrel or other receptacle having a metallic hoop or binding flush, or nearly so, with its upper edge, metallic plates riveted to said hoop, bent over the same and lying in recesses in the edge, a cover having a packing-annulus and provided with a metallic frame or spider which receives the heads of the bolts lying under the metallic plates on the hoop, said bolts passing up through the plates and openings in the cover and frame or spider, and means engaging the bolts for forcing the cover against the edge, substantially as described.

3. The combination, with a barrel or other packing-receptacle having a metallic hoop riveted to the upper edge, said hoop provided with metallic plates bent inward over its edge and lying in recesses in the edge of the vessel, of a cover having a spider fastened to its upper face and provided with apertures in the ends of the arms of the spider, which receive bolts whose heads lie under the inwardly-bent plates and which pass through holes in the plates and the cover, and nuts turned on said bolts, substantially as described.

410,513. CAR-BRAKE. HENRY GALLAGER, Savannah, Ga. Filed July 10, 1889. Serial No. 317,012. (No model.)



Claim.—1. The combination, with a car, a brake mounted thereon, a spring adapted to force the brake against the wheels, and a sliding draw-bar connected with the brake to overcome the force of the spring and carry the brake from the wheels, of draw-bar locking mechanism, a cord passing from end to end of the car through the upper part thereof, and a lock-actuating rope connecting said locking mechanism with said cord, substantially as and for the purpose set forth.

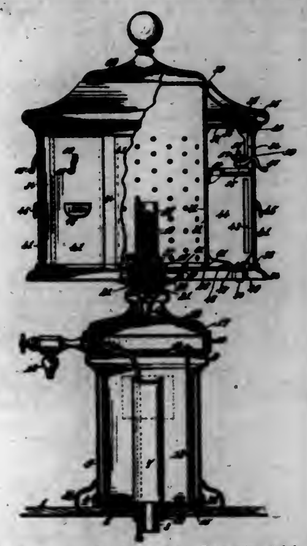
2. The combination, with the car and truck frames and the swinging brakes G, of the transverse bar B, the lever pivoted thereon, a spring connected to said lever to draw the brakes against the wheels, and a sliding draw-bar connected with said lever to draw it in the opposite direction, substantially as set forth.

3. The combination, with the car, of the swinging brake suspended to swing against the car-wheels, the lever H, pivotally suspended between the brakes and having its ends connected with them, respectively, the spring K, fixed alongside the lever, the link L, connecting the free end of the spring to one end of said lever, and the sliding draw-bars connected, respectively, to the ends of the lever to overcome the force of the spring, substantially as and for the purpose set forth

410,514. APPARATUS FOR DISPENSING EFFERVESCING DRINKS. WILLIAM GEE, New York, N. Y. Filed May 23, 1889. Serial No. 311,848. (No model.)

Claim.—1. In apparatus for dispensing effervescing drinks, the combination, with a container having an ice-chamber in which the coils are arranged, of a supporting cap or cover having a seat, a stem or spindle, and a cup-flange, all formed in one casting, and a rotating siruping apparatus contained in a casing pivotally mounted upon said seat and stem, substantially as described.

2. In an apparatus for dispensing effervescing drinks, the combination, with an ice-container in which the pipe-coils are arranged, of a cap or cover having a seat, a stem or spindle, and a flange, all formed of a single integral casting, a siruping apparatus contained in a casing pivotally mounted upon said stem and seat and having openings in its base discharging into the cup-flange, and thence through openings in the seat into or upon a diverting-plate which conducts the drip to the inner face of the container, substantially as described.



3. In an apparatus for discharging effervescing drinks, a siruping apparatus contained within a casing or chamber inclosed in front by a series of panels resting at their lower ends within a circumferential rib or flange, and upon the inner faces of which the sirup-jars are detachably mounted, substantially as described.

4. In an apparatus for dispensing effervescing drinks, the combination, with the casing, of a series of separate panels resting at their lower ends within a channel on the base of the casing, each panel being provided on its interior face with flanges or tangs, and sirup-jars having grooves terminating at a short distance from their inverted bottoms, and in which the flanges lie, substantially as described.

5. In apparatus for dispensing effervescing drinks, the combination, with a casing, of a series of separate panels inclosing its front, each panel having its lower edge lying in a channel in the base of the casing, a series of inverted sirup-jars detachably mounted upon the inner faces of said panels and having valves carried by stems projecting through their inverted bottoms, and weights adjustably mounted on the projecting ends of the valve-stems, and actuating-levers inserted through openings in the panels and engaging the valve-stems beneath said weights, substantially as described.

6. In apparatus for dispensing effervescing drinks, the combination, with a casing, of a series of separate panels inclosing its front, a series of inverted sirup-jars detachably mounted on the inner faces of said panels, their necks projecting through openings in the base or floor of said chamber, a series of valves carried by stems which lie within and project above the inverted bottoms of the jars, each bottom being formed of two removable parts, each part having a half socket or bearing for the valve-stem, weights screwed upon the threaded projecting ends of the valve-stems, and a series of levers inserted through openings in the panels and resting upon the edges of said openings, said levers engaging the valve-stems beneath the weights, substantially as described.

7. In an apparatus for dispensing effervescing drinks, the combination, with a casing, of a panel inclosing its front and resting at its lower end in a channel in the base of the casing, a sirup-jar having grooves in its body engaging flanges on the inner face of said panel, by which the jar is entirely supported, a screw-cap containing a valve-seat and turned upon the inverted neck of the jar, which projects through an opening in the base of the casing, a rubber-faced valve engaging said seat and mounted on a stem passing through the removable two-part bottom of the inverted jar, a weight turned upon the threaded projecting end of said stem, and a lever inserted in an opening in the panel and engaging the stem below the weight, substantially as described.

8. In an apparatus for dispensing effervescing drinks, the combination, with a pivotal support, of a casing for the siruping apparatus having a circular base provided with a peripheral channel and having at intervals a series of columns or brackets arranged within said channel and connected by screws or rivets to the base and to a sectional flange above, and a series of panels having their lower ends resting in said channel and their vertical edges overlying the outer faces of the columns, substantially as described.

9. In an apparatus for dispensing effervescing drinks, the combination, with a container having a suitable ice-chamber within which the pipes are coiled and provided with a support or cover having a stem or pivot, of a siruping apparatus contained within a casing pivotally mounted upon said stem and supported by the container, substantially as described.

410,515. REVOLVING COAL-SCREEN. WINFIELD O. SIMMONS, Terre Haute, Ind. Filed Jan. 22, 1889. Serial No. 297,097. (No model.)



Claim.—1. The combination of the cylindrical wire screen, the flat bands secured to the ends of the screen, the middle driving-band of larger diameter than the end bands, the driving-shafts situated below the screen, one on each side of it, the flat-faced wheels supporting the ends of the screen, and the driving-wheels engaging with the said middle driving-band, substantially as and for the purpose set forth.

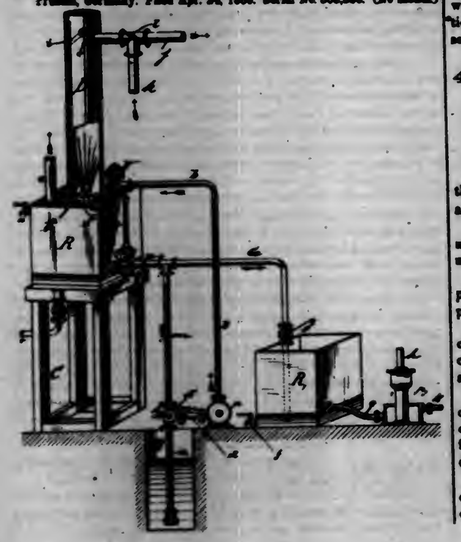
2. The combination of the inclined cylindrical wire screen, the flat bands secured to the ends of the screen, the middle driving-band of larger diameter than the end bands, and provided with the circumferential V-shaped projection, the longitudinal bars uniting the middle and end bands, the driving-shafts situated below the screen, one on each side of it, the flat-faced wheels supporting the ends of the screen, and the grooved driving-wheels engaging with the said projection on the middle driving-band, substantially as and for the purpose set forth.

3. The combination of two parallel driving-shafts, three wheels secured upon each shaft, and a cylindrical screen provided with middle and end bands, supported upon the said wheels and bearing hardest upon the middle wheels, whereby the screen is driven from the middle, substantially as set forth.

410,516. INCRUSTATION PREVENTIVE. THOMAS HARRIS and CHARLES DAY, Xenia, Ohio. Filed Oct. 22, 1888. Serial No. 288,541. (No specimens.)

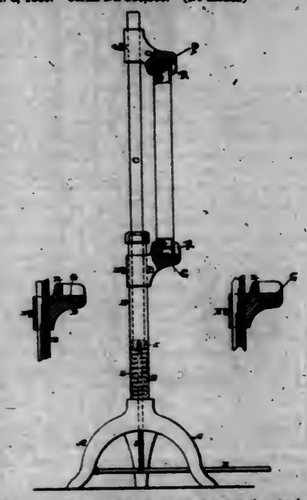
Claim.—The herein-described composition for removing scale from steam-boilers, consisting of one gallon of coal-oil, one pint of black oil, one ounce of wheat-flour, and one ounce of lard, as and for the purpose set forth.

410,517. FEED-WATER HEATER. MAX HENKING, Dortmund, Prussia, Germany. Filed Apr. 24, 1889. Serial No. 308,286. (No model.)



Claim.—The herein-described apparatus for heating and purifying the feed-water for steam-boilers, consisting of the following combined and co-operative parts, viz: tank R, having pipes c and v and faucet u, heating-dome D, having valve i and branched pipe j k, provided with the valve l, water-pipe b b', having air-chamber W and rose or spraying nozzle b^2, discharge-pipe E G, having gage-chamber O, provided with the gage-glass F and valve g, secondary or sediment tank K', connecting-pipe e, feed-pump p', suction-pipe a, valve d', having three-way cock d^2, connecting-pipe d, pump p, and branch pipe m, all constructed and combined to operate substantially in the manner and for the purpose herein set forth.

410,518. MACHINE FOR CRIMPING THE ENDS OF PAPER TUBES. ROBERT K. HILL and HERBERT C. FOSTER, Woodbury, N. J. Filed Apr. 3, 1889. Serial No. 305,969. (No model.)



Claim.—1. The combination of the tubular body B, mounted upon a suitable stand or support, and a lower support or table which is attached thereto, with the upper portion of the frame, the upper support placed thereon, and a spring-actuated treadle mechanism for depressing the upper die upon the lower one, substantially as shown.

2. In a machine for crimping the ends of paper tubes, the combination of the two supports secured to a suitable frame and made vertically movable in relation to each other, each one being provided with a circular flange for the purpose of centering the tube in position, with the dies for crimping the ends of the tubes, substantially as set forth.

410,519. SCOURING AND WASHING MACHINE. SAMUEL HOSKIN, Medway, Mass., assignor to himself, and Frank R. Anderson, Orange, N. J. Filed Nov. 1, 1888. Serial No. 289,707. (No model.) Patented in England Nov. 27, 1888, No. 17,271; in France Nov. 30, 1888, No. 194,668; in Germany Dec. 7, 1888; in Belgium Mar. 2, 1889, No. 85,234, and in Cape of Good Hope Mar. 20, 1889, No. 56.

Claim.—1. The combination, with a substantially horizontal tube that is normally filled with liquid, of a staple-supplying mechanism and a tube-flushing mechanism, as and for the purpose stated.

2. The combination, with a tube normally filled with liquid, of a means for delivering a constant supply of liquid to the tube and a means for delivering an intermittent supply of liquid thereto.

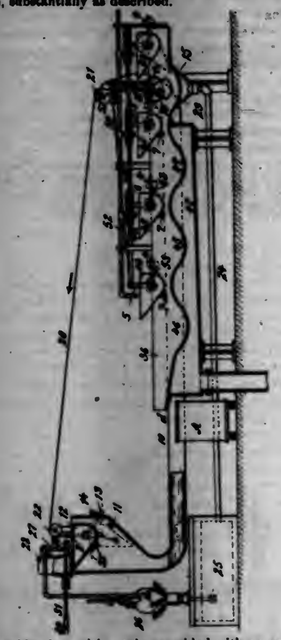
3. The combination, with a tube provided with an upturned and perforated delivery end, of a tube-flushing mechanism, as and for the purpose stated.

4. The combination, with a tube having an upturned delivery end, of a receiving-tray arranged in advance of said delivery end, a staple-compressing mechanism, and a tube-flushing mechanism, substantially as described.

5. The combination, with a tube having an upturned delivery end, of a receiving-tray arranged in advance of said delivery end, a staple-compressing mechanism, a flushing-tank, and connections between the flushing-tank and the staple-compressing mechanism, substantially as described.

6. The combination, with a tube having an upturned delivery end, of a receiving-tray arranged in advance of said delivery end, a staple-compressing mechanism, a vertically-movable and tilting flushing-tank,

and connections between said flushing-tank and the staple-compressing mechanism, substantially as described.



7. The combination, with a tube provided with an upturned delivery end and with a receiving-hopper, of a tilting flushing-tank mounted in said hopper, a staple-receiving hopper, and a staple-delivery mechanism, substantially as described.

8. The combination, with a tube provided with a hopper and an upturned and perforated delivery end, of a tube-flushing attachment and a slide, said slide being arranged in connection with the perforated delivery end, substantially as described.

9. The combination, with a hopper and a flushing mechanism, of a tube connected thereto and formed with an upturned delivery end, the tube gradually increasing in diameter from the hopper to its delivery end, substantially as described.

10. The combination, with a tube or conduit having its main portion lying in a plane below its inlet and outlet, of an intermittent staple-feeding mechanism and an intermittent flushing mechanism, as and for the purpose stated.

11. The combination, with a series of basins, of a series of flushing-tanks and connections between said tanks, as and for the purpose stated.

12. The combination, with a series of basins, of a series of pivotally mounted tanks provided with lever-arms, and slotted arms pivotally connected to the tank lever-arms, and extending to the rear to engage with pins carried by the lever-arms of the tanks to the rear, said pins passing through the rod-slots, substantially as described.

13. The combination, with a tube provided with a hopper and an upturned delivery end, of a staple-feeding mechanism, a tube-flushing mechanism, a staple-compressing mechanism, and a staple-washing mechanism, substantially as described.

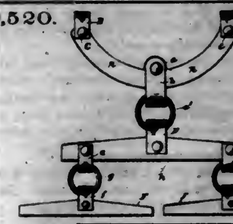
14. The combination, with a tube or conduit normally filled with liquid, of a liquid-supply attachment and a means for imparting an intermittent impulse to the liquid within the tube, as and for the purpose stated.

410,520. WHIFFLETREE. JACOB B. HOWELL, Veteran, N. Y.

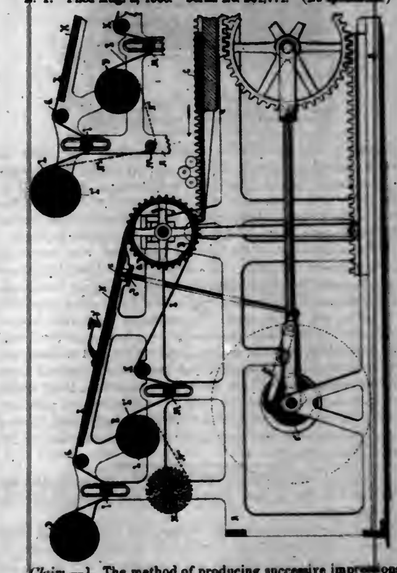
Filed June 5, 1888. Serial No. 313,119. (No model.)

Claim.—The whiffletree consisting of the segmental casting or plate A, having at its ends pivoted loops B B, the loop *b*, having its ends connected to a central enlargement or knob *a* of the segmental plate A upon its rear or concave side, the doubletree A, having a central loop D, connected by a ring *d* to the loop *b* of the segmental plate, and the singletrees F, having loops *f*, connected by ring *g* with loops *e* at the ends of the doubletree A, substantially as set forth.





410,521. METHOD OF PRINTING. GUSTAV L. JAEGER, New York, N. Y. Filed Aug. 3, 1888. Serial No. 281,771. (No specimens.)



Claim.—1. The method of producing successive impressions on a continuous web, which consists in drawing the web from the roller on which it has been wound by the co-operation of the impression-cylinder and of the bed during the forward stroke of the bed, holding the impression cylinder stationary during the return-stroke of the bed, and adjusting the web in the proper registering position previous to the next movement of the impression-cylinder, substantially as described.

2. The method of producing successive impressions on a continuous web, which consists in drawing the web from the roller on which it has been wound by the co-operation of the impression-cylinder and of the bed during the forward stroke of the platen, holding the impression-cylinder stationary during the return-stroke of the bed, providing the web with registering holes or perforations, and bringing these in engagement with suitable registering projections previous to the next movement of the impression-cylinder, substantially as described.

3. The method of producing successive impressions on a continuous web, which consists in drawing the web from a roller and producing the first impression by the coaction of an impression-cylinder and a bed, and then adjusting the web to bring registering marks thereon into coincidence with other registering marks prior to producing the next impression, substantially as described.

4. The method of introducing a laying-in sheet, which consists in drawing the same from a roller and winding it up upon another roller, together with the freshly-printed web, then changing the position of the compound roll containing the printed web and the laying-in sheet, and passing the web from said compound roll through the printing apparatus for a second series of impressions while the laying-in sheet is drawn from the compound roll and wound up for the second time with the web after the latter has passed for the second time through the printing apparatus, substantially as described.

410,522. BOX-STAYING MACHINE. GUSTAV L. JAEGER, New York, N. Y. Filed May 1, 1889. Serial No. 309,257. (No model.)

Claim.—1. In a machine for applying corner-stays to boxes, the combination, with the die A, of an anvil or support C, said anvil being made laterally movable upon its base, substantially as described.

2. In a machine for applying corner-stays to boxes, the combination, with the die A, of an anvil or support C, having a laterally-oscillating motion, substantially as described.



3. In a machine for applying corner-stays to boxes, the combination, with the die A, of an anvil or support C, having a longitudinally-oscillating motion, substantially as described.

4. In a machine for applying corner-stays to boxes, the combination, with the die A, of an anvil or support C, laterally movable upon its base, and a spring H, for holding said anvil in the starting position, substantially as described.

5. In a machine for applying corner-stays to boxes, the combination, with the die A, of an anvil or support C, made laterally movable upon its base and secured to said base by a pin-and-slot connection, substantially as described.

6. In a machine for attaching corner-stays to boxes, the combination, with the die A, of an anvil or support C, either said die or anvil being made laterally movable, substantially as described.

410,523. DECOY. WILLIAM H. JENNER, Clinton, Iowa. Filed Feb. 5, 1889. Serial No. 298,728. (No model.)



Claim.—1. A decoy-duck provided with an internal anchor-cord-winding reel, in combination with a set-screw adapted to bear upon the reel and lock the same in position, substantially as specified.

2. A decoy-duck provided with an internal anchor-cord-winding reel having a recess upon one of its ends, in combination with a set-screw adapted to take into the recess, whereby the reel is locked against unwinding, but may be oscillated from side to side, substantially as specified.

3. A decoy-duck provided with an internal anchor-cord-winding reel mounted upon a shaft projecting through the upper portion of the duck, in combination with the head of the decoy mounted on the shaft, adapted to be revolved for the purpose of revolving the reel, substantially as specified.

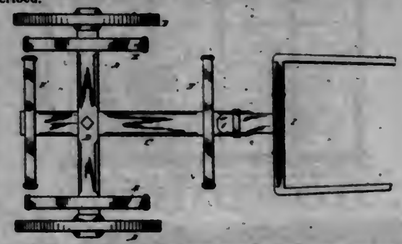
4. A decoy-duck formed with forward and rearward internal recesses, in combination with a shaft mounted in the forward recess and provided with a spool or reel, a decoy-head mounted on the shaft and adapted to revolve the same, and an anchor-cord, one end of which is made fast to and adapted to be wound upon the spool, substantially as specified.

5. The combination of the body-sections 1 and 2, secured as at 6, internally recessed, as at 4 and 5, and having the openings 7, 8, and 14, in combination with the head 3, recessed, as at 11, the shaft 9, mounted in the bearings 7 and 8 and terminating in the recess 11, the reel 12, mounted rigidly on the shaft and recessed, as at 16 and 18, and carrying the anchor-cord 13, passing through the opening 14, and the set-screw 17, for taking into the recesses 16 and 18, substantially as specified.

410,524. VEHICLE. WESLEY JOHNSON, East Enid, Pa. Filed Apr. 13, 1889. Serial No. 307,000. (No model.)

Claim.—1. The combination, with a body of a vehicle, of an axle, a supporting rod or bar secured near its center to the axle and at right angles thereto, and springs arranged on opposite points of said supporting-rod and disposed between the same and the vehicle-body, substantially as set forth.

2. The combination, with the body of a two-wheel vehicle, of the running-gear, consisting of the axle, supporting rod or reach, said rod being secured near its center to the axle at right angles thereto, and of the springs interposed between the vehicle-body and the running-gear, said springs being secured to the base of the vehicle-body at the sides and ends thereof and at opposite points to the supporting-rod and axle, substantially as herein shown, and for the purpose described.



3. The herein-described running-gear for a two-wheel vehicle, consisting of the wheels, axle, longitudinally-supporting recessed rod, and of the springs interposed between the vehicle-body and the running-gear, said springs being secured to the base of the vehicle-body at the sides and ends thereof and to the outer ends of the axle and supporting-rod, substantially as herein shown and described.

4. The herein-described running-gear for two-wheel vehicles, consisting of the wheels, axle, longitudinal supporting-rod, said rod having a central recess formed therein, into which the axle is adapted to engage, coupling-bolt for securing the axle within the recessed portion of the supporting-rod, and of the side and end springs interposed between the vehicle-body and the running-gear, said springs being secured to the base of the vehicle-body and to the outer ends of the axle and supporting-rod, substantially as set forth.

5. The herein-described running-gear for two-wheel vehicles, consisting of the centrally-enlarged longitudinal supporting-rod, said rod having a recess formed therein, of the axle adapted to fit within the recess formed in the supporting-rod, coupling-bolt for securing the axle and rod, springs interposed between the body of the vehicle, at the sides and ends thereof, and the running-gear, said springs being secured to the outer ends of the axle and supporting-rod, and of the shaft secured upon the forward end of the supporting-rod, substantially as set forth.

410,525. STEAM-ENGINE. WILLIS R. JONES, Alba, Mich. Filed Jan. 15, 1889. Serial No. 296,366. (No model.)

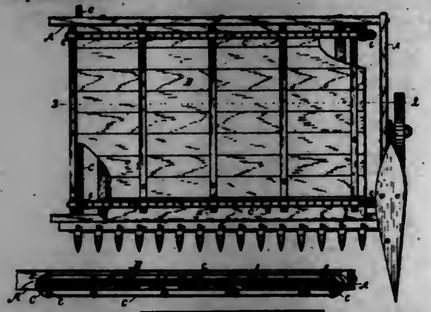


Claim.—The combination of the bed-plate provided with central ways or grooves having upper flanges, the three-throw crank-shaft, the pitman connected thereto, the cross-heads working in the grooves or ways and provided with steps or shoulders passing beneath the upper flanges of the ways or grooves, and also having the forward ends of the pitman secured thereto, the frame surrounding the cylinder, the inner ends of the side pieces thereof being connected to the outer sliding cross-heads, and their forward ends passing through bearings upon diametrically-opposite portions of the cylinder, the cross-heads connecting said side pieces transversely, the forward one of which connects the extreme front ends thereof, and the rear cross-head connecting said side pieces at a point somewhat removed from their rear extremity, the piston-rods extending from the cross-heads, the piston-rod upon the innermost cross-head being hollow, the central piston-rod connected to the central sliding cross-head constructed to pass through said hollow piston-rod and to be actuated in an opposite direction to the piston-rods upon the cross-heads, the steam-cylinder, the steam-pipes leading into the steam-cylinder and provided with induction and eduction openings, and the valve for alternately admitting steam into the cylinder and exhausting the same therefrom, substantially as set forth.

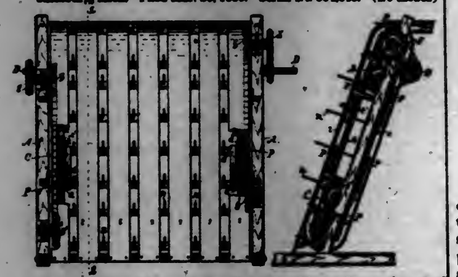
410,526. GRAIN-CARRIER. WILLIAM H. KRAFT, Galesburg, Mich. Filed Mar. 26, 1888. Serial No. 304,512. (No model.)

Claim.—The combination of a platform, sprocket-wheels at the four corners, sprocket-chains on said wheel at the sides of the platform, said wheels being recessed between the sprockets to receive the slats, and slats attached at the ends to the side of the chains which engage the wheels, whereby the slats move the grain along the upper

surface of the floor of the platform and in contact therewith, substantially as set forth.



410,527. ELEVATOR FOR HARVESTERS. WILLIAM H. KNAPP, Galesburg, Mich. Filed Mar. 26, 1889. Serial No. 304,813. (No model.)

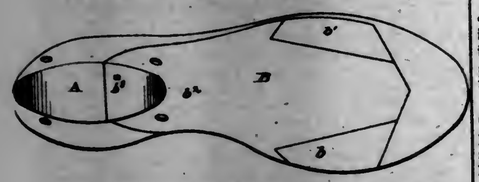


Claim.—1. An elevator or carrier comprising a frame, the set of sprocket-wheels on each side of said frame, and sprocket-chains on said wheels, one set of said wheels and chains being placed at a suitable distance above the other set, and a frame or frames bearing fingers and being pivoted at diagonally-opposite corners to said chains, substantially as set forth.

2. In an elevator or carrier, the combination of the two sets of sprocket wheels and chains, one set being placed a suitable distance above the other set, the frame bearing fingers, said frame being pivoted at diagonally-opposite corners to the chains, and guideways to steady the moving chains and frame, substantially as set forth.

3. In an elevator or carrier, the combination of two sets of sprocket wheels and chains, one set being a suitable distance above the other set, the frame bearing fingers and having a friction-roller at each of the four corners of said frame, said frame being pivoted at the two diagonal corners to the chains, and the guideways for the rollers to traverse, substantially as set forth.

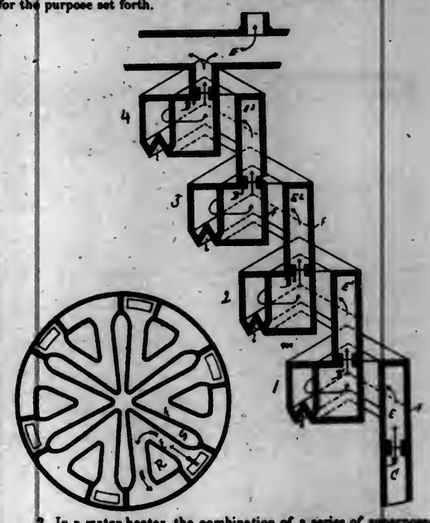
410,528. LAST. BERNARD W. KOSTMAN, Terre Haute, Ind. Filed May 20, 1889. Serial No. 311,069. (No model.)



Claim.—In a last, the body portion, in combination with the last-block, said block consisting of the central part b^3, and the wedge-shaped pieces b and b' across the ball upon the inner and outer sides, respectively, of said block, substantially as described, and for the purpose set forth.

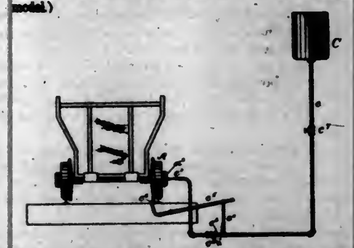
410,529. WATER-HEATER. NEWELL P. ANDERS, Brooklyn, assignor of one-half to Robert J. Hatby, New Brighton, N. Y. Filed June 19, 1888. Serial No. 314,891. (No model.)

Claim.—1. In a water-heater, the combination of a series of superposed chambers each provided with a series of irregular water-passages formed by their internal walls, said passages having separate inlets and outlets arranged equidistant around the chambers and having their respective consecutive water-connections arranged spirally, and the heat-flues R and S, formed between the external walls of said chambers and passing vertically through them, substantially as and for the purpose set forth.



2. In a water-heater, the combination of a series of superposed chambers provided with irregular water-passages formed by their internal walls and having their consecutive water-connections arranged spirally, said chambers being separated by horizontal spaces m and provided with grooves i in their under sides, and the heat-passages R and S, formed between the external walls of said chambers and passing vertically through them, substantially as and for the purpose set forth.

410,530. APPARATUS FOR OILING MINE-CARS. JAMES F. BEATTIE, Wheeler, Pa. Filed May 2, 1889. Serial No. 308,774. (No model.)



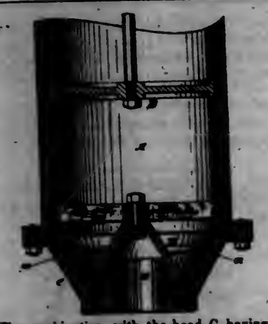
Claim.—1. In an apparatus for oiling cars, the combination of an oil-reservoir, a pipe connecting with the said reservoir, a valve located in said oil-pipe, a trip-lever connecting to said valve, whereby a passing wheel may open the valve, and a nozzle located at the end of said pipe and so directed that it will squirt a jet of oil into the oil-chamber of the passing wheel, substantially as specified and set forth.

2. In an apparatus for oiling the journals of car-wheels, a fixed nozzle located so as to squirt a jet of oil into the oiling-place of the passing wheel, in combination with a pipe connecting to the said nozzle, an oil-reservoir connected to said pipe, and an automatic valve located in the said pipe, for controlling the delivery of oil, substantially as specified and set forth.

410,531. MACHINE FOR MAKING CURVED PIPE. HORACE B. CARP, Cuyahoga Falls, Ohio, assignor to Turner, Vaughn & Taylor, same place. Filed June 4, 1888. Serial No. 275,905. (No model.)

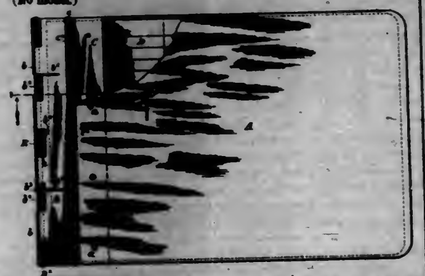


410,531.



Claim.—The combination, with the head C, having the internal recess *a*, and the mandrel D, supported centrally therein, of the detachable ring E, arranged to rest immovably in said recess and having an opening eccentric to its periphery, substantially as shown and described, and for the purpose specified.

410,532. TEMPORARY BINDER. WILLIAM H. CARROLL and FRANK LEMMON, Chicago, Ill. Filed Feb. 12, 1889. Serial No. 299,664. (No model.)

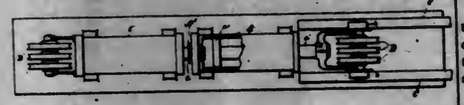


Claim.—1. The temporary binder, comprising the spring-actuated clamping-leaves B B, pivotally secured to each other at one of their margins and each provided with a leaf C, to which the covers of the book may be secured, said leaves C C being pivotally joined to said clamping-leaves B B, substantially as specified.

2. The combination, with the clamping-leaves B B, hinged together at their adjacent margins, and a spring adapted to compress or hold said leaves together, of a spring-detent secured to one of said leaves, provided with a shoulder to engage a margin or part upon the other leaf when said leaves B B are opened, and to hold the latter in the opened position against the action of the said spring.

3. In a hinge-back for book-binders, the spring-actuated clamping-leaves B B, the cover-leaves C C, each pivotally attached to the outer margins of the leaves B B, the pages D, and a cushion *d*, interposed between said pages D and the clamping-leaves B B, substantially as and for the purpose specified.

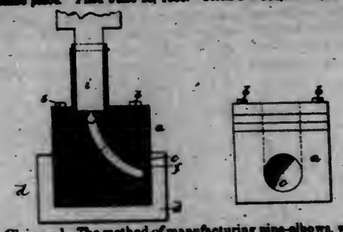
410,533. HYDRAULIC ELEVATOR. GEORGE W. CLAYTON, Cleveland, Ohio. Filed Jan. 23, 1888. Serial No. 261,562. (No model.)



Claim.—1. In a hydraulic elevator, the combination, with a primary motor, a piston and piston-rod therein, and a cross-head secured to the latter, of auxiliary motor, piston therein, the latter having piston-rod secured thereto, said piston and rod running out of frictional contact with the piston of the primary motor and adapted to abet the reciprocating part of the primary motor in order to co-operate with the latter in hoisting heavy loads, substantially as set forth.

2. In a hydraulic elevator, the combination, with primary and auxiliary motors, of an independent piston in each of said motors and independent piston-rods secured to the pistons, the piston and piston-rod of the auxiliary motor being located out of frictional contact with the piston of the primary motor and adapted to abet the reciprocating part of the primary motor to co-operate with the latter, substantially as set forth.

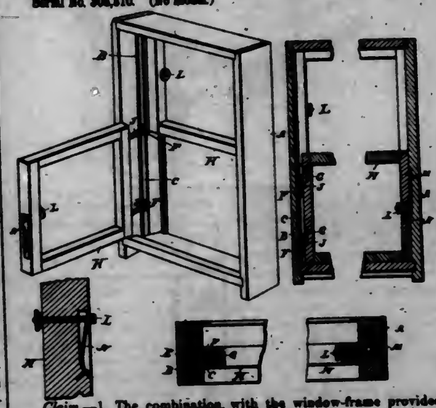
410,534. PROCESS OF MAKING PIPE-ELBOWS. CHARLES B. COOPER, New York, N. Y., assignor to W. P. Wallace and Hugh B. Cooper, same place. Filed June 15, 1889. Serial No. 314,376. (No model.)



Claim.—1. The method of manufacturing pipe-elbows, which consists in first forming a flat metal blank and bending the same into cylindrical form with its edges overlapping, then inserting said cylindrical blank into a bore or female die of the shape of the pipe-section to be produced, then inserting a hollow flexible air or fluid tight expander into said cylindrical blank, and then applying heavy pressure to the end of said expander, and thereby expanding the same laterally, for the purpose set forth.

2. The method of forming pipe-sections, which consists in placing a cylindrical sheet-metal blank in a forming-bore, the walls of which conform to the shape of pipe-section to be produced, and which is closed at one end and open at the other end, then inserting an elastic hollow air-tight cylinder loosely into said blank, and then applying sudden heavy pressure to the end of the cylinder, as set forth.

410,535. WINDOW. PATRICK D. CORRIGAN, Wellsville, N. Y., assignor of one-half to John W. Gallman, same place. Filed Apr. 27, 1889. Serial No. 308,810. (No model.)



Claim.—1. The combination, with the window-frame provided with vertical longitudinal grooves in its sides and the sash, of the guide-bars secured within the grooves and arranged out of contact with the walls of the grooves, the hinges secured to the sashes, and the slide secured to the hinges and having flanges engaging the edges of the guide-bars, as set forth.

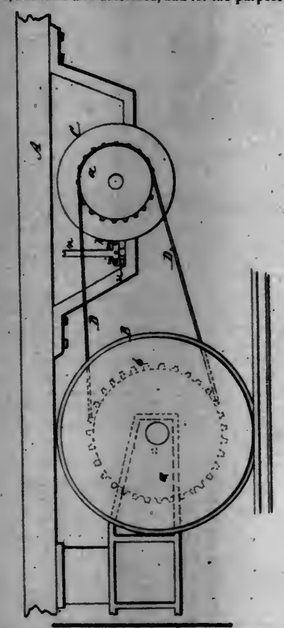
2. The combination, with the frame and the guide-bar secured therein, of the slide engaging the guide-bar, the sash, and the hinge connecting the sash and the slide, and consisting of the leaves I K, the leaf K having a shoulder L', and the link adapted to contact with said shoulder, as set forth.

410,536. MOTOR FOR LAND-CARRIAGES. COVE. B. COWLEY, Wyoming, and LEONARD H. COWLEY, Rochester, assignors of one-third to William A. Sutherland, Rochester, N. Y. Filed Sept. 17, 1888. Serial No. 285,592. (No model.)

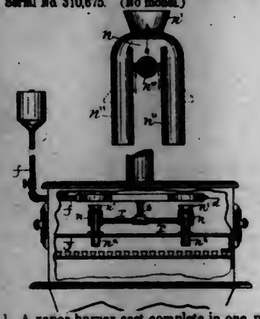
Claim.—1. In a land-carriage, the combination of the engine-shaft, the side plates turning freely thereon, the cog-ring resting loosely between the side plates, the fixed gear on the shaft, the planetary gears having their bearings in the side plates and engaging with the center gear and cog-ring, the brake consisting of a clamping-band resting around the cog-ring and capable of being clamped thereon, and a friction-gear on the shaft adapted to be engaged with and disengaged from one of the side plates, as shown and described, and for the purpose specified.

2. In a land-carriage, the combination of the engine-shaft, the side plates turning freely thereon, the cog-ring resting loosely between

the side plates, the fixed gear on the shaft, the planetary gears engaging with the fixed gear and the cog-ring, the brake-band resting around the cog-ring, the rock-lever for operating the brake-band, the friction-gear on the shaft engaging with a friction-rim on one of the side plates, and a clutch mechanism connecting the rock-lever with the friction-gear, whereby the latter is operated automatically with the brake-band, as shown and described, and for the purpose specified.



410,537. VAPOR-BURNING STOVE. JESSE R. CURL, Des Moines, Iowa, assignor of one-half to Alfred Anderson, same place. Filed May 13, 1889. Serial No. 310,675. (No model.)



Claim.—1. A vapor-burner cast complete in one piece, comprising a hollow metal case or combustion-chamber having a contracted neck and flaring open top at its center, open-ended tubes at its outside extending downward, an integral tube extending across the bottom and open at one end to be connected with an extraneous tube, a perforation in the top of said horizontal tube, and one or more perforations in the bottom of the case at the side of said horizontal tube, substantially as and for the purposes stated.

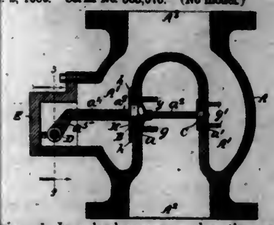
2. A vapor generator and burner coupling device cast complete in one piece and provided with two distinct chambers and two openings in each chamber to admit tubes, and an integral post adapted to support a deflector, in combination with two burners and a deflector, for the purposes stated.

3. The combination of a generator having a post adapted to support a deflector, two burners and tubes extending therefrom into distinct chambers in the generator, and a deflector extending horizontally over the tops of the burners, in the manner set forth, for the purposes stated.

4. The vapor-burners *n*, having open tops *n'*, open-ended tubes *n''*, and perforated tubes *n'''*, a generator *s*, having chambers *s'* and *s''*, and an integral post *s'''*, a deflector on said post extending horizontally over said burners, arranged and combined substantially as shown and described, for the purposes stated.

5. A burner *n*, having tubes *n''*, a plate *y*, having perforations to admit said tubes, a vapor-generator, and flame-deflector arranged and combined with a stove, in the manner set forth, for the purposes stated.

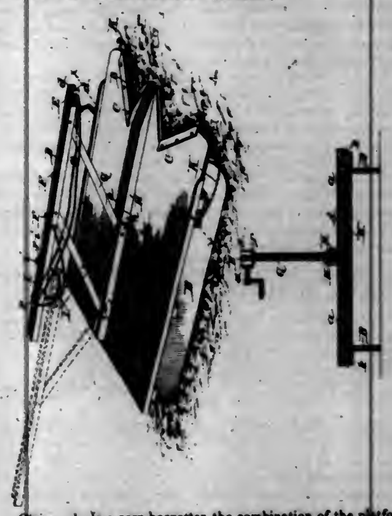
410,538. BACK-PRESSURE VALVE. GEORGE M. DAVIS and ALBERTO BEMENT, Chicago, Ill.; said Bement assignor to said Davis. Filed Apr. 2, 1889. Serial No. 305,673. (No model.)



Claim.—1. In a back-pressure valve, the combination, with a valve-chamber having two exhaust-openings of different areas, of the differential valves located in said openings and connected by a stem common to both, the spring-plate secured to the larger of said valves and cushioning the action of the same, the stud a^2, the link a^4, the crank-arm, the shaft on which said crank is mounted inside of the valve-casing, and the weighted lever mounted on the outer projecting end of said shaft, substantially as and for the purpose set forth.

2. In a back-pressure valve, the combination of the valve-casing, the differential valves chambered therein, the spring-plate cushioning the action of said valves, the chambered cap bolted to one side of said casing, the connecting-link and crank, the rock-shaft located inside of said cap, the bearing-sleeve through which said shaft passes, and the weighted lever mounted on the outer end of said shaft, substantially as and for the purpose set forth.

410,539. CORN-HARVESTER. LEWIS A. DAVIS, Delaware, Ohio, assignor to the Delaware Corn Harvester Company, same place. Filed Oct. 6, 1888. Serial No. 287,366. (No model.)



Claim.—1. In a corn-harvester, the combination of the platform, the vertically and longitudinally movable beam D, and connections, as the bars G, between the beam and platform, and having pivotal connections at their ends with the said beam and platform, respectively, substantially as described, for the purpose specified.

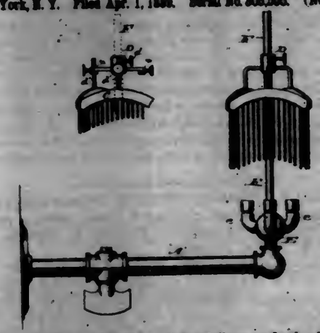
2. In a corn-harvester, the combination, with the platform and the beam D, of the bars G, pivoted to beam D at their upper ends and to the platform at their lower ends, and an adjustable stop for the bars, substantially as and for the purpose described.

3. In a corn-harvester, the combination, with the platform and the beam H, of the beam D and the bars G, pivotally connecting the beam D with the beams H and adapted to fold between the beams H, substantially as set forth.

4. In a corn-harvester, the combination, with the platform, the beam D, and the bars G, pivotally connecting beam D with the platform, of the staples F on the beam, the rope I, adapted to be hooked into said staples, and the windlass mounted on the end of the beam, the rope being connected therewith, substantially as and for the purpose described.

5. The herein-described corn-harvester, composed of the platform mounted on runners, the parallel beams H, arranged midway of the sides of the platform, the beam D, composed of two parallel bars, the bars G, pivotally connecting beam D with the beams H and adapted to fold in each, the windlass on the front end of the beam, the rope I, attached therewith and having hooks at its ends, the staples F along on the beam D, adapted to be engaged by said hooks, the pins adapted to be interposed between the beams H and the bars G, the blades C on the platform, and the draft-chain extending from one side of the platform to the other and passing over pulleys at each side of the platform, substantially as described.

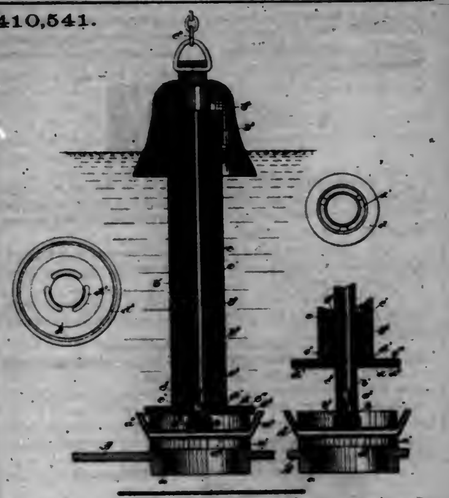
410,540. INCANDESCENT GAS-BURNER. EDWARD C. DAVIDSON, New York, N. Y. Filed Apr. 1, 1889. Serial No. 305,565. (No model.)



Claim.—1. The combination, substantially as set forth, of radially-arranged independent gas-burners, a centrally-located support extending above the burners, independent groups of filaments arranged in angular relation to each other, radial arms in which the filament groups are mounted projecting from said central support above their corresponding gas-burners, and connections between each filament group and its radial arm, by which the group is independently adjustable and removable.

2. The combination, substantially as set forth, of a group of pendent filaments or pencils carried by a suitable head, a supporting-rod connected with said head, and a supporting-arm in which the supporting-rod is both vertically adjustable and rotatable.

410,541.



410,542. CAR-COUPLING. ROBERT H. DOWLING, Newark, Ohio, assignor of two-thirds to Charles Pollett and Charles H. Pollett, both of same place. Filed Apr. 8, 1889. Serial No. 306,891. (No model.)



Claim.—1. In a draw-bar, the lateral joint projection and the inner concussion-shoulder of the draw-head, in combination with the coupling-hook engaging bearings of said joint projection, and its concussion-shoulder in rear of the middle portion of the hook-head, adapted to engage the concussion-shoulder of the draw-head when the hook is closed, substantially as specified.

2. In a draw-bar, the lateral outwardly-concave joint projection having circular bearing-flanges, in combination with the hook recessed to receive the joint projection and its bearing-flanges, and having upper and lower circular flanges engaging the circular flanges of the joint projection of the draw-head, and covering in the same above and below, substantially as specified.

3. In a draw-bar, the T-form arc-shaped lateral bearing-shank or joint projection, in combination with the recessed coupling-hook and its circular flanges covering in the T-form bearing-shank above and below the pin-slot of said projection, the pin-receiving notches of the draw-head in line with said slot, the pin-receiving channels of the hook-shank, the rabbeted bearings communicating therewith, and the notched prismatic locking-pin, substantially as specified.

4. In a car-coupling, the combination, with the draw-head having a concave front including a lateral curved guide-flange and the connected coupling-hook, of the lateral concussion-shoulder H of said concave front opposite the curved guide-flange and extending across the draw-head from top to bottom, substantially as specified.

5. In a draw-bar, the combination, with the T form arc-shaped joint projection having a pin-slot extending vertically through it and the pin-receiving extensions thereof in the concave wall of said joint projection, of the circularly flanged and recessed coupling-hook shank, the pin-receiving channels thereof, and the rabbets extending from said channels, the notched prismatic locking-pin, and the stops of the shank of the coupling-hook adapted to engage the same, substantially as specified.

410,541. FLUSHING-VALVE. CHARLES H. DILLON, North Attleborough, Mass., assignor of one-half to John G. Hannigan, same place. Filed Apr. 23, 1889. Serial No. 308,336. (No model.)

Claim.—1. In a flushing-valve, the combination, with a hollow casting or shell provided with a hollow cross-bar having an outlet, of a pipe secured to said cross-bar about said outlet, a hollow spindle fitted loosely over said pipe, a valve secured to said spindle and provided with a slot, an overflow-pipe, and a cap or casting secured to said spindle and extended below and covering the mouth of the said overflow-pipe, substantially as described.

2. In a flushing-valve, the combination, with a hollow casting or shell provided with a hollow cross-bar having an outlet and provided with arms extended above said shell, of a pipe secured to said cross-bar about said outlet, a valve to control said outlet, a hollow spindle fitted loosely over said pipe, a valve secured to said spindle and provided with a slot, an overflow-pipe, and a cap or casting secured to said spindle and extended below and covering the mouth of the said overflow-pipe, substantially as described.

3. In a flushing-valve, the combination, with a hollow casting or shell provided with a hollow cross-bar having an outlet, of a pipe secured to said cross-bar about said outlet, a valve to control said pipe, a hollow spindle fitted loosely over said pipe, a valve secured to said spindle and provided with a slot, an overflow-pipe, and a cap or casting secured to said spindle and extended below and covering the mouth of the said overflow-pipe, and a chain or pull connected to said cap substantially over the center of the said valve, whereby a direct pull upon the valve is obtained, substantially as specified.

410,543. CAR-COUPLING. JOSEPH H. DOFFIN, Harrisburg, Pa., assignor of one-half to Jacob Warren Reap, same place. Filed July 2, 1888. Serial No. 310,208. (No model.)

Claim.—1. In a car-coupler, a coupling-frame, a pivoted jaw, a projection on the upper face of the same at the rear end thereof, and a spring-bar in the path of said projection and adapted to engage the same, substantially as described.

2. In combination, a coupler-frame, a pivoted jaw, a projection on the upper face of the same at the rear end thereof having an inclined face, and a spring locking-bar in the path of said projection, substantially as described.



3. In combination, a coupler-frame, a pivoted jaw, a locking projection on the rear end of said pivoted jaw, a spring locking-bar adapted to engage said projection, and a lever for lifting said locking-bar, substantially as described.

4. In combination with a pivoted jaw of a coupler, a spring locking-catch and an operating-lever extending beneath the opposite car, substantially as described.

5. In combination with the pivoted jaw of a coupler, a spring locking-catch, a bar *f*, for operating it, and an extension *f'*, substantially as described.

410,544. CAR-COUPLING. DENNIS P. EDGAR, Jackson, Mich. Filed May 9, 1889. Serial No. 310,087. (No model.)

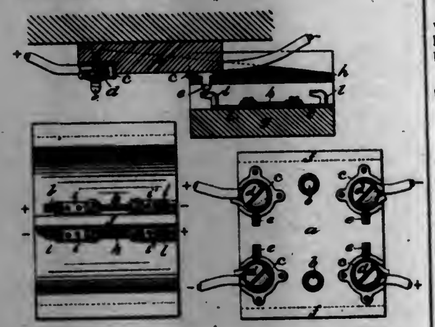


Claim.—1. The draw-bar of a car-coupling provided with two lever-jaws K K, movable in a vertical plane, said jaws having projections k^3 k^4 to press down on the link, and projections k^5 k^6, to raise the end of link above the fixed hook I on the bottom of draw-bar, as described.

2. The combination, with the lever-jaws K K, of the spring-pitman L, curved at *l l'* and having slotted end l^2, the pendent lug or post O, and the cross-shaft M', having the middle crank M and diametrically opposite thereto the end cranks m^2 m^3, as and for the purpose set forth.

3. In car-couplers, the bottom hook J, bolted detachably in a medium groove of the draw-bar, as and for the purpose specified.

410,545. CUT-OUT. LAWRENCE F. FURLONG, Hartford, Conn., assignor to Frederick C. Rockwell, same place. Filed Apr. 26, 1889. Serial No. 308,739. (No model.)

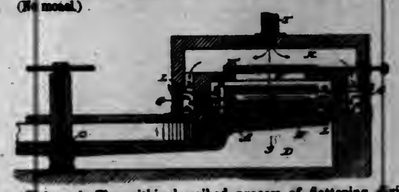


Claim.—1. In an electrical cut-out, in combination, a base two edges of which are provided with wedge-shaped tongues, contact-plates with outwardly-projecting lugs attached to the base, a cap two edges of which are provided with wedge-shaped grooves adapted to receive the tongues on the base, and outwardly-projecting lugs attached to the cap, so as to make contact with the lugs on the base when the base and cap are slid together, substantially as specified.

2. In an electrical cut-out, in combination, a base two edges of which are provided with tongues, contact-plates with hook-shaped lugs attached to the base, a cap two edges of which are provided with grooves adapted to receive the tongues on the base, and plates having hook-shaped lugs attached to the cap, one or more of said plates on the cap being joined by an electric fuse, said lugs on the base being adapted to interlock and make contact with the lugs on the cap when the tongues on the base are slid into the grooves in the cap, substantially as specified.

3. In an electrical cut-out of the within-described class, in combination, a rectangular base two edges of which are provided with a wedge-shaped tongue, and a rectangular trough-shaped cap, two edges of which are provided with wedge-shaped grooves adapted to receive the tongues on the base, substantially as described, and for the purpose specified.

410,546. MANUFACTURE OF WINDOW-GLASS. HERBERT W. GRISWOLD, Ridgewood, N. J. Filed Jan. 26, 1889. Serial No. 297,702. (No model.)



Claim.—1. The within-described process of flattening divided glass cylinders, which consists in subjecting them when ductile to a blast of air, gas, or steam introduced into the cylinder, substantially in the manner specified.

2. The within-described process of flattening divided glass cylinders, which consists in subjecting them to a sufficient degree of heat to make them plastic and then submitting them to a blast of air or gas forced into the cylinder under a pressure sufficient to produce a separation or divergence of the opposite sides of the ductile cylinder.

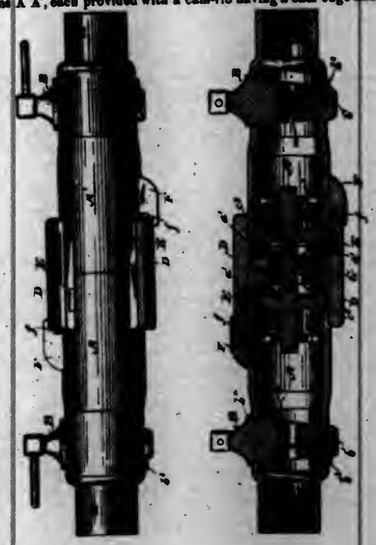
3. The process of softening the inner concave surface of a divided glass cylinder, which consists in heating the same by means of a blast of air, gas, or dry steam applied directly thereto with power sufficient to produce a separation and divergence of the opposite sides of the ductile cylinder, substantially in the manner and for the purpose herein set forth.

410,547. STEAM-PIPE COUPLING. FREEMAN HARMON, Bar Mills, assignor of three-fourths to Charles B. Harmon, Biddeford, and George H. Bird and Herbert G. Briggs, both of Portland, Me. Filed Jan. 14, 1888. Serial No. 260,894. (No model.)

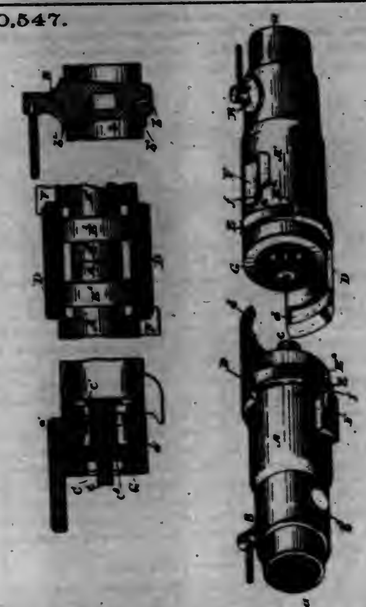
Claim.—1. A pipe-coupling composed of two similar sections adapted to be locked together by turning, and each provided with a cam-rib extending circumferentially about one-quarter of the periphery of the section, and provided with an inner cam-edge *c*, a longitudinal projection D, as wide as the cam-rib is long on the side opposite said rib, and provided with the cam-groove *d* in its inner surface, and a fixed keeper-block F inward from the cam-rib, substantially as specified.

2. A pipe-coupling composed of the two sections A A', each provided with the cam-rib E, having the cam-edge *c*, the stop-rib E^3, the longitudinal projection D, having the cam-groove *d*, and the keeper-block F, having the lip *f*, substantially as specified.

3. In a pipe-coupling, as described, the combination of the sections A A', each provided with a cam-rib having a cam-edge and stop-



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rib and a projection internally cam-grooved, and block F, having lip *f*, with the perforated valves C, having the stems *c*, projecting from each side, the perforated diaphragms secured at proper points within the sections, and the coiled springs c^2 between said diaphragms and the disk c^3 of the valves, substantially as specified.

4. In a pipe-coupling, as described, composed of two parts, each part similarly constructed and having one-quarter of its periphery plain, a cam-rib, and a projection D, as wide as the cam-rib is long, and having a cam-groove in its under surface, substantially as set forth, whereby, when the two sections are placed end toward end, said projections D stand toward the plain surfaces, and are adapted to fit back to back and act as guides by which the two parts are brought together.

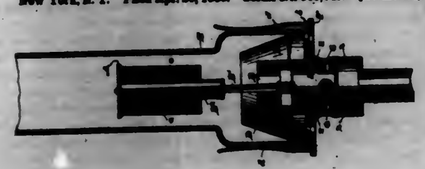
410,548. LAMP-CHIMNEY HOLDER. FREEMAN HARMON, Bar Mills, assignor of one-half to Charles B. Harmon, Biddeford, Me. Filed Feb. 2, 1889. Serial No. 298,465. (No model.)



Claim.—1. The combination, in a lamp-chimney holder, of the detachable yoke C, having a hinged part *c*, the thumb-screw *d*, and guards E, each provided at its upper end with a horizontal wire piece *e*, substantially as and for the purposes set forth.

2. In a lamp-chimney holder, a detachable and adjustable yoke adapted to fit a lamp-neck, and carrying vertical and elastic standards, each of which has at its upper end a horizontal curved piece to fit upon a lamp-chimney, the several parts combined and operating substantially as set forth.

410,549. INCANDESCENT GAS-BURNER. CHARLES B. HARRIS, New York, N. Y. Filed Apr. 20, 1889. Serial No. 308,045. (No model.)



Claim.—1. An incandescing pencil consisting of magnesia, or similar refractory substance, in tubular form.

2. The combination, with a gas-burner, of a group of tubular incandescing pencils, of the character described, arranged or hung vertically above the burner, so as to be raised to incandescence by the heat of the burner.

3. The combination, substantially as set forth, with a burner, of a series of incandescing pencils or filaments, and a centrally-arranged light-reflecting core, of the same or like material.

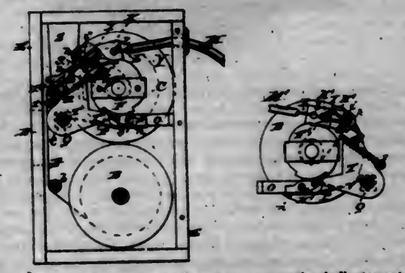
4. The combination, substantially as set forth, with a burner, of a group of incandescing pencils or filaments, and a reflector of like material arranged in the interior of said group in such manner as to reflect the light and heat outwardly.

5. The combination of a circular burner, a circular series of incandescing elements or pencils arranged above the burner, a support for the elements or pencils extending up from the center of the burner, and an interior reflecting-core arranged within the circle of incandescent material upon said central support.

6. The combination of the circular burner having an interior air-supply inlet for supplying air to the interior of the annular flame, an exterior air-supply inlet for supplying air to the exterior of the flame; and simultaneously-adjustable air-supply regulators, as F and *s*, for regulating simultaneously both the interior and exterior supply of air.

7. The combination of a circular burner, its flange having air-inlets, the movable ring F, having corresponding apertures, the air-tubes G, leading to the interior of the burner, the band or collar *s*, having corresponding apertures, and interlocking devices, as *f* and s^3, for locking the ring and band together for simultaneous adjustment.

410,550. STREET OR STATION INDICATOR. HENRY HERTHAN, Brooklyn, assignor of one-half to Charles F. Crowley, New Brighton, N. Y. Filed Feb. 26, 1888. Renewed July 31, 1889. Serial No. 319,264. (No model.)



Claim.—1. In a car or public-conveyance station-indicator, a tape with the stations marked thereon attached at its ends, respectively, to two storage-rollers B C and intermediately running over two guide-rollers *b c*, said indicator-tape moved longitudinally in intermittent movements by the pull-cord M, acting on and attached to a swinging follower-block K, to which is attached the pawl G, acting on the ratchet-wheel F, and governed by the radial arm H and controlling-spring I, all combined and arranged as described and set forth.

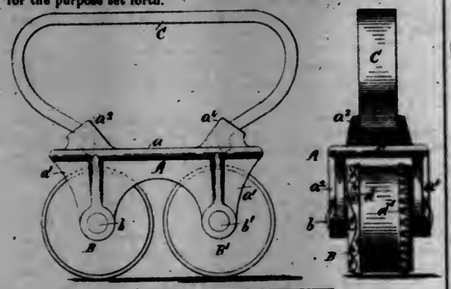
2. In a station-indicator, an actuating mechanism for moving and controlling the tape on which the names of the stations are written, consisting of a radial arm fulcrumed to the axle of the tape-drum, and carrying at its outer end a sliding follower, to which is attached a pawl for actuating a ratchet-wheel on said tape-drum, in combination with a pull-strap for driving said follower forward, and a tension-spring for habitually drawing it back against a stop-block adapted to receive it, substantially as described.

3. In a station-indicator for railway-cars and similar purposes, an indicator-tape mounted on two carrying-rollers, which are moved forward in a series of intermittent movements by a ratchet-wheel mounted on the axle of one of the tape-rollers, and actuated by a pawl attached or pivoted to a swinging follower carried on a radial arm fulcrumed on the same axle, the said pawl and swinging or radial arm coupled together with an intermediate follower, substantially as described.

4. In a station-indicator for railway-cars and similar purposes, a ratchet-wheel for operating the indicator-tape in intermittent movements, and provided with an actuating-pawl and a holding pawl or dog, and also with a guiding-follower T, placed on a rock-shaft and adapted to lift the actuating-pawl and the holding-dog simultaneously off from the ratchet, so it may be rotated in either direction, substantially as described.

410,551. EMBOSSING DEVICE FOR LAUNDRY-WORK. EDWARD HOLM, MARIUS JOHANSEN, and EMIL ANDERSEN, Chicago, Ill., assignors, by mesne assignments, to said Holm. Filed Feb. 21, 1889. Serial No. 300,726. (No model.)

Claim.—In a device for the ornamentation of laundry-work, the combination, with the bracket-frame, consisting of the top part *a*, the sides a' a^4, extending downwardly therefrom, and the legs a^3 a^5, rising upwardly from each end, of the embossing-rollers provided with designs or configurations, as described, the shafts upon which said rollers are loosely mounted, and the curved handle C, substantially as and for the purpose set forth.



410,552. PIPE-COUPLING. DAVID KENNEDY, Jr., Erie, Pa., assignor of one-half to Brastus B. Lipton, same place. Filed Oct. 8, 1888. Serial No. 287,531. (No model.)



Claim.—1. In a pipe-coupling, the combination, with the heads or collars *a*, each provided at its outer end with a suitable packing, of movable coupling-sleeves surrounding said heads and each provided at its outer end with a series of projecting segments, the segments on one of said sleeves interlocking with the segments on the opposing sleeve, whereby the two sleeves are held from turning in opposite directions, and which form together a continuous sleeve inclosing both heads, with its joint overlapping the meeting ends of the two heads, said sleeves being free to turn on said heads when coupled and having a limited lengthwise movement thereon, and a locking-lever pivoted to one of said sleeves, and engaging with the opposing sleeve, whereby the two sleeves are drawn together, substantially as set forth.

2. In a pipe-coupling, the combination, with the heads or collars *a*, each provided at its outer end with a suitable packing, of coupling-sleeves surrounding said heads and provided with interlocking segments which together form a continuous sleeve inclosing both heads, a connecting-shank formed on each sleeve and engaging between lugs formed on the opposing sleeve, and locking-levers pivoted to each sleeve and engaging with the shank of the opposing sleeve, whereby the two sleeves are drawn together, substantially as set forth.

3. The combination, with two adjacent pipes provided at their ends with heads or collars *a*, of the coupling-sleeves D, surrounding said heads, a shank or connecting-bar *h*, arranged on one of said sleeves and engaging between two jaws on the opposing sleeve, and a locking-lever J, attached to said last-mentioned coupling-sleeve and bearing against the connecting-shank *h*, substantially as set forth.

4. The combination, with two adjacent pipes provided at their ends with heads or collars *a*, of the coupling-sleeves D, surrounding said heads and each provided on diametrically-opposite sides with a connecting-shank *h*, and a pair of jaws or lugs *i*, and with a cam-lever J, pivoted between said jaws, substantially as set forth.

5. The combination, with two adjacent pipes, each provided at its end with a head or collar *a*, of coupling-sleeves D D, respectively surrounding the heads and provided with interlocking segments *d*, a pair of jaws *i*, arranged on one side of each coupling-sleeve, a cam-lever J, pivoted between said jaws, a connecting-shank *h*, and recessed lug *k*, arranged on the opposite side of the coupling-sleeve, and a spring-catch, whereby the cam-lever J of one coupling-sleeve is attached to the lug *k* of the opposite coupling-sleeve, substantially as set forth.

6. In a pipe-coupling, the combination, with the heads *a* and coupling-sleeves D, surrounding said heads, of a connecting-shank *h*, secured to each sleeve and engaging between a pair of jaws *i*, formed on the opposing sleeve, and a cam-lever J, pivoted to each sleeve between said jaws and provided with an adjustable wear-plate which bears against the shank of the opposing sleeve when the sleeves are secured together, substantially as set forth.

410,553. ART OF PACKING CIGARS. WILLIAM F. LANE, Allegheny, assignor to the Union American Cigar Company, (Limited,) Pittsburg, Pa. Filed Feb. 13, 1889. Serial No. 299,698. (No model.)



Claim.—1. As an improvement in the art of shaping and packing cigars, the following successive steps: first, arranging a series of layers of cigars and interposed presser-plates, each layer consisting of a definite number of cigars definitely spaced, the spacing being proportioned to the diameter of the cigar, and the number in a row proportioned to the size of the box in which the cigars are to be packed, second, subjecting said series of layers to compression sufficient to reduce the height thereof proportionately to the height of the box in which said cigars are to be packed, and, finally, transferring the layers as such successively to the box by means of the intermediate presser-plate, substantially as and for the purposes described.

2. As a step in the art of shaping and packing cigars, subjecting a series of layers of cigars and interposed presser-plates to compression, the cigars of each layer being spaced or definitely separated proportionately to the diameter of the cigar and the reduction to be effected to allow for change of form, and, finally, utilizing the interposed presser-plates as carriers for transferring the separate layers as such from the press to the cigar-box or final receptacle, substantially as and for the purposes described.

410,554. CAR-COUPLING LINK-HOLDER. HENRY C. MILLER, Soldiers' Home, Leavenworth County, Kans. Filed July 20, 1888. Serial No. 280,567. (No model.)



Claim.—The combination of the side springs united by the plate *f*, the rods *g*, the pulleys, and the lateral chains, substantially as described.

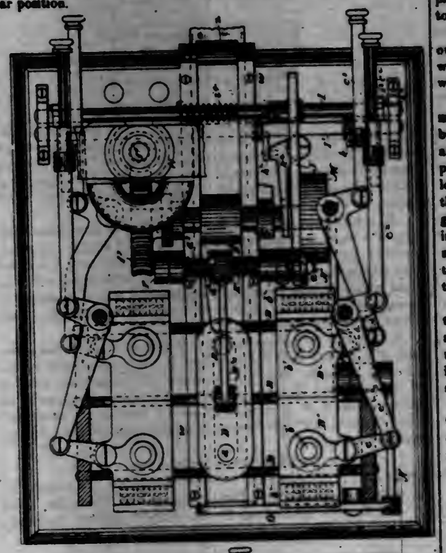
410,555. TICKET-PRINTING MACHINE. JOHN A. MILLIKEN, New York, and CHARLES H. MILLIKEN and EDWARD D'ARCUR, Brooklyn, assignors of one-fourth to Charles F. Smith, Brooklyn, N. Y. Filed May 8, 1888. Serial No. 272,568. (No model.)

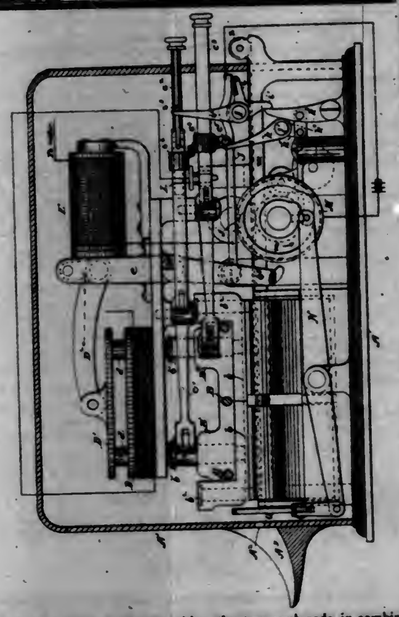
Claim.—1. In a ticket-printing machine, a ticket-way, channel, or tablet, one or more impression-plates or type-forms arranged on each side of said way, channel, or tablet and out of printing position, in combination with systems of leverage for moving said plates or forms into printing position, substantially as set forth.

2. The combination, with two independently-operated impression-plates or type-forms for printing different kinds of tickets, of a single printing-magnet, which is adapted to operate in conjunction with either of said mechanisms to print any form of ticket required.

3. The combination, with two independently-operated impression-plates or type-forms for printing different kinds of tickets, of a hammer adapted to operate in conjunction with either of said plates or forms to print any kind of ticket desired.

4. In a ticket-printing machine, the combination, with two carriages, each provided with engraved plates, of a push-rod for throwing one of the said carriages into a position for printing, and a separate push-rod for throwing both carriages simultaneously into a similar position.





5. In a ticket-printing machine, the two push-rods, in combination with the type-carriages, the former for operating the type-carriages, and each being provided with lugs or projections so arranged that one of said rods may be operated alone while the other cannot be moved without coincidently operating its fellow.

6. The combination, herein described, with two similar sets of mechanism on opposite sides of the machine, the said mechanism consisting of carriages having type-plates and a system of leverage for moving the same into a position above the ticket-strip where the printing is done, of a tablet or way over which the ticket-strip passes, located intermediate of the two sets of mechanism.

7. In a ticket-printing machine, a centrally-located ticket-strip way, channel, or tablet, a hammer or striking apparatus located directly above the same, two sets of printing-plates located on each side thereof, and manually-operated mechanism for throwing the printing-plates into position to be struck by the hammer or striking apparatus to drive them against the ticket-strip.

8. In a ticket-printing machine, two motors, both adapted to feed out the ticket-strip, in combination with an electro-magnet which when energized will lock one of the motors and when not energized will allow a spring to unlock the same motor, as set forth.

9. In a ticket-printing machine, an electromotor and a spring or mechanical motor, both adapted to feed out the ticket-strip, in combination with an electro-magnet in circuit with the electromotor, the armature of said magnet being constantly subjected to spring or other power in opposition to the pull of the magnet, and a pawl or other locking device for the spring or mechanical motor, connected with the armature in such a manner that when the said magnet is energized it will act on its armature to lock said mechanical motor, allowing the electromotor to drive the feeding mechanism, and when said magnet is not energized it will allow the power opposing the magnet to act through the armature to unlock said mechanical motor to drive the feed-rollers.

10. In a ticket-printing machine, the combination, with an electric circuit, including an electric motor, the frame of the machine, and an insulated locking-bar, as J, of a rock-shaft, as I, geared to push-rods under control of the operator, whereby said arm J may be brought into contact with the frame of the machine to short-circuit the motor, substantially as described.

11. In a ticket-printing machine, a bar, as J, and an electric motor for the feeding mechanism included in the same electric circuit, in combination with the feeding mechanism, the said bar being adapted to lock the feeding mechanism and simultaneously short-circuit the motor, as set forth.

12. In a ticket-printing machine, a hammer for driving the type or impression-plate against the ticket-strip, in combination with an electro-magnet and a spring, either of which is arranged to operate the hammer, for the purpose specified.

13. In a ticket-printing machine, the means for mechanically driving the type or impression-plate against the ticket-strip, consisting of a movable element, as M, moved by any suitable motor and provided with a notch, in combination with a spring-actuated rock-shaft carrying two arms, one of which is connected with the impression-plate and the other adapted to enter said notch in the movable element and allow a rocking movement of the shaft to drive the impression-plate against the ticket-strip, substantially as described.

14. In a ticket-printing machine, a printing-magnet and an electric motor controlling the feeding mechanism, the magnet being located in a shunt-circuit to the motor, in combination with a mechanical-locking and circuit-controlling arm, as J, for locking the mechanism which the motor drives and for switching the electric current through the motor and closing the circuit of the printing-magnet.

15. A knife-operating wheel and a pair of feed-rollers geared together and adapted in one rotation to feed out and cut off the length of one ticket from the ticket-strip, in combination with the push-rod c^3, the clutch *m*, and intermediate leverage, whereby the clutch is operated simultaneously with the push-rod to uncouple the cam-wheel from the feed-rollers and prevent its movement during the rotation of the shaft, substantially as described.

16. In a ticket-printing machine, two independent sets of mechanism for printing different kinds of tickets, each set consisting of a system of leverage and an engraved plate or type form operated thereby, both sets being adapted to print upon the same ticket-strip, as described.

17. In a ticket-printing machine, a single way, passage, or channel for the strip to be printed upon, a pair of printing-plates or type-forms arranged on each side of said way or channel, and systems of leverage corresponding to the plates or forms of each pair for moving one or both members of each pair into position to print upon said strip.

18. In a ticket-printing machine, a ticket channel or tablet, a hammer located above the same, a laterally-moving plate or type-form located normally at one side of said ticket-channel or tablet, and mechanism consisting of a system of leverage for moving said plate or type-form into a position adjacent to the said ticket channel or tablet, where it may be struck by the hammer.

19. In a ticket-printing machine, a ticket channel or tablet and hammer located adjacent to or above the same, a plurality of independently and laterally moving plates or type-forms, and mechanism consisting of a system of leverage for moving said plates or type-forms into a position to be struck by the hammer and caused to make an impression.

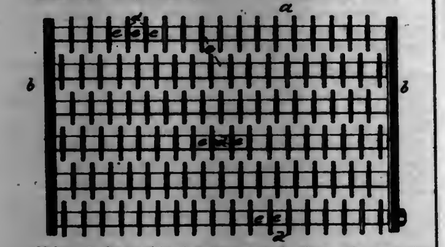
20. In a ticket-printing machine, the combination, with a ticket way, channel, or tablet, of a series or plurality of impression-plates or

type-forms arranged adjacent thereto, a system of leverage for throwing one of the said plates or forms into a position to print upon the ticket-strip, another system of leverage acting in connection with the first system for throwing two of said plates or forms into a similar position, a third system of leverage acting in connection with said first and second systems for throwing three of said plates or forms into a similar position, and so on throughout the series, whereby any number of tickets may be printed by operating the proper system of leverage.

21. In a ticket-printing machine, the combination, with a ticket way, channel, or tablet, of a series or plurality of impression-plates or type-forms arranged adjacent thereto, a system of leverage for throwing one of the plates or forms into a position to print upon the ticket-strip, another system of leverage acting in connection with the first system for throwing two of said plates or forms into a similar position, a third system of leverage acting in connection with said first and second systems for throwing three of said plates or forms into a similar position, and so on throughout the series, whereby any number of tickets may be printed by operating the proper system of leverage, all in combination with a striking device adapted to drive one or more of the plates or forms against the ticket-strip to make the impression, substantially as described.

22. In a ticket-printing machine, a knife for severing a ticket from the ticket-strip, mechanism for operating said knife, a feeding device for feeding out the ticket-strip and connected with the knife-operating mechanism by a suitable clutch, all in combination with an actuating rod or lever, and connections between said rod or lever and clutch, whereby the operation of said rod or lever will open the clutch and disconnect the knife mechanism from the feeding mechanism, thus allowing the ticket-strip to be fed out without the operation of the knife, substantially as described.

410,556. DOOR-MAT. WILLIAM J. MYERS, Hartford, Conn., assignor to George P. Bissell & Co., same place. Filed Apr. 27, 1889. Serial No. 308,784. (No model.)

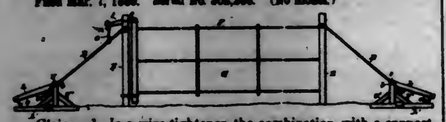


Claim.—1. In combination, in a mat, the frame, the crosswise-extending rods, and the disk-shaped scrapers arranged at intervals along the rod and projecting therefrom, all substantially as described.

2. In a mat and scraper, in combination with the frame, the rods extending crosswise of the frame and detachably secured to the said frame at opposite ends, and the disk-shaped scrapers secured at intervals along each rod and held rigidly thereon, all substantially as described.

3. In a mat and scraper, in combination with the frame having threaded sockets, the crosswise rods having the opposite ends provided with a right-hand thread and a left-hand thread, respectively, said rods being angular in cross-section, the scraper-disks rigidly secured on the rods, and the collars or equivalent device for holding the disks against movement lengthwise on the rod, all substantially as described.

410,557. WIRE-TIGHTENING DEVICE. JOHN MCDONNALL, Barnett, Kans., assignor of one-half to Washington W. Aldrich, same place. Filed Mar. 7, 1889. Serial No. 302,966. (No model.)



Claim.—1. In a wire-tightener, the combination, with a supporting upright, of a lever pivoted to said upright, said lever provided at a point near its free end and upon its upper face with a notch and at a point near its pivot-point and on its under face with a pin, and a loop adapted to engage the notch, as and for the purpose set forth.

2. In a wire-tightener, the combination, with an upright, of a lever *l*, pivoted thereto, said lever provided on its upper face and at its free end with a notch *n* and on its under face near its pivot-point with a pin *p*, a loop O, arranged to engage notch *n*, and a loop *o*, arranged to engage pin *p*, as and for the purpose set forth.

410,558. PINION-HOLDER FOR PINION-POLISHING MACHINES. GRANVILLE HUTTER, Waltham, Mass., assignor to the United States Watch Company, same place. Filed Apr. 20, 1888. Serial No. 309,091. (No model.)

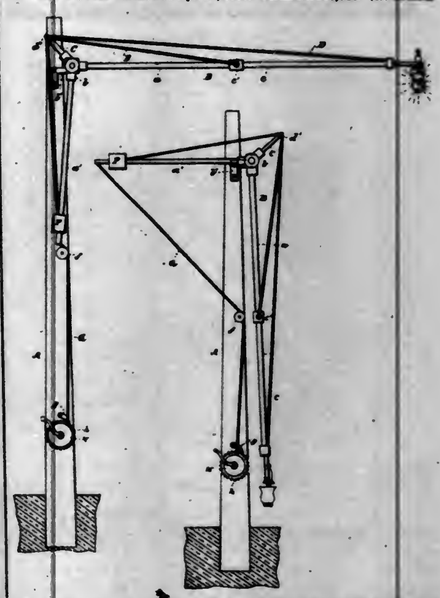


Claim.—1. A holder for pinions for leaves of pinions to be polished, composed of a block A to hold and support the pinion at and with a portion of its perimeter exposed, and heads D D^3 on opposite sides of the pinion-holding block A, in combination with a guideway C, having the block and heads D D^3 held thereon, substantially as described, for the purpose specified.

2. A holder for pinions for leaves of pinions to be polished, composed of a block A to hold and support the pinion at and with a portion of its perimeter exposed, a carrier B for said block A, and the block adjustable vertically thereon, and heads D D^3 on opposite sides of the pinion-holding block A, in combination with a guideway C, having the block and heads D D^3 held thereon, substantially as described, for the purpose specified.

3. A holder for pinions for leaves of pinions to be polished, composed of a block A to hold and support the pinion at and with a portion of its perimeter exposed, and heads D D^3 on opposite sides of the pinion-holding block A, and each carried by and adjustable on separate blocks E E^3, in combination with a guideway C, having the several blocks A E E^3 held thereon, substantially as described, for the purpose specified.

410,559. MAST-ARM. WILLIAM H. O'BRIEN, New Orleans, La., assignor to the Star Iron Tower Company, Fort Wayne, Ind. Filed June 19, 1888. Renewed Apr. 26, 1889. Serial No. 308,642. (No model.)

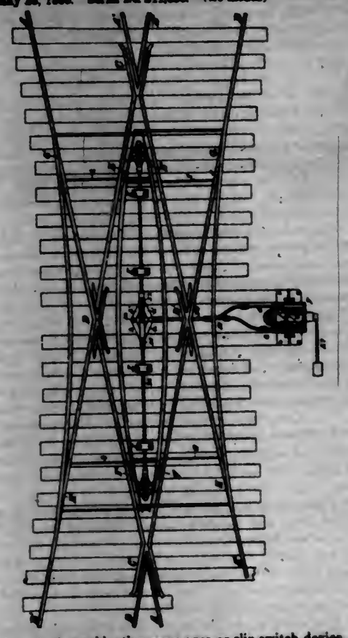


Claim.—1. The combination of the mast-arms at right-angles to each other, and each having one end inserted in a socket of the triple-socket iron pivoted to the vertical pole, the extension-section, the socket *c'*, and the operating-rope, substantially as specified.

2. The combination of the mast-arms at right-angles to each other, the triple-socket iron pivoted to the pole, the weight F, and the operating rope or wire, substantially as specified.

3. The combination, with the vertical post, of the mast consisting of the arms *a a'* and the extension-section, the socket *c'*, the pivoted triple-socket iron, the brace-arm, the brace-rods, the weight attached to the arm *a'*, the pulley *f*, pivoted on the pole, the drum having the ratchet-wheel, the pawl, and the wire rope, substantially as specified.

410,560. COMBINED CROSSING AND SWITCH. CHARLES PARTRIDGE, Cincinnati, Ohio, assignor to The Weir Frog Company, same place. Filed May 20, 1889. Serial No. 311,396. (No model.)



Claim.—1. A combination cross-over or slip-switch device, combined with and operated by duplex horizontally-moving rods actuating duplex-jointed links, substantially as specified.

2. In combination with the duplex rods 14 and 16, having connection with switch-rails and operated by a switch-stand, the central duplex links *a a' b b'*, hinged to each other and to the duplex rods and switch-bars, substantially as herein described.

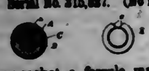
3. In combination, the duplex rods 14 and 16, hinged, respectively, to opposing duplex links, which duplex links are hinged to the switch-rails, whereby the said rails are moved toward or from each other as the duplex rods are moved, substantially as herein set forth.

4. In combination, the duplex rods 14 and 16, respectively hinged to opposing duplex links at their center and at either end of the crossing, the latter links being hinged to their respective switch-rails, whereby the moving of the duplex rods simultaneously moves the switch-rails of the crossing, substantially as specified.

5. The combination of the double-acting switch-stand, the duplex switch-bars 10 and 11, and the duplex central links hinged to said bars and conversely hinged to duplex rods 14 and 16, which are connected with the switch-rails, substantially as specified.

6. The combination of the parallel duplex rods 14 and 16, each provided with slots 23 and 17, and hinged to duplex links at the two ends and to the central duplex links operated by the switch-bars, substantially as specified.

410,561. CARRIAGE-BOW SOCKETS. RUDOLF H. PFAFF, Ashtabula, Ohio, assignor to the Ashtabula Carriage Bow Company, same place. Filed June 27, 1889. Serial No. 315,257. (No model.)



Claim.—1. In a bow-socket, a ferrule made of a single rolled piece of metal, the meeting edges of said ferrule being cut angularly, whereby a groove is formed along said meeting edges, substantially as set forth.

2. In a bow-socket, the combination, with a stiffener provided with a tenon, of a ferrule, said tenon fitting in said ferrule, substantially as set forth.

3. In a bow-socket, the combination, with a ferrule, of a filler and stiffener, each provided with a tenon fitting in said ferrule, substantially as set forth.

4. In a bow-socket, a ferrule made of a flat piece of metal, two of the opposite edges of which are cut angularly to each and in opposite directions, the ferrule being bent round until said angular edges meet at the inner side of the ferrule, whereby a groove is formed between the upper portion of said meeting edges, substantially as set forth.

5. In a bow-socket, the combination, with a ferrule, of a stiffener brazed to said ferrule, substantially as set forth.

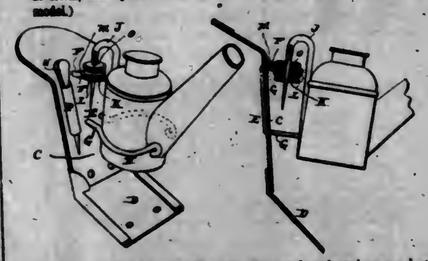
6. In a bow-socket, the combination of a wood filler, a stiffener inserted therein, each said filler and stiffener provided with a tenon, and a ferrule in which said tenons are inserted, substantially as set forth.

7. The combination of a bow-socket provided with an interior rib, a filler provided with a groove in which said rib fits, a stiffener inserted in said filler, said stiffener and filler each provided with a tenon, and a ferrule provided with a groove at its meeting edges, said groove fitting around said socket-rib, said tenons fitting in said ferrule, substantially as set forth.

8. In a bow-socket, the combination, with a stiffener provided with a tenon, of a ferrule provided with an opening in which said stiffener is inserted.

9. The combination of a bow-socket provided with an interior rib, a filler provided with a groove fitting around said rib, said filler also provided with a slot, a stiffener fitting in said filler-slot, said stiffener and filler each provided at corresponding ends with a tenon, said tenons lying in the same transverse plane, and a ferrule made of a single bent piece of metal, the meeting edges of said metal cut angularly, whereby a groove is formed, said groove fitting around said socket-rib, said tenons fitting in said ferrule, said ferrule and stiffener brazed together, and said ferrule and socket also brazed together, substantially as set forth.

410,562. ATTACHMENT FOR MINERS' LAMPS. WARREN C. ROCKWELL, Mount Carmel, Pa., assignor to Isaac Goldschmidt and George B. Renn, same place. Filed Mar. 13, 1889. Serial No. 303,119. (No model.)



Claim.—1. In a lamp-holding attachment for miners' caps or hats, the combination, with the lamp-supporting bracket carrying the coils L, of the block K, fitted in said coils and having the central perforation for the reception of the lamp-hook, as set forth.

2. In a lamp-holding attachment for miners' caps or hats, the combination, with the lamp-supporting bracket and the coils L, of the block K, fitted in said coils and having a central perforation, and the plate O, secured to the coil and extending over the said block, as set forth.

3. The combination, with the plate C, of the wire bracket secured thereto, carrying the coils L and having the curved portions H, and the block fitted in said coils, as set forth.

4. The improved lamp-holding attachment for miners' caps or hats, consisting of the leather plate C, the metallic plate D, secured to the lower end thereof, the keeper P, secured on the front side of the plate C, the lamp-holding bracket secured to said plate and carrying the coils L, and the elastic block fitted in said coils, as set forth.

5. The combination of the lamp-holding bracket, the coils hinged thereto, and the elastic block fitted in the coils, as set forth.

6. The combination of the bracket and the swinging elastic block supported thereby, as set forth.

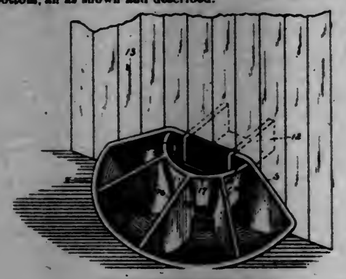
7. In a lamp-holding attachment, the plate C, the bracket E, secured thereto and having its lower end bent to form clamping-arms G for the lamp, and the block K, attached to the upper end of the bracket E and provided with a perforation for the passage of the hook of the lamp, as set forth.

8. In a lamp-holding attachment, the plate C, attached to the miner's hat or cap, the block K, hinged to the plate C to receive the lamp-hook, and the clamping-arms G for the lamp, as set forth.

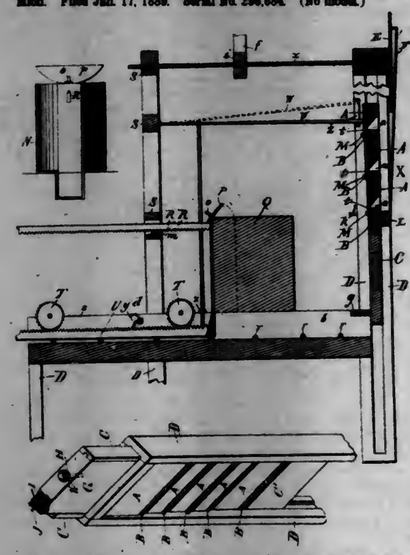
410,563. FEED-TROUGH. HENRY C. SEWARD, Mount Olive, N. J. Filed Dec. 31, 1888. Serial No. 294,266. (No model.)

Claim.—A trough for feeding cattle and the like, consisting of the base-receptacle having a vertical back, a downwardly-inclined bottom joining the lower edge of the vertical back, an outwardly-inclined front wall slightly turned inward at its top at 9 to prevent

the food working over the edge, and carved at its junction with the bottom at 7, and a separate device having a curved back and radial partitions seated and secured within said base-receptacle, the said back wall and the partitions being cut away at their junction with the inclined bottom, all as shown and described.



410,564. EXCELSIOR-MACHINE. CHARLES G. SMITH, Detroit, Mich. Filed Jan. 17, 1889. Serial No. 296,684. (No model.)



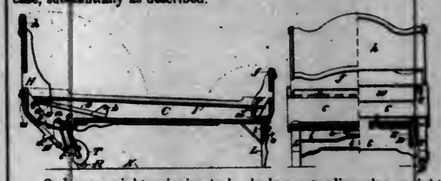
Claim.—1. The combination, in an excelsior-machine, of the frame C, to receive the plate C', the shaving-knives A, and the slitting-knives B, the plate C', fitted in the frame C at the bottom to support the knives, the shaving-knives A, fitted in the frame C and resting on top of the plate C', the slitting-knives B, fitted in the frame C, resting on top of one or more of the shaving-knives A, the plate or cross-head G, set on and fastened at top of the frame C to retain the knives in place, all substantially as set forth.

2. In an excelsior-machine, the combination of the frame C and the plate C', to receive the shaving-knives A and the slitting-knives B, the shaving-knives A, the slitting-knives B, the top plate or cross-head G, to retain the knives in the frame C, the standard D, in which the frame C reciprocates, and the table *b*, which supports the block to be cut up, all substantially as set forth.

3. The combination, in an excelsior-machine, of a table or bench *b*, provided with groove, the groove running full length of table, in which the cog-bar U, supporting the carriage-frame N, runs, the cog-bar U, supporting carriage, the carriage-frame N, to carry the block, propelled and held in position by the cog-wheel T, the cog-wheel T, the bar *i*, and the weight A, which forces the block toward the knives, substantially as shown and set forth.

410,565. FOLDING BED. HENRY M. WOOD, Chicago, Ill. Filed Mar. 2, 1889. Serial No. 301,796. (No model.)

Claim.—1. In an upright swinging bed, a bed-case standing when upright with its bottom in front and its head resting posteriorly upon the floor, in combination with a two-legged stool provided with a pair of foot-rollers, and at its top horizontally pivoted to the bottom of said bed-case, so as to alternately stand upright with and be oppositely inclined and thrust forward feet foremost by said bed-case, and a spring connecting to the head of said case said stool and imparting thereto elastic resistance as a front-leg support to said bed-case, substantially as described.



2. In an upright swinging bed, a bed-case standing when upright with its bottom in front and its head resting posteriorly upon the floor, in combination with a two-legged stool provided with a pair of foot-rollers and pivoted at its top transversely to the bottom of said bed-case, so as to alternately stand upright with and be oppositely inclined and rolled forward by said bed-case, and a spring connecting to said bed-case said stool and imparting thereto elastic resistance as a front-leg support to said bed-case, and a pivoted folding brace provided with a self-dislodging cam, and connecting to said bed-case said stool, and arresting, holding, and releasing the same as a rigid head-leg support to said bed-case, substantially as described.

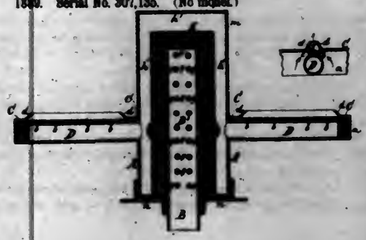
3. In an upright swinging bed, a rigid bed-case having a weight fixed to its head and standing when upright with its bottom in front and its head resting posteriorly upon the floor, in combination with a two-legged stool provided with a pair of foot-rollers and pivoted at its top to the bottom of said bed-case, so as to permit said case to incline forward from an upright half-way to a horizontal position, but only by tilting and thrusting forward, feet foremost, the said stool, and a pivoted folding brace connecting the head of said case and said stool and opening with and arresting their extension from each other, all as a means for making the head, along with its weight, an effective counterpoise to the foot of said bed-case in the more inclined positions of the bed, substantially as described.

4. In a folding bed, the combination, with a bed-case and a movable bed-bottom therein, of an oscillating lever-frame serving as a folding foot-board for the bed, but pivoted to the interior bottom of said case and having a cross-bar extending beneath and supporting one end of said bed-bottom between its standards as a means for raising and lowering said bed-bottom within said bed-case, substantially as described.

5. In a folding bed, the combination, with a bed-case and a movable bed-bottom therein, of an oscillating lever-frame serving as a folding head-board for the bed, but pivoted to the interior sides and at the bottom of said case, and having its standards provided at the sides of said bed-bottom with lug-pins projecting beneath it, and an oscillating guide-frame transversely pivoted to the interior of said case, so as to project across and rest upon said lug-pins, and having a cross-bar extending beneath and supporting one end of said bed-bottom, all as a means for raising and lowering said bed-bottom in said bed-case, substantially as described.

6. A folding and upright swinging bed consisting of the bed-case C, the movable interior bed-bottom I, the oscillating head-board and foot-board lever-frames A H and *f* F J, and guide-frame *g* G, the lever and guide frames pivoted to said case and imparting vertical motion to the bed-bottom therein, and the two-legged stool T *t*, provided with the foot-rollers R and pivoted to the bottom of said case, and the springs S, connecting said stool to said case and imparting elastic resistance thereto as a front-leg support for said case, and the folding braces D, each provided with a self-dislodging cam *d*, and connecting to said case, and arresting, holding, and releasing said stool as a rigid head-leg support for said bed, substantially as described and set forth

410,566. GAS-BURNER FOR LIGHTING, COOKING, AND HEATING PURPOSES. JOHN H. KEYSER, New York, N. Y. Filed Apr. 13, 1889. Serial No. 307,135. (No model.)



Claim.—1. The reservoir A, having hollow burner-arms D, of tubular form, about midway of its height and in communication at their inner ends with its interior and closed at their outer ends and connected to a circular ring *a*, in combination with a plate having burner-passages and a radially-slitted burner-plate attached to the casting of the gas-burner, and a supply-pipe B, having extension-pipe B', perforated along its periphery and terminating above the burner-arms in the portion *m* of the reservoir, substantially as described.

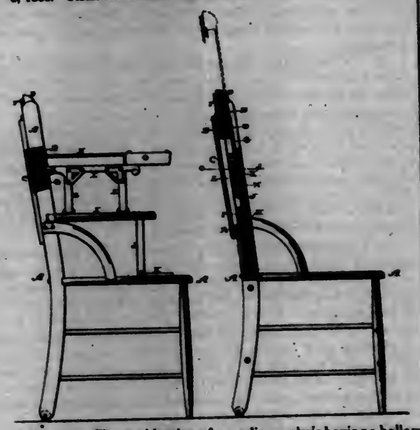
2. In a gas-burner, the combination of the reservoir A, having burner-arms D, of tubular form, about midway of its height and in communication at their inner ends with its interior and closed at their outer ends and connected to a circular ring *a*, radially-slitted burner-plate attached to the casting of the gas-burner, a supply-pipe B, having extension-pipe B', perforated along its periphery and terminating above the burner-arms in the portion *m* of the reservoir, and the finely-perforated or wire-gauze cylinder E, completely inclosing the perforated extension-pipe B', and having a gas-chamber between the inner surface of the reservoir A and the outer surface of the wire-gauze cylinder, substantially as described.

3. In a gas-burner, in combination, the reservoir A, hollow burner-arms D between its ends, the plate C, immediately above said burner-arms and provided with burner-passages, the supply-pipe B, perforated extension-pipe B', and wire-gauze cylinder E, substantially as and for the purpose described.

4. In a gas-burner, in combination, the reservoir A, supply-pipe B, perforated extension-pipe B', wire-gauze cylinder E, plate C, having burner-passages, inclined wind-guards *d*, and hollow burner-arms D, substantially as described.

5. In a gas-burner, in combination, the reservoir A, supply-pipe B, hollow arms D, plate C, having burner-passages attached to the casting of the gas-burner, and inclined wind-guards *d*, substantially as described.

410,567. CHAIR. JOHN HUDSON, Baldwinsville, Mass. Filed May 3, 1889. Serial No. 309,804. (No model.)



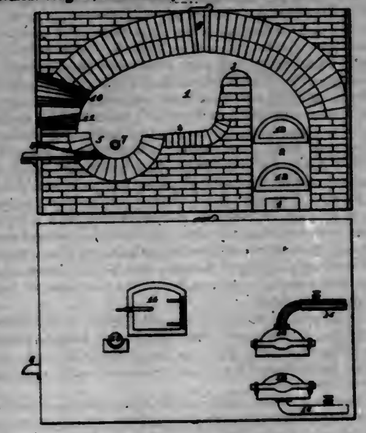
Claim.—1. The combination of an ordinary chair having a hollow or recessed back, a folding child's chair which is adapted to be closed therein, and a removable slide which is placed therein in front of the child's chair after it has been returned to position, substantially as described.

2. The combination of an ordinary chair having a hollow or recessed back, the grooves or guides secured to opposite inner edges of this back, a slide which is placed in the guides, the seat of the child's chair hinged to the back of the chair A and provided with folding arms and legs or supports, substantially as set forth.

410,568. PROCESS OF PRODUCING ALUMINIUM. MARTIN WARNER, Rotheram, assignor of one-half to John A. Hall, Axial, and Albert H. Weber, Denver, Colo. Filed Aug. 3, 1886. Serial No. 283,230. (No specimens.)

Claim.—1. The process of producing the metal aluminum herein described, consisting in treating a fused aluminous fluoride or fluorides, while in a molten-metallic bath and protected from oxidizing agents, with a reagent whose elements dissociate at a temperature below the fusing-point of the aluminous fluoride or fluorides, and having an element of such affinities that it displaces the aluminum in the fluoride or fluorides, but having no element capable of uniting with the aluminum, substantially as set forth.

2. The process of obtaining aluminum by treating a base of fused aluminous fluoride or fluorides, while in a bath of molten metal and protected from oxidizing agents, with a sulphide of silicon or equivalent reagent, substantially as set forth and described.



REISSUES.

11,028. ROTARY STEAM-ENGINE. JOSEPH H. DOW, Cleveland, Ohio, assignor of one-half to William Chisholm, same place. Filed Aug. 6, 1889. Serial No. 319,956. Original No. 302,545, dated Nov. 6, 1883.



Claim.—1. In a rotary steam-engine, the combination, with engine-shaft and a double-cone sleeve mounted on the engine-shaft, substantially as indicated, of bucket-wheels mounted on the respective conical sections of the said sleeve, substantially as set forth.

2. In a rotary steam-engine, the combination, with engine-shaft

and double-cone sleeve mounted on the shaft, of bucket-wheels mounted on the said sleeve, said bucket-wheels having hubs set facing each other, said wheels and hubs having conical bores made to fit the respective conical sections of the sleeve, substantially as set forth.

3. In a rotary steam-engine, the combination, with engine-shaft and a double-cone sleeve mounted on the shaft, of bucket-wheels and attached hubs set facing each other mounted on the said sleeve, the sleeve having external screw-threads at the respective ends thereof, and nuts for engaging such threads, said nuts being made to abut the respective outer faces of the bucket-wheels, substantially as set forth.

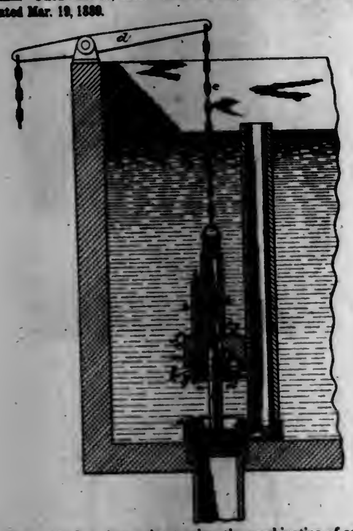
4. In a rotary steam-engine, the combination, with stationary disks and intervening steam-chamber, substantially as indicated, of sleeves for closing the inner periphery of the steam-chamber, said sleeves being screwed together and having external flanges made to clamp the disks as against internal pressure, substantially as set forth.

5. In a rotary steam-engine, the combination, with stationary disks and intervening steam-chamber, said disks having series of chutes and vent arranged thereon, substantially as indicated, of sleeves made to close the inner periphery of the steam-chamber, said sleeves having external flanges made to cover the faces of the inner series of chutes, substantially as set forth.

6. In a rotary steam-engine, the combination, with stationary disks, chutes, and vents, and rotary wheels with buckets, substantially as indicated, of rings made to cover the faces of the outer series of buckets, said stationary disks having recesses to receive such rings, substantially as set forth.

7. In a rotary steam-engine, in combination, stationary disks and opposing rotating wheels bearing, respectively, chutes and buckets arranged in series, substantially as indicated, annular paths between the different series, the relative width of such paths as compared with the buckets or chutes operating therein being such as to include annular steam-distributing passage-ways between adjacent buckets and chutes, substantially as set forth.

11,029. **WATER-CLOSET VALVE.** EDWIN L. KINSEY, Springfield, Mass. Filed June 28, 1880. Serial No. 315,989. Original No. 300,905, dated Mar. 19, 1880.



Claim.—1. In a water-closet valve, the combination of an upper weighted member to which the lifting-chain is attached, with the lower member loosely connected thereto and having a vertical play independently of the upper member and provided with an opening through which the minor flush of water passes, and the valve-seat upon which the lower member first closes, substantially as shown.

2. In a water-closet valve, the combination of the upper weighted member provided with a lifting device at its lower end and the lifting-chain attached to it at its upper end, with the lower perforated vertically-moving member which has an independent vertical play or movement of its own and which is raised by the lifting device, the valve-seat, and a means for retarding the closing of the upper weighted member after the lower perforated member has become seated upon the valve-seat, substantially as specified.

3. The combination, with a valve-seat and a guiding-spindle supported therefrom, of a valve comprising two members, the upper of which consists of a body and an upwardly and downwardly projected hollow spindle open from its bottom, the bore of which is of two diameters, substantially as described, and having a laterally and downwardly extending passage *k*, and a lifting-abutment *l* on said lower spindle-extension, and the lower member consisting, essentially, of an open-work disk adapted for a vertical movement with relation to said lower spindle-extension, substantially as described.

4. The combination, with a valve-seat and a guiding-spindle supported therefrom, of a valve comprising two members, the upper of which consists of a body and an upwardly and downwardly projected hollow spindle open from its bottom, the bore of which is of two diameters, substantially as described, and having a laterally and downwardly extending passage *k*, and a lifting-abutment *l*, vertically adjustable on said lower spindle-extension, and the lower member consisting, essentially, of an open-work disk adapted for a vertical movement with relation to said lower spindle-extension, substantially as described.

5. The combination, with a valve-seat and a guiding-spindle supported therefrom, of a valve comprising two members, the upper of which consists of a body and an upwardly and downwardly projected hollow spindle open from its bottom, the bore of which is of two diameters, substantially as described, and having a laterally and downwardly extending passage *k*, and a regulating-screw therefor, and a lifting-abutment *l* on said lower spindle-extension, and the lower member consisting, essentially, of an open-work disk adapted for a vertical movement with relation to said lower spindle-extension, substantially as described.

6. The combination, with the valve-seat and a guiding-spindle supported therefrom, of a valve comprising two members, the upper of which consists of a cylindrical body recessed on its under side having an upwardly and downwardly projected hollow spindle, the bore of which is of two diameters, substantially as described, and having a lateral and downwardly-extending passage *k*, and the lower extension of the spindle screw-threaded and provided with an apertured abutment-nut *l*, and the lower member consisting of a sleeve, a concentric collar, and radial connecting-arms *p*, and the said collar provided with a washer *q*, attached at and extending outwardly from its edge, substantially as and for the purpose described.

7. The combination, with the valve-seat and a guiding-spindle supported therefrom, of a valve comprising two members, the upper of which consists of a cylindrical body *f*, recessed on its under side, and an upwardly and downwardly projected hollow spindle open from its bottom, the bore of which is of two diameters, substantially as described, and having a lateral and downwardly-extending passage, and an adjusting-screw therefor, and provided with the apertured adjustable abutment-nut *l*, and the lower member consisting of the sleeve *m*, the collar *n*, flanged and screw-threaded, and the connecting-arms *p*, and the washer *q*, and nut *s*, combined and operating substantially as and for the purpose described.

8. In a water-closet valve, the combination of the upper weighted vertically-moving member provided with a water-channel through it and having a lifting device secured thereto, the perforated lower member loosely attached to the upper one, and a guiding-spindle common to both members, substantially as specified.

9. In a water-closet valve, the combination of the upper weighted vertically-moving member, the lifting-chain attached to its upper end, the perforated valve or lower member loosely connected to and having an independent movement from the upper member, and a guiding-spindle extending from the valve-seat and which is common to both members, substantially as shown.

PHOTO LITH. NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE JLJINSKY.

Decided August 24, 1889.

JOINDER OF INVENTIONS.

An apparatus attached to a photographer's lamp for feeding a magnesium spray to the flame may be claimed in the same application with other parts of the lamp.

ON petition.

PETROLEUM-LAMPS.

Application filed March 23, 1889, No. 304,475.

Mr. C. T. Burchard and *Mr. A. C. Fraser* for the applicant.

FISHER, *Acting Commissioner:*

This is a petition from the action of the Primary Examiner requiring a division of petitioner's application because it embraces two distinct inventions.

The invention described and claimed in this application is a lamp for the use of photographers. The oil-reservoir is so constructed that when it is desired to use the lamp a sufficiency of oil may be supplied to the wick; but when not in use the oil is absorbed, so that the lamp may be safely packed and transported without danger of leakage. The lamp is also adapted to be used either for ordinary purposes or, when supplied with a ruby chimney, in the photographer's dark-room. Attached to the lamp is an apparatus by which a spray of magnesium may be fed to the flame for use in the production of flash-light photographs.

It will be seen from this brief description of the lamp that it is one especially designed and adapted for the several usages desired by photographers, and as such constitutes a unitary invention. All the several parts may therefore be included in the same application.

The petition is granted.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of Ohio, Western Division.

YALE & TOWNE MANUFACTURING COMPANY *et al. v.* CONSOLIDATED TIME LOCK COMPANY.

Decided May 16, 1889.

1. LITTLE—TIME-LOCKS—VALIDITY.

The first and seventh claims of reissued Letters Patent No. 8,550, granted January 1, 1879, to the Yale Lock Manufacturing Company, as assignee of Samuel Little, for an improvement in time-locks, *Held* valid, and the seventh claim *Held* not an expansion of the original patent, on the authority of *Yale Lock Co. v. Berkshire Nat. Bank* (17 Fed. Rep., 531) and *Yale Lock Co. v. New Haven Sav. Bank*, (32 Fed. Rep., 167.)

2. INFRINGEMENT.

Defendant's lock was substantially identical with the lock of the defendant in *Yale Lock Co. v. Berkshire Nat. Bank*, except that in the latter there was an additional dog controlled by the time mechanism, which dog added nothing to the efficiency or value of the lock. The defense of that case was assumed by a lock company, or its president, who afterward became president of defendant, and all the questions presented here were presented in that case. On the authority of that case *Held* that defendant's lock was an infringement.

SUIT BY the Yale & Towne Manufacturing Company and others against the Consolidated Time Lock Company for the infringement of a patent.

Messrs. Wetmore & Jenner for the complainants.

Mr. W. C. Cochran and *Messrs. Parkinson & Parkinson* for the defendant.

SAGE, *J.:*

This suit is for the infringement of the first and seventh claims of reissued Letters Patent No. 8,550, granted January 1, 1879, to the Yale Lock Manufacturing Company, as assignee of Samuel Little, for an improvement in time-locks. This patent has been repeatedly sustained by the courts. The first and seventh claims were held valid by Judge Shipman in *Yale Lock Manufg. Co. v. Norwich Nat. Bank* and *Same v. New Haven Sav. Bank*, (6 Fed. Rep., 377;) by Judge Lowell in *Yale Lock Co. v. Berkshire Nat. Bank*, (17 Fed. Rep., 531,) and again by Judge Shipman in *Yale Lock Co. v. New Haven Sav. Bank*, (32 Fed. Rep., 167,) decided September 10, 1887, upon petition for rehearing. In this case claims 1 and 7 were considered in the light of *Miller v. Brass Co.* (104 U. S., 350) and of subsequent cases; and Judge Shipman, concurring with Judge Lowell in *Yale Lock Co. v. Berkshire Nat. Bank*, cited above, held that both claims were valid, and particularly that the seventh claim of the reissued patent was not an undue expansion of the original patent.

Upon the question of infringement there is no material difference between the lock manufactured by the defendant in this case and that used by the defendant in the case of *Yale Lock Co. v. Berkshire Nat. Bank*. The time mechanism is the same in both locks. In the Berkshire lock it controls two dogs, in the defendant's but one; but the extra dog in the Berkshire lock adds nothing to its efficiency or value. In other particulars the two locks are substantially identical. It was true in the Berkshire lock, as it is in the defendant's lock, that after the lever has moved into the releasing position the dog is still held in the locking position by the supporting mechanism until the latter is moved by the combination-lock. The defense of the Yale Lock Company case against the Berkshire National Bank was assumed by the Hall Safe Lock Company, of Cincinnati, Ohio, or by Mr.

Hall, its president, who subsequently became president of the defendant company, which carried on the manufacture of the lock and mechanism now claimed to be an infringement. All the questions presented here were presented in that case, and it was decided adversely to the defendant.

I have read the opinions of Judge Shipman and of Judge Lowell, and, aside from considerations of comity, which, however, I am not at all inclined to disregard, have found them so entirely satisfactory that I think it unnecessary to enter into further details. Upon the authority of the cases decided by them a decree for an injunction and account, with costs, will be entered against the defendant.

U. S. Circuit Court—Southern District of Ohio, Western Division.

NATIONAL CABLE RAILWAY COMPANY *v.* MT. ADAMS & EDEN PARK INCLINED RAILWAY COMPANY.

Decided May 24, 1889.

1. HOVEY—ENDLESS-ROPE RAILWAYS—ANTICIPATION.

The first claim of Letters Patent No. 195,372, for improvement in endless-rope traction-railways, granted to Asa E. Hovey September 18, 1877, which is "the construction and arrangement together of the brackets * * * and rails * * * forming the frame or skeleton for a rope-tunnel for endless-rope traction-railways, said-brackets forming a support for the groove-rails and for the planking forming the sides or shell of the tunnel," is void for want of invention, having been anticipated by the Gardner patent, No. 19,736, of March 23, 1858, the Thompson patent, No. 131,913, of October 1, 1872, and the structure used in 1873 by the Clay Street Hill Road, of San Francisco, Cal.

2. INVENTION.

Any differences in construction and material between the structure described by the first claim of the Hovey patent and the devices covered by the prior patents and used by the Clay Street Hill Road do not constitute invention, but merely involve ordinary mechanical skill, and are not patentable.

3. INFRINGEMENT.

If such first claim could be sustained by limiting its scope, so as to make it cover all of the elements described in the specifications, it is not infringed by the structure used by defendant, the Mt. Adams & Eden Park Inclined Railway Company.

4. ANTICIPATION.

The first branch of the sixth claim of said Letters Patent, in reference to the combination, "with the rope tunnel or chamber, of pulleys journaled in the same, upon which the rope runs," was anticipated by the Gardner patent and is not patentable.

5. SAME.

The second branch of the sixth claim, relating to the "means for lubricating the bearings of said pulleys from the outside of the tunnel," lacks invention, and is not patentable, in view of the well-known use of tubes to carry oil to inaccessible journals.

6. INFRINGEMENT.

Even if such sixth claim were patentable, it is not infringed by defendant, who does not use any oil reservoirs or tubes leading from the outside of the tunnel to the shaft-bearings, such as are covered by said sixth claim.

BILL for infringement of patent, filed by the National Cable Railway Company against the Mt. Adams & Eden Park Inclined Railway Company.

The first claim of complainant's patent is as follows:

1. The construction and arrangement together of the brackets A A and rails B B', forming the frame or skeleton for a rope-tunnel for endless-rope traction-railways, said brackets forming a support for the groove-rails, and for the planking forming the sides or shell of the tunnel, substantially as herein described and specified.

Mr. George Harding for the complainant.

Messrs. Parkinson & Parkinson and *Messrs. Ramsey, Maxwell & Ramsey* for the defendant.

JACKSON, *J.*:

As the assignee and present owner of Letters Patent No. 195,372, for improvement in endless-rope traction (or cable) railways, granted to Asa E. Hovey September 18, 1877, the complainant brings this suit to restrain the defendant from infringing the same, and for an account of profits. The complainants insist that the defendant infringes the first and sixth claims of said Letters Patent. The defendant sets up various defenses: Anticipation by prior public use of like structures and by prior patents, want of patentable novelty, and denial of infringement. The issues thus raised and presented have been carefully examined and considered in connection with the evidence in the cause, and, without going into details or a full review of the facts established by the evidence and of the law applicable thereto, the conclusions of the court are the following, viz:

1. That, considered in the light of the prior art, as shown more particularly in the Gardner patent, No. 19,736, of March 23, 1858, and in the Thompson patent, No. 131,913, of October 1, 1872, and in the structure actually used and employed in 1873 by the Clay Street Hill Road of San Francisco, Cal., the device or combination covered by the first claim of said Hovey patent, No. 195,372, is wanting in novelty and patentable invention, the same having been anticipated by said prior patents and the structure used by said Clay Street Road.

2. That whatever differences in construction and material exist between the structure described in and by the first claim of said Hovey patent, No. 195,372, and the devices covered by the foregoing prior patents, together with that actually used and employed in 1873 by the Clay Street Hill Road of San Francisco, such differences do not constitute invention, but merely involve the exercise of ordinary mechanical skill, and were not, therefore, patentable.

3. That if the first claim of said Letters Patent No. 195,372 could be sustained by limiting its scope and operation, so as to make it cover and embrace all the elements of the combination described in the specifications, including the sill C and the planking resting thereon, which forms the sides or shell of the tunnel, then, as thus limited and confined to the specific structure described in the patent, it is not infringed by the defendant's structure.

4. That the first clause or branch of the sixth claim of said Letters Patent, in reference to the arrangement or combination "with the rope tunnel or chamber of pulleys journaled in the same, upon which the rope runs," was anticipated by the Gardner patent, No. 19,736, and is wanting in patentable novelty; that, in respect to the second clause of said claim relating to the "means for lubricating the bearings of said pulleys from the outside of the tunnel, substantially as described and shown," no patentable invention is shown, in view of the general and well-known use of tubes for carrying oil to inaccessible journals.

5. But, if said sixth claim contained any patentable device, the same is not infringed by the defendant, who employs a different means for oiling its journal-boxes. Defendant does not use or employ any oil-reservoirs or oil-tubes leading from the outside of the tunnel to the shaft-bearings such as those described in the specifications and drawings of said Letters Patent No. 195,372, and complainant certainly cannot properly insist upon such a broad construction of the latter clause of said sixth claim as to cover any and all openings or holes made in the covering of the tunnel for the purpose of reaching the journals with oil directly applied.

6. It follows from the foregoing conclusions that the complainant's bill must be dismissed, which is accordingly ordered and adjudged, with costs.

U. S. Circuit Court—Southern District of Ohio.

LEONARD *et al. v.* WHITE'S GOLDEN LUBRICATOR COMPANY.

Decided May 4, 1889.

TRADE-MARKS—WHAT CONSTITUTES.

The word "Valvoline," compounded and used on packages of lubricating-oils by plaintiffs, and registered as a Trade-Mark, may be used for that purpose, and the use thereof by defendant in the same manner will be enjoined, though defendant uses his own name in connection with the word.

ON MOTION for temporary injunction.

Messrs. Kittredge & Wilby for the complainants.
Messrs. Jordan & Jordan for the respondent.

SAGE, *J.*, (orally:)

This is a motion for a temporary injunction to restrain defendant from the infringement of complainant's Trade-Mark, "Valvoline." The complainants set forth in their bill that they are, and have been for many years, engaged in the manufacture of lubricating-oils; that since about the year 1873 they have used as a Trade-Mark for their lubricating-oils the word "Valvoline," a fanciful word invented by themselves, and applied to their packages as a Trade-Mark, and that in the month of May, 1881, it was registered under the statutes of the United States. According to the registry certificate the Trade-Mark consists of the word "Valvoline," as shown in the *fac-simile* attached to the certificate. Extending through the center of it is a half-moon or crescent containing dots or stars; but these, it is said, may be omitted and some other device substituted, or they may be omitted altogether, without material change. That the defendants have been using this word as a designation or mark for their lubricating-oils is not denied. They do not use the crescent or half-moon either with or without the dots or stars, but they use the word "Valvoline" in connection with their own name—that is to say, their oil is sold as "White's Golden Lubricator Valvoline No. 1 or 2," and other numbers, and is so labeled.

The defense is that "Valvoline" is a descriptive word; that it is really a compound made up of the words "valve" and "oleine;" that its literal signification is "valve-oil," and that the law of Trade-Marks does not permit a descriptive word, or, rather, a word descriptive of the article, to be appropriated as a Trade-Mark, which is undoubtedly the law, so settled that it requires no verification.

It would be out of all reason to say that a man should not be at liberty to sell a gun as a gun because some other person had chosen to appropriate that name as a Trade-Mark for the guns he wanted to sell; and hence no person has any right to appropriate as a Trade-Mark a word of the language which is descriptive of the article to which the Trade-Mark is applied; but that is quite different from the proposition presented in this case. Here there was no such word as "Valvoline." The article sold was known in the language and to the trade as lubricating-oil. That was the appellation descriptive of that kind or grade of oil, and it could not be appropriated as a Trade-Mark. But these complainants compounded the word "Valvoline," and at the same time made it their Trade-Mark. Now, if they had originated that word and applied it descriptively to their lubricating-oils, without appropriating it as a Trade-Mark, they would thereby have abandoned it to the public and made it public property, and that, once done, would put an end to their right to it as a Trade-Mark.

The defendant cites *In re Leonard & Ellis' Trade-Mark*, (L. R., 26 Ch. Div., 288,) decided in 1884; but the decision was upon grounds not applicable here. It appeared from the evidence that, although the word had been registered as a Trade-Mark in the United States prior to its use in England, the complainants had in England, before applying for registration, used it as descriptive of their lubricating-oils, which any one had the right to manufacture, and not as a Trade-Mark, and the court held that by this descriptive use prior to the time when they had the word registered the complainants lost their right to the exclusive use. The court also questioned whether a word used alone as a Trade-Mark in a foreign country before the passing of the Trade-Marks act of 1875 could be registered under that act if it had not been so used in England. Selborne, L. C., said that he was not disposed to doubt that if the word had been used in the United Kingdom as a Trade-Mark before the passing of the act it might have been registered under the act; but he confirmed the finding of the court below that it had been used descriptively, and not as a Trade-Mark, and that it had been thereby dedicated to the public of the United Kingdom. The defendant in this case has substituted its own name for that of the complainants in connection with the word "Valvoline," so that there is no pretense that the defendant is selling lubricating-oils as the oils of the complainant, because it is clearly stated in their labels to be "White's Valvoline Oil;" but that does not relieve the defendant. The authorities upon this point are numerous; but it is not necessary to refer to any other than the case of *Menendez* v. *Holt*, (128 U. S., 514; 9 Sup. Ct. Rep., 143,) which is the latest decision of the United States Supreme Court upon this subject.

The motion for a temporary injunction, to continue until the final hearing and decree, will be granted upon the complainants executing a bond, with sureties in the sum of $2,000.

TRADE MARKS REGULATIONS OF JAPAN.

Imperial Ordinance No. LXXXVI.

TRADE MARKS REGULATIONS.

Promulgated December 18, 1888.

Article I.—Any person desirous of using a trade mark to distinguise his own merchandise may register such trade mark under these regulations and may use the same exclusively. Trade marks should be composed of distinctive diagrams, or characters, or of both combined, as their essential parts.

Art. II.—Trade marks of the following nature will not be registered:—

1. Those that contain a scandalous design.
2. Those the essential parts of which consist of a common designation of merchandise, or of a foreign or domestic national flag.
3. A mark closely resembling one already in use by another person for a similar article.

Art. III.—Applications for registration of trade marks should be made to the Minister of State for Agriculture and Commerce, accompanied by written detailed statements and specimens of the marks.

NOTE.—All applications, written detailed statements and specimens will be submitted to the Patents Bureau.

Art. IV.—On the receipt of an application for registration of a trade mark, the Director of the Patents Bureau shall require the judges of the Bureau to examine the same, and should such examination prove satisfactory, the trade mark will, with the approval of the Minister of State for Agriculture and Commerce, be duly registered and a certificate to that effect issued.

Art. V.—The registration certificate shall bear the signatures of the Minister of State for Agriculture and Commerce and of the Director of the Patents Bureau, and should be handed to the applicant with the detailed statement and specimen of the trade mark.

Art. VI.—The term of exclusive use of any trade mark shall be 20 years, computed from the date of registration.

Art. VII.—The exclusive use of a trade mark shall be limited to merchandise specified by the applicant in accordance with the classification of merchandise as fixed by the Minister of State for Agriculture and Commerce.

Art. VIII.—When more two or more persons apply for registration of the same or a similar trade mark for similar merchandise, registration will be granted according to priority in date of application; otherwise registration will not be granted.

NOTE.—When one applicant withdraws his application the foregoing provision will not apply.

Art. IX.—When a person who has secured or is about to secure registration of a trade mark dies, his right shall devolve upon his heir.

Art. X.—Even though a trade mark has been registered, should it be found to fall under the provisions of Art. II. or to have been registered in contravention of Art. VIII. such registration shall be declared null and void.

Art. XI.—In matters relating to the examination of, and judgment and arbitration on, trade marks, the Patents Regulations shall apply.

Art. XII.—The rights pertaining to a trade mark may be sold or transferred or made property in common only in the event of the owner of a registered trade mark selling or transferring his business, or admitting another into partnership. In such a case application should be made to the Patents Bureau to have such contract registered, and no contract that is not so registered shall be valid as regards a third person.

Art. XIII.—Trade marks even which have already been registered shall become invalid under the following circumstances:—

1. When without proper reason a trade mark is not put into use within 6 months from the date of registration.
2. When without proper reason the use of a trade mark has been suspended for one year.
3. When the particular business using a trade mark has been relinquished.
4. When fraud has been discovered with regard to the number of places of production or quality of the merchandise to which a trade mark is applied.
5. When a disfigured or defaced trade mark has been used.

Art. XIV.—Any owner of a trade mark who desires to renew registration of his trade mark after the expiration of the term for which registration was originally granted, may apply for such renewal of his certificate.

Art. XV.—Application, stating particulars, may be made for renewal of any certificate which has been defaced or lost.

Art. XVI.—Any owner of a registered trade mark who discovers that his detailed statements or specimens were imperfect, may apply for revision of his certificate by submitting revised statements and specimens with a view to securing the validity of his trade mark.

NOTE.—This will not apply in any case where essential alterations in a trade mark are involved.

Art. XVII.—The following fees shall be paid for applications or demands in connection with trade marks:—

1. For registration of a trade mark—1 *yen* for each trade mark, as applicable to one variety of merchandise.
2. For registration of sale, transfer, &c., of a trade mark—1 *yen* for each trade mark as applicable to one variety of merchandise.
3. For renewal of registration certificate—1 *yen* for each certificate.
4. For revision of registration certificate—2 *yen* for each trade mark as applicable to one variety of merchandise.
5. For arbitration—7 *yen* for each case.

Art. XVIII.—On the issue of a certificate of registration of a trade mark, or of a revised certificate, or a renewed certificate, a registration fee of 10 *yen* should be paid for each variety of merchandise to which the trade mark applies.

Art. XIX.—Official trade mark reports will be printed from time to time by the Patents Bureau, and provided for the inspection of the public. Such reports may also be purchased at a reasonable price.

Art. XX.—Copies of documents in connection with registered trade marks may be obtained from the patents Bureau on payment of a reasonable fee.

Art. XXI.—Any one who infringes the rights of exclusive use of a registered trade mark will be held responsible for the indemnification of the owner of such trade mark.

Art. XXII.—Three years will be the full term for indemnification for loss as above.

Art. XXIII.—Any one who applies a trade mark similar to that of another to the same or similar merchandise in the full knowledge of that fact, and sells such merchandise, or who with such knowledge sells such merchandise on behalf of another, shall be liable to major confinement for a period not exceeding 6 months and not less than 15 days, or to a fine not exceeding 100 *yen* and not less than 10 *yen*.

Any one who obtains a registration certificate by fraudulent means, or affixes the word "registered" to any trade mark which has not been registered, or who with full knowledge of the fact sells on behalf of another merchandise bearing such false or fraudulent trade marks, shall be liable to the same punishment as above.

Art. XXIV.—In any of the foregoing events the infringing trade mark shall be effaced, and should the mark be inseparable from the goods the latter shall be destroyed.

Art. XXV.—Investigation into offences coming under the provisions of the first clause of Art. XXII., shall take place on the complaint of the injured party.

In such case judge may, on the motion of the complainant, order the temporary suspension of merchandise connected with the offence.

Art. XXVI.—The provisions of the Criminal Code as to the concurrence of several offences will not apply to contraventions of these regulations.

Art. XXVII.—Detailed rules for the carrying out of these regulations shall be specially prepared by the Minister of State for Agriculture and Commerce.

Art. XXVIII.—These regulations will be put in force on 1st February, 1889.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 48—NO. 11. TUESDAY, SEPTEMBER 10, 1889. PRICE—$5 per year.

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Changes in Classification.

(ORDER No. 578.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 2, 1889.

The following changes are directed in Division IV:

New Class 189, Iron Structures, and sub-classes thereunder are established, as follows:

1. Jails.
2. Buildings.
3. Grilles.
4. Metallic ceilings.

The following sub-classes are established:

In Class 14, Bridges:

11. Flooring.
12. Truss, Bow-string.

In Class 108, Roofing:

8. Flashing.

In Class 139, Fire Escapes and Ladders:

20. Fluid-check.
21. Fly-check.
22. Escapement-check.
23. Governor-check.

ROBERT J. FISHER,
Acting Commissioner.

Additional Sub-Classes.

(ORDER No. 579.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 3, 1889.

The following additional sub-classes are hereby established in Division XXVI:

In Class 171, Electricity, Generation:

121. Inductoriums—
122. Induction-coils.
123. Transformers, Rotary.
124. Transformers, Stationary.
125. Pyro-magneto-electric devices.

In Class 172, Electricity, Motive-Power:

126. Motors, Reciprocating.

ROBERT J. FISHER,
Acting Commissioner.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and catalogued in the Scientific Library for convenient and ready reference.

Issue of September 10, 1889.

Patents	431—No.	410,569 to No. 410,999, inclusive.
Designs	13—No.	19,301 to No. 19,313, inclusive.
Trade-Marks	25—No.	16,990 to No. 17,014, inclusive.
Labels	3—No.	6,011 to No. 6,013, inclusive.
Reissues	None.	
Total issue	472	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	.....	Nebraska	3	.....
Arizona Territory	1	.....	Nevada	.....	.....
Arkansas	1	.....	New Hampshire	5	.....
California	11	.....	New Jersey	23	.....
Colorado	2	.....	New Mexico Terri'y	.....	.....
Connecticut	19	.....	New York	76	7
Dakota Territory	2	.....	North Carolina	3	.....
Delaware	.....	.....	Ohio	22	.....
District of Columbia	2	.....	Oregon	.....	.....
Florida	1	.....	Pennsylvania	39	5
Georgia	2	2	Rhode Island	9	.....
Idaho Territory	.....	.....	South Carolina	2	.....
Illinois	30	1	Tennessee	4	.....
Indiana	12	1	Texas	8	.....
Iowa	10	1	Utah Territory	.....	.....
Kansas	6	.....	Vermont	4	.....
Kentucky	5	.....	Virginia	2	.....
Louisiana	4	1	Washington Terri'y	.....	.....
Maine	2	.....	West Virginia	.....	.....
Maryland	3	.....	Wisconsin	6	.....
Massachusetts	27	1	Wyoming Terri'y	.....	.....
Michigan	18	1	U. S. Army	.....	.....
Minnesota	5	1	U. S. Navy	.....	.....
Mississippi	1	.....			
Missouri	24	.....	Total to citizens of the United States	407	21
Montana Territory	1	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Australia	.....	.....	Germany	13	.....
Austria-Hungary	2	.....	Italy	1	.....
Belgium	.....	.....	Netherlands	.....	.....
Bermuda	.....	.....	New South Wales	.....	.....
Brazil	.....	.....	Queensland	.....	.....
Canada	3	.....	Russia	.....	.....
Canary Islands	.....	.....	Scotland	.....	.....
Columbia, U. S. of	.....	.....	Spain	.....	.....
Cuba	.....	.....	Switzerland	4	.....
Denmark	.....	.....	Victoria	1	.....
Ecuador	.....	.....			
England	11	5	Total to citizens of foreign countries	37	7
France	2	2			

DESIGNS.

19,301.—SPOON, FORK, &c.—*John H. Argyll*, Newburyport, Mass., assignor to *The Towle Manufacturing Company*, same place. Application filed July 15, 1889. Serial No. 317,643. Term of patent 7 years.

19,302.—UPRIGHT PIANO HAVING SUPPLEMENTAL TOP.—*George W. Lyon*, Chicago, Ill. Application filed August 3, 1889. Serial No. 319,691. Term of patent 7 years.

19,303.—BRACKET.—*Martin Merklen*, New York, N. Y. Application filed August 9, 1889. Serial No. 320,283. Term of patent 7 years.

19,304.—CHIMNEY-CAP.—*Gregoire Poirier*, Garfield, Clay county, Kans. Application filed June 24, 1889. Serial No. 315,433. Term of patent 14 years.

19,305 and 19,306.—ORNAMENTATION OF CHATELAINE-BAG FRAMES. *Louis P. Prahar*, Brooklyn, N. Y. Applications filed August 3, 1889. Serial Nos. 319,689 and 319,690. Term of patents 7 years.

19,307.—LAMP-BURNER.—*Lewis J. Atwood* and *Frederick W. Tobey*, Waterbury, Conn., assignors to *The Plume & Atwood Manufacturing Company*, same place. Application filed July 6, 1889. Serial No. 316,705. Term of patent 7 years.

19,308.—WIRE-FENCE-TWISTING DISK.—*Charles Travis Hupp*, New Market, Va. Application filed July 9, 1889. Serial No. 316,960½. Term of patent 14 years.

19,309.—COFFIN.—*Leo Stein*, Rochester, N. Y. Application filed August 3, 1889. Serial No. 319,687. Term of patent 14 years.

19,310.—BURIAL-CASKET LID.—*Leo Stein*, Rochester, N. Y. Application filed August 3, 1889. Serial No. 319,688. Term of patent 14 years.

19,311.—RADIATOR.—*Thomas H. Williams*, Jersey City, N. J., assignor to himself and *Samuel D. Tompkins*, same place. Application filed July 17, 1889. Serial No. 317,838. Term of patent 14 years.

19,312.—RADIATOR.—*Thomas H. Williams*, Jersey City, N. J., assignor to himself and *Samuel D. Tompkins*, same place. Application filed July 10, 1889. Serial No. 317,068. Term of patent 14 years.

19,313.—CELERY-DISH.—*Joseph Locke*, Toledo, Ohio, assignor to *The W. L. Libbey & Son Company*, same place. Application filed April 6, 1889. Serial No. 306,258. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,990.—MEATS AND MEAT FOOD PRODUCTS.—*Armour & Co.*, Chicago, Ill. Application filed March 9, 1889. Used since May 1, 1879.

"The representation of a shield bearing a diagonal cross-band."

16,991.—SMOKING-TOBACCO AND PLUG-TOBACCO FOR CHEWING.—*Arnold, Carlton & McCord*, Atlanta, Ga. Application filed August 12, 1889. Used since May 15, 1889.

"The words 'HENRY GRADY.'"

16,992.—CIGARETTE-PAPER.—*Joseph Bardou et Fils*, Perpignan, France. Application filed August 7, 1889. Used since May, 1874.

"The word 'GOUDRON.'"

16,993.—PERFUMERY AND PERFUMED TOILET PREPARATIONS AND EXTRACTS.—*F. C. Calvert & Co.*, Bradford, Manchester, county of Lancaster, England. Application filed December 14, 1888. Used since August, 1888.

"The device of a circular line with four arrows radiating from a star in the center."

16,994.—ICE-MAKING MACHINES.—*Alexander Conacher*, New York, N. Y. Application filed August 6, 1889. Used since May 17, 1889.

"The word 'ZERO.'"

16,995.—SHOES.—*M. Ellin & Co.*, Philadelphia, Pa. Application filed June 29, 1889. Used since June 7, 1889.

"'E E E E,' suggestive of 'FOR EASE.'"

16,996.—LIQUID STAIN FOR FURNITURE.—*Fleury & Faust*, New Orleans, La. Application filed August 8, 1889. Used since December, 1887.

"The letters and character 'F & F' and the representation of a bedstead."

16,997.—TOILET SOAP.—*Granite City Soap Company*, Fall River, Mass. Application filed August 9, 1889. Used since July 1, 1888.

"The representation of a white elephant and the words 'WHITE ELEPHANT.'"

16,998.—LIQUID SHOE-BLACKING.—*John M. Hillan*, Shenandoah, Pa. Application filed August 1, 1889. Used since July 15, 1889.

"The word 'ECLAT.'"

16,999.—BOILER CLEANSING MATERIAL.—*S. W. Lord & Co.*, Philadelphia, Pa. Application filed August 10, 1889. Used since July 15, 1889.

"The representation of a safety-valve and an eagle perched thereon."

17,000.—HEATING AND COOKING STOVES.—*The Michigan Stove Company*, Detroit, Mich., Buffalo, N. Y., and Chicago, Ill. Application filed August 5, 1889. Used since January, 1882.

"The words 'WORLD'S BEST.'"

17,001.—NERVINE AND GENERAL RESTORATIVE.—*Victor H. Monroe*, Seymour, Ind. Application filed July 27, 1889. Used since January 1, 1889.

"The words 'ELIXIR VITÆ, OR MONROE'S NERVINE SPECIFIC.'"

17,002.—MINERAL WATERS.—*John Morgan*, New York, N. Y. Application filed August 9, 1889. Used since March 1, 1872.

"The combination of a siphon-bottle and five cupids."

17,003.—GINGER-ALE.—*John Morgan*, New York, N. Y. Application filed August 9, 1889. Used since August 1, 1889.

"The combination of an eagle standing on a shield, the latter extending across a green band with red edges, and green stalks or plants of ginger."

17,004.—COUGH-SYRUP.—*Lon J. McConnell*, Carnesville, Ga. Application filed August 1, 1889. Used since July 26, 1889.

"The letters 'P. C. C.'"

17,005.—FLOOR AND BATH MATS.—*McKesson & Robbins*, New York, N. Y. Application filed July 25, 1889. Used since July 1, 1889.

"The word 'KORKOZY.'"

17,006.—BEER.—*P. M. Ohmeis & Co.*, New York, N. Y. Application filed August 1, 1889. Used since June 22, 1889.

"The representation of a star together with the word 'MILWAUKEE' and the letters 'V Y V.'"

17,007.—CIGARS.—*Onrida Cigar Co.*, Oneida, N. Y. Application filed August 9, 1889. Used since September, 1887.

"The words 'OLD HOMESTEAD.'"

17,008.—COGNAC BRANDY.—*Pector & Ducout, Jr.*, Paris, France. Application filed July 9, 1888. Used since 1867.

"The representation of a rooster mounted on a globe and the words 'COGNAC DEL GALLO.'"

17,009.—CORDAGE.—*The Schlichter Jute Cordage Company*, Philadelphia, Pa. Application filed July 18, 1889. Used since June 13, 1889.

"'KEYSTONE,' whether expressed pictorially or in word."

17,010.—CIGARS, CIGARETTES, AND TOBACCO.—*Nicholaus Schubmehl*, Binghamton, N. Y. Application filed August 6, 1889. Used since June 10, 1889.

"The letters and characters 'C. & E. B. & L. F.'"

17,011.—LADIES' AND CHILDREN'S UNDER-CLOTHING, GARMENTS, CORSETS, AND EMBROIDERIES, LACES, AND TRIMMINGS FOR THE SAME.—*Stapley & Smith*, London, England. Application filed August 10, 1889. Used since 1883.

"The representation of two hands in the act of sewing."

17,012.—LADIES' AND CHILDREN'S UNDER-CLOTHING, GARMENTS, CORSETS, AND EMBROIDERIES, LACES, AND TRIMMINGS FOR THE SAME.—*Stapley & Smith*, London, England. Application filed August 10, 1889. Used since 1883.

"The word 'STERLING' and the character '£.'"

17,013.—LADIES' AND CHILDREN'S UNDER-CLOTHING, GARMENTS, CORSETS, AND EMBROIDERIES, LACES, AND TRIMMINGS FOR THE SAME.—*Stapley & Smith*, London, England. Application filed August 10, 1889. Used since 1883.

"The representation of a dog's head with the word 'ALPINE.'"

17,014.—VARIOUS TOILET PREPARATIONS.—*William S. Thomson*, London, England. Application filed June 8, 1889. Used since January, 1874.

"A bottle-stopper or representation thereof the upper portion of which is in the shape of a crown."

LABELS.

6,011.—Title: "DR. GETMAN'S PAIN RELIEF OR MOUNTAIN HERB LINIMENT."—*Getman & Lainson*, Ida Grove, Iowa. Application filed August 16, 1889.

6,012.—Title: "MEXICAN FILLER." (For cigars.)—*Frederick C. Lauer*, Minneapolis, Minn. Application filed August 17, 1889.

6,013.—Title: "COIN GUM." (For packages of chewing-gum with which coin is given away.)—*Frank A. Seeber* and *Jacob S. Ammon*, Reading, Pa. Application filed August 13, 1889.

DISCLAIMERS.

308,482.—*George Whysall*, Toledo, Ohio, and *John A. Lambing*, Wilkinsburg, Pa. IMPROVEMENT IN GAS-FURNACES FOR STEAM-BOILERS. Patent dated February 26, 1889. Disclaimer filed September 4, 1889.

Enter their disclaimer to the first claim of said patent, which is in the following words:

"1. A combustion-chamber of a furnace having grate-bars and adapted to the combustion of solid fuel, and having a gas-supply pipe or port entering the combustion-chamber through the wall thereof, and having its opening at said wall above the normal level of the fuel on the grate-bars, substantially as and for the purposes described."

PATENTS

GRANTED SEPTEMBER 10, 1889.

410,569. ROLLER-STUD. SATTERLEE ARNOLD, Morristown, N. J. Filed May 27, 1889. Serial No. 312,382. (No model.)

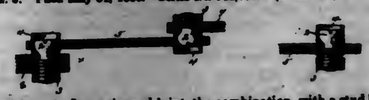


Claim.—1. A roller-stud consisting of a shank having a conical or tapered bearing portion, combined with a roller having a tapered interior fitting said bearing portion.

2. The combination, with a roller-stud consisting of a shank having a conical or tapered bearing portion and a roller having a tapered interior fitting said bearing portion, of a part, as *a*, to which said stud is attached, a grooved cam in which said roller works, and a shaft by which said cam is carried.

3. The combination, with a roller-stud consisting of a screw-threaded shank having a conical or tapered bearing portion and a roller having a tapered interior fitting said bearing portion, of a part, as *a*, into which said shank is tapped, a set-nut on said shank, a grooved cam in which said roller works, and a shaft by which said roller is carried.

410,570. UNIVERSAL JOINT. SATTERLEE ARNOLD, Morristown, N. J. Filed May 31, 1889. Serial No. 312,730. (No model.)



Claim.—1. In a universal joint, the combination, with a stud having a threaded stem and a head with a convex under or inner surface and a slotted or nicked upper or outer face, of a cup or socketed bushing having an inner concave face and an outer convex face, said faces being parallel with each other and with the convex face of the head of said stud, and a pitman or other moving part to which the stem of said stud is attached.

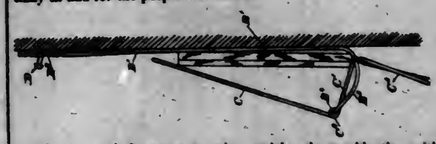
2. In a universal joint, the combination, with a stud having a threaded stem and a head with a convex under or inner surface and a slotted or nicked upper or outer face, of a cup or socketed bushing having an inner concave face and an outer convex face, said faces being parallel with each other and with the convex face of the head of said stud, and a pitman or other moving part to which the stem of said stud is attached, and which is provided with a concave seat in which the convex face of the said bushing fits.

3. In a universal joint, the combination, with a stud having a threaded stem and a head with a convex under or inner surface and a slotted or nicked upper or outer face, of a cup or socketed bushing having an inner concave face and an outer convex face, said faces being parallel with each other and with the convex face of the head of said stud, a set-nut on said threaded stem, and a pitman or other moving part to which the stem of said stud is attached.

4. The combination, with a headed stud having a threaded stem and nicked head, the part of which head adjacent to said stem is convex, of a pitman or similar moving part having opposite concave and convex faces, and a set-nut on the said threaded stem.

410,571. RACK FOR PAPERS, &c. SAM J. BRAMER, Pittsburg, Pa. Filed Dec. 31, 1888. Serial No. 294,682. (No model.)

Claim.—1. In a rack for papers or other articles, the combination of a pivoted holder and an inwardly-projecting gravity-lever, by which the holder is pressed against the contents of the rack, substantially as and for the purposes described.



2. As a rack for papers or other articles, the combination, with the main frame, of a lever on which the contents of the rack are supported, and a holder which is pressed by depression of the lever against the said contents, substantially as and for the purposes described.

3. As a rack for papers or other articles, the combination, with the main frame, of a lever on which the contents of the rack are supported, a holder connected with the lever and operated thereby, and a projection or tongue adapted to prevent overturning of the holder, substantially as and for the purposes described.

4. As a rack for papers or other articles, the combination of the frame B, having projecting side pieces B^2, and a holder C, journaled to the frame and having an inwardly-supporting lever or frame forming the support for the contents of the rack, substantially as and for the purposes described.

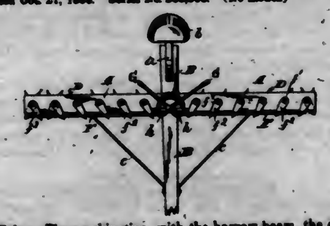
410,572. MOLDING-CUTTER. EDWIN BENJAMIN, South Evanston, Ill., assignor to the Benjamin Machine Company. Filed May 1, 1889. Serial No. 309,162. (No model.)



Claim.—1. The combination, in heads for cutting moldings, of cutters fitted to each other by tongues and grooves.

2. The combination, in heads for cutting moldings, of two or more cutters united to produce the desired outline, the smaller cutter or cutters being rabbeted at or near its outer edge and the larger being tongued to correspond, as and for the purpose set forth.

410,573. DISK HARROW. HERBERT D. BLAKEMORE, Moline, Ill. Filed Oct. 27, 1888. Serial No. 289,303. (No model.)

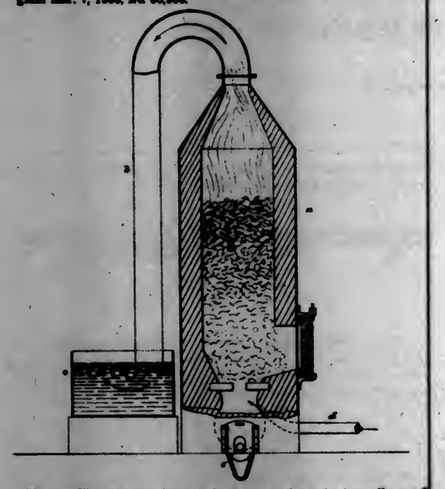


Claim.—The combination, with the harrow-beam, the disks, and their yokes having spindles free to turn in said beam, of the yoke-arms fast at one end to the said spindles, the lever-rods pivotally connecting the outer ends of the yoke-arms, and the lever G G, pivotally connected to the beam on a common vertical pivot, with their shorter

arms crossed and pivotally connected to the adjacent ends of the lever, substantially as shown and described.

410,574. PROCESS OF OBTAINING ALLOYS OF ALUMINIUM.

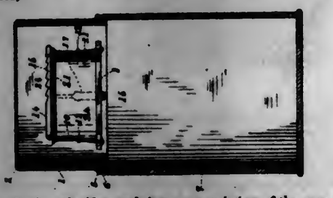
Léon G. Reis, Paris, France. Filed Jan. 24, 1888. Serial No. 297,440 (No model.) Patented in France Mar. 6, 1888, No. 189,171, and in Belgium Mar. 7, 1888, No. 80,908.



Claim.—The herein-described process of producing alloys of aluminium with copper or other metal in the immediate presence of ignited fuel, said process consisting in placing the said metal (copper, &c.) and a mixture of flux containing aluminous clay or aluminous salt or earth and common salt (or other suitable chloride) upon and in direct contact with a bed of fuel, and in then igniting said fuel and subjecting said metal and mixture to a melting heat in the immediate presence of the burning fuel, thereby effecting the reduction of aluminium and alloying it directly with said metal, as specified.

410,575. ASH SIFTER AND DUMPER.

Robert T. Brown and Samuel Page, Buffalo, N. Y. Filed June 8, 1889. Serial No. 313,612. (No model.)



Claim.—1. An ash sifter and dumper consisting of the case 1, in combination with a reversible plate 8, secured between the cranks of a crank-shaft mounted in bearings in the case 1 and provided with a handle for operating it, two bail-shaped frames 10 and 11, pivoted to the plate 8, one of which is provided with a notched bar for securing the two frames, and two cross-bars 13, secured to the frames, the whole combined for conjoint action in securing and dumping the ash-pan, substantially as described.

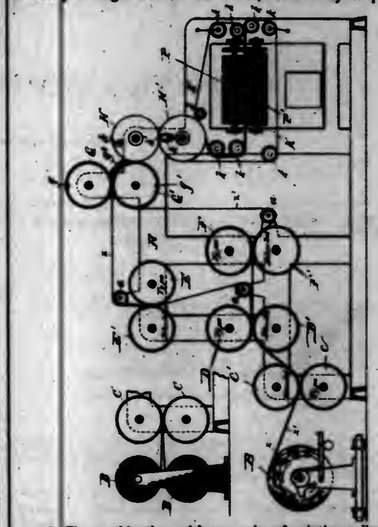
2. The combination of the case 1, the reversible plate 8, secured between the cranks of a crank-shaft mounted in bearings in the case 1 and provided with a handle for operating it, the frame-bars 10 and 11, pivoted to the plate 8, and each having cross-bars 13, vertical bars 23, secured to the cranks, and a removable sieve 21, substantially as described.

410,576. ROTARY PRINTING-MACHINE.

John J. Claire, Chicago, Ill. Filed May 10, 1888. Serial No. 273,407. (No model.)

Claim.—1. The combination, with a series of printing-cylinders arranged in the same path to print the outsides of two webs passing together between them, of a series of printing-cylinders arranged in divergent paths to print the insides of the two webs, substantially as specified.

2. The combination, with two pairs of printing-cylinders in the same path to print the outsides of two webs passing between them, of two pairs of printing-cylinders in divergent paths to print the insides of said webs, and a single pair of cutting-cylinders for simultaneously cutting both webs into sheets, substantially as specified.



3. The combination, with two pairs of printing-cylinders in the same path to print the outsides of two webs passing between them, of two pairs of printing-cylinders in divergent paths to print the insides of said webs, a single pair of cutting-cylinders for simultaneously cutting both said webs into sheets, and a sheet-folding mechanism into which the sheets are simultaneously delivered from said cutting-cylinders, substantially as specified.

4. The combination, with a paper-roll having two webs of paper wound thereon, of two pairs of printing-cylinders arranged in the same path to print the outside of each web, two pairs of printing-cylinders arranged in divergent paths to separate the two webs and print the inside thereof, and a pair of cutting-cylinders between which both webs are fed and by which they are cut simultaneously, substantially as specified.

410,577. ELEVATED RAILWAY.

Lorenzo J. Cody, Sault Ste. Marie, Mich. Filed Feb. 2, 1889. Serial No. 298,627. (No model.)

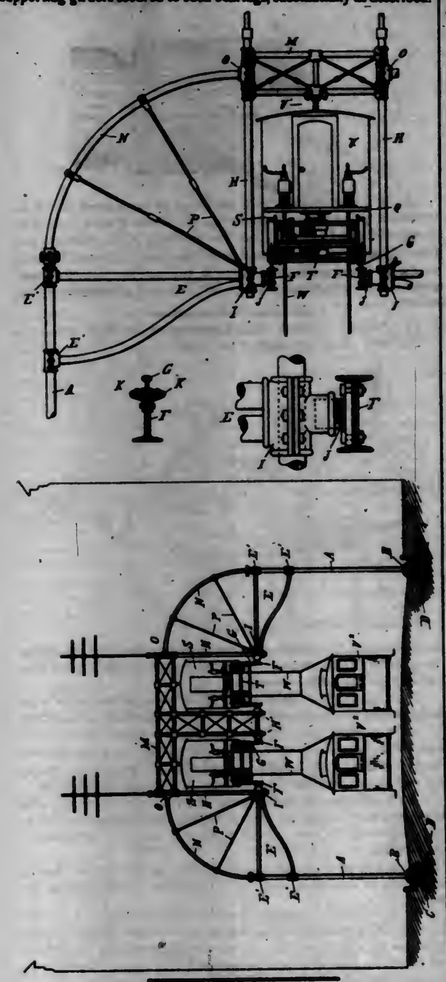
Claim.—1. In an elevated railway, a two-rail roadway having each rail independently adjustably supported above the roadway, substantially as described.

2. In an elevated railway, the combination of the following elements: the two rows of posts on opposite sides of the roadway, the bracketing devices secured on top thereof, the rail-supporting girders secured to the inner ends of the bracketing devices, the rails independently adjustably supported, and the overhead cross-trusses provided with the hangers supporting the bracketing devices, substantially as described.

3. In an elevated railway, the combination of the following elements: the two rows of posts on opposite sides of the roadway, the bracketing devices vertically adjustably secured on top thereof, the bearings laterally adjustably secured to the ends of the bracketing devices, the rail-supporting girders secured thereto, the track-rails supported thereon, the overhead cross-trusses, and the hangers from said cross-trusses adjustably supporting the ends of the bracketing devices, substantially as described.

4. In an elevated railway, the combination of the following elements: the posts on opposite sides of the roadway, the brackets provided with fittings adjustably clamped to the posts, the inwardly curved or inclined extensions on the top of the posts, the hangers secured to said extensions, the cross-trusses connected to the upper ends of said hangers, the fittings adjustably connecting the lower ends of the hangers to the ends of the brackets, and the bearings adjustably secured to said fittings and having bolting-flanges, to which rail-supporting girders are bolted, substantially as described.

5. In an elevated railway, the combination of the following elements: the posts provided with the base B, bolted to the foundations C, the brackets provided with the fittings adjustably clamped to the posts, the curved extensions N on the posts, the hangers suspended from said extensions, the fittings adjustably securing said hangers to said extensions, the cross-trusses vertically adjustably secured to the hangers, the fittings adjustably connecting the hangers and brackets, the bearings laterally adjustably supported by the bracketing devices, and the rail-supporting girders secured to such bearings, substantially as described.



410,578. FARE-REGISTER.

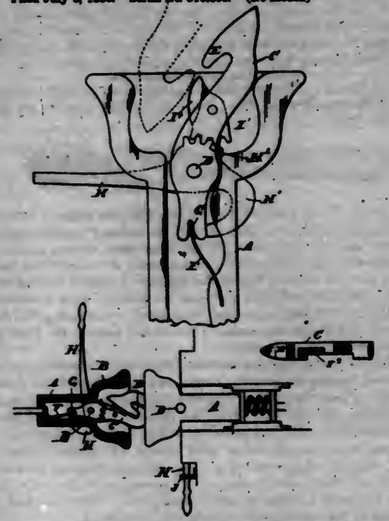
Henry B. Coffey, Stockton, Cal. Filed Oct. 15, 1888. Serial No. 288,168. (No model.)



Claim.—A fare-register comprising the case A, the dished toothed wheel B, provided with a fixed arbor D^9 and a pin B', an angular-shaped elbow-support E, rigidly fixed to the said arbor, the wheels C and D, provided with their ratchet-teeth, journaled on studs fixed to elbow E, the angular spring F, fixed to said elbow, and the striking-pin C', adapted to engage the wheel C with the wheel D, all substantially as specified.

410,579. CAR-COUPLING.

Daniel Coupe, Grand Rapids, Mich. Filed July 8, 1889. Serial No. 316,998. (No model.)



Claim.—1. In a car-coupling, a vertical plane coupling-hook pivoted in the draw-bar and projecting with its hooked front end beyond the mouth of the draw-head and with its rear end slotted in rear of its pivot, and a spring secured in the draw-bar and engaging with its free end into the slot in the rear end of the coupling-hook, substantially as described.

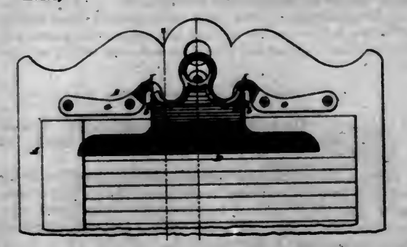
2. In a car-coupling, coupling-hooks C, pivotally secured by the vertical pivot-pin D in the draw-bar and provided with the hook E, projecting beyond the draw-head, and the rear extension in rear of its pivot provided with the vertical slot G, and the spring F, secured in the rear end of the draw-bar and engaging with its free end into the slot G of the coupling-hook, substantially as described.

3. In a car-coupling, the combination of the vertical plane coupling-hook pivoted in the draw-bar, the spring engaging with the rear end of said hook, the spreader pivotally secured in the draw-head, and the uncoupling-lever engaging with said coupling-hook and spreader to simultaneously operate them in uncoupling, substantially as described.

4. In a car-coupling, the combination of a vertical-plane coupling-hook C, pivoted in the draw-bar, the spring F, engaging with the rear end thereof, the spreader I, pivotally secured under the coupling-hook in the mouth of the draw-head, and the uncoupling-lever H, provided with the slot H^3, engaging the rear end of the spreader, and the rearwardly-curved arm H', engaging with the rear end of the coupling-hook, substantially as described.

410,580. PAPER-CLIP FOR WRITING-TABLETS.

Warren K. Crowell, New York, N. Y., assignor of one-third to William Barclay, Kearney Township, N. J. Filed Oct. 9, 1888. Serial No. 287,681. (No model.)



Claim.—1. The superimposed spindle E, having the central lug F and diverging shoulders *a a*, and forming at its ends the bearings

b b, combined with the spring C, clip D, and board A, substantially as and for the purpose set forth.

2. The transverse bar embodying the superimposed spindle, the central leg, and the extensions having turns I, passing around the extremities of said spindle, combined with the spring and clip, substantially as set forth.

3. The transverse bar embodying the superimposed spindle, extensions, and diverging shoulders *a a*, the ends of the spindle forming bearings *b b*, combined with the spring and the clip, the sides of the latter being sprung upon said bearings, substantially as set forth.

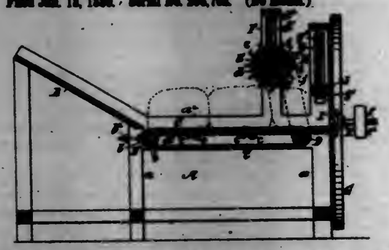
410,581. TOOL FOR DRESSING ABRASIVE SURFACES. GEORGE G. CROWELL, Cincinnati, Ohio. Filed Feb. 27, 1889. Serial No. 301,243. (No model.)



Claim.—1. In a tool of the class described, the shank *c*, the forward end of which is cut away to form the recess *f'*, terminating in the rear abutting shoulder *f*, and the front offset bearing-arm *e*, in combination with the clamping-section *g*, fitting the recess *f'* and having its rear end abutting against the shoulder *f*, and its forward end offset to form the bearing-arm *g*', and the binding-screw *i*, inserted through the clamping-section and terminating in the bottom of the recess *f'*, and the wheel *a*, mounted for rotation between the bearing-arms, substantially as specified.

2. In a tool of the class described, the shank *c*, cut away at its front end, forming the shoulder *f* and recess *f'*, and beyond the recess offsetted to form the perforated bearing-arm *e*, and having the bottom of its recess provided with a rib *h* and threaded opening *f*², in combination with the clamping-section *g*, mounted in and fitting the recess, and having its rear end abutting against the shoulder *f*, perforated, as at *g'*, and grooved, as at *K*, to receive the rib, and extended to form a forward offset bearing-arm *g*', agreeing with the arm *e*, the screw *i*, inserted through the perforations *g'* and *f*², and the wheel *a*, mounted in the bearing-arms, substantially as specified.

410,582. VEGETABLE-SLICER. JAMES BYRNE, New York, N. Y. Filed Jan. 18, 1889. Serial No. 296,702. (No model.)



Claim.—1. In a vegetable-slicer, the combination, with an inclined chute and a table, of an endless apron, a roller having fixed bearings and a roller having adjustable bearings, anti-friction rollers beneath said apron, an automatically-adjustable rotary feeder, a main shaft, gearing, substantially such as described, operating the feeder and the apron from the main shaft, and a rotary cutter on the main shaft, substantially as specified.

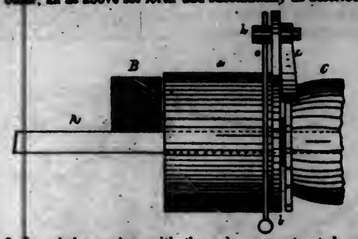
2. The combination, with feeding mechanism and a main shaft operating said feeding mechanism, of a rotary wheel on the main shaft and having oblique notches in its hub and rim, two or more series of oblique radial cutters having their ends seated in said notches, each series comprising two or more parallel cutters having their cutting-edges in one plane, substantially as specified.

3. The combination, with feeding mechanism, of a cutter-bearing wheel having the rim and hub provided with oblique notches, and cutters having their ends secured in said notches, substantially as specified.

410,583. RECOIL-SPRING FOR BABY-CARRIAGES. WILLIAM L. FAY, Elyria, Ohio. Filed Dec. 28, 1888. Serial No. 294,242. (No model.)

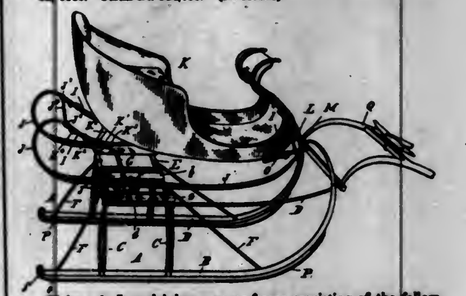
Claim.—1. In a baby-carriage with the axles attached to the frame thereof and so constructed as not to revolve, a spring in combination with one or more of its wheels and connected with each other by any intermediate mechanism, all for the purposes above set forth and substantially as described.

2. In a baby-carriage with the axles so constructed as not to revolve, a spring in combination with one or more of its wheels, so constructed and connected that they will operate in conjunction with each other, all as above set forth and substantially as described.



3. In a baby-carriage with the axles so constructed as not to revolve, a spring in combination with the wheels thereto, and all so constructed and connected that the revolving of the wheels in one direction will increase the tension of the spring, and revolving said wheels in the opposite direction will decrease the tension of said spring, all for the purposes above set forth and substantially as described.

410,584. SLEIGH. SETH C. FIELD, New Boston, Mich. Filed June 12, 1888. Serial No. 314,063. (No model.)



Claim.—1. In a sleigh, a runner-frame consisting of the following elements: an angle-iron runner B, knees C, raves D, and axle-frame E, substantially as described.

2. In a sleigh, the combination, with the runner thereof, of a detachable shoe having a hook *e* and studs *g*, substantially as described.

3. In a sleigh, the combination, with the runner thereof, of a detachable shoe secured at its rear end by a hook and at the forward end by a stud and bolt passing through an aperture in the runner, and at or near the middle by standards, substantially as described.

4. In a sleigh, the combination, with an angle-iron runner, of a detachable shoe having the hook *e*, studs *g*, and standards *m* and *n*, adapted to embrace said angle-iron, and the sleeves *o*, substantially as described.

5. In combination with a sleigh, a shoe having a wide bearing adapted to be detachably secured to the runner, substantially as described.

6. In a sleigh, the springs, the body flexibly connected thereto, the axle, the frames supporting said axle, the braces for said frames, the knees for supporting the frames, the angle-runners from which the knees rise, and the shoes connected to the runners and having supplemental bars, substantially as described.

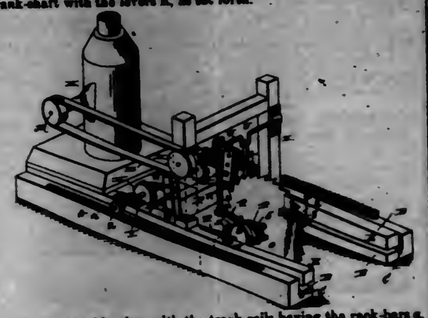
7. In a sleigh, the runners, the shoes, the bifurcated knees rising from the runners, and the frames supported on the knees, substantially as described.

8. In a sleigh, the shoe having the socket and stud, the runner having one end fitting in the socket, and having an opening to receive the stud, and the catch on the runner engaging the said stud, for securing the shoe and runner together, substantially as described.

9. In a sleigh, the angle-runners, the shoes connected to said runners, the standards connecting the runners and shoes, the knees rising from the runners, the frame supported on the knees, the axle bearing on the frames, the springs supported on the axle, and the body supported on the springs, substantially as described.

410,585. STONE-SAWING MACHINE. JAMES C. PERRIGO, Belton, Tex. Filed Mar. 26, 1888. Serial No. 268,150. (No model.)

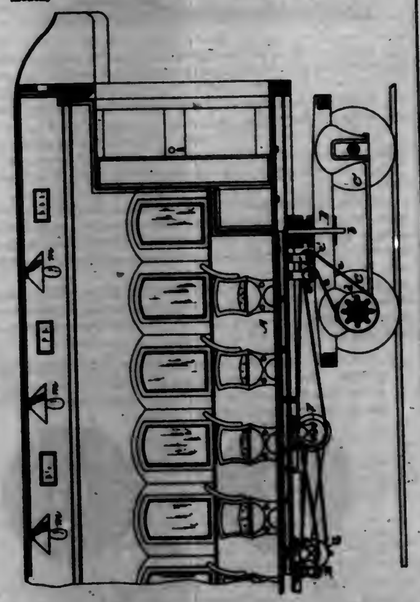
Claim.—1. In a sawing-machine, the combination of the carriage, the rotary saw-arbor journaled thereon, the saw secured on said arbor, the ratchet-wheels secured on the saw-arbor on opposite sides of the saw, the levers E, having the plates 5 at their outer ends loosely mounted on the saw-arbor, the pawls pivoted between the plates 5, the crank-shaft arranged in rear of and above the saw-arbor, mechanism for rotating the crank-shaft, and the pitmen connecting the crank-shaft with the levers E, as set forth.



2. The combination, with the track-rails having the rack-bars *a*, of the carriage mounted on the track-rails, the transverse shaft Y on the carriage, the pinions Z on said shaft, engaging the rack-bars, the stirrups U, mounted on the carriage adjacent to the shaft Y, the ratchet-wheels X on said shaft Y, the pawls pivoted in the stirrups U and engaging the ratchet-wheels X, the pitmen pivoted to said stirrups and driven by the saw-arbor, and mechanism for rotating the saw-arbor, as set forth.

3. As an improvement in sawing-machines, the combination of the track-rails having the rack-bars *a* on their upper sides, the carriage mounted on the rails, the shaft Y on the carriage, provided at its ends with pinions engaging the rack *a*, the ratchet-wheels X on said shaft, the brackets V on the carriage adjacent to said shaft, the stirrups U, pivoted to said brackets, the pawls pivoted in said stirrups and engaging the ratchet-wheels X, the saw-arbor mounted in the carriage, the pitmen connecting the stirrups U with the saw-arbor, the ratchet-wheels P on the saw-arbor, the crank-shaft above and in rear of the saw-arbor, the levers E, loosely mounted on the saw-arbor, the pawls on said levers engaging the ratchet-wheels P, the pitmen connecting said levers with the crank-shaft, and mechanism for rotating the crank-shaft, as specified.

410,586. ELECTRIC LIGHTING OF RAILWAY-CARS. THEODORE M. FOOTE, Boston, Mass. Filed Apr. 26, 1888. Serial No. 271,799. (No model.)



Claim.—1. In an electric-lighting system, the combination of the dynamo K, the storage-battery L, the lighting plant *m* the automatic electric switch H, and the automatic speed-regulator G, substantially as described.

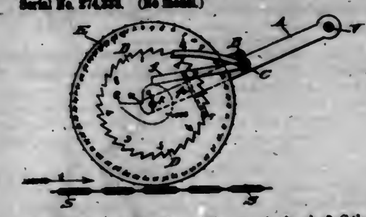
2. An electric-lighting system containing the combination of the driving-pulley *d*, the automatic reversing-clutch F, the automatic speed-regulator G, the automatic electric switch H, the dynamo K, the storage-battery L, and the lighting plant *m*, substantially as and for the purposes described.

3. In a railway-car having the usual swiveling-trucks and a combination of car-wheels with an electric-lighting system for said car, the combination consisting of the pulley C upon an axle of the car-truck, the belt *c*, led from said pulley toward and near to the center of oscillation between the car and truck, the guide-pulleys *c'* *c*², attached to the body of the car near said center of oscillation, and the automatic reversing-clutch F, substantially as and for the purpose described.

4. In a railway-car having the usual swiveling-trucks and a combination of the car-wheels with an electric-lighting system for said car, the combination of the pulley C on one of the axles of a car-truck, the belt *c*, leading from said pulley toward and near to the center of oscillation between the car and the truck, the guide-pulleys *c'* and *c*², attached to the body of the car near the center of oscillation between the car and its truck, an automatic reversing-clutch F, and a speed-regulator G, substantially as described.

5. An electric-lighting system adapted to be driven from a source of power of varying velocity, in which the power which drives the dynamo K is transmitted through the speed-regulator G and controlled thereby within a predetermined maximum velocity, in combination with an electric switch H, said dynamo K, and a lighting system, substantially as described.

410,587. REGISTER FOR SLAT-FENCE LOOMS. WILLIAM M. GRAY and WILLIAM M. WEBER, Crawfordsville, Ind. Filed May 18, 1888. Serial No. 274,233. (No model.)



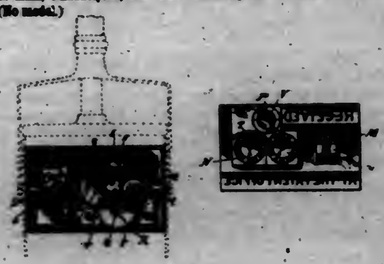
Claim.—The combination of the arm A, the shaft C thereon, carrying the pawl *h* and the arm *f*, and pawl *p* and the shaft K, with the disk E, provided with brads on its periphery, loose on the shaft K, the cam *m*, fixed to the disk E to vibrate the arm *f*, and the ratchet-wheel D, also loose on the shaft K and engaged by the pawls *h* and *p*, the said disk E and ratchet-wheel D being marked with figures on their surfaces.

410,588. MATCH-SAFE. ELI P. HAMMOND, Syracuse, N. Y. Filed Apr. 11, 1889. Serial No. 306,702. (No model.)



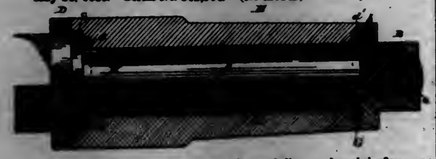
Claim.—A match-safe and burning-match extinguisher comprising a body, a central partition across the body, a hinged cover upon the match-receiver, and a detachable cover upon the extinguisher, provided with an opening to receive the burning match.

410,589. SELF-INKING TIME AND DATING STAMP. BENJAMIN B. HILL, Philadelphia, Pa. Filed Feb. 16, 1887. Serial No. 227,511. (No model.)



Claim.—The combination, in a self-inking hand-stamp and with fixed inscription-plate thereof, of multiple printing-disks having their axes substantially at right angles to the face of the fixed inscription-plate, wheel-work connecting said disks, an oscillating box containing said wheel-work, having its top and bottom formed of the permanent inscription-plate of said stamp and a second plate secured thereto, said second plate being provided with bearings for the shafts of the wheel-work, and a shaft connected with the wheel-work passing through said second plate and provided with means, as the knob Y, for turning the shaft at the will of the operator, substantially as described.

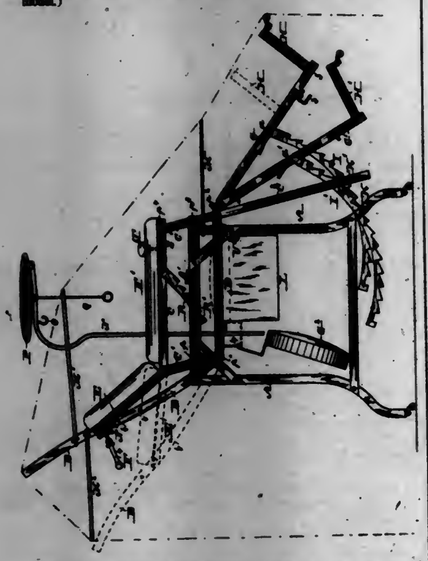
410,590. AXLE-BOX. CHARLES R. HORNOR, Bourne, Tex. Filed May 23, 1888. Serial No. 312,264. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the axle formed with a collar C, the axle box or hub formed with recesses *c*, *d*, and *d'*, the anti-friction rods or rollers, of the same diameter from end to end, extending the entire length of the journal end of the axle, the rings or washers at each end surrounding the ends of the rods and seated in the recesses *d* and *d'* in the box, and the nut on the outer end of the axle bearing against the end washer, the end of the box, and the outer ends of the rods.

2. The combination, substantially as hereinbefore set forth, of the axle, the axle box or hub, the anti-friction rods or rollers extending the entire length of the journal end of the axle, and the rings or washers formed with recesses opening inwardly for the ends of the rods and in which they are free to move.

410,591. INVALID-CHAIR. LENA M. HOFFMAN, Philadelphia, Pa. Filed Jan. 11, 1888. Renewed Dec. 19, 1888. Serial No. 294,129. (No model.)

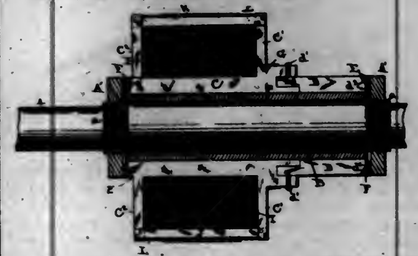


Claim.—1. An invalid-chair having a frame A, with the upper side bars A', the seat frame C C D, consisting of the horizontal bars C and D and the connecting-bars C', pivoted to said horizontal bars and to the side bars A', the back-support D, with openings and secured to the lower portion of frame C C D, and the link or rod E, pivotally secured to said frame C C D and to the back-support D, said parts being combined substantially as described.

2. In an invalid-chair, the frame A, with cross-bar K, in combination with the pivoted frame C C D, consisting of the horizontal bars C D and the pivoted connecting-bars C', the latter frame having the depending side bars C², with pins K', the separate leg-rests G G', each having a rack-bar pivoted thereto and adapted to engage with the pins K', and cross-bar K, substantially as and for the purpose set forth.

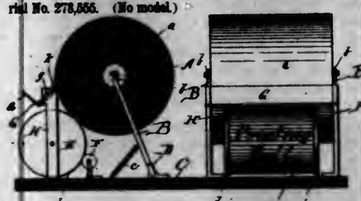
3. An invalid chair having a stationary frame and a vertically-adjustable seat-frame, separate foot-rests, each having a sleeve pivoted on a cross-bar of the seat-frame, a link connecting said leg-rests, and fastening devices for said rests, said parts being combined substantially as and for the purpose set forth.

410,592. ARMATURE. JOHN B. JOHNSON, Yonkers, N. Y. Filed Mar. 27, 1889. Serial No. 305,081. (No model.)



Claim.—An armature of the Gramme type, consisting of the shaft A, the series of bars C, having the recesses *c* and the wide thin radial arms C C², the bars J, connecting the arms C C² of adjoining bars C, the core H, the commutator-segments D, having tenons *d*, secured in the recesses *c*, and means for retaining the bars and segments in place upon the shaft, substantially as described.

410,593. PAPER-ROLL HOLDER AND PRINTER. GUY L. KENNEDY, Chicago, Ill., assignor, by mesne assignments, to the Merchants Roll Paper Supply Company, same place. Filed June 29, 1888. Serial No. 278,555. (No model.)



Claim.—1. In a printing paper-roll holder, the combination of a roll-supporting cylinder mounted in a swinging frame with a stationarily-journaled type-wheel against which the roll rests, whereby the roll is rendered automatic in retaining its contact with said wheel, substantially as specified.

2. The combination, with a paper-roll cylinder, a swinging frame supporting said cylinder, and springs acting upon said frame, of a stationarily-journaled type-wheel against which the roll rests, substantially as specified.

3. The printing paper-roll holder consisting of a cylinder for carrying the paper, a spring-depressed frame supporting said cylinder with the paper resting in constant contact with the type-wheel, the type-wheel, and a knife for severing the paper, substantially as specified.

4. In a paper-holder, the combination of a revoluble printing-roller and a core for supporting a roll of paper, the latter situated above and resting upon said printing-roller and removable without disturbing the printing-roller, substantially as described.

410,594. ROLL WRAPPING-PAPER HOLDER, PRINTER, AND CUTTER. GUY L. KENNEDY, Chicago, Ill., assignor, by mesne assignments, to the Merchants Roll Paper Supply Company, same place. Filed Jan. 26, 1888. Serial No. 297,549. (No model.)



Claim.—1. In a roll-paper holder and printer, the combination of the type-cylinder with the impression-roller and inking roller, the cylinder being supported by the rollers, substantially as set forth.

2. In a roll-paper holder and printer, the combination of the type-cylinder with stationarily-journaled impression and inking rollers by which the cylinder is supported, substantially as specified.

3. The combination, with the knife and the type-cylinder, of the supporting-wire *n*, substantially as set forth.

4. The roll-paper holder, printer, and cutter, consisting of a paper-cylinder, a stationarily-journaled impression-roller, a stationarily-journaled inking-roller, a type-cylinder supported between said impression and inking rollers, and a knife, substantially as set forth.

5. The roll-paper, holder, printer, and cutter, consisting of a stationarily-journaled paper-cylinder, a stationarily-journaled smoothing-roller, acting also as an impression-roller, a type-cylinder and inking-roller, and a knife, the smoothing-roller being below the plane of the paper-cylinder, and the paper being passed around it with an abrupt change of direction, substantially as set forth.

6. The roll-paper holder, printer, and cutter, consisting of the paper-cylinder, a smoothing and impression roller, a printing cylinder, an inking-roller, a paper-supporting wire *n*, and a knife, all the parts being constructed and relatively arranged as set forth, substantially as specified.

7. In a printing-paper holder, a type-cylinder supported between the impression and the inking rollers, and held against end play by flanges *f* and *g*, in combination with said rollers, substantially as set forth.

8. In a printing roll-paper holder, a type-cylinder supported by stationarily-journaled rollers at either side, in combination with such rollers, substantially as set forth.

410,595. PRINTING-HOLDER FOR ROLL WRAPPING-PAPER. GUY L. KENNEDY, Chicago, Ill., assignor, by mesne assignments, to the Merchants Roll Paper Supply Company, same place. Filed May 3, 1888. Serial No. 309,445. (No model.)



Claim.—1. The printing-paper holder consisting of a roll-paper cylinder, a type-cylinder, a pressure-roller, a knife, and an inclosing-box made in two parts, the type-cylinder being in one part of the box and the pressure-roller in the other, substantially as set forth.

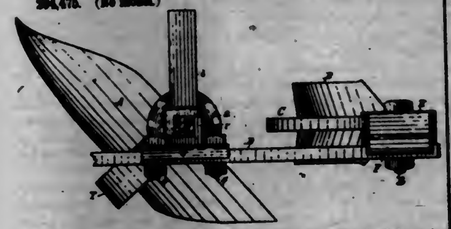
2. The printing-paper holder consisting of a roll-paper cylinder, a type-cylinder, a pressure-roller, a knife, and an inclosing-box made in two parts, the roll and type cylinders being in the lower half and the pressure-roller and knife in the upper half, substantially as set forth.

3. The paper-roll holder inclosed in a protecting-box and provided with knife swinging in said box and through a slit therein, substantially as set forth.

4. In a paper-roll holder and cutter, a knife suspended by swinging vertical supports and movable into operating position by the friction of the paper in its passage, substantially as set forth.

5. In a paper-roll holder and cutter, a knife suspended upon vertical swinging supports movable by and with the paper into cutting position, and retreating to a position back of said cutting position after the paper is severed, substantially as set forth.

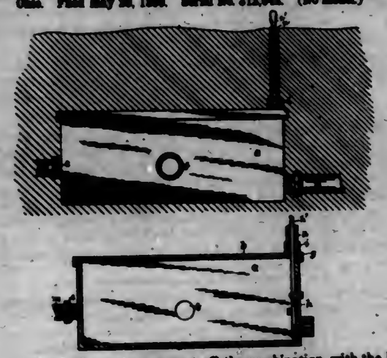
410,596. CULTIVATOR. HENRY D. KIPP, Kalamazoo, Mich., assignor to L. G. Lull & Co., same place. Filed Dec. 24, 1888. Serial No. 294,475. (No model.)



Claim.—1. In a cultivator, the combination of the draft-bar, the vertically-edgewise blocks, having the serrated engaging faces, said blocks being attached to the front end of the draft-bars by adjusting-bolts, shares attached to the outer blocks, the transverse bar, the blocks attached to the draft-bars in the rear of the front shares, said blocks having the horizontal serrated engaging faces, the upper block provided with the raised recessed portion with which the ends of the transverse bars are attached, and the channeled portions with which the ends of the draft-bars are attached, the rear shares having their standards attached to the lower blocks, and the securing-bolts, substantially as set forth.

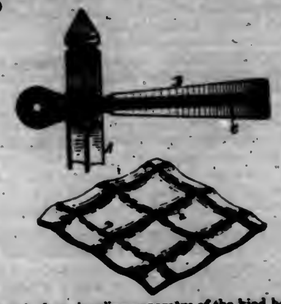
2. In a cultivator, the blocks having the horizontal serrated faces engaging each other, the upper block being provided with a raised recessed portion with which one end of the transverse bar of the cultivator is attached and a channeled portion with which one end of the draft-bar is attached, a share and its standard, said standard being attached to the lower block, and the securing-bolts, all combined, substantially as set forth.

410,597. RAIN-WATER CUT-OFF. HENRY W. KENNEY, Columbus, Ohio. Filed May 20, 1889. Serial No. 312,042. (No model.)



Claim.—In a rain-water cut-off, the combination, with the box *a*, located within the earth, its inlet-pipe sockets *c* and *f*, outlet-pipes *d*, and detachable slotted lid *b*, of the pivoted valve-plate A, having handle *k*, passing through slot *g* of said lid and projecting above the ground, substantially as and for the purpose set forth.

410,598. SEMAPHORE-SIGNAL FOR RAILWAYS. CHARLES H. KOTZ, Philadelphia, assignor to the National Switch and Signal Company, Bethlehem, Pa. Filed June 6, 1889. Serial No. 313,296. (No model.)



Claim.—1. In a signaling apparatus of the kind hereinbefore referred to, a reflector the surface of which has the shape or approximately the shape of the segment of a paraboloid and is corrugated, as described, said reflector being rotatable about an axis coincident with the axis of the paraboloid of which it is a segment, substantially as and for the purpose set forth.

2. In a signaling apparatus of the kind hereinbefore referred to, a reflector the surface of which has the shape or approximately the shape of the segment of a paraboloid and is impressed with two sets of corrugations or waves at right angles to each other, substantially as and for the purpose set forth.

410,599. SEMAPHORE-SIGNAL FOR RAILWAYS. CHARLES H. KOTZ, Philadelphia, Pa. Filed July 16, 1888. Serial No. 317,737. (No model.)

Claim.—In a semaphore-signaling apparatus, a reflector having the shape of a paraboloidal segment formed or provided along its upper edge with a downwardly-reflecting overhang or hood and rotatable about an axis coincident with that of the paraboloid, in combination with a lamp or other source of light located at the focal point

of the paraboloid, substantially as and for the purposes hereinbefore set forth.

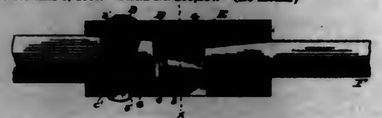


410,600. METHOD OF MAKING BLANKS FOR KNITTED DRAWERS. DWIGHT P. MILLS, Naugatuck, Conn. Filed Jan. 15, 1889. Serial No. 296,267. (No model.)



Claim.—The herein-described method of making knit drawer-blanks, which consists, first, in providing a tubular fabric with certain lengths containing a section of firm fabric at each end and an intermediate section of a looser and more elastic character, and then cutting both thicknesses of the flattened tube longitudinally on substantially the straight and diagonal lines shown, thereby forming the parts designed for the waist portion of one member and ankle portion of the other member from each of said firm sections, substantially as described, and for the purpose specified.

410,601. DRILL-CHUCK. EDWARD MOTLE, Grass Valley, Cal. Filed Jan. 3, 1889. Serial No. 295,267. (No model.)



Claim.—The herein-described drill-chuck, provided at its respective ends with inwardly-tapering longitudinal drill and shaft sockets, a contracted cylindrical channel connecting the same, and with a diametrical slot passing entirely through the chuck and through the drill-socket, the said shaft-socket having oppositely-disposed diametrical tapering slots in its walls, substantially as set forth.

410,602. COPY-HOLDER. GEORGE HUNT, Brooklyn, N. Y. Filed Oct. 9, 1888. Serial No. 287,603. (No model.)



Claim.—1. In a copy-holder, the combination, with the paper-table and its support, of a friction device at the horizontal joint or axis of the paper-table operating constantly to resist motion of the paper-table about said axis due to gravity, but capable of being overcome by muscular force applied to the paper-table to vibrate the same, whereby the paper-table is caused to remain at any inclination to which it may be adjusted without obliging the user to operate the friction device independently of the paper-table, as set forth.

2. In a copy-holder, the combination of a pivoted horizontally-arranged carrier-arm 18, a vertical two-part support, and a paper-table, substantially as set forth.

3. In a copy-holder, the combination of a crom-strip, as B, adapted to be attached to the base of a type-writing machine, the pivoted carrier-arm, the vertical support, and a paper-table, substantially as set forth.

4. In a copy-holder, the combination of an extensible crom-strip, as B, the pivoted carrier-arm, the vertical support, and the paper-table, substantially as set forth.

5. In a copy-holder, the combination of the crom-strip provided with a compressible or yielding end, the carrier-arm, the vertical support, and the paper-table, substantially as set forth.

6. In a copy-holder, the combination of the crom-strip consisting of the bar portion, the screw, and the nut, the arm 18, the vertical support, and the paper-table, substantially as set forth.

7. In a copy-holder, the combination of the carrier-arm having an inclined abutment, the hinged support, and the paper-table, substantially as set forth.

8. In a copy-holder, the combination of the carrier-arm having a vertical abutment, the hinged support, and the paper-table, substantially as set forth.

9. In a copy-holder, the combination of the carrier-arm having a vertical and an inclined abutment, the hinged support, and the paper-table, substantially as set forth.

10. In a copy-holder, the combination of the paper-table provided with the rearwardly-extending perforated arms 7 7, the perforated and threaded paper-table support 8, the thumb-screw 13, passing through one of said arms and engaging with the threaded portion of the paper-table support, and the pin 12, passing through the other of the said arms 7 and into the perforated portion of the paper-table support, substantially as set forth.

11. In a copy-holder, the combination of the adjustable paper-table, the pivoted carrier-arm, and the two-part rotatable support hinged to the carrier-arm, substantially as set forth.

12. A copy-holder provided with an extensible crom-strip B, adapted to be secured between the sides of the type-writing machine bed or frame, substantially as set forth.

410,603. CASH INDICATOR AND REGISTER. THOMAS RUSSELL, Mount Sterling, Ky. Filed Dec. 13, 1887. Serial No. 257,737. (No model.)

Claim.—1. The combination of the cent key-lever c^3, having a finger swinging in a plane transverse of the plane of said lever, and a fulcrum c^4, the stop-pins c^{12} and c^{13}, the shaft J, having a ratchet-wheel c' and an index c^7, and the dial c^6, substantially as described.

2. The combination of the cent key-lever c^3, having a finger swinging in a plane transverse of the plane of said lever, and a fulcrum c^4, the shaft J, having a ratchet-wheel c', and the spring c^5, having its free end fitting in the space between two teeth of the ratchet-wheel, substantially as described.

3. The combination of the key-lever c^3, having a hinged spring-finger c^{14}, and the shaft J, having a ratchet-wheel c' and an index c^7, substantially as described.

4. The combination of the key-lever c^3, having a hinged spring-finger c^{14}, the shaft J, having a ratchet-wheel c' and an index c^7, and the spring c^5, having its free end fitting between two teeth of the ratchet-wheel for controlling the movement of the latter, substantially as described.

5. The key-lever c^3, comprising the finger c^{14}, formed with an under-cut or bevel c^9, the pivot c^8, by which the finger is hinged to the key-lever, and the spring c^5, substantially as described.

6. The combination of the key-lever c^3, having a hinged spring-finger c^{14}, formed with a bevel c^9, and the shaft J, having a ratchet-wheel c' and an index c^7, substantially as described.

7. The combination of the key-lever c^3, having a hinged spring-finger c^{14}, formed with a bevel c^9, the shaft J, having a ratchet-wheel c' and an index c^7, and a spring c^5, having its free end fitting between two teeth of the ratchet-wheel for controlling the movement of the latter, substantially as described.

8. The combination of the key-lever c^3, having a finger and a fulcrum c^4, the shaft J, having a ratchet-wheel c' and gear-wheel A, the gear-wheel B, meshed by the gear-wheel A, having a finger or projection C, the lantern-wheel D', having pins a, with which the finger or projection engages, and the short shaft $K^{\times}$, having an index K', substantially as described.

9. The combination of the rod B^2, the key-lever c, and boring c^2, the stop-plate c^3, and spring c^5, having one end hooked over the key-lever on the inner side of its shaft and the other end secured to the stop-plate, substantially as described.

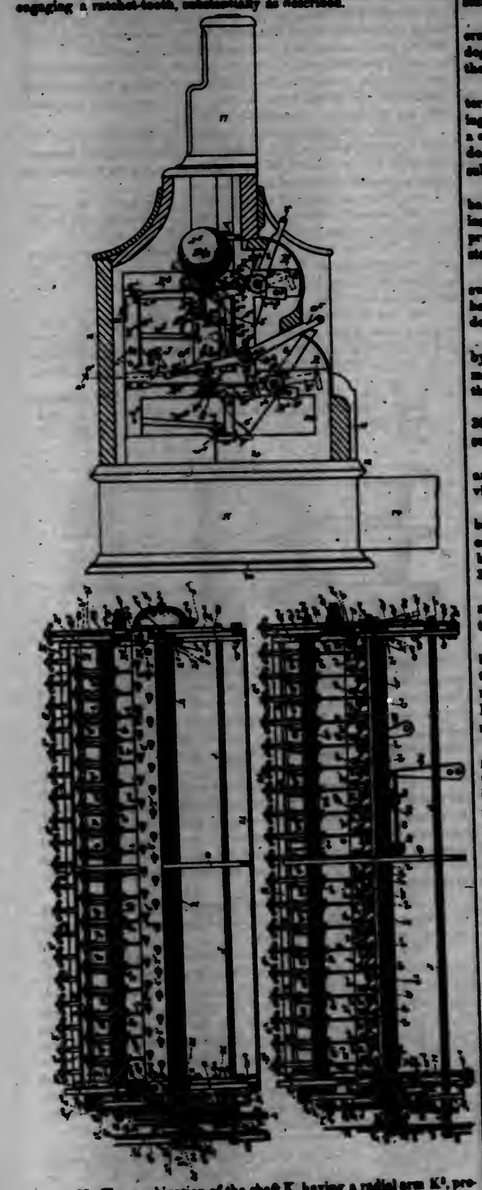
10. The combination of the gear-cylinder k, having elongated guide-tooth K, and the key-lever c, having rack-segment c', substantially as described.

11. The combination of the gear-cylinder k, having a shaft K, provided with a radial arm s^2, the stop-pin s^3, the returning-spring s^5, and a key-lever c, having a rack-segment c', substantially as described.

12. The combination of a key-lever having a rack-segment, a gear-cylinder having a shaft, a short shaft having a ratchet-wheel and an index, and the shaft and pivoted spring-dog connection between the cylinder-shaft and the ratchet-wheel, substantially as described.

13. The combination of the key-lever c, having rack-segment c', the gear-cylinder k, the shank K, having a radial arm K^2, provided with a pivoted dog D^2, the spring connecting the pivoted dog to the arm, the ratchet-wheel D, with which the dog engages, the lantern-wheel D', turning with the ratchet-wheel, and a short shaft $K^{\times}$, having an index K', substantially as described.

14. The combination of the shaft K, provided with a radial arm, a short shaft having a ratchet-wheel and an index, the pivoted spring-dog connection between the arm and ratchet-wheel, and a spring d, engaging a ratchet-tooth, substantially as described.



15. The combination of the shaft K, having a radial arm K^2, provided with a pivoted dog D^2, the spring connecting the pivoted dog to the arm, the ratchet wheel D, with which the dog engages, the lantern-wheel D', turning with the ratchet-wheel, the short shaft $K^{\times}$, having an index K', and a spring d, engaging the ratchet-teeth in front of the dog, substantially as described.

16. The combination of the lantern-wheel D', having pins a, and the swinging lever d^2, having perforated spring d^3, and tooth or projection d^4, working through the spring, substantially as described.

17. The combination of the key-lever c, pressure-bar E, lantern-wheel D', having pins a, and the swinging lever d^2, having outer end d^{10}, projecting beneath the pressure-bar and provided with perforated spring d^3, and stud or projection d^4, working through the spring, substantially as described.

18. The combination of the lower lantern-wheel D', having peripheral finger E, the upper lantern-wheel G, and the vertically-swinging dog or lever F, having an inverted pawl f^4, for engaging the pins of the upper lantern-wheel, substantially as described.

19. The combination of the lower lantern-wheel D', the upper lantern-wheel G, and the connection between the lantern-wheels, comprising a swinging dog or lever F, formed with a hub having two wings f, a spring bearing on the projections, inverted pawl f^4, jointed to the dog or lever, and a spring bearing on the heel or butt of the spring, substantially as described.

20. The combination of a key-lever, a supporting-rod, pressure-bar beneath the lever having crom-arms $E^{\times}$, and horizontal pin on the inner end E^2 of a crom-arm, a spring bearing on the pin to retain the pressure-bar in normal position, the upright bar S, and pin E^7, substantially as described.

21. The combination of the longitudinally-moving bar S, the swinging pawl S^7 thereon, having spring S^8, the hammer-lever S^4, the hammer S^5, lifting device for the bar, and alarm S^9, substantially as described.

22. The combination of the upright bar S, the pawl S^7, the pin S^{11}, by which the pawl is pivoted to the bar, the pawl-spring S^8, the hammer-lever S^4, pin S^6, by which the lever is pivoted, the hammer S^5, the bell S^9, and the hammer-spring S^8, substantially as described.

23. The combination of the upright bar S, having a projection 39, the rock-bars 36 and 34, the spring-bolt 29, and drawer-lid M, substantially as described.

24. The combination of a key-lever pressure-bar having crom-arms $E^{\times}$, the upright bar S, having pin E^7, and the bell-operating devices, substantially as described.

25. The combination of a key-lever, supporting-rod, pressure-bar beneath the lever having crom-arms $E^{\times}$, and horizontal pin on the inner end of a crom-arm, a spring bearing on the pin to retain the pressure-bar in normal position, the upright bar S, a pin E^7, and a projection 39, substantially as described.

26. The combination of a key-lever, pressure-bar having crom-arms $E^{\times}$, the upright bar S, having the projection 39, the pin E^7, and the bell-releasing devices, substantially as described.

27. The combination of a shaft, device for turning the shaft, combined ratchet and gear wheel mounted loosely on the shaft, connection between said shaft and said ratchet-wheel by which the latter is rotated on each movement of the shaft, the stud L', the gear-wheel H, mounted on the stud, having pinion I, and the short shaft having registering-wheel y^5 and the index G^9, substantially as described.

28. The combination of a key-lever having a rack-segment, a gear-cylinder having a shaft, combined ratchet and gear wheel mounted loosely on the shaft, radial arm and spring-dog connection between said shaft and said ratchet-wheel by which the latter is rotated on each movement of the shaft, the stud L', the gear-wheel H, mounted on the stud, having pinion I, the short shaft $L^{\times}$, having registering-wheel y^5 and the index G^9, substantially as described.

29. The combination of a shaft, device for turning the shaft, combined ratchet and gear wheel mounted loosely on the shaft, connection between said shaft and said ratchet-wheel by which the latter is rotated on each movement of the shaft, the stud L', the gear-wheel H, mounted on the stud, having pinion I, the short shaft $L^{\times}$, having registering-wheel y^5 and pinion P, the registering-wheel y, mounted on the stud, having pinion I', and the sleeve G^{10}, mounted on the short shaft, having registering-wheels y^5 and index G^{10}, substantially as described.

30. The combination of a key-lever having a rack-segment, a gear-cylinder having a shaft, combined ratchet and gear wheel mounted loosely on the shaft, radial arm and spring-dog connection between said shaft and said ratchet-wheel by which the latter is rotated on each movement of the shaft, the stud L', the gear-wheel H, mounted on the stud, having pinion I, the short shaft $L^{\times}$, having registering-wheel y^5 and pinion P, the registering-wheel y, mounted on the stud, having pinion I', and the sleeve G^{10}, mounted on the short shaft, having registering-wheel y^5 and index G^{10}, substantially as described.

31. The combination of a shaft, device for turning the shaft, combined ratchet-wheel and gear-wheel mounted loosely on the shaft, connection between said shaft and said ratchet-wheel by which the latter is rotated on each movement of the shaft, the stud L', the gear-wheel H, mounted on the stud, having pinion I, the short shaft $L^{\times}$, having registering-wheel y^5 and pinion P, the registering-wheel y mounted on the stud, having pinion I', the sleeve G^{10}, mounted on the short shaft, having registering-wheel y^5 and pinion I^2, the registering-wheel y', mounted on the stud, having pinion P, and the sleeve G^{12}, mounted on the sleeve G^{10}, having registering-wheel y^4 and index G^{12}, substantially as described.

32. The combination of a key-lever having a rack-segment, a gear-cylinder having a shaft, combined ratchet and gear wheel mounted

loosely on the shaft, radial arm and spring-dog connection between said shaft and said ratchet-wheel by which the latter is rotated on each movement of the shaft, the stud L', the gear-wheel H, mounted on the stud, having pinion I, the short shaft L^x having registering-wheel y^6 and pinion I^2, the registering-wheel y, mounted on the stud, having pinion I', the sleeve G^{2a}, mounted on the short shaft, having registering-wheel y^5 and pinion I^4, the registering-wheel y', mounted on the stud, having pinion I^3, and the sleeve G^{2d}, mounted on the sleeve G^{2a}, having registering-wheel y^4 and index G^{2b}, substantially as described.

33. The combination of the five-cent shaft K, device for turning the five-cent shaft, the short shaft K^x, the ratchet-wheel D, and the wheel D', having peripheral finger E, carried by the short shaft, connection between said five-cent shaft and said ratchet-wheel by which the latter is impelled forward, the dollar-shaft L, device for turning the dollar-shaft, the short shaft L^x, combined ratchet-wheel G' and lantern gear-wheel G, having pins g, mounted on said dollar-shaft, connection between said dollar-shaft and the last-named ratchet-wheel by which the latter is impelled forward, connection between the peripheral finger and the pins, the stud L', the gear-wheel H, mounted on the stud, having pinion I, and the short shaft L^x, having registering-wheel y^6 and the index G^2, substantially as described.

34. The combination of a cent-shaft J, having an index, five-cent shaft K, short shaft K^x, having an index, dollar-shaft L, short shaft L^x, having an index, levers by which the main shafts are impelled in one direction only to produce continuous registration, connections, substantially as shown, between the cent-shaft and the short shaft K^x, connection, substantially as shown, between the five-cent shaft and dollar-shaft, and connection, substantially as shown, between the dollar-shaft L and the short shaft L^x.

35. The combination of a key-lever having a cam, and a tablet-rod having a tablet normally transverse of the register and provided with a projection on which the cam operates to impart a one-quarter of a rotation to the rod to exhibit the faces of the tablet longitudinally of the register, substantially as described.

36. The combination of a key-lever having a cam, a stop-pin, a tablet-rod having a projection with which the cam engages for rotating the rod, and also a projection bearing against the stop-pin, and a spring for returning the rod when the latter is released, substantially as described.

37. The combination of a pivoted bar having recesses and inclines leading thereto on its edge, a key-lever having a cam, and a tablet-rod having a projection with which the cam engages for rotating the rod, and also a projection with which the pivoted bar engages for retaining the rod when the latter is advanced, substantially as described.

38. The combination of a pivoted bar having recesses and inclines leading thereto on its edge, a key-lever having a cam, a stop-pin, and a tablet-rod having a projection with which the cam engages, and also a projection with which the pivoted bar engages, the bar projection adapted to bear against the stop-pin when in normal position, substantially as described.

39. The combination of a pivoted bar having recesses and inclines leading thereto on its edge, a key-lever having a cam, a stop-pin, and a tablet-rod having three projections—to wit, a projection on which the cam operates, a projection with which the bar engages, and a projection arrested by the stop-pin—substantially as described.

40. The combination of a pivoted bar having recesses and inclines leading thereto on its edge, a key-lever, a tablet-rod rotated by the key-lever and retained by the pivoted bar, and means by which the latter is operated to release the tablet-rod, substantially as described.

41. The combination of the lower bar w, having recesses and inclines leading thereto on its edge, arms w^2, by which the bar is pivoted, inward extension w^{10} to one of the arms, the upper pressure-bar R', having cross-arms R^x, the pitman w^3, upper key-lever, and a tablet-rod rotated by the key-lever, retained by the pivoted bar, and released by the pressure-bar, substantially as described.

42. The combination of the upper bar w^9, having recesses and inclines leading thereto on its edge, arms w^2, by which the bar is pivoted, inward and downward extension w^3 to one of the arms, the lower pressure-bar having cross-arms R^x, lower key-lever, and a tablet-rod rotated by the key-lever, retained by the pivoted bar, and released by the pressure-bar, substantially as described.

43. The combination of a tablet-rod having a pin or projection, a key-lever engaging the pin or projection by which the rod is rotated, a pivoted notched bar by which the rod is retained, and a pressure-bar by which the bar is lifted and the rod is released, substantially as described.

44. The combination of the upper plate V, lower plate V', tablet-rods T' T^2, turning freely in the plates, lower tablet T', upper tablet T^2, lower key-lever operating the lower tablet-rod, the upper key-lever operating the upper tablet-rod, pivoted lower bar for retaining the upper tablet-rod, pivoted upper bar for retaining the lower tablet-rod, lower pressure-bar for releasing the upper tablet-rod, and upper pressure-bar for releasing the lower tablet-rod, substantially as described.

45. The combination of the pivoted bars w and w^2, key-levers c and δ, and the tablet-rods T' and T^2, having projections engaged by the key-levers and pivoted bars, substantially as described.

46. The combination of the key-levers c and δ, the pressure-bars R and R', having cross-arms, the upright bar S, having horizontal pins engaged by the pressure-bars, and the alarm mechanism connected with the upright bar, substantially as described.

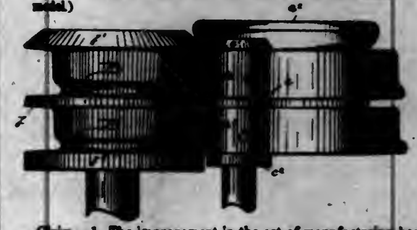
47. The combination of the shaft K, having radial arm s^5, the shaft L, having radial arm s^3, the pivoted arms Z' and Z, the connecting-rod s^6, and mechanism for moving the pivoted arms to release the radial arms, substantially as described.

48. The combination of a shaft having a radial arm s^5, the hinged arm, the pitman 2, and disk or wheel 1, having eccentric wrist-pin 26, to which the pitman is connected, substantially as described.

49. The combination of a shaft having a radial arm s^5, the hinged arm, the curved pitman 2, and the disk having eccentric wrist-pin 26, to which the pitman is connected, and the eccentric stop-pin 27, substantially as described.

50. The combination of a shaft L, having a radial arm s^3, hinged arm Z, pitman 2, and operating-shaft 25, disk or wheel 1 on the inner end of the operating-shaft, having eccentric wrist-pin 26, and button s^4 on the outer end of the operating-shaft, substantially as described.

410,604. PROCESS OF MANUFACTURING ROLLED RINGS OR TIRES. JAMES HEWTON, Maywood, assignor to himself and CHARLES H. FOSTY, Chicago, Ill. Filed Feb. 26, 1889. Serial No. 301,224. (No model.)



Claim.—1. The improvement in the art of manufacturing heavy tires or rings, consisting in first casting an annulus or ingot with a central opening heavy enough for two or more blooms or rings of the weight required, and then severing the ingot or annulus into two or more separate blooms or rings by pressure, and simultaneously densifying the bloom or ring by crowding the material displaced by the severing-instrument into the bloom or ring, substantially as specified.

2. The process consisting in making a single annulus heavy enough for two or more blooms or rings of the weight required and severing by pressure the annulus into two or more blooms or rings, and simultaneously densifying the blooms or rings by crowding the material displaced by the severing-instrument into the same, and finally rolling the blooms or rings to the diameter and shape required, substantially as specified.

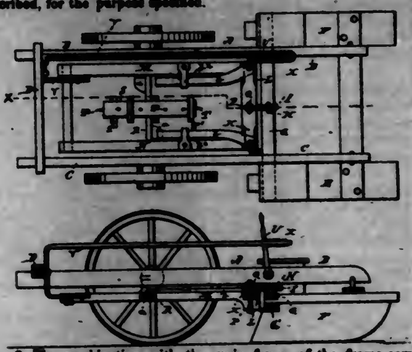
3. The process consisting in simultaneously rolling and severing by pressure an annulus into two or more blooms or rings of the size required, substantially as specified.

4. The process consisting in first casting an annulus, as A, and then simultaneously cutting off the imperfect top portion, as a', and severing by pressure the annulus into blooms or rings, as a a, and simultaneously densifying the same by crowding the material displaced by the pressure-severing tabs into the body of the blooms or rings, whereby several blooms are produced at once, the scales are densified, and the loss of metal incident to casting each bloom separately is saved, substantially as specified.

5. The process of producing two or more blooms at once by heating and then severing by pressure an annulus into two or more parts or blooms, substantially as specified.

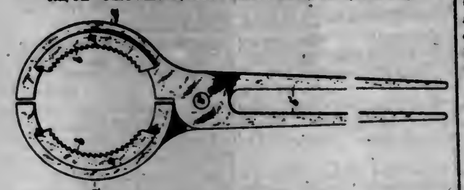
410,605. MARKING AND DROPPING ATTACHMENT FOR CORN-PLANTERS. BRYAN O'DONNELL, Vail, Iowa. Filed Apr. 23, 1888. Serial No. 308,288. (No model.)

Claim.—1. In a marking and dropping planter, the combination, with the main frame A, composed of parallel side beams B C, united at their front and rear ends by cross-bars and supported by the bearing-wheels, of the shorter beams M N, hinged at their forward ends to the transverse brace-bar G and located intermediate of the beams B C and parallel therewith, designed to support the axle E, provided on opposite sides and ends with tappets a, said beams M N being adapted to have a vertical movement within the side beams B C, and whereby raise and lower the axle E, the marker-wheel S, secured to said axle intermediate of the beams M N and provided with markers T and spurs T, the cross-bar K, pivoted at its center upon a pin P, projecting from the bar L, the levers b b, pivoted at their forward ends to the outer ends of the bar K and passing through guides b^3, secured to the beams M N, the rear ends of said levers lying adjacent to and adapted to be struck by the tappets a when the axle E revolves, and the forwardly-projecting pin I, passing through a staple H on the slide G, as described, for the purpose specified.



2. The combination, with the main frame, of the frame composed of the shorter parallel beams M N, located within the main frame and supporting the axle E, provided with the opposed tappets a, the wheel S, secured to said shaft, the cross-bar K, loosely pivoted at its center by the pin P and provided in its ends with the levers b b, passing through guides b^3 b^3 and engaging the tappets on the axle, the forwardly-projecting pin I, located in the forward edge of the bar L at the center thereof and engaging a staple H on the seed-slide, whereby a hinged connection is made, the lever V, passing over the frame, bent at its rear end to engage the beam M, the forward end bent to receive the coiled spring X, the lever U, secured to the side beam B, passing upwardly and passing at the rear end of the coiled spring, substantially as described.

410,606. METAL-FORMING TOOL. ALEXANDER S. PATTON, Creighton, Pa. Filed June 16, 1888. Serial No. 277,206. (No model.)



Claim.—1. A metal-working tool of the class described, consisting, essentially, of two segmental jaws formed integral with pivoted handles, and segmental dies fixed to the opposing edges of said jaws and having the serrated working-faces, substantially as and for the purpose described.

2. A metal-working tool for reducing oblong or other shaped metallic articles to an approximately-cylindrical shape, consisting, essentially, of a pair of segmental jaws formed integral with handles which are pivoted together, and the segmental dies conforming to the curvature of said jaws and removably fixed to the inner opposing edges of the jaws, said dies having the serrated working-faces, substantially as and for the purpose set forth.

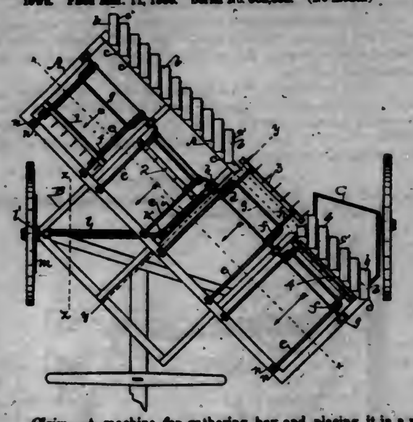
3. A metal-working tool of the class described, consisting, essentially, of two segmental jaws which are made dovetailed in cross-section, the pivoted handles, and the segmental dies tightly and removably fixed to the dovetailed edges of the jaws and having the serrated working-faces, substantially as and for the purpose described.

410,607. PROCESS OF PREPARING AND HARDENING LIME-STONES. GEORGE J. RANDALL, Marketer, Longley Road, County of Surrey, England. Filed Apr. 22, 1889. Serial No. 308,151. (No specimens.)

Claim.—1. The process herein described for hardening, preserving, and preparing oolitic and other limestones, consisting in subjecting the stone to a temperature sufficient for the purposes hereinbefore set forth, immersing said stone in a bath of the compound of lime, acetic acid, and cane-sugar, then removing said stone thus treated and rubbing to a face with a fine grit, and then drying the same, substantially as set forth.

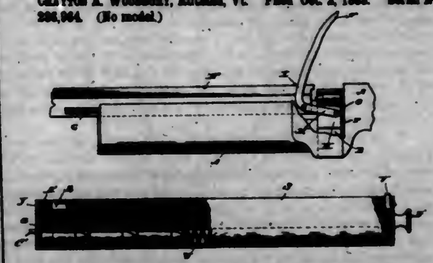
2. The process herein described for hardening, preserving, and preparing oolitic and other limestones, consisting in subjecting the stone to a temperature sufficient for the purposes hereinbefore set forth, immersing said stone in a bath of the compound of lime, acetic acid, and cane-sugar, then removing said stone thus treated and rubbing to a face with a fine grit, and then drying the same, substantially as set forth.

410,608. SIDE-DELIVERY HAY-RAKE. MADISON REW, Grinnell, Iowa. Filed Mar. 11, 1889. Serial No. 302,883. (No model.)



Claim.—A machine for gathering hay and placing it in a row parallel with its line of advance, comprising an oblong frame having a pole extending forward from its front side at an acute angle to the frame, supporting traction-wheels at the opposite sides and end portions of the frame and in parallel position with the pole, a series of rake-teeth independently connected with the rear side of the frame, a rotating shaft having beads or cranks extending in different planes in bearings attached to the cross-pieces of the frame in front of the rake-teeth, forks pivoted to the cranks of the shaft, to swing at right angles to the line of rake-teeth to move hay laterally to the line of advance, and a driver-wheel fixed to one of the traction-wheels and connected with the rotating crank-axle by means of shafts and bevel-gears arranged and combined substantially as shown and described, to operate in the manner set forth.

410,609. MAGAZINE FIRE-ARM. MARK F. RICHARDSON and CLAYTON A. WOODBURY, Rutland, Vt. Filed Oct. 2, 1888. Serial No. 286,964. (No model.)



Claim.—1. The combination, in a magazine fire-arm, of the longitudinally-movable barrel, the revolvable magazine having a series of cartridge-chambers, the vertically-movable cartridge-elevator adapted to register alternately with the magazine and barrel, and the lever pivoted to the barrel and connected to the cartridge-elevator, substantially as described.

2. The combination of a revolvable multichambered magazine, a vertically-movable cartridge-elevator adapted to register successively with the several chambers of the magazine as the latter revolves, and mechanism intermediate of said magazine and said elevator, whereby as the elevator reciprocates the magazine is caused to revolve, as and for the purpose set forth.

3. In a magazine-gun, the combination of a longitudinally-movable barrel, a vertically-movable cartridge-elevator, and a lever pivoted to said barrel and connected to the elevator for the purpose set forth, substantially as described.

4. In a magazine-gun, a stock having a vertical opening B, and a groove O in the rear side thereof, and flanges P at the sides of said

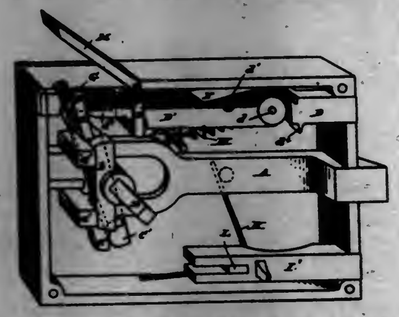
groove, a vertically-movable cartridge-elevator working in the opening B, a longitudinally-movable barrel, and an operating-lever pivoted to the barrel and connected directly to the elevator, all in combination, substantially as described.

5. The combination of the revolvable magazine, a revolvable cap on the discharge end thereof adapted to open and close the magazine, a vertically-movable cartridge receiver or elevator, and connections between the same and the cap, whereby the latter will be automatically operated, for the purpose set forth, substantially as described.

6. The combination, with a stock having the bore C and notches W, of the magazine, revolvable in said bore, and a detent secured in the magazine to engage the notches, for the purpose set forth, substantially as described.

7. The combination, in a magazine fire-arm, of a revolvable cap at the discharge end of a magazine having the opening E' and an eccentrically-arranged cam-pin C', and a vertically-movable cartridge receiver or elevator having the cam slot or groove engaged by said pin, substantially as described.

410,610. LOCK. MICHAEL RIEDERER, Cincinnati, Ohio. Filed Apr. 2, 1888. Serial No. 269,515. (Model.)



Claim.—1. In a door-lock, the combination of a knob-bolt, an outer knob operating independently of the inner knob, an arm attached to the stem of the outer knob and adapted to throw the knob-bolt, the combination-plate set in the end of the said arm and provided with variously-placed openings, a series of tumblers in the line of travel of the said plate, and means for adjusting the tumblers to the positions of the openings in the said plate.

2. In a door-lock, the combination of a knob-bolt, an outer knob operating independently of the inner knob, an arm attached to the stem of the outer knob and adapted to throw the knob-bolt, the combination-plate set in the end of the said arm and provided with variously-placed openings, a series of tumblers in the line of travel of the said plate, and means for adjusting the tumblers to the positions of the openings in the said plate, and an auxiliary bolt attached to the tumblers and adapted to be thrown out by them as the knob-bolt is withdrawn.

3. In a door-lock, the combination of a knob-bolt, an outer knob operating independently of the inner knob, an arm attached to the stem of the outer knob and adapted to throw the knob-bolt, the combination-plate set in the end of the said arm and provided with variously-placed openings, a series of tumblers in the line of travel of the said plate, and means for adjusting the tumblers to the positions of the openings in the said plate, and an auxiliary bolt attached to the tumblers and adapted to be thrown out by them as the knob-bolt is withdrawn, and an electric switch adapted to be moved by the said auxiliary bolt so as to close an electric circuit to ring a bell.

4. In a lock, the combination of knob-bolt A, provided with lug a^3, outer knob turning independently of the inner knob, arm C, attached to stem of outer knob and provided with lug c', combination-plate G, provided with openings g and attached to the arm C, bolt D, tumblers D', and means for dropping one or more of the tumblers D, substantially as and for the purposes specified.

5. In a lock, the combination of knob-bolt A, provided with lug a^3, outer knob turning independently of the inner knob, arm C, attached to stem of outer knob and provided with lug c', combination-plate G, provided with openings g and attached to the arm C, bolt D, tumblers D', and levers H, passing through the door and each upholding one of the tumblers D in the lock, substantially as and for the purposes specified.

6. In a lock, the combination of knob-bolt A, provided with lug a^3, outer knob turning independently of the inner knob, arm C, attached to stem of outer knob and provided with lug c', combination-plate G, provided with openings g and attached to the arm C, bolt D, tumblers D', levers H, passing through the door and each upholding one of the tumblers D in the lock, spring F, and pin d', substantially as and for the purposes specified.

7. In a lock, the combination of knob-bolt A, provided with lug a^3, outer knob turning independently of the inner knob, arm C, attached to stem of outer knob and provided with lug c', combination-plate G, provided with openings g and attached to the arm C, bolt D, tumblers D', levers H, passing through the door and each upholding one of the tumblers D in the lock, and shaft I, provided with leaf i.

8. In a lock, the combination of knob-bolt A, provided with lug a^3, outer knob turning independently of the inner knob, arm C, attached to stem of outer knob and provided with lug c' and yoke c^3, combination-plate G, provided with openings g and held in yoke c^3, bolt D, tumblers D', and means for dropping one or more tumblers D', substantially as and for the purposes specified.

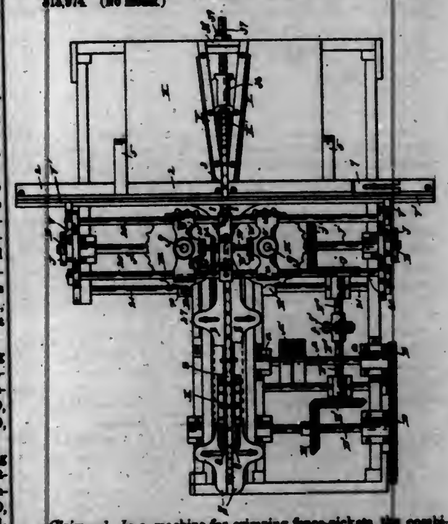
9. In a lock, the combination of knob-bolt A, provided with lug a, outer knob turning independently of the inner knob, arm C attached to stem of outer knob and provided with lug c', combination-plate G, provided with openings g and attached to the arm C, bolt D, tumblers D', and means for dropping one or more of the tumblers D', switch-lever P, provided with projection p, and wire W, and plate O, having wire attached thereto, substantially as and for the purpose specified.

10. In a lock, the combination of knob-bolt A, provided with lug a^3, outer knob turning independently of the inner knob, arm C, attached to stem of outer knob and provided with lug c', combination-plate G, provided with openings g and attached to the arm C, bolt D, tumblers D', and means for dropping one or more of the tumblers, lugs d^3 on bolt D, lever n', having dog n, link n^2, arm n^3, and rock-shaft n^4, rigidly connected to arm n^3, clapper and clapper-spring, and gong, substantially as and for the purposes specified.

11. In a lock, the combination of knob-bolt A, provided with lug a^3, outer knob turning independently of the inner knob, arm C, attached to the stem of outer knob and provided with lug c' and yoke c^3, combination-plate G, provided with openings g and held in yoke c^3, bolt D, tumblers D', and means for dropping one or more tumblers D', and outer casing provided with hinged portion M near the combination-plate, substantially as and for the purposes specified.

12. In a lock, the combination of knob-bolt A, provided with lug a^3, outer knob turning independently of the inner knob, and arm C, attached to stem of outer knob and provided with lug c' and yoke c^3, substantially as and for the purposes specified.

410,611. FENCE-PICKET-CRIMPING MACHINE. MARIAN. M. SHELLABERGER, Beaver Falls, Pa. Filed June 12, 1888. Serial No. 313,974. (No model.)



Claim.—1. In a machine for crimping fence-pickets, the combination of the endless carrier provided with a series of dies and the rotary disks arranged on opposite sides of the carrier and carrying a series of dies which mesh with those on said carrier, substantially as specified.

2. The combination of the die-bearing disks, the die-carrier bearing dies arranged between said disks, the channeled bar arranged at right angles to the carrier to receive the rod or wire for the pickets, and the table provided with divergent stop-flanges to check the legs of the picket, substantially as specified.

3. The combination of the die-bearing disks, the interposed die-carrier bearing dies, and the parallel grooved guides to receive and guide the legs of the completed picket, substantially as specified.

4. The combination, with the die-bearing disks and the interposed die-carrier bearing dies, of the transverse channeled bars and the feed-bar fitting in said channel and geared to the die-bearing disks, substantially as specified.

5. The combination, with the die-carrier bearing dies, of the die-bearing disks having their shafts mounted in laterally-movable brackets, and the right-and-left screw-bolts connecting said brackets in pairs, whereby they may be moved toward or from each other, substantially as specified.

6. The combination, with the die-carrier bearing dies, of the die-bearing disks having their shafts mounted in laterally-movable brackets which are connected in pairs by right-and-left screw-bolts, and the adjusting-chain connecting rigid pulleys on the said screw-bolts, whereby when said chain is moved all the brackets are operated simultaneously, substantially as specified.

7. The combination, with the die-carrier bearing dies, of the upper and lower parallel guide-rods, the sliding brackets mounted in pairs on said guide-rods and connected by right-and-left screw-bolts carrying sprocket-pulleys, the die-bearing disks having vertical shafts mounted in bearings in the said brackets, and the sprocket-chain engaging said sprocket-pulleys and passing around intermediate pulleys 25 and 26, substantially as and for the purpose specified.

8. The combination, with the die-carrier bearing dies, of the upper and lower parallel guide-rods, the sliding brackets mounted in pairs on said guide-rods and provided with revolvable nuts, the right-and-left screw-bolts connecting said brackets in pairs and provided with rigid pulleys connected by an endless chain, and the die-bearing disks provided with shafts mounted in bearings in the said brackets, substantially as specified.

9. The combination, with the die-carrier bearing-dies, of the movable brackets mounted on parallel guide-rods and provided with revolvable nuts, the retaining or locking pins or rods fitting in peripheral perforations in the said nuts, the right-and-left screw-bolts connecting said brackets in pairs and connected together for simultaneous operation, and the die-bearing disks provided with shafts mounted in bearings in the brackets, substantially as specified.

10. The combination, with the die-carrier bearing dies, of sliding brackets connected by right-and-left screw-bolts which are geared together for simultaneous operation and the die-bearing disks having their shafts mounted in bearings in the said brackets, substantially as specified.

11. The combination, with opposing disks bearing dies, of a carrier arranged between the disks and provided with a groove or channel and the dies provided with webs or ribs secured in said grooves or channels, substantially as specified.

12. The combination of an endless carrier provided with dies, the sprocket wheels or pulleys supporting said carrier, the rotary disks arranged on opposite sides of the carrier and provided with dies to mesh with the dies on the carrier, and the divided shaft having separable sections which are geared, respectively, to the sprocket wheels or pulleys and the rotary disks, and having their contiguous ends provided with perforated disks which are engaged by clamping-bolts, substantially as specified.

13. The combination, with a die-carrier having its dies arranged in groups with intervening blanks, of the die-bearing disks arranged on opposite sides of said die-carrier and having blank spaces to correspond with the blanks on the carrier, substantially as specified.

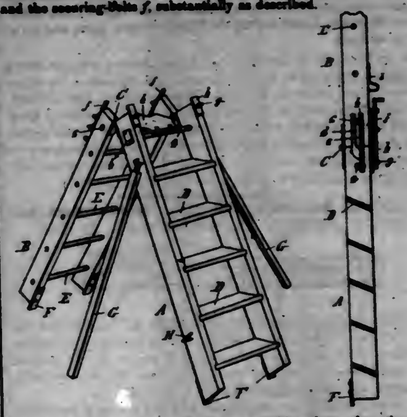
14. The combination, with a die-carrier, of the shaft J', geared to the said carrier, the die-bearing disks provided with shafts having miter-wheels G', the movable miter-wheels G, feathered on the shaft J', and provided with grooved hubs, and the yokes engaging the grooved hubs and having their threaded arms extended through suitable brackets and engaged by nuts, substantially as specified.

15. The combination, with a die-carrier and the opposing die-bearing disks, of the shaft J', geared to said die-bearing disks and carrying cams J, and the feed-bar carried by sliding brackets having anti-friction rollers bearing on the said cams, substantially as and for the purpose specified.

410,612. EXTENSION STEP-LADDER. WILLIAM SMITH, Shiloy, Mich. Filed Apr. 27, 1889. Serial No. 308,827. (No model.)

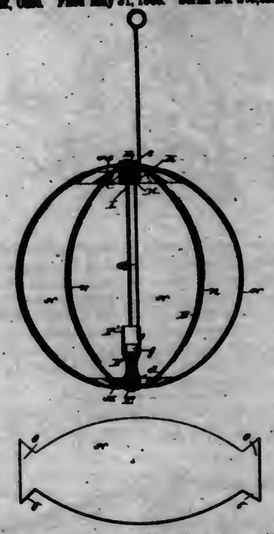
Claim.—1. In a ladder consisting of two parts hinged together, the combination of the sides thereof with a top step having a pivotal connection with one side through the top round on that side and a sliding connection with the top round of the other side, and securing devices—such as the bolts f—substantially as described.

2. In a ladder composed of two parts hinged together, the combination of a round a, pivotally held in the top of one part, the plates b' for securing said round a in position, the top step b, secured at one end to the round a and having a sliding connection with the round c, and the securing-plate f, substantially as described.



3. In a ladder composed of two parts hinged together, the combination of a round a, pivotally held in the top of one part, the plates b', for securing said round a in position, the top step b, secured at one end to the round a and having a sliding connection with the round c, the securing-bolts f, the overlapping base h, and the step i, substantially as described.

410,613. LAWN LANTERN OR ILLUMINATOR. JAS. H. SPRAGUE, Berwick, Ohio. Filed May 31, 1888. Serial No. 275,622. (No model.)



Claim.—1. In a lantern or illuminator, the combination, with the cover or envelope, of the frame having the upper and lower spools or blocks O D, provided with recesses in their outer ends, and radial slots communicating with the recesses, the rings arranged horizontally in the recesses of the spools or blocks, the ribs passing through the said radial slots and having hooks or loops on their ends engaging the rings, and the adjusting-wire attached to the lower spool or block and adjustably secured at its upper end to the upper spool or block, substantially as specified.

2. In a lantern or illuminator, the combination, with the frame having the extending ribs, of the cover or envelope surrounding the frame and comprising the tapered sections or gores N N, secured together at their side edges, the flaps O O on the upper and lower ends of the gores, folded inward and secured to the inner surfaces of the

same, and the ears e e on the side edges of the said flaps, affixed to the adjacent sections or gores to prevent the upper and lower ends of the same from separating, substantially as specified.

3. In a lantern or illuminator, the cover or envelope comprising the tapered sections N, secured together at their adjacent side edges to form the angles n, and having the flaps O at their upper and lower ends, as set forth.

4. In a lantern or illuminator, the combination, with the cover or envelope, of the frame arranged therein and comprising the upper and lower spools or blocks C D and the radial elastic ribs pivotally connected at their ends to the said spools or blocks, the lower spool or block being extended upward to form the integral candle-socket F, the sleeve F', embracing the candle-socket, and the adjusting-wire connected at its lower end to the sleeve F' and passing upward and engaging the upper sleeve or block, for the purpose set forth.

410,614. MACHINE TAP AND DRILL. CHRISTIAN STEBNER, New York, N. Y. Filed Mar. 9, 1889. Serial No. 302,695. (No model.)



Claim.—1. The combination, substantially as hereinabefore set forth, of a twist-drill provided, as described, with a tapping device above and in connection with the spiral portion of said drill, and parallel sides located between the taper cutting-edges and the tapping-teeth, all arranged and operating substantially as set forth.

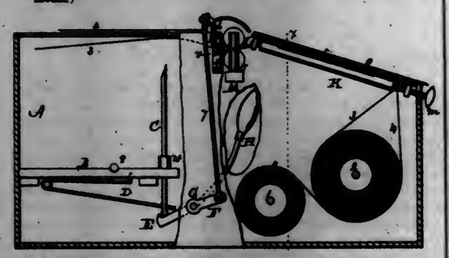
2. In a twist-drill, the combination of a tap having a portion of its threads upon the spiral grooved portion of the drill.

410,615. CULTIVATOR AND HARROW. JOSEPH STOATS, Oxford, Miss. Filed June 10, 1889. Serial No. 313,799. (No model.)



Claim.—The pivotally-connected yielding frame for harrows and cultivators, consisting of the center beam A, to the rear end of which is secured the transverse end piece *a* by braces *a' a'*, the side beams B B, the front ends of which are pivotally connected to the front end of the center beam A, while their rear ends are inclined outwardly and adjustably secured to the standard *c* on the end piece *a* by means of inwardly-reaching levers *d d*, while to each end of beams B B are attached the shovels D D, and the levers O O and ratchets J J, for controlling such shovels, as set forth.

410,616. AUTOGRAPHIC REGISTERING APPARATUS. JOHN B. THIM, Dayton, Ohio. Filed Apr. 13, 1889. Serial No. 307,164. (No model.)



Claim.—1. In an autographic registering apparatus, the combination of the frame A, the spools 1 and 2, so arranged that the strip 4 of the former is drawn beneath the roll 3 to give tension to both of said strips by moving the same in contact in opposite directions, the tablet-frame K, with its transfer-paper, and feeding-rollers I J, with handle to operate the latter, substantially as shown and described.

2. In an autographic registering apparatus, the combination of the frame, the rollers 1 and 2, with the arrangement of the strips of paper as being withdrawn therefrom, the tablet-frame K, to support said strips with the intermediate transfer-paper, the carrying-rollers I and J, the shears of parts 5 and 6, connecting-rod 7, crank F, shaft G, and operating-lever H, substantially as described.

3. In an autographic registering apparatus, the combination of the frame, the detachable filing-block B, with thimble-guides *w w*, the angular filing-pin C, held loosely in said guides, the depressing-spring D, attached to said block and bearing downwardly against the transverse part of said pin, arm E, shaft G, and operating-arm H, substantially as described.

4. In an autographing registering apparatus, the combination of the frame A, shaft G, arm E, filing-pin C, carried upwardly by said arm to pierce the under strip of paper as it is thrust against the top of said frame and pierced by the filing-pin points entering orifices *z z* of said top, the crank F, connection-rod 7, the moving blade 6 and fixed blade 5, and the operating-handle H, these parts to simultaneously sever the two strips of paper and fix the under strip on the said filing-pin, substantially as described.

5. In an autographic registering apparatus, the combination of the frame A, the shaft G, with the operating-handle H attached, crank F, connection-rod 7, and shears of parts 5 and 6, to sever the strips of paper carried forward by the feeding-rollers, substantially as described.

6. In an autographic registering apparatus, the frame having the top with orifices *z z*, in combination with the filing-block B, with guides *w w*, held down against cleats in said frame, the bolt S, to hold the same down against the depressing-springs D D, the arm E, shaft G, with operating-arm H attached, and filing-pin C, to pierce the under strip 3, substantially as described.

410,617. SHEET-METAL VESSEL. DAVID V. TRIPP, Nevada, Iowa. Filed May 1, 1889. Serial No. 309,283. (No model.)



Claim.—A rim or top having an annular shoulder or flange on its inside, and fastening devices for attaching a bail or handles thereto, in combination with a sheet-metal vessel having its top edge bent outward over the shoulder on the inside of said rim, substantially as shown and described, for the purpose stated.

410,618. CORDING ATTACHMENT FOR SEWING-MACHINES. EDWIN J. TOOF, New Haven, Conn. Filed July 22, 1881. Serial No. 34,404. (Model.) Patented in England Mar. 11, 1882, No. 1,193.



Claim.—The improvement in cording attachments for sewing-machines herein described, the same consisting in the combination, with the presser-foot or holder having a transverse slit in one side of the lower portion of the shank at its junction with the foot and parallel therewith, and having a recess at the front and an aperture at the rear in the upper surface of said foot portion, of a cord-guide having a guiding channel-way therein and provided with a spring-metal shank having projections complemental to the recess and aperture in the foot, whereby the said shank may be sprung within the transverse slit in the presser-foot or holder and firmly seated by the engagement of the said projections upon the shank, with the recess and opening at the front and rear portions, respectively, of the foot, as set forth.

410,619. RUFFLER FOR SEWING-MACHINES. EDWIN J. TOOF, New Haven, Conn. Filed May 20, 1882. Serial No. 62,705. (No model.) Patented in England Mar. 11, 1882, No. 1,194.

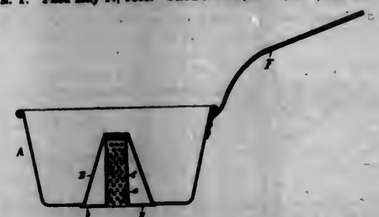
Claim.—1. The combination, with a ruffling and shirring attachment for sewing-machines, consisting of a frame, gathering-blade, and operating-levers adapted to be supported in position by the presser-bar of said machine, of a separator-plate hinged to said frame upon a bearing which is at right angles to the line of feed, the said separator-plate being thus parallel with and operating in direction with said blade, substantially as and for the purpose set forth.



2. The combination, in a ruffling and shirring attachment for sewing-machines, consisting of a supporting-frame adapted to be secured to the presser-bar of said machine, and a gathering-blade operated by connecting-levers, of a separator-plate the shank of which forms a part of the same and is hinged to the supporting-frame at one side thereof to permit the operator to swing said plate from beneath said blade, substantially as described, and for the purpose set forth.

3. The combination, in an attachment adapted to ruffle and shirr, of a supporting-frame adapted to be held in position by the presser-bar of a sewing-machine, a gathering-blade operated by a connecting-lever, an adjustable separator-plate hinged to the foot part of the said frame, and a supplemental or guard plate adapted to be independently secured to the cloth-plate of the machine, whereby the said attachment may be operated for shirring with the hinged separator-plate moved out of operative position without operating the blade against the feed-dog, substantially as set forth.

410,620. COOKING UTENSIL. WHITFIELD WARD, New York, N. Y. Filed May 17, 1889. Serial No. 311,128. (No model.)



Claim.—A cooking-vessel combining a conical hood B, a cylindrical perforated hood within said conical hood, and a perforated ring D between said hoods, substantially as and for the purpose described.

410,621. MAGAZINE FIRE-ARM. CHARLES P. H. WEATHERBY, New York, N. Y. Filed June 14, 1889. Serial No. 314,232. (No model.) Patented in Belgium June 27, 1889, No. 82,363.

Claim.—1. The combination, in a fire-arm, of a barrel open at the breech, a movable breech-block, an inclined cartridge-chamber extending downward in the stock at an angle to the line of the barrel and with a straight inclined forward face 5, and a carrier parallel to the line of the barrel and movable in said chamber upon an inclined guideway, substantially as described.

2. The combination of the barrel, stock having an inclined chamber, carrier in said chamber parallel with the line of the barrel, and inclined guideway for a slide connected with the carrier, substantially as set forth.

3. The combination of the barrel open at the breech, and stock having an inclined chamber and an inclined face *y*, and a carrier in said chamber parallel to the line of the barrel, and inclined guideway therefor, substantially as set forth.

4. The combination, with the longitudinally-movable breech-block having a terminal slot or recess, of an L-shaped dog, one arm extending into said recess and bearing with its inner end against the forward face of the recess in the block and the other arm extending forward and provided with a catch at its outer end, substantially as set forth.

5. The combination of the barrel, stock having an inclined cartridge-chamber, case for holding the cartridges adapted to said chamber, spring arranged to bear upon and eject the case, and movable catch 2, arranged to bear upon and hold the case in position, substantially as set forth.

6. The combination of the barrel, stock having an inclined chamber, horizontal carrier supported to move in an inclined direction in said chamber, and case located in said chamber and having a lower and a side edge opening for the passage of the carrier, substantially as described.

7. The combination, with the barrel, stock, and chamber of a magazine-gun, of a closing-piece located below the barrel and movable into position to close and open the cartridge-chamber and provided with a projecting operating-arm, substantially as set forth.



410,622. MATCH-MACHINE. JOHN H. WHITE, Washington, D. C. Filed Feb. 4, 1887. Serial No. 226,565. (No model.)

Claim.—1. In combination with the trough or conductor for the blanks, the toothed feeding-head, the peripherally-acting cam C^9, and intermediate connections for advancing the head, the spring C^9, to retract the head when relieved from the cam, the depressing-cam C^7 and its intermediate connections, and the lifting-spring C^{10}, whereby the feeding-head is positively engaged and moved forward with the blank and speedily lifted and retracted when relieved from the action of the cams.

2. The reciprocating feeding-head grooved in its sides, in combination with the rock-shaft and its arms provided with projections to enter the grooves and guide the head.

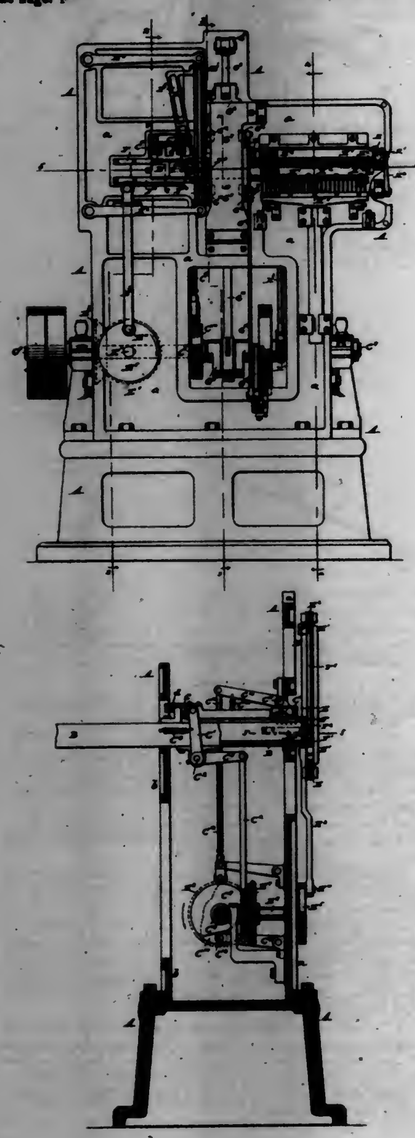
3. In combination with the trough or guide for the blanks and the slicing-knife movable across the mouth of the trough to sever the slice from the blank, the guide bars or rails F F', arranged outside of the knife and transversely of the mouth of the trough, as described, in position to receive and sustain the edges of the slice as it is severed by the knife.

4. In combination with the trough or guide for the blanks, the slicing-knife movable across the mouth of the trough, the guide-bars F F', lying outside of the knife in position to receive the edges of the slice, and the reciprocating finger F^9, for advancing the slice between the guides beyond its original position in order that the next succeeding slice may enter the guides.

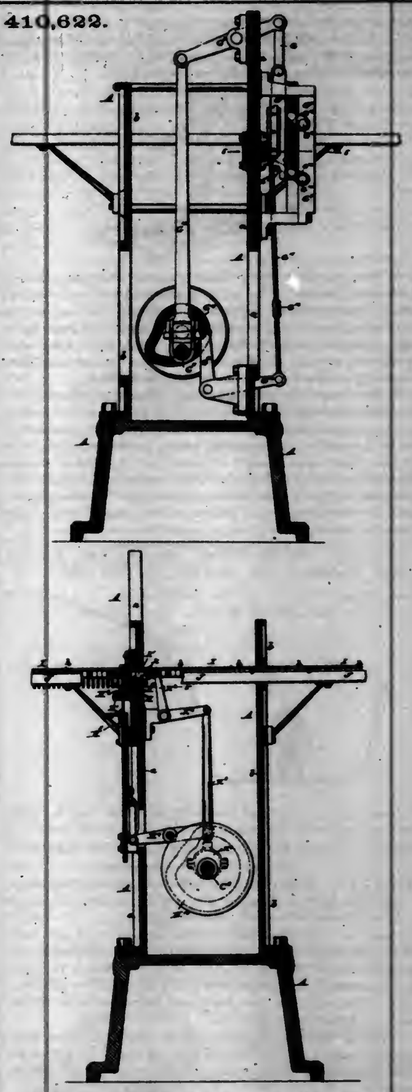
5. In combination with the knife-carrying frame, the trough or guide E, the guides F F', the reciprocating plate provided with the finger to move the slices edgewise, and the inclined bar F^x, attached to the knife-frame and acting to move said plate, whereby the retraction of the knife is caused to effect the advance of the slice edgewise from its original position.

6. The trough to guide the blanks, in combination with the slicing-blade movable across its mouth, the frame in which said blade is mounted, the guides F F', to receive and sustain the slice, the reciprocating slide L^2, its yielding arm L', and the roller mounted in said arm opposite the edge of the knife to sustain the slice, whereby the slices are formed and delivered to the supporting-guides.

7. In combination with the guide or channel for the blanks, the guides F, to sustain the blanks, the traveling roller, the reciprocating finger F^9, to advance the blank, and the reciprocating finger M, whereby the blank is given an initial movement and carried within reach of the finger F^9



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8. In a mechanism for dividing wooden slices into splints, the combination of a supporting-anvil, a series of parallel connected blades having their edges presented toward the anvil, a pressure mechanism to urge the knives toward the anvil, and an independent mechanism for reciprocating the knives longitudinally, whereby the cutting-edges are caused to act in the direction of their length as they are urged toward the anvil.

9. In combination with a series of vertical dividing-knives and their supporting-plate G^2, grooved in its edges, the rock-shafts and their arms G^{12}, with rollers or studs entering the grooves of said plate, the lever G^3, connected to said plate, and the pitman, lever, and cam for operating the rock-shafts.

10. In a machine for forming match-splints, the combination of a trough or conductor to sustain the blanks, a blade movable lengthwise across the trough to remove slices from the blanks, transverse guides F F', lying outside of the knife to sustain the edges of the successive slices, a feed-finger which reciprocates lengthwise of the guides to advance the successive slices, an anvil to sustain the advanced slices on one side, and a series of parallel knives acting transversely of the guides to divide the slices into splints, whereby the splints are left in position between the guides.

11. In a match-machine, a mechanism for dividing the wooden slices into splints and retaining said splints in line, the same consisting of guides F F', to engage and sustain the edges of the slices, an anvil to sustain the slice on one side, a series of parallel knives extending transversely of the guides, and mechanism, substantially as shown, for advancing said knives edgewise against the slice, whereby the slice is divided into splints and the latter left in position between the guides.

12. In combination with the dividing-knives, the guides F F', and means for advancing the splints past the dividing-knives, the guide-rails adapted to receive and hold the lower ends of the splints, and the vertically-reciprocating head H^3, provided with pins or projections to force the splints upward.

13. In combination with the overlying splint-receiving frame and the vertically-movable splint-lifting head, the intermediate splint-guiding rails H H^3, with an opening at one end to permit the splints to enter laterally between them, the rail H^3 having its upper edge at suitable distance below the receiving-frame to permit the escape of fractured splints.

14. In a match-machine, the parallel splint-guiding rails H and H^3 and the reciprocating finger to feed the splints sidewise between said rails, a reciprocating feeder H^5, with its pins or fingers to deliver the splints endwise from the rails, and the yielding stop or finger H^6 at the end of the rail, as and for the purpose described.

15. In combination with the splint-receiving frame overlying the stop-plate, toothed or notched on its under side, and a splint lifting or ejecting head H^3, having a series of teeth or pins to deliver the splints through the receiving-frame, the teeth of the overlying plate being arranged opposite the spaces between the pins or teeth of the lifting-head, whereby the adjoining splints are projected on opposite sides of the frame.

16. In a match-machine, the combination of a continuous guide or channel, a slicing-knife by which the wooden slice is delivered into said guide, the reciprocating feeder for advancing the slices lengthwise of the guide, a series of parallel knives lying transversely of the guide and of the path in which the slices advance and acting to divide the slice while supported in the guide into splints.

17. In combination with a continuous guide or channel, a slicing-knife E, whereby the wooden slice is delivered into said channel, a reciprocating finger whereby the slice is advanced through said guide from its normal position, a series of parallel knives acting transversely of the guide to divide the slice supported therein, and a reciprocating ejecting-head acting to deliver the splints endwise from the guide, said parts constructed and arranged for joint operation substantially as described.

18. In combination with a guide or channel constructed, substantially as described, to sustain the edges of a wooden slice and the ends of the splints produced therefrom, a series of parallel knives acting transversely of the guides to divide the slice therein into splints, and a reciprocating feed device arranged to act on the successive slices, whereby the slices are advanced edgewise through the guide one against another, and thus the slices and splints advanced in close order to and beyond the dividing-knives.

410,623. GANG-SAW MILL. TIMOTHY S. WILKIN, Milwaukee, Wis. Filed Mar. 1, 1888. Serial No. 301,092. (No model.)

Claim.—1. In a gang-saw mill, the combination, with a frame-work, of a reciprocating saw-sash, a cranked shaft below but connected with the sash, a cylinder below the shaft, a piston working in the cylinder, and a connection between the piston and cranked shaft.

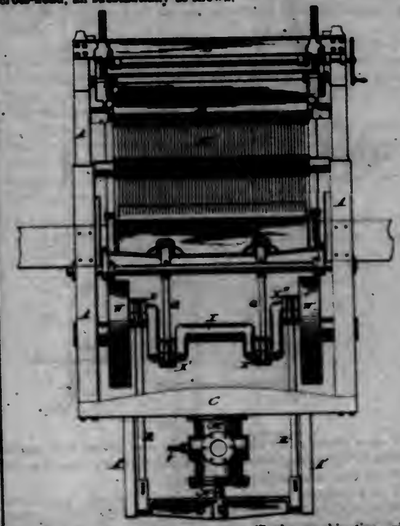
2. In a gang-saw mill, the combination, with a frame-work, of a shaft provided with two sets of cranks diametrically opposite each other, a saw-sash connected with one set of cranks, a cylinder, and a piston working in said cylinder and connected with the other set of cranks.

3. In a gang-saw mill, the combination, with a main frame, of a saw-frame, a cranked shaft, a cylinder provided with a piston, a pitman or pitmen connecting the saw-frame with the cranked shaft, and a pitman or pitmen connecting the cranked shaft with the piston-rod.

4. In a gang-saw mill, the combination, with the main frame, of a saw-frame, a cranked shaft journaled in the main frame, a cylinder mounted directly beneath the shaft, a piston working within said cylinder, a cross-head secured to the piston-rod, and a pitman or pitmen connecting the cranked shaft with the cross-head, and an independent pitman connecting the saw-frame with the cranked shaft.

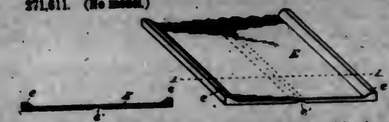
5. In a gang-saw mill, the combination, with the main frame, of a saw-frame, a cranked shaft journaled in the main frame and connected with the saw-frame by means of a pitman, a cylinder located upon the main frame beneath the shaft, a single piston working within said cylinder and having its rod extending from the lower end of said cylinder, a cross-head secured to the said piston-rod, and pitmen connecting the cross-head with the cranked shaft.

6. In a gang-saw mill, the combination, with a main frame, of a reciprocating saw gate or frame, a cranked shaft journaled in the main frame, a pitman connecting the saw-gate with the cranked shaft, a cross-bar C, extending across the main frame near its lower end, a cylinder mounted upon said cross-bar between the uprights A A of the main frame, a single piston working within said cylinder and having its rod extending from the lower end thereof, a cross-head secured to said piston-rod, and pitmen connecting the cranked shaft with the cross-head, all substantially as shown.



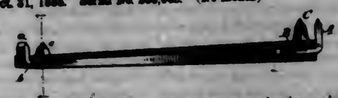
7. In a reciprocating gang-saw mill, the combination, with the main frame, of a shaft provided with four cranks K K' K'' K''', a reciprocating saw-frame, pitmen Q Q, connecting the cranks K' K'' with the saw-frame, a cylinder, a piston working within said cylinder, and pitmen R R, connecting said rod of said piston with the cranks K' K'''

410,624. PROCESS OF MANUFACTURING HORSESHOE-NAILS. HARRY A. WILLS, Brighton Park, Ill. Filed Apr. 23, 1888. Serial No. 271,611. (No model.)



Claim.—The hereinbefore-described process of making horseshoe-nails, which consists in first rolling a heated bar so as to form a continuous blank having a longitudinal rib along each lateral edge and a continuous V-shaped groove along the center, then slightly widening and deepening the groove by suitably-beveled hammer-dies when the blank is cool to compress the metal at that point, and then simultaneously cutting from the blank two finished nails, substantially as and for the purposes specified.

410,625. HORSESHOE. WILLIAM ZIEGLER, De Leuw, Mo. Filed Oct. 31, 1888. Serial No. 289,665. (No model.)

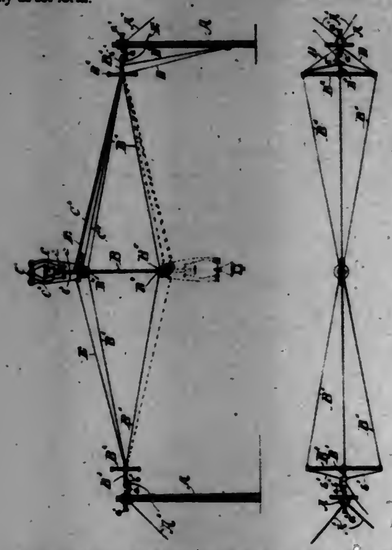


Claim.—The combination, with a horseshoe having a slot parallel with its face, of an L-shaped calk consisting of a wedge-shaped point for contact with the ground and a backwardly-projecting portion fitting the slot, and the auxiliary calk with threaded stem bearing against the backwardly-projecting portion of the L-shaped calk.

410,626. STRUCTURE FOR SUPPORTING LAMPS ABOVE STREETS. JOHN B. ADAMS, Indianapolis, Ind., assignor to the Jenney Electric Company, same place. Filed Oct. 11, 1888. Serial No. 287,331. (No model.)

Claim.—1. A structure for supporting lamps over streets, consisting of a bridge pivoted between suitable posts and provided with suit-

able supports for said lamp, located on one side of the axis, substantially as set forth.



2. As a structure for supporting lamps over streets, a pivoted or invertible bridge having suitable supports for the lamp, located on one side of the axis, substantially as set forth.

3. In a structure for supporting lamps over streets, the combination of the posts, and a truss structure carrying the lamp pivotally secured between said posts and on one side of the axis of said structure, whereby it may be inverted, substantially as set forth.

4. In a structure for supporting lamps over streets, the combination of a bridge pivotally arranged above said street, the lamp mounted on said bridge and pivoted at its top in the frame in which it is mounted and to one side of the axis of said structure, substantially as set forth.

5. In a structure for supporting lamps over streets, the combination of the posts arranged on each side of the street, the bridge structure pivotally secured between said posts, the lamp on the top of said structure, and a counterbalance-weight on its bottom, substantially as set forth.

6. The combination, in a structure for supporting lamps above streets, of the posts A, the U-shaped part a, secured at its top, the bridge structure, consisting of central post B, the trusses B', and end frames B^2, said end frames being provided with the arms B^3, terminating in the U-shaped part b', said U-shaped parts b' and a being interlocked and pivoted together, and the means for securing and operating the structure, substantially as set forth.

7. In a structure for supporting lamps above streets, the combination of the end posts, the bridge structure pivotally secured between said posts, the lamp mounted on the top of said bridge structure and pivoted in the top of its frame, and the means for securing said lamp from turning on its pivot when desired, substantially as set forth.

8. The combination of the posts A, the bridge structure pivotally secured between them, the lamp C, mounted on the top of said bridge in the frame C^2, and shaft journaled in bearings in said frame, the part c, secured to the base of the frame and extending up to rest against one side of the base of the lamp, the pivoted part c' resting against the other side of said base, and the means, substantially as described, for operating it, whereby the lamp may be secured from swinging and released when desired, substantially as set forth.

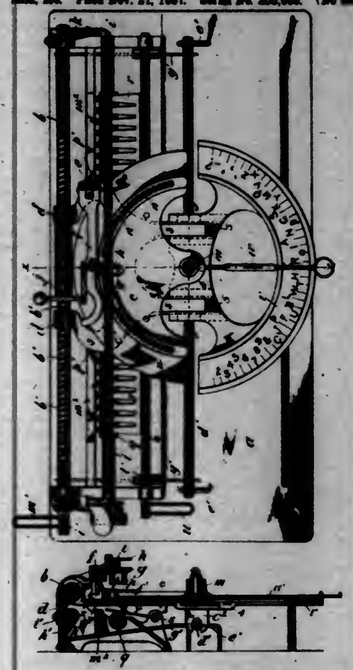
9. In a structure for supporting lamps over streets, the combination of the end posts and a truss-bridge carrying the lamp on one side of its axis, consisting of a central post connected by a pair of truss-cables secured to each of its ends, to the ends of the arms of the end frames which extend out in a plane at right angles to said central post, said end frames being connected to said end posts, substantially as set forth.

10. The combination of the posts A and the bridge structure pivotally secured between them, consisting of the central post B, the truss-cables B', the end frames B^2, and the arms B^3, pivotally connected to said posts A, substantially as set forth.

11. The combination of the posts A, the bridge structure consisting of the central post B, connected by truss-cables to suitably-formed end frames which are pivotally supported by said posts, said central post B being provided with a coupling B^4 at its top and bottom, and said coupling being formed with laterally-projecting wings, and the clamping-jaws b^4, bolted thereon, said truss-cables being clamped between said jaws and said wings, substantially as set forth.

12. The combination of the posts A, the parts a, formed with U-shaped ends secured in the tops of said posts, a coiled spring a^2, interposed between the outer end of said parts and said posts, the truss-bridge carrying the lamp on its top and provided with the U-shaped parts b', attached to its ends, which are interlocked and pivotally connected with said parts a, substantially as set forth.

410,627. TYPE-WRITING MACHINE. DANIEL ALLEN, Jr., Boston, Mass., assignor to the Type-Writer Improvement Company, Portland, Me. Filed Nov. 21, 1887. Serial No. 255,693. (No model.)



Claim.—1. In a type-writer, the combination, with the paper support or guide, the longitudinal guides, the carriage movable thereon, and the feeding mechanism for automatically feeding the carriage forward when a type has been depressed, of the movable type-carrying segment bearing concentric rows of type mounted on said carriage in fixed guides at right angles to the line of movement of the carriage and a shifting-bar mounted on fixed guides and engaging said segment to shift the same, whereby the types in said concentric rows may be brought to the proper printing-point, substantially as described.

2. In a type-writing machine, the combination, with a paper support or guide, a carriage mounted on longitudinal guides, and a printing-lever thereon, of a type-carrying segment provided with concentric series of characters mounted on an axis or pivot which is movable in fixed guides on and at right angles to the line of movement of the carriage, and a shifting-bar mounted in fixed guides and engaging said pivot, whereby the types in said concentric series may be brought to the proper printing-point, substantially as described.

3. In a type-writing machine, the combination of a carriage mounted on longitudinal guides and made in two parts or sections, one of which is independently movable in fixed guides at right angles with the usual movement of the carriage, a type-carrying segment having a plurality of series of printing-characters pivoted to the said independently-movable section, a printing-lever pivoted to the other section of the carriage and engaging said printing-characters to print the same, and a shifting-bar mounted in fixed guides and engaging said independently-movable section for moving the section to bring either series of characters into operative relation with the printing-lever, as set forth.

4. In a type-writing machine, the combination of a carriage made in two parts or sections, one of which is independently movable at right angles with the usual movement of the carriage, a type-carrying segment having a plurality of series of printing-characters pivoted to the said independently-movable section, a printing-lever pivoted to the other section of the carriage, a laterally-sliding bar, as d', arranged to be engaged by slotted lugs with the independently-movable section of the carriage, and means, substantially as described, for moving said rod laterally, and with it the type-carrying segment and the section of the carriage supporting it, as set forth.

5. In a type-writing machine, the combination of a carriage made in two parts or sections, one of which is independently movable at right angles with the usual movement of the carriage, a type-carrying segment having a plurality of series of printing-characters pivoted to the said independently-movable section, a printing-lever pivoted to the other section of the carriage, and a laterally-sliding bar, as d', arranged to be engaged by slotted lugs on the independently-movable section, a spring-controlled rock-shaft journaled in fixed bearings, and connections between said rock-shaft and rod, whereby the latter is moved by the rotation of the former, as set forth.

6. In a type-writer, the combination, with the longitudinally-movable carriage, the type-segment carrying concentric rows of printing-characters thereon and movable in fixed bearings in a direction at right angles to the line of movement of the carriage, and the printing-lever, of centering-pins co-operating with the type-segment to center the type in any of said concentric rows, substantially as described.

410,628. TYPE-WRITING MACHINE. GEORGE K. ANDERSON, Memphis, Tenn. Filed Nov. 15, 1887. Serial No. 255,203. (No model.)

Claim.—1. In a type-writing machine, the combination, with a pivoted impression-plate, of a series of pivoted key-bars adapted to swing from the same center as the plate and printing-characters carried by one of said parts.

2. In a type-writing machine, the combination, with a series of pivoted key-bars, of a pivoted plate and a series of printing-characters carried by the pivoted plate directly above the key-bars.

3. In a type-writing machine, the combination, with a series of pivoted key-bars, of a pivoted impression-plate, a series of printing-characters, and a paper-feed mechanism independent of and operated by the plate, all substantially as shown.

4. In a type-writing machine, the combination, with a series of key-bars C, of a pivoted plate D, provided with a printing-plate K, a spring M, to hold the plate down, a support I for the inner ends of the key-bars, and stops g g, to limit the movement of the plate.

5. In a type-writing machine, the combination, with pivoted key-bars C, of a pivoted plate D, having printing-plate K, a spring M, a paper-feed mechanism, and a pawl carried by the plate to actuate the feed mechanism.

6. In combination with base-board A, support B, and key-bars C, plate D, provided with pawl m, and printing-plate K, feed-rolls O P, a shaft Q, provided with ratchet U, a spring o, to keep the pawl in engagement with the ratchet-wheel, and a pawl n, to prevent the backward rotation of the wheel U.

7. In a type-writer, the combination, with a series of pivoted key-bars and a pivoted impression-plate, of a series of printing-characters, a paper-feed mechanism actuated by the pivoted plate, an inking-ribbon, and a shaft upon which said ribbon is wound, actuated by the paper-feed mechanism.

8. In a type-writing machine, the combination, with a series of key-bars and with a pivoted impression-plate, of a series of printing-characters, a feed mechanism for the paper, actuated by the plate, an ink-ribbon, and an adjustable frame for supporting the ribbon, arranged substantially as shown, whereby the ribbon is caused to travel in one or the other direction, as desired.

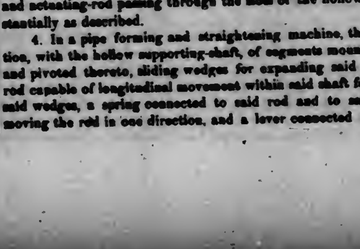
9. In a type-writing machine, the combination, with a paper-feed mechanism, of a series of pivoted key-bars and a pivoted plate provided on its under face with type and arranged directly over the key-bars, substantially as shown, whereby the pressure of the key-bars against the plate causes the actuation of the feed mechanism.

10. In a type-writing machine, the combination, with a paper-feed mechanism provided with a shaft Q, having wheels T T', of a bar Z, pivoted to the frame of the machine at a point between its ends, shafts W W', located at opposite ends of bar Z and provided with wheels Y Y', and a ribbon V, wound upon the shafts W W', all substantially as shown.

11. In a type-writing machine, the combination, with the bar Z, pivoted between its ends and provided at opposite ends with shafts W W', having wheels Y Y', a sliding rod s, adapted to rock or tip the bar Z, and a fixed rotary shaft Q, provided with wheels T T', all substantially as shown.

12. In combination with the block B and pivoted plate D, arranged substantially as shown, a spring M, bearing at its ends upon the plate and the block, a screw h, passing through the spring and screwing into the block B, and a coiled spring i, surrounding the screw and bearing upon the spring M.

410,629. TYPE-WRITING MACHINE. HORACE L. ARNOLD, Brooklyn, N. Y., assignor to the Arnold Type-Writer Company. Filed Sept. 2, 1887. Serial No. 248,568. (No model.)



Claim.—1. In a type-writing machine, the combination of a shell-like type-carrier provided with type on one side and index-holes on the other, an abutment, an impression device, and an index-pin, substantially as set forth.

2. In a type-writing machine, the combination of a sleeve adapted to slide and oscillate, a shell-like type-carrier secured thereto and provided on one side with type and on the other with index-holes, a bearing for said sleeve, an impression device, and an index-pin, substantially as set forth.

3. In a type-writing machine, the combination of a sleeve adapted to slide and oscillate, a shell-like type-carrier secured thereto, and provided with type on one side and index-holes on the other, a bearing for said sleeve, an abutment for said type-carrier, an impression device, and an index-pin, substantially as set forth.

4. In a type-writing machine, the combination of a curved type-carrier provided with a head or support at its top, a sleeve attached to said head or support, an abutment in rear of said carrier and beneath said head or support, a bearing for said sleeve, and an impression device, substantially as set forth.

410,630. PIPE-FORMING MACHINE. CLARENCE E. AINSWORTH, Minneapolis, Minn. Filed Sept. 26, 1888. Serial No. 286,702. (No model.)

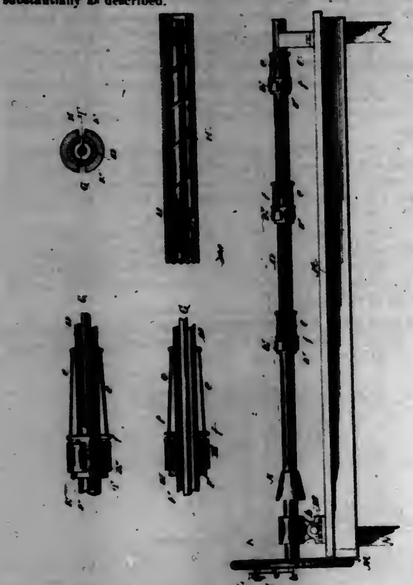
Claim.—1. In a pipe forming and straightening machine, the combination, with the supporting-shaft, of segments mounted thereon and secured thereto, and wedges for expanding said segments mounted on said shaft, adapted to slide longitudinally thereof and to engage the inner faces of said segments, substantially as described.

2. In a pipe forming and straightening machine, the combination, with the supporting-shaft, of segments mounted thereon and pivotally secured thereto, sliding wedges for expanding said segments mounted on said shaft, adapted to slide longitudinally thereof and to engage the inner faces of said segments, and an actuating-rod for moving said wedges, substantially as described.

3. In a pipe forming and straightening machine, the combination, with a hollow supporting-shaft provided with slots, of segments pivotally mounted on said shaft, sliding wedges for expanding said segments laterally, an actuating-rod capable of longitudinal movement through the hollow shaft, and connections between the said wedges and actuating-rod passing through the slots of the hollow shaft, substantially as described.

4. In a pipe forming and straightening machine, the combination, with the hollow supporting-shaft, of segments mounted thereon and pivoted thereto, sliding wedges for expanding said segments, a rod capable of longitudinal movement within said shaft for actuating said wedges, a spring connected to said rod and to said shaft for moving the rod in one direction, and a lever connected to the said

rod for moving it in the opposite direction against the said spring, substantially as described.



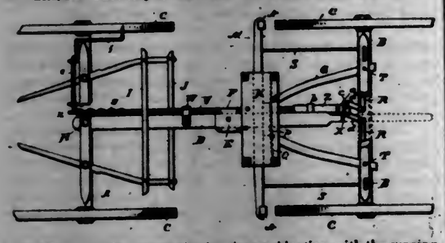
5. In a pipe forming and straightening machine, the combination, with the hollow supporting-shaft, of segments mounted thereon and pivoted thereto, sliding wedges for expanding said segments, an actuating-rod for said wedges, a spring for moving said rod in one direction, a lever for moving said rod in the opposite direction and compressing said spring, and a locking device for said lever for holding the spring compressed, substantially as described.

6. In a pipe-forming device, the combination, with the supporting-shaft and expansible segments, of a conical centering-collar mounted on said shaft, substantially as described.

7. In a pipe forming and straightening machine, the combination, with the supporting-shaft mounted in suitable bearings, of segments mounted thereon and secured thereto, wedges for expanding said segments mounted on said shaft, adapted to slide longitudinally thereof and engaging the inner faces of said segments, said shaft being capable of rotating in its bearings, and thereby rotating said segments and wedges, substantially as described.

8. In a pipe forming and straightening machine, the combination, with the supporting-shaft provided with a balance-wheel, of bearings for said shaft, one of said bearings engaging said shaft on the under side only, the other of said bearings being pivoted, and a spring-latch for engaging said balance-wheel and holding said shaft in an elevated position, substantially as described.

410,631. **WAGON-BRAKE.** WILLIAM W. ATTEBERRY, Chesterfield, Ill. Filed May 6, 1889. Serial No. 309,770. (No model.)



Claim.—1. In a wagon-brake, the combination, with the running-gear, of a plate mounted upon the front ends of the rear bounds and having downwardly-extending brackets or hangers, the brake-bar arranged to slide longitudinally in said brackets and having downwardly-extending guide-studs, a block secured centrally to the rear side of the brake-bar, a spring secured to the rear side of said block and bearing against the rear ends of said brackets or hangers and to force the brake-bar normally in a forward direction, levers pivoted to the under side of the rear axle, rods connecting the outer ends or arms of said levers with the ends of the brake-bar, a longitudinally-sliding rod mounted in bearings attached to the reach, links connecting the rear end of said sliding rod with the inner ends of the levers, a rock-shaft mounted in bearings attached to the front axle and having a crank at its inner end connected by the chain with the longitudinally-sliding rod, and an operating-lever at the outer end of said rock-shaft, substantially as and for the purpose set forth.

2. In a wagon-brake, the combination of the longitudinally-sliding brake-bar, a spring arranged to force the said brake-bar normally in a forward direction, levers pivoted to the under side of the rear axle, rods connecting the outer ends or arms of said levers with the longitudinally-sliding brake-bar, a longitudinally-sliding rod mounted in bearings attached to the reach of the running-gear and having at its rear end an upturned flange provided with the transverse slot, a plate extending through the said slot and having a ring encircling the longitudinally-sliding rod, bolts connecting the said plate adjustably with the longitudinally-sliding rod, links connecting the rear end of said adjustable plate with the inner ends or arms of the brake-operating levers, and a rock-shaft journaled in bearings attached to the front axle and having an operating-lever at its outer end and provided at its inner end with a crank connected by a chain with the longitudinally-sliding rod, substantially as herein set forth.

410,632. **CULINARY UTENSIL.** CORNELIUS BERKEY, Hartford, Conn. Filed Oct. 2, 1888. Serial No. 286,948. (No model.)



Claim.—1. In combination, a vessel *a*, a dependent cylinder secured thereto and constructed in sections *c c'*, the lower one of which is adapted to support a heat-generating device, and means for adjusting one section of said cylinder in relation to the other section, whereby the heat in the casing *a* may be increased or decreased, substantially as set forth.

2. In combination, a vessel *a*, a dependent cylinder communicating with said vessel and adapted to support a heat-generating device, a vessel *g*, supported within said vessel *a*, a water-chamber supported between said vessels *a* and *g*, and a non-conducting shield *j*, secured to said water-chamber upon its lower side and exposed directly to the heat from the dependent cylinder and in contact with the said water-chamber throughout its entire length and breadth, substantially as set forth.

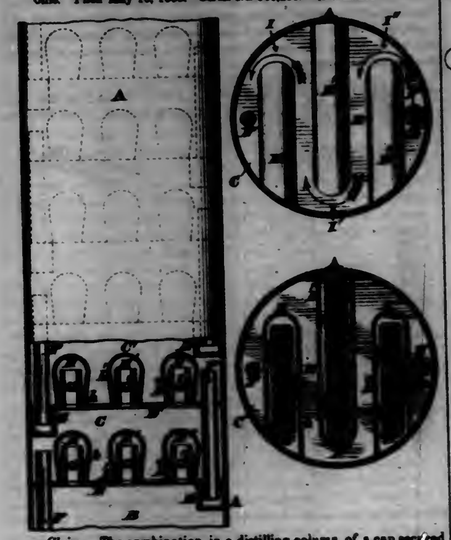
3. In combination, a vessel *a*, provided with dependent cylinder for supporting a heat-generating device, a vessel *g*, supported within said vessel *a*, a water-chamber *i*, supported beneath said vessel *g*, a perforated cover *m* for said vessel *g*, and dampers for said dependent cylinder and the vessel *a*, substantially as set forth.

410,633. **COMBINED SHOE OR BOOT SCRAPER AND BELL-PULL.** THEODOR BÖHM and LEOPOLD ROSENBERG, Berlin, Germany. Filed Feb. 5, 1889. Serial No. 298,716. (No model.)



Claim.—The combination of a frame with a scraper pivotally connected therewith and with a pawl connected to the scraper and engaging a ratchet-wheel, and with a series of interruptions upon said ratchet-wheel, and with a bell-wire acted upon by said interruptions to intermittently ring the bell, substantially as specified.

410,634. **DISTILLING-COLUMN.** EDWARD BOLTON, Cincinnati, Ohio. Filed May 10, 1889. Serial No. 310,253. (No model.)



Claim.—The combination, in a distilling-column, of a cap secured over the steam-pipe, said cap being closed at its upper end, but perforated at its sides, which perforated portions are wider at top than at bottom, whereby the jets of steam issuing from said cap are projected down into the liquid, substantially as herein described.

410,635. **METHOD OF PRODUCING ARTIFICIAL STONE.** GRANVILLE M. BARNES, New Milford, Conn. Filed Jan. 30, 1889. Serial No. 298,126. (No specimens.)

Claim.—The within-described composition of matter, consisting, in the proportions named, of emery, ground silex, or corundum, feldspar, and silicate of soda, consolidated by the treatment specified.

410,636. **SEAM-FINISHING MACHINE.** PETER A. COUPAL, Boston, and JOSEPH COUPAL, Quincy, Mass. Filed Jan. 26, 1889. Serial No. 297,712. (No model.)

Claim.—1. In a machine for finishing the seams of boots and shoes, the combination of the work-support P, hammers F and F', eccentrics E and E', studs G and G', a guide for holding and directing the work upon the support to the hammers, and mechanism for rotating the eccentrics, all substantially as specified.

2. In a machine for finishing the seams of boots and shoes, the combination of a work-support, hammer F, provided with an oscillating foot J, hammer F', provided with an oscillating foot J', means for guiding the seam to the hammers, and mechanism for actuating the hammers, all substantially as specified.

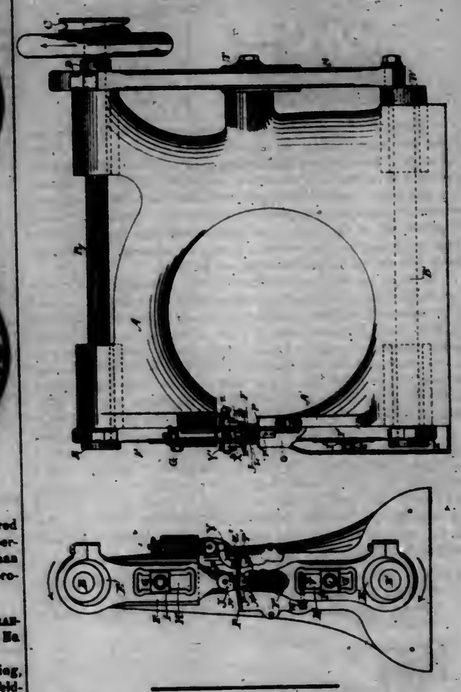
3. In a machine for finishing the seams of boots and shoes, the combination of a work-support, hammers F and F', arranged and operated as described, and a guide comprising an under yielding support P', an upper pressure-spring Y', and side fingers Z' and Z², all substantially as and for the purpose specified.

4. In a machine for finishing the seams of boots and shoes, the combination of a work-support, hammers F and F', arranged and operated together as described, guide-fingers Z' and Z², secured to adjustable side pieces X' and X², and an adjusting-screw Z, for regulating the distance apart of said fingers, all substantially as specified.

5. In a machine for finishing the seams of boots and shoes, the combination of a work-support, mechanism for guiding the seam, hammers F and F', oscillating foot J, attached to hammer F and constructed with a V-shaped heel L and roughened surface K, an adjusting-spring M, and a rest or stop on the hammer, all as and for the purposes specified.

6. In a machine for finishing the seams of boots and shoes, the combination of a work-support, mechanism for guiding the seam, hammers F and F', oscillating foot J, attached to hammer F and constructed with a groove K', an adjusting-spring M', and a stop N', attached to the yielding piston F², all as and for the purposes specified.

7. In a machine for finishing the seams of boots and shoes, the combination of a work-support, mechanism for guiding the seam, hammer F', mounted upon a yielding piston F², hammer F, the supporting-spring U, the securing-nut V, and locking-screw W, all as and for the purposes specified.



410,637. **INSULATOR.** WILLIAM H. DAVIS, Plymouth, Mass. Filed Apr. 25, 1889. Serial No. 308,863. (No model.)



Claim.—1. The combination, with an insulator, of a bridle made to form a loop, and a shield mounted in the loop and adapted for connection with the opposite sides thereof, substantially as specified.

2. The combination, with an insulator, of a bridle made to form a loop, and a shield of semicircular form mounted in the loop and having its opposite ends formed to engage with the opposite sides of the loop, substantially as specified.

3. The combination, with an insulator, of a bridle consisting of two strands, the terminals of one being twisted around the other strand, and the terminals of the other strand being bent to engage with each other, and the two strands being oppositely bent intermediate their ends to form a loop, and a shield-plate mounted in the loop and provided with opposite hook ends for the engagement with the opposite portions of the loop, substantially as specified.

4. A bridle for insulators, made of wire in two strands, the strands being oppositely bent intermediate their ends to form a loop, and the shield-plate provided with opposite hook ends to engage the opposite portions of the loop, as set forth.

410,638. OIL-STOVE. JOHN DE MOOT, Jr., Cleveland, Ohio, assignor to the Taylor & Boggis Foundry Company, same place. Filed Apr. 19, 1889. Serial No. 307,708. (No model.)

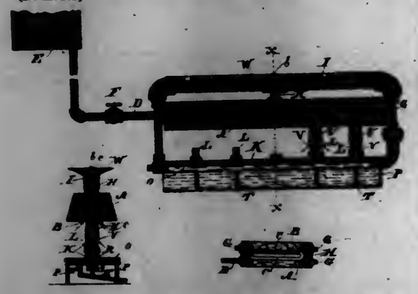


Claim.—1. In an oil-stove, the combination, with a fender provided with a longitudinal slot extending from one edge of the fender inwardly, of a wick-tube provided with a wick-shaft chamber, and also provided at its base with an angular flange secured to the reservoir-top, said fender located in contact with said flange, and below said wick-shaft chamber, a continuous uninterrupted air-space being formed longitudinally of the fender and reservoir-top, said fender provided with projecting handles, whereby it may be removed from engagement with the oil-stove, substantially as set forth.

2. In an oil-stove, the combination, with a fender provided with two longitudinal slots extending from one edge inwardly, and provided with outwardly-projecting handles on the end of the fender opposite to the open end of the said slots, of a pair of wick-tubes, each provided at the base with an angular flange and provided above said flange with a wick-shaft chamber, the longitudinal walls of said slots extending, respectively, on either side of said wick-tube, said fender located in a horizontal plane intermediate of said angular flange and said wick-shaft chamber, with both of which it engages, substantially as set forth.

3. In an oil-stove, the combination, with a standard provided on opposite sides with recessed ledges, and provided at one end with a lug having an opening, of a reservoir provided at its sides with a projecting top resting on said ledges and provided with a projecting end portion having an opening, said opening registering with said end lug-opening, said reservoir provided at its forward end with a lug having engagement with the under side of said standard, substantially as set forth.

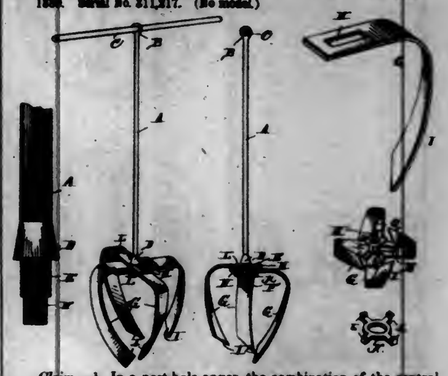
410,639. DEVICE FOR VAPORIZING HYDROCARBON OIL AND BURNING THE SAME. ASA DOREY, Chicago, Ill., assignor to Jeremiah B. Selby, Milwaukee, Wis. Filed Aug. 13, 1888. Serial No. 282,636. (No model.)



Claim.—1. A vapor-burning device consisting of an oil-vaporizing chamber having a central longitudinal slot, the opposite side walls of which slot incline inwardly toward each other from the bottom of the chamber to the top, forming a constantly-narrowing flue and terminating at the top of the chamber in a long narrow opening for the passage of the vapor, vapor-discharge pipe having a series of burner-tubes L, located in a line immediately below the slot in the chamber, in combination with a longitudinal superheating vapor-tube located above and in line with the slot in the chamber, which superheating vapor-tube is connected by pipes directly with the vaporizing-chamber and with the vapor-discharging pipe, whereby the entire product of the vaporizing-chamber passes through the superheating vapor-tube to the vapor-discharging pipe, substantially as described.

2. In a device for vaporizing and burning carbon oil, an oil-vaporizing chamber provided with an oil-supplying pipe, said chamber having a central longitudinal slot, the walls of which incline inwardly from the bottom to the top of the chamber, forming a constantly-narrowing flue for the passage of vapor, and terminating at the top of the chamber in a long narrow aperture, in combination with a discharge-pipe leading from the chamber and passing above in line with and at a short distance from the slot in the chamber, which pipe continues and extends below the chamber and the slot therein, a series of vapor-discharging tubes in said pipe below the slot in the chamber and thereon frustum-of-cone chimneys, each provided with a side aperture or apertures, which chimneys are adapted to lead the discharged vapor and the air introduced through the side apertures upward into the flue formed by the inclined walls of the slot in the chamber, by which device the entire supply of oil vaporized and burned is led into the vaporizing-chamber and through the superimposed superheating-pipe and is discharged into and is burned above the slot in the chamber, substantially as described.

410,640. POST-HOLE DIGGER. JOHN C. DOBLER, Creighton, Mo., assignor of one-half to Richard R. Walden, same place. Filed May 18, 1889. Serial No. 311,217. (No model.)



Claim.—1. In a post-hole auger, the combination of the central stock having a squared lower end, the cutting-blades having longitudinal slots in their upper horizontal portions, a spacing-washer having upwardly-extending lugs or studs adapted to be fitted between the adjacent edges of said cutting-blades, and a nut for securing said washer and cutting-blades in position upon the stock, substantially as and for the purpose set forth.

2. In a post-hole auger, the combination of the central stock having an annular flange and a squared section below said flange, the blades or cutters having longitudinally-slotted horizontal upper portions and downwardly-extending spirally-curved outer portions provided with inwardly-curved ends, the washer having upwardly-extending lugs or studs, and a nut or key for securing the said washer and cutting-blades upon the lower end of the stock, substantially as set forth.

410,641. CRUSHER. WILLIAM JOHNSTON, Pittsburg, Pa. Filed July 23, 1888. Serial No. 280,833. (No model.)



Claim.—1. In a crusher, the combination of the shafts rocking in opposite directions, the jaws secured thereon, said jaws having curved inclined plates on their rear sides, with the frame provided with the corresponding curved inclined plates, and means, substantially as described, for imparting motion to said shafts and jaws whereby said jaws are caused to approach each other.

2. The combination of a pair of jaws provided with curved inclined plates, said jaws rocked in opposite directions and the frame provided with inclined curved plates, rocking shafts for carrying said jaws, and levers attached to the outer end of said rock-shafts, and mechanism for operating said levers to cause the jaws to approach one another, substantially as described.

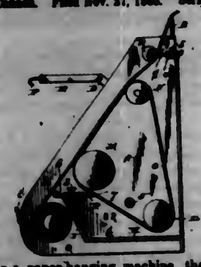
3. In a crusher, the combination of the rocking jaws having serrations on their inner faces, the inclined plates or portions secured to the jaws and frame of the machine, respectively, the rock-shafts and levers, and means, substantially as described, for imparting motion to said levers and thereby operating the crushing-jaws.

4. In a crusher, the rocking jaws inclined toward each other provided with detachable corrugated crushing-faces, inclined plates for forcing said jaws toward each other, said plates secured to the jaws and frame of the machine, respectively, and a hopper for feeding material between said jaws, the rock-shaft for supporting the levers at the outer ends of said rock-shafts, and links for imparting motion to the levers and thereby to the crushing-jaws, as described.

5. In a crusher, the combination of a pair of rocking corrugated jaws, moving inclined plates secured to said jaws, and inclined curved plates secured to the frame of the machine, said plates causing the jaws to approach each other when the supporting-shaft is rocked, rock-shafts for supporting said jaws, a hopper for supplying material between the jaws, and a guide or casing for conducting the crushed material from between said jaws, and means, substantially as described, for operating said jaws.

6. In a crusher of the character described, the frame 1, the shafts 2 and 3, secured thereon, the pulleys and gearing mounted on said shafts, the balance-wheels 7 7, secured to the shaft 2, and the links 9, connected to said wheels, the levers 10, and rock-shafts 11, in combination with the rocking jaws 14, having removable corrugated crushing-faces 17, curved inclined plates secured on the rear sides of said jaws, and similar curved plates 20, secured to the frame of the machine, the whole constructed and arranged to be operated substantially as and for the purpose described.

410,642. PAPER-HANGING MACHINE. ERASMUS L. JONES, Pittsburg, Ontario, Canada. Filed Nov. 27, 1888. Serial No. 291,966. (No model.)



Claim.—1. In a paper-hanging machine, the combination of a casing having an inclined open front side, a paste-receptacle within said casing, a roller arranged transversely in the paste-receptacle, rollers arranged transversely at some distance from the upper and lower ends of the casing near the inclined front side thereof, an endless belt passing over said rollers, and rollers to support the wall-paper and guide it over the front part of said belt and in contact therewith, substantially as set forth.

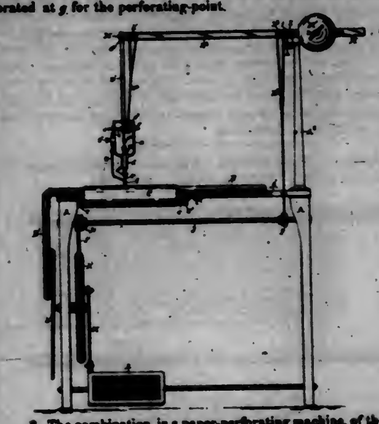
2. The combination, with the casing, of the partition within the same, forming a paste-pot, a series of rollers, journaled in the sides of the casing, an endless belt moving over said rollers to feed the paste to the wall-paper, the cylindrical rod in the lower front corner of the casing adapted to support the roll of paper, and the guide-roller in the upper end of the casing, as set forth.

3. In a paper-hanging machine, the combination of the casing having an inclined front side, a roller within the casing to support the wall-paper, a guide-roller near the upper end of the casing, a paste-conveying belt, and a vertically-disposed knife at the top of the casing, substantially as set forth.

4. In a paper-hanging machine, the combination of the series of transverse rollers, the paste-conveying belt moving over said rollers, a lower scraper designed to bear against the belt, an upper scraper designed to bear against the wall-paper, the cylindrical rod in the lower front corner of the casing, and the guide-roller in the upper end of the same, as set forth.

410,643. PAPER-PERFORATING MACHINE. ALBERT B. LA ROE, Cincinnati, Ohio. Filed Aug. 6, 1888. Serial No. 282,205. (No model.)

Claim.—1. The combination, in a perforating-machine, of the frame, the bed, a vertically-rocking and horizontally-swinging bar mounted above said bed-plate, the swinging yoke D, the bar connecting it with the end of the swinging bar, the vertically-reciprocating point-carrier mounted in said yoke, and the adjustable finger G, perforated at *g* for the perforating-point.



2. The combination, in a paper-perforating machine, of the frame, the bed-plate, the upwardly-projecting standard A^2, the vertically-rocking and horizontally-swinging bar H, mounted upon said standard, the rod D', hinged to said arm H, the perforator-head fitted with the reciprocating point-carrier secured to the lower end of said rod D', the transverse shaft J, means for imparting motion to said shaft, and the bands and pulleys for communicating motion from said shaft to the reciprocating point-carrier, arranged substantially as and for the purpose set forth.

410,644. GATE. EDGAR M. LIVELY and LOUIS P. LIVELY, Canton, Tex. Filed Apr. 19, 1889. Serial No. 307,770. (No model.)



Claim.—1. The combination, with the gate having its bottom rail pivoted at one end, of the horizontally-swinging arm arranged above the gate, the vertical lever pivotally mounted on the gate and having its upper end connected with the free end of said arm, the vertical latch pivoted on the gate, and the connecting-bar between the latch and lever, as set forth.

2. The combination, with the gate and the horizontally-swinging arm arranged above the gate and provided in its free end with a longitudinal slot and a series of transverse perforations, of the vertical lever pivoted on the gate and having its upper end entering said slot, the pin passing through one of said transverse perforations and engaging the lever, the vertical latch, also pivoted on the gate, and the horizontally-sliding connecting-bar between the lower ends of the latch and the lever, as set forth.

410,645. VEHICLE-WHEEL. SAMUEL C. HEAD, Grove, Mich. Filed June 7, 1889. Serial No. 313,402. (No model.)



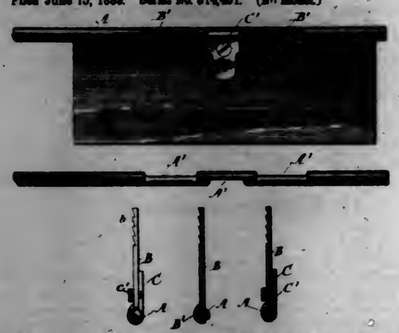
Claim.—1. In a vehicle-wheel, the combination, with the rim, the inner concentric ring, and the spokes uniting the said ring and rim, of a hub inside the concentric ring, and radially-arranged springs of corrugated flat bar-steel interposed between and having their ends secured to the said hub and ring, substantially as set forth.

2. In a vehicle-wheel, the combination, with the rim, the inner concentric ring, and the spokes uniting the said ring and rim, of a hub inside the concentric ring, the radially-arranged springs interposed

between and having their ends secured to the said hub and ring, and the cover-plates secured to the hub with their circumferences resting against the sides of the concentric ring, substantially as set forth.

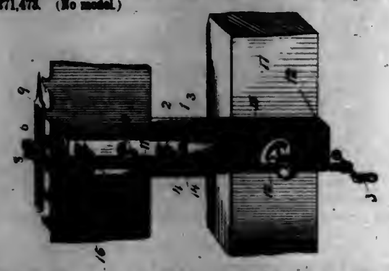
3. In a vehicle-wheel, the combination, with the rim, the inner, concentric ring, and the spokes uniting the said ring and rim, of the hub, the radially-arranged springs secured at one end to the said ring and provided with flanges at the other end resting against the hub, and the rings encircling the said flanges and hub and securing them together, substantially as set forth.

410,646. STOVE-DAMPER. WILLIAM C. METZNER, Chicago, Ill. Filed June 15, 1888. Serial No. 314,451. (No model.)



Claim.—In a stove-damper, the combination of the shaft A, having the recesses A' on one side thereof and having a recess A^3 on the other side thereof and between said recess A', a space being left between the ends of the recesses A' A' and the recess A^3, a blade B, having tongues B' lying in the recesses A' A', a clip C applied to the blade B and extending into the said recess A^3, and a bolt C' extending through said clip and said blade and binding said clip and said blade to said shaft, substantially as shown and described.

410,647. DEVICE FOR JOINTING THE TEETH OF BAND-SAWS. JAMES R. MILES, East Saginaw, Mich. Filed Apr. 12, 1888. Serial No. 271,473. (No model.)



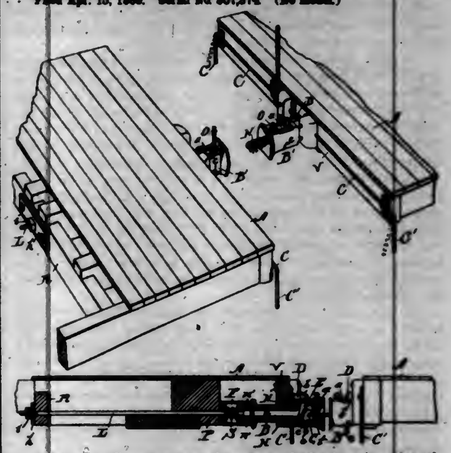
Claim.—The combination of the plates 1 2 3, bolted together to form the space 18, the sliding bar 11, the adjusting-screw 12, the pivoted post 5, and the handle 13, as and for the purpose herein set forth.

410,648. CULTIVATOR. EDWARD POOLE, Perkyoe, Ark. Filed June 12, 1889. Serial No. 313,964. (No model.)



Claim.—The combination, in a cultivator, of the central beam, the tooth-bars arranged in pairs, pivoted to the beam by a common pivot, and adapted to overlap, the links pivoted to the tooth-bars, the standards having double arms formed integral, as shown and described, and having their arms pivoted to the tooth-bars by the bolts which pivot the links thereto, the perforated locking-plate, and the locking-arms pivoted to the front tooth-bars and engaging the locking-plate, as set forth.

410,649. CAR-COUPLING. ANDREW P. PREVOST, Kawkawlin, Mich. Filed Apr. 16, 1888. Serial No. 307,374. (No model.)



Claim.—1. For supporting the outer end of a draw-bar, the collar H, having the wings H" and the cap-piece H', said collar adapted to environ the outer end of the draw-bar and support it by being bolted to the end cross-beam of the car, substantially as and for the purposes specified.

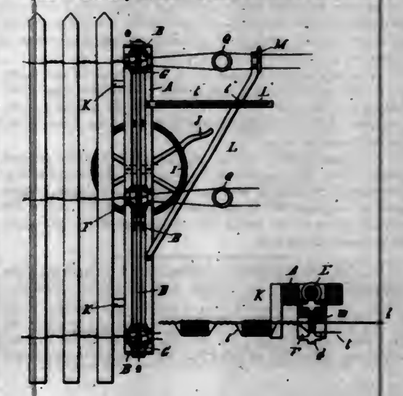
2. A draw-head provided with the chamber M, having the gravitating dog G pivotally located therein, the reciprocating head E, having the spur *x*, extended plate *a*, and post *b*, said head adapted to be actuated by the arm D and operate the pin and dog, for the purposes specified.

3. The basket-frame F, containing the cup K and spring S, and having the rod L passing therethrough, said frame adapted to be secured to the rear end of a draw-bar, and all of said parts arranged to operate as and for the purposes specified.

4. In a car-coupler, in combination with the frame of a car, the draw-bar having the head B', provided with the chamber M, the dog G, located in said chamber and having the groove *d*, the pin O, link N, the reciprocating head E, having the spur *x*, post *b*, and plate *a*, the actuating-rod C, having the arm D, and the collar H, said parts arranged to operate for the purposes specified.

5. A car-coupler comprising the following elements: the draw-bar having the head B' and shoulders *n n'*, the collar H, reciprocating head E, dog G, pin O, and link N, the actuating-rod C, having the arm D, the frame F, cup K, spring S, and rod L, when arranged as and to operate for the purposes set forth.

410,650. PICKET-FENCE MACHINE. EDWARD EDMONDS, Perry, Mich. Filed May 27, 1889. Serial No. 312,272. (No model.)



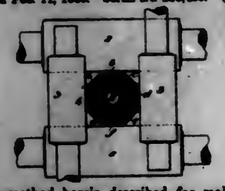
Claim.—1. In a wire-fence machine, a twister-wheel provided with the central wire-passage communicating with the slotted periphery, and a detachable plug secured between such central aperture and the periphery, substantially as described.

2. In a wire-fence machine, a twister-wheel provided with one or more eccentric wire-passages and a central wire-passage connecting with one of said eccentric wire-passages, and a detachable plug between said passages, substantially as described.

3. In a picket-fence machine, the combination, with a frame, twister-wheels journaled therein, and suitable gearing for driving the same, of an outrigger pivotally connected to said frame, a bracket provided with slotted annular bearing having a groove on its inner surface, and a guide-wheel secured in said bearing, substantially as described.

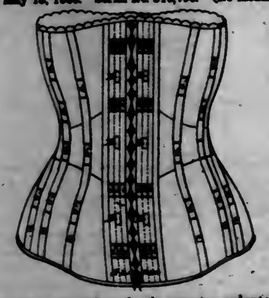
4. In a picket-fence machine, a wire-spreading device adapted to be slidingly secured by the tension of the wires in front of the machine, and consisting of a wheel having peripheral grooves, substantially as described.

410,651. MAKING METAL ROLLS. CHARLES M. SEEWAR, Munhall, Pa. Filed Feb. 11, 1889. Serial No. 299,692. (No model.)



Claim.—The method herein described for making rolls, which consists in casting an ingot of octagonal shape, reducing the same to a bloom of octagonal cross-section by subjecting the ingot to a simultaneous vertical and lateral rolling pressure, and finally turning the bloom into cylindrical form, substantially as and for the purposes described.

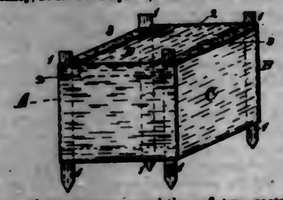
410,652. MAGNETIC BODY-WEAR. GEORGE A. SCOTT, New York, N. Y. Filed May 15, 1889. Serial No. 310,796. (No model.)



Claim.—1. The combination of a chest-vesture adapted to human environment, provided with open band-sockets, and a series of magnetized metal bands inserted therein, substantially as and for the purpose explained.

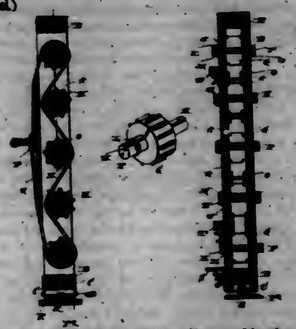
2. The combination of a chest-vesture provided with open band-sockets and a series of different metal bands inserted therein, so placed relatively as to induce galvanic action when applied to a human body, substantially as and for the purpose explained.

410,653. PLANT-PROTECTOR. IRA H. SHERMAN and WILLIAM T. CROWN, Sidney, N. Y. Filed Apr. 22, 1889. Serial No. 308,172. (Model.)



Claim.—A plant-protector consisting of two rectangular end frames covered with cloth secured thereto, said end frames being connected by cloth secured to their tops and vertical edges by cloth, creating the top and sides of the protector, and removable stretcher inserted between the upper ends of the uprights of the end frames, substantially as described.

410,654. FENCE-MACHINE. THOMAS G. SHUTES and MANSFIELD R. SHUTES, York, Nebr. Filed June 22, 1889. Serial No. 315,155. (No model.)



Claim.—1. In a fence-machine, the combination of the frame having bearings for the twisting-shafts and slots extending from said bearings to the outer edges of the frame-bars, the shafts journaled in said bearings and having longitudinal grooves adapted to register with said slots, the split rings or lap-rings adapted to be adjusted upon the projecting ends of said shafts, and means for rotating the latter, substantially as set forth.

2. In a fence-machine, the combination of a frame having bearings for the twisting-shafts and slots extending from said bearings to the outer edges of the frame-bars, the shafts journaled in said bearings and having sprocket-wheels located between the frame-bars, said shafts and sprocket-wheels being provided with longitudinal diametrically-opposite grooves adapted to register with the slots in the frame-bars, the split rings adjustable upon the projecting ends of the shafts, and an operating-chain having its ends connected together detachably, substantially as set forth.

3. In a fence-machine, the combination of the frame having bearings for the twisting-shafts and slots extending from said bearings to the outer edges of the frame-bars, the shafts journaled in said bearings and having sprocket-wheels located between said frame-bars, said shafts and sprocket-wheels being provided with longitudinal grooves or recesses, the split rings adjustable upon the projecting ends of the shafts, an operating chain passing over the series of sprocket-wheels, and a clamp connecting the ends of the chain detachably and provided with a handle by means of which said chain may be operated to rotate the twisting-heads, substantially as set forth.

410,655. MACHINE FOR TRIMMING THE EDGES OF FABRICS. ROSWELL T. SMITH, Haskins, N. H., assignor to himself and NOAH W. GODDARD, same place, and GEORGE H. DUNHAM, New York, N. Y. Filed Mar. 16, 1887. Serial No. 231,140. (No model.)



Claim.—1. The combination, with a support over which the cloth may be drawn and cutting devices mounted on the edges of said support for trimming the fibers or threads projecting at the edges of the fabric, of an exhaust-chamber having walls extending above and over the sides of said cloth-support and means for withdrawing air from the exhaust-chamber, whereby as the fabric is passed over the cloth-support the fibers or threads projecting at the edges thereof will be drawn into the line of the cutting devices by the action of the currents of air and severed by said cutting devices.

2. The combination, with a support over which the cloth may be drawn and cutting devices mounted on the edges of said support for trimming the fibers or threads projecting at the edges of the fabric, of an exhaust-chamber having walls extending above and over the sides of said cloth-support, means for withdrawing air from the exhaust-chamber, whereby as the fabric is passed over the cloth-support the fibers or threads projecting at the edges thereof will be drawn into the line of the cutting devices by the action of the currents of air and severed by said cutting devices, and a receiving-cham-

ber communicating with the exhaust-chamber for retaining the severed fibers.

3. The combination, with a divided support or guide over which the cloth may be drawn and cutting devices mounted on the edges of said support, of an expansible exhaust-chamber having an end which consists of a movable bulk-head adapted to carry one of the parts of the cloth-support and its accompanying cutting device, said exhaust-chamber having walls extending above and over the sides of the cloth-support, means for withdrawing air from the exhaust-chamber, whereby as the fabric is passed over the cloth-support the fibers or threads projecting at the edges thereof will be drawn into the lines of the cutting devices by the action of the currents of air and severed by said cutting devices, and a device for moving and adjusting the bulk-head, and cutters mounted upon the cloth-support for trimming the fibers or threads projecting at the edges of the fabric.

4. The combination, with a support or guide over which the cloth may be drawn and cutting devices mounted upon the sides of the cloth-support, of an exhaust-chamber having walls extending above and over the sides of the cloth-support and forming air-passages at the sides of the cloth-support, means for withdrawing air from said exhaust-chamber, whereby as the fabric is passed over the cloth-support the fibers or threads projecting at the edges thereof will be drawn into the line of the cutting devices by the action of the currents of air and severed by said cutting devices, a feed-roll for driving the fabric over the cloth-support, and means for operating said feed-roll.

5. In a machine for trimming the edges of textile fabrics, the combination, with a support for the cloth having marginal cutters, of an inclosing frame-work forming an exhaust-chamber beneath said support, hoods overhanging the margins of the support and forming air-passages communicating with the exhaust-chamber, a blower having its casing communicating with the exhaust-chamber, and a receiving-chamber communicating with the said blower-casing and constructed of foraminous material to permit the passage of the air-blast and prevent the escape of the clippings, substantially as specified.

6. In a machine for trimming the edges of textile fabrics, the combination, with a divided support for the cloth, of an inclosing frame-work forming an exhaust-chamber beneath the same, having its top made in two intersecting portions lying a little beneath the cloth-support, hoods overhanging the margins of the said support and forming air-passages communicating with the exhaust-chamber, a movable bulk-head forming one wall of said chamber and supporting one of the hoods, a blower having its casing opening into said chamber, cutters mounted on the margins of the said support beneath the hoods, mechanism for operating said blower and cutters, and a diaphragm lying on the divided top of the exhaust-chamber, the central portion of the support being cut away above the top of the exhaust-chamber, and the space between the said top and the support being closed at the sides and left open at the ends, substantially as specified.

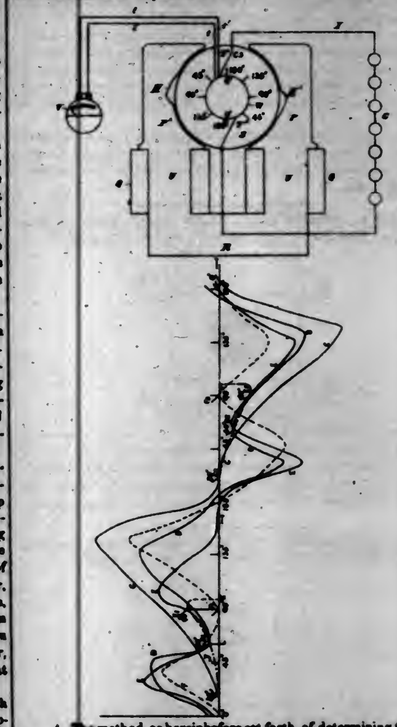
7. The combination, with a support or guide over which the cloth may be drawn and cutting devices mounted on the edges of said support for trimming the fibers or threads projecting at the edges of the fabric, of an exhaust air-chamber having walls extending above and over the sides of said cloth-support, whereby open hoods are formed whose leaves project above and over the edges of the cloth-support and inclose the edges of the fabric when the machine is in use, means for withdrawing air from the exhaust-chamber, whereby as the fabric is passed over the cloth-support the fibers or threads projecting at the edges thereof will be drawn into the line of the cutting devices by the action of the currents of air and severed by said cutting devices, and a feeding device for giving progressive movement to the fabric.

410,656. METHOD OF DETERMINING THE SHAPE OF POLE-PIECES FOR DYNAMOS. JOHN G. STATTER, London, County of Middlesex, England. Filed Mar. 20, 1888. Serial No. 304,543. (No model.) Patented in England Feb. 23, 1887, No. 2,895; in Belgium Feb. 2, 1888, No. 80,487; in France Apr. 13, 1888, No. 188,496, and in Spain May 14, 1888, No. 7,943.

Claim.—1. The method of determining the shape of the pole-pieces of dynamo-electric machines or motors, consisting of exploring the armature at various points around the same under different positions of the commutator-brushes to determine the electro-motive forces at various points around the armature and under different positions of the brushes, plotting out the curves of the electro-motive forces so obtained, and from these exploratio-curves determining the excess of the inductive effect over the self-inductive effect in the coils passing under the brushes in the various positions of said brushes.

2. The method of determining the shape of the pole-pieces of dynamo-electric machines or motors, consisting, first, in obtaining a curve which represents the excess of induction over self-induction, then removing experimentally less metal than required from the pole-pieces at the point indicated by the curve so obtained, then replotting the curve, and again experimenting until sufficient correction be obtained to make the inductive effect equal to the self-inductive effect.

3. The method of determining the shape of the pole-pieces of a dynamo-electric machine or motor to prevent sparking when the brushes are shifted, which consists in plotting out exploration-curves obtained in substantially the manner described, setting up ordinates corresponding to the various positions of the commutator-brushes in their several positions, and joining by a line the points where these ordinates cut their respective curves.



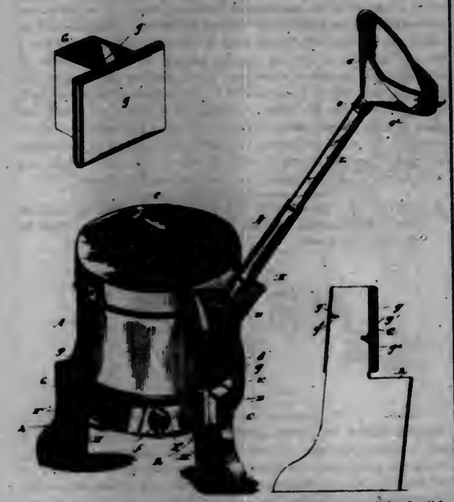
4. The method, as hereinbefore set forth, of determining the shape of the pole-pieces of a dynamo-electric machine or motor to vary the magnetic effect of said pole-pieces upon said armature and render the magnetic effect of said pole-pieces on said armature equal to the self-induction generated in the coils of the armature passing under the brushes at the time to prevent sparking, which consists in running said dynamo or motor under normal conditions, placing the brushes at several points around the commutator and measuring the differences of potential between adjacent coils around the armature for each position of the brushes, plotting the curves of said differences of potential by setting out the angular distances around the commutator as abscissæ and the differences of potential as ordinates for every position of the brushes, erecting ordinates corresponding to the angles at which the brushes are located in the several positions, noting the points where these ordinates cut their curves and joining the points so located by a line the angular position, size, and form of which will indicate the position, shape, and proportionally the amount of metal to be cut from the pole-pieces.

5. The method of determining the shape of the pole-pieces of dynamo-electric machines or motors to prevent sparking when the brushes are shifted, which consists in running said dynamo or motor with a constant current and resistance, or a variable load, respectively, changing the position of the brushes around the commutator, measuring the difference of potential between the adjacent coils around the commutator to correspond with each position of the brushes, plotting the curves of said differences of potential, setting out ordinates corresponding with the various positions of the brushes and noting the points where the said ordinates cut their corresponding curves, joining the points so located by a line and constructing the pole-pieces to correspond with the position and shape of this line and substantially in proportion to the area inclosed by said line, then running the dynamo under normal conditions again and shifting the brushes as before, measuring the differences of potential between the adjacent coils around the armature as before, and shaping the pole-pieces until the curves representing the differences of potential in adjacent coils cut the zero-line of said curves at points corresponding to the location of said brushes.

410,657. WASHING-FLUID. JOHN H. STEWART, Reidsville, N. C. Filed Oct. 4, 1888. Serial No. 287,316. (Specimens.)

Claim.—The herein-described composition of matter, forming a washing compound, and composed of soap, strained coffee, gum-arabic, saltpeter, soapstone, borax, and carbonate of ammonia, in the proportions specified.

410,658. COMBINED MILKING STOOL AND BUCKET. JOHN H. STEWART, Reidsville, N. C. Filed Nov. 6, 1888. Serial No. 290,155. (No model.)



Claim.—1. The combination, with the milk-bucket, of the flexible belt or strap encircling the bucket, and the supporting-legs having keepers *g* affixed to their upper ends and fitting on the belt or strap, substantially as specified.

2. The combination, with the milk-bucket, of the flexible belt encircling the bucket, the stirrups secured at intervals to the belt and provided with keepers through which the belt extends, and the supporting-legs fitting at their upper ends in the stirrups, substantially as specified.

3. The combination, with a milk-bucket, of the removable belt encircling the bucket, the stirrups G, provided on their inner sides with keepers *g*, through which the belt extends, and having interior transverse ribs *g'*, and the supporting-legs fitting at their upper ends in the stirrups and provided with transverse grooves which are engaged by the said ribs, substantially as specified.

4. The combination, with the milk-bucket provided at its lower edge with the lateral flange D, and having a rib *d* parallel with and above the flange, of the adjustable belt encircling the bucket between the flange and rib and bearing at its edges against the same, and the supporting-legs fixed to the said belt, substantially as specified.

5. The combination, with a milk-bucket, of the adjustable belt encircling the same at its bottom, the yoke fixed to one end of the belt to receive the other end, and provided with a set-screw to engage the latter, the movable stirrups arranged on the belt, and the supporting-legs fitting in the stirrups and provided with the inward-extending shoulders extending under the bottom of the bucket, substantially as specified.

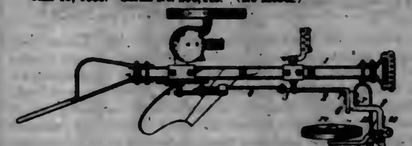
6. The combination, with a milk-bucket, of a removable hollow block fitting in the spout of the bucket and having a receiver or funnel connected thereto, substantially as specified.

7. The combination, with a milk-bucket provided with a lip or spout, of the block fitting in the said lip or spout and provided with a bore, the flexible tube fitting at one end in the said bore and provided at its free end with a receiver or funnel, substantially as specified.

8. The combination, with a milk-bucket provided with a lip or spout, of the removable block fitting in the lip or spout and provided with an inclined bore and a short tube I, the flexible tube inclosed at its lower end in a metallic shell fitting in the tube I, and the receiver or funnel connected to the free end of the flexible tube, substantially as specified.

9. The combination, with a milk-bucket provided with a lip or spout, of the block fitting in the lip or spout and provided with a bore, the flexible tube fitting at its lower end in the said bore, and the receiver or funnel provided with a tube fitting in the upper end of the flexible tube and having a rib *n'*, and the socket O, inclosing the upper end of the flexible tube, substantially as specified.

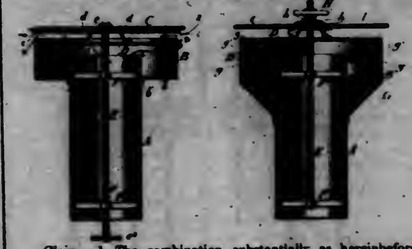
410,659. PLOW. GALEARD B. ST. JOHN, Kalamazoo, Mich. Filed Jan. 16, 1889. Serial No. 296,442. (No model.)



Claim.—1. In a plow, the combination, with a suitable support therefor, of a caster-standard for the forward wheel, a cam on said standard, substantially as described, with a notch therein to receive the traveler of a spring, a spring, substantially as described, with a traveler mounted in its free end and bearing on the periphery of said cam and adapted to engage with the notch therein and hold the caster in normal position, as set forth.

2. In a plow, the combination, with a tilting-arm, of the bifurcated arm 8, the spring 11, mounted between the members of said arm and having traveler 12, the caster-standard 9, and the cam 10, secured thereto between the members of said arm, substantially as and for the purpose set forth.

410,660. CHIMNEY-COWL. ISAAC J. TURNER, Princeton, N. J. Filed Jan. 8, 1889. Serial No. 296,747. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the flue or body portion, the guard around the upper edge of the flue or body portion and extending above it, a flat deflector or disk above the flue, and the imperforate top plate or cap above the deflector.

2. The combination, substantially as set forth, of the flue, the imperforate top plate or cap, and the flat deflector below the cap and above the flue and held away from the cap.

3. The combination, substantially as hereinbefore set forth, of the flue, the guard around the upper end of the flue, the cap above the guard, and the deflector, having a downwardly-projecting flange below the cap and above the flue.

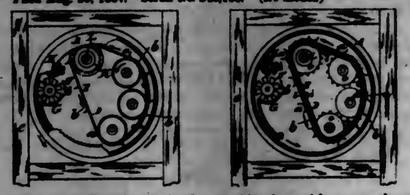
4. The combination, substantially as hereinbefore set forth, of the flue, the guard around the upper end of the flue, the imperforate top plate or cap above the guard, the flat deflector having a downwardly-projecting flange below the cap and over the flue, and the deflector-flange G below the upper end of the flue.

5. The combination, substantially as hereinbefore set forth, of the flue, a guard around the upper end of the flue, an adjustable cap above the guard, and an adjustable deflector below the cap and within the guard.

6. The combination, substantially as hereinbefore set forth, of the flue, the cap, the deflector below the cap and above the flue, the adjusting-rod, the supporting-brackets, and device, substantially as described, on the rod for varying the distance between the deflector and the upper end of the flue.

7. The combination, substantially as hereinbefore set forth, of the flue, the guard around the upper end of the flue, the deflector-flange around the upper end of the flue within the guard, the deflector above the flue and having downwardly-projecting flanges, the cap above the deflector, the brackets which connect the cap to the deflector, the adjusting-rod, the brackets in the flue in which it is mounted, the adjusting-wheel adjustably secured to the adjusting-rod, and the flanged plate connecting the adjusting-wheel with the cap.

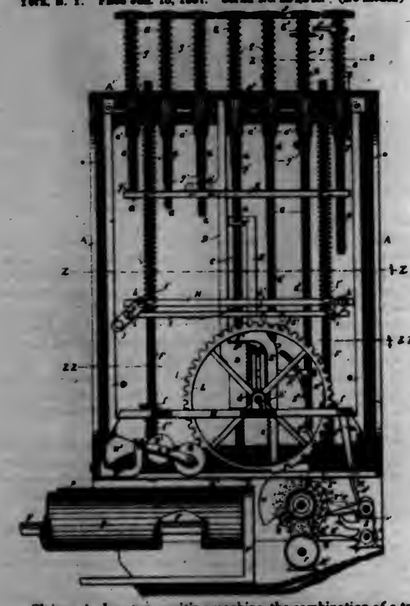
410,661. ROTARY BOLT. JOHN H. WALSH, Mason City, Iowa. Filed Aug. 20, 1887. Serial No. 246,103. (No model.)



Claim.—1. In a flour-bolt, the combination, with a round reel having an unobstructed bolting-surface on the inside adapted to allow for the movement in close proximity thereto, of an independent elevator mounted and operating inside said reel, an elevator with buckets thereon adapted to carry up the stock on the ascending side of the reel in close proximity thereto and carry the unbolted residue of stock across from the ascending to the descending side, and an apron interposed between said elevator and the lower part of the reel to prevent any stock spilled from the buckets falling to the bottom of said reel, substantially as set forth.

2. The combination, with a substantially cylindrical flour-bolt having an unobstructed internal bolting-surface, of an elevator, substantially as described, mounted and revolving inside of and independently of said reel, but at about the same rate of speed, and adapted to carry up the stock on the ascending side of the reel in close proximity thereto and the unbolted residue across the reel to the descending side, and a fixed apron mounted inside the path of said elevator and adapted to catch any stock spilled from the buckets of the elevator, substantially as described.

410,662. TYPE-WRITING MACHINE. GEORGE C. BLICKENSDERFER, Erie, Pa., assignor to the Blickensderfer Manufacturing Company, New York, N. Y. Filed Jan. 13, 1887. Serial No. 224,246. (No model.)

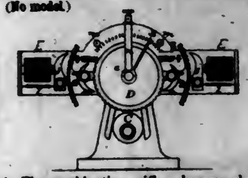


Claim.—1. In a type-writing machine, the combination of a type-wheel, a rack-bar and pinion for revolving said wheel, a presser-plate on the end of said rack-bar in position to be acted upon by keys, key-rods for acting upon said plate, which have necks which pass through said plate varying distances and in their action depress said plate varying distances, a second rack-bar operated from the type-wheel in an opposite direction and parallel with the first-named rack-bar, a plate on said last-named rack-bar which lies parallel with the presser-plate and impinges against the ends of the necks of the key-rods which pass through the presser-plate, substantially as and for the purposes set forth.

2. In a type-writing machine, the combination, substantially as set forth, of a type-wheel mounted on a plate or frame which is movable at right angles to the axis of said wheel and is retained from said movement by catches, a rack-bar for revolving said wheel, a presser-plate for moving said rack-bar, a series of keys for moving said presser-plate and rack-bar varying distances which extend through said presser-plate varying distances, a second rack-bar which lies parallel with the first-named rack-bar and is moved in an opposite direction thereby by said type-wheel, and supports a plate at its end which is parallel with the presser-plate, and impinges against the ends of the necks of the keys which pass through the presser-plate, and moves sidewise when so pressed upon and loosens the catches which retain the frame which supports the type-wheel and allows said wheel to move at right angles to its axis by the force exerted by the key upon both the presser-plate and the secondary plate.

3. In a type-writing machine, the combination, substantially as set forth, of the type-wheel L, mounted on the plate or frame M, which is supported by the catches O, the spur-gear L′ on the hub of said wheel, the rack-bar D, for engaging with said spur-gear and revolving said wheel, the presser-plate K on the end of said rack-bar, a series of keys G, of varying lengths, passing through said plate K, with abutting shoulders at varying distances from the ends of said keys, the rack-bar E, lying parallel to the rack-bar D and moving in opposition thereto, the plate I on the end of said rack-bar E, the plate H, hung on said plate I by parallel links J and supported by the spring k', the rod j, connecting the links J at one end of said plates, the rods F, springs f' and f^2 on said rods F, for reacting the said working parts, and the springs o o, for reacting the catches O O.

410,663. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. JULIUS M. BRADFORD, Portland, Me. Filed Dec. 27, 1887. Serial No. 258,119. (No model.)



Claim.—1. The combination, with a dynamo-electric machine, of two stop-motion regulating devices, electric circuits for controlling said regulating devices, a line-current indicator and two regulating-wheels for controlling the dynamo, and two eccentrics arranged on the driving-shaft for obtaining accumulative and differential action, substantially as described.

2. The combination, with a dynamo-electric machine, of two regulating devices, electric circuits for controlling said regulating devices, a line-current indicator, two contact-arms, a series of resistance-conductors, and two regulating-wheels for moving the contact-arms over the resistance-conductors, and two eccentrics arranged on the driving-shaft for obtaining accumulative and differential action, substantially as set forth.

3. In a circuit-regulator arranged to variably increase or decrease the action of a dynamo-electric machine, and in which a strong increase or decrease of the line-current is not necessary to produce variable action, the combination of a line-current indicator, two or more regulating devices, and electric circuits for controlling said regulating devices, eccentrics for operating the regulating devices, and regulating-wheels for controlling the dynamo in such a manner that its generative power may remain stationary or be diminished or increased, substantially as set forth.

4. The combination, with a dynamo-electric machine, of two regulating devices, electric circuits for controlling the regulating devices, a line-current indicator and two regulating-wheels for controlling the dynamo, and two eccentrics arranged on the driving-shaft for obtaining accumulative and differential action, substantially as described.

5. The combination of an oscillating lever b c, spring g, pawl a, stop-motion latch j, temporary magnet E, spring l, and disengaging-pin m with the wheel D, for regulating a dynamo-electric machine, substantially as set forth.

6. The combination, with two or more regulating devices and a driving-shaft carrying eccentrics for actuating said regulating devices, of two or more regulating-wheels for transmitting the action of the regulating devices through intermediate gearing to a shaft regulating a dynamo-electric machine, substantially as described.

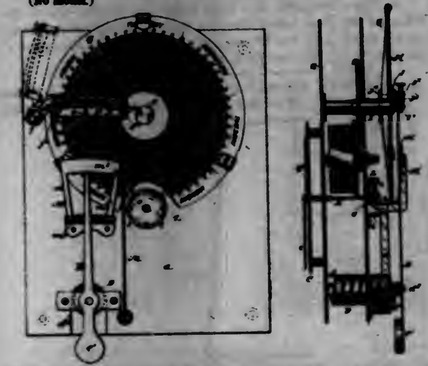
7. The combination, with two or more regulating devices and a driving-shaft carrying eccentrics for operating said regulating devices, of two or more regulating-wheels carrying pinions held thereon in such a manner that they may turn with said wheels when the regulating devices act in concert to concentrate action, accumulating according to the operation of regulating devices, and slip without turning with said wheels when the regulating devices act in opposition for concentrating differential action, substantially as described.

8. The combination of a driving-shaft, eccentrics on said shaft, two toothed levers, each carrying a pawl, the regulating-wheels, two stop-motion latches, each having an electro-magnet and a spring to actuate it, two circuits, and a line-current indicator, substantially as described.

9. The combination of one or more toothed regulating-wheels, each having an untoothed gap or space, one or more regulating devices to move the regulating-wheels to the right or left to an extent that will be limited by their untoothed spaces, electric circuits, and a line-current indicator, substantially as described.

10. The combination of a driving-shaft carrying eccentrics, levers oscillated by said shaft, pawls carried by said levers, regulating-wheels and gearing for controlling a dynamo-electric machine, and stop-motion latches actuated by electro-magnets through changes in the intensity of the line-current to cut off the stroke of said levers at different points, substantially as described.

410,664. RECORDING-THERMOMETER CLOCK. WILLIAM F. BREWSTER, New York, N. Y. Filed Mar. 16, 1889. Serial No. 303,584. (No model.)



Claim.—1. In a recording-thermometer, the combination, substantially as set forth, of a recording-sheet, a mechanism for moving the same, a thermometer with its free end connected to an arm, a stylus on said arm, a holder independent of the recording-sheet, a marking medium mounted on said holder and disposed between the recording-sheet and stylus, and independent time-indicating devices connected with the mechanism for moving the recording-sheet, whereby the time at which a record of the temperature is being made on the recording-sheet can be readily read without disturbing the holder and marking medium mounted on said holder.

2. In a recording-thermometer, the combination, substantially as set forth, of a recording-sheet, a mechanism for moving the same, a thermometer with its free end connected to an arm, a stylus on said arm, a marking medium disposed between the stylus and recording-sheet, and a hammer connected to the mechanism for moving the recording-sheet, one portion of which is forked or split, substantially as described, whereby the recording-sheet and its support are permitted to move between such forked portions, while the hammer is operated by the mechanism for moving the recording-sheet.

3. In a recording-thermometer, the combination, substantially as set forth, of a recording-sheet, mechanism for moving the same, and a thermometer, one end of which is secured to the mechanism and its other or free end projects toward the plane occupied by the recording-sheet and is provided with an arm and stylus arranged to act upon the recording-sheet, whereby the whole instrument is made more compact in form and desirable in shape.

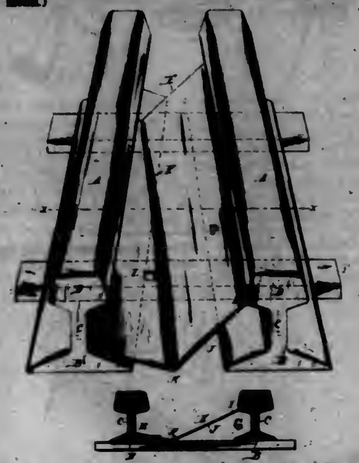
410,665. DENTAL JAW-PROP. ROBERT H. DAWYER, New York, N. Y. Filed Jan. 25, 1889. Serial No. 297,540. (No model.)



Claim.—1. In an implement of the character herein set forth, the cushion-heads combined with an intervening section and a yielding spring, one of the heads being made adjustable in or on said section and independently of the spring to vary the length of the prop, substantially as and for the purposes explained.

2. The herein-described prop, composed of the cushion-heads, one of which carries a screw, the intervening section, a yielding spring, and a retaining-bolt, combined and arranged substantially as and for the purposes set forth.

410,666. FOOT-GUARD FOR RAILWAY-TRACKS. EDWARD P. EDWARDS, Sterling, Ill. Filed Apr. 26, 1889. Serial No. 308,577. (No model.)

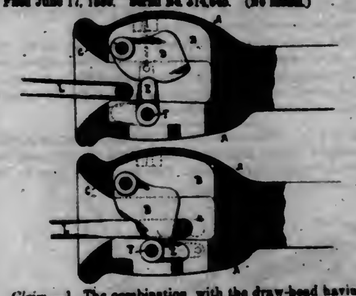


Claim.—1. The combination of one of the rails A, the ties F, and the guard E, provided with the flange G, adapted to rest under and against the ball D of said rail, and adapted at or near its opposite edge to be fastened to said tie, substantially as shown, and for the purpose described.

2. The foot-guard E, provided with the downwardly-projected flange G and the upwardly-projected flange H, substantially as shown, and for the purpose described.

3. In combination with the rails A A, the interposed foot-guard E, provided upon one edge with the downwardly-projecting flange G, adapted to rest against the neck C of one of said rails and to be in contact with the lower surface of the ball D of said rail, and provided, further, with the upwardly-projecting flange H, adapted to rest upon the web B of the opposite rail A, substantially as shown, and for the purpose described.

410,667. CAR-COUPLING. HENRY H. EVERETT, Passaic, N. J. Filed June 17, 1889. Serial No. 314,645. (No model.)



Claim.—1. The combination, with the draw-head having a tumbler pivoted therein and abutting against the inside of the head at the front, of a cam disposed in a slot in the head beneath the tumbler and adapted to lift the tumbler and hold the same poised on the end of each toe while the coupling and uncoupling take place.

2. In combination with the draw-head having the tumbler pivoted therein and the slot in the head beneath the tumbler, the double-acting cam-toe affixed to a rock-shaft and carrying an arm G, placed outside the draw-head and operated to the right or left, according to circumstances, whereby the tumbler may be disengaged by swinging up the cam-toe either from the front or rear, as the case may be, as set forth.

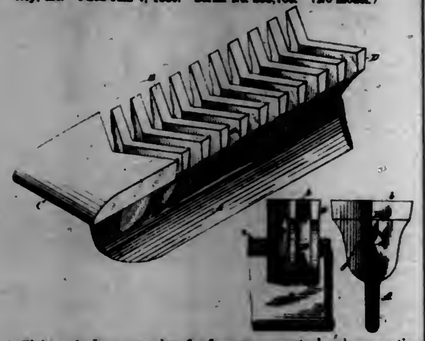
3. In combination with the double-acting cam-toe, the guide I on the draw-head, the arm G, made fast to the rock-shaft carrying the cam-toe, and the chain H, attached to the arm G and passing through said guide.

410,668. BOTTLE-STOPPER. BENJAMIN F. GREBER, Pittsburg, Pa. Filed June 15, 1889. Serial No. 314,371. (No model.)



Claim.—In a bottle-stopper, a locking-lever provided with inwardly-bent arms upon its lower ends, said arms terminating in trunnions and being bent upwardly and out of alignment with the main portion of the lever, in combination with a yoke provided with eyes upon its lower ends, through which the lever passes at the bend *g*, a cap-plate provided with perforations upon opposite sides, through which the yoke passes, and an elastic stopper-disk, all arranged and adapted to operate substantially as described.

410,669. GRATE-BAR. LESTER HALL and OTTO J. BARTH, Kansas City, Mo. Filed Jan. 7, 1889. Serial No. 295,700. (No model.)



Claim.—1. In a grate-bar for furnaces, a central web supporting a number of upward projections, the latter being of angular shape, diverging outwardly in opposite directions, and so arranged that the web or central portion of the bar will be entirely below the fuel-surface and admit of a clear air-circulating space between the fire-surface proper and the top of the web, as herein described.

2. In a grate-bar, a central web with upward angular projections so arranged that the web of the bar will be entirely below the fuel-surface, and the first, last, and centrally-located projections extending outwardly beyond the line of the rest of the projections, substantially as and for the purpose herein set forth.

3. The grate-bar herein described, consisting of central web A, beveled on its upper surface *a*, and the plain-surface angular projections B, diverging in opposite directions, substantially so arranged that an uninterrupted air-space from side to side of the bar between its projections will exist, as herein described.

410,670. BRUSH-HOLDER FOR DYNAMO-ELECTRIC MACHINES. CHARLES D. JENNEY, Indianapolis, Ind., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Aug. 2, 1888. Serial No. 281,728. (No model.)



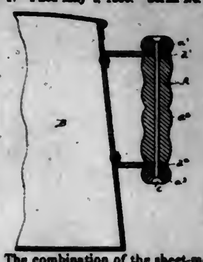
Claim.—1. The combination, in a brush-holder for dynamo-electric machines, of a brush-holder frame loosely mounted upon its shaft, an arm fixedly mounted on said shaft, a rod connecting said brush-holder frame and said arm, an adjustable spring whereby said brush-holder frame is forced forward, and a cam whereby the brush-holder frame may be retracted, substantially as set forth.

2. The combination, in a brush-holder for dynamo-electric machines, of the brush-holder frame revolubly mounted on its shaft, an arm fixedly mounted upon the same shaft, and a connection between said frame and said arm consisting of a tubular rod pivoted to one and extending through the other, a collar on said rod, a spring between said collar and the face of said arm, a smaller rod located inside said rod and connected to said collar, and a thumb-nut upon the outer end of said smaller rod, whereby the spring may be compressed or relaxed as said nut is turned, substantially as set forth.

3. The combination, in a brush-holder for dynamo-electric machines, of the brush-holder frame revolubly mounted upon its shaft, an arm fixedly mounted upon the same shaft, a rod pivoted to the brush-holder frame and extending through an opening in said arm, a yoke secured to said rod outside of said arm, and a cam secured to said yoke, substantially as and for the purposes set forth.

4. The combination, in a brush-holder for dynamo-electric machines, of the brush-holder frame C, the arm D, the hollow connecting-rod E, the screw-rod E^2 therein, the spring E^3, the thumb-nut E^4, the yoke E^5, and the cam E^6, substantially as set forth.

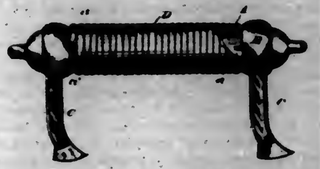
410,671. NON-HEAT-CONDUCTING HANDLE. HENRY L. PALMER, Brooklyn, N. Y. Filed May 4, 1889. Serial No. 309,559. (No model.)



Claim.—1. The combination of the sheet-metal strips *d*, the non-heat-conducting pieces d' d^2 d^3, and the rod *c*, said rod passing through said pieces and strips alternately and riveted at both ends, substantially as described.

2. The combination of the sheet-metal strips *d*, the non-heat-conducting pieces d' d^2 d^3, the rod *c*, and the vessel B, said rod passing through said pieces and strips alternately and riveted at both ends, and said strips secured to any convenient part of said vessel, substantially as described.

410,672. HANDLE. HENRY L. PALMER, Brooklyn, N. Y. Filed May 10, 1889. Serial No. 310,202. (No model.)



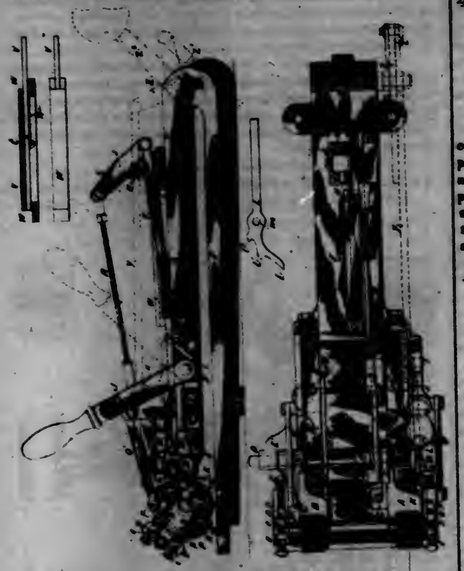
Claim.—1. A metal handle having a hollow hand-piece, the outer surface of which is wrapped with rattan, and tongues at the ends of the hand-piece securing the rattan in place, substantially as described.

2. In a metal handle, the combination, with the hand-piece, of tongues formed at the ends of the hand-piece, and a strip of rattan coiled on the same, its ends being placed below the tongues and fastened thereby to the hand-piece, substantially as described.

3. The combination, with a metal hand-piece having a non-heat-conducting covering, of tongues at the ends of the hand-piece, the ends of the covering being placed below the tongues and fastened thereby to the hand-piece, substantially as described.

410,673. APPARATUS FOR THE CONSECUTIVE NUMBERING OF CHECKS, TICKETS, &c. JOHN PHILLIPS, London, England. Filed Nov. 5, 1888. Serial No. 290,053. (No model.) Patented in Belgium Oct. 1, 1888, No. 83,440.

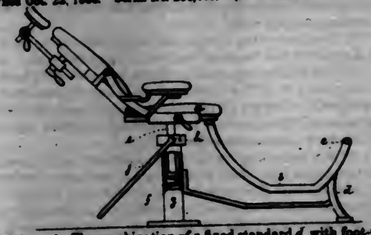
Claim.—1. In numerical printing apparatus, the combination of a printing table or platform with a shaft held in bearings parallel to the said platform and provided with mechanism for imparting to it an oscillating motion around its axis, a numbering-head comprising a disk-holder and inking-table with a set of type-disks and inking apparatus held by a lever mounted on the said shaft and adapted to be fixed thereon at various points of its length, and ratchet mechanism adapted to turn the type-disks at each oscillation, substantially as described, and for the purpose specified.



2. In numerical printing apparatus, the combination of a printing table or platform, with a shaft held in bearings parallel to the said platform and provided with mechanism for imparting to it an oscillating motion around its axis, two or more levers mounted on the said shaft at a variable distance from each other, each lever carrying at its free end a disk-holder and inking-table with a set of type-disks and inking apparatus, and ratchet mechanism adapted to turn the type-disks at each oscillation, substantially as described, and for the purpose specified.

3. In numerical printing apparatus containing two or more sets of type-disks mounted on an axle adapted to oscillate to and from the printing table or platform, the combination of printing-platform X with horizontal shaft D, held in a pair of bearings and provided with means for imparting to it an oscillating motion to and from the platform, a pair of disk-carriers A B, and levers mounted on the axle D at a variable distance from each other, each disk-carrier being shaped as a cylindrically-curved casing over the upper part of the circumference of the type-disks and adapted to serve as inking-table, two sets of type-disks, together with ratchet-wheel and axle supported by the disk-holder, a pair of multiple ratchet-pawls L, adapted to come in contact with the ratchet-wheels and turn the same during the up motion of the disk-holders, and inking apparatus mounted on the axles of the type-disks and provided with means to prevent it from turning with the disks or disk-holders, substantially as described.

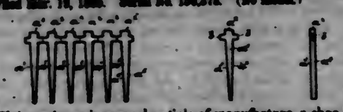
410,674. DENTIST'S CHAIR. CARL RAUBE, Darmstadt, Germany. Filed Oct. 22, 1888. Serial No. 288,779. (No model.)



Claim.—1. The combination of a fixed standard *d*, with foot-piece *b* pivoted thereto, a seat-plate *a*, secured to the foot-piece, and an adjustable support beneath the seat, substantially as specified.

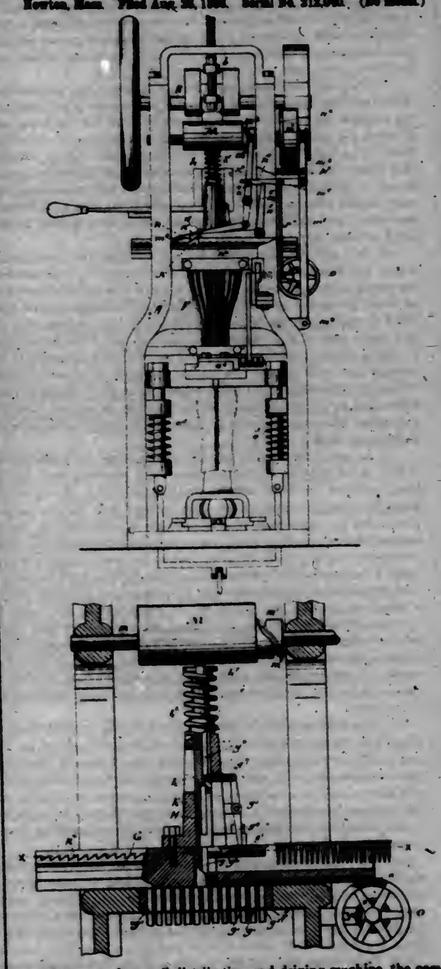
2. The combination of a fixed standard *d*, with foot-piece *b* pivoted thereto, a seat-plate *a*, secured to the foot-piece, a rod *c*, supporting the seat, a hollow foot *g*, receiving the rod *c*, a spring *f*, placed in the hollow foot *g*, and a clamp-screw and lever for locking the rod to the hollow foot, substantially as specified.

410,675. HEEL-NAIL. FREEMAN P. RAYMOND, 2d, Newton, Mass. Filed Mar. 19, 1889. Serial No. 303,573. (No model.)



Claim.—As an improved article of manufacture, a shoe-heel nail consisting of a shank of uniform thickness having parallel sides and tapering edges provided with homogeneous shoulders of the same thickness as the shank and in the same horizontal plane as the sides thereof, projecting at right angles from the edges below the upper end of the shank to form a short head which is of greater width at its upper end than the remainder of the shank, the said nails being formed from sheet metal, as described.

410,676. HEEL-NAILING MACHINE. FREEMAN P. RAYMOND, 2d, Newton, Mass. Filed Aug. 26, 1889. Serial No. 312,040. (No model.)



Claim.—1. In a nail distributing and driving machine, the combination, with a nail-distributer having a series of nail receiving and distributing passages the upper ends of which are arranged in a row,

of a traveling block G, having a single throat adapted to be brought successively over the said upper ends of said passages, and nail or fastening severing and supplying devices carried by and then movable with said traveling block, substantially as set forth.

2. In a nail distributing and driving machine, the combination, with a nail-distributer having a series of nail receiving and distributing passages the upper ends of which are arranged in a row and the lower ends of which are spread to distribute the nails, of a traveling block G, having a single throat, feeding appliances for intermittingly advancing said traveling block to bring said throat successively over the said upper ends of said receiving and distributing passages, and a nail-supplying device carried by the said traveling block and comprising comb or nail strip feeding appliances, and a reciprocating plunger or severing device arranged above the said throat and serving to sever the nails from a nail-strip, and thus cause them to pass through said throat to said receiving and distributing passages, substantially as set forth.

3. In a nail distributing and driving machine, the combination, with a nail-distributer having a series of nail receiving and distributing passages the upper ends of which are arranged in a row and the lower ends of which are spread to distribute the nails or fastenings, of a traveling block having a single throat, feeding appliances for intermittingly advancing said block to cause said throat to be brought into register with the upper ends of said passages successively, nail or fastening severing and supplying devices carried by said block, a gang of reciprocating nail-drivers, and a reciprocating nail-carrier movable from beneath said distributer to a position beneath said drivers, substantially as set forth.

4. In a nail distributing and driving machine, the combination, with a nail-distributer having a series of nail receiving and distributing passages the upper ends of which are in a row and the lower ends of which are spread to distribute the nails or fastenings, of a traveling block G, having a single throat to be brought into register with the said upper ends of said passages successively, said block having also a rack or series of ratchet-teeth, a feeding-pawl for intermittingly advancing said block, a detent for locking the latter after each forward movement, and nail or fastening supplying devices carried by said block, substantially as set forth.

5. In a nail distributing and driving machine, the combination, with a nail-distributer having a series of nail receiving and distributing passages the upper ends of which are in a row and the lower ends of which are spread to distribute the nails or fastenings, of a traveling block G, having a single throat to be brought into register with the said upper ends of said passages successively, said block having also a rack or series of ratchet-teeth, a feeding-pawl for intermittingly advancing said block, a detent for locking the latter after each forward movement, automatic appliances for disengaging the feeding-pawl and detent and for returning said traveling block to its original position, and nail or fastening supplying devices carried by said block, substantially as set forth.

6. In a nail distributing and driving machine, the combination, with a nail-distributer having a series of nail receiving and distributing passages the upper ends of which are in a row, of a traveling block G, having a single throat to be brought into register successively with the upper ends of said passages, a nail-supplying device carried by said traveling block and comprising a reciprocating plunger or severing device to cause the nails to enter said throat and passages, a rotary shaft to operate said plunger, feeding appliances operated by said shaft for intermittingly advancing said traveling block, a clutch, a stop-motion mechanism for disconnecting the parts or members of said clutch, and a tripping mechanism operated from said traveling block and serving to operate said stop-motion mechanism and disconnect the parts or members of said clutch, and thereby arrest the rotation of said shaft when a predetermined number of nails or fastenings have been supplied to said distributer, substantially as set forth.

7. The combination of a traveling block having a throat through which fastenings are adapted to be moved intermittingly in one direction and fastening-supplying mechanism carried thereby, comprising a reciprocating nail plate or strip feeding device for feeding the nail strip or plate to a nail-severing device or plunger, said nail-severing device or plunger being adapted to be reciprocated by a disconnected cam M as it is moved, and the spring k^3, substantially as described.

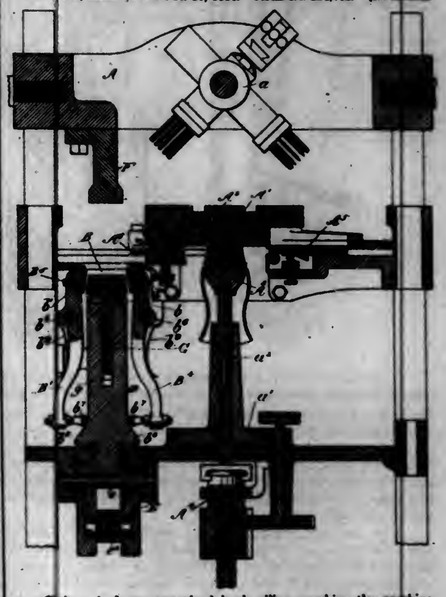
8. The combination, with the intermittingly-moving traveling block G, the support or post K, attached thereto, and thus moving therewith, and the severing device or plunger H, reciprocating in said support or post, of the extended cam M to operate said plunger in the different positions to which it may be moved, substantially as set forth.

9. The combination of the traveling block G, having a single throat, a rack carried thereby, a reciprocating pawl to engage said rack, and a cam for giving it an intermittent movement, a detent-pawl for locking it stationary, the comb or nail strip feeding and severing devices carried by said traveling block, comprising a reciprocating feed-pawl, a detent-pawl, and a movable plunger, and a cam and spring for reciprocating the plunger at given intervals, substantially as described.

10. The combination of the traveling block G, the feed-pawl g^3, its supporting-block g^5, the lever g^4, cam g^5, for operating it, the detent-pawl g^6, the plunger-bar A, the plunger H, the spring k^3, and cam M, substantially as described.

11. The combination of the cam d^3, the slide-bar D', having the incline p, and the latch m^2, controlling the position of the driven member m^3 of the clutch, with the rod p^2, a lever p^3, adapted to be moved by said incline to lift the latch and permit the spring to draw the driven member of the clutch into engagement with the fastenings, substantially as described.

410,677. **HEEL-NAILING MACHINE.** FREDERICK P. RAYMOND, 2d, Newton, Mass. Filed Dec. 16, 1886. Serial No. 221,702. (No model.)



Claim.—1. In an organized heel-nailing machine, the combination, with heel-attaching devices, of a heel-blank-edge molding or compressing apparatus consisting of vertical and lateral formers or pressers from which the blank is automatically transferred to said attaching devices connected substantially as described and automatically operated, and thereby adapted for conjoint and simultaneous use, one to mold the side edge of a heel-blank and the other to attach a previously-molded heel-blank, substantially as described.

2. In a heel nailing or attaching machine, the combination of a heel-blank-edge molding or compressing apparatus, a heel-blank carrier for feeding the heel-blanks thereto, a device for transferring a molded heel-blank from the compressing apparatus to the attaching devices, the said attaching devices, and connected mechanism, substantially as described, for simultaneously and automatically operating the several parts, as set forth.

3. In a heel-nailing machine, the combination of the jaws b' b^2 b^3 b^4, the plate b^5, and the head b, substantially as described.

4. In a heel-nailing machine, the combination of the jaws b' b^2 b^3 b^4, their levers B' B^2 B^3 B^4, pivoted as described, the slide-head D, the head b, and the wedge or inclined surfaces b^5 upon the slide-head, against which the ends of the levers are held in contact, substantially as and for the purposes described.

5. In a heel-nailing machine, the combination of the jaws b' b^2 b^3 b^4, their levers B' B^2 B^3 B^4, a slide-head B, having the inclined surfaces b^5, and a roll b^7 at the lower end of each lever arranged to bear against the inclined surface b^5, and means for adjusting the position of the roll in relation to the end of the lever, substantially as described.

6. In a heel-nailing machine, the combination of the jaws b' b^2 b^3 b^4, their levers B' B^2 B^3 B^4, the slide-head D, having the inclined surfaces b^5, and the springs b^6, for holding the ends of the levers in contact with the inclined surface b^5, substantially as described.

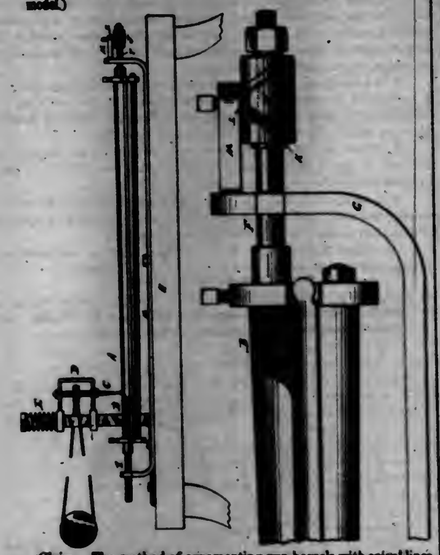
7. In a heel-nailing machine, the combination of the jaws b' b^2 b^3 b^4, adapted to have closing and opening movements imparted to them, the plate b^5, the head b, and the head F, substantially as described.

8. In a heel-nailing machine, the combination of the jaws b' b^2 b^3 b^4, the head b, and the plate b^5, the said head having an upward vertical movement simultaneous with the closing movements of the said jaws, as and for the purposes described.

9. In a heel-nailing machine, the combination of the carrier A^5 with the jaws b' b^2 b^3 b^4 and operating mechanism therefor, as described, the head b, and its lifting-rod G, adapted to be moved upward upon the release of the jaws to present the molded heel-blank to the transferrer A^5, substantially as described.

10. In a heel-nailing machine, the combination of the head b, the rod G, the lever g, and a cam for moving the same, substantially as described.

410,678. **METHOD OF ORNAMENTING GUN-BARRELS.** GODFREY A. RAGSDALE, Valley City, Dak. Filed Nov. 14, 1888. Serial No. 290,940. (No model.)



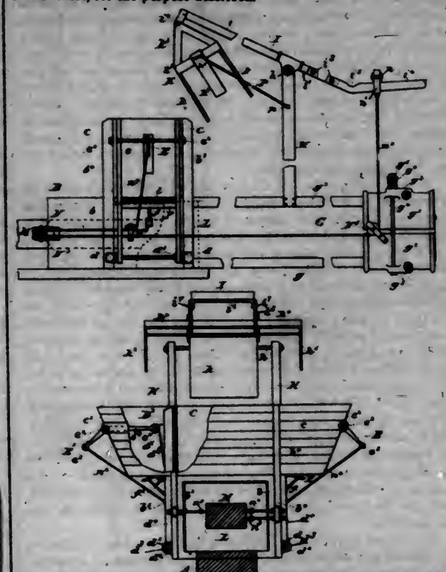
Claim.—The method of ornamenting gun-barrels with spiral lines, consisting in subjecting the gun-barrel to the action of a rotary abrading implement, and at the same time rotating the gun-barrel and moving the same in the direction of its length, so as to cause the said abrading implement to cut spiral lines into the outer surface of the barrel, substantially as set forth.

410,679. **BALING-PRESS.** BENJAMIN C. BOOT, Kansas City, Mo. Filed Aug. 14, 1888. Serial No. 282,716. (No model.)

Claim.—1. In a baling-press, the combination, with the feed-chamber for the material to be baled provided with a feed-opening, of an elevated receptacle over said feed-chamber, provided with an opening registering with said feed-opening, vibrating bars pivotally attached at their lower ends to the sides of said feed-chamber a suitable distance below the said feed-opening, sides to said elevated receptacle attached to said bars and adapted to vibrate to and from said feed-opening in the arc of a circle, and laterally-extended curved plates attached to the side of said feed-chamber beneath said vibrating sides, as and for the purpose described.

2. In a baling-press, the combination, with the feed-chamber for the material to be baled provided with a feed-opening, of a reciprocating plunger in said feed-chamber, an elevated receptacle over said feed-chamber, provided with an opening registering with said feed-opening and laterally-extended end portions, laterally-vibrating sides to said elevated receptacle, and a rock-shaft on each of said extended portions of said ends, a bell-crank lever on each of said rock-shafts adapted to move said sides into a vertical position, and elevating-ropes connected with said bell-crank levers and said plunger, as and for the purpose described.

3. In a baling-press, the combination, with the feed-chamber for the material to be baled provided with a feed-opening, of a reciprocating plunger in said feed-chamber, an elevated receptacle over said feed-chamber, provided with an opening registering with said feed-opening and laterally-extended end portions, laterally-vibrating sides to said elevated receptacle, rock-shafts having bell-crank levers on said extended portion of said ends, and an inclined projection on said vibrating sides in the path of the respective ends of said bell-crank levers, for the purpose described.



4. In a baling-press, the combination, with the feed-chamber for the material to be baled provided with a feed-opening, of a reciprocating plunger in said feed-chamber, an elevated receptacle over said feed-chamber, provided with an opening registering with said feed-opening and laterally-extended end portions, laterally-vibrating sides to said elevated receptacle, rock-shafts on said extended portions of said ends, and bell-crank levers on said rock-shafts having anti-friction vibrating end portion, an inclined projection on said sides in the path of the anti-friction ends of said bell-crank levers, and elevating-ropes connected with said bell-crank levers on said rock-shafts and with said plunger, for the purpose described.

5. In a baling-press, the combination, with the feed-receptacle for the material to be baled provided with a feed-opening, of a reciprocating plunger, an elevated receptacle over said feed-chamber, having an opening registering with said feed-opening, a baling-chamber having an opening communicating with said feed-chamber in the direction of the path of said plunger, a suitable standard on said baling-chamber, and an oscillating beam on said standard, extending at one end to a point over the opening in said elevated receptacle, a material-ejecting weight pivoted upon the said end of said beam, adapted to enter the opening in said elevated receptacle, and a rod pivotally attached at one end to said standard and at its opposite end to said weight at a described angle to said beam, for the purpose described.

6. In a baling-press, the combination, with the feed-chamber for the material to be baled provided with a feed-opening, of a reciprocating plunger, a pitman provided with traveler-rods and travelers on said rods in the rear of said plunger, an elevated receptacle over said feed-chamber, having an opening registering with said feed-opening, and a baling-chamber in communication with said feed-chamber and in the line of the path of said plunger, standards upon said baling-chamber extending above said elevated receptacle, and an oscillating beam on said standards, having one end portion extending to and over the said opening in said elevated receptacle, and provided with a weight pivotally attached thereto and adapted to enter said elevated receptacle, and an upwardly-inclined bar on the opposite end portion of said beam and a roller on said bar, sheaves on said feed and baling chambers, and a cable attached to said roller on said beam and extending through said sheaves and attached to said travelers on said pitman, for the purpose described.

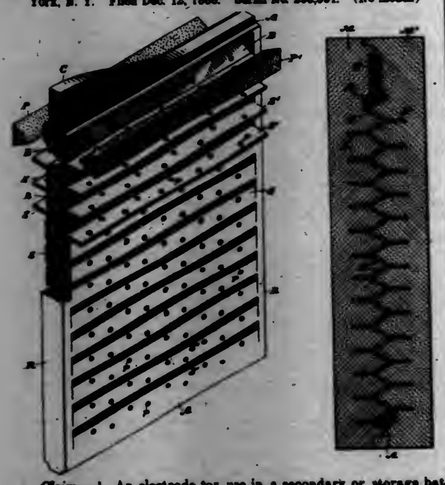
7. In a baling-press, the combination, with the feed-chamber for the material to be baled having a feed-opening, of a reciprocating

plunger and a baling-chamber in communication with said feed-chamber, a pitman provided with longitudinal rods and travelers in rear of said plunger, an elevated receptacle over said feed-receptacle, having its opening registering with said feed-opening and provided with extended end portions and laterally-vibrating sides, rock-shafts on said extended end portions of said ends, and arms on said shafts adapted to elevate said sides and levers on said rock-shafts, standards on said baling-chamber extending above said elevated receptacle, and an oscillating beam on said standards having one end portion provided with a pivotally-attached material-compressing weight and extending over the said elevated receptacle, and its opposite end portion provided with an upwardly-inclined arm, laterally-extended arms on said weight adapted to move into the path of said arm on said rock-shaft, suitable sheaves on said baling-chamber and said feed-receptacle, and a cable attached to said roller on said beam and extending through said sheaves and attached to said travelers on said pitman, for the purpose described.

8. In a baling-press, the combination, with the feed-chamber for the material to be baled having a feed-opening, of a reciprocating plunger, a baling-chamber having an opening in communication with said feed-opening and in the line of the path of said plunger, a pitman on said plunger, and rods on said pitman provided with retarding ends, an elevated receptacle over said feed-chamber, having its opening registering with said feed-opening and laterally-extended portions, laterally-vibrating compressing sides to said elevated receptacle, and rock-shafts on said extended portions of said end, having bell-crank levers adapted to move said sides into a vertical position, standards on said baling-chambers extending above said elevated receptacle, and an oscillating beam on said standards having one end provided with a compressing-weight pivotally attached thereto and extending to and above said feed-receptacle, arms on said weight adapted to move into the path of the arms on said rock-shaft, and an upwardly-inclined notched arm on said beam opposite to that provided with said weight, and a roller on said arm, sheaves on said baling and feed chambers, and cables attached, respectively, to said roller on said beam and to said pitman and also to the bell-crank levers on said rock-shaft, and the rods on said pitman, substantially as and for the purpose described.

9. In a baling-press, the combination, with the feed-chamber for the material to be baled provided with a feed-opening, of a reciprocating plunger in said feed-chamber, an elevated receptacle over said feed-chamber provided with an opening registering with said feed-opening and laterally-extended end portions, laterally-vibrating side bars adapted to support the sides of said elevated receptacle, pivoted at their lower ends to the sides of said feed-chamber, rock-shaft on said extended end portions of said elevated receptacle, provided with side elevating bell-crank levers, and springs between said vibrating bars and the sides of said feed-chamber, for the purpose described.

410,680. SECONDARY BATTERY. JEAN T. VAN GEMPEL, New York, N. Y. Filed Dec. 12, 1888. Serial No. 293,391. (No model.)



Claim.—1. An electrode for use in a secondary or storage battery, made of a single piece of lead or analogous material having angular retaining-shelves on its opposite faces, said shelves being located in a common plane and having turned-up lips or ledges for holding the active material in place, substantially as described.

2. An angular or corrugated retaining plate or support for use in secondary batteries, having active material located in said angles or corrugations, and retaining lips or shelves for holding it secured in place, substantially as described.

3. A retaining plate or support for the active material in a secondary or storage battery, having a series of angular grooves or corrugations on its opposite faces, with retaining lips or shelves attached to the backs of said angular grooves and on the opposite side thereof, said lips or shelves being adapted to hold the active material more securely in place, substantially as described.

4. A retaining plate or support for the active material of a secondary or storage battery, having angular corrugations on its opposite faces, in combination with lips or shelves attached to the backs of the corrugations, substantially as described.

5. An electrode for a secondary or storage battery, consisting of a corrugated supporting-plate having lips integral with the backs or outer faces of the corrugations, and active material held in place between said lips and the corrugations, substantially as described.

6. An electrode for a secondary or storage battery, consisting of a corrugated or angular depressed supporting-plate having lips or ledges on the outer side or backs of said corrugations or angles, and active material in the shape of compressed bars or rods adapted to fit in the angles or corrugations, as shown, and held in place by said lips or ledges, substantially as described.

7. An electrode for a secondary or storage battery, consisting of a perforated corrugated sustaining-plate having perforated lips or ledges on the backs of the corrugations, with active material held in place by said lips or ledges, substantially as described.

8. Active material for use in storage-batteries in the shape of a bar, rod, or pencil, and composed of silicate of soda and oxide of lead in substantially the proportions named.

9. A compressed bar, rod, or pencil of active material for use in storage-batteries, said bar, rod, or pencil being composed of silicate of soda and oxide of lead, substantially as described.

10. Active material for use in storage-batteries, composed of silicate of soda and oxide of lead, substantially as described.

410,681. VELOCIPEDE. JAMES L. WATKIN, London, County of Middlesex, England. Filed Apr. 22, 1889. Serial No. 308,204. (No model.) Patented in England Mar. 27, 1888, No. 4,676.



Claim.—1. In a velocipede driven by the rear wheel or wheels and steered by the front wheel, constructing the steering-post forming the upward extension of the steering-fork with an aperture or loop immediately above the cogs or their equivalent forming the steering head or joint and below the level of the saddle, and adapting the upward extension of the steering-post above the said aperture or loop to receive the adjustable pillar carrying the transverse handle-bar, as and for the purpose set forth.

2. In a velocipede driven by the rear wheel or wheels and steered by the front wheel, constructing the frame in the manner hereinbefore set forth—*i. e.*, with a central aperture or loop in the steering-post and with the support for the saddle-pillar adapted to carry the said pillar out of the longitudinal center of the machine to enable a rifle or gun to be carried central on the machine, as and for the purpose set forth.

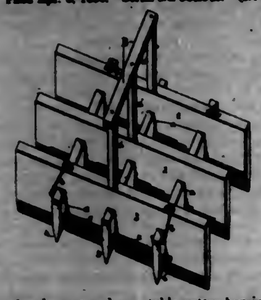
3. In a velocipede, the combination of the aperture or loop in the steering-post, or its equivalent, and the leather sheath or bucket for carrying a rifle, both combined, arranged, and operating as and for the purpose set forth.

4. In a velocipede, the combination, with the fork carrying the steering-wheel, of the double-forked frame consisting of the arms D D, the light-fork D', the cross-bar D^2, the mud-guard D^3 and of the slotted bar E fixed to the said frame and adapted to interlock with a catch *f*, carried by the brake-spoon F, as and for the purpose set forth.

5. In an upright standing gear for two-wheeled velocipedes of unstable equilibrium, automatically locking down the said gear to support the machine by means of a suitable catch carried on and operated by the brake-gear of the machine, as set forth.

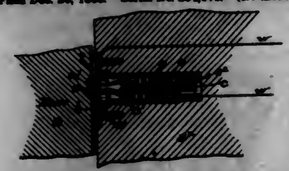
6. In a velocipede, the combination of the loop or aperture in the head, of the seat-pillar supported out of the center of the machine, of the sheath or bucket for carrying a rifle, and of the upright standing gear, all constructed, arranged, and operating as and for the purpose set forth.

410,682. MEAT AND VEGETABLE CHOPPER. IRA M. BERRY, Sullivan, Ill. Filed Apr. 8, 1889. Serial No. 306,342. (No model.)



Claim.—The hand meat and vegetable cutter herein described, composed of the slotted blades 1 2 3, narrow blades 4 5 6, fitting in said slotted blades, hooks *b*, rod *c*, and handle β *c'*, constructed and arranged substantially as and for the purpose specified.

410,683. BURGLAR-ALARM. EDWIN H. CARHART, Providence, R. I. Filed Dec. 28, 1888. Serial No. 294,678. (No model.)



Claim.—1. A short-circuit spring for burglar-alarms, consisting of an electrically-connected shell or casing, a spring-actuated contact-pin provided with a cone-shaped head mounted within the shell, and an electrically-connected plate provided with an enlarged central opening through which the outer end of said pin slightly extends, thereby, when in its normal position, forming an annular space around the pin, substantially as hereinbefore described, and for the purpose set forth.

2. The combination of a mounted electrically-connected shell or casing, a spring-actuated contact-pin having its outer or free end provided with a cone-shaped head mounted within the shell, and an electrically-connected plate having an enlarged opening formed therein transversely to receive the head of said pin, and having the plate insulated from the adjacent end of the casing by means of an air-space *n'*, substantially as described.

3. The combination, with the electrically-connected shell *a* and apertured plate *b*, constructed and arranged substantially as shown and described, of the spring-actuated contact-pin *c*, having a cone-shaped head portion extending slightly through said plate, and forming, when thus in its normal open-circuit position, an annular space around the pin, but when the pressure upon the pin is removed the spring forces the head of the pin into engagement with the plate, thereby closing the circuit, substantially as hereinbefore set forth.

410,684. METAL RAILROAD-TIE. BENJAMIN W. BELLSCOTT, Flemington, N. J. Filed Apr. 10, 1889. Serial No. 306,902. (No model.)

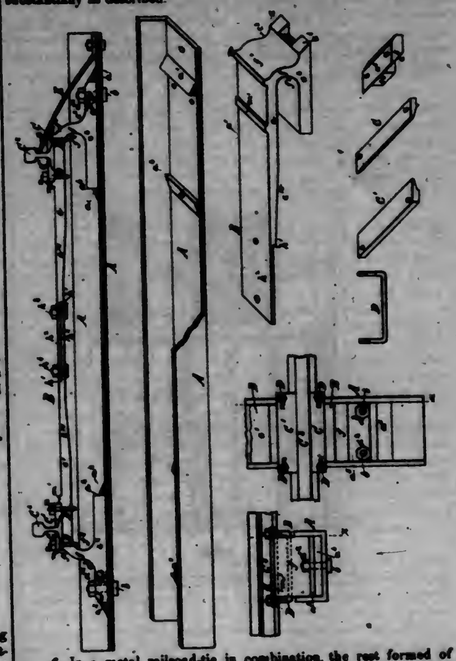
Claim.—1. In a metal railroad-tie, in combination, a foundation-plate provided with abutment-ribs in rear of the standards of the rail-rest and a flexible transverse rail-rest having abutment-ribs for the rails between the said standards of the rail-rest, substantially as and for the purpose described.

2. In a metal railroad-tie, in combination, the plate A, provided with abutment-ribs *a a' a^3 a^3*, abutment-blocks a^2, having beveled portions c^3 and lugs c^4, and a flexible rail-rest B, having foot portions c^2, with beveled portions c^1 and a notch c^5, substantially as and for the purpose described.

3. In a metal railroad-tie, the flexible rail-rest B, formed with foot portions c^2, curved standard portions *f*, and abutments *m m'* inside of or between the standards, substantially as described.

4. In a metal railroad-tie, in combination, the flexible rail-rest B, having abutments *m m'* between its standards, chair-plates C C', and the foundation-plate A, having abutments for the feet of the rail-rest, substantially as described.

5. In a metal railroad-tie, in combination, the flexible rail-rest B, chair-plates C C', extended beyond the edges of the rail-rest, and gripping-clips D, passed under the rest and through the chair-plates, substantially as described.



6. In a metal railroad-tie, in combination, the rest formed of two spliced parts *c c'*, provided with abutment-ribs *m m'*, and having parallel portions terminated in shoulders *h'*, then tapered for a portion of their length, then made of uniform thickness from said tapered portion to their standards *f*, then bent into curved standards of a thickness equal to the last-mentioned portion, and terminating in thicker abutting foot portions, substantially as and for the purpose described.

7. In a metal railroad-tie, in combination, the flexible rail-rest having abutment-ribs between its standards and provided with standards and abutting foot portions, said portions extending inward from said standards a greater distance than outward, substantially as and for the purpose described.

8. The flexible spliced rail-rest, in combination with a rigid foundation abutment-plate, substantially as described.

9. The abutment-ribs *a a'* of the foundation-plate A, made of less height than the abutment-ribs *a' a'* and with a bevel surface a^4, substantially as and for the purpose described.

10. The abutment-ribs *m m'* of the rail-rest, these *m'* being made of a less height than the ribs *m*, in combination with the differently-formed chair-plates C C' and the rails C^2 C^3, substantially as and for the purpose described.

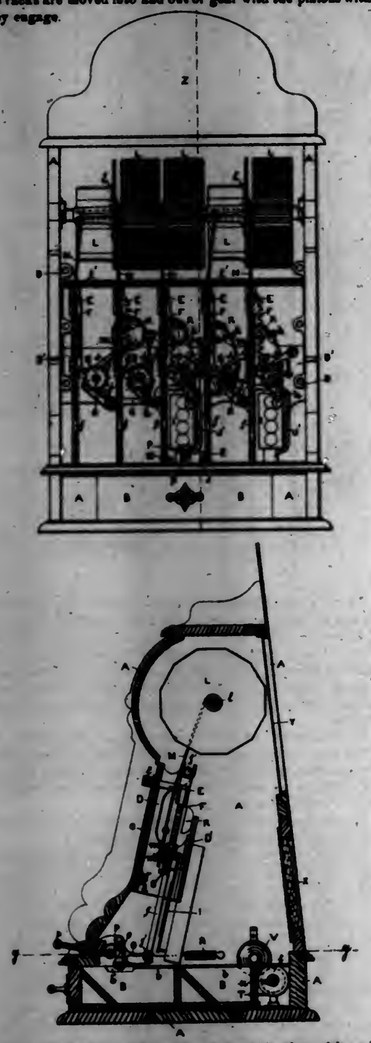
11. The combination of the auxiliary braces E, rail-rest, rail, and foundation-plate A, substantially as and for the purpose described.

12. In combination with a rigid or solid plate or foundation, a flexible transverse rail-rest receiving the rail between its bearings, said transverse rail-rest yielding at once, under a load, bodily throughout its entire length and thickness between the foundation-supports, and in thus yielding assuming a downwardly-curved or approximately-segmental form, and when the load is withdrawn resuming its original straight shape, substantially as described.

410,685. CASH INDICATOR AND REGISTER. JAMES R. FARROW, Southport, and JAMES MCG. CARRIE, Salford, County of Lancaster, England. Filed May 20, 1889. Serial No. 275,894. (No model.) Patented in England Sept. 1, 1887, No. 11,956.

Claim.—1. In a cash indicator and register, the combination, with an index-plate cut with a slot and inscribed with a scale of the denomination of money, and an operating-rod or pointer, of a revolving drum, which displays or indicates the amounts of money to be registered at each transaction, a sliding rack which actuates the registering mechanism, and mechanism to register the amounts successively indicated.

2. In a cash indicator and register, the combination, with the index-plate having scales inscribed thereon, the operating-rod or connecting-piece E, and pointer *e*, of a sliding rack which actuates the registering mechanism and swinging rack-frame, by the movement of which the racks are moved into and out of gear with the pinions with which they engage.



3. In a cash indicator and register, the combination, with an index-plate having one, two, or more scales inscribed thereon—one for each denomination of money—one, two, or more operating-rods or connecting-pieces E, and pointers *e*—one for each scale—of one, two, or more sliding racks, which actuate the indicating and registering mechanism, one, two, or more sets of registering mechanism, and one, two, or more indicating-drums—one for each denomination of money—each operated by one connecting rod or piece E through a sliding rack.

4. In a cash indicator and register, the combination, with the sliding racks F, of the swinging rack-frame composed of the upright rods or pillars *f* and the cross-bars *f'*, substantially as described.

5. In a cash indicator and register, the combination, with the sliding racks F, of the pinions G, the pivoted levers H, the levers A, substantially as and for the purposes described.

6. In a cash indicator and register, the combination with the sliding rack F and swinging frame *f f'*, of the pinion G and the weighted guard or tumbler N.

7. In a cash indicator and register, the combination, with the sliding racks F and pinions G, having teeth *g* on their back of the catch or pawl levers J, the pivoted levers H and A, and the recording-disk I.

8. In a cash indicator and register, the combination, with the sliding rack and swinging rack-frame, of the pivoted lever *d*, substantially as and for the purposes described.

9. In a cash indicator and register, the combination, with the index-plate having scales inscribed thereon, the operating connecting rod or piece E, and pointer *e*, of the sliding racks F, revolving drums L, bands M, and pulleys *l*, substantially as described.

10. In a cash indicator and register, the combination, with the sliding racks and swinging rack-frame, of the pivoted fork O and swinging lever *o*, substantially as and for the purposes described.

11. In a cash indicator and register, the combination, with the sliding racks and swinging rack-frame, of the fork O, bracket P, swinging lever *o*, and spindle *p*, substantially as described.

12. In a cash indicator and register, the combination, with the sliding racks and swinging rack-frame, of a pivoted hook or catch S to lock or retain the racks out of gear with the pinions.

13. In a cash indicator and register, the combination of the sliding racks, swinging rack-frame, pivoted hook or catch S, and bolt or lock on the drawer, substantially as and for the purposes described.

14. In a cash indicator and register, the combination, with the cash-drawer, of a pulley *t*, band T, spiral spring U, and spindle *u*, substantially as described and shown.

410,686. HANDLE FOR BUCKETS OR FRUIT-BASKETS. OLIVER S. GANDY, Newport, N. J. Filed July 22, 1889. Serial No. 318,304. (No model.)



Claim.—1. The improved handle for baskets and other vessels, consisting of a bail provided at one end with a shoulder E and a hook D' and at its other end with a swinging hooked fork D, swiveled thereto, as set forth.

2. The movable handle for baskets, provided at one end with a rigid hook adapted to engage the rim of the basket and form a fulcrum and having a swinging hooked fork at its other end, as set forth.

410,687. WIRE-GUY GRIPPER. JAMES GIBSON, Kansas City, Mo. Filed Mar. 21, 1889. Serial No. 304,208. (No model.)



Claim.—1. In a gripping apparatus for wire rope having a base-plate, the combination therewith of cam-jaws consisting of opposite eccentrically-pivoted circular plates and operating-levers rigidly connected laterally with said cam-plates, and hinged and arranged to yield in a transverse relation thereto, for the purpose described.

2. In a grip apparatus for wire rope having a suitable base-plate, the combination therewith of opposite eccentrically-pivoted grasping cam-plates having pivot-bolts on said base-plate, and a hasp connected with one of said bolts and adapted to be removably secured to the other bolt, substantially as described.

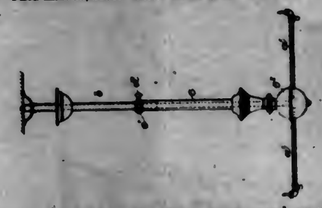
3. In a grip apparatus for wire rope having a suitable base-plate, the combination therewith of opposite eccentrically-pivoted grasping cam-plates having pivot-bolts on said base-plate, (one of said bolts having a flat head or plate and the other bolt a contracted head,) and a hasp hinged to the said plate on the head of one of said bolts at one end and having its opposite end provided with a suitable opening adapted to receive said contracted bolt-head and keyed thereto, for the purpose described.

410,688. ARTIFICIAL STONE. OTTO R. C. GOELZE, Detroit, Mich. Filed Feb. 27, 1889. Serial No. 301,256. (No specimens.)

Claim.—1. The composition of material consisting of litharge and acetate of lead and water, in the proportions named, mixed together in the manner described, and combined with sulphate of baryta, substantially as and for the purpose described.

2. The described composition consisting of sulphate of baryta, litharge, and acetate of lead, combined in the proportions named and in the manner specified, when used in combination with cement and water saturated with alum and borax in the formation of slabs of artificial stone, substantially as described.

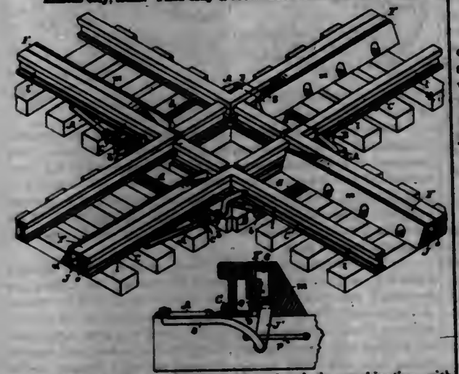
410,689. ELECTRIC-LIGHT FIXTURE. JAMES C. HALLIDIE, Boston, Mass. Filed Mar. 26, 1889. Serial No. 304,946. (No model.)



Claim.—1. A fixture *a*, of ordinary or approved construction, as described, combined with tubes *b c*, of greater diameter than the fixture and adapted to be telescoped one within the other to uncover the space between the said fixture and the said tubes, substantially as and for the purpose described.

2. A fixture *a*, of ordinary or approved construction, as described, combined with the surrounding tubes *b c*, of greater diameter than the fixture to leave a space between them and the fixture for the reception of electric conductors, the said tubes being adapted to be telescoped one within the other to uncover the space between the fixture and the tubes, and a locking device for retaining the tubes in adjusted position, substantially as and for the purpose set forth.

410,690. SIGNAL FOR RAILROAD CROSSINGS. DANIEL H. IRWIN, Kansas City, Kans. Filed May 1, 1889. Serial No. 309,191. (No model.)



Claim.—1. In a railroad-crossing signal, the combination, with the spring-supported shoe, of the upright shaft provided with an arm carrying a curtain or shield adapted to vibrate between the lamp and the glass-covered opening of the signal, and mechanism through which said shoe actuates said shaft, substantially as set forth.

2. The combination of the spring-supported shoe, the downwardly-deflected arm, the sliding rod, the signal-operating levers having upwardly-bent forward or free ends and arranged upon opposite sides of a track or arm of the crossing, the crank rock-shaft connected to said shoe and said arm, wires connecting with said levers, the quadrant wheels or levers, the chains C' C'', the wires u, 9, and 10, link 8, and rod-wire C', the shaft L, having an arm at its lower end, to which are connected said rods or wires C', the spring applied to said arm or shaft and to a fixture, the signal G, and curtain or shield G', applied to the upper end of the shaft L, and the lamp secured to the upper end of the tube or pipe inclosing the shaft L, substantially as specified.

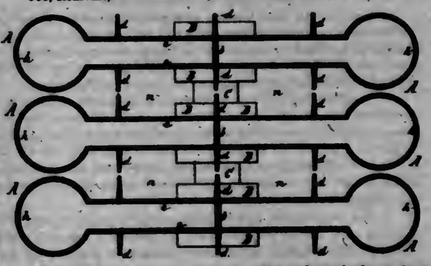
3. In a railroad-crossing signal, the combination, with a spring-supported shoe right-angular in cross-section, with its horizontal flange beveled downwardly at its ends, of the crank-ed rock-shaft, the plates fixed to the shoe and hinged or articulated to rigid staples on the rock-shaft, the signal-lever connected to said rock-shaft, and the signal-shaft connected to said lever, substantially as specified.

4. In a railroad-crossing signal, the combination, with a spring-supported shoe and a rock-shaft connected thereto, of the revolvable signal-shafts arranged on opposite sides of the crossing track, and the signal-levers connected respectively to said signal-shafts and to each other, one of said levers being connected to the said rock-shaft, substantially as specified.

5. In a railroad-crossing signal, the combination, with a spring-supported shoe and a rock-shaft connected to said shoe, of the signal-lever A, pivoted at one end on one side of the track and connected at its free end to the signal, and the signal-lever B, pivoted at the opposite side of the track and connected to a signal, and also connected at one end to an intermediate point of the lever A, whereby said levers and the signals connected thereto are simultaneously operated, substantially as specified.

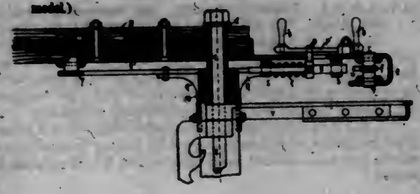
6. In a railroad-crossing signal, the combination, with a spring-supported shoe and a rock-shaft connected thereto, of the signal-lever connected to said rock-shaft, the revolvable signal-shaft provided with an arm which is connected to said signal-lever and bearing an actuating-spring whereby it is automatically returned to its normal position, and the curtain or shield fixed to an arm of the signal-shaft and arranged in a casing or closure provided with an opening to be closed by said curtain or shield, substantially as specified, for the purpose set forth.

410,691. STEAM AND HOT-WATER RADIATOR. THADDEUS C. JOY, Titusville, Pa. Filed Feb. 6, 1889. Serial No. 299,573. (No model.)

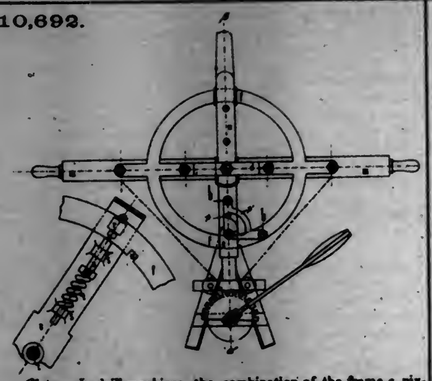


Claim.—The steam or hot-water radiator formed of a series of connected hollow circulating-sections, the intermediate portions of said sections having hollow columnar enlargement projections at their ends, which are in horizontal section a part of a circle and form a vertical air-column way a from bottom to top and end to end of the sections, and said intermediate portions of the sections being formed with projections which, with the enlargement projections, form a series of vertical air-column ways, as a a', from bottom to top of the sections, substantially as and for the purpose described.

410,692. DRILL-MACHINE. AUGUST KIRNER, Dortmund, near Dortmund, Germany. Filed Aug. 8, 1888. Serial No. 282,259. (No model.)

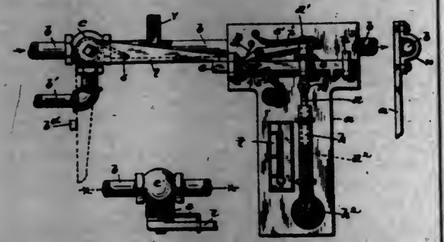


410,692.



Claim.—In drill-machines, the combination of the frame *e*, pivoted at *w* to the king-bolt *c*, and having fixed to it the bar *n*, a catch *o*, and spring *i*, with the fifth-wheel *f*, having a slot-*s*, and with the sector *p'*, having handles *b*, substantially as and for the purpose described.

410,693. ANTI-FREEZING DEVICE FOR WATER-PIPES. CORNELIUS MILLER, Providence, R. I., assignor of one-fourth to George W. Pettis, same place. Filed Dec. 3, 1888. Serial No. 292,495. (No model.)



Claim.—1. The combination, with a mounted valve or cock, of mechanism connected with said valve and released by a piston of said mechanism actuated by the change in volume of mercury, alcohol, or other suitable liquid directly affected by thermal changes, substantially as hereinbefore described, and for the purpose specified.

2. A self-closing valve having releasing mechanism consisting of a mounted spring-actuated bar adapted to retain the valve-lever in a normal position, a connection or link provided with a piston d^3, supported by a column of mercury or other suitable fluid having the property of expanding and contracting by thermal changes, and a spring-pawl or lever *i*, engaging both the said spring-actuated bar and link, substantially as described.

3. The combination, with a spring-actuated bar, a tripping-lever engaging said bar directly actuated by variations due to thermal changes in the height of a column of mercury, of a stop-valve provided with a lever engaging said bar and adapted to close the valve upon the withdrawal of the bar, substantially as hereinbefore described.

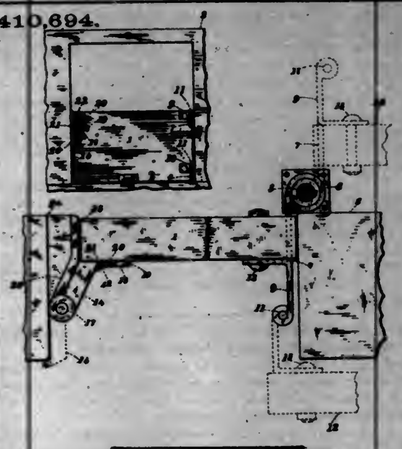
4. The non-freezing attachment for water-pipes, &c., substantially as hereinbefore described, the same consisting of a water-pipe *b*, a self-closing valve or cock *c*, located in said pipe, a mounted spring-actuated bar *e*, provided with a notch e^2, a spring-pawl *i*, engaging said notch, a mercury-holding tube *h*, an adjustable link or rod *d*, adapted to engage the pawl *i* and provided with a piston d^3, fitting said tube and in contact with the mercury, and a spring *d'*, for insuring the contact of the piston with the mercury.

410,694. FREIGHT-CAR DOOR. JOHN MONTGOMERY, Jarvis, Ontario, Canada. Filed May 6, 1889. Serial No. 309,738. (No model.)

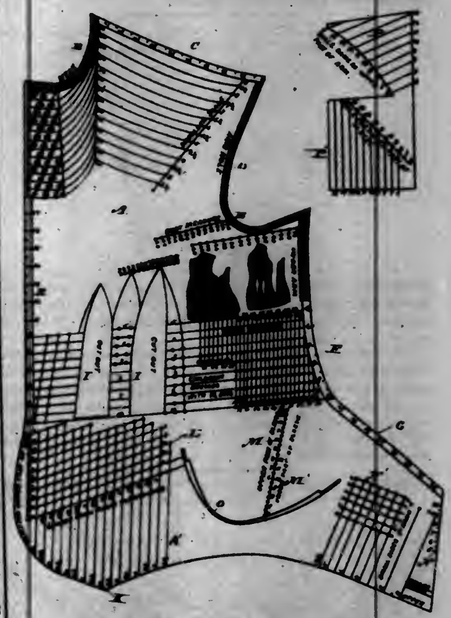
Claim.—1. A freight-car door consisting of a door 1, provided with double hinges mounted on a vertical pivotal bar, so as to be capable of opening either inside or outside of the car or of being moved up or down on the pivotal bar, in combination with a pivoted check-bar 14 and a latch-fastening device, substantially as described.

2. In a hinged car-door, the combination therewith of a pivoted check-bar and a latch-fastening device for holding it closed or permitting it to open outward, substantially as and for the purposes described.

410,694.



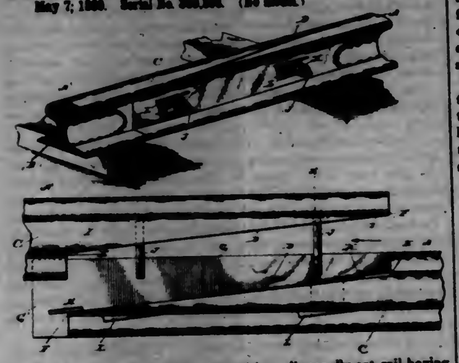
410,695. DRESS-CHART. JULIA PERLEY, Portland, Me. Filed Mar. 13, 1889. Serial No. 303,167. (No model.)



Claim.—1. In a dress-chart, the combination of a shoulder-scale C, graduated by numbers thereon, a neck-scale B, the latter being composed of a series of intersecting lines and numbers at the intersections of said lines, and connecting lines between the numerals on scale B and C, whereby a measurement of the neck of a garment being laid off by number on the neck-scale, the number on the shoulder-scale connected thereto indicates the proper shoulder-measure, substantially as set forth.

2. The combination, with the sleeve-scale A', of the separate scales P P', said scales being graduated by numbers, the numerals on the scale P corresponding with those on the scale A', and the numerals on the scale P' corresponding with similar numbers on the scale P, whereby, when a certain number on the scale P is applied in the manner set forth in the specification to its equivalent number, said number having been ascertained by measurement, the same numeral on the scale P' indicates the extreme point of the upper end of the under part of a dress-sleeve, substantially as set forth.

410,696. RAIL-JOINT. HIRAM B. POTTER, Canton, Kans. Filed May 7, 1889. Serial No. 309,891. (No model.)



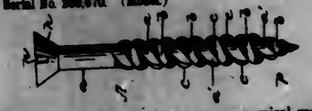
Claim.—1. The combination, with a diagonally-cut rail having an integrally-formed base-plate extending beyond the end of the body of the rail, of a second oppositely-cut rail recessed at its base to receive said plate, substantially as set forth.

2. The combination, with a diagonally-cut rail having an integrally-formed base-plate extending beyond the end of the rail and of the full width of the rail's base throughout, of a similarly-cut rail adapted to overlap the first and having its base recessed to receive and rest upon the whole surface of said plate, whereby the joint may be supported and be held against torsional opening by spikes upon each side of the rail, binding together said plate and the superposed base of the other rail.

3. The combination, with the diagonally-cut rail A, provided with the integrally-formed slotted base G, of the similarly-cut rail A', recessed to receive said base and provided with the lugs to enter said slots, substantially as and for the purpose set forth.

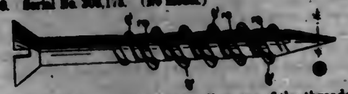
4. The combination, with the diagonally-cut overlapped rails, the bolts passing transversely through the overlapped ends, and the bosses formed integrally with one of said ends and having their outer surfaces parallel to the diagonally-cut faces, substantially as and for the purpose set forth.

410,697. WOOD-SCREW. CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed Feb. 12, 1889. Serial No. 300,070. (Model.)



Claim.—A screw provided with one or more spiral grooves impressed into the metal of a screw-blank and with spiral threads raised between the grooves and the adjacent normal surface of the blank by the compression and displacement of the metal in forming the grooves.

410,698. DRIVE-SCREW. CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed Apr. 6, 1889. Serial No. 306,173. (No model.)



Claim.—A rolled screw having the diameter of the threaded portion exceeding that of the plain or unthreaded portion, and having the bottom of the grooves between the said threads formed into low auxiliary ribs or projecting surfaces, the outer faces of which have substantially the same diameter as the said unthreaded portion.

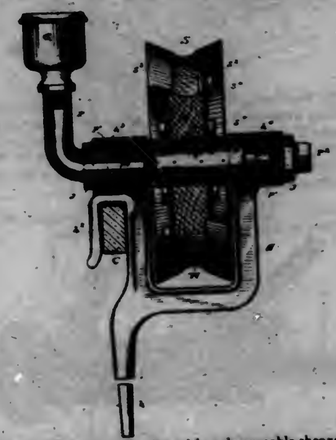
410,699. SPOOL-HOLDER. ANDREW W. SAWYER, Providence, R. I. Filed Mar. 12, 1889. Serial No. 302,991. (No model.)



Claim.—1. The combination of the two-part frame portion sliding one upon the other, an attaching-pin secured to the back of said frame, a thread guide and cutter, and oppositely-arranged inwardly-extending divided arms *c*, having the free ends thereof arranged to enter and frictionally engage the interior of a spool, substantially as shown and described.

2. The spool-holder hereinbefore described, consisting of the attachable frame portion formed of two pieces sliding endwise one upon the other, oppositely-arranged spool-holding arms secured to the lower side of said frame, a thread guide and cutter secured to the upper portion of the frame, and hooks *h* at the vertical sides, substantially as shown, and for the purpose set forth.

410,700. CABLE SHEAVE AND HANGER FOR CABLE TRAMWAYS. HARRY C. BENSON, Brooklyn, N. Y., and ALBERT WAGGONER, Columbus, Ohio. Filed June 16, 1888. Serial No. 314,443. (No model.)



Claim.—1. In combination with a loose cable-sheave, a tubular shaft, a hanger comprising a pair of bearing portions, and screw-plugs adjustable within the respective bearing portions and having circumferential shoulders which coact with the ends of the shaft and terminal studs which project into the shaft at its respective ends, substantially as hereinbefore specified.

2. The combination of a hanger comprising a pair of bearing portions, screw-plugs adjustable within the respective bearing portions and having circumferential shoulders and terminal studs, one of the plugs being tubular and of L shape, a grease-cup applied to the latter, a tubular shaft provided with radial perforations and mounted between said shoulders upon said studs, and a cable-sheave mounted loosely upon said shaft, substantially as hereinbefore specified.

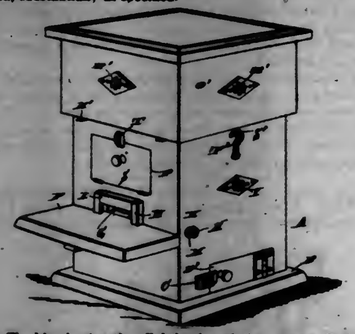
3. The combination of a hanger comprising a pair of bearing portions which are tapped and counterbored, screw-plugs adjustable within the respective bearing portions and having circumferential shoulders and terminal studs, one of the plugs being tubular and of L shape, a grease-cup applied to the latter, a tubular shaft provided with radial perforations and mounted between said shoulders upon said studs, and a cable-sheave mounted loosely upon said shaft and having a hub, the ends of which are in contact with the inner ends of said bearing portions of the hanger, and wooden segments around said hub, extending outward to the groove of the sheave, substantially as hereinbefore specified.

4. In combination with a trench having a cross-bar with central lugs and a socket beneath the same, a hanger having a leg the lower end of which is fitted to said socket, and a hook fitted to the cross-bar between its lugs and having a pair of bearing portions at top, plugs fitted to the latter, a grease-cup carried by one of said plugs, a tubular shaft, and a loose cable-sheave, substantially as hereinbefore specified.

410,701. BEE-HIVE. CHRISTIAN H. STORY, Sevierville, Tenn., assignor of one-half to William P. Mitchell, same place. Filed Sept. 3, 1888. Serial No. 284,916. (No model.)

Claim.—1. The hive having the brood-chamber D, having the opening P, provided with the pane R and hinged door S and the entrance G, the air-chamber E, arranged below the brood-chamber and having the opening A' in its side and a hinged door for the same, the bottom board C between the two chambers, provided with the opening U, and the slide V, adapted to open or close said opening and

having one end projecting from one side of the hive, for the purpose set forth, substantially as specified.



2. The hive having the alighting-board, the entrance G, the tube K, extending transversely through one side of the hive and in rear of the entrance G, said tube being provided with the opening L, arranged opposite the entrance and level with the bottom thereof, for the purpose set forth, and the wiper adapted to be inserted in the opening, substantially as described.

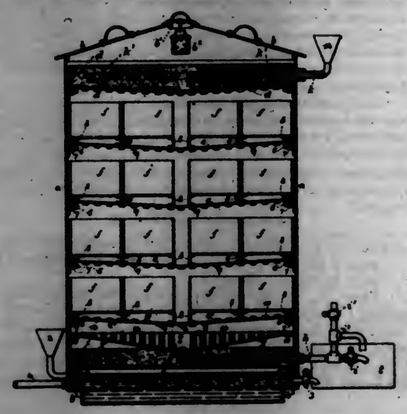
410,702. LIFTING-JACK. JOSEPH T. WEATHERLY, Flint, Ala. Filed July 30, 1888. Serial No. 319,162. (No model.)



Claim.—1. The combination of the hollow standard, the lifting-bar mounted therein and provided with ratchet-teeth on its sides and rack-teeth on its back, the links pivoted at their upper ends within the standard, the lever fulcrumed between the lower ends of the links and having a segmental gear at its end adapted to engage the rack-teeth on the lifting-bar, the pawls mounted on the standard and engaging the ratchet-teeth, and mechanism for disengaging the pawls from the ratchet-teeth, as set forth.

2. The combination of the hollow standard, the lifting-bar mounted in the standard and provided with ratchet-teeth on its sides, mechanism for raising the lifting-bar, the pawls mounted in the standard and engaging the ratchet-teeth, the treadle mounted on the rear of the standard, the pitmen connecting the treadle with the pawls, and the springs bearing on the pawls and adapted to throw them into engagement with the ratchet-teeth, as set forth.

410,703. BAKER FOR CLAMS. THOMAS C. AVERY, New York, N. Y. Filed Apr. 25, 1889. Serial No. 308,698. (No model.)



Claim.—1. The combination, in a clam-baker, of a case *a*, having a cover and door, a water-receptacle at b^2, comprising the bottom of the case, an open-work metal receptacle *c* for sea-weed, extending entirely across the case and located directly above the water-receptacle, an open-work metal receptacle *d* for sea-weed, also extending across the case and located in the top part thereof, and open-work metal baskets *f* to hold the material to be cooked, located between the sea-weed receptacles, substantially as and for the purpose set forth.

2. The combination, in a clam-baker, of a case *a*, having a cover and door, a water-receptacle at b^2, comprising the bottom of the case, an open-work metal receptacle *c* for sea-weed, extending entirely across the case and located directly above the water-receptacle, a receptacle *g* for the juice or liquid directly above the sea-weed receptacle *c* and a pipe therefrom for discharging the liquid, an open-work metal receptacle *d* for sea-weed, also extending across the case and located in the top part thereof, and open-work metal baskets *f* to hold the material to be cooked, located between the upper sea-weed receptacle and the receptacle *g*, and removable concave perforated metal trays *e e'*, for supporting the baskets *f*, substantially as and for the purposes set forth.

3. A clam-baking device consisting of a case *a*, having a cover and door, a water-receptacle at b^2, perforated metal receptacles *c d* for sea-weed, concaved perforated metal trays *e e'*, having ribs 8 thereon, perforated metal or wire baskets *f* for the material to be cooked, the conical tray *g*, having vertical pipes passing through it and forming a receptacle for the juice, and a pipe *h*, for discharging the juice, and a funnel 12 and pipes *k k'*, for returning the same within the case, substantially as set forth.

4. The combination, in a clam-baker, with the case *a*, of the door *a'*, extending across one side, the cover *b*, the auxiliary cover *b'*, and the basket b^2, substantially as set forth.

5. The combination, in a clam-baker, with the case, door, and cover, of the sea-weed receptacles *c d*, the juice-receptacle *g*, having vertical pipes 14, the delivery-pipe *h* and cock *i*, the siphon or overflow and cock *i'*, the return-pipes *k k'*, and funnel 12, substantially as set forth.

6. The combination, in a clam-baker, with the case, door, and cover, of the perforated metal trays *e e'*, the perforated metal or wire baskets *f*, the juice-receptacle *g*, having vertical pipes 14, and the delivery-pipe *h* and cock *i*, substantially as set forth.

410,704. TROUSERS-ELEVATOR. SAMUEL W. BROCK, Hamilton, Ohio. Filed May 2, 1889. Serial No. 309,209. (No model.)



Claim.—1. In a trousers-elevator, the combination, substantially as set forth, of strips secured to the inner surface of the trousers near the side seams thereof, a button over each of said strips, and a strip pivoted to each of said secured strips and provided with notches adapted to engage said button.

2. In a trousers-elevator, the combination, substantially as set forth, of perforated strip D, adapted to be secured to goods, and a strip E, pivoted to the end thereof and provided in its edge with one or more notches adapted to engage a button.

3. In a trousers-elevator, the combination, substantially as set forth, of a piece D, provided with transverse grooves terminating in perforations, and a strap E, pivoted at its lower end to the upper end of piece D, and provided in its edge with one or more notches adapted to engage a button.

410,705. VEHICLE-SPRING. RICHARD H. CARPENTER, Jackson, Mich. Filed June 6, 1889. Serial No. 313,373. (No model.)



Claim.—1. In a vehicle-spring, the combination, substantially as hereinbefore set forth, of the four quarter-sections A, the center spring F, the coupling E, and bolt connecting the inner ends of the quarter-springs and the center spring, the short springs G, having their inner ends secured to the springs A, and the shackles H to couple the ends of the springs G and center spring F.

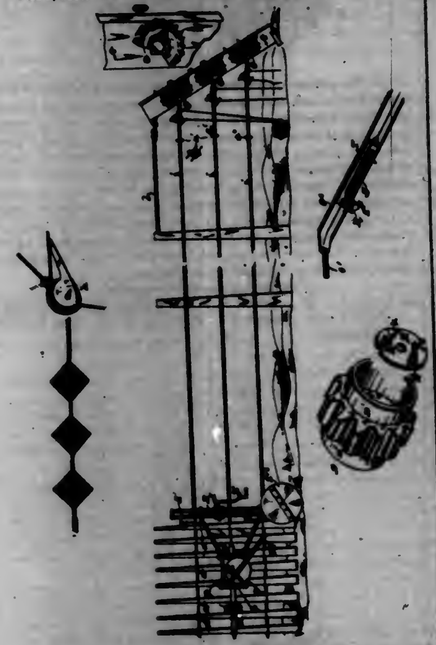
2. The combination, substantially as specified, of the center spring and quarter-springs A, the coupling E and its bolt for the inner ends of said quarter-springs, and the bolt centrally connecting the said quarter-springs, center spring, and coupling, the four short springs G, secured to the quarter-springs, the shackle H and its bolt for coupling the ends of the springs G and center spring F, and the shackle B and its bolt to couple the outer ends of the quarter-springs.

3. The combination, substantially as specified, of the quarter-springs, the short springs G secured thereto, the center spring F, the coupling E, spring-bar J, and bolts connecting the coupling-springs and spring-bar, and the shackle H to couple the outer ends of the short springs G and center spring F.

4. The combination of the axle C, having the downwardly-bent center part, the shackles B, secured upon each end of said axle, and the compound spring-coupling comprising the quarter-springs A, coupled to said shackle B, the coupling E for the inner ends of said quarter-springs, the center spring F, also secured to said center coupling, the short springs G, and the shackle H and its bolt for coupling the ends of said center spring and the short springs G.

5. A spring-coupling for connecting the body and gear of vehicles, consisting of four quarter-sections arranged in pairs, a semi-elliptic spring arranged between the said quarter-springs, a center coupling for said center and quarter springs, four short spring-sections G, secured upon the quarter-springs and having their outer ends curved above the quarter-sections and in the same plane as the upwardly-curved ends of the center spring, and shackle H and bolt *h* to couple the outer ends of the said short spring-sections and the ends of the center spring, substantially as and for the purpose set forth.

410,706. FENCE-MACHINE. ISAIAH R. REED, Canton, Okla. Filed Feb. 2, 1889. Serial No. 298,513. (No model.)



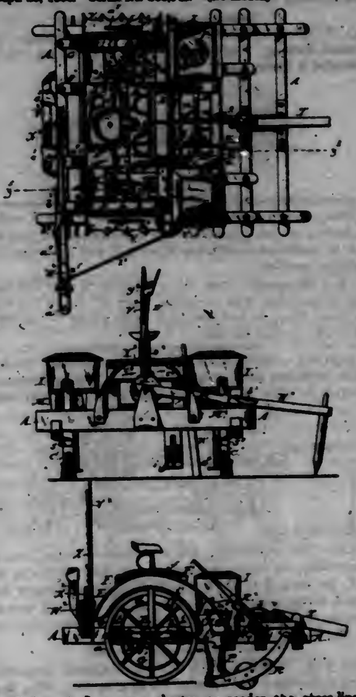
Claim.—1. The combination of the spool-frame A, provided with the spools B, the gear-wheels C, adapted to cause each set of the spools B to rotate in unison, the straps *d*, and the brace *b*, adapted to press against the adjacent post, substantially as and for the purpose specified.

2. The combination of the side pieces *a'*, the twister-heads provided with the journals D, and the disk K, having the notches *k* and *k'*, said notches being formed in pairs of unequal depth, and the lips or extensions *m*, the drive-chain E, and the adjustable arms I, carrying the wheel F, substantially as and for the purpose specified.

3. The combination of the sliding bar *n*, the wheel M, eccentrically attached thereto by the bolt *o*, the block *n'*, adjustably attached to the sliding bar *n* and provided with a groove adapted to receive the fence-wire *i*, opposite the groove, the guides or ways *p*, and the horn P, the whole being mounted on a twister-frame, substantially as and for the purpose specified.

4. The combination of the braces O', the picket-adjusters R, provided with the elongated slots S, and the shoulders T, and the bolts T, the whole being mounted on a twister-frame, substantially as and for the purpose specified.

410,707. CORN-PLANTER. JOSEPH G. HARRIS, Sedalia, Mo. Filed Sept. 25, 1888. Serial No. 286,048. (No model.)



Claim.—1. In a corn planter or seeder, the cross-line marker composed of two long bars, two adjustable short transverse bars connecting said long bars, and interposed wooden bars, in combination with the wheel-shaft and two wheels arranged thereon, one of which wheels is provided with teeth and fixed to the shaft and the other loose with reference to said shaft.

2. The combination, with the cross-line marker formed as described and provided with adjustable nibs, of slotted bows G G', adjustably fixed to the long bars of the cross-line marker, adjustable nibs *i i'*, arranged in the slots of said bows, the ratchet-wheel fixed upon the seeder-shaft, and the spring-detent *w*, fixed to the frame of the planter, as and for the purpose specified.

3. The combination, with the cross-line marker, as described, of the shaft B, wheel C, toothed or serrated wheel C', and the spring *c*, located between the said wheel C and plate *b*, as and for the purpose set forth.

4. The combination, with the frame of the planter, bows E, for the driver's seat, boards F F', fixed to said bows, the forked lever *e*, and spring *f*, of the cross-line marker, the wheel C', spring *c*, and the wheel C, whereby the cross-line marker may be thrown out of gear with the planter when it is desirable to move the latter from place to place, as set forth.

5. The combination, with shaft H, the hub *m*, fixed thereon, provided with pins, and the ratchet-wheel K, provided with segmental slots m^2, adjustably fixed to the said hub, and the pawl *w*, of the cross-line marker and the nibs adjustably fixed thereto, adapted to engage said ratchet-wheel, the gear-wheels on said shaft, and the grooved rollers, as and for the purpose specified.

6. The combination, with the planter-frame and the arc Y^2, secured to said frame, of the cars e^2, pivoted to said arc, each of which is provided with two holding-nibs, the one to catch and hold the lever W^2 and the other to take hold of the said arc as a brace, and the lever W^2, as and for the purpose specified.

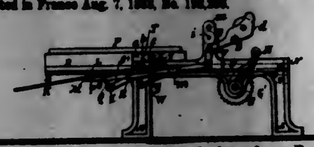
7. The combination, with pointed lever W and spring X, secured

thereto, of the planter-frame and the pin b^4 to receive the spring X, as set forth.

8. The combination, with the seeder-box, of the bed-plate fitting therein, slotted in one of its angles and fitted with two slides, one overlapping the other, each of said slides being arranged for limited adjustment, substantially as set forth.

9. The combination, with the cross-line marker, as described, of the pointed plate V and graduated concave plate U, as and for the purpose set forth.

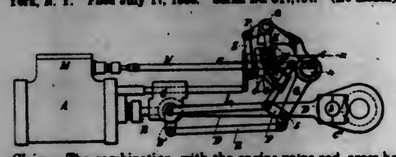
410,708. LITHOGRAPHIC PRESS. GUSTAV HEIDENS, Dresden, Saxony, Germany. Filed Mar. 26, 1889. Serial No. 304,914. (No model.) Patented in France Aug. 7, 1888, No. 192,203.



Claim.—1. In a lithographic press, the lever-frame R, with forks X and hook y, curved grooves Z, stud Q, elbow-lever U, and inking-roller S, in combination with bar K, stud P, and guide-bars O, substantially as specified.

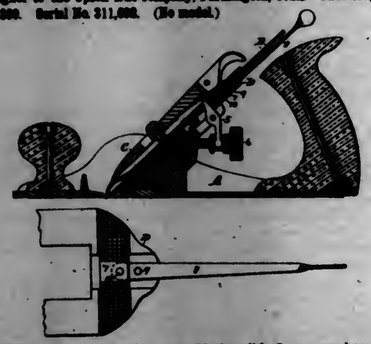
2. In a lithographic press, the combination of plate T at the sides of slide D, provided with projecting studs or pins *a b c*, with the fork X, lever frame R, and springs W, with guides W', substantially as and for the purpose set forth.

410,709. VALVE-GEAR FOR STEAM-ENGINES. CHARLES W. HUNT, West New Brighton, assignor to the C. W. Hunt Company, New York, N. Y. Filed July 17, 1888. Serial No. 317,797. (No model.)



Claim.—The combination, with the engine valve-rod, cross-head, and connecting-rod having a short arm, of the radius-arm G, the rocker F, and links E L, for moving the same, the swinging link H, the pivot 6 for the same upon the radius-arm G, the link 8, connecting the swinging link H with the rocker F and the sector, and connections to the valve-rod, substantially as set forth.

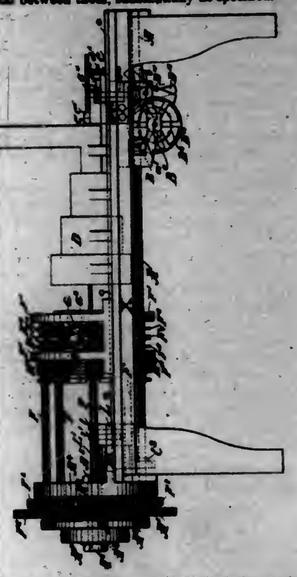
410,710. BENCH-PLANE. GEORGE KARRMANN, Unionville, assignor to the Upson Nut Company, Farmington, Conn. Filed May 23, 1889. Serial No. 311,602. (No model.)



Claim.—In a bench-plane, the friction-slide 7, arranged to move transversely under the upper end of the cutting-bit, and provided with operating mechanism, substantially as described, and for the purpose specified.

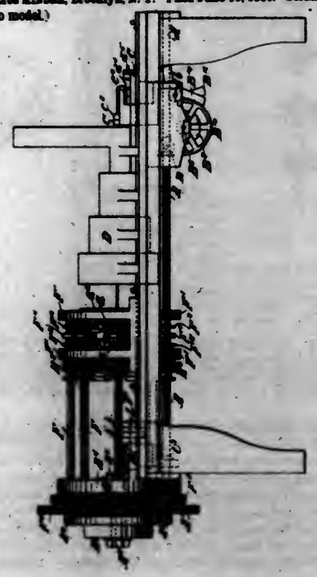
410,711. PROCESS OF MAKING SOLID-LINK CHAINS. JULIUS KINDER, Brooklyn, N. Y. Filed June 10, 1889. Serial No. 314,236. (No model.)

Claim.—1. The process of making a solid-link chain, consisting in taking a rod of metal and first indenting it by pressure on opposite sides and also in directions at right angles to each other to form portions on the bar of the approximate shape of chain-links, afterward puncturing and opening out by pressing aside the metal between the ends of said link-shaped portions and at the sides of said ends, further shaping by pressure said link-shaped portions into the form of links and severing said link-shaped portions from each other by incisions in the metal between them, substantially as specified.



2. The process of making a solid-link chain, consisting in taking a rod of metal and first indenting it by pressure upon opposite sides and also in direction at right angles to each other to form portions on the bar of the approximate shape of chain-links, afterward puncturing and opening out by pressing aside the metal between the ends of said link-shaped portions and at the sides of said ends, further shaping said link-shaped portions into the form of links by pressure and severing said link-shaped portions from each other by incisions in the metal between them, the links being ultimately forced into proper relative position by pressure applied between their adjacent ends after they have been pressed toward each other during the operation of severing, substantially as specified.

410,712. APPARATUS FOR MAKING SOLID-LINK CHAINS. JULIUS KINDER, Brooklyn, N. Y. Filed June 10, 1889. Serial No. 314,237. (No model.)



Claim.—1. The combination, with intermittently-operating apparatus for moving a rod of metal along, of a series of intermittently-operating dies for forming indentations in the rod opposite each other and also in directions at right angles to each other to form portions on the bar in the approximate shape of chain-links, intermittently-operating spacers acting on the metal between the ends of said link-shaped portions and at the sides of said ends to press said metal aside, and cutters for severing the links from each other, substantially as specified.

2. The combination, with intermittently-operating apparatus for moving a rod of metal along, of a series of intermittently-operating dies for forming indentations in the rod opposite each other and also in directions at right angles to each other to form portions on the bar in the approximate shape of chain-links, intermittently-operating spacers acting on the metal between the ends of said link-shaped portions and at the sides of said ends, and cutters operating to form incisions between the links and force said links apart to sever them from each other, substantially as specified.

3. The combination, with intermittently-operating apparatus for moving a rod of metal along, of a series of intermittently-operating dies for forming indentations in the rod opposite each other and also in directions at right angles to each other to form portions on the bar in the approximate form of chain-links, intermittently-operating spacers acting on the metal between the ends of said link-shaped portions and at the sides of said ends intermittently-operating cutters operating to sever said links from each other, and separators acting between the ends of said links to force them apart and into their proper relative position, substantially as specified.

4. The combination, with intermittently-operating apparatus for moving a rod of metal longitudinally, of a series of intermittently-operating dies, spacers, cutters, and separators adapted to press, open and cut, and separate the cut portions of said metal rod from each other, and an annealing-furnace through which said rod passes intermediate of said moving apparatus and said dies, spacers, cutters, and separators, substantially as specified.

5. The combination, with intermittently-operating apparatus by which a rod of metal is reciprocated and moved along, of an annealing-furnace through which said rod is reciprocated and a number of dies, spacers, cutters, and separators acting intermittently to form said rod into chain, substantially as specified.

6. The combination, with intermittently-operating apparatus for moving a rod of metal longitudinally, comprising jaws for gripping said rod, of independently-operating jaws for gripping and feeding said rod and intermittently-operating dies, spacers, cutters, and separators acting on said rod to form it into a chain, substantially as specified.

7. The combination, with intermittently-operating apparatus for moving a rod of metal longitudinally, comprising jaws for gripping said rod, of independently-operating jaws for gripping and feeding said rod and an adjusting device for varying the degree of feed of said rod imparted by said feeding-jaws, substantially as specified.

8. The combination, with intermittently-operating apparatus for moving a rod of metal longitudinally, of a series of intermittently-operating dies and spacers for forming said rod into the shape of links and a series of sets of cutters acting subsequently on said links to sever them from each other, said sets of cutters operating in succession, substantially as specified.

9. The combination, with intermittently-operating apparatus for moving a rod of metal longitudinally, of a series of intermittently-operating dies and spacers for forming the said rod into the shape of links, a series of sets of cutters acting subsequently on said links to sever them from each other, and separators acting on the severed links to force them into proper relative positions, substantially as specified.

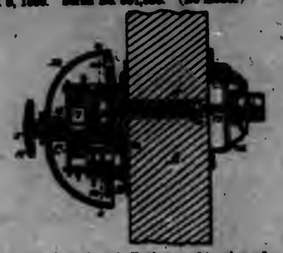
10. The combination, with intermittently-operating apparatus for moving a rod of metal longitudinally, of a series of intermittently-operating dies and spacers for forming said rod into the shape of links, a series of cutters acting subsequently on said links to sever them from each other, and separators acting on the severed links to separate them from each other, all said dies, spacers, cutters, and separators being withdrawn from contact with the metal substantially in unison, substantially as specified.

11. The combination, with intermittently-operating apparatus for gripping a rod of metal and moving it longitudinally, of a series of dies, spacers, and cutters operating on said rod to form it into a chain, and other grippers for gripping the chain, said last-named grippers co-operating with the grippers first named and moving in unison with the same, substantially as specified.

12. The combination, with intermittently-operating apparatus for gripping a rod of metal and moving it longitudinally, of independent feeding-grippers for said rod for feeding it forward, a series of dies, spacers, and cutters operating on said rod to form it into a chain, other grippers for gripping the chain co-operating with the grippers first named and moving in unison therewith and other feeding-grippers for the chain operating with the feeding-grippers first named and moving in unison therewith, substantially as specified.

13. The combination, with a series of dies, spacers, cutters, and separators, of cams operating to force the same inwardly, levers, and a number of other cams acting on said levers to move said dies, spacers, cutters, and separators outwardly, substantially as specified.

410,718. DOOR-BELL. HENRY LEARD, Bristol, assignor, by direct and mesne assignments, to P. & F. Corbin, New Britain, Conn. Filed Mar. 8, 1889. Serial No. 302,603. (No model.)



Claim.—1. In a door-bell, the combination of a spring-actuated alarm movement and hammer-wire, a slide 17, having a holding and releasing dog 18, arranged to move transversely to the movement of said hammer-wire, a spring 19, for holding said dog in engagement with said hammer-wire, and a push-button 21 at the other end of said slide for throwing said dog out of engagement with said hammer-wire, substantially as described, and for the purpose specified.

2. In a door-bell, the combination of the vibratory hammer-wire, the slide 17, push-button 21 at one end of said slide, a holding and releasing dog adapted to move with said slide transversely from and to the path of said hammer-wire, said dog being provided with a beveled face upon that side which first engages the hammer-wire when moving into its path, substantially as described, and for the purpose specified.

410,714. STEREOTYPE-BLOCK. JAMES G. MERRITT, Highland Falls, N. Y. Filed Nov. 9, 1888. Serial No. 290,267. (No model.)



Claim.—The combination of the block 1, having channels 2, forming opposite feet 3, and the opposite side plates 5, riveted to the opposite feet, as at 4, and having the heads of the rivets within the channels, said plates having the opposite inwardly-turned flanges 6 arranged slightly above the face of the plate, with the plate 8, having the opposite beveled edges 9, substantially as specified.

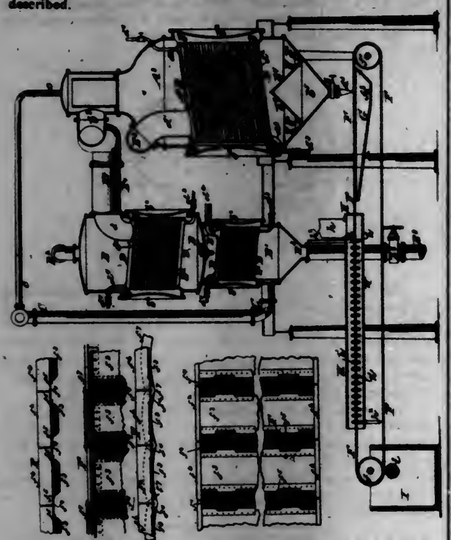
410,715. EVAPORATING APPARATUS. ALEXANDER MELLER, New York, N. Y., assignor of one-half to Robert Dunlop, same place. Filed Feb. 21, 1887. Renewed July 30, 1889. Serial No. 319,572. (No model.)

Claim.—1. The combination, with an upright closed evaporating-pan and a heating-drum arranged therein and containing tubes for circulation of liquor, of a partition arranged in the pan and forming below it in the lower part of the pan a compartment which communicates with the portion of the pan above the partition only through a restricted but uninterrupted and constantly-open aperture in the partition, whereby violent ebullition below the partition will be prevented and the precipitant allowed to deposit, substantially as herein described.

2. The combination, with an upright closed evaporating-pan and a heating-drum arranged therein and containing tubes for circulation of the conical head or partition b^4, extending nearly across the pan, and affording between its edges and the wall of the pan a restricted opening b^5, substantially as herein described.

3. The combination, with an evaporating-pan, as A^3, and a heating-drum arranged therein and containing tubes for circulation, of two heaters B B', connected for the passage of liquor from one to the other of them, and each provided with a heating-drum containing tubes for circulation, a pipe B^3, connecting the vapor-outlet of the pan with the heating-drum of the heater B, and a pipe c^3, for supplying the heating-drum of the heater B' with steam, a pipe B9, for feeding the first heater with liquor, and a pipe C, for conducting hot liquor from the second heater to the pan, substantially as herein described.

4. The combination, with an upright closed evaporating-pan A^1 and a heating-drum arranged therein and containing tubes for circulation, of the heater B' and tubes d therein for circulation, the said heater having its liquor-inlet at the top and its liquor-outlet near the bottom, and being provided at the bottom with an outlet B^2, furnished with a valve or gate, and serving for the removal of impurities from the heater while the apparatus is in operation, substantially as herein described.



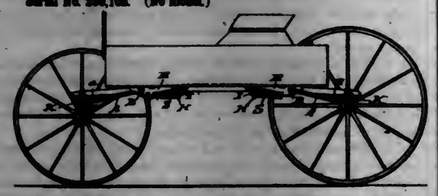
5. The combination, with an evaporating-pan A^1 and a heating-drum arranged therein and containing tubes for circulation, of the two heaters B B', arranged one above the other and having a communicating opening controlled by a valve d^3, feed and delivery pipes B^3 C for the liquor, heating-drums containing tubes for circulation and arranged in the heaters, a pipe connecting the vapor-outlet of the pan with the drum of the first heater B, and the pipe for supplying steam to the drum of the second heater B', substantially as herein described.

6. The combination, with an upright evaporating-pan having at the bottom an outlet-nozzle A^3, and the heating-drum arranged in the pan, of an endless conveying and sieving or straining apron arranged below the outlet-nozzle and receiving precipitant therefrom, the nozzle being contracted in a direction lengthwise of the apron and having a width nearly equal the width of the apron, substantially as herein described.

7. The endless sieving or straining apron herein described, composed of alternate imperforate and perforated or reticulated sections and having flanges at the sides, substantially as herein set forth.

8. The combination, with an endless conveying and sieving or straining apron for receiving precipitant, of a drainage-box arranged beneath the apron in its upper travel and near the receiving end, and a heated drying-chamber, through which the apron passes after passing the drainage-box, substantially as herein described.

410,716. VEHICLE-SPRING. Gomer Norwood, Boston, Mass., assignor of one-half to Louis Kolb, Cincinnati, Ohio. Filed Feb. 8, 1889. Serial No. 299,102. (No model.)



Claim.—1. The combination of arms A, shaft B, crank D, spring-box E, provided with diaphragm or bearing e^2, spring S, rod F, and nut I, substantially as and for the purposes specified.

2. The combination of the arms A, shaft B, crank D, spring-box E, provided with diaphragm or bearing e^2, spring S, rod F, and bearing-plate at the end of rod F, substantially as and for the purposes specified.

3. The combination of the arms A, shaft B, crank D, spring-box E, provided with sides e and diaphragm or bearing e^2, bearing-plates G and H, spring S, rod F, and nut I, substantially as and for the purposes specified.

4. The combination of the arms A, shaft B, crank D, spring-box E, provided with sides e, and diaphragm or bearing e^2, bearing-plates G and H, each provided with a circumferential flange, spring S, rod F, and nut I, substantially as and for the purposes specified.

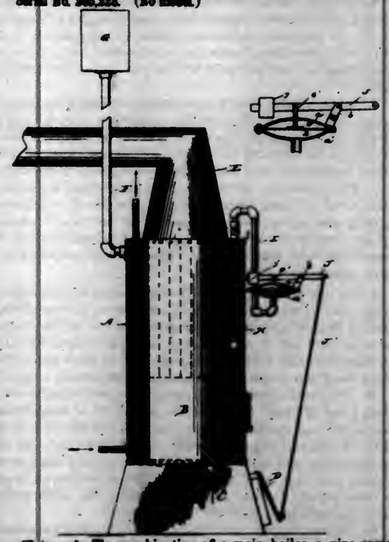
5. The combination of the arms A, shaft B, crank D, spring-box E, provided with sides e, and diaphragm or bearing e^2, bearing-plate G, having flange g and lug g', bearing-plate H, provided with flange A, spring S, rod F, and nut I, substantially as and for the purposes specified.

6. In a vehicle, the combination of two similar sets of devices, one located at the forward and the other at the rearward portion of the vehicle, each consisting, essentially, of the coil-spring, suitably supported, resting against a supporting-abutment fixed to the wagon-body, and the draw-rod F, arranged for compressing the spring, the draw-rod being connected to the lever D, the latter in turn being connected to the rod-lever A B, shackled to its respective end of the vehicle and nut or equivalent provision for adjusting the elasticity of the spring to meet the requirements of the carrying capacity of the vehicle independently of the spring at the other end of the vehicle, substantially as and for the purposes specified.

7. In a vehicle, the combination of rod B, provided at each end with rod A at right angles thereto, journal-bearing C, rod B, turning therein, and the spring S, provided with abutment secured to the vehicle-body, rod F, for compressing the spring, and the lever D, made separate from the rod B and adjusted thereon, the free end of the lever being connected to the rod F, substantially as and for the purposes specified.

8. In a vehicle, the combination of the rod B, provided at each end with rod A at right angles thereto, journal-bearing C, and the rod B, turning therein, and spring-box E, spring S, bearing against an abutment connected to said box, rod F, for compressing the spring, and the lever D, adjustable on the rod B, substantially as and for the purposes specified.

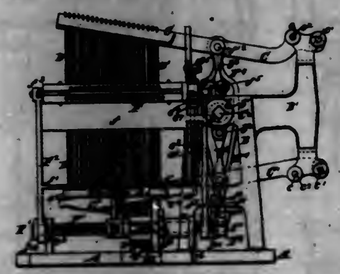
410,717. AUTOMATIC DRAFT-REGULATOR FOR HOT-WATER BOILERS. William P. Powers, La Crosse, Wis. Filed Feb. 25, 1889. Serial No. 300,923. (No model.)



Claim.—1. The combination of a main boiler, a pipe communicating therewith and extending above it for containing a column of water, by means of which the water in the boiler is held under greater than atmospheric pressure, a supplemental boiler or steam-generator so located as to be heated by the circulating water, containing water under a pressure lower than that in the main boiler, a pressure-chamber containing a diaphragm and communicating with the supplemental boiler, and a suitable heat-controlling device, the body of water in the supplemental boiler being in such quantity that the increase in volume when raised from the normal to the boiling-point will be less than the displacement of the diaphragm when raised to operate the heat-controlling device.

2. As an attachment for water-circulating systems, a supplemental boiler, a pressure-chamber communicating therewith containing a diaphragm and a body of water in the supplemental boiler, the quantity of water being such that the increase in volume when raised from its normal temperature to the boiling-point will be less than the displacement of the diaphragm when raised to operate the heat-controlling device.

410,718. SHEDDING MECHANISM FOR LOOMS. Vernon Royle, Paterson, N. J. Filed Feb. 10, 1887. Serial No. 227,266. (No model.)



Claim.—1. The combination, with the lifting-wires and needles, the rocking bars, the cylinder and cylinder-frame, and mechanism, substantially as described, for operating the said parts, of a frame consisting of a base-plate A, having lugs or ears c^6 for supporting the cylinder-frame fulcrum, and having an opening for the lifting-wires and a raised rim around its margin and said opening, an upright or standard, and an upper guiding-frame for the needles secured at its one end only to the upright or standard, substantially as herein set forth.

2. The combination, with the lifting-wires, the needles, the rocking bars, and the cylinder, of a cylinder-frame having upright arms fulcrumed at the one end and connected by a stretcher or brace which is inclined to the perpendicular in order to properly direct the cards, and operating mechanism for the several parts, substantially as herein set forth.

3. The combination, with the lifting-wires and needles and the rocking bars, of the cylinder and the cylinder-frame having a rocking shaft which constitutes a fulcrum on which the frame may rock, and which is provided with a rigid arm having a bearing against the frame to move it in one direction, mechanism, substantially as described, for operating the several parts, and a spring interposed between said rigid arm and the cylinder-frame, and through which the arm moves the frame in the other direction, substantially as herein set forth.

4. The combination, with the lifting-wires, the needles, the rocking bars, the cylinder, and the cylinder-frame having an arm extending from its fulcrum, of mechanism, substantially as described, for operating the rocking bars, and the rod F^4, composed of two similar halves or sections connecting the upper bar with the arm on the cylinder-frame fulcrum, substantially as herein described.

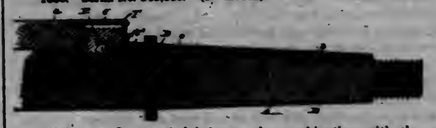
5. The combination, with needles, of lifting-wires, rocking bars for actuating the lifting-wires, a cylinder for operating the needles, a support on which said cylinder is mounted and with which it may receive longitudinal movement, mechanism, substantially such as described, for operating the several parts, a change-wire and needle corresponding to the lifting-wires and needles, a cam for effecting the lengthwise movement of the cylinder and its support, cam-surfaces against which said cam acts, and a connection between the change-wire and the cam, whereby the latter is rotated by the movement of the change-wire, substantially as specified.

6. The combination of the lifting-wires and needles, the rocking bars, the cylinder-frame, the cylinder held against lengthwise movement in the frame, bearings which permit of the movement of the frame in a direction lengthwise of the cylinder, mechanism, such as described, for operating said parts, a change-wire and needle corresponding to the lifting-wires and needles, a cam for effecting the lengthwise movement of the frame, cam-surfaces against which said cam acts, and a connection between the change-wire and the cam, whereby the latter is rotated by the movement of the change-wire, substantially as specified.

7. The combination, with the lifting-wires and the needles, the rocking bars, the cylinder and cylinder-frame and bearings which permit the lengthwise movement of said frame, and mechanism for operating the several parts, of a change-wire and needle corresponding to the lifting-wires and needles, a cam-wheel movable lengthwise of its axis with the frame, a lever upon which said change-wire acts, a clutch operated by said lever to impart motion to said cam-wheel, and a stationary cam with which said cam-wheel engages when turned, and whereby the frame is moved lengthwise, substantially as herein set forth.

8. The combination, with the lifting-wires and needles, the rocking bars, the cylinder and cylinder-frame, a shaft on which the said frame is fulcrumed, bearings which permit the lengthwise movement of said shaft and frame, and mechanism, substantially as described, for operating the several parts, of the change-wire and needle D' F^3, the cam-wheel and ratchet-wheel H^3 j' on said shaft, the lever I and its pawl j, and the stationary cam or cams with which the cam-wheel engages as it is turned, substantially as herein set forth.

410,719. AXLE-LUBRICATOR. James B. Shaw, Bishopville, S. C., assignor of one-half to Robert W. Spann, same place. Filed June 11, 1889. Serial No. 313,999. (No model.)

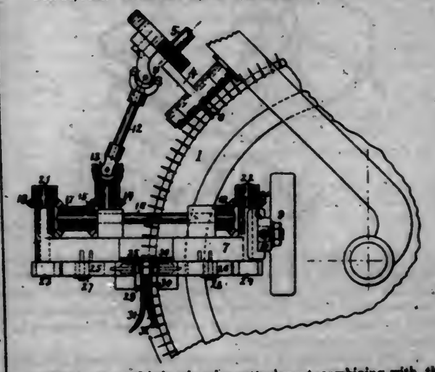


Claim.—1. In an axle-lubricator, the combination, with the receptacle and a feed-tube projecting therefrom and provided with a lug at its inner end, of an adjustable feed-regulating pin disposed in said tube and provided with a series of notches adapted to receive said lug, and a spring for retaining said pin in adjusted position, substantially as set forth.

2. In an axle-lubricator, the combination, with a receptacle provided with an air-tight cover and with a feed-tube having a lug projecting from its inner end, of an adjustable feed-regulating pin disposed in said tube and provided with a series of notches adapted to receive said lug, and a spring for retaining the pin in adjusted position, substantially as set forth.

3. In an axle-lubricator, the combination, with the receptacle and a feed-tube projecting therefrom and provided with a contracted feed-opening at its outer end and with an interior lug at its opposite end, of an adjustable pin having a pointed end corresponding to the feed-opening and provided near its other end with a series of notches adapted to engage the lugs, and a spring for holding the pin in adjusted position, substantially as and for the purpose set forth.

410,720. TRIMMING ATTACHMENT FOR MACHINES FOR SEWING LOOPED FABRICS. Adelbert L. Travis, Piedmont, N. Y. Filed Dec. 21, 1888. Serial No. 294,260. (No model.)



Claim.—1. A fabric-trimming attachment combining with the intermittently-rotating pin-plate and sewing mechanism of a turning-off machine levers having points attached thereto in a position to pierce and sever the fabric, jaws on the levers behind the points and in a position to grip the trimmed edge of the fabric, yokes at the rear end of these levers affording surfaces at right angles to each other for cam action, cams for imparting motion to these levers, by which they are pushed toward the fabric and the points and jaws carried by them lifted while in contact with the work, positive rotary mechanism for revolving the cams from the sewing-machine shaft in such time that the severing and gripping elements will be withdrawn from the fabric during the feeding of the pin-plate, and a frame for supporting and guiding said levers and carrying said cams and rotary mechanism, as and for the purpose set forth.

2. A fabric-trimming attachment combining with the pin-plate of a turning-off machine slotted levers guided by fulcrum-pins on which they can slide and rock, points positioned on these levers where they can pierce opposite sides of the fabric impaled on said pin-plate,

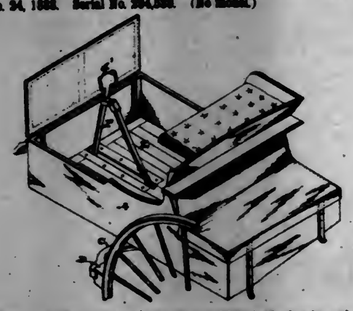
yokes at the rear ends of said levers affording surfaces at right angles to each other for cam action, cams for imparting motion to these levers, by which the points are pushed through the fabric in the direction of their axes and then lifted at right angles thereto, whereby the fabric is broken apart at a uniform height above the pin-plate, and a frame for supporting and guiding said levers through said fulcrum-pins and carrying said cams, as and for the purpose set forth.

3. A fabric-trimming attachment combining with the pin-plate of a turning-off machine slotted levers guided by fulcrum-pins on which they can slide and rock, points positioned on these levers where they can pierce opposite sides of the fabric impaled on the pin-plate, guides having openings through which the points enter and recede from the fabric, whereby severed portions thereof lodging on the points are removed, cams operating said levers to carry them toward and withdraw them from the fabric, and a frame for supporting and guiding said levers through said fulcrum-pins and carrying said cams and said guides, as and for the purpose set forth.

4. The combination, in an attachment to a turning-off machine, of levers situated on opposite sides of the fabric impaled on the pin-plate and guided by fulcrum-pins, so that they can slide in a direction to and from the fabric and rock to and from said pin-plate, jaws supported from these levers in a position to oppose each other, springs between the levers and the jaws, four-motion cams, positive connecting mechanism, and a frame for supporting and guiding said levers through said fulcrum-pins and supporting said cams and connecting mechanism, whereby the jaws may be caused to press the edges of the fabric with a spring-pressure when lifting, as and for the purpose set forth.

5. A trimming attachment for a turning-off machine combining with the pin-plate for feeding the fabric slotted levers guided by fulcrum-pins on which they can slide and rock, points positioned on these levers where they can pierce the fabric, jaws supported on these levers in a position to oppose each other on opposite sides of the fabric between the points and the sewing mechanism, cams acting upon these levers to slide them toward the fabric and then rock the ends with points and jaws upward from the pin-plate, and a frame for supporting and guiding said levers through said fulcrum-pins and supporting said cams, as and for the purpose set forth.

410,721. CARRIAGE-BRAKE. IRA WHALEN, Canton, Ohio. Filed Dec. 24, 1888. Serial No. 294,269. (No model.)



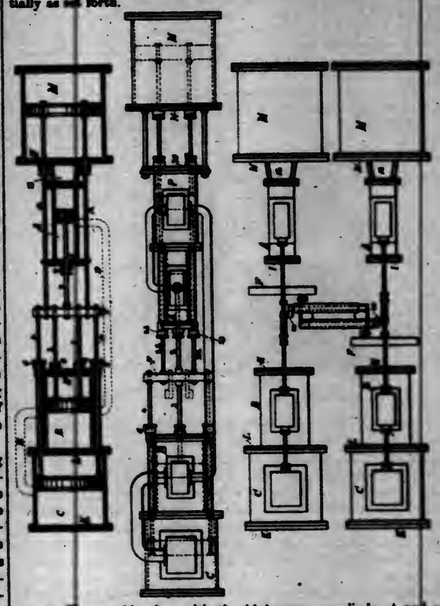
Claim.—1. The combination of a vehicle-body having pivotally attached thereto the S-shaped bars C, provided with suitable brake-blocks, the link-bars *a*, pivotally attached to the S-shaped bars C and to the spring-bar E, and the spring-bar E, formed of spring metal and having pivotally attached thereto the operating-lever F, substantially as and for the purpose specified.

2. The combination of a vehicle-body having pivotally attached thereto the S-shaped bars C, the links *a*, pivotally attached to the S-shaped bars C and to the spring-bar E, the spring-bar E, formed of spring metal, the operating-lever F, the roller G, and the pins or stops *d*, substantially as and for the purpose set forth.

410,722. EXPANSION-ENGINE. FREDERICK M. WEBSTER, Montclair, N. J. Filed Dec. 31, 1888. Serial No. 295,017. (No model.)

Claim.—1. The combination, with the high-pressure cylinder A and expansion-cylinders B and C, of the cross-head F between the cylinders A and B, and the piston-rods from the pistons of the respective cylinders connected to said cross-head F, substantially as set forth.

2. The combination, with the high-pressure cylinder A and the expansion-cylinders B and C, of the cross-head F between the cylinders A and B, the piston-rod 2 to the piston in the cylinder A, and the piston-rod 3 to the piston in the cylinder B, and the piston-rods 4, connected to the piston in the cylinder C, and passing through tubes or sleeves at the sides of the cylinder B and through the stuffing-boxes 6, all of the piston-rods being connected to the cross-head F, substantially as set forth.



3. The combination, with the high-pressure cylinder A and expansion-cylinders B and C, of the cross-head F between the cylinders A and B, and the piston-rods of the respective cylinders connected to such cross-head, and a pump-cylinder M, to which the cylinder A is connected, substantially as set forth.

4. The combination, with the high-pressure cylinder A and expansion-cylinders B and C, of the cross-head F between the cylinders A and B, the piston-rods to the pistons of the respective cylinders connected to the cross-head F, the pump-cylinder M, connected with the cylinder A, and the piston-rods 12 of a pump-piston connected to the cross-head F, substantially as set forth.

5. The combination, with the high-pressure cylinder A, of the expansion-cylinders P, B, and C, and the cross-head F between the cylinders A and B, and the piston-rods to the pistons of the respective cylinders connected to said cross-head, substantially as set forth.

6. The combination, with the high-pressure cylinder A and expansion-cylinders P, B, and C, of the piston-rods to the pistons in the respective cylinders connected together, and the piston-rods to the two most distant cylinders passing through tubes or sleeves at the sides of the intermediate cylinders, and glands or packing-boxes at the ends of the respective sleeves or tubes, substantially as set forth.

7. The combination, with the high-pressure cylinders A A, of the expansion-cylinders B B C C and cross-heads F F, or equivalents F F, forming duplex expansion steam-engines, and the connections from the cross-head of one engine to the valves of the other, substantially as specified.

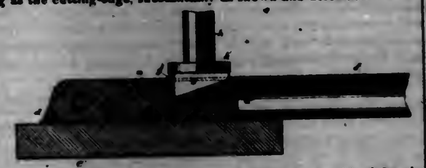
8. The combination, with the pump-cylinder M, of the high-pressure cylinder A and the expansion-cylinders B C, all in line with each other, the heads of the cylinders A and B facing each other and being removable one toward the other, substantially as specified.

9. The combination, with the pump-cylinder M, of the high-pressure cylinder A and the expansion-cylinders B, C, and P, all in line with each other, the heads of the cylinders A and B facing each other and being removable one toward the other, and the head of the cylinder P being removable toward the pump-cylinder M, substantially as specified.

410,723. DEVICE FOR SLOTTING TUBES. CHARLES H. WITHERS, Lake Rock, Conn. Filed Dec. 17, 1888. Serial No. 293,575. (No model.)

Claim.—1. In a metal-working die, the combination of a female die having a depression or groove therein extending out through one end thereof with a male die shaped to fit within such depression, the face of the male die which comes in contact with the surface of the metal to be punched being obliquely inclined to said surface of the metal, substantially as shown and described.

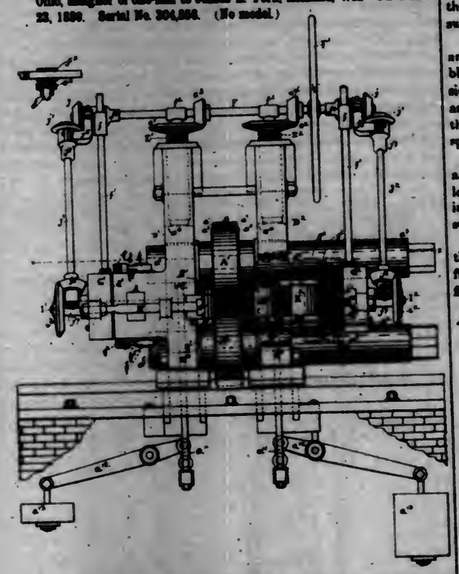
2. In a tube-slotting die, the combination of a combined female die and holder for the tube, consisting of a cylindrical stud having a depression or groove therein extending out through one end thereof, the upper edge of which groove forms the cutting-edge of the female die, with a male die shaped to fit within such depression or groove, the face of the male die which comes in contact with the surface of the tube to be punched being obliquely inclined to said surface, and the lower end and two sides only of said inclined face of the die acting as the cutting-edge, substantially as shown and described.



3. In a tube-slotting die, the combination of a combined female die and holder for the tube, consisting of a cylindrical stud having a depression or groove therein extending out through one end thereof, the upper edge of which groove forms the cutting-edge of the female die, and said stud having at its other end an enlarged part, whereby it is secured to the bed-plate of the press, the shoulder of which enlarged part forms a stop for the tube placed upon the holder, with a male die shaped to fit within such depression or groove, the face of the male die which comes in contact with the surface of the tube to be punched being obliquely inclined to said surface, and the lower end and two sides only of said inclined face of the die acting as the cutting-edge, substantially as shown and described.

4. In a tube-slotting die, the combination of the combined female die and holder for the tube, consisting of the cylindrical stud *a*, the depression or groove *a'* formed therein extending out through one end thereof, and the square end *b*, adapted to be secured by a bolt to the bed-plate of the press, with the male die, consisting of the punch *g*, having the inclined face *g'*, and provided with a stem and flange for securing it to the moving head of the press, substantially as shown and described.

410,724. ROLLING APPARATUS. LEVI D. YORK, Portsmouth, Ohio, assignor of one-half to James R. York, Ashland, Wis. Filed Mar. 23, 1889. Serial No. 304,256. (No model.)



Claim.—1. In an apparatus for rolling metal, the combination of top and bottom rolls, side rolls, blocks with which the side rolls are connected, screws for effecting the adjustment of these blocks toward and from each other, screws for effecting the adjustment of the upper roll, a shaft driving the screws for effecting the adjustment of the upper roll, other shafts transmitting motion to the screws for effecting the adjustment of the blocks with which the side rolls are connected, the shaft whereby the screws for effecting the adjustment of the upper roll are driven being supported in vertically-sliding boxes, and the shafts for transmitting motion to the screws whereby the adjustments of the sliding blocks are effected being supported to slide in the direction of the length of the shaft which drives the screws for effecting the adjustment of the upper rolls, substantially as specified.

2. In an apparatus for rolling metal, the combination of top and bottom rolls, side rolls, movable blocks to which the side rolls are connected, side guides carried by said blocks, shafts, bevel-gear, and screw-connections, whereby an adjustment may be effected simultaneously between the several rolls, substantially as specified.

3. In an apparatus for rolling metal, the combination of the rolls A' A^2, the screws E' E^2, the shaft F, driving said screws, the side rolls B' B^2, sliding blocks by which said rolls B' B^2 are adjusted, screws for adjusting these blocks, and shafts J' J^2, for driving the screws for adjusting the said blocks, the shaft F being supported in vertically-sliding bearings, and the shafts J' J^2 being supported so as to move laterally correspondingly with the movement of the said blocks, substantially as specified.

4. In an apparatus for rolling metal, the combination of rolls A' A^2, having long journals a^4 a^4, the screws E' E^2, the shaft F, driving said screws, the side rolls B' B^2, sliding blocks by which said rolls B' B^2 are adjusted, screws for adjusting these blocks, and shafts J' J^2, for driving the screws for adjusting the said blocks, the shaft T being supported in vertically-sliding bearings, and the shafts J' J^2 being supported so as to move laterally correspondingly with the movement of the said blocks, substantially as specified.

5. In an apparatus for rolling metal, the combination of upper and lower rolls, side rolls having curved bearings on the journals of the lower roll, adjustable blocks for effecting the adjustment of the side rolls, and rollers supported by said blocks and sustaining the side rolls, substantially as specified.

6. In an apparatus for rolling metal, the combination of upper and lower rolls, screws for adjusting said rolls, loosely-running side rolls, adjustable blocks for effecting the adjustment of the side rolls, loosely-running rollers supported by said blocks and sustaining the side rolls, and gearing operating to adjust the rolls together, each of the side rolls and the rolls which sustain it being arranged in the apices of a triangle, substantially as specified.

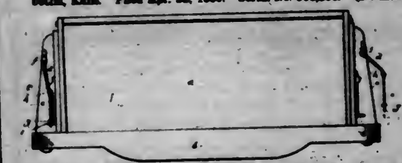
7. In an apparatus for rolling metal, the combination of upper and lower rolls, side rolls, adjustable blocks *g'*, receiving journals with which the side rolls are provided, sliding blocks G' G^2, connected with the blocks *g'*, and rollers K' K^2, supported in the sliding blocks G' G^2, substantially as specified.

8. In an apparatus for rolling metal, the combination of the top and bottom rolls, the adjustable side rolls, sustaining-rollers, sliding blocks supporting the sustaining-rollers, and blocks supporting the side rolls connected to the blocks supporting the sustaining-rollers, so as to be capable of moving independently of the blocks sustaining the side rolls away from the top and bottom rolls, substantially as specified.

9. In an apparatus for rolling metal, the combination of the top and bottom rolls, the adjustable side rolls having journals at their lower ends only, and supporting-blocks beneath the side rolls receiving their journals and sliding on the journals of the bottom roll, substantially as specified.

10. In an apparatus for rolling metal, the combination of positively-rotating top and bottom rolls, freely-turning side rolls, and freely-turning sustaining-rolls for said side rolls, substantially as specified.

410,725. WAGON-BOX FASTENER. ANDREW J. ADAMSON, Sabetha, Kans. Filed Apr. 22, 1889. Serial No. 308,260. (No model.)



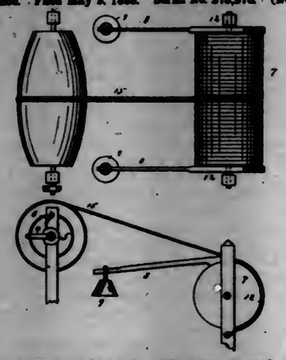
Claim.—1. A wagon-body fastener or anti-rattler comprising a pair of toggle-links, the upper end of one link adapted to be stationarily pivoted to either the wagon-body or a portion of the running-gear, said toggle adapted to be straightened with its lower free end bearing down upon a stationary portion of one of said two parts of the vehicle, to which it is not pivoted, substantially as described.

2. A wagon-body fastener comprising a pair of toggle-links, in combination with a locking-plate having an aperture, said plate adapted to be secured to either a wagon-body or to the running-gear, and the toggle adapted to have one end pivoted to the other of said parts and having a stop a distance from its opposite end and to be straightened with its free end in said aperture and its stop bearing against said plate, for the purpose set forth.

3. A pair of toggle-links adapted to be stationarily pivoted at one end and having a stop a distance from its other end, in combination with a locking-plate adapted to be stationarily secured and having a lateral extension with an aperture to receive the free end of said toggle, and with a pair of ears between which the elbow of said toggle is adapted to fit, substantially as described.

4. The combination, with a wagon-body and a standard secured to the running-gear, of a locking-plate secured to the side of the wagon-body and having a horizontal perforated arm at its lower end, and a pair of toggle-links, the upper link being pivoted at its upper end to said standard and the lower link having an adjustable stop a distance above its lower free end, said toggle adapted to be straightened with its free end in said perforation and its stop bearing on said arm, for the purpose set forth.

410,726. MANUFACTURE OF PAPER BARRELS. ADOLF BEAR, Ehrenfeld, near Cologne, Prussia, Germany, assignor to Kahnen & Co., same place. Filed May 9, 1888. Serial No. 273,270. (No model.)



Claim.—1. The method of making paper barrels, consisting in pasting a series of sheets of paper one upon the other, and then winding ropes under pressure around said pasted sheets for the purpose of pressing them together, substantially as herein shown and described.

2. The method of making paper barrels, consisting in pasting a number of sheets upon each other on a core, then removing the core, then inserting heads in the ends of the shell thus formed, and then pasting another series of sheets of paper upon the first series and over the edges of the heads, substantially as herein shown and described.

3. The method of making paper barrels, consisting in placing rings on the ends of a barrel-shaped core, then pasting a number of paper sheets one upon the other around said core, then removing the core, then placing heads in the ends of the shell thus formed and against the above-mentioned rings, and then pasting more sheets on said shell and over the edges of the heads, substantially as shown and described.

410,727. DEVICE FOR OPERATING HATCHWAY-COVERS, &c. JAMES R. BROWN, Brooklyn, N. Y., assignor of one-half to James H. Sherwood, same place. Filed Apr. 20, 1889. Serial No. 307,960. (No model.)



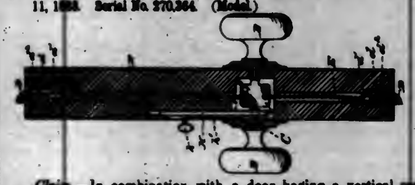
Claim.—1. The combination, with a shutter arranged and adapted to be closed or drawn across the well-hole and to be held back or open by a spring-latch, of the automatic thermostatic closing device consisting of the fusible wire L, secured at one end and passing around the well-hole and room and connected by the other to the swinging shelf N, the shelf N, hinged to the wall and held up directly by the fusible wire L, and the weight O, supported by the shelf and connected to and adapted to release the spring-latch, the whole arranged and operating as described, as and for the purposes set forth.

2. The combination, with a shutter arranged to be closed or drawn across the well-hole, of the direct releasing device, consisting of the spring-latch D and cord E, and the automatic thermostatic releasing device, consisting of the fusible wire L, secured at one end and connected by the other to the swinging shelf N, the shelf N, hinged to the side of the room, and the weight O, adapted to open the spring-latch D, the whole arranged and operating as directed, as and for the purposes set forth.

3. The combination, with the shutter A, arranged to be drawn across the well-hole by the weight W and rope *w* and to be drawn back from the well-hole or shaft by the windlass B and rope *b*, of the spring-latch D, adapted to engage and hold the shutter and be released by the cord E, and the automatic thermostatic device consisting of the fusible wire L, shelf N, weight O, and cords P and E, substantially as described, and for the purpose set forth.

4. The thermostatic device for releasing shutters and doors, consisting of the fusible wire L and chains *l*, fastened at one end and passing around the room and connected to the shelf N, the shelf N, held up directly by the fusible wire L, and the weight O, arranged to release the shutter, the whole arranged and operating as described, substantially as and for the purpose set forth.

410,728. LATCH. JOSEPH BROWN, Santa Rosa, Cal. Filed Apr. 11, 1888. Serial No. 270,364. (Model.)



Claim.—In combination with a door having a vertical recess therein and a chamber, as at *c*, a square rod extending through said chamber and having knobs or handles on the extreme ends thereof, and wings projecting from the opposite sides of the center, said wings being integral therewith, one having two and the other a single aperture therethrough, the bolt-frames *d* at the extremities of the vertical recess and having bolts therein actuated by springs, said bolts having connection with the wings on the square rod by a chain or other suitable means, the catch F, extending through the front edge of the door and surrounded by a coil-spring and manipulated by a wing on the rod C, and the vertical adjustable locking-plate H, having a bifurcated end, which plate fits over the square rod C, thus preventing said rod from turning, substantially as and for the purposes set forth.

410,729. VALVE-GEAR FOR GAS-ENGINES. EMIL CAPITAINE, Berlin, Germany. Filed Nov. 26, 1888. Serial No. 292,072. (No model.) Patented in Germany Feb. 4, 1888, No. 44,409.

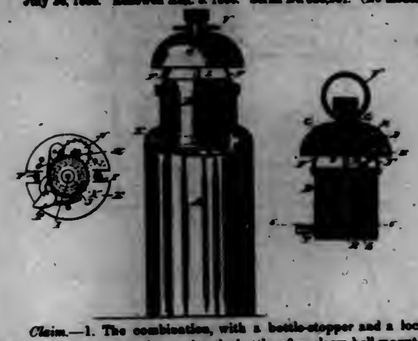


Claim.—1. In valve-gear for gas-engines, the combination, with a valve-stem and a reciprocating rod, of a hinged piece on the end of the reciprocating rod, which hinged piece is adapted to act on the valve-stem, and a spring-actuated mechanism, substantially as herein described, for inclining the hinged part so that the same will not strike the valve-stem at alternate strokes, substantially as set forth.

2. The combination, with a valve-stem, of a reciprocating rod, a hinged part on the end of said reciprocating rod, a lever pivoted on said hinged part, fixed springs acting on the lever, and fixed stops acting on said lever, substantially as set forth.

3. In a valve-gear, the combination, with a valve-stem, of a reciprocating rod, a hinged part on the end of said reciprocating rod, a lever pivoted on said hinged part and having a spring bearing on the hinged part, said lever also having two opposite arms, fixed springs that can act on said lever, and fixed stops that can act on the arms of said lever, substantially as set forth.

410,780. ALARM BOTTLE-STOPPER. ROBERT H. DEVEREAUX, Chicago, Ill., assignor of one-half to J. S. McDonald, same place. Filed July 26, 1888. Renewed Apr. 8, 1889. Serial No. 306,201. (No model.)



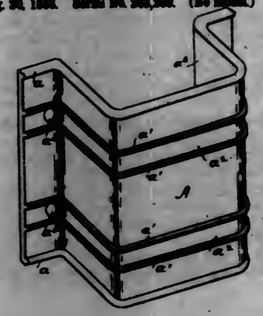
Claim.—1. The combination, with a bottle-stopper and a lock-bolt working therein and engaging the bottle, of an alarm-bell mounted on said stopper and a connecting and actuating mechanism simultaneously operating said bell and lock-bolt, substantially as described.

2. The combination, with a bottle-stopper and a lock-bolt working therein, of an alarm-bell mounted on said stopper and spring-controlled mechanism connected with and simultaneously operating said bell and lock-bolt, whereby when operated said mechanism will simultaneously withdraw said bolt and set the bell-ringing mechanism, and which when released will automatically and simultaneously ring said bell and cause the bolt to project, substantially as and for the purpose described.

3. The combination, with a bottle-stopper provided with a central bore, a bell mounted thereon, and a lock-bolt working therein, of a spring-controlled arbor working in the bore of the stopper, bell-ringing mechanism, and connections between said arbor and bolt, and between said arbor and the bell-ringing mechanism, whereby the rotation of said arbor in either direction will cause a simultaneous operation of said mechanism and bolt, substantially as and for the purpose described.

4. The combination, with a stopper provided with a central bore, a bell mounted thereon, and a lock-bolt working in said stopper, of an arbor working in the bore of said stopper, a bearing therefor, a pinion mounted thereon for engaging and operating said bolt, a winding-cap secured thereto, bell-ringing mechanism operated by said arbor, and a spring fixed at one end and attached at its opposite end to said arbor, substantially as described.

410,781. STAKE-POCKET. WILLIAM EVANS, Philadelphia, Pa. Filed Aug. 20, 1888. Serial No. 283,289. (No model.)



Claim.—1. A stake pocket or holder made from a blank of wrought metal having outside edge beads or flanges and strap or clip socket rolled or formed in the blank, substantially as set forth.

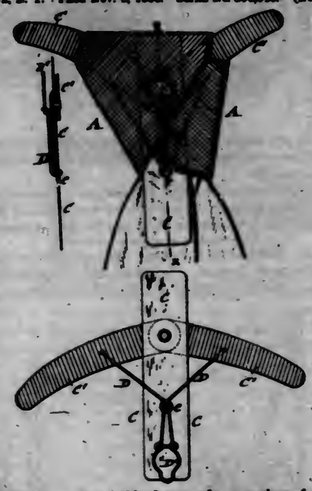
2. A stake pocket or holder made from a blank of sheet metal having outside edge beads or flanges and strap or clip socket projections rolled or formed in the blank, the edge beads and strap-pocket projections being of greater thickness in cross-section than the rest of the blank or holder, and the latter having a smooth or uncorrugated inside surface from top to bottom, substantially as set forth.

3. A stake pocket or holder made from a blank of wrought or sheet metal, having strap-sockets formed or rolled in the blank, and the holder having a smooth or uncorrugated inside surface from top to bottom, substantially as set forth.

4. A blank sheet-metal strip for stake pockets or holders having one smooth or uncorrugated side, and on the other side strap-sockets and bead edges formed or rolled thereon, substantially as set forth.

5. A blank sheet-metal strip for stake pockets or holders having one smooth or uncorrugated side, and on the other side strap-sockets c^2, formed or rolled thereon, substantially as set forth.

410,782. NECKSCARF-FASTENER. ELIAS J. FREELAND, New York, N. Y. Filed Nov. 3, 1888. Serial No. 290,316. (No model.)



Claim.—1. A detachable fastener for a neckscarf, consisting of a flat center piece provided with an eyeleted opening in its lower part, arms pivoted to said center piece at its upper part, and a looped elastic cord passed through said eyeleted opening and having its ends connected to said arms, substantially as described.

2. A detachable fastener for a neckscarf, consisting of a flat center piece provided with an eyeleted opening in its lower part, arms pivoted to said center piece at its upper part, a looped elastic cord passed through said eyeleted opening and having its ends connected to said arms, and a metallic collar-button loop at the end of said looped cord, substantially as described.

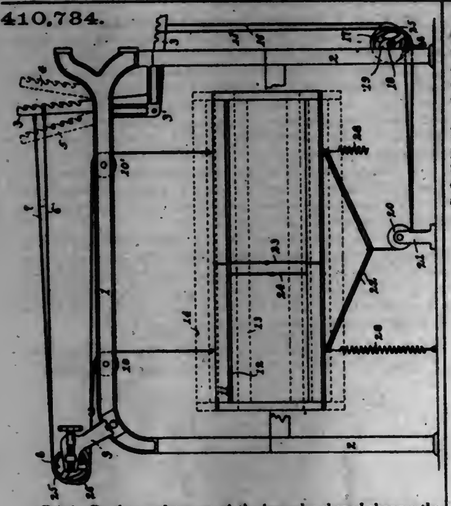
410,783. PROCESS OF MAKING A VIOLET DYE. RUDOLPH GNEHM, Basle, Switzerland, assignor to John R. Geigy & Co., same place. Filed Mar. 5, 1889. Serial No. 301,992. (Specimens.)

Claim.—The process for producing colors consisting of heating twenty kilos of gallamide with thirty kilos of the chlorhydrate of nitroso-dimethylaniline in a solution of acetic acid, substantially as described.

410,784. SHEDDING MECHANISM FOR LOOMS. GEORGE F. HUTCHINS, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed Apr. 6, 1889. Serial No. 306,203. (No model.)



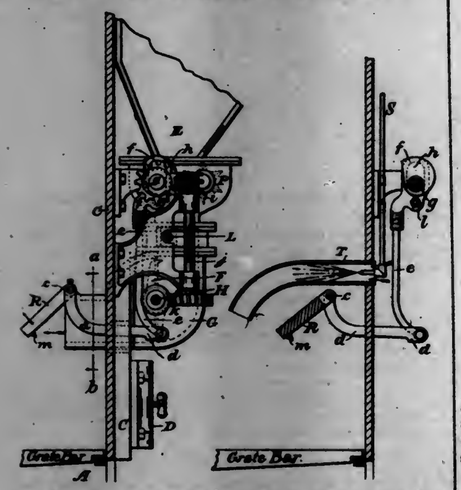
410,784.



Brief.—By the employment of the irregular-shaped sheaves the harness-frames are so shifted that the warp-threads do not all pass the center at the same time.

Claim.—The combination, with harness-levers, harness-frames, and cords connecting the same, of eccentric or irregular-shaped sheaves over which the cords pass, substantially as and for the purpose stated.

410,785. MECHANICAL STOKER. WILLIAM LEACH, Accrington, County of Lancaster, England. Filed July 2, 1888. Serial No. 316,390. (No model.) Patented in England Nov. 28, 1887, No. 16,096.



Claim.—1. In mechanical stokers, the combination therewith of a deflecting-plate and reciprocating feed-box, arranged in the manner substantially as herein shown and described.

2. In mechanical stokers, the combination therewith of a deflecting-plate, revolving fans, and reciprocatory feed-box, all arranged in the manner substantially as herein shown and described.

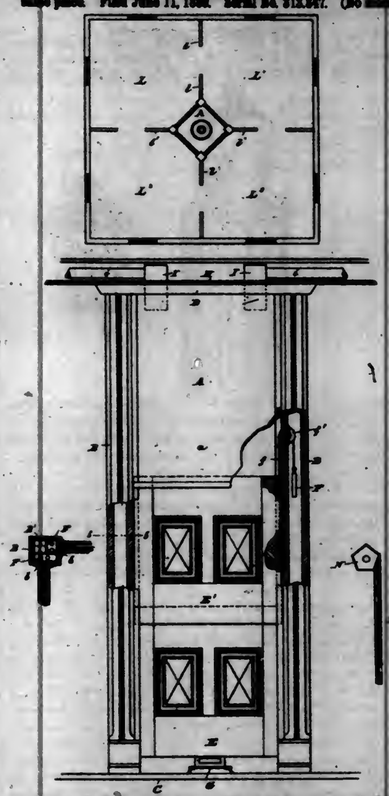
3. The combination, with a mechanical stoker, of an inclined deflecting-plate supported in front of the fuel-discharge opening, and lever mechanism for imparting oscillating motion to said plate, whereby the fuel is evenly distributed upon the grate-bars, substantially as set forth.

4. The combination, with a mechanical stoker, of a deflecting-plate oscillating continuously in front of the fuel-discharge opening of said stoker and adapted to distribute the fuel evenly upon the grate-bars, substantially as set forth.

5. The combination, with a mechanical stoker provided with a deflecting-plate oscillating continuously in front of its fuel-discharge outlet for evenly distributing the fuel, of a pipe for injecting steam and air pressed above said fuel-outlet, and having its inner end bent downwardly and adapted to clear the said oscillating plate, substantially as and for the purpose set forth.

6. The combination, in a mechanical stoker, with the central feed-hopper, of the horizontal chamber supported below the hopper and provided with an outlet at each end leading to the fire-box, and the reciprocating feed-box in said chamber provided with chambers for conveying the fuel from the hopper to the said outlets, substantially as set forth.

410,786. HEATING APPARATUS. EDGAR W. OLIN, Pueblo, Colo., assignor of two-thirds to Allen R. Barnum and Joseph W. Johnston, same place. Filed June 11, 1888. Serial No. 312,847. (No model.)



Claim.—1. The combination, with adjoining rooms of a building, of a compartment interposed between said rooms and provided with doors which constitute the sides of said compartment and form an intermediate room for the reception of a heater, as and for the purpose specified.

2. An improved appliance for distributing heat to the apartments of buildings, consisting of a compartment interposed between and communicating with adjacent apartments and provided with adjustable doors which constitute the sides of said compartment and form an inclosed space for the reception of a heater, substantially as described.

3. An improved appliance for heating the apartments of buildings, consisting of an angular apartment for inclosing the heating device set obliquely to the contiguous walls of the adjacent apartment, substantially as and for the purpose described.

4. An improved appliance for heating the apartments of buildings, consisting of a heater compartment or room interposed between and communicating with adjacent apartments, in combination with several sets of adjustable doors, one set for each apartment, applied to and forming the sides of said heater-compartment, whereby the hot air may be conducted to any or all adjoining apartments, as set forth.

5. The combination, with adjoining apartments of a building, of a compartment interposed between the same and provided with doors which constitute the sides of said compartment and form an intermediate room for the reception of a heater, said heater-compartment and its doors being provided with an interior lining of zinc or equivalent material, substantially as and for the purpose described.

6. An improved appliance for distributing heat to the apartments of buildings, consisting of an interior compartment interposed between, inclosed by, and communicating directly with adjoining apartments on the same floor, and provided with adjustable doors, in combination with a portable heater located within said compartment, all arranged substantially as and for the purpose specified.

7. An improved appliance for distributing heat to the apartments of buildings, consisting of a compartment interposed between and communicating directly with adjoining apartments on the same floor, and provided with adjustable doors which constitute the sides of said compartment and form an intermediate room for the reception of the heater, in combination with hot-air outlets leading from the upper part of said heater-compartment and serving to supply heated air to the upper stories of the building, substantially as described.

410,787. APPARATUS FOR LOADING OR UNLOADING FREIGHT. THOMAS H. ROSS, St. Louis, Mo. Filed Jan. 19, 1888. Serial No. 260,847. (No model.)

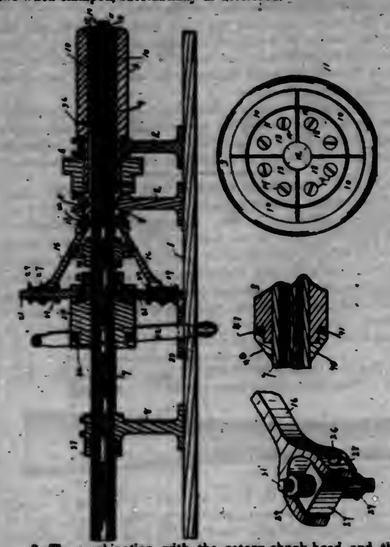


Claim.—An apparatus for loading or unloading boats, cars, and the like, the same comprising a movable skid for bridging from the boat to a distant exterior objective point on the shore, an endless cable provided with a set of guide-pulleys on the boat and a set of guide-pulleys removably secured in position near the objective point on the shore, a stand or back for elevating the endless cable at the objective point on the shore, a steam-driven drum or capstan on the boat for driving the endless cable, an adjustable pulley for regulating the reach of the cable, one line of the endless cable disposed above the skid in the direction of the length thereof, and one or more gripping-handles adapted to automatically grip the cable, the entire apparatus being carried by the boat from place to place and constructed to be readily secured in position and easily removed therefrom at a landing, substantially as and for the purpose set forth.

410,788. CHUCK FOR RODS OR TUBES. HENRY ROSS, Rochester, N. Y., assignor of one-half to Frank S. Upton, same place. Filed May 17, 1889. Serial No. 311,265. (No model.)

Claim.—1. The combination, with the chuck-head having the inclined portion and the jaws co-operating with the incline, of a toggle or toggles connecting said head and jaws, moving them relative to each other to cause the clamping, and a stop for limiting the motion of the toggle or toggles across the center and locking the jaws in clamped position, substantially as described

2. The combination, with the chuck-head and the jaws co-operating therewith, of a toggle connecting said head and jaws for moving them relative to each other, causing the clamping, and means for throwing said toggle across the center, causing the locking of the jaws when clamped, substantially as described.



3. The combination, with the rotary chuck-head and the jaws co-operating therewith, of one or more toggles connecting said head and jaws, for moving them relative to each other to cause the clamping, a sliding block rotating with the head, and a lever for operating said block to move the toggle across the center, causing the clamping and locking, substantially as described.

4. The combination of the chuck-head having the two inclines, the spindle, the clamping-jaws thereon co-operating with one of the inclines, the pivoted lever or levers mounted on the spindle and co-operating with the other incline on the head, the sliding block for moving the lever or levers to cause the movement of the head and jaws relative to each other, and the lever for moving said block, substantially as described.

5. The combination of the chuck-head having the differential inclines, the spindle, the clamping-jaws thereon co-operating with one of the inclines, the pivoted lever or levers mounted on the spindle and co-operating with the other incline, and the sliding block for moving the lever or levers to cause the movement of the head and jaws relative to each other, substantially as described.

6. The combination, with the clamping-jaws, the chuck-head, and the spindle arranged to be moved relative to each other to cause the clamping, of the lever forming the connection between them, a sliding block rotating with the head, and a link connecting the block and lever, substantially as described.

7. The combination of a hollow chuck-head having inclines at the ends, a hollow spindle, clamping-jaws carried thereby, levers pivoted on the spindle operating on the incline on the head, a sliding block, links connecting it with the levers, and a shifting-lever connected to the block for operating it, substantially as described.

8. The combination, with the chuck-head, the clamping-jaws, and the spindle, of the lever or levers for moving the head and spindle relatively to cause the clamping, the movable block rotating with the spindle and head, the links connecting levers and block, and means for adjusting their length, substantially as described.

9. The combination, with the chuck-head, the clamping-jaws, and the spindle, of the lever or levers for moving the head and spindle relatively to cause the clamping, the movable block rotating with the spindle and head, the adjustable links connecting the levers and block, and a stop for limiting the movement of the block, substantially as described.

10. The combination of the chuck-head having the inclined portion, the spindle, the sleeve thereon having the spring-arms carrying the clamping-jaws, and the spline-and-groove connection between said sleeve and head, substantially as described.

11. The combination, with the chuck-head and the spring-arms, of the removable clamping-jaws mounted on the arms, and the secur-

ing devices—such as screws—accessible from the front, substantially as described.

12. The combination, with the chuck-head, the spindle, and the spring-arms thereon, of the removable clamping-jaws having the lateral flange passing over the ends of the arms, and the screws for securing them to the arms, substantially as described.

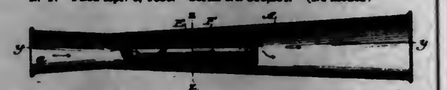
13. The combination, with the chuck-head, the spindle, and the spring-arms thereon, of the removable clamping-jaws having the longitudinal bearing-surfaces on the inside of the arms and the lateral flanges on the outer ends, and the screws for securing the jaws on the arms, substantially as described.

14. The combination of the chuck-head, the spindle, the clamping-jaws, the levers for causing the movement of the head and spindle relatively to each other to cause the clamping, and the adjustable inclined collar on which the lever operates, substantially as described.

410,739. PROCESS OF MAKING AURIN DERIVATIVES. TRAUGOTT SANDMEYER, Basle, Switzerland, assignor to John R. Geigy & Co., same place. Filed Mar. 12, 1889. Serial No. 303,021. (Specimens.)

Claim.—The process for the production of colors by first taking two parts of salicylic acid dissolved in fifteen parts of concentrated sulphuric acid and four parts of methyl-alcohol, then heated to about 70° centigrade, after which one and one-half part of nitrite of sodium is added. It is then poured into water, by which the new product is precipitated. It is then washed, after which it is saturated with an alkali and dried, substantially as described.

410,740. WIND-INSTRUMENT. LOUIS SCHMIDEK, New York, N. Y. Filed Apr. 8, 1889. Serial No. 306,291. (No model.)



Claim.—1. The reed for wind-instruments, consisting of a longitudinal cup C, having a tongue B of shorter length resting upon its upper rim to close down upon the front and sides thereof and leave an uncovered opening D at its rear end, and an encircling band E, binding the tongue-strip to the cup at or about the middle of its length, substantially in the manner and for the purpose herein set forth.

2. The combination, in a wind-instrument, of a trumpet A, an extended reed-cup C, a tongue B, of shorter length than the cup and fitted to cover the same from its front end to a point D near its rear end, and an encircling band E, binding the tongue at about the middle of its length to the cup, and serving as a packing between the reed and trumpet to secure the one within the other with a tight joint, substantially in the manner and for the purpose herein set forth.

410,741. SASH-CORD GUIDE. WILLIAM G. SEEDS, Leadville, Colo. Filed Jan. 28, 1889. Serial No. 297,754. (No model.)

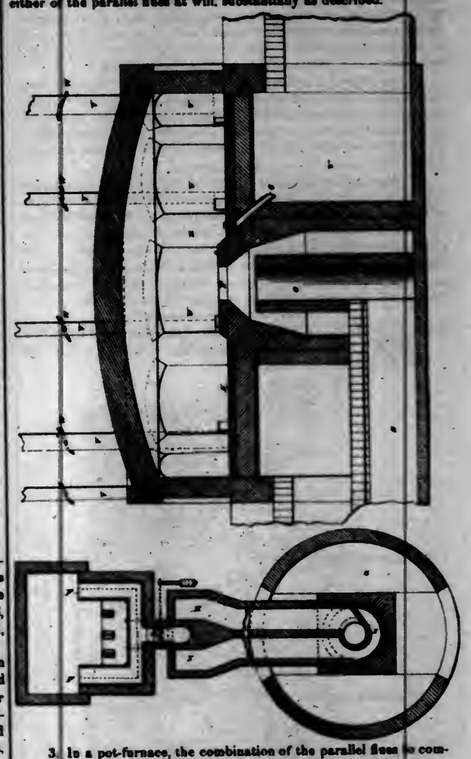


Claim.—A case for sash-pulleys stamped, pressed, or struck from sheet metal and having wings provided with bearings for the pulley-wheel axis, or perforations in which to rivet the pulley-wheel axle, slots, and parting-strips having extensions which enter the slots in the wings, and face areas terminating in eyelets for securing the case to the frame in which the sash moves, substantially as shown.

410,742. POT-FURNACE. MARTIN V. SMITH, Pittsburg, Pa., assignor of one-half to the Calumet Fire Clay Company, Calumet, Ohio. Filed Apr. 15, 1887. Serial No. 234,986. (No model.)

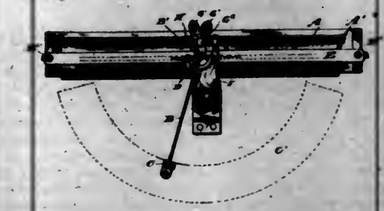
Claim.—1. The combination, with a pot-furnace and a gas-producer, of the parallel flues having outlets at the center of the furnace and communicating with the producer at the other end and the external air, one of said flues terminating at the furnace end in a vertical flue, and the other one of said parallel flues terminating in an annular chamber surrounding the vertical flue, and a reversing-valve constructed and arranged to change the gas and air from one flue to the other, as set forth.

2. The combination, with a pot-furnace and producer, of parallel flues communicating at one end with the producer and having outlets at the center of the furnace, air and gas supply tubes communicating with both of said parallel flues, and a reversing-valve constructed and arranged to cause the current of gas and air to be directed through either of the parallel flues at will, substantially as described.



3. In a pot-furnace, the combination of the parallel flues to communicate with the producer, one of said parallel flues terminating in a vertical flue and the other in an annular chamber surrounding the vertical flue, and said vertical flue and chamber uniting in the nozzle of the combustion-chamber in the center of the working-hearth, the air-flue with its regulating-valve, and the gas-flue with its regulating-valve, and a reversing-valve for changing the air and gas from one flue to the other, substantially as described.

410,743. ALIGNER FOR TYPE-WRITING MACHINES. CHARLES BYRD, New York, N. Y. Filed Jan. 24, 1889. Serial No. 297,247. (No model.)



Claim.—1. An aligner for the type of a type-writing machine, consisting of a matrix of the type to be aligned.

2. An aligner for the type of a type-writing machine, consisting of a matrix of the type to be aligned, combined with the matrix-supporting devices, substantially as specified.

3. An aligner for the type of a type-writing machine, consisting of a plate provided with matrices of the type to be aligned, substantially as specified.

4. An aligner for the type of a type-writing machine, consisting of a plate provided with matrices of the several type to be aligned, adapted for connection with the carriage of the machine, substantially as specified.

5. An aligning-bar for type-writing machines, provided with matrices of the printing-surface portions of the type, substantially as specified.

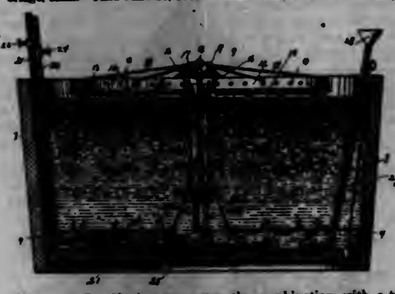
6. The combination, with the carriage of a type-writing machine, of an aligner for the type, consisting of a bar provided with type-matrices, substantially as specified.

7. The combination, with the carriage of a type-writing machine, of an aligner for the type, consisting of a matrix-bar mounted thereon and a type-holding clamp, substantially as specified.

8. The combination, with the carriage of a type-writing machine, of an aligner for the type, consisting of a matrix-bar having type-matrices arranged in a line thereon and spaced in accordance with the step-by-step movement of the carriage, substantially as specified.

9. A type-holding clamp provided with a screw-pivot for binding the jaws of the clamp in position to retain a type, in combination with an aligner consisting of a bar provided with matrices of the type to be aligned, substantially as specified.

410,744. APPARATUS FOR DYEING. ALBERT A. SPRAGUE, Uxbridge, Mass. Filed June 20, 1888. Serial No. 314,947. (No model.)



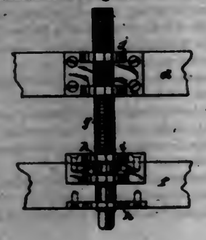
Claim.—1. In a dyeing apparatus, the combination, with a tub having a false perforated bottom and steam-pipes entering the tub and extending under the false perforated bottom, of a central pipe extending up from the perforated bottom and divided longitudinally into two or more divisions and steam-pipes extending into said divisions, and a removable perforated distributing-pan of less diameter than the diameter of the tub, supported upon the upper part of the central pipe and provided with a deflector extending over the upper open end of the central pipe, and small pipes extending from holes in the bottom of the distributing-pan into the body of the liquid in the tub, for the purpose stated, substantially as set forth.

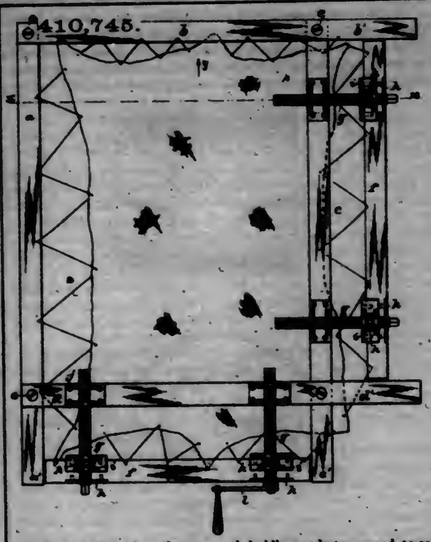
2. In a dyeing apparatus, the combination, with a tub having a false perforated bottom and a central pipe extending up therefrom, of a distributing-pan supported upon the central pipe above the liquid in the tub and having an upwardly-projecting rim extending around its outer edge and holes in its bottom, and small pipes leading down from some of said holes below the surface of the liquid into the body of the liquid, and a deflector supported above the open end of the central pipe, all substantially as shown and described.

410,745. STRETCHING-FRAME. GEORGE F. STORER, Newark, N. J. Filed Aug. 9, 1887. Serial No. 246,485. (No model.)

Claim.—1. A leather-stretching frame consisting of frame-pieces *a*, *b*, *c*, and *d*, provided with projecting ends *a'*, *b'*, *c'*, and *d'*, adjustable pieces *f*, arranged on two adjacent sides of said frame-pieces between the projecting ends, and means for adjusting said pieces *f* in relation to the rigid portion of the frame, for the purposes set forth.

2. A stretching-frame consisting of the rigidly-attached frame-pieces *a*, *b*, *c*, and *d*, provided with projecting ends *a'*, *b'*, *c'*, and *d'*, adjustable pieces *f*, arranged on two adjacent sides of said rigid frame-pieces between the projecting ends, threaded adjusting-rods connecting said adjustable pieces with the rigid portion of the frame, threaded sockets secured to said rigid portion of the frame, through





which the adjustable rods pass, and holding-sockets secured to said adjustable pieces, which also receive the said adjustable rods, all of said parts being arranged substantially as and for the purposes set forth.

410,746. DIE-PRESS. NORMAN C. STILES, Middletown, Conn. Filed Jan. 31, 1889. Serial No. 298,230. (No model.)



Claim.—1. In a press of the described kind, the combination, with two parts requiring adjustment relatively toward and from each other, of an intervening adjusting-screw adjustable through an opening in one of said parts, and means, substantially as described, for centering the screw relatively to such opening after its adjustment, such means consisting of a piece movable relatively to the walls of said opening and adapted when forced to place to embrace and seat itself against the screw, whereby such parts are returned to an invariable lateral position after each adjustment.

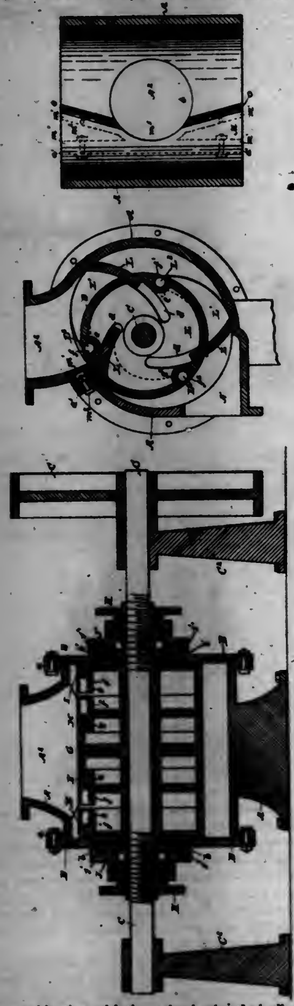
2. In a press of the described kind, the combination, with two parts requiring adjustment relatively toward and from each other, of an intervening adjusting-screw adjustable through an opening in one of said parts, the said part formed with a seat, and a washer surrounding the screw and entering said seat, the seat and washer being reciprocally tapered at their points of engagement, whereby on forcing the washer into the seat the screw is brought to center.

3. In a press of the described kind, the combination, with two parts requiring adjustment relatively toward and from each other, of an intervening adjusting-screw adjustable through an opening in one of said parts, the said part formed with a seat, and a split or collapsible washer arranged to surround the screw and entering said seat, the seat and washer being reciprocally tapered at their points of engagement, whereby on forcing the washer into the seat it is collapsed upon the screw and the latter is brought to center.

410,747. ROTARY PUMP. CHARLES H. YOUNG, Oil City, Pa. Filed May 7, 1889. Serial No. 309,962. (No model.)

Claim.—1. The combination, with the cylinder, the buckets carried thereby, and the casing surrounding the same, of an interposed seat attached to said casing and provided with the inclined forward edge, and set-screws for adjusting said seat, for the purpose set forth.

2. The combination, with the cylinder, the buckets carried thereby, and the casing thereof provided with the inlet and discharge orifices and with the sediment-grooves, of the false seat attached to said casing and having its forward edge located at or in close proximity to said grooves, substantially as shown and described



3. The combination, with the casing having the inclined sediment-grooves and provided with the adjustable seat having its forward edge inclined to correspond with said grooves, of the cylinder and its buckets, all arranged substantially in the manner shown and described.

4. The combination, with a cylinder composed of sections provided on their adjacent faces with the recessed enlargements, as described, of the buckets L, connected to said cylinder by means of arms L', located at points intermediate the ends of the cylinder, and provided with the trunnions L^2, which enter and engage the recessed enlargements in adjacent sections, as described and shown.

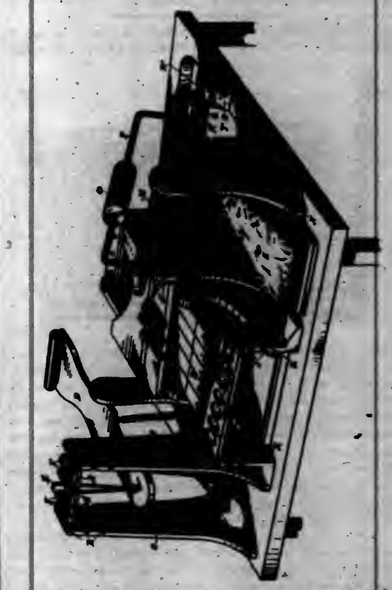
5. The combination, with the screw-threaded shaft, of the cylinder composed of a number of sections, the screw-threaded confining collars or nuts located at opposite ends of said cylinder and inside the casing, and the buckets pivoted to said cylinder in the manner substantially as set forth.

6. The combination, with the shaft, of a cylinder composed of sections provided on their adjacent faces with recessed enlargements on the inside face of their rims for the reception of the piston-trunnions and with the curved slots for the passage of the piston-heads and the buckets pivoted thereto, substantially as described.

7. A cylinder-head for rotary pumps, composed of sections each having a central hub, a flat peripheral rim, and connecting-web, said sections being provided upon adjacent faces inside said rims with recessed enlargements, in combination with the buckets pivoted thereto, substantially as set forth.

8. The combination, in a rotary pump, of the casing A, the head-plates B, having grooves b b', the shaft C, the sectional cylinder D, the pistons connected therewith, and the jam-nuts or collars J and J', all arranged substantially as shown and described.

410,748. EXERCISING DEVICE FOR MUSICIANS. Dominic S. Donelli, San Francisco, Cal. Filed Dec. 19, 1888. Serial No. 294,114. (No model.)



Claim.—1. The combination, with the spring-actuated pivoted lever D and the finger loop connected therewith, of the transverse table having the central opening through which the loop passes, and the supplemental loops F, fixed to the upper surface of said table, substantially as herein described.

2. The spring-actuated pivoted lever D, having the loop connected therewith and extending upwardly therefrom, in combination with the centrally-perforated table through which the loop passes, the supplemental finger-loops fixed to the upper surface of the table upon each side of the loop which is connected with the lever, and the vertical standard extending upward upon each side of the lever and having the transverse slots wherein the table may be adjusted to different heights with relation to the lever and its loops, substantially as herein described.

3. The combination, with the spring-actuated pivoted lever D and the finger-loops connected therewith, of a transverse table having an opening through which the loop from the lever passes, and slots, depressions, or rests for the ends of the fingers not engaged with the loop, substantially as herein described.

4. The elastic or spring levers H, in combination with the horizontal table I, with the finger-supporting depressions L, said table being arranged with relation to the levers H, substantially as and for the purpose herein described.

5. The horizontal support or table I, having the depressions L for the fingers, and the vertical standards K, with the transverse slots J, within which the table I may be adjusted, in combination with the spring-levers H, the ends of which are adapted to receive one or more of the fingers while the others are supported upon the table, substantially as herein described.

6. The fulcrum-lever M, with the adjustable weight O, and the roller R, journaled beneath the movable end of the lever, and the arm-support S beneath the fulcrum portion of the lever, in combination with the support U, by which the downward movement of the lever and roller is arrested, substantially as herein described.

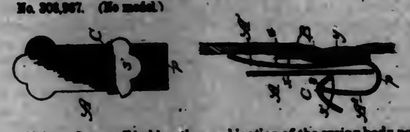
7. The weighted fulcrum M, the roller R, journaled beneath its movable end, and the arm-rest S beneath the fulcrum end, in combination with the base or support having the cut-out or open spaces T in front of the arm-rest, and the stops or supports U, whereby the downward movement of the lever and roller is arrested, substantially as herein described.

410,749. POLISHING-WHEEL. Alvin Colburn, Lynn, Mass. Filed May 13, 1889. Serial No. 310,519. (No model.)



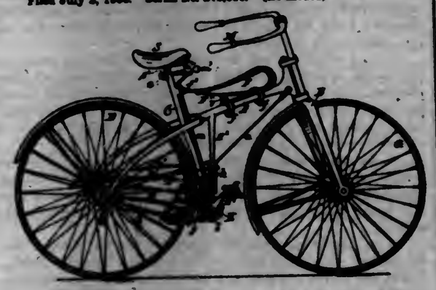
Claim.—In a polishing-wheel composed of two circular pieces with beveled edges clamped together and a rim comprising a metallic ring covered with fibrous pieces coated with an abrasive substance and mounted upon and clamped between the beveled edges of the circular pieces, substantially as described, the fibrous pieces I, formed with an angular V-shaped edge I^2, and having holes K and slits L cut therein to receive the metallic ring, said slits being cut at right angles to the polishing-face of the rim and radial to the wheel, so that when clamped between the beveled edges B and B' the slits will be kept closed thereby, substantially as specified.

410,750. CUFF-HOLDER. Henry J. Dale, Lake View, assignor of one-half to Charles J. Dale, Chicago, Ill. Filed Apr. 12, 1889. Serial No. 306,967. (No model.)



Claim.—In a cuff-holder, the combination of the spring body portion A, comprising a long arm A' and a short arm A^2, pivotal clamp C upon the end of the arm A^2, having a thumb portion c' and a jaw c, closing normally against the face of the arm A', and a securing-pin B on the back of the arm A', substantially as and for the purpose set forth.

410,751. VELOCIPEDE. George H. Davis, Worcester, Mass. Filed July 2, 1888. Serial No. 278,810. (No model.)



Claim.—1. In a velocipede, the combination, with the main frame, of an auxiliary yielding frame carrying the seat and pedal-shaft, supported upon and connected with said main frame only by a spring that sustains the parts in position laterally while supporting the weight of said auxiliary frame, together with the pedal mechanism and rider upon the seat, and a guide (or guides) that retains the lower part of said auxiliary frame in proper relation, while it is free to rise and fall with the flexure of said spring.

2. In a velocipede, the seat, pedal-shaft, and chain driving-gear, mounted upon a movable auxiliary frame that maintains them at constant distance apart in relation to each other, in combination with the main frame, the attachment of said auxiliary frame to the main frame being formed by a spring, as F, that sustains the parts in lateral relation, while affording upward and downward yielding action, and braces that sustain the pedal-shaft at constant working position from the driving-wheel axis.

3. The combination, with the main frame A, of the auxiliary frame C, the flat curved spring F, connected by a hinge to the auxiliary frame and fixed on said main frame in the manner described to give vertical yielding support, while sustaining the parts laterally, the pedal-shaft E, carrying the cranks, and drive-chain gears supported in bearings fixed on the lower bifurcated end of said auxiliary frame, the seat S, having an extension-standard S', adjustable in the upper part of said auxiliary frame, and a clamp for retaining the said standard at position of adjustment, all substantially as set forth.

4. The combination, with the yielding auxiliary frame C, guiding-wheel fork B, and the handle-shaft N', supported in a bearing on said auxiliary frame, of the guiding-handles M, fixed to the upper end of said shaft, the cross-head N^2 on the lower end of said shaft, the cross-head N^3 on the guide-wheel fork, and the link-rods n n, connecting the respective arms of said cross-heads, as and for the purposes set forth.

5. The combination, with the yielding frame C, having the forwardly-extended arm C', provided with a clamping-socket C^2 thereon, of the shaft-supporting sleeve N, extending through and longitudinally adjustable in said socket, the guiding-handles mounted on an upright shaft that extends through said sleeve and provided at its lower end with the cross-head N^2, and a binder for clamping said sleeve at position of adjustment, substantially as shown, and for the purpose set forth.

6. The guide-wheel fork B, provided with an operating-head N^3, in combination with guiding-handles mounted on the yielding auxiliary frame, links that connect the parts for operation, and a compensating joint b, for the purpose set forth.

7. The compensating joint b and the joint-supporting spring T, in combination with the top or cross head N^2 of the guide-wheel fork and the guiding-connections, for the purpose set forth.

8. The combination of the driving-wheel D, mounted in bearings on the main frame A, the yielding auxiliary frame C, carrying the pedal-shaft E, the curved flat spring F, connecting said auxiliary frame with the main frame, the braces H, connecting the pedal-shaft and drive-shaft bearings, differential sprocket-wheels and drive-chains for transmitting power and motion from the pedal-shaft to the driving-wheel axis, clutches for connecting and releasing the pedal-shaft sprockets, the sliding clutch-sleeve K, the shipper-rod m, supported in bearings on said auxiliary frame and having a handle m', and a catch m^2, having detents for retaining said shipper-rod at positions of adjustment, all substantially as shown and described.

9. The main frame having the dependent arm A', in combination with the truss-rods a and a', extending from the front and rear ends of said frame and connected with the lower part of said arm.

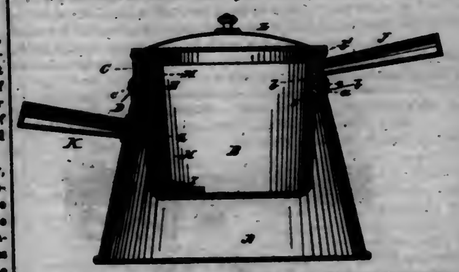
10. The main frame having the dependent arm A', in combination with the auxiliary frame C, its guide A, and yielding supporting-spring F, substantially as set forth, and truss-rods a and a', extending from the front and rear ends of said frame and connected with the lower part of said arm.

11. The spring F, having its main leaf connected to the auxiliary movable frame C, and a second leaf disposed as a brace beneath its main leaf, in combination with the main frame A and auxiliary frame C, substantially as set forth.

12. The spring F, supported upon the main frame A, and having its main leaf connected to the auxiliary movable frame C, and a second leaf F^2, disposed as a brace beneath said main leaf, in combination with an adjusting-support v, for increasing or reducing the tension of said spring, substantially as set forth.

13. In combination, substantially as described, the frame A, guiding-fork B, wheels D and G, yielding frame C, seat S, handle-bar M, with flexible connections for operating said guiding-fork, the pedal-shaft E, with cranks and chain gearing for operating said driving-wheel D, the braces H, spring F, and guide A' A, for the purpose set forth.

410,752. STEAMER. Rees Dimmock, Scranton, Pa. Filed Feb. 2, 1889. Serial No. 298,452. (No model.)

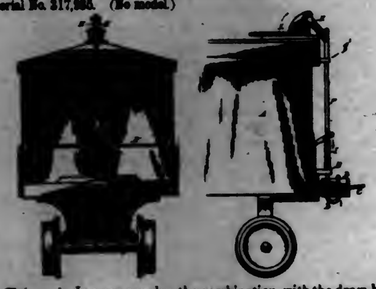


Claim.—1. In a steamer, the combination, with a water-receptacle, of a feed-receptacle constructed of earthenware, porcelain, or the like, fitting within said water-receptacle and having the steam-passage E, and the pipe H, integral with said feed-receptacle, forming

the steam-passage G, communicating with the passage E and an opening M, formed in said pipe H, for the purpose specified.

2. In a steamer, the combination, with a water-receptacle A, provided with a vertical lip *a*, of a food-receptacle B, constructed of earthenware, porcelain, or the like, having an annular shoulder *b*, a bead *b'*, steam-passages E G, formed therein, the packing-ring D, fitted in a recess in the shoulder *b*, and the band C, fitted around the shoulder *b*, and having the annular enlargement *c* and a suitable handle for said receptacle, substantially as described.

410,753. CAR-COUPLING. BETHUEL GHERARDI, Houma, La., assignor of one-half to Henry C. Miner, same place. Filed July 18, 1889. Serial No. 317,980. (No model.)



Claim.—1. In a car-coupler, the combination, with the draw-head, of the vertical U-shaped bar working in openings in the upper and lower sides thereof and in a bracket secured to the end of the car, the bifurcated bar connected thereto and working vertically in a bracket secured to the end of a car, the spiral spring surrounding the long shank of the U-shaped bar and confined under the lower end of the bifurcated bar, and the segment or bell-crank lever fulcrumed at the top of the car, whereby the coupler may be operated, substantially as specified.

2. The combination, with the draw-head, the U-shaped bar, the bifurcated bar, and spiral spring, of the transverse bars bent at their ends and pivoted to the bifurcated bar, their outer ends projecting beyond the sides of the car, whereby the coupling devices may be operated from either side, substantially as specified.

410,754. CAR-COUPLING. BETHUEL GHERARDI, Houma, La., assignor of one-half to Henry C. Miner, same place. Filed July 18, 1889. Serial No. 317,986. (No model.)



Claim.—1. In a car-coupler, the combination, with the draw or coupler head, of the vertical rod having its outer end bent outward and downward and entering the coupling-pin, openings in the coupling-head, the brackets wherein the said rod has its bearings, the spiral spring surrounding said rod and bearing against the lower bracket and a shoulder on said rod, and the segment-lever and connecting-links whereby the coupler may be operated, substantially as specified.

2. The combination, with the draw-head, the vertical rod having its lower end bent to form the coupling-pin, spiral spring, and bell-crank lever, of the cord connected to said lever and passing through guides down each side of the car, whereby the coupler may be operated from either side, substantially as specified.

410,755. CAR-COUPLING. BETHUEL GHERARDI, Houma, La., assignor of one-half to Henry C. Miner, same place. Filed July 18, 1889. Serial No. 317,987. (No model.)



Claim.—In a car-coupler, the combination, with the draw-head and coupling-pin thereof, of the bifurcated bent lever fulcrumed in a hanger secured to the lower part of the platform and having the lower end of the coupling-pin attached to its bifurcated end, the vertical rod pivoted to the opposite end of said lever and extending upward through a bearing in the platform, and the spiral spring bearing against the platform and a pin passing through the rod, whereby the parts are automatically returned and held in normal position, substantially as specified.

410,756. PULVERIZING-MILL. EDWIN C. GRIFFIN, Brooklyn, assignor to the Griffin Manufacturing Company, New York, N. Y. Filed June 1, 1888. Serial No. 275,712. (No model.) Patented in England Jan. 25, 1888, No. 1,162.



Claim.—1. In a pulverizing-mill, the casing or pan, the annular die, and the crushing or pulverizing rollers, in combination with the revolving centrally-arranged carrier provided along its upper portion with a feed receiving and distributing shell having openings arranged to deliver in front of the rollers, and also provided with an annular web or plate arranged beneath said shell and formed with pockets for the rollers, and with a disk or circular shaped lower end provided with inclined elevating-faces and horizontal supporting-surfaces, said carrier and its parts being integrally formed, substantially as described.

2. In a pulverizing-mill, the combination of the casing or pan, the annular die, the crushing or pulverizing rollers rotating within and against said die, the spindles upon which said rollers are closely fitted, the combined hoods and spindle-drivers, the ball-and-socket joints, and the revolving carrier provided with the top frame, said spindles being connected at their upper ends to the top frame of said carrier by said ball-and-socket joints, substantially as described.

3. In a pulverizing-mill, the combination of a casing or pan, an annular die, a central revolving carrier, pulverizing-rollers which are substantially vertically connected to said carrier, spindles to which said rollers are closely fitted, combined hoods and spindle-drivers, and pushing-blocks mounted on said carrier and arranged to engage said combined hoods and spindle-drivers and drive said rollers from the rear, substantially as described.

4. In a pulverizing-mill, the combination of a casing or pan, an annular die, a central revolving carrier having elevating-inclines provided with rests, pushing-blocks, and pulverizing-rollers loosely journaled on said carrier and in front of said pushing-blocks, said rests being arranged below said rollers for supporting them when not in operation, substantially as described.

5. In a pulverizing-mill, the combination of a casing or pan, an annular die, a central revolving carrier, pulverizing-rollers loosely journaled on said carrier, and elastic pushing-blocks mounted upon said carrier and arranged to engage said rollers, substantially as described.

6. In a pulverizing-mill, the combination of the casing or pan, the annular die, the revolving carrier provided with the pushing-blocks, the rollers provided with upward extensions, and the combined hoods and drivers, which freely rotate against said pushing-blocks as the rollers move in and out toward the center of the machine, substantially as described.

7. In a pulverizing-mill, the combination of the casing or pan, the annular die, the crushing or pulverizing rollers, the revolving carrier, the ball-and-socket joints, the spindles secured at their upper ends by said ball-and-socket joints, the elastic pushing-blocks secured to said carrier, and combined hoods and drivers which roll in and out to and from the center of the mill against said pushing-blocks, substantially as described.

8. In a pulverizing-mill, the combination of the casing or pan, the annular die, the rollers, spindles, spindle-drivers, and the revolving carrier provided with the semicircular pockets in which the rollers rotate, with the pushing-blocks arranged in rear of said spindle-drivers, with a feed-directing shell having the discharge-openings, and with a set of inclines by which the material is thrown upward against the face of and across the die, substantially as described.

9. In a pulverizing-mill, the combination of the casing or pan, the annular die, the revolving carrier provided with horizontal supports or rests, as described, and the spindles and rollers arranged at an incline from the perpendicular, whereby when in operation said spindles and rollers rise from said supports or rests and remain in operative position against said die by centrifugal force, substantially as described.

10. In a pulverizing-mill, the combination of the casing or pan, the annular die, the revolving carrier having horizontal supports or rests formed on its lower portion and provided with a horizontal frame at its top, the ball-and-socket joints, the rollers, and the spindles having bosses at their lower ends, and, together with the rollers, arranged at an inclination from the perpendicular and secured to said top frame by said ball-and-socket joints, substantially as described.

11. In a pulverizing-mill, the combination of the casing or pan having downwardly-leading discharge-openings in its body, the annular die, and the rollers rotating within and against the same, with a revolving circular disk or carrier arranged below said die and provided with inclined surfaces arranged in a vertical line falling inside of the interior surface of the die for the purpose of throwing material against the die and above the same, substantially as described.

12. In a pulverizing-mill, the combination of a casing or pan having downwardly-leading discharge-openings in its body, an annular die, pulverizing-rollers, elevating devices arranged below said die and adapted to throw the ground material above the same, and a cover or housing arranged around and above said die and having air ducts or passages for carrying the heavier ground material toward said discharge-openings, substantially as described.

13. In a pulverizing-mill, the combination of a casing or pan having downwardly-leading discharge-openings in its body, an annular die, pulverizing-rolls, feed-elevating devices arranged below said die, and a cover or housing arranged above said die and having tortuous air ducts or passages for carrying the heavier ground material toward said discharge-openings and for permitting the air and fine dust to pass upward within the mill, substantially as described.

14. In a pulverizing-mill, the combination of the casing or pan, crushing or pulverizing mechanism, and an inner revolving part provided with vanes or wings, with an outer stationary cover, an inner cover, and the upwardly-projecting ring, said parts being so arranged by the revolution of said inner part and its vanes or wings that currents of air are caused to circulate within the mill and carry away or discharge the sufficiently-pulverized material without permitting air and fine dust to escape, substantially as described.

15. In a pulverizing-mill, the combination, with the crushing or pulverizing mechanism and the revolving carrier provided with wings or vanes, of the upwardly-projecting ring, the outer cover, the internal cover consisting of an outer hood and an inner ring secured thereto and projecting, respectively, outside and inside of the ring first named, and the casing or pan provided with downwardly-leading openings, substantially as and for the purpose described.

16. In a pulverizing-mill, the combination, with the crushing or pulverizing mechanism and the revolving carrier provided with wings or vanes, of the upwardly-projecting ring, the outer cover, the internal cover consisting of an outer hood and an inner ring secured thereto and projecting, respectively, outside and inside of the ring first named, and formed with an inlet-opening in its top, an adjustable plate or valve arranged over said opening, and the casing or pan provided with downwardly-leading openings, substantially as and for the purpose described.

17. In a pulverizing-mill, the combination, with the crushing or pulverizing mechanism and the revolving carrier provided with wings or vanes, of the upwardly-projecting ring, the outer cover, the internal cover consisting of an outer hood and an inner ring secured thereto and projecting, respectively, outside and inside of the ring first named, and the casing or pan provided with downwardly-leading openings, the trough, and the sweep, substantially as and for the purpose described.

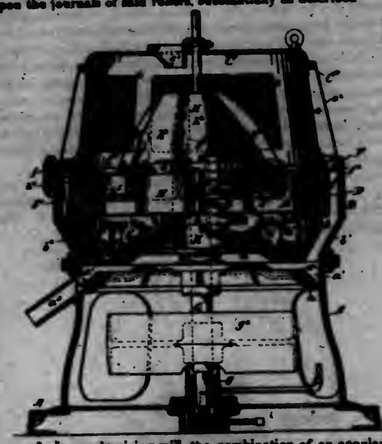
410,757. PULVERIZING-MILL. EDWIN C. GRIFFIN, Brooklyn, assignor to the Griffin Manufacturing Company, New York, N. Y. Filed June 1, 1888. Serial No. 275,713. (No model.)

Claim.—1. In a horizontal pulverizing-mill, the combination of an annular die, vertical pulverizing-rollers having journals on their ends, and a revolving casing or driver having driving-disks mounted thereon and engaging the journals of said rollers, substantially as described.

2. In a horizontal pulverizing-mill, the combination of an annular die, vertical pulverizing-rollers, a revolving casing or driver, revolving shafts mounted thereon, and driving-disks mounted on the ends of said shafts and engaging the journals of said rollers, substantially as described.

3. In a horizontal pulverizing-mill, the combination of the casing or pan, the annular die, the grinding or pulverizing rollers, the central revolving casing or driver, the vertical shafts and their bearings, and driving-disks upon said vertical shafts engaging said rollers at their upper and lower ends and operating to drive the same, substantially as described.

4. In a pulverizing-mill, the combination of the casing or pan, the annular die, the rollers having journals at their upper and lower ends, the revolving casing or driver formed with roller-pockets, the vertical shafts, and the driving-disks at each end thereof for operating upon the journals of said rollers, substantially as described



5. In a pulverizing-mill, the combination of an annular die, pulverizing-rollers having journals on their ends, a revolving casing or driver, and driving-disks mounted thereon and engaging said journals, the upper disks and journals being of smaller diameter than the lower ones, substantially as described.

6. In a pulverizing-mill, the combination of the casing or pan, the annular die, the rollers having journals at their upper and lower ends, the revolving casing or driver formed with roller-pockets, the vertical shafts, and the driving-disks at each end thereof, the upper driving-disks and upper journals of the rollers being of smaller diameter than the lower ones, substantially as described.

7. In a pulverizing-mill, the combination of the casing or pan formed of an inner and outer shell having an intermediate discharge passage or openings, the rollers, the annular die mounted upon the upper part of said inner shell, the perforated ring over said die, and the wedges around its periphery, substantially as described.

8. A pulverizing-mill provided with a casing or pan formed of an inner and outer shell having an intermediate discharge passage or openings, the rollers, the annular die mounted upon the upper part of said inner shell, the screen-frames and screens, and the perforated ring over said die, substantially as described.

9. In a pulverizing-mill, the combination of the casing or pan, the annular die, the rollers, and the revolving casing or driver provided with feed-directing webs having deflecting-flanges, substantially as described.

10. In a pulverizing-mill, the combination of a casing or pan, an annular die, pulverizing-rollers, and a vertical revolving casing or driver serving to propel said rollers and provided with feed-directing webs having deflecting-flanges above said die, substantially as described.

11. In a pulverizing-mill, the combination of a casing or pan, an annular die, pulverizing-rollers, and a revolving casing or driver serving to propel said rollers and provided with feed-directing webs above said die and feed-elevating devices below the same, substantially as described.

12. In a pulverizing-mill, the combination of a casing or pan having a feed-discharge passage or openings, an annular die, pulverizing-rollers, and a revolving casing or driver provided with feed-directing webs having deflecting-flanges, which are adapted to project the material against said die, substantially as described.

13. In a pulverizing-mill, the combination of a stationary two-part casing or pan having an annular passage or openings for discharging material from its lower portion, an annular die, pulverizing-rollers, and a cover having screened openings above said die and feed-elevating devices below said die, which are adapted to project the pulverized material toward said openings, substantially as described.

14. In a pulverizing-mill, the combination of an annular die, pulverizing-rollers, a stationary two-part casing or pan having an annular passage or openings between its parts for discharging material from its lower portion, and feed-elevating devices below said die, which are adapted to project the pulverized material toward said passage or opening, substantially as described.

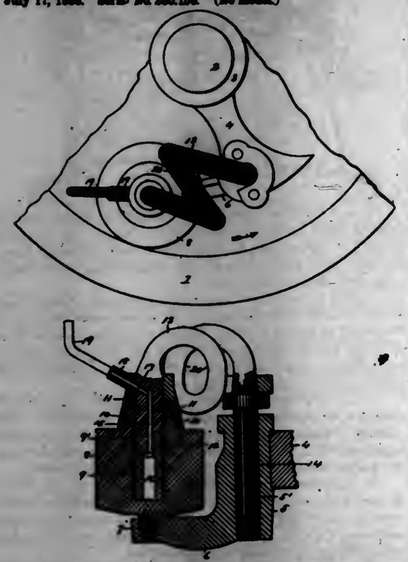
15. In a pulverizing-mill, the combination of an annular die, pul-

verizing-rollers, a stationary two-part casing or pan having an annular passage or openings between its parts for discharging material from its lower portion, the outer casing, the screen-frames above said die, and feed-elevating devices below said die, substantially as described.

16. In a pulverizing-mill, the combination of the casing or pan, the annular die, the rollers, the revolving casting or driver provided with a slotted flange at its lower end, and removable inclines or shoes fitting in said slots at their lower ends, substantially as described.

17. In a pulverizing-mill, the combination of the casing or pan and the grinding or pulverizing mechanism with the integrally-formed two-part cover and screen-frame, one of said parts being removable and the other stationary, the two-part removable casing surrounding said screen-frame, and the swinging bolts and open-topped lugs for removably securing said two-part casing, substantially as and for the purpose described.

410,758. PULVERIZING-MILL. BROWN C. GRIFFIN, Brooklyn, assignor to the Griffin Manufacturing Company, New York, N. Y. Filed July 17, 1888. Serial No. 280,153. (No model.)



Claim.—1. In a pulverizer, the combination, with an annular die and a revolving center or driver, of a roller-support secured to said revolving center or driver and provided with a universally-yielding journal-spindle, and a roller mounted upon said spindle, substantially as described.

2. In a pulverizer, the combination, with an annular die and a revolving center or driver, of a roller-support provided with a universally-yielding journal-spindle and also with a pivotal spindle arranged parallel to the axis of said revolving center or driver, the pivotal spindle being pivoted to said center or driver and the journal-spindle having a roller mounted thereon, substantially as described.

3. In a pulverizer, the combination, with an annular die and a vertical revolving center or driver provided with brackets having vertical sockets formed therein, of roller-supports provided with vertically arranged spindles at their inner and outer ends, the inner spindles being mounted in said sockets and the outer spindles provided with rollers and means for permitting a universal yield of said outer spindles, substantially as described.

4. In a pulverizer, the combination, with the annular die 1, the drive-shaft 2, the revolving center 3, the brackets 5, formed with vertical sockets 5′ and extensions 6, having the supports 7, of the roller-supports 13, provided with the universally-yielding springs 20, and with the pivotal spindles 14 and journal-spindles 12, and the rollers 8, which are formed with the central bores 9, closed at the lower ends, and which are mounted upon said journal-spindles, substantially as described.

5. In a pulverizer, the combination of the annular die 1, the revolving center or driver 3, provided with the brackets 5, having the sockets 5′ and supports 7, the roller-supports 13, provided with the pivotal spindles 14, which are mounted in said sockets, and with the universally-yielding journal-spindles 12, provided with the hoods 14, and the rollers 8, mounted upon said journal-spindles and formed with the conical necks 10, substantially as described.

6. In a pulverizer, a roller-support provided with a pivotal spindle, a journal-spindle, and intermediate spring-coils, substantially as described.

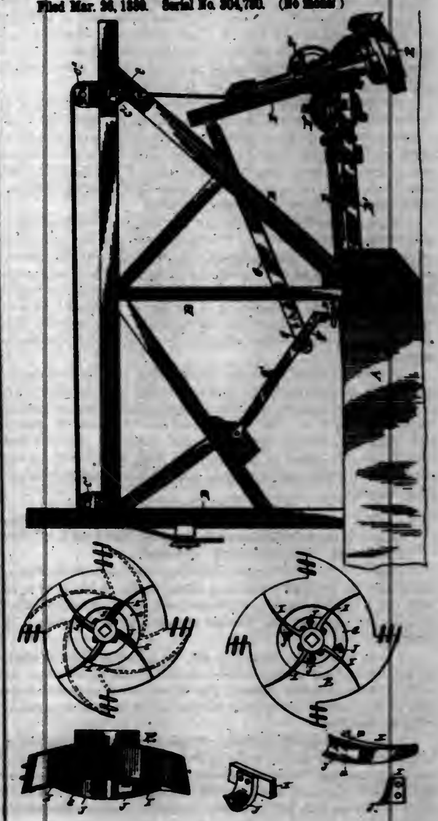
7. In a pulverizer, the combination of an annular die 1, a revolving center or driver 3, provided with vertical sockets 5′, roller-supports 13, provided with spring-coils 20, pivotal spindles 14 and journal-spindles 12, said pivotal spindles being mounted in said sockets, and rollers 8, mounted upon said journal-spindles, substantially as described.

8. In a pulverizer, the combination of the annular die 1, the revolving center or driver 3, provided with the brackets 5, having the vertical sockets 5′ and the supports 7, the roller-supports 13, provided with the spring-coils 20, the pivotal spindles 14 and the journal-spindles 12, and the rollers 8, having the central bores 9, closed at the lower ends and mounted upon said journal-spindles, substantially as described.

9. In a pulverizer, the combination of the annular die 1, the revolving center or driver 3, provided with the brackets 5, having sockets 5′ and supports 7, the roller-supports 13, formed with the spring-coils 20, the pivotal spindles 14, mounted in said sockets, and the journal-spindles 12, provided with the hoods 14, and the rollers 8, mounted upon said journal-spindles and formed with the conical necks 10 at their upper ends and with closed lower ends, substantially as described.

10. In a pulverizer, the combination of the roller-support 13, provided with the journal-spindle 12, which is formed with the axial channel 15, the enlarged chamber 16, and the lateral duct 17, the apertured hood 11, the metal pipe 18, the flexible pipe 19, and the roller 8, formed with a central closed bore 9 and a conical neck 10, substantially as described.

410,759. DREDGING-MACHINE. WILLIAM P. HARRINGTON, San Francisco, Cal., assignor to Charles Dodge, West Washington, D. C. Filed Mar. 26, 1888. Serial No. 304,760. (No model.)



Claim.—1. The combination, with a suction-pipe, an excavator jointed to the suction-pipe, and a pivoted standard by which the excavator is carried, of an arm composed of two parts jointed together attached to the top of the standard at one end and to a fixed portion of the dredge-boat at the other for regulating the inclination of the standard, as set forth.

2. The combination, with a suction-pipe, an excavator jointed to the outer end thereof, and a standard by which the excavator is carried, of an arm composed of two parts pivoted together and to the standard and dredge-boat at their outer ends, and a screw for regulating the elevation of the meeting pivoted ends of the two parts of the arm, as set forth.

3. The combination, with a suction-pipe, an excavator swung therefrom, and a pivoted standard, of a jointed arm composed of two members, one having a slot and the other a pin working therein, and an adjusting-screw attached to the end of one of the members of the arm, as set forth.

4. A rotary excavator having cutting-edges on its sides and spoil-passages leading therefrom to the suction-opening, and a central circular opening in the bottom of equal or greater area than the suction-opening above, the center of said bottom opening being beneath the center of the suction-opening.

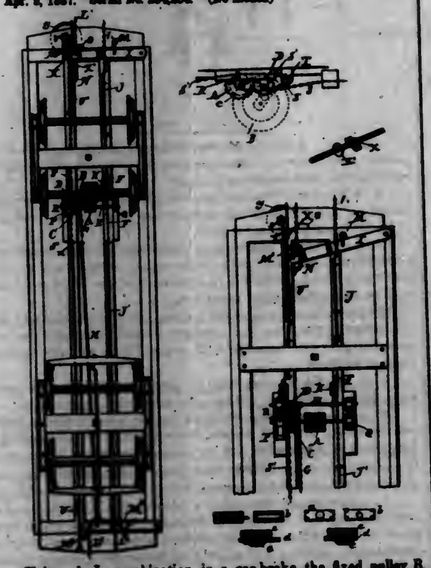
5. A rotary excavator having cutting-edges on its sides and helical passages leading inward therefrom and provided with a central opening in the bottom thereof, and cutting-arms extending over said opening, substantially as set forth.

6. A rotary excavator having cutting-edges on its sides and passages leading inward from said edges and provided with a central opening in the bottom, and cutting-arms with scrapers upon them beneath said opening, as set forth.

7. A rotary excavator having cutting-edges on its sides and passages leading inward, and having a central opening in the bottom, and cutting-arms, each having a scraper integral with itself beneath the opening, as set forth.

8. A rotary excavator having cutting-edges on its sides and passages leading inward therefrom, and having a central opening in the bottom, and radial arms having their portions which span the opening hollowed on one side and provided with a lower protruding cutting-edge, as set forth.

410,760. CAR-BRAKE. BENJAMIN KELLOGG, Peoria, Ill. Filed Apr. 9, 1887. Serial No. 234,200. (No model.)



Claim.—1. In combination, in a car-brake, the fixed pulley B, attached to car-axle, the friction-pulley A, the cog-wheels C and D, and the reel-shaft E, these parts being combined and operated substantially in the manner and for the uses herein set forth.

2. In combination, in a car-brake, the shaft-boxes P and Q, which allow the shaft passing through them to be drawn toward and away from the friction-pulley A and cog-wheel D without binding, substantially as set forth.

3. In combination, in a car-brake, the levers I I′, the hooks M M′, the stop O, and the chains L L′ L² L³, combined and operated substantially in the manner and for the uses herein set forth.

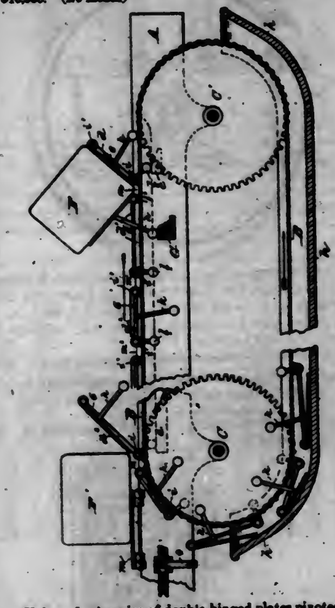
4. In combination, in a car-brake, the rods U U′, with the chains attached thereto, together with the stop X′ and the guide-block X, combined and operated substantially in the manner and for the uses herein set forth.

5. In combination, in a car-brake, the bifurcated chains S S′, connecting the rods U U′ with the axle-box P, one portion of said chain pulling over a block-pulley T, combined and operated substantially as herein set forth.

6. In combination, in a car-brake, the bifurcated chain F, connecting the rods J J′ with the reel-shaft E, one portion of said chain pulling over a block-pulley K, combined and operated substantially as herein set forth.

7. In the herein-described car-brake, the spring R, arranged to throw the friction-pulley out of gear when the brakes are released, operated substantially as herein set forth.

410,761. SOLDERING-MACHINE. ANDREW W. LIVINGSTON and GEORGE WILDEY, San Francisco, Cal. Filed May 10, 1889. Serial No. 310,395. (No model.)



Claim.—1. A series of double-hinged plates pivoted to an endless chain and to each other, each plate having a lifting device secured to it, in combination with means for automatically actuating the lifting devices, substantially as herein described.

2. A series of double-hinged plates pivoted to an endless chain and to each other, each plate having a lifting device secured to it, in combination with the trip-lugs *c* and G, for automatically actuating the lifting devices, substantially as herein described.

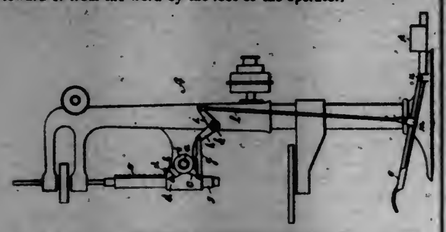
3. The single pivoted plate M, adapted to move at right angles to the line of motion of the double plates on the endless chain, and a cam by which said single plate is actuated, in combination with said double plates pivoted to said chain and adapted to deliver the can from the machine, substantially as described.

4. In a can-soldering machine, the combination, with an endless carrier for supporting the cans, of a pivoted plate adapted to move at right angles to the line of movement of the carrier and to receive the cans delivered therefrom, and means for actuating said single plate, substantially as described.

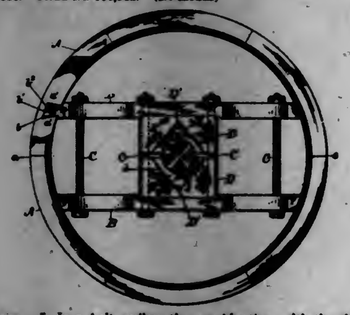
410,762. DRILLING-MACHINE. FREDERICK W. LINCOLN and DAVID A. COREY, New Bedford, Mass. Filed July 3, 1889. Serial No. 316,442. (No model.)

Claim.—In combination with the feed-piston and shaft of a drilling-machine, a toothed wheel rigidly mounted on said shaft and having a housing pivoted on said shaft, and provided with two spring-detents to engage with said toothed wheel at the will of the operator, and having a projecting arm connected by suitable mechanism

with a foot-lever, whereby the spindle of the drilling-machine is fed toward or from the work by the foot of the operator.



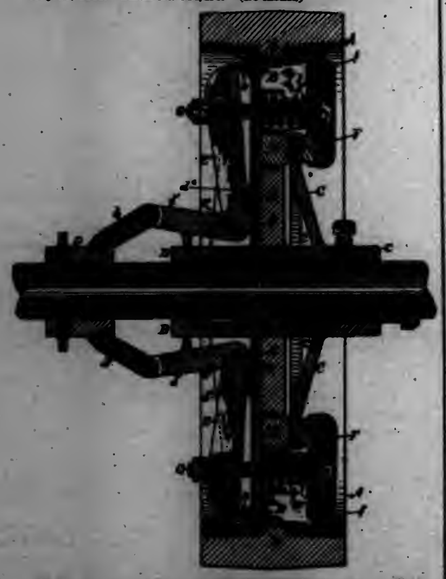
410,763. BELT-PULLEY. JOSEPH G. MOSHY, Erie, Pa. Filed Apr. 8, 1889. Serial No. 306,312. (No model.)



Claim.—1. In a belt-pulley, the combination, with the rim-sections A A, of spoke-bars B B, bolts C C C C, hub-blocks D D, having V-formed notches D' D', and V-shaped bushings E E, fitting in said notches and on the shaft S, and having kerfs or cuts *e* from the shaft toward the apex of said bushings.

2. In a belt-pulley, the combination, with the rim part A, having dovetail notches *a'*, of the spoke-arms B, having dovetail tenons *b* with kerfs *b'*, and the holes *b²* for wedge-pins within said tenon.

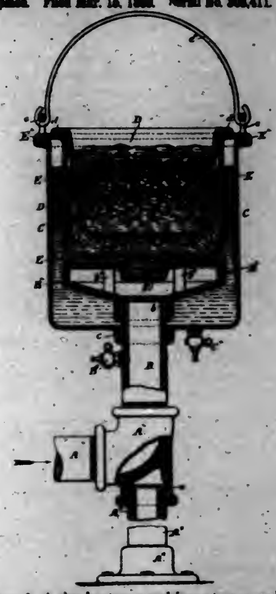
410,764. FRICTION-CLUTCH. JOSEPH G. MOSHY, Erie, Pa. Filed May 23, 1889. Serial No. 312,490. (No model.)



Claim.—1. In a friction-clutch, the combination of a pulley or wheel A B, mounted loosely upon the shaft, the clutch ring or disk C, fixed to the shaft, jaws H and H', carried by said pulley and arranged on opposite sides of said clutch-ring, the loose sleeve D on said shaft, and the system of levers *d d'* and E, and the bolt G, mounted on said pulley and serving to operate said jaws.

2. In a friction-clutch, the combination of a clutch ring or disk fixed to the shaft, a loose pulley having bearings on the shaft on each side of the clutch-ring and an opening in its web to receive said clutch-ring, clamping-jaws on opposite sides of said clutch-ring, which jaws are carried by said pulley, a sliding sleeve on said shaft, and a system of levers moved by said sleeve and carried by said pulley for operating said clamping-jaws.

410,765. GLUE-HEATER. SILAS B. MOSHER, Chicago, Ill., assignor to the Mosher Tubular Metallic Packing and Manufacturing Company, same place. Filed Mar. 15, 1889. Serial No. 303,411. (No model.)



Claim.—1. A glue-heater comprising a steam-supply pipe, a water-jacket, and a steam-cap removably secured upon said pipe within the water-jacket, substantially as set forth.

2. A glue-heater comprising a water-jacket, a steam-supply pipe extending into the same, and a steam-cap removably secured upon said pipe, substantially as set forth.

3. A glue-heater comprising a water-jacket, a steam-supply pipe extending into the same, and a steam-cap connected by a screw-joint with the pipe and provided in its top with a depression of other than circular form, substantially as set forth.

4. A glue-heater comprising a water-jacket, a steam-supply pipe extending into the same, and a steam-cap secured upon said pipe, said steam-cap provided internally with integral posts or studs, substantially as set forth.

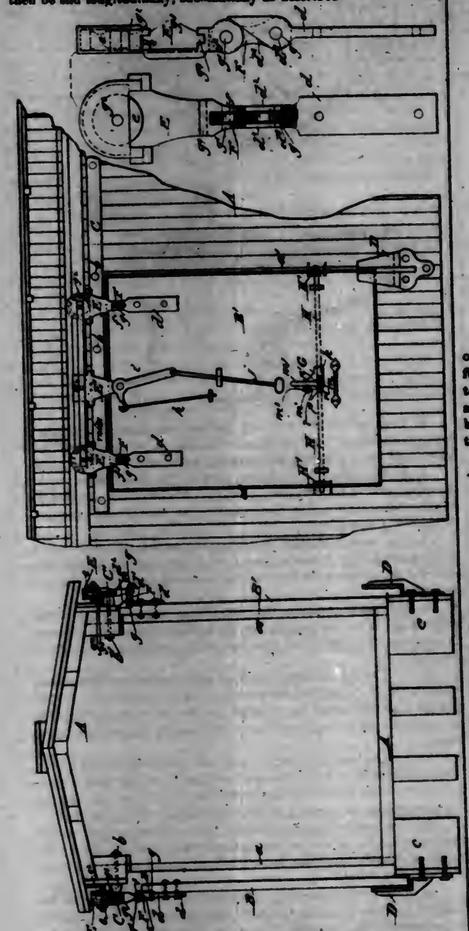
5. A glue-heater comprising an outside water-jacket, an inside water-jacket, a glue-pot, and a heater, substantially as set forth.

6. A glue-heater comprising an outside water-jacket, a steam-pipe extending into said outside water-jacket, a glue-pot having a flange near its upper edge, and an inside water-jacket resting upon the upper edge of the outside water-jacket and supporting the glue-pot by engagement with the flange thereof, substantially as set forth.

7. A glue-heater comprising a water-jacket, a steam-cap, and a steam-supply pipe secured to said steam-cap, combined with a pipe-elbow, a pipe leading from the source of steam-supply, and the said steam-supply entering said elbow, said pipe-elbow having a tubular extension, a supporting-pipe or bar, the upper end of which enters said tubular extension, and the lower end of which rests on an adjacent supporting-surface, substantially as set forth.

410,766. CAR-DOOR. JOHN H. MATHEWES, Rutland, Vt. Filed May 6, 1889. Serial No. 309,744. (No model.)

Claim.—1. The combination, with a car or other structure, the sliding door thereof, and a suspension-track, of the sliding suspension device comprising hinge-plate *d*, provided with an abutting and stop-extension portion for insuring a vertical position of the link, the housing E, and connecting-link F, pivoted directly to the hinge-plate and to the said housing, whereby the door when closed can be made to occupy a vertical position within the doorway while suspended on the track with its outer surface flush with the outer surface of the car or structure, and when it is to be opened can be bodily swung out and down beyond said outer surface, so as to stand vertically and then be slid longitudinally, substantially as described



2. A door closing from the outside provided with a hinge-plate *d*, having a bevel-surface d^3, in combination with a suspension-housing provided with an abutting end *f* and with the link F, substantially as described.

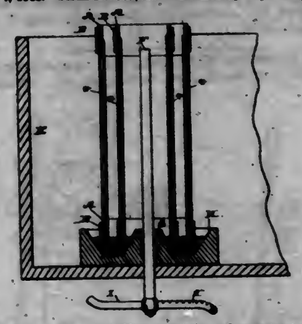
3. The combination of the jointed suspension means, consisting of the housing E, hinge-plate *d*, provided with an abutting and stop-extension portion for insuring a vertical position of the link, and connecting-link pivoted directly to the hinge-plate and to the housing, door, car-suspending track, and foot-guide, the two latter being in about the same vertical plane, substantially as described.

4. The combination, with the door having jointed suspension means, as described, of the housing E, an elbow-lever pivoted to said housing, a connecting-rod attached to the door and lever, and an operating-handle, substantially as described.

5. The sheave-housings constructed with a chamber for a sheave or roller grooved and open at one side to admit the rail and provided with a hinging end, in combination with the hinge-plate provided with an abutting and stop-extension portion for insuring a vertical position of the link, and the link F, pivoted to said housing and hinge-plate, substantially as described.

6. The combination, with the car provided with a suspension-track and a lower guide, both in about the same vertical plane, of a door provided with a hinging-plate, a link which is adapted to lie horizontally and stand vertically, and a housing which is pivoted to the link and moves on the suspension-track, substantially as and for the purpose described.

410,767. FILTER. OSBORNE PIERCE, San Francisco, Cal. Filed Mar. 7, 1888. Serial No. 266,309. (No model.)



Claim.—An improved filter consisting of an outer tank, a casting or base-piece having an annular channel with oppositely-inclined walls forming approximately an inner and outer conical surface, vertical filtering-cylinders concentric with each other and removably fitted in said channel, and a discharge-pipe passing through the center of the base-piece and inner filtering-cylinder and discharging near the top of the latter, substantially as herein described.

410,768. CULTIVATOR AND SEEDER. JOHN S. ROWELL, Beaver Dam, Wis. Filed Feb. 4, 1889. Serial No. 298,899. (No model.)

Claim.—1. The combination, with the vertically-movable bar D and a lever and ratchet mechanism at or near one end thereof for raising and lowering said bar, of an upright at or near the opposite end of the bar and a coiled spring connected at one end to the upper end of the upright and at the other end to the bar, substantially as described.

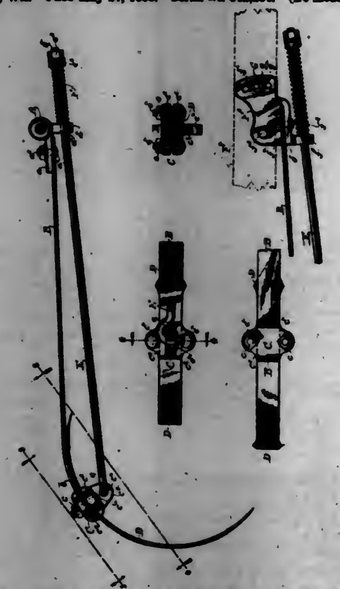
2. The combination of the bar D, mounted on laterally-extended arms D', a lever for raising and lowering the bar D, a spring arranged to exert a lifting force on said bar, and chains severally connecting the

toothed beams with the bar D and passing over the top of the bar to a point of attachment therewith, whereby when said bar D is depressed the chains are enrolled, and vice versa, and thus lengthened or shortened to an extent greater than is directly due to the actual vertical movement of the bar D, substantially as described.

3. The combination, with the toothed beam provided with an adjustable weight, of an adjustable spring arranged to lift the toothed beam, substantially as described.

4. The combination, with a drill-shoe and draft-rod, of an adjustable draft-bar K and a vertically-flexible toothed beam I', substantially as described.

410,769. SPRING CULTIVATOR-TOOTH. JOHN S. ROWELL, Beaver Dam, Wis. Filed May 27, 1889. Serial No. 312,231. (No model.)



Claim.—1. In a cultivator, a spring-tooth connected to the cultivator-beam by a flat spring-bar, one end of which bar is rigidly secured to a plate on the said beam, and a longitudinally-movable rod connected to said tooth and said plate, substantially as specified.

2. The combination, with a plate adjustably secured to the beam of a cultivator and a spring-tooth, of a flat spring-bar connecting said tooth with said plate, and a rod connected at one end to the tooth and provided on its other end with an adjustable connection with said plate, whereby a double adjustment of the cultivator-tooth with reference to the beam is possible, substantially as described.

410,770. MACHINE FOR ATTACHING TONGUES TO BUCKLES. ADOLPH SAMUEL, Buffalo, N. Y., assignor to Pratt & Letchworth, same place. Filed Apr. 12, 1888. Serial No. 307,002. (No model.)

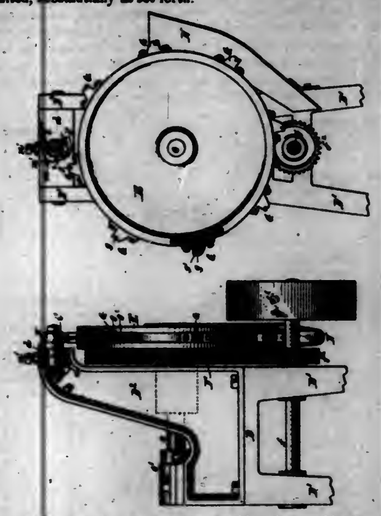
Claim.—1. In a machine for tonguing buckles, the combination, with a bending or compressing die, of a traveling die carrying the buckle and co-operating with said compressing-die, substantially as set forth.

2. In a machine for tonguing buckles, the combination, with a movable bending or compressing die, of a traveling die carrying the buckle and co-operating with said compressing-die, substantially as set forth.

3. In a machine for tonguing buckles, the combination, with an oscillating bending or compressing die, of a traveling die carrying the buckle and co-operating with the compressing-die, substantially as set forth.

4. In a buckle-tonguing machine, the combination, with a traveling or carrying die, of an oscillating compressing-die operating in conjunction with said traveling die and a spring whereby the oscillating die is returned to its normal position upon clearing the traveling die, substantially as set forth.

5. In a buckle-tonguing machine, the combination, with a traveling or carrying die, of an oscillating compressing-die operating in conjunction with said traveling die, a spring whereby the oscillating die is returned to its normal position upon clearing the traveling die, and a stop whereby the return movement of the compressing-die is limited, substantially as set forth.



6. In a machine for tonguing buckles, the combination, with a compressing-die, of a die carrying the buckle and a revolving disk to which said die is attached, substantially as set forth.

7. In a machine for tonguing buckles, the combination, with a movable bending or compressing die, of a traveling die carrying the buckle and having a seat for receiving the buckle and its tongue, substantially as set forth.

8. In a buckle-tonguing machine, the combination, with a compressing die having a bending-recess, of a traveling die co-operating with the compressing-die and having a buckle-seat, substantially as set forth.

9. In a buckle-tonguing machine, the combination, with a compressing-die, of a carrying-die having a transverse recess or depression for receiving one of the cross-bars of the buckle, substantially as set forth.

10. In a buckle-tonguing machine, the combination, with a compressing-die, of a carrying-die having a transverse recess or depression for receiving one of the cross-bars of the buckle and a longitudinal recess for receiving the tongue of the buckle, substantially as set forth.

11. In a buckle-tonguing machine, the combination, with a traveling carrying-die, of a pivoted compressing-die provided with a shoulder or projection against which the traveling die strikes and whereby the compressing-die is swung on its pivot, substantially as set forth.

12. In a buckle-tonguing machine, the combination, with a traveling carrying-die, of a compressing-die co-operating with the traveling die and made adjustable toward and from the traveling die, substantially as set forth.

13. In a buckle-tonguing machine, the combination, with the stationary frame having an elongated opening or slot, of an adjustable compressing-die mounted on an arbor clamped in said slot and a set-screw bearing against said arbor, substantially as set forth.

410,771. MACHINE FOR ATTACHING EYEBOLTS TO HAME-RINGS. ADOLPH SAMUEL, Buffalo, N. Y., assignor to Pratt & Letchworth, same place. Filed Apr. 12, 1888. Serial No. 307,003. (No model.)



Claim.—1. The combination, with the dies D D', provided with flat upper faces adapted to support a stud-blank, and a ring suspended

from said blank, of a vertically-movable follower provided with depending fingers engaging over said ring on opposite sides of the blank, substantially as set forth.

2. The combination, with the dies D D', provided with flat upper faces adapted to support a stud-blank, and a ring suspended from said blank, of a vertically-movable follower engaging over said ring on opposite sides of the blank, and mechanism whereby the inner adjacent faces of the two dies are closed against the blank, substantially as set forth.

3. The combination, with the dies D D', provided with flat upper faces adapted to support a stud-blank, and a ring suspended from said blank, of a follower engaging over said ring on opposite sides of the blank, and mechanism whereby the blank is bent between the dies by the movement of the follower, substantially as set forth.

4. The combination, with the dies D D', provided with flat upper faces adapted to support a stud-blank, and a ring suspended from said blank, of a follower engaging over said ring on opposite sides of the blank, mechanism whereby the blank is bent between the dies by the movement of the follower, and mechanism for closing the dies against the bent blank, substantially as set forth.

5. The combination, with the rectangular frame, and the dies D D', journaled in said frame, and provided with gear-wheels whereby the dies are geared together, of a rock-arm secured to the journal of one of said dies, and a spring bearing against said arm, whereby both dies are held in an open position to receive a blank, substantially as set forth.

6. The combination, with the rectangular frame C, and the dies D D', journaled in said frame, and provided with suitable gear-wheels, whereby the dies are geared together, of a rock-arm secured to the journal of one of said dies, a spring bearing against said arm for holding the dies in an open position to receive a blank between the dies, and a vertically-movable slide-rod bearing against the opposite side of said arm for compressing said spring and closing the dies against the blank, substantially as set forth.

7. The combination, with the vertical frame A, provided with a crank-shaft J and a vertically-reciprocating follower L, connected with said crank-shaft, of the dies D D', journaled in a frame arranged below the follower, gear-wheels mounted upon the journals of said dies, whereby the dies are geared together, a rock-arm *i*, mounted on the journal of one of said dies, a spring I, bearing against the arm *i*, and a vertically-movable slide-rod bearing against said arm for compressing said spring and operated by the downward movement of the follower, substantially as set forth.

8. The combination, with the vertical frame A, provided with a crank-shaft J and a cross-head K, guided in vertical ways formed on said frame and connected with said crank-shaft, and a follower L, secured to said cross-head and provided with depending fingers *l*, of a pair of rectangular dies D D', having upper flat faces and journaled in a supporting-frame arranged centrally below the follower L, gear-wheels mounted on the journal of said dies, whereby the dies are geared together, a rock-arm mounted on the journal of one of said dies and held in a horizontal position by a spring I, a vertically-movable slide-rod *m*, guided in ways secured to the frame A and resting upon the arm *i*, and a lug or bracket *n*, secured to the cross-head and engaging with the slide-rod upon the downward movement of the cross-head and follower, substantially as set forth.

9. The combination, with the rectangular frame C, provided with shoulders *g*, formed on the front and rear walls of said frame, of the dies D D', journaled in said frame between its front and rear walls, with the rear or back sides of said dies abutting against the shoulders *g*, substantially as set forth.

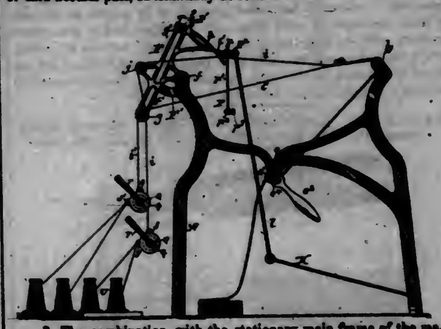
10. The combination, with the supporting-frame, of the rectangular dies D D', journaled in said frame and provided with flat upper faces, and a transverse recess or groove extending across the upper faces of said dies, substantially as set forth.

11. The combination, with the supporting-frame, of the dies D D', journaled in said frame and provided with flat upper faces, a transverse groove or recess extending across the upper faces of said dies, and a semicircular recess or groove formed on the inner or adjacent face of each die, substantially as set forth.

410,772. HAND-LOOM. JOSEPH SCHERER, Buffalo, N. Y. Filed Oct. 20, 1888. Serial No. 288,648. (No model.)

Claim.—1. The combination, with the stationary main frame of the machine, of an oscillating heddle-frame pivoted to the main frame and provided on one side of its pivot with a series of needles which carry one set of warps and at the opposite side of its pivot with a support which carries the other set of warps, substantially as set forth.

2. The combination, with the main supporting-frame of the loom, of an oscillating heddle-frame pivoted at or near its center to the main frame and provided on the front side of its pivot with a series of depending needles which carry one set of warps and on the rear side of its pivot with a roller or support carrying the other set of warps, and a guide roller or support over which the portions of the warps in rear of said needles pass, substantially as set forth.



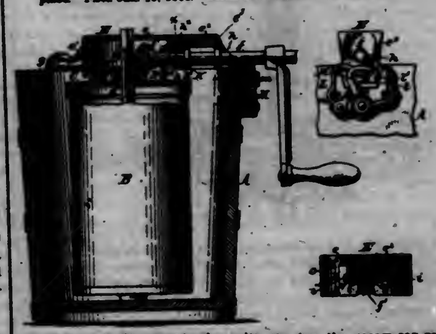
3. The combination, with the stationary main frame of the machine, of an oscillating heddle-frame pivoted to the main frame and provided on one side of its pivot with a series of needles which carry one set of warps and at the opposite side of its pivot with a support which carries the other set of warps, and a treadle whereby said heddle-frame is operated, substantially as set forth.

4. The combination, with the main supporting-frame of the loom, of an oscillating heddle-frame pivoted at or near its center to the main frame and provided on the front side of its pivot with a series of depending needles which carry one set of warps and on the rear side of its pivot with a roller or support carrying the other set of warps, a guide roller or support over which the portions of the warps in rear of said needles pass, and suspended tension-weights adapted to be applied to the depending portions of the warp-threads passing over said guide-roller and the support or roller at the rear end of the heddle-frame, substantially as set forth.

5. The combination, with the heddle-frame provided with a rectangular needle-supporting bar *g'* of the needles A, provided with rectangular loops fitting over said needle-bar, washers arranged between said loops, and wedges *n*, passing through longitudinal slots in said supporting-bar and bearing against the endmost needles or washers, substantially as set forth.

6. The combination, with the rod Q, of the clamping-disk *q*, provided with perforated lugs or ears, pins or rods passing through said ears, washers *q'*, interposed between said clamping-disks, and springs attached to the rods Q and bearing against the end clamping-disks, substantially as set forth.

410,773. ICE-CREAM FREEZER. CHARLES G. SHEPARD and PETER ADAMS, Buffalo, N. Y.; said Adams assignor to Walter J. Shepard, same place. Filed Jan. 19, 1888. Serial No. 261,212. (No model.)



Claim.—1. The combination, with the tub, the cream-can provided with a gear-rim, and the actuating-shaft provided with a wheel, of a removable top frame provided with a divided inner bearing and a solid oblique outer bearing, in which the shaft is journaled, whereby the shaft can be tilted and withdrawn from the solid outer bearing upon removing the cap of the inner bearing, substantially as set forth.

2. The combination, with the tub, the cream-can provided with a gear-rim, and the actuating-shaft provided with a gear-wheel, of a removable top frame provided with a divided inner bearing and with an outer bearing having its lower portion arranged outwardly beyond its upper portion, substantially as set forth.

3. The combination, with the tub, the cream-can, and its cover

provided with a gear-rim, of an upwardly-projecting collar secured on the cover within the marginal edge thereof and surrounding said gear-rim, a removable top frame adapted to be secured to the tub, a shaft journaled in said frame and provided with a gear-wheel meshing with the gear-rim of the cream-can and rotating the same, and a depending annular shield arranged on the under side of the top frame above and inside of the marginal edge of the cream-can and around the collar thereof, substantially as set forth.

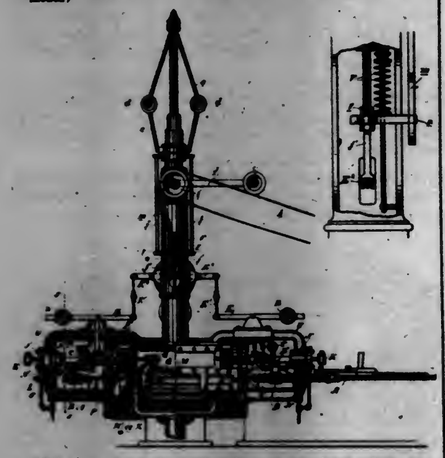
410,774. HAND GARDEN-CULTIVATOR. JESSE A. SIBSON, Goshen, Ind. Filed Mar. 13, 1889. Serial No. 303,152. (No model.)



Claim.—1. The combination, with the handle having an opening formed in one of its ends, wires B and C, having their free ends bent to form the teeth of the cultivator and their centers formed with a loop, as described, of the transverse pin G and block or wedge H, for securing the said looped portions of the wires within the opening in the handle, substantially as and for the purpose specified.

2. The combination, with the handle having an opening in one of its ends, of two wires, the free ends of which form the teeth of the cultivator, the wires being provided with loops, a wedge or block H inserted in the end of the handle and bearing against said loops, and a transverse pin passed through the handle and through the block and securing the said parts together, substantially as and for the purpose specified.

410,775. CUT-OFF-VALVE GEAR FOR ENGINES. ISAAC F. THOMPSON, San Francisco, Cal. Filed June 6, 1889. Serial No. 313,379. (No model.)



Claim.—1. In a reciprocating-piston engine, independent steam and exhaust valves at each end, a single eccentric-rod having an arm connecting it directly with the exhaust-valve stem, and an independent branch of this arm, in combination with the steam-valve rod or stem having a trigger hinged thereto, so that one end will be engaged by the independent arm from the reciprocating eccentric-rod, a wheel or shoe connected with said trigger, and an inclined or wedge-shaped foot connected with the governor and movable to or from the wheel by the action of the governor, whereby the trigger is raised and disengaged from the arm moved by the eccentric, substantially as described.

2. In a reciprocating engine having a steam-chamber with a separate slide-valve at each end independent of each other, each valve having a rod connecting with it and extending out through the end of the steam-chamber and forming a piston upon which the steam within the chest acts so as to force it outward when released and close the steam-ports, in combination with the cylinder of said engine having a separate exhaust-chamber at each end with slide-valve to each, all of said steam and exhaust valves actuated by one or more eccentric-rods, substantially as described.

3. The sliding steam-valve with its steam-actuated piston or rod, the trigger hinged to said rod outside the steam-chest, a spring by which said trigger is drawn down, an arm projecting from the eccentric-rod, so as to engage the depressed end of the trigger, a wedge-shaped foot, and a bell-crank lever, whereby the foot is advanced or retracted by the action of the governor, and a wheel or shoe connected with the trigger, so as to move upward on the wedge-shaped foot and raise the trigger and disengage it from the arm, substantially as described.

4. The combination, with steam-valve, the reciprocating rod extending outward through the end of the steam-chest, having its inner end formed to be acted upon by steam-pressure, a trigger hinged to said rod, and an arm projecting from the eccentric-rod, so as to engage said trigger, of a bell-crank lever and inclined wedge-shaped foot adapted to ride under a projection on said trigger, whereby the latter is lifted and disengaged from the actuating-arm, and the air-cushion chamber, and the piston reciprocating within said chamber and connected with the steam-valve rod, substantially as described.

5. The combination, with the sliding steam and exhaust valves of a reciprocating engine and an eccentric-rod by which they are moved, of a trigger connected with the steam-valve stem and actuated by the rod, a governor, and intermediate connecting mechanism comprising a wedge-shaped foot and projection on the trigger, whereby the trigger is lifted and disengaged from the actuating-rod and the admission of steam to the cylinder is cut off, substantially as described.

6. The combination, with the valve-actuating mechanism, of the governor, the inclined foot, the bell-crank lever, the rods and levers, as shown, and the spring V, whereby the vibrations of the governor are modified, substantially as described.

7. The bell-crank lever, the inclined tripping-foot, the governor, and rods connecting it with the bell-crank lever, in combination with the cross-bar having the pin *n*, the pulley *k*, the lever *j*, and rod *m*, having its lower end slotted, substantially as herein described.

410,776. GRAIN-SEPARATOR. HERMIAN G. THIPLENT, Orland, Cal. Filed May 15, 1889. Serial No. 310,998. (No model.)



Claim.—1. A single fan-case and fan having the discharge-passages F and H, in combination with the carriers A and C, the fingers I and J, arranged with relation to each other, as shown, to receive an air-blast from the passage H, the inclined board K, and the oscillating screen G, substantially as herein described.

2. The improvement in separators for threshing-machines, consisting in the combination, with the carriers A and C and the return-board L, of the double series of fingers I and J, arranged with relation to each other and the carriers, as shown, an oscillating screen G, and the inclined board K, together with fan, and the fan-case having the blast-openings F and H discharging independently through the screen and the fingers, as herein described.

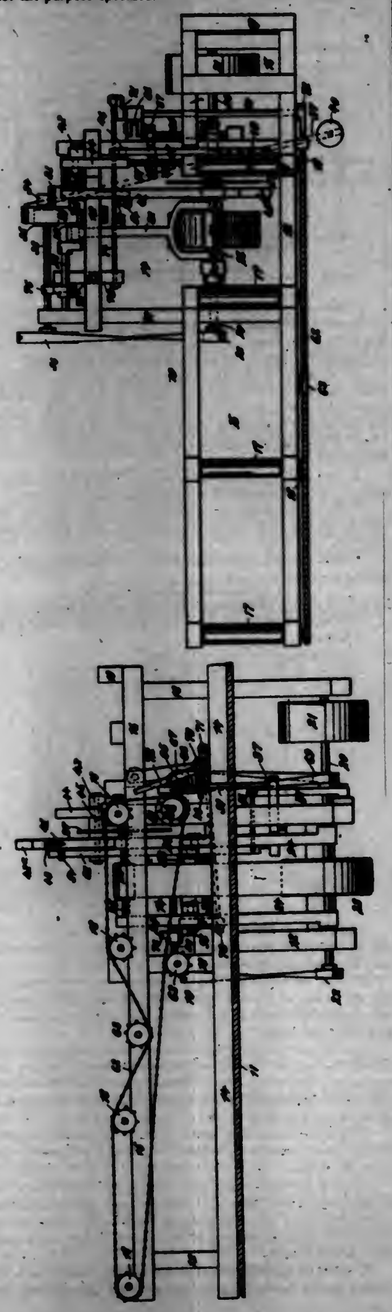
3. The single independent screen having its central portion suspended upon links N, and an eccentric or crank O, connected with one end of the screen, substantially as herein described.

4. The stationary inclined grain-board M, arranged beneath the screen and extending between the auger-cases P and P', as shown, the independent screen G, having its central portion suspended by links or hangers and the end connected with an eccentric, whereby a rotary motion is imparted to the opposite ends of the screen and a horizontal swinging motion to the central portion, substantially as herein described.

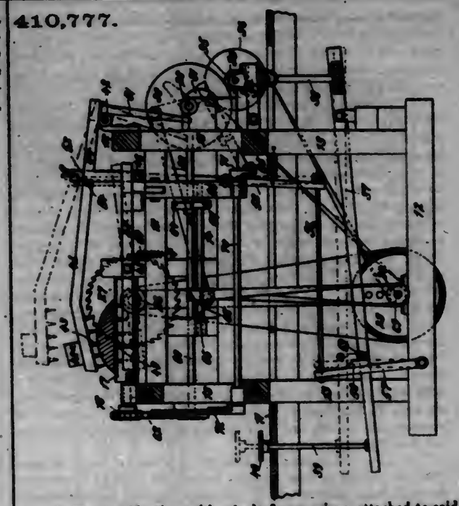
5. A grain-cleaning device consisting of a centrally-suspended screen, a crank connected with one end, a screen-bottom with segmental downwardly-bent tongues cut in its surface, and a fixed inclined grain-board beneath, an inclined chute discharging upon the screen, a fan and a fan-casing with blast-openings above and below the chute, and superposed straw-separating fingers fixed above and behind the upper blast-opening, so that both receive the single blast, substantially as herein described.

410,777. SLAB-SAWING MACHINE. DAVID S. ARNOT, Olean, N. Y. Filed Oct. 18, 1888. Serial No. 288,488. (No model.)

Claim.—1. The combination, with a body-frame, wings attached to the said frame, and carrying-rollers journaled in said wings, of a pivoted frame, a shaft journaled in the same, carrying a saw, a crank-shaft parallel with the saw-shaft, a pitman connecting the saw-frame and crank-shaft, an upper and lower toothed dog fulcrumed upon the body-frame, and means, substantially as shown and described, for rotating the crank-shaft and actuating the dogs from said crank-shaft, as and for the purpose specified.



410,777.



2. The combination, with a body-frame, wings attached to said frame, carrying-rollers journaled in said wings, a pivoted frame, and a shaft journaled in the pivoted frame, carrying a saw, of a crank-shaft parallel with the saw-shaft, a pitman connecting the saw-frame and crank-shaft, an upper toothed dog fulcrumed upon the body-frame, provided with a finger at the extremity, a lower toothed dog actuated by the upper dog, and an essentially hooked-shaped cam secured to the crank-shaft capable of contact with the said finger, substantially as shown and described.

3. The combination, with the body-frame and the drive-shaft, a rocking frame, a shaft journaled in the rocking frame, carrying a saw, a crank-shaft parallel with the saw-shaft, provided with a friction-roller, and a pitman connecting the crank-shaft and rocking frame, of a shaft parallel with and beneath the crank-shaft, said shaft journaled at one end in a fixed bearing and in a swinging bearing at its other end, provided with a friction-roller aligning the friction-roller of the crank-shaft, said shaft belted to the drive-shaft, a lever fulcrumed in the body-frame, and a link connecting the swinging bearing and the lever, all arranged substantially as and for the purpose described.

4. The combination, with a body-frame and the drive-shaft thereof, a rocking frame, a shaft journaled in the rocking frame, carrying a saw, a crank-shaft parallel with the saw-shaft provided with a friction-roller and a cam, and an adjustable shaft beneath the crank-shaft belted to the drive-shaft provided with a friction-roller aligning the friction-roller of the crank-shaft, of a lever linked to the adjustable shaft, an upper dog fulcrumed upon the body-frame provided with a downwardly-projecting finger, and a lower dog actuated from the upper dog, substantially as shown and described.

5. The combination, with a body-frame and the drive-shaft thereof, a saw-frame rocking on the drive-shaft, a crank-shaft connected with the rocking frame, an adjustable shaft parallel with the crank-shaft, having frictional contact therewith, and a lever controlling the adjustable shaft, of a cam secured to the crank-shaft, an upper and lower dog actuated by said cam, and a latch-bar controlling the dogs and connected with the said lever, substantially as shown and described.

6. The combination, with a body-frame and the drive-shaft thereof, wings projected from the body-frame, carrying-rollers journaled in said wings, a saw-frame rocking upon the drive-shaft, a crank-shaft connected with the saw-frame, an adjustable shaft having frictional contact with the crank-shaft, and a foot-lever controlling the adjustable shaft, of a cam secured to the crank-shaft, upper and lower dogs actuated by said cam, a latch-bar controlling the dogs and connected with the said lever, and means for actuating the carrying-rollers, substantially as shown and described, whereby the material is fed to the saw, the saw automatically fed to the material, and the material held from binding while being cut, as set forth.

7. The combination, with a body-frame and the drive-shaft thereof, wings projected from the body-frame, carrying-rollers journaled in said wings, a saw-frame rocking upon the drive-shaft, a crank-shaft connected with the saw-frame and provided with a fixed finger, and a connection between the crank-shaft and drive-shaft, substantially as described, of a shaft 60 at a right angle to the crank-shaft, an adjustable shaft 65 parallel with the shaft 60, having

frictional contact therewith, a chain belt connecting shaft 60 and the carrying-rollers of the wings, an adjusting-shaft 70, provided with a crank-arm 71, a lever 73, engaging the finger of the crank-shaft, and a rod 74, connecting the lever and adjusting-shaft, all combined for operation substantially as shown and described.

8. In a slab-sawing machine, the combination, with the crank-shaft 28, journaled on the frame, the cam 31, mounted thereon, the pivotal frame having a saw journaled therein, and a pitman-connection between crank-shaft and saw-frame, of the dog 41, pivotally secured to the frame, its forward end projected over the slab to be cut and having at said end teeth 43, for engaging the slab, pin 54, projected laterally from the dog, and a finger 51, depending therefrom, adapted to engage the cam 31, the pivoted dog 47, having teeth 49, adapted to engage the lower surface of the slab, the angle-arm 44, having the pin 46, for engaging the dog 47, the latch-lever 52, for engaging the pin 54, a lever 57, having a lug 58, a rod 56, connecting said lever and the latch-lever 52, and the lever 37, having a pin 59, for engaging the lug 58, all arranged substantially as and for the purpose described.

9. In a slab-sawing machine, the combination, with the main shaft, the rocking frame 24, pivoted upon said shaft, a saw journaled in said frame, the crank-shaft 28, having a friction-pulley 30, and a pitman 32, connecting the saw-frame and crank-shaft, of the shaft 33, having a fixed bearing at one end and a swinging bearing 34 at its opposite end, the lever 37, fulcrumed in the main frame, and a link-connection 38 between said bearing and lever, all arranged substantially as shown and described.

10. In a slab-sawing machine, the combination, with the main frame, the carrying-rollers mounted thereon, the shaft 60, journaled in the main frame and geared with the carrying-rollers, and the friction-pulley 64, mounted on the said shaft, of the shaft 65, the friction-pulley 67, mounted thereon, the beam 66, pivoted to the main frame and carrying one end of the shaft 65, the shaft 70, journaled in the main frame, having a crank-arm 71 and a handle 72, the shaft 28, provided with a cam 76, the lever 73, adapted to engage the cam 76, and a rod connecting the lever 73 and crank-arm 71, all arranged substantially as and for the purpose described.

410,778. HAND-EXERCISER. GEORGE H. BIDWELL, New York, N.Y.

Filed Mar. 30, 1889. Serial No. 305,354. (No model.)

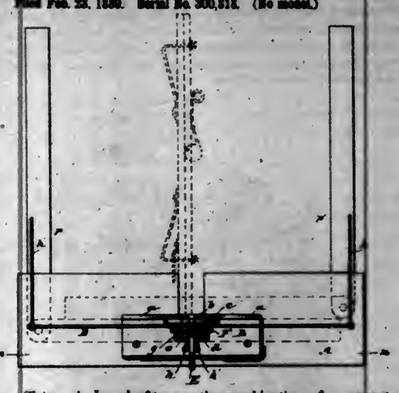


Claim.—1. In a hand-exercising attachment, the combination, with a support provided with a snap-hook, of a series of elastic bands provided with rings, a cap, and a means for connecting the cap with the rings of the bands, substantially as described.

2. In a hand-exercising attachment, the combination, with a stirrup, of a snap-hook connected therewith, an elastic band provided with rings arranged for engagement with the snap-hook, a padded cross-bar connected to the band, and an elastic band connected with the cross-bar, substantially as described.

410,779. LEAF-TURNER. CYRIL P. BROWN, Spring Lake, Mich.

Filed Feb. 23, 1889. Serial No. 300,818. (No model.)



Claim.—1. In a leaf-turner, the combination of a support and guide, a series of arms placed on the support and guide, a spring-pressed key-lever, and a double hook carried by the key-lever and adapted to engage the arms in succession, substantially as specified.

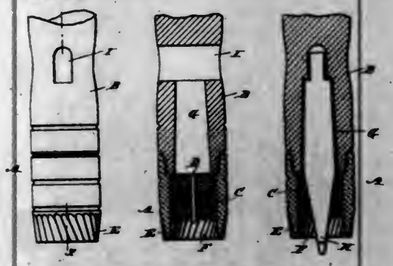
2. In a leaf-turner, the combination of the supporting-plate B, disk *c*, the grooved U-shaped guide attached to the said disk, the arms D, provided with L-shaped loops *g*, the key-lever E, the springs *k k'*, the curved arm F, pivoted to the key-lever E and provided with hooks *l l'* and projections *m m'*, and the double-acting spring *n*, substantially as specified.

3. In a leaf-turner, the combination of the clamping-bars *q q'*, the springs *t*, wires *r*, and eccentric H, substantially as specified.

4. In a leaf-turner, the combination of the clamp G, provided with the dowel *u* and wire *w*, and the back piece A, substantially as specified.

5. In a leaf-turner, the combination, with the back piece A, of the folding arms *p p'*, substantially as specified.

410,780. DEVICE FOR REMOVING BROKEN SCREWS, &c. MAURICE CARR, Weatherford, Tex. Filed May 28, 1889. Serial No. 312,426. (No model.)



Claim.—1. A bit for extracting broken screws, &c., provided with an internal spiral cutting-thread and external cutters, substantially as shown and described.

2. A bit for extracting broken screws, &c., comprising a hollow cylinder having an internal spiral cutting-thread and oblique cutters formed externally on one end of the said cylinder, substantially as shown and described.

3. A bit for extracting broken screws, &c., comprising a hollow cylinder having an internal spiral cutting-thread, oblique cutters formed externally on one end of the said cylinder, and beveled oblique cutters formed internally on one end of the said cylinder, substantially as shown and described.

4. A bit for extracting broken screws, &c., formed of a hollow cylinder having an internal spiral cutting-thread, and grooves formed across the ridges of said thread, substantially as shown and described.

5. A bit for extracting broken screws, &c., comprising a hollow cylinder having internal spiral cutting-thread, and grooves formed across the ridges of the said thread, and beveled oblique cutters formed externally on one end of the said cylinder, substantially as shown and described.

6. A bit for extracting broken screws, &c., comprising a hollow cylinder having internal spiral cutting-thread, and grooves formed across the ridges of the said thread, beveled oblique cutters formed externally on one end of the said cylinder, and beveled oblique cutters formed internally on one end of the said cylinder, substantially as shown and described.

7. The combination, with a shank, of a bit held on the said shank and comprising a hollow cylinder having internal spiral cutting-thread, and grooves formed across the ridges of the said thread, and beveled oblique cutters formed externally on one end of the said cylinder, substantially as shown and described.

8. The combination, with a shank, of a bit held on the said shank and comprising a hollow cylinder having an internal spiral cutting-thread, and grooves formed across the ridges of the said thread, beveled oblique cutters formed externally on one end of the said cylinder, and a drill held in a socket on the said shank and projecting below the end of the said bit, substantially as shown and described.

410,781. HORSESHOE. WILLIAM R. GARMONT, Catford, London, County of Kent, England. Filed July 24, 1888. Serial No. 280,900. (No model.) Patented in England July 28, 1886, No. 9,717.

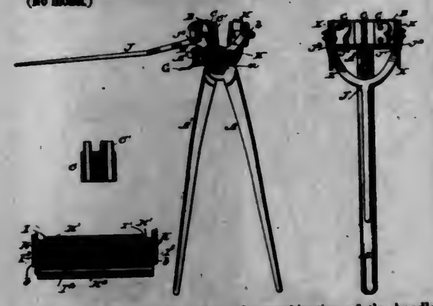


Claim.—1. In horseshoes, the combination, with the shoe having a recess upon its under side, of an elastic pad or cushion fitting and seated in said recess, and resilient pins or wires embedded in and projecting from said pad, substantially as set forth.

2. In horseshoes, the combination, with the shoe having a recess upon its under side, of an elastic pad or cushion fitting and seated in said recess, and bent resilient pins or wires embedded in and projecting from said pad, substantially as set forth.

3. The combination, with the shoe recessed upon its under side, of an elastic pad or cushion in the upper part of said recess, a metallic plate beneath said cushion, a second cushion beneath said plate, and resilient pins embedded in the second cushion projecting therefrom and abutting at their upper or inner ends against said plate, substantially as set forth.

410,782. LIVE-STOCK MARKER. ANDREW CARTER, Argo, and ANDREW JACOBSEN, Omaha, Nebr. Filed Apr. 12, 1888. Serial No. 270,496. (No model.)



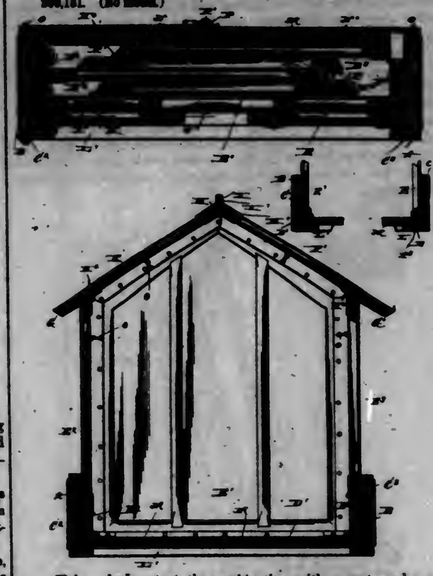
Claim.—1. In a stock-marker, the combination of the handle having a rectangular frame at its end, the shouldered blocks formed with the cutting-dies and the bottom recess, and the spring-actuated locking-plate, substantially as set forth.

2. In a stock-marker, the combination of the handle having the rectangular frame at its end and the cylindrical casing, the shouldered cutting-die blocks having the bottom recess, the locking-plate having the sleeve D', the spiral spring, and the hinged thumb-piece connected by the rod to the locking-plate, substantially as set forth.

3. In a stock-marker, the combination, with a handle having cutting-dies at its upper end, of a handle having the frame H at its upper end, and the block I, formed with the end recesses and the longitudinal rear recess and adapted to fit in said frame, substantially as set forth.

4. In a stock-marker, the combination, with the pivoted handle A', carrying the block at its end, and the pivoted handle A, having at its end the frame B, containing the removable cutting-dies and formed with the ears *b*, of the curved pivoted S-shaped links K, the pivoted lever J, having the bifurcated upper end formed with the arms J' and J², and the pivots J³, passing through the ears *b b* and both arms J' J², substantially as set forth.

410,788. TENT. WILLIAM CRAIG, Wilkes-Barre, Pa., assignor of one-half to George Shalley, same place. Filed Feb. 8, 1888. Serial No. 263,181. (No model.)



Claim.—1. In a tent, the combination, with a rectangular casing, the front, rear, and side walls of which are provided on their inner sides with steps of gradually-increasing height, of the wall-frames hinged to said steps and adapted to fold within said casing, substantially as set forth.

2. In a tent, the combination, with a rectangular casing, of the wall-frames hinged and adapted to fold within said casing, the front and rear walls being provided with gable tops, and the roof-frames hinged to the upper edges of the side walls and adapted to rest upon the tops of the front and rear frames, substantially as set forth.

3. The combination of the casing, the hinged wall-frames, and the roof-frames hinged to the upper edges of the side-wall frames and provided along their adjoining edges with ridge-plates bent so as to form, respectively, a groove and a flange, combined to form a water-tight lock-joint, substantially as set forth.

4. The combination of the casing, the hinged side walls, the roof-frames hinged to the upper edges of the latter and projecting so as to form eaves, and the ridge-plates along the adjoining edges of the roof-frames, bent so as to form, respectively, a groove and a flange, combining to form a water-tight lock-joint, as set forth.

5. In a tent, the combination, with the rectangular frame, of the wall-frames hinged and adapted to fold therein, the front frame being provided with a door, and the front wall of the casing having a recess corresponding with said door, substantially as set forth.

6. The combination of the rectangular casing, the frames hinged to steps upon the inner sides of the walls thereof, cleats upon the inner sides of the steps secured upon the front and rear walls of said casing, and floor-sections adjustable upon said cleats, substantially as set forth.

7. The combination of the rectangular casing having the floor-supporting cleats, the wall-frames hinged and adapted to fold within said casing, the roof-frames hinged to the side-wall frames and having interlocking ridge-plates, the floor-sections, and hooks and staples along the edges of the wall and roof frames, substantially as set forth.

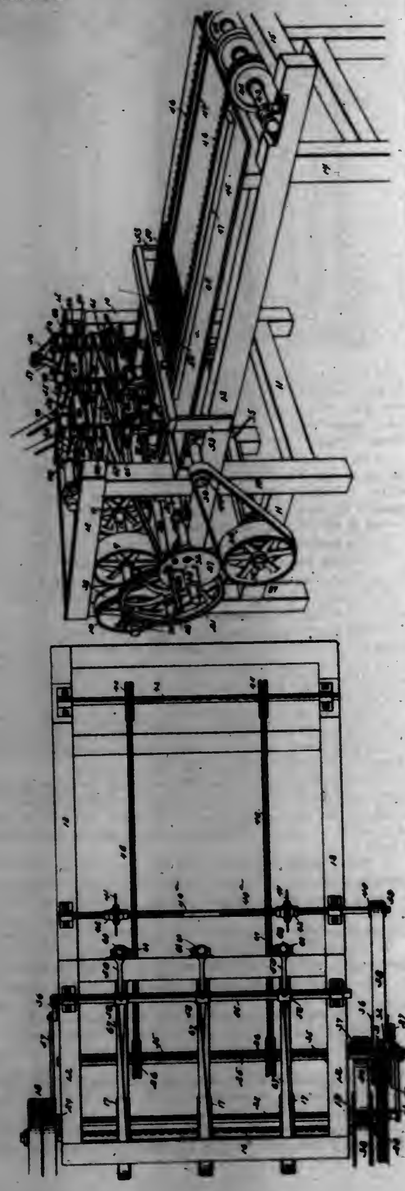
8. The combination of the casing having staples at its sides, the frames hinged and adapted to fold within said casing, the floor-sections adapted to be packed in the top of the casing, and the straps or keepers adapted to engage the staples in the sides of the casing and having slot and staple, whereby they may be connected so as to secure the tent when folded within its casing, substantially as set forth.

410,784. MACHINE FOR BORING AND TRIMMING SLATE. JOHN COLVILLE, Brunswick, Ga. Filed Dec. 31, 1888. Serial No. 295,036. (No model.)

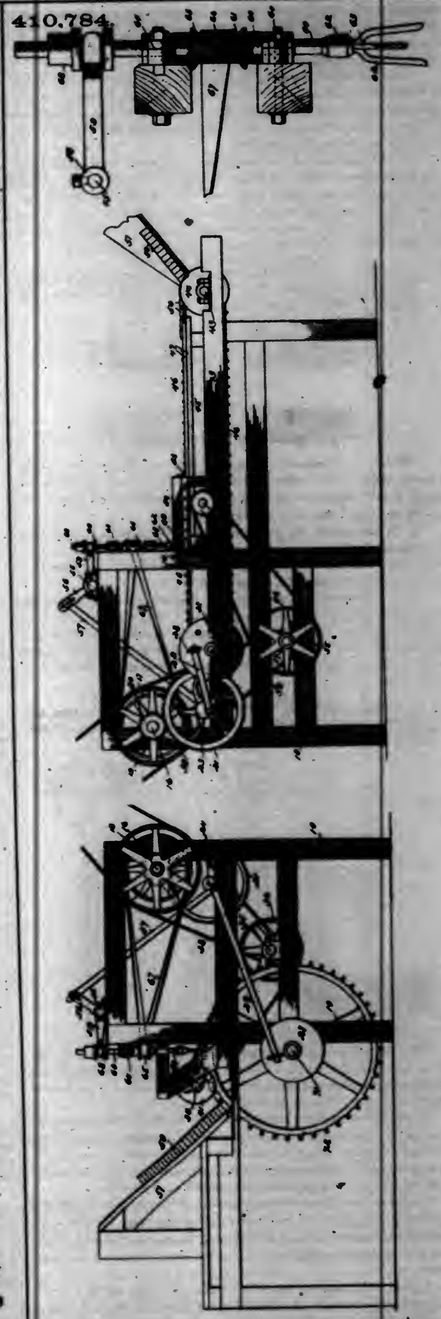
Claim.—1. The combination, with a feed mechanism, of a series of bit-stocks, a rock-shaft carrying bifurcated arms embracing the

bit-stocks, gage-bars attached to the said arms at the upper end, extending parallel with the bit-stocks and having a forked lower end, a shaft carrying the feed mechanism, and a drive-shaft provided with cranks adapted to alternately actuate the rock-shaft and the feed-shaft, substantially as shown and described.

2. The combination, with a drive-shaft provided with cranks, one at each end, a feed-shaft, and a carrying mechanism attached to the said feed-shaft, of a rock-shaft, bit-stocks connected with the rock-shaft, a lever-arm attached to one end of the said rock-shaft, a disk loosely mounted upon the feed-shaft carrying dogs, ratchet-wheels secured to the said feed-shaft having contact with the said dogs, and a pitman-connection between the respective cranks of the drive-shaft and the disk and lever-arm of the rock-shaft, substantially as shown and described.



410,784.



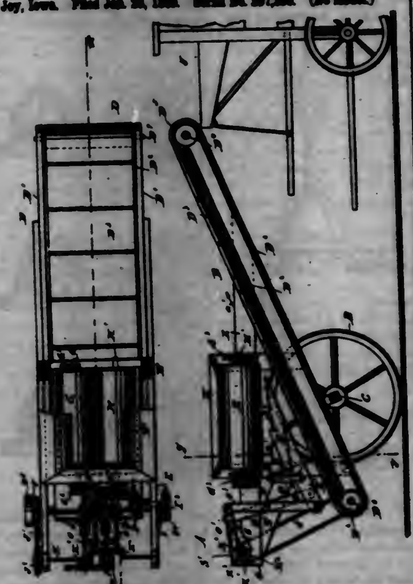
3. The combination, with a drive-shaft provided with cranks, one at each end, a feed-shaft, and a feed mechanism carried by said shaft, of a rock-shaft provided with a lever-arm at one end, bit-stocks attached to the rock-shaft, a slotted disk loosely mounted upon the feed-shaft carrying spring-actuated dogs, ratchet-wheels secured to

the said feed-shaft for contact with the said dogs, a pitman adjustably connecting one crank of the drive-shaft and the slotted disk, and a second pitman adjustably connecting the opposite crank of the drive-shaft and the lever-arm of the rock-shaft, all combined for operation substantially as shown and described.

4. The combination, with a feed mechanism, a series of bit-stocks having a pulley splined thereon, a rock-shaft connected with the bit-stocks, and the main drive-shaft belted to said pulleys, of a shaft carrying a feed mechanism, a second drive-shaft driven from the main shaft and provided with cranks adapted to alternately actuate the rock-shaft and the feed-shaft, a threaded saw-shaft in advance of the drill-stocks, and saws laterally adjustable upon the latter shaft, substantially as shown and described.

5. The combination, with a feed mechanism, substantially as described, a rock-shaft, a series of clutch-arms projected from the rock-shaft, bit-stocks having a pulley splined thereon and embraced by the said clutch-arms, and a gage-rod attached to the extremity of the clutch-arms, provided with a forked lower end, of a main shaft belted to the pulleys of the bit-stocks, a shaft carrying the feed mechanism, a second drive-shaft driven from the main shaft, provided with cranks adapted to alternately actuate the rock-shaft and the feed-shaft, a saw-shaft in advance of the bit-stocks, and saws laterally adjustable upon the latter shaft, all combined for operation, as and for the purpose specified.

410,785. BAND-CUTTER AND FEEDER. HENRY C. COOK, Mount Joy, Iowa. Filed Jan. 23, 1888. Serial No. 297,288. (No model.)



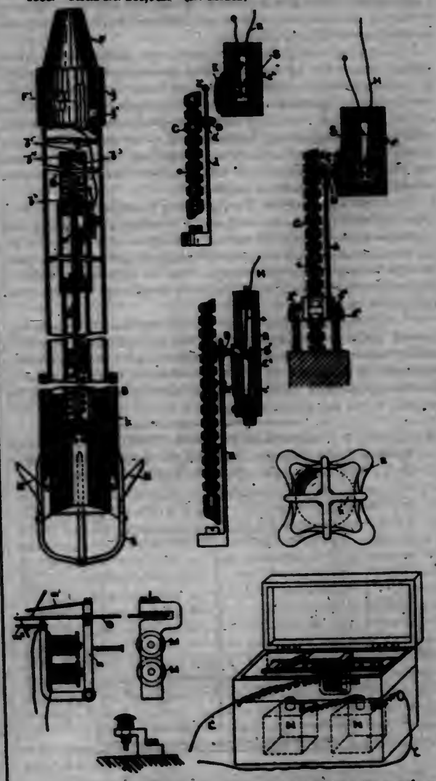
Claim.—1. In a band-cutter and feeder, the combination, with feed-rollers, of shakers suspended under the rollers, knives suspended between the shakers, and means for alternately swinging the shakers and knives backward and forward, substantially as herein shown and described.

2. In a band-cutter and feeder, the combination, with feed-rollers, of tapered shakers having their upper faces notched suspended under the rollers, knives having knife-edged teeth suspended between the shakers, and means for alternately moving the shakers and knives backward and forward, substantially as described.

3. In a band-cutter and feeder, the combination, with a supporting-frame and feed-rollers mounted therein, of a crank-shaft journaled in the frame at right angles to the feed-rollers, shakers suspended under the feed-rollers, knives also suspended under the said rollers between the shakers, pivoted levers having their lower ends connected to the shakers and knives, and links connecting the upper ends of the levers with the cranks of the said shaft, substantially as herein shown and described.

4. In a band-cutter and feeder, the combination, with an elevator and feed-rollers journaled above the elevator, of shakers suspended between the rollers and elevator, knives suspended between the shakers, a crank-shaft in front of the rollers, pivoted levers having their lower ends connected to the shakers and knives, links connecting the levers with the crank-shaft, and means for operating the crank-shaft and feed-rollers from the elevator, substantially as herein shown and described.

410,786. ELECTRIC REGISTERING DEEP-SEA SOUNDER. ALFRED J. COOPER and BENJAMIN F. WHEELL, London, England. Filed Oct. 24, 1882. Serial No. 208,062. (No model.)



Claim.—1. In a registering deep-sea sounder, the submerged portion having a spring-pressed piston in communication with the sea and moved by hydrostatic pressure and an electrical make-and-break device contained in a special sealed or water-tight chamber operated by the upward movement of the serrated rod of said piston against an elastically-supported sliding bead opposite to said electrical contacts, the said bead falling out of position on return-stroke, in combination with an upper portion provided with electrical registering mechanism fitted with an electro-magnet making a registering-pulsation for every make and break in the current from the submerged portion of the sounder, and with electrical conductors connecting said make-and-break device with the said registering mechanism, substantially as hereinbefore specified.

2. In a submerged portion of a registering deep-sea sounder, the combination of a spring-pressed piston moved by hydrostatic pressure and an electrical make-and-break device consisting of an indented or serrated stem of the said piston, producing on the upward stroke intermittent pressure through an elastically-supported sliding bead upon spring-electrical contact-points inclosed in a sealed or water-tight chamber, the bead falling out of operation on the return-stroke, substantially as hereinbefore specified.

3. In a submerged portion of a registering deep-sea sounder, the combination of a hydrostatically-moved piston, spring-pressed or pulled by two springs, one re-enforcing the other during the travel, having a piston-rod grooved at suitable intervals, with a bead supported and sliding on an elastic rod and pressing upon the said piston-rod, the upward movement of the piston raising the said bead to the highest position on the rod, and thus producing intermittent pressure upon the electrical contacts within an adjoining sealed or water-tight

chamber, the said bead falling out of operation on the return-stroke, substantially as and for the purposes described.

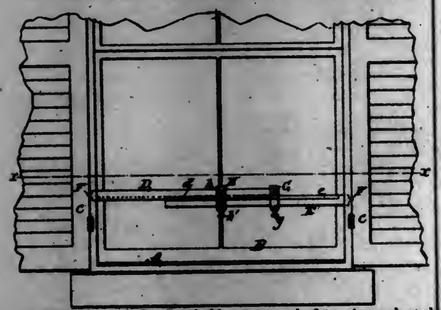
4. In the submerged portion of a registering deep-sea sounder, the combination of a cap to which the connecting-wires are attached, the cap being secured to the case by a locking bayonet-joint, and an internal projecting plunger making electrical contact with the continued internal insulated wire, the said plunger being surrounded by a cup-leather working in a chamber of insulating material to prevent contact of the sea-water with the said insulated internal current, substantially as hereinbefore specified.

5. In a registering deep-sea sounder, the combination of a submerged portion having a spring-pressed piston moved by hydrostatic pressure operating an electrical make-and-break device, a winch provided with one specially-insulated bearing conducting an insulated current, and wires connecting said submerged portion and said winch with electrical registering mechanism, so as to maintain complete circuit between the said sounder and battery and registering mechanism while the connecting-wire is being unrolled from the said winch, substantially as hereinbefore specified.

6. In the upper portion of a registering deep-sea sounder, an electrical registering mechanism comprising a sliding card provided with a suitable scale whereon the register of depth is maintained by it being fed uniformly forward by an electro-magnet and driving-pin operated by the said intermittent current from the submerged portion of the sounder, and a punch which regulates the distance traveled by the said sliding card.

7. In a registering deep-sea sounder, the combination of the spring-pressed piston in communication with the sea and moved by hydrostatic pressure, serrations carried by said piston, and an electrical make-and-break device contained in a closed chamber and having one of its contacts operated by said serrations as the piston moves under the pressure of the sea, substantially as set forth.

410,787. CLOTHES-LINE HOLDER FOR WINDOWS. HENRY A. DEHMAN, Newburg, assignor to himself and Samuel Dunlap, Brooklyn, N. Y. Filed Aug. 9, 1888. Serial No. 282,262. (No model.)



Claim.—1. A clothes-line holder composed of two bars adapted to slide upon each other and carrying a hook adapted to receive the clothes-line pulley, a clamp for locking the bars when extended, and the spars F, attached to the free ends of the bars to prevent the displacement of the same, substantially as shown and described.

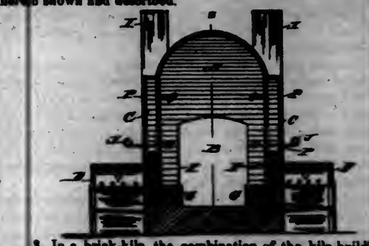
2. The combination, with two bars sliding over each other, of a locking-clamp secured to one bar and working over the other to lock the same when in position, and a clamp working over both bars and carrying a hook for attachment of the clothes-line pulley, substantially as shown and described.

3. The combination, with bar E, provided with a tongue *e*, of the bar D, having a groove *d* to receive the tongue *e*, the clamp G, and the clamp H, provided with a hook A, substantially as shown and described.

410,788. BRICK-KILN. SIMON DEWEESE, Veris, Mo. Filed Jan. 22, 1889. Serial No. 297,141. (No model.)

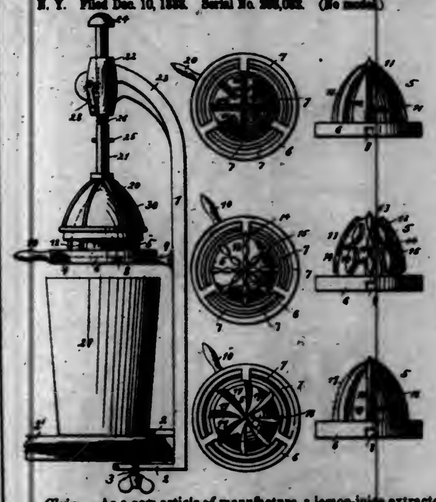
Claim.—1. A brick-kiln provided in its side walls with a series of combustion-chambers having channels leading therefrom into the interior of the kiln above the floor thereof, and with a series of chimneys between the combustion-chambers and communicating with the interior of the kiln at or near the bottom, in combination with a series of furnaces on the outside of the kiln, each furnace communicating with a combustion-chamber, substantially as described.

2. A brick-kiln provided in its side walls with chambers C, combustion-chambers F, having channels G leading therefrom into the interior of the kiln, along the floor of the same, and a series of chimneys I between the combustion-chambers, provided with dampers J and communicating with the interior of the kiln just above the floor, as at H, in combination with the furnace D outside of the kiln, and each communicating with a combustion-chamber, substantially as herein shown and described.



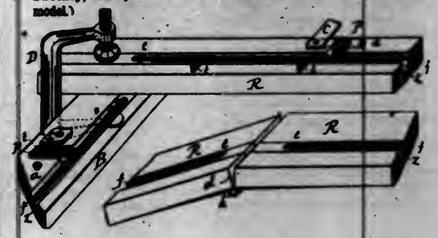
3. In a brick-kiln, the combination of the kiln-building A, provided in its side walls with the chambers C, the combustion-chambers F, having channels G leading into the interior of the kiln, the chimneys I between the combustion-chambers, provided with the dampers J and communicating with the interior of the kiln at H, the furnaces D on the outside of the kiln and communicating with the combustion-chambers, and the auxiliary chimneys K at the side of the chimneys I, communicating with the interior of the kiln through the top and provided with dampers L, substantially as herein shown and described.

410,789. LEMON-JUICE EXTRACTOR. JOHN L. RAMLEY, New York, N. Y. Filed Dec. 10, 1888. Serial No. 293,082. (No model.)



Claim.—As a new article of manufacture, a lemon-juice extractor consisting of a standard with a bracket extending laterally from the standard to support an abrading-cone, and a sleeve at the upper end of the standard with a pinion and crank-handle, the pinion projecting into the bore of the sleeve, a rotary shaft mounted in the sleeve, vertically movable therein, and formed with a circular rack meshing with the pinion, and a lemon-holder mounted on the lower end of the rotary shaft, which may be raised and lowered by means of the circular rack and pinion and rotated with the rotary shaft to disintegrate the pulp of a lemon and extract the juice, substantially as shown and described.

410,790. DEVICE FOR STRETCHING AND DRYING LACE CURTAINS. DAVID RASEMAS, Detroit, Mich., assignor of one-half to Frank Sweeney, same place. Filed June 17, 1889. Serial No. 314,617. (No model.)



Claim.—1. A frame consisting of crossing rails, and means for locking the rails at the crossing points, said rails having a channel in their upper faces and a pocket communicating therewith, a rod suspended over the channels, and a series of hooks loosely mounted on said rod, as and for the purposes specified.

2. A frame consisting of the crossing rails R R, and means for locking said rails at the crossing point, the channels and pockets formed in the upper face of the rails, the rods suspended over the channels, the hooks on said rods, and plates covering said pockets, substantially as specified.

410,791. ACOUSTIC TELEPHONE. LARKIN V. ELLIOTT, Mooresville, Ind. Filed Feb. 5, 1889. Serial No. 298,767. (No model.)



Claim.—1. In an acoustic telephone, a base-piece having a central transverse opening flared toward the front of the base, a mouth-piece mounted over the base and provided with a ball-shaped bore agreeing in diameter at its front end with the front or large end of the opening in the base and at its rear end with the smaller or rear end of the opening, and a diaphragm interposed between the front face of the base and the rear face of the mouth-piece, and having contact with the latter face at all points except opposite its bore, substantially as specified.

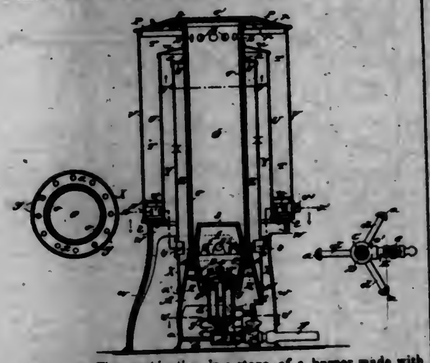
2. The diaphragm for acoustic telephones, consisting of parallel sheets of rawhide, which are held out of contact by an interposed filling or layer of soft fibrous material, substantially as specified.

3. The diaphragm for acoustic telephones, having an inner tightly-stretched sheet of rawhide, an outer loosely-stretched sheet of rawhide, and an interposed filling or layer of soft fibrous material, substantially as specified.

4. The diaphragm for acoustic telephones, consisting of the sheets E G of rawhide, the filling or layer of soft fibrous material interposed between the said sheets, and the covering H of fabric, substantially as specified.

5. In an acoustic telephone, the combination, with the receiver, of the diaphragm consisting of the rawhide members E G, the filling or layer of soft fibrous material, and the covering C of velveteen or fabric, and the line-wire extending through a central opening in the diaphragm and provided with a button which bears on the said covering, substantially as specified.

410,792. GAS-STOVE. JAMES GIBBONS, Jersey City, N. J. Filed Mar. 30, 1887. Serial No. 233,018. (No model.)



Claim.—1. The combination, in a stove, of a burner made with a gas and air mixing tube C, apertured at *c* at its inner part, and a casing G, having an open outer end admitting air and fitted at its closed inner end to the mixing-tube beyond or outside of its apertures *c*, and a fire-chamber receiving products of combustion from the burner and provided at its walls with an air-passage which opens at one end to an air-supply and ranges along or next the fire-chamber, into which it opens at or near the point of ignition of the burner, substantially as shown and described, whereby products of combustion from fluid fuel and superheated air commingled in advance of the point of ignition of the burner and flaming at the burner will be met thereat by a volume of air superheated in the passage at the fire-chamber walls to maintain combustion at a very high temperature in the stove, as herein set forth.

2. The combination, in a stove, of a burner made with a gas and air mixing tube C, apertured at *c* at its inner part, a flame-cup held to the outer end or part of the mixing-tube, a casing, as G H, surrounding the tube and cup and providing air-superheating passage J and chamber G', said casing fitted at its closed inner part to the mixing-tube beyond or outside of its apertures *c*, and a fire-chamber receiving the products of combustion from the burner and provided at its walls with an air-passage which opens at one end to an air-supply and ranges along or next the fire-chamber, into which it opens at or near the point of ignition of the burner, substantially as described, for the purposes set forth.

3. The combination, in a stove, of a burner made with a gas and air mixing tube C, apertured at *c* at its inner part, and a casing, as G, having an air-inlet at its outer part and fitted at its closed inner part to the mixing-tube beyond or outside of its apertures *c*, a fire-chamber receiving the products of combustion from the burner and provided at its walls with a passage which opens at one end to an air-supply and ranges along or next the fire-chamber and opens at the other end to the fire-chamber at or near the point of ignition of the burner to maintain combustion of commingled fluid fuel and superheated air at the burner by a supply of air superheated by the fire-chamber of the stove, and a drum or wall providing an air-passage outside of and communicating with the inlet of the air-passage at the fire-chamber walls and opening to the outer air nearer the burner of the stove to cause the air which maintains combustion at the burner to traverse the fire-chamber twice in its passage to the burner for highly superheating said air, all arranged and combined for operation substantially as herein set forth.

4. The combination, in a stove, of a burner made with a gas and air mixing tube C, apertured at *c* at its inner part, and a casing, as G, having an air-inlet at its outer part and fitted at its closed inner part to the mixing-tube beyond or outside of its apertures *c*, a fire-chamber receiving the products of combustion from the burner and provided at its walls with a passage which opens at one end to an air-supply and ranges along or next the fire-chamber and opens at the other end to the interior of the fire-chamber at or near the point of ignition of the burner to maintain combustion of commingled fluid fuel and superheated air at the burner by a supply of air superheated by the fire-chamber of the stove, and said fire-chamber provided with outlets for delivery of hot products, a drum or wall providing an air passage outside of and communicating with the inlet of the air-passage at the fire-chamber wall and opening to the outer air nearer to the burner of the stove to cause the air which maintains combustion at the burner to traverse the fire-chamber twice in its passage to the burner for highly superheating said air, and an outside drum forming an outer chamber receiving the hot products from the outlets of the fire-chamber and serving to radiate or distribute the heat of the stove, all arranged and combined for operation substantially as herein set forth.

5. The combination, in a stove, of a fire-chamber, a burner delivering hot products thereto, and said chamber provided with a passage at its walls which opens at one end to an air-supply and ranges along or next the fire-chamber and opens at its other end to the interior of the fire-chamber at or near the point of ignition of the burner to maintain combustion at the burner by a supply of air superheated by the fire-chamber of the stove, a drum or wall providing an air-passage outside of and communicating with the inlet of the air-passage at the fire-chamber walls and opening to the air nearer the burner of the stove to cause the air-supply maintaining combustion at the burner to traverse the fire-chamber twice in its passage to the burner in a superheated condition, said fire-chamber provided with outlets delivering hot products, and an outer drum, forming an outer chamber, receiving the hot products from the outlets of the fire-chamber and serving to radiate or distribute the heat of the stove, all substantially as described, for the purposes set forth.

6. A stove constructed with a body having a main fire-chamber and three drums forming three passages for air and products of combustion outside the fire-chamber, the center of the three passages opening at the bottom or inner part of the air, which has an updraft or outdraft through it, the inner of the three passages communicating with the outer part of the center passage and the inner part of the fire-chamber, and the outer passage or flue communicating with the outer part of the fire-chamber and serving as a heat receiving and distributing chamber, substantially as herein set forth.

7. In a stove, the combination, with a burner or fire-pot, of a fire-chamber provided with lower or inner air-inlet, and outer passages, as at S, for hot products, a drum X, fitted at its outer part to the fire-chamber and having air-inlet at *y*, and drums U V, supported outside of the drum X, said drum U fitting the fire-chamber inside of its pas-

sages S, and a cover fitted to the fire-chamber and outer drum V, substantially as shown and described, whereby passages Y Z T are formed for circulation and heating of air in the stove-body, as and for the purposes set forth.

8. In a stove, the combination, with a burner or fire-pot, of a fire-chamber provided with lower or inner air-inlet, and outer passages, as S, for hot products, a drum X, fitted at its outer part to the fire-chamber and provided with air-inlet at *y*, and drums U V, supported outside of the drum X, said drum U fitting the fire-chamber inside of its passages S, and a cover fitted to the fire-chamber and outer drum V, whereby passages Y Z T are formed in the stove-body for circulation and heating of air, said stove-body having passages at its outer wall for exit of hot products, and one or more dampers fitted to these hot-product exits, substantially as herein set forth.

9. A stove constructed with a body having a main fire-chamber and three drums forming three passages Y T Z for air and products of combustion outside the fire-chamber, and said fire-chamber fitted with a removable cover or plate at its outer end, substantially as herein set forth.

10. A stove constructed with a body having a main fire-chamber and three drums forming three passages Y Z T for air and products of combustion outside the fire-chamber, said body having a top or outer end provided with openings *y'*, and a damper *p*, controlling said openings, substantially as herein set forth.

11. A stove constructed with a body having a main fire-chamber and three drums forming three passages Y Z T for air and products of combustion outside the fire-chamber, said body having a top or outer end formed with a removable cover for the fire-chamber, and with openings *y'* from the outer passage T, and a damper *p*, controlling said openings, substantially as herein set forth.

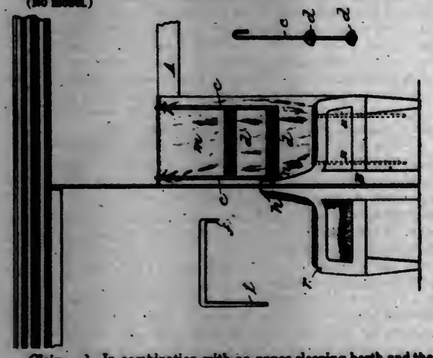
12. In a stove, the combination, with a burner or fire-pot, a fire-chamber having inner air-inlet and outer passages for hot products, and drums relatively arranged to provide passages Y T Z for establishing circulation of air and hot products through the stove-body, of a damper fitted over hot-product passages in the outer drum, and one of said hot-product passages and the damper relatively arranged to always leave an opening for escape of hot products from the stove-body, substantially as herein set forth.

13. A stove made with a burner or fire-pot, a fire-chamber having air-inlet R and hot-product outlet S, a drum X, fitted to the fire-chamber and resting on the burner or fire-pot shell, and drums U V, connected at the top with the fire-chamber and resting on a base or support, as W *w*, substantially as shown and described, whereby passages Y Z T are provided in the stove-body for air-circulation and the entire body may be removed from the burner or fire-pot, as and for the purposes set forth.

14. In a stove, the combination, with a burner, a fire-chamber, and a drum fitted around the fire-chamber and burner and provided with mica or translucent plates 4, of a body capable of incandescence and made in the form of an inverted cup, placed in the fire-chamber and providing an air and light passage at its rim, substantially as herein set forth.

15. In a stove, the combination, with a burner, a fire-chamber, and a drum fitted around the fire-chamber and burner and provided with mica or translucent plates 4, of a body capable of incandescence and made in the form of an inverted cup, placed in the fire-chamber, and provided with a passage 3 at its top or outer part and providing an air and light passage at its rim, substantially as herein set forth.

410,793. STEP FOR SLEEPING-CAR BERTH. JOHN J. GRIMSON, Fort Warren, Boston, Mass. Filed Mar. 23, 1889. Serial No. 304,262. (No model.)



Claim.—1. In combination with an upper sleeping-berth and the arm connected with the seat below, a removable step interposed between said arm and the berth above so as to form in connection with said arm a series of steps by which to enter the upper berth, substantially as herein specified.

2. In combination with a sleeping-berth and a removable step, as described, a bolt, stud, or hook connecting the same with the dividing-partition between the sections, as described.

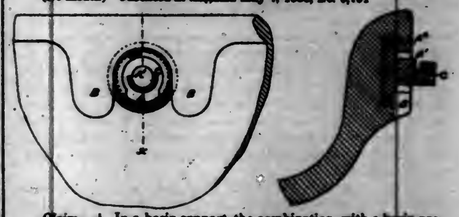
3. In combination with the upper sleeping-berth and step, substantially as described, the inner curtain *m*, as and for the purpose specified.

410,794. ANTISEPTIC TOOTH-PICK. KARL M. HELMUTH, Berlin, Germany. Filed Dec. 6, 1888. Serial No. 292,594. (No specimens.)

Claim.—1. As an improved article of manufacture, a tooth-pick saturated with a spirituous aromatic solution and impregnated with an antiseptic liquid, substantially as and for the purpose herein described.

2. As an improved article of manufacture, a tooth-pick saturated with eucalyptol, substantially as and for the purposes described.

410,795. DEVICE OR HOOK FOR FIXING THE THREE LEGS OF BASINS USED IN TIP-UP LAVATORIES, &c. SIDNEY JOHNSON, Stanstead, County of Surrey, England. Filed Jan. 4, 1889. Serial No. 295,304. (No model.) Patented in England May 7, 1888, No. 6,791.



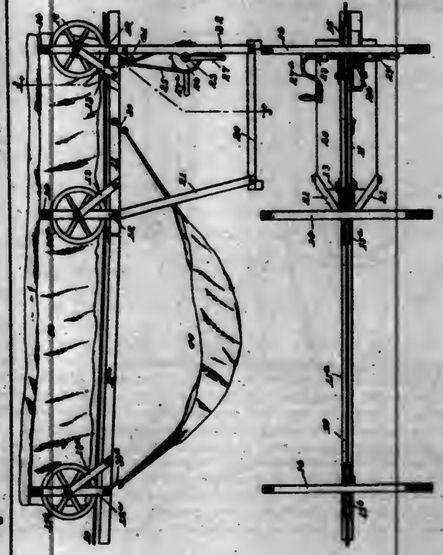
Claim.—1. In a basin-support, the combination, with a basin provided with a trunnion and with a partially-surrounding flange having an opening smaller than its internal diameter, of a trunnion-bearing having a horizontal dimension a little less than the width of said opening, substantially as set forth.

2. The herein-described trunnion-bush A, provided with a trunnion A' and a surrounding flange A^2, of more than a half-circle, having an opening on its under side, substantially as set forth.

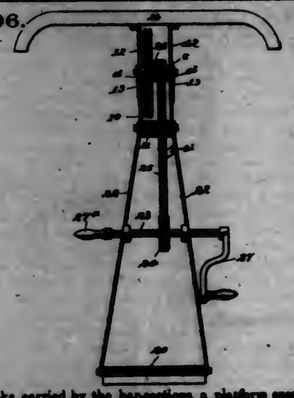
410,796. HAMMOCK AND SEAT SUPPORT. JAMES J. JOHNSON, Dayton, Ohio, assignor to McIntire, Slaght & Johnson. Filed May 1, 1889. Serial No. 309,166. (No model.)

Claim.—1. The combination, with a sectional supporting-bar, of wheels arranged above the bar and hooks carried by the bar-sections, substantially as described.

2. In a hammock-support, the combination, with a sectional bar, of wheels journaled above the bar, cross-bars extending over the

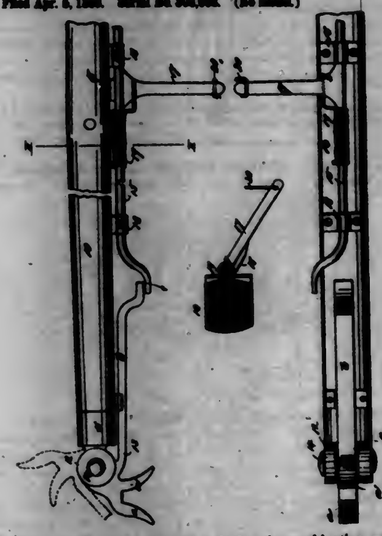


410,796.



wheels, hooks carried by the bar-sections, a platform suspended beneath the bar, and a means, substantially as described, for driving one of the wheels, as and for the purpose stated.

410,797. HORSE-DETACHER. HENRY J. KIMBERLY, Bristol, Pa. Filed Apr. 5, 1889. Serial No. 306,008. (No model.)

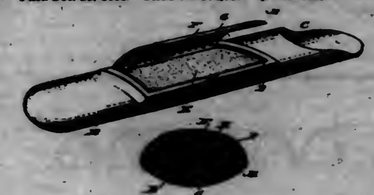


Claim.—1. In a horse-detaching device, the combination, with a horizontally-turning trace-receiver 13, provided with rearward-projecting horns *a a'*, and a lever-arm *b* to extend along the rear side of the singletree, of the rocking bar 15, having bearings 16 on the rear side of the singletree, and provided with an outward bend at its inner end to engage a similar bend on the lever-arm *b*, a spring 19, holding said ends in engagement, and an operating-arm 17, projecting from the bar 15, substantially as set forth.

2. The combination, with the trace-receivers 13, having lever-arms *b*, projecting toward each other, and vertically-rocking bars or rods 15, having outward bends at their opposite ends engaging similar bends on arms *b*, springs holding said ends in engagement, and the operating-arms 17, projecting from rods or bars 15, of a vertically-rocking rod or bar 21, having crank-arms 22 at its ends engaging the arms 17, substantially as set forth.

3. The combination, with a singletree having trace-receivers pivoted at its ends and provided with lever-arms extending toward each other along the rear side of the singletree and having their inner extremities bent rearwardly and inwardly, of bearings 16 on the rear side of the singletree, a vertically rocking or turning rod 15, mounted in said bearings, provided with rearward and outward bent ends overlapping the inner extremities of the lever-arms *b*, a spring 19, holding said ends in engagement, and an operating-arm 17, substantially as set forth.

410,798. SPRINGALE-GAME. CHARLES B. LOUD, Louisville, Ky. Filed Dec. 20, 1888. Serial No. 294,019. (No model.)



Claim.—1. As an improved article of manufacture, a case for spectacles or eyeglasses formed on one face with an integral hollow enlargement forming a second compartment, and a cover therefor flush with the surface of said second compartment, substantially as set forth.

2. As a new article of manufacture, a spectacle-case comprising a shell having a compartment for the reception of the spectacles or eyeglasses, a second compartment formed on top of the shell for the reception of a wiper, and a lid for closing the second compartment, substantially as shown and described.

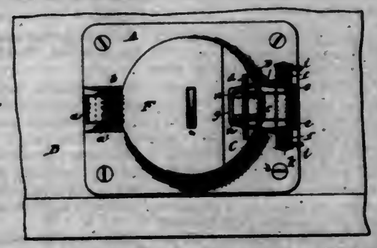
410,799. WAGON-TONGUE SUPPORT. REUBEN LUSH, Sr., Brighton, Iowa. Filed July 2, 1888. Serial No. 316,268. (No model.)



Claim.—1. The improved tongue-support herein described, consisting of the spring formed with arms *c*, coils c^1, and rods c^2, and the plates F, having sockets or openings adapted to receive the free ends or extremities of rods c^2, all constructed and adapted for use, substantially as set forth.

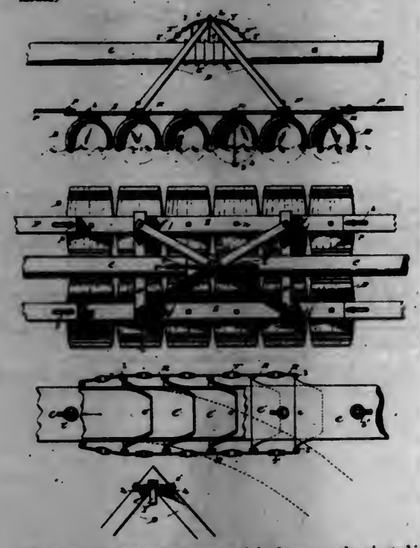
2. The combination, substantially as described, of the axle, the bounds, the tongue, the bolt D, the plates F, having sockets or openings *f*, and the spring coiled around the bolt D, having an arm extended forward from said coils and bearing under the tongue, and having rods extended rearwardly from said coils and fitted at their ends in the sockets of plates F, substantially as set forth.

410,800. SELF-SEALING BUNG FOR ICE-CREAM FREEZERS. BENJAMIN R. HARRIS, Zanesville, Ohio. Filed June 13, 1889. Serial No. 314,047. (No model.)



Claim.—In a self-sealing bung, the combination, with a bung-plate provided with a thimble, a gate hinged to the bung-plate so as to close the hole in the thimble, and a hinged clamping-plate which bears upon the gate when these parts are in closed adjustment, of a wire spring having spiral coils which engage the pintle of the clamp-plate hinge, and a loop which bears upon the clamping-plate, whereby the said clamping-plate is normally held closed, substantially as set forth.

410,801. HYDRAULIC DREDGING APPARATUS. JAMES M. MILLER, Washington, D. C. Filed Apr. 15, 1889. Serial No. 307,267. (No model.)



Claim.—1. A pontoon having an upright frame, a yoke pivoted in the upper portion of said frame, a flexibly-jointed conduit provided on its upper side with lugs, and suitable links connecting the ends of the yoke with said lugs, substantially as described.

2. A pontoon having a centrally-located upright frame, a yoke pivoted in the upper portion of said frame, a conduit flexibly jointed beneath said yoke, and suitable links connecting the ends of the yoke with the conduit on each side of the joint, all combined substantially as described.

3. A pontoon having an upright frame whose top portion is over the central part of the pontoon, a yoke pivoted in said frame longitudinally of the pontoon, a flexibly-jointed conduit provided on its upper side with lugs, and turn-buckles connecting the ends of the yoke with said lugs, whereby the conduit is suspended and its joint may be tightened, substantially as described.

4. A flexibly-jointed conduit made of sections of pipe, each section being inwardly bent or curved at one end to reduce its diameter and outwardly-curved or bell-mouthed at its other end, the reduced or male end of one section fitted within the bell-mouth or female end of another section, in combination with a pontoon having an upright frame, a yoke pivoted in the upper part of said frame, and means for connecting the sections with the yoke, for the purposes stated.

5. A flexibly-jointed conduit made of sections of pipe each having a male and a female end, as described, the male end of one section fitted within the female end of another section, and rods carrying turn-buckles connecting the sections, substantially as described, and for the purpose stated.

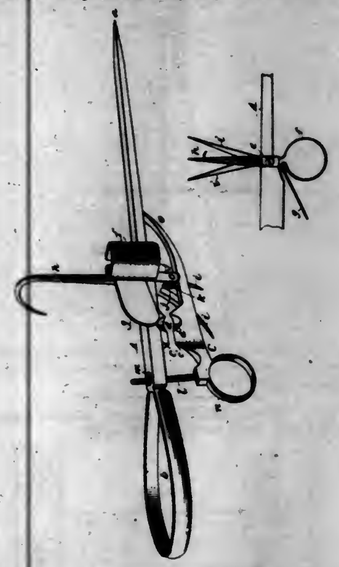
410,802. MINER'S CANDLESTICK. HENRY M. MEYER, Empire, Nevada, assignor of one-half to Alexander A. Higo, same place. Filed Feb. 9, 1889. Serial No. 299,346. (No model.)

Claim.—1. In a miner's candlestick, the combination, with a pointed bar provided with a handle, of a head detachably secured on the bar a short distance from the handle and provided with the spring-loop *f*, the hook *h*, and the claws *i*, substantially as described.

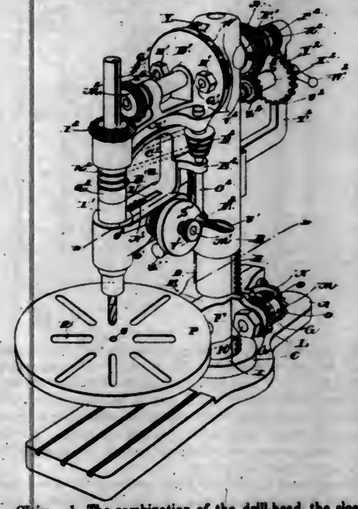
2. In a miner's candlestick, the combination, with a pointed bar provided with a handle at one end and a jaw on its under side, of a head detachably secured on the bar and provided with a candle-loop and a hook and claws, and a nipper-lever pivoted to the head, substantially as herein shown and described.

3. In a miner's candlestick, the combination, with the pointed bar A, provided with the loop-handle *b*, the mortise *m*, and the jaw *c*, of the head B, provided with the spring-loop *f*, the hook *h*, the claws *i* and ears *j*, and the nipper-lever C, furnished with the jaw *c'* and stud *l*, substantially as specified.

4. In a miner's candlestick, the combination, with the pointed bar A, provided with the loop-handle *b*, the mortise *m*, and the jaw *c*, of the head B, provided with the spring-loop *f*, the hook *h*, the claws *i* and ears *j*, and the nipper-lever C, furnished with the jaw *c'*, the stud *l*, and ring *n*, substantially as specified.



410,803. DRILLING-MACHINE. CHARLES W. MCDANIEL, Lake Village, N. H. Filed June 21, 1883. Serial No. 277,707. (No model.)



Claim.—1. The combination of the drill-head, the sleeves journaled therein, one of said sleeves having the pulleys and being geared to the driving-shaft and the other sleeve having the rack-bar, the drill-shaft feathered in the upper sleeve and swiveled in the lower sleeve, the shaft M', having the pinion engaging the rack, the worm-wheel loose on the said shaft, the worm engaging said worm-wheel, the shaft O', geared to the worm and having the pulley connected to the pulley on the upper sleeve by an endless belt, the disk S', feathered on shaft M', and the nut V' on said shaft to compress the disk S' against the worm-wheel and to release the latter from the disk, whereby the drill may be fed either automatically or by hand, substantially as described.

2. In a drilling-machine, the drill-head F, the sleeves journaled thereon, the upper sleeve having the pulley K², the driving-shaft L², geared to the upper sleeve, the lower sleeve having the rack-bar, the drill-shaft F², feathered in the upper sleeve and swiveled in the lower sleeve, the shaft O', having the pulley D², the belt-connections between the pulleys D² and K², the pinion N', engaging the rack-bar on the lower sleeve, the shaft M', carrying the pinion, the shaft Y', geared to shaft M', and the gearing connecting the shafts Y' and O', as set forth.

3. In a drilling-machine, the drill-head Z, the sleeves H² F, journaled therein, the upper sleeve H² having the gear I² and the pulley K², and the lower sleeve F having the rack K', the drill-shaft F², feathered to the sleeve H² and swiveled in the lower sleeve F, the driving-shaft L², having a gear meshing with the gear I², the shaft O', having a pulley D², connected to the pulley K², the pinion N', meshing with the rack K', the shaft M', for the pinion, worm-wheel O', on the shaft, worm Z', engaging the worm-wheel, the shaft Y', for the worm, and the gears A² B², connecting shafts Y' and O', as set forth.

4. In a drilling-machine, the drill-head Z, having disk D', the standard B, having the face W, the diameter of which is equal to the diameter of the disk D', the sleeve E, projecting from the disk and journaled in a horizontal opening V of the standard, the clamping-nut F for the sleeve E, the concentric annular groove X, made in the face W, the vertical slot Y', also made in the face and communicating with the groove X, the bolts G', having their heads in the groove X, the nuts H' for the bolts, and the drill mechanism carried by the drill-head, whereby drilling at an angle can be performed, as set forth.

5. The combination, in a drilling-machine, of the vertically-movable sleeve F, having rack K', the drill-shaft swiveled in said sleeve, the sleeve H², having pulley K², the shaft M', having the pinion engaging rack K', the worm-wheel O', loose on said shaft, the shaft having the worm engaging the worm-wheel, the shaft O', geared to the worm-shaft and having the pulley D², connected to pulley K², the disk S', feathered on the shaft M' and having the crank U', and the nut V' on said shaft, adapted to engage the said disk with the worm-wheel and to disengage the same therefrom, substantially as described.

410,804. BABY-CARRIAGE. RUDOLPH MCILHAGH, New Albany, Ind., assignor to himself and Eli T. Ogle, same place. Filed Mar. 12, 1889. Serial No. 302,905. (No model.)



Claim.—1. The combination, with a baby-carriage having its front axle centrally pivoted to turn horizontally, of a guiding and propelling bar extending from a point behind the carriage in reach of the user downwardly and forwardly under the carriage to a point near the front thereof and there forked, the ends of which fork are secured to the front axle, the fork being rigidly and immovably connected with or formed upon the said bar to move as an integral part thereof, substantially as set forth.

2. In a baby-carriage, the combination, with the carriage-body, of a rear axle rigidly connected with the said carriage-body and provided with a horizontal longitudinally-extending slot, rear wheels mounted to turn on the said rear axle, a bolster held on the front end of the said carriage-body, a front axle carrying the front wheels and pivotally connected with the said bolster, a propelling and guiding bar extending rearward from the said front axle and provided with a handle for pushing and directing the carriage, said propelling and guiding bar passing through said slot in the rear axle and having a free horizontal oscillating movement therein, substantially as shown and described.

3. In a baby-carriage, the combination, with the carriage-body, of a rear axle rigidly connected with the said carriage-body, rear wheels mounted to turn on the said rear axle, a bolster held on the front end of the said carriage-body, a front axle carrying the front wheels and pivotally connected with the said bolster, a propelling and guiding bar extending rearward from the said front axle and provided with a handle for pushing and directing the carriage, said horizontally-oscillating propelling and guiding bar passing through a slot extending transversely in the said rear axle, and a friction-wheel held on the said propelling and guiding bar in the said slot, substantially as shown and described.

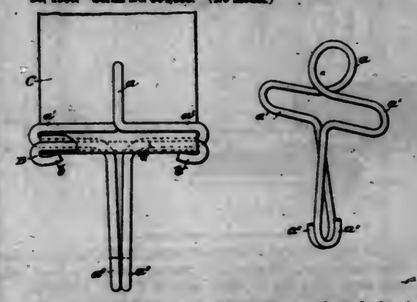
4. In a baby-carriage, the combination, with the carriage-body, of side bars connected by springs with the said carriage body, a rear axle rigidly connected with the said side bars and carrying the rear wheels, a bolster rigidly connected with the front ends of the said side bars, a front axle pivotally connected by a king-bolt with the said bolster, a fifth-wheel located between the said bolster and said front axle on the king-bolt, front wheels held on the said front axle, and a rearwardly-extending propelling and guiding bar guided in the rear axle and provided with an upwardly-extending handle for pushing and directing the carriage, substantially as shown and described.

410,805. MEANS FOR PREVENTING THE SLIPPING OF BELTS. FREDERICK W. HUMMEL, Adrian, Mich., assignor of one-half to Jonathan B. Ingersoll, same place. Filed Feb. 27, 1889. Serial No. 301,503. (No model.)



Claim.—A means for preventing the slipping of belts, consisting of two belts placed one above the other on the pulleys, so as to form a double belt, both belts mounted loosely on the pulleys, so that the inner belt will sag as the belts pass over the pulleys and the outer belt will sag as the belts pass under the pulleys, substantially as described.

410,806. BACK-BAND HOOK. DAVID D. HALLET, Wilson, N. C., assignor of two-thirds to George D. Green & Co., same place. Filed Mar. 26, 1889. Serial No. 304,893. (No model.)



Claim.—1. An improved back-band fastener formed of a single piece of wire bent to form the rein-guide *a*, the laterally-extending skeleton arms *a'* below the guide, and the hooks *a²*, depending from the skeleton arms *a'*, substantially as herein shown and described.

2. The combination, with the fastener provided with the rein-guide *a*, the lateral-extending skeleton arms *a'* below the guide, and the hooks *a²*, depending from the skeleton arms, of the keeper B, having its ends *b* bent over to adapt them to embrace the back-band, substantially as herein shown and described.

410,807. CAR-DOOR FASTENER. THOMAS G. RUTTENBAR, Renovo, Pa. Filed July 12, 1888. Serial No. 279,780. (No model.)

Claim.—1. In a car-door fastener, the screw-threaded bolt having a projection at its inner end, the faces of which are oblique to its length, in combination with a socket the walls of which are inclined or tapered, substantially as set forth.

2. In a car-door fastening, the latch consisting of a lever the pivot of which is a screw having a cam arm or projection, in combination with a plate or bracket having an internally-screw-threaded sleeve or barrel and curved bolt or screw receiving slots, and an oblique door-jamb socket, substantially as specified.

3. A fastener for locking car-doors in a fully-closed or partially-open position, comprising the screw-threaded socket, the rotary screw turning therein and having an inclined projection at its inner end, the jamb-plate G, having an oblique slot, and the plate H, for the side of the car, having a tapering cavity d^4, spirally flanged, as at d^5, substantially as set forth.

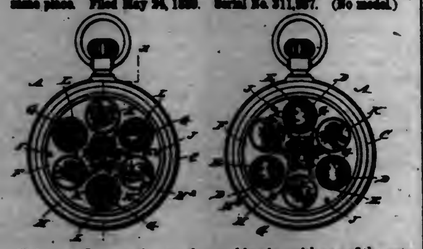
4. In a car-door fastening, the latch consisting of the lever the pivot of which is a screw having a cam arm or projection, in combination with a plate or bracket having an internally-screw-threaded sleeve or barrel and provided with a hook taking into or engaging with a keeper or eye upon the latch-lever and adapted to be sealed, and an oblique socket, substantially as specified.

5. The combination of the latch consisting of the lever the pivot of which is a screw carrying a cam arm or projection, the plate or bracket provided with curved slots which receive screws or bolts and

with an offset or projection, the hook pivoted to said offset or projection and engaging with an eye or keeper upon the latch-lever, and the oblique door-jamb socket receiving said cam arm or projection, substantially as set forth.



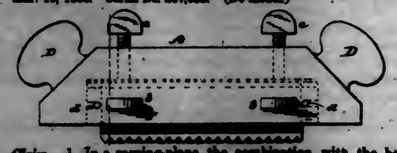
410,808. PICTURE-HOLDER ATTACHMENT FOR WATCH-CASES. GASPARD SCHLAGER, Brooklyn, N. Y., assignor of one-half to Henry Goll, same place. Filed May 24, 1889. Serial No. 311,987. (No model.)



Claim.—1. In a watch-case, the combination, with one of the outer covers or lids provided with a circular offset I, of a bezel H' H², sprung upon said offset, and a revolubly apertured disk F, resting over the outer face of said cover, under the bezel, substantially as set forth.

2. In a watch-case, the combination, with one of the outer lids or covers having a circular offset I and a concentrically-arranged series of picture-receiving recesses, of the bezel H' H², sprung upon said offset, and the revolubly disk F, resting over the recessed face of the lid or cover, under the bezel, and having an aperture and a pin or projection J, substantially as set forth.

410,809. RASPING-PLANE. CHARLES S. BROWNE, Mossleasy, Fla.; Thomas W. Lakin administrator of said Browne, deceased. Filed Mar. 19, 1888. Serial No. 267,665. (No model.)

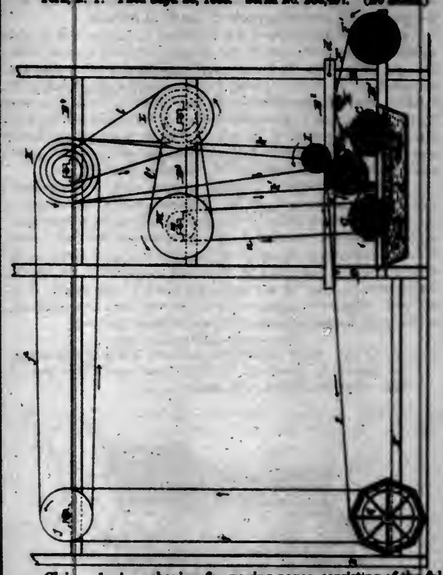


Claim.—1. In a rasping-plane, the combination, with the body A, provided with the mortise a, of a series of saws C and means, substantially as described, for clamping the saws in the stock.

2. The combination, with the body A, provided with the mortise a, of the cross-wires d, the slotted spacing-plates B, and the saws C, substantially as described.

3. As an improved article of manufacture, a rasping-plane formed of the body A, provided with the mortise a and with handle D, the thumb-screws b c, inserted in the body, the transverse wires d, the spacing-plates B, the plate e, and the saws C, combined and arranged substantially as herein shown and described.

410,810. MANUFACTURE OF WAXED PAPER. EDWARD S. SPARR, Brooklyn, assignor to the Sparr Manufacturing Company, New York, N. Y. Filed Sept. 26, 1888. Serial No. 286,497. (No model.)



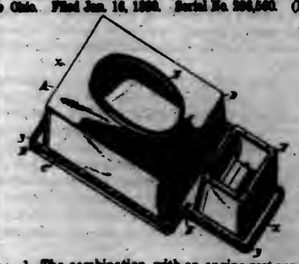
Claim.—1. A mechanism for waxing paper, consisting of the following elements, operated in combination, as herein described, namely: a tank or holder for the wax, a take-up device moving in contact with the wax, a delivering-roller moving in contact with the take-up device, and means for imparting independent velocities respectively to the take-up device and to the delivering-roller, as set forth.

2. In machines for waxing paper, the combination, with the take-up device and the paper web, of a delivery-roll speeded to move at a higher velocity than the paper web, as herein set forth.

3. In machines for waxing paper, the combination, with the take-up device and the paper web, of a delivering-roll arranged to move in contact with both the take-up device and the paper web at a higher velocity than either of them, as and for the purposes set forth.

4. In machines for waxing paper, the combination of the following instrumentalities, operated as described, namely: a take-up device and means for independently driving the same, a delivering-roll and means for independently driving the same, and a winding-reel and means for independently driving the same, as herein set forth.

410,811. BASE-FRAME FOR ENGINES. BENJAMIN A. BEEVER, Toledo, Ohio. Filed Jan. 16, 1889. Serial No. 296,601. (No model.)

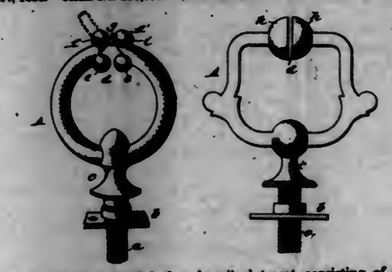


Claim.—1. The combination, with an engine-rest supported upon a suitable bottom portion, of a curved plate formed within the engine-rest and adapted to conduct the oil to an opening formed in the side of the same, substantially as and for the purpose specified.

2. A base-frame for engines, formed of a bottom portion having a flange upon its outer edges and the upper surface sloping toward the center of the same, a hollow rectangular boiler-rest having an opening in its upper face surrounded by an annular flange to which the boiler is attached, an engine-rest formed upon the opposite end of the same, and a vertical web-plate connecting the rests and the bottom portion, all of said parts being cast integral, substantially as shown and described.

3. A base-frame for engines, comprising a bottom portion, an elevated rest having an annular flange to which the boiler is secured, and an elevated rest to which the engine is secured, the two rests being connected by a vertical web-plate G, perforated at the base for the escape of condensation and oil, the bottom portion, rests, and web-plate all formed integral, as and for the purposes set forth.

410,812. TERRET. JOHN T. STULL, Sacramento, Cal. Filed Oct. 17, 1888. Serial No. 288,202. (No model.)



Claim.—1. The hereinbefore-described terret, consisting of the screw-shank a, the body portion A, said body portion formed of outwardly and upwardly extending side arms the ends of which extend inwardly toward each other, the proximate ends provided with ball-like enlargements, said proximate ends disposed to form a narrow vertical slot d, to admit of the driving-rein being passed edgewise therethrough, said body portion being of a height slightly greater than the width of the ordinary driving-rein, substantially as and for the purpose described.

2. The hereinbefore-described terret, consisting of the screw-shank a, the ring A, having a slot d, the adjacent ends thereof formed with opposite inner guards e e and two outer opposite balls f f', the ball f' provided with rib or notch i, and a hasp or keeper pivoted at one end in the ball f, its opposite end adapted to extend over the ball f' and engage the notch i, all arranged substantially as and for the purpose described.

410,813. EARTH-CLOSET COMMODE. JOHN W. BROWNE, Putney, Vt. Filed June 20, 1888. Serial No. 278,005. (No model.)



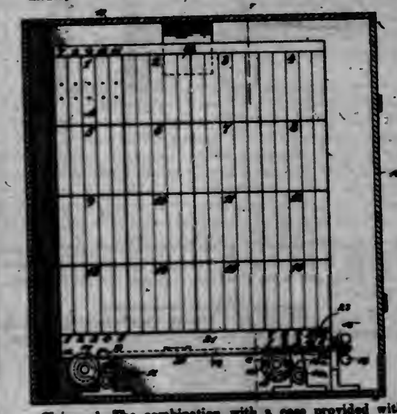
Claim.—1. An earth-closet commode made with a case, a structure fitted thereto and adapted for withdrawal therefrom, and provided with an earth-closet attachment opening at the inside of said structure and with an ordinary chamber-vessel receptacle, the latter having an opening at or through the outside or front of the structure, substantially as herein set forth.

2. In an earth-closet commode, the combination of a case, a structure hinged thereto and provided with two compartments F G, the one G forming an earth-closet-vessel receptacle and opening at the inside of the structure and the case F forming an ordinary chamber-vessel receptacle and opening at or through the outside of the structure, and an earth-box or deodorizer-vessel hinged to the seat-board of the closet, so as to stop against the commode-case when the closet is adjusted for use, substantially as herein set forth.

3. An earth-closet commode constructed with a case A and a structure B, hinged thereto and provided with a box F, opening at the front or outside of the structure, an earth-closet box G, opening at the inside of the structure, and a valved earth-receptacle hinged to the top or seat board of the box G and adapted to discharge earth therein, substantially as herein shown and described.

4. An earth-closet commode constructed with a case A, having a drawer C, and a structure B, hinged to the case and provided with a box F, opening at the front or outside of the structure, an earth-closet box G, opening at the inside of the structure, and a valved earth-receptacle hinged to the top or seat board of the box G and adapted to discharge earth therein, substantially as herein set forth.

410,814. CHECKING AND RECORDING DEVICE. FREDERIC SOLMER, Yonkers, N. Y. Filed Jan. 10, 1889. Serial No. 296,916. (No model.)



Claim.—1. The combination, with a case provided with apertures and hooks, of a chart mounted within the case, dogs mounted in front of the chart, and checks B, provided with rearwardly-extending tongues, substantially as described.

2. The combination, with a case provided with hooks and apertures in its face, of a frame arranged to receive a chart mounted within the case, dogs pivotally mounted within the case, and checks arranged to be placed upon the hooks, said checks being provided with tongues which bear against the dogs, substantially as described.

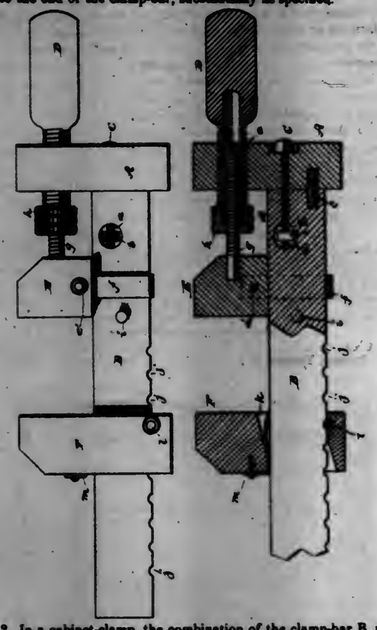
3. The combination, with a case having an apertured front, of hooks arranged in connection with the apertures, checks arranged to be placed upon the hooks, a vertically-adjustable frame mounted within the case, a chart carried by the frame, and dogs mounted in front of the chart and arranged in connection with the case-apertures, substantially as described.

4. The combination, with a case formed with apertures c, and provided with hooks 20, and checks B, of dogs 31, a frame 30, a chart carried by the frame, and a means, substantially as described, for raising and lowering the frame and for moving it laterally, as and for the purpose stated.

5. The combination, with a case formed with apertures c, and provided with hooks 20, of dogs mounted within the case, rock-shafts 11 and 11ª, a roller 17, a gear 18, arms 12 and 12ª, that are carried by said shafts and supporting said roller and gear, a rod 14, arms 13 and 13ª, carried by said shafts and pivotally connected to said rod, a winged nut arranged to engage a threaded section of the rod, a frame provided with a rack 23, with which the gear 18 engages, a chart divided into sections A, said chart being carried by the frame, and a means, substantially as described, for turning the gear 18, as and for the purpose stated.

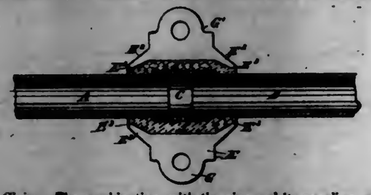
410,815. GARMENT-CLAMP. WILHELM P. TAUSSIG, Hilford, Ill. Filed Sept. 19, 1888. Serial No. 286,781. (No model.)

Claim.—1. In a cabinet-clamp, the combination of the head A, the clamping-bar B, the joint-bolt C, passing through the head and into the clamp-bar, and the dowel *c*, inserted in the head and extending into the end of the clamp-bar, substantially as specified.



2. In a cabinet-clamp, the combination of the clamp-bar B, provided with the head A, the axially-bored screw D, inserted in the said head, the sliding jaw E, the threaded rod *g*, and the nut *h*, substantially as specified.

410,816. PIPE-CLAMP. WILLIAM WALKER and JOHN R. DAVIS, Lackawanna, Pa. Filed Mar. 14, 1889. Serial No. 303,344. (No model.)



Claim.—The combination, with the pipe and its coupling, of the clamp D, formed of two semi-cylindrical sections E E', bolted together around the coupling and having semi-annular flanges E² at their opposite ends projecting beyond the ends of the coupling and chamfered at E³ to form flaring openings of greater diameter than the pipes, and the packing J, filling the space within the clamp from one extremity to the other, and calked therein and against the outer chamfered ends E³, substantially as set forth.

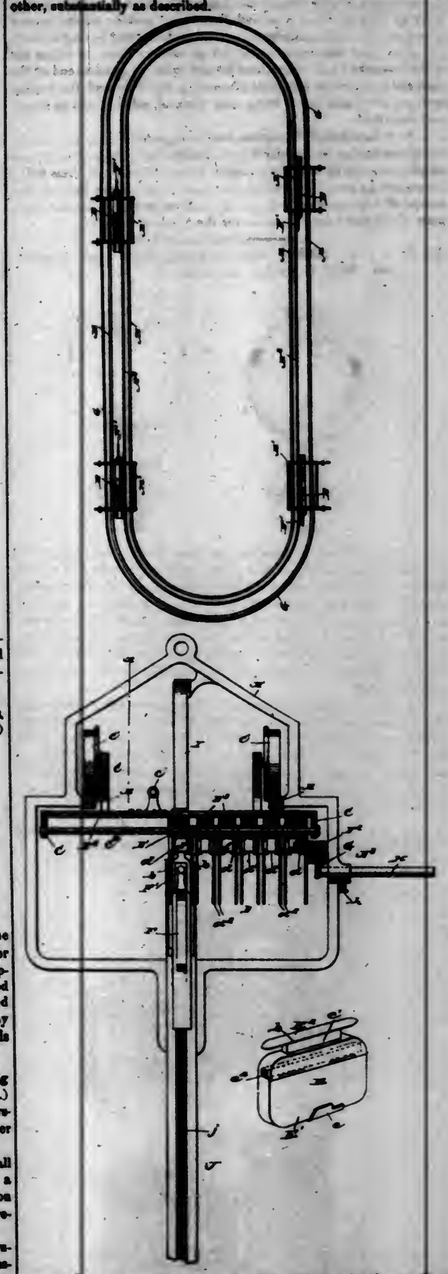
410,817. CARRYING APPARATUS. HIRAM WHEEL, Jr., Long Island City, N. Y. Filed Feb. 9, 1889. Serial No. 299,574. (No model.)

Claim.—1. The combination, with a track, of a carriage traversing the same, a carrier thereon, and a guide for moving the carrier transversely on the carriage, substantially as described.

2. The combination, with the track, of a trip at each station, all arranged in line with each other, a carriage traversing the track, a carrier thereon, and a guide for moving the carrier transversely on the carriage to bring a different section thereof in line with the respective trips, substantially as described.

3. The combination, in a carrier apparatus, of a track, a continuously-movable carriage, a carrier on the latter adapted to move transversely thereon, and a guide-rail with which the carrier engages, the guide-rail being laterally adjustable, substantially as described.

4. The combination, in a carrier apparatus, of a track and a carriage, a transversely-movable carrier thereon, chutes arranged at intervals throughout the track and projecting into the path of the carrier, and arms for holding the cash-pockets to be taken up by the carrier, the said chutes and arms of all stations being arranged in line with each other, substantially as described.



5. In a carrier apparatus, a carriage and a carrier thereon fitted for independent transverse movement, in combination with trips at each station arranged in the same line throughout the track, arms in line with the chutes for holding the cash-pockets, and a guide for guiding the movable carrier to present a different section thereof to the various chutes and arms, substantially as described.

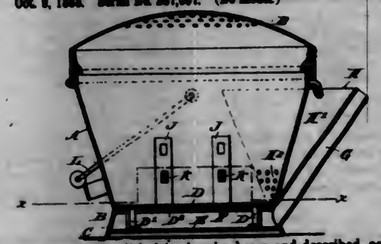
6. A carrier apparatus comprising the following elements: a continuous track, a carriage traveling thereon, a comparted carrier hung on the carriage and transversely movable thereon, the compartments of the carrier being closed at one end by latches, cash-pockets receivable by said compartments, chutes at each station projecting into the path of the carriage for dislodging and receiving the cash-pockets from the carrier, the said chutes being in line throughout the track, arms at each station for holding the cash-pockets until taken up by the carrier, the said arms being vertically movable to be projected into the path of the carriage or withdrawn therefrom, and a laterally-adjustable guide-rail for the carrier extending around the track and lying at varying distances from the chutes of the different stations to present a different compartment of the carrier to the different chutes, and a magnet at each station for lifting the latches of the carrier, substantially as described.

7. In a cash-carrier, the vertically-movable staff or head F, having a pocket-holding arm projecting therefrom and provided with an outward-bowed longitudinally-extending spring *f*, substantially as set forth.

8. In a cash-carrier, the staff or head F, having a pocket-holding arm F', provided with an outward-bowed longitudinally-extending spring, the guide-rib *f'*, and the stop-lug *f''*, substantially as set forth.

9. In a cash-carrier, the combination, with the carriage provided with a transversely-movable carrier having a series of cash-pocket holders and means for automatically shifting the said series, of a series of cash-pocket supports or arms arranged at proper intervals, the said series of cash-pocket holders being automatically shifted transversely to bring said holders successively in line with the said arms or supports, substantially as set forth.

410,818. DISH-DRIER. ALBERT J. WILSON, Abilene, Tex. Filed Oct. 9, 1888. Serial No. 287,697. (No model.)

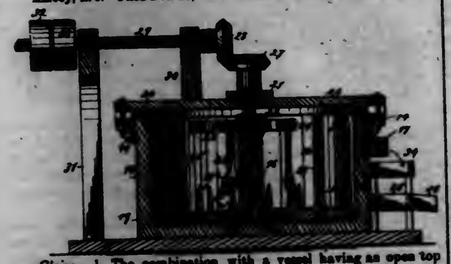


Claim.—1. The dish-drier herein shown and described, comprising the body A, cover B, false bottom D, side chamber H', and spout G, substantially as described.

2. The false bottom supported a short distance above the main bottom of the drier and provided with the opposite uprights J J, in combination with the straight parallel cross-pieces K, held by the uprights J, substantially as shown and described.

3. The body A, having perforations H², and having side projection H and spout G, in combination with the cover B, false bottom D, supported from the main bottom of the drier, and having the uprights J and cross-pieces K, substantially as described.

410,819. CLAY-WASHING MACHINE. HENRY WOODCOCK, Perth Amboy, N. J. Filed Dec. 21, 1888. Serial No. 294,269. (No model.)



Claim.—1. The combination, with a vessel having an open top and a detachable auxiliary bottom provided with a series of upwardly-extending pins, of a vertical shaft held to revolve within said vessel, arms horizontally attached to the said shaft, and stirrer-arms projected downward from the horizontal arms, adapted for movement between the pins of the auxiliary bottom, and means for rotating the said shaft, all combined for operation substantially as shown and described.

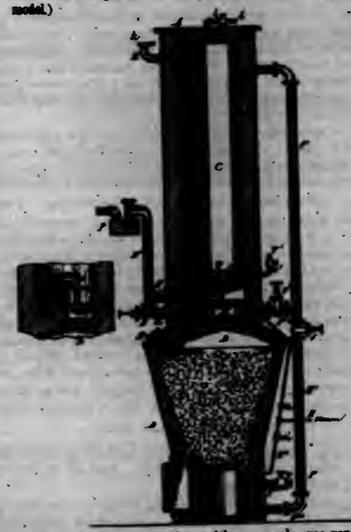
2. The combination, with a vessel having an open top and provided with a series of interior vertical ribs, a detachable auxiliary bottom held in said receptacle by contact with the said ribs, and a series of concentrically-arranged pins projected upward from the said auxiliary bottom, of a vertical shaft capable of rotation within the vessel, horizontal arms attached to the said shaft, and a series of downwardly-extending stirrer-arms attached to the horizontal arms and adapted for movement between the pins of the auxiliary bottom, substantially as shown and described.

3. The combination, with a vessel having an open top and provided with a series of interior perpendicular ribs, an auxiliary bottom having peripheral recesses to receive the said ribs, and teeth projected upward at intervals from the said auxiliary bottom, of a perpendicular shaft capable of revolving within the said vessel, horizontal arms attached to the said shaft, stirrer-arms projected downward from the horizontal arms, adapted to pass between the teeth of the auxiliary bottom, and a ring attached to the upper portion of the vessel, extending a distance inward, all combined for operation as and for the purpose specified.

4. The combination, with a vessel having an open top and provided with a series of interior perpendicular ribs, a detachable auxiliary bottom provided with peripheral recesses to receive the said ribs, and a series of pins concentrically arranged projecting upward from the said auxiliary bottom, of a perpendicular shaft held to rotate within the vessel, a polygonal casting secured to the said shaft, horizontal arms attached to the sides of the said casting, a series of stirrer-arms projected downward from the said horizontal arms, adapted to pass between the said pins, a guard-ring attached to the upper surface of the vessel projecting inward, and means, substantially as shown and described, for rotating the said shaft, as and for the purpose specified.

5. The combination, with a vessel having an open top and provided with a series of interior perpendicular ribs, an auxiliary bottom provided with peripheral recesses adapted to receive the said ribs, and a series of concentrically-arranged pins attached to the upper surface of the bottom, of a perpendicular shaft capable of revolving within the vessel, a polygonal casting secured to the said shaft, horizontal arms attached to the sides of the said casting, braces connecting the said arms, and a series of stirrer-arms projected from the horizontal arms, all combined for operation substantially as shown and described.

410,820. APPARATUS FOR MANUFACTURING GAS. HENRY S. BAYER, Chicago, Ill. Filed Apr. 2, 1889. Serial No. 305,863. (No model.)

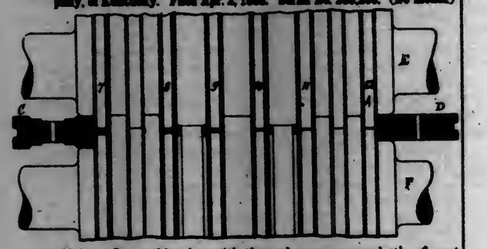


Claim.—1. In combination with a cupola gas-generating furnace having a fuel-chamber at the base and a fixing-chamber above, a valved water-gas pipe leading from the base of the fuel-chamber to the upper portion of the fixing-chamber, a valved branch pipe connecting the top of the fuel-chamber with each water-gas pipe, a valved pipe for gaseous products, connecting the top of the fuel-chamber with the bottom of the fixing-chamber, and valved steam-supply pipes connecting with both the bottom and top of the fuel-chamber, as and for the purpose described.

2. In combination with the fuel-chamber of a cupola gas-generator, the perforated arch E, the solid horizontal division-plate *m*, forming gas-chamber M, and the pipes F F, having valves *f f*, connecting with the base of the fuel-chamber, gas-chamber M, and the upper portion of the fixing-chamber, as and for the purpose described.

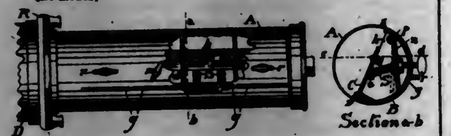
3. In combination with the fuel-chamber and fixing-chamber of the cupola, the gas-distributing chamber N, having ports *n*, air-distributing chamber O, having ports *o*, and the connecting-pipes, as and for the purpose described.

410,821. MACHINE FOR ROLLING GIRDER-RAILS. FREDERICK OELLY, Johnstown, Pa., assignor to the Johnson Steel Street Rail Company, of Kentucky. Filed Apr. 2, 1888. Serial No. 269,260. (No model.)



Claim.—In combination with the end passes, one or both, of a set of main rolls, a horizontal side roll set in vertical bearings, said main rolls having passes cut away on one side to permit of the entry of said side roll, substantially as set forth.

410,822. MACHINE FOR SPREADING VISCOUS SUBSTANCES. JOHN H. DAY, Albany, N. Y. Filed July 13, 1888. Serial No. 317,323. (No model.)



Claim.—1. In a spreading-machine, the combination of a cylindrical vessel having a longitudinal slot along its side, a valve-holding receptacle placed within said cylinder, a valve hinged at one side to a bolt in the interior of said valve-holding receptacle and having a spring pressing against one side thereof, and a thumb-screw passing through said cylinder in contact with the opposite side of said valve, substantially as described.

2. In a spreading-machine, the combination of a valve-holding receptacle L, placed within a cylinder A, provided with a valve *n*, operated by a spring S, pressing against the back plate C of the valve-holding receptacle and against one side of said valve *n*, the opposite side of said valve *n* being in contact with a thumb-screw *r*, a longitudinal slot along the side of said valve-holding receptacle, and a corresponding slot *g* in said cylinder, all substantially as described.

3. In a spreading-machine, the combination of the cylinder D, provided with a feeding-hopper H, a propeller J, placed longitudinally in said cylinder, a knife K, attached to the said propeller near its point, and the perforated plate T at the end of said cylinder near the knife K, with the cylinder A, attached to said cylinder D by coupling R, said cylinder A having a series of longitudinal slots *g* along its side, and having a valve-holding receptacle L placed within it, containing a valve *n*, spring S, attached to the back plate C of the valve-holding receptacle and to the valve *n*, and a screw *r*, passing through the said cylinder and in contact with said valve *n*, all substantially as described.

410,823. CARDING-MACHINE FOR MAKING MOTTLED ROVINGS. WESTLEY DENTON, Centreville, Mich. Filed Feb. 2, 1889. Serial No. 298,530. (No model.)

Claim.—1. The combination, with the frame F, of the main cylinder A, the worker B, the standards *b*, rigidly secured to said frame, the supplemental worker C, mounted in said standards and arranged in close proximity to the worker B, the pins *c* on one end of the worker C, the feed-rolls D D', the ratchet-wheel *a*, secured to feed-roll D', the spring-actuated lever *l*, pivoted to one of the standards *b* and having one end in the path of the aforesaid pins *c*, and the pawl *p*, pivoted to the outer end of the said lever and engaging the ratchet-wheel, substantially as set forth.

2. The combination, with the main frame F and the standards *b*, of the main cylinder A, the two workers B C, the pins *c* on the end of worker C, a stripper E', arranged in the relation to the worker B, as shown, the two feed-rolls, one of which is provided with a ratchet-wheel, and a pawl and spring-actuated lever *l*, all arranged and adapted to operate as specified.

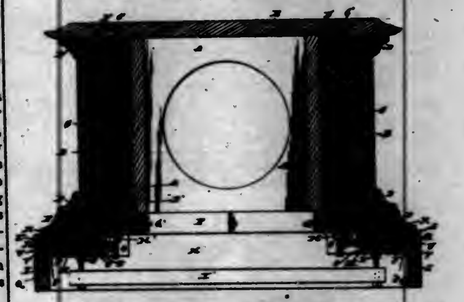


410,824. CHECKREIN-HOOK. CHARLES H. DOW, Hyde Park, Mass. Filed Feb. 9, 1888. Serial No. 263,315. (No model.)



Claim.—A checkrein-holder consisting of the hook A, having its outer surface continuously convex and having the downwardly-inclined end *c*, and a spring clip or lever bearing against said end and extending beyond the same, substantially as and for the purpose set forth.

410,825. CLOCK-CASE. JOHN M. DENWARD, Bristol, Conn., assignor to the Bristol Clock Case Company, same place. Filed Nov. 27, 1888. Serial No. 291,779. (No model.)



Claim.—1. In a sectional stone clock-case, the combination, with a section provided with a blind pocket formed in its inner face and with an opening intersecting the said pocket at an angle, of a bolt having one end perforated and inserted into the said blind pocket and a pin located in the said opening and passing through the perforation in the bolt, substantially as set forth.

2. In a sectional stone clock-case, the combination, with a stone section provided with a blind pocket formed in its inner face and with an opening intersecting the said pocket at an angle, of a bolt having one end perforated and inserted into the blind pocket, a pin located in the said opening and passing through the perforation in the bolt, and a filling located in the opening and keying the pin in place, substantially as set forth.

3. In a base for a stone clock-case the combination, with a front piece, a back piece, and two end pieces, of two binding-blocks located within and at opposite ends of the shell formed by the said pieces, and each having its inner face cut away to form three bearing-faces, and three bolts carried by each block, having their inner ends embedded and pinned in the respective adjacent base-pieces and their outer ends provided with nuts screwed against the bearing-faces of the block carrying them, substantially as set forth.

4. A sectional stone clock-case having its several parts keyed together by metallic keys, consisting of binders angling to each other and formed by pouring molten metal into pockets formed in adjacent parts of the case, so as to communicate with each other in angles when such parts are properly assembled, substantially as set forth.

5. A stone clock case having two of its parts each provided with intersecting vertical and horizontal pockets arranged so that when the parts are properly assembled their corresponding horizontal pockets will communicate, so as to permit the formation of a key, binding the two parts together, by pouring metal into the vertical pockets of one of them, substantially as set forth.

410,826. APPARATUS FOR BURNING HYDROCARBON OILS. ELLIS F. EDGAR, Woodbridge, N. J. Filed Feb. 11, 1888. Serial No. 263,682. (No model.)



Claim.—1. A combined oil and vapor burner and oil-vaporizer, consisting of a closed vessel or retort of non-combustible porous material, said vessel or retort having openings in one or more of its side walls for the escape of vapor and provided with an oil-supply aperture, substantially as described, and for the purpose specified.

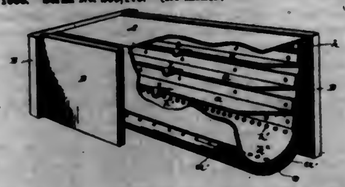
2. In a hydrocarbon-burner, the combination, with an open rectangular frame provided on its inner face with flanges forming supports, of an incombustible porous vessel provided with an oil-supply orifice and having openings in its side walls, said vessel being of a smaller diameter than the frame and adapted to rest upon the flanges thereof, whereby an air-passage is formed between its walls and the said frame, substantially as described.

3. In a hydrocarbon-burner, the combination, with an open rectangular frame provided on its inner face with flanges forming supports, of an incombustible porous vessel provided with an oil-supply pipe and having openings in its side walls near the top, said vessel being of a smaller diameter than the frame and adapted to rest upon the flanges thereof, whereby an air-passage is formed between its walls and the said frame, substantially as described.

4. In a hydrocarbon-burner, the combination, with an open rectangular frame provided on its inner face with flanges forming supports, of an incombustible porous vessel provided with an oil-supply pipe and having openings in its side walls, said side walls inclining inward toward the bottom and of a much smaller diameter than the frame, said vessel adapted to rest upon the flanges of the frame, whereby a wedge-shaped air-passage is formed between the walls of the vessel and the frame, substantially as described.

5. In a hydrocarbon-burner, the combination, with an open rectangular frame provided on its inner face with flanges forming supports, of an incombustible porous vessel provided with an oil-supply pipe and having openings in its side walls near the top, said side walls inclining inward toward the bottom and of a much smaller diameter than the frame, said vessel adapted to rest upon the flanges of the frame, whereby a wedge-shaped air-passage is formed between the walls of the vessel and the frame, substantially as set forth.

410,827. APPARATUS FOR VAPORIZING AND BURNING HYDROCARBON OILS. ELLIS F. EDGAR, Woodbridge, N. J. Filed Mar. 31, 1888. Serial No. 269,178. (No model.)



Claim.—1. In a heating apparatus for vaporizing and burning hydrocarbon oils, the combination, with a closed vaporizing-retort provided with vapor-openings through its walls, of an oil-holding vessel or pan supported within said retort, said retort being provided with an oil-supply opening through which oil is supplied into said pan or vessel, substantially as described.

2. The combination, with a closed oil-vaporizing chamber provided with vapor-eduction openings in its upper and lower portions, of a liquid-holding pan within said chamber, located below the upper vapor-eduction openings and above the lower eduction-openings, and means for supplying oil to said pan, substantially as described.

3. The combination of a closed vaporizing-chamber provided with an oil-supply opening and with vapor-eduction openings, an oil-holding pan within said chamber, and a surrounding casing forming a combustion-chamber between itself and the outer wall of said chamber, as set forth.

4. The combination, with a closed vaporizing-chamber provided with means for supplying oil thereto and having vapor-eduction openings, of a shield secured to the exterior of said chamber and forming a space between itself and the bottom of said chamber, open on one side, and non-combustible absorbent material filling said space, said chamber being provided with openings through its bottom leading to the said material, substantially as described.

410,828. FERRULE. SAMUEL W. EVANS, Jr., Philadelphia, Pa. Filed July 11, 1888. Serial No. 317,159. (No model.)

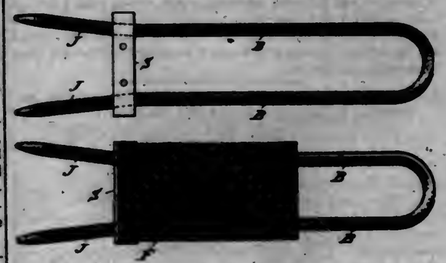


Claim.—1. A ferrule and point connected by a dovetailed joint, substantially as described.

2. A ferrule, in combination with a point, the latter having an inverted tapering neck, and the former embracing said neck, substantially as described.

3. A ferrule, in combination with a point, the latter having an inverted tapering neck and a shoulder at the narrow part thereof, the lower end of the ferrule resting against the neck, and the adjacent portion thereof bent upon said neck, substantially as described.

410,829. BOOT-JACK. HENRY W. FARLEY, Urbana, Ill. Filed Apr. 15, 1889. Serial No. 307,262. (No model.)



Claim.—1. In a boot-jack, the combination, with a prop-block having two perforations or holes at or near its upper edge diverging toward the forward face of said block-prop, of two rods inserted with their disconnected ends through said perforations for forming the heel-receiving jaws of said boot-jack, substantially as described.

2. In a boot-jack, the combination, with a block or prop having two diverging perforations near its upper edge, of two jaws or rods inserted with their forward portions through said diverging perforations, and a plate or foot-rest secured with its forward end upon the upper edge of said block or prop, and having its rear end resting upon the jaw-forming rods, substantially as described.

3. In a boot-jack, the combination, with a prop-block apertured at or near its upper edge, of a doubled rod having its disconnected ends inserted through said apertures and held thereby in flaring relation to said block for forming the heel-receiving jaws of said boot-jack, substantially as described.

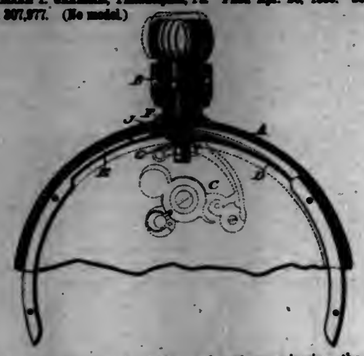
410,830. BACKING COMPOUND FOR STEREOTYPE-MATRICES. J. FREMONT FEST, Indianapolis, Ind. Filed Mar. 26, 1888. Serial No. 268,171. (No specimens.)

Brief.—The compound claimed is applied in the form of a dry powder, to absorb moisture from the matrix and beast by said moisture.

Claim.—1. As a new article of manufacture, a filling or backing compound for matrices, composed of plaster-of-paris, lime, flour, and alum, substantially as and for the purpose set forth.

2. As a new article of manufacture, a filling or backing compound for matrices, composed of finely-pulverized plaster-of-paris, lime, and flour, substantially as and for the purpose set forth.

410,881. WATCH-PENDANT WINDING AND SETTING DEVICE. WILLIAM T. CRAMER, Philadelphia, Pa. Filed Apr. 20, 1889. Serial No. 307,977. (No model.)



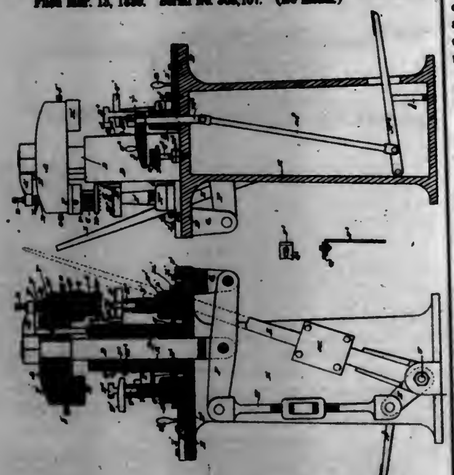
Claim.—1. In a watch winding and setting mechanism, the case of the watch having two springs, one spring being connected with the stem and having its connected end freely engaging with the end of the other spring, so that it may be moved to the opposite faces of the latter, said parts being combined substantially as described.

2. In watch winding and setting mechanism, two springs having their ends in engagement, one spring being connected with the stem, so that its end may be placed on opposite sides of the end of the other spring for holding said stem in either of its adjusted positions, substantially as described.

3. The springs D E, in combination with the stem, the ends of said springs being adapted to engage and one pass the other, one of the springs being connected with said stem, and the other spring having its place of contact with the other spring beveled or chamfered, as stated.

4. In a watch winding and setting mechanism, the combination of springs D and E, having overlapping ends, a stem passing through a slot in the spring D and being provided with collars on opposite sides of the said springs, the spring E having beveled faces, as at J, and the spring D having a lip adapted to engage said beveled faces, substantially as described.

410,882. HEELING-MACHINE. HUBERT C. HAHN, Unionville, Conn. Filed Mar. 13, 1889. Serial No. 303,107. (No model.)



Claim.—1. A heel-machine having an awl-head provided with awls, a reciprocating carrier for the said head, a movable stripper through which the awls play, adapted to retire to permit them to pass into the heel, and a stationary stop independent of the carrier, adapted to arrest and hold the stripper, against which the heel is drawn, while the awls are being pulled out of it by the movement of the said carrier, substantially as set forth.

2. A heel-machine having an awl-head provided with awls and with a hollow shank, a stripper through which the awls play, having a stem projecting through and beyond the shank of the awl-head, a carrier for such head and stripper, and a stop for engagement with the stem of the stripper which it holds while the awl-head is retired by the carrier, substantially as set forth.

3. A heel-machine having a reciprocating cross-head or carrier, an awl-head applied thereto and provided with awls, a movable stripper through which the awls play, having a stem extending through the head and carrier and projecting above the latter, and an adjustable stop for engagement by the said stem, whereby the stripper is held to be pulled against by the head in drawing the awls from the heels, substantially as set forth.

4. A heel-machine having a reciprocating cross-head or carrier, an awl-head applied thereto and provided with awls, a stripper through which the awls play, having a stem extending through the head and carrier and projecting above the latter, a set-screw for engagement by the said end of the stem, a stop-arm carrying the said screw, and a stationary rod supporting the said arm and passing through a vertical opening formed in the carrier, substantially as set forth.

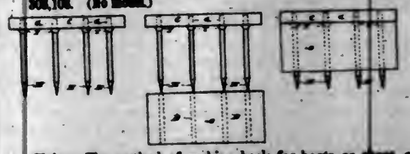
5. A heel-machine having a nailing-block, a reciprocating carrier therefor, a last for co-operation with the said block, provided with a shank, a vertically-adjustable post adapted at its upper end to receive the shank of the last and threaded and vertically slotted at its lower end, a longitudinally-movable carriage receiving the threaded lower end of the said post, and screws mounted in the carriage for holding the post against rotation and regulating the play of the carriage, one of the said screws entering the vertical slot in the post, substantially as set forth.

6. A heel-machine having a nail-holder consisting of a solid block provided with sockets adapted to receive the points of the nails and arranged to correspond to the arrangement of nails in a finished heel and shaped to prevent them from passing through it and adapted to support the nails so that their heads will project beyond its face, and a presser for forcing a top lift down upon the said projecting ends of the nails, whereby the top lift and nails are rigidly assembled together, substantially as set forth.

7. A heel-machine having a nail-holder consisting of a solid block provided with sockets adapted to receive the points of the nails, arranged to correspond to the arrangement of nails in a finished heel and shaped to prevent them from passing through it and adapted to support the nails so that their heads will project beyond its face, a presser adapted to be swung over and away from such nail-holder, and means for operating the same, substantially as set forth.

8. A heel-machine having a cross-head or carrier provided with an awl-head and nailing-block, a shaft for the said carrier, a manual operating-lever, an adjustable connection between the shaft and lever, an adjustable sliding weight mounted upon the lever between the fulcrum and the handle end thereof, and an adjustable stop for the lever mounted upon the bed of the machine, substantially as set forth.

410,883. METHOD OF MAKING HEELS FOR BOOTS OR SHOES. HUBERT C. HAHN, Unionville, Conn. Filed Mar. 13, 1889. Serial No. 303,108. (No model.)

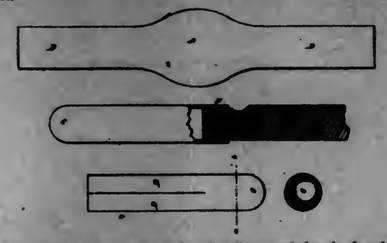


Claim.—The method of making heels for boots or shoes, consisting in grouping and supporting the nails in the relative positions which they will occupy in the completed heel, then placing a top lift upon their outer ends and applying pressure to force the said ends into the inner face of the lift, whereby all of the nails are simultaneously assembled with the top lift and held in place by their outer ends, with their shanks projecting from the inner face thereof, taking a heel-blank and piercing holes therein, and, by grasping the lift, simultaneously inserting the points of all the nails into the holes thereof and drawing the blank and lift together under pressure and simultaneously forcing the shanks of all of the nails through the heel-blank.

410,884. MANUFACTURE OF CUTLERY-HANDLES. HUBERT C. HAHN, Unionville, Conn. Filed Mar. 13, 1889. Serial No. 303,109. (No model.)

Claim.—1. A sheet-metal blank for cutlery-handles, consisting of an enlarged central portion having outwardly-curved side edges adapted to be drawn into a cup to form a seamless butt-end for the handles, and two corresponding leaves extending in opposite directions from the said central portion, having straight edges and of uniform width throughout and adapted to be folded to form the upper part of the handle, substantially as set forth.

2. A method of making cutlery-handles, consisting in part in drawing the central portion of a suitable blank into a cup forming a seamless butt-end for the handle, and transversely and longitudinally folding the two ends of the blank to conform them to the exterior curvature of the cup and to bring them into line with the length thereof.

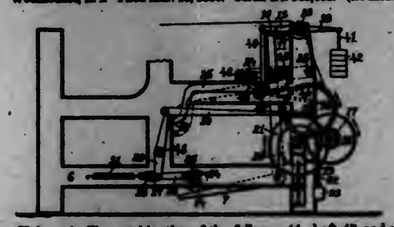


3. A method of making cutlery-handles, consisting in drawing the central portion of a blank into a cup and transversely and longitudinally folding the two ends of the blank and uniting the edges of the said folded ends.

4. A method of making cutlery-handles, consisting in drawing the central portion of a suitable blank into a cup and transversely and longitudinally folding the two ends of the blank and coupling the said folded edges by a transverse rivet.

5. A method of making cutlery-handles, consisting in drawing the central portion of a suitable blank into a cup and transversely and longitudinally folding the two ends of the blank, coupling the said folded ends by a transverse rivet, hot-welding their edges together in dies, and finally finishing the handle.

410,885. LET-OFF MECHANISM FOR LOOMS. CHARLES RISDE, Woonsocket, R. I. Filed Mar. 18, 1889. Serial No. 303,662. (No model.)



Claim.—1. The combination of the follower 44, shaft 43, and arm 45 with the levers 32 35 29, link 26, operated by the picker-shaft 24 to oscillate the lever 29, the shaft 24, crank-arm 25, rack-arm 30, ratchet-gear 20, pinion 19, intermediate pinion 17, and the gear 16, all substantially as herein shown and described.

2. The combination of the L-shaped lever 7, provided with the stud 10, the spring 9, arm 11, whip-roll 12, provided with the arm 13, link 40, balance-lever 39, weight-holder 41, and weights 42, with the follower 44, shaft 43, arm 45, levers 32 35 29, shaft 24, cam 14, crank-arm 25, link 26, rack-arm 30, ratchet-gear 20, pinion 19, intermediate gear 18, intermediate pinion 17, and the gear 16, all substantially as herein shown and described.

3. The cam 14, secured to the shaft 24, the L-shaped lever 7, provided with the stud 10, the spring 9, the arm 11, and the whip-roll 12, provided with the arm 13, in combination with the follower 44, the shaft 43, carrying the arm 45, provided with the stud 46, the lever 32, pivoted to the side frame and provided with the slot 34, in which the stud 46 works, the bent lever 35, connected to the lever 32 and provided with the stop 37, the lever 29, carrying the weight-holder 41 and weights 42, supported on the whip-roll shaft 38 and connected to the bent lever 35 by the arm 13 and link 40, the rack-arm 30, the lever 29, provided with the slot 28, the spring 31, the link 26, connected to the crank-arm 25 and carrying the stud 27, the crank-arm 25, the gears 16, 18, and 20, the pinions 17 and 19, and the friction-pulley 21, strap 22, and weight 23, all arranged and operating substantially as herein shown and described.

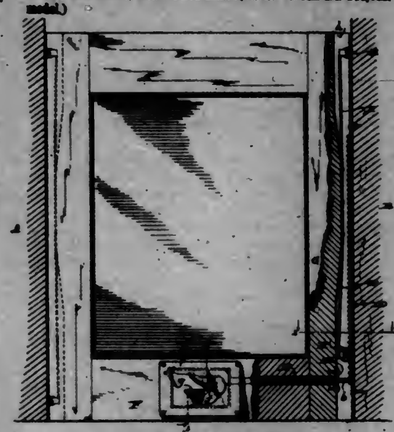
410,886. LAWN-MOWER ATTACHMENT. DANIEL JOHNSON, Kansas City, Mo. Filed Sept. 16, 1887. Serial No. 249,542. (No model.)

Claim.—1. In lawn-mowers, the combination, with the handle having forked ends, of a grass-receiver frame consisting of separate U-shaped strips having longitudinal slots in the respective end portions, one horizontal strip being secured to the forked ends of said handle by means of suitable securing and adjusting bolts, another U-shaped strip secured at its end portions, by means of securing and adjusting bolts, to the parallel portions of said horizontal strip, and a transverse U-shaped supporting-strip upon said handle, also having longitudinally-slotted end portions secured to the slotted sides of said horizontal strip by means of securing and adjusting bolts, for the purpose described.



2. In lawn-mowers, the combination, with the frame of the mower having feed-roller brackets, of grass-receiver pivots upon the side of said feed-roller brackets and arms connected with said pivots, a rod attached to said arms and also connected with and supporting the lower front end portion of said grass-receiver, and means for adjusting the rod-carrying arms on said pivots, for the purpose described.

410,887. SASH-FASTENER. HENRY S. KLEIN and HENRY B. KLEIN, Milwaukee, Wis. Filed Mar. 1, 1889. Serial No. 301,703. (No model.)



Claim.—1. In a window, the combination, with the frame and sash, of a rack secured to a side piece of said frame, a sliding rod arranged in said sash to engage the rack and having a screw-threaded inner end, a rack-bar provided with a socket to engage said screw-threaded end of the sliding rod, and a pivotal toothed segment arranged to mesh with said rack-bar, substantially as set forth.

2. In a window, the combination, with the frame and sash, of a rack secured to a side piece of said frame, a sliding rod arranged in said sash, a casing mortised in the lower sash-rail and provided with a detachable face-plate having a finger-rest projecting therefrom, a rack-bar arranged within the casing and detachably connected to the sliding rod, a stem having its bearings in said casing and face-plate and terminated in a thumb-piece, a toothed segment arranged on the stem to engage the rack-bar, and a spring arranged to exert its force against said rack-bar, substantially as set forth.

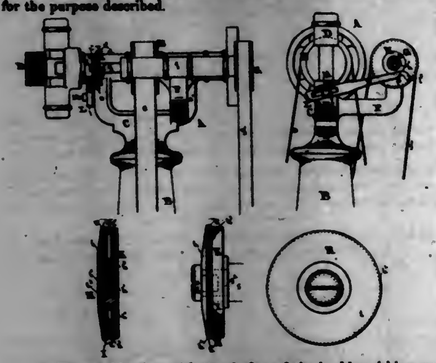
410,888. HEEL-BURNISHING MACHINE. JAMES KNOWY and SAMUEL POPE, Philadelphia, Pa., assignors of one-third to Thomas Beatty, same place. Filed May 1, 1889. Serial No. 309,288. (No model.)

Claim.—1. The combination, with the seat-wheel of a heel-burnishing machine, of an arm or rest longitudinally slotted through the sides of its inner end, a bolt passing through the slot and into the side of the machine, its head impinging the side of the rest and securing it in position, the outer end of the arm being rounded and hook-shaped and presented edgewise at the side of the seat-wheel, substantially as shown and described.

2. The combination, with the seat-wheel of a heel-burnishing machine, of the arm or rest L, having the enlarged inner end *l*, the slot *l'*, passing through the sides of the inner end, the outer rounded end *P*, presented edgewise at the side of the seat-wheel and having the notch *P* in its under side, the bolt *m*, passing through the slot and into the side of the machine, and the head of the bolt impinging the side of the inner end of the rest, substantially as shown and described.

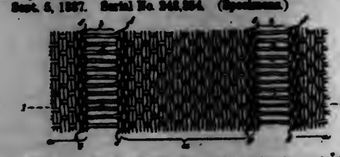
3. The combination, with the shaft of a heel-burnishing machine,

of a seat-wheel secured thereon, consisting of an outer and inner disk having annular flanges or rings on their inner surfaces, said outer disk having a sharp circumferential rim and having in its inner face a central recess for the reception of the end of a stepped bem on the inner face of the inner disk, on which bem is loosely journaled an interposed flat beading-disk whose surfaces bear against said rings and the shoulder of the stepped bem, and its flat edge projects slightly beyond the flat or square edges of the other disks, substantially as and for the purpose described.



4. The combination, with the shaft *g* of the heel-burnishing machine A, of a seat-wheel H, secured to the end of said shaft through the medium of the screw *k'*, said wheel consisting of the disk *h*, having the sharp rim h^3, with the face h^3 at right angles with the square edge h^4 of said disk, which has also the rings h^2 h^2, the central opening h', and the concentric recess h^5, receiving the end of the bem *k* on the inner face of the disk K, and having the central opening *k'*, said disk also having the ring k^2 and the square edge k^3 and abutting against the washer g^5 on the shaft, the beading-disk I, with the milled square edge, being loosely journaled on said bem and its flat sides bearing against said rings and the shoulder k^4 of the bem *k*, said edge *i* projecting slightly beyond the aligned flat edges h^4 k^3, substantially as and for the purpose described.

410,839. ELASTIC WEBBING. ELIJAH LAMB, Camden, N. J. Filed Sept. 5, 1887. Serial No. 248,894. (Specimens.)



Claim.—1. A strip of elastic webbing having a body composed of warp-threads and disconnected weft-threads, longitudinal elastic strands embedded in the fabric, and doup-threads tying the edge warps to the weft-threads, substantially as described.

2. A strip of elastic webbing having a body composed of interwoven warps and wefts, elastic strands embedded therein, doup-threads tying the edge warps of the strips, and fringed edges formed by projecting ends of the wefts, all substantially as described.

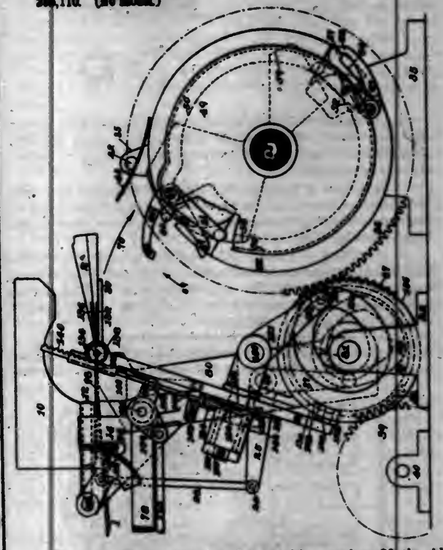
410,840. BROOM-CORN-SEWING MACHINE. CHARLES H. LEPE, Syracuse, N. Y., assignor to the Hand Stitch Broom Sewing Machine Company, Pittsburg, Pa. Filed May 6, 1889. Serial No. 309,714. (No model.)



Claim.—1. In combination with the table A, formed with the successively-enlarged openings O O, conveyers C C over said table, chutes D D under the said openings, and bins B B beneath the respective chutes, the gates *a a*, interposed between the chutes and bins and inclined in opposite direction from the delivery sides of the chutes, substantially as described and shown.

2. In combination with the table A, formed with the successively-enlarged openings O O, conveyers C C over said table, chutes D D, each composed of two plates *d d'*, inclined toward each other and having the bottom edge of the plate *d'* extending beneath that of the plate *d*, and bins B B beneath the said chutes, the gates *a a*, hinged at one edge under the plates *d d*, and their free edges adapted to swing toward the bottom edges of the plates *d' d'*, the rod *c*, connected to the gates, and the lever *l*, connected to the said rod, substantially as described and shown.

410,841. PAPER-BAG MACHINE. WILLIAM A. LORENZ and EDWARD R. GLASSER, Hartford, Conn., assignors to Felix W. Lobenstein and Clarence A. Wolle, Bethlehem, Pa. Filed Dec. 10, 1888. Serial No. 293,110. (No model.)



Claim.—1. The combination of the rocking carriage 30, the side plates 10 and 11, rocking toward each other above that carriage and at right angles to the rocking thereof, and the cam 29, and mechanism, substantially as described, between that cam and those side plates and operating to work the latter, all substantially as described.

2. The combination, in a bag-machine, of the folding-bed thereof, and a pair of grippers pivoted in a recess in the surface of that bed and rising from that surface to clasp a bag-blank some distance above it, and then falling to that surface to carry that blank thereon, all substantially as described and shown.

3. The combination of the cylinder 32, the pair of grippers 55 and 66, rocking in a recess in the periphery of that cylinder upon the shafts 53 and 64, the arms 51 and 60, rocking those shafts, and the cams 49 and 48 and the spring 62, working those arms, all substantially as described.

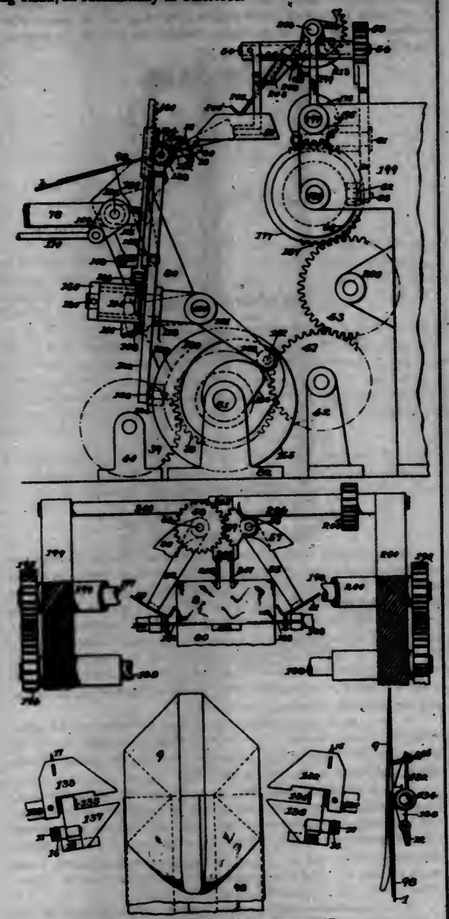
4. The combination of the cylinder 32, the pair of grippers 55 and 66, rocking in a recess in the periphery of that cylinder upon the shafts 53 and 64, the arms 51 and 60, rocking those shafts, the cams 49 and 48 and the spring 62, working those arms, and the plates 43 and 44, co-operating with the grippers 55 and 66 to draw and hold a bag-blank down upon the periphery of the cylinder, all substantially as described.

410,842. PAPER-BAG MACHINE. WILLIAM A. LORENZ and WILLIAM H. HOMES, Hartford, Conn., assignors to Felix W. Lobenstein and Clarence A. Wolle, Bethlehem, Pa. Filed Jan. 18, 1889. Serial No. 296,734. (No model.)

Claim.—1. The combination of the tack-blades 132 and 133, the studs 16 and 17, the box-blades 136 and 137, provided with the studs 10 and 11, respectively, and the grippers 12 and 13, provided with the springs 14 and 15, respectively, all combined and operating together substantially as described.

2. The combination of the swinging side plates 50 and 51, attached by means of the arms 52 and 53 to the shafts 54 and 55, respectively, the gear 58, and the sector 59, respectively fixed to the shafts 54 and 55, the sector-lever 60, meshing with the gear 58, and the cam 65, working that lever, all substantially as described.

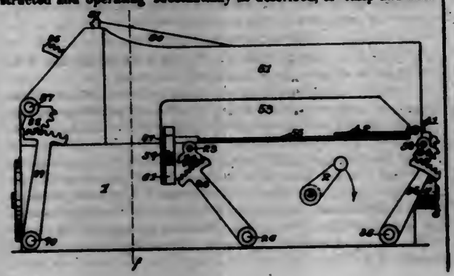
3. The combination of the side plates 50 and 51, reciprocating toward and from each other crosswise of the bag-blank, with the two sweeper-shafts 206 and 207, reciprocating side by side lengthwise of the bag-blank, all substantially as described.



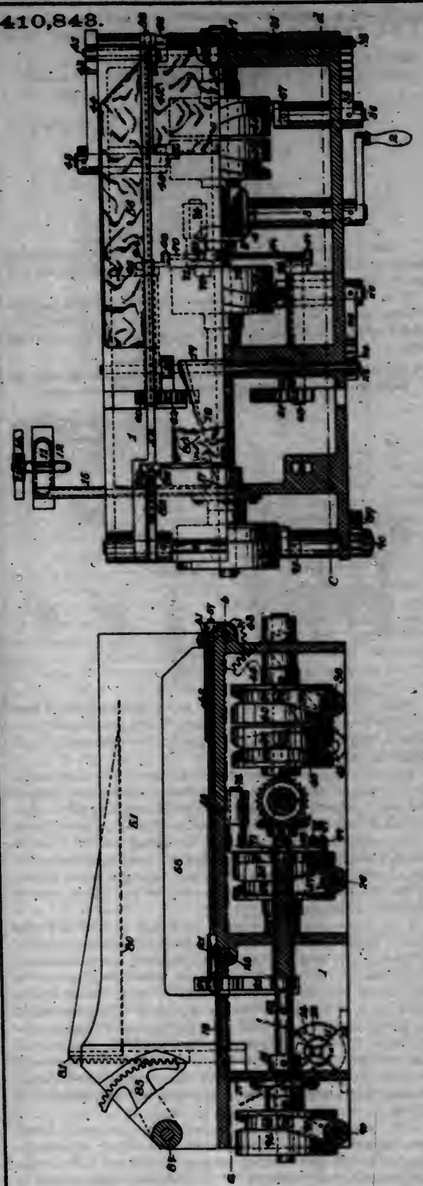
410,848. PAPER-BAG MACHINE. WILLIAM A. LORENZ, Hartford, Conn., assignor to Felix W. Lobenstein and Clarence A. Wolle, Bethlehem, Pa. Filed Jan. 18, 1889. Serial No. 296,740. (No model.)

Claim.—1. The combination of the grippers 21 and 22, 31 and 32, constructed and operating substantially as described, to clasp and hold a paper bag, with pneumatic apparatus, constructed and operating substantially as described, to inflate the bag thus held, all substantially as described.

2. The combination of the grippers 21 and 22, 31 and 32, constructed and operating substantially as described, to clasp and hold



410,848.



a paper bag or blank, with the side plates 55 and 56, constructed and operating to make bellows folds in the sides of the bag or blank thus held, all substantially as described.

3. The combination of the side plates 55 and 56, the bottom plate 42, and the presser-plate 80, all constructed and arranged to work together to collapse a rectangular paper bag into a bellows-sided square-bottom paper bag, all substantially as described.

4. The combination of the side plates 55 and 56, the bottom plate 42, the presser-plate 80, and pneumatic apparatus, substantially as described, all constructed and arranged to work together to collapse a rectangular paper bag into a bellows-sided square-bottom paper bag, all substantially as described.

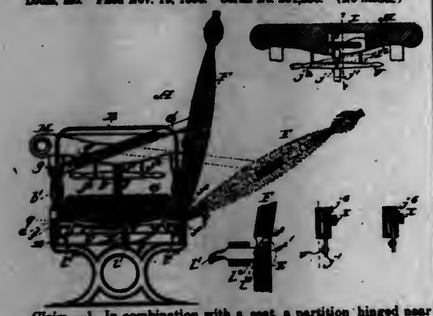
410,844. HEATING APPARATUS. ARMIER H. MARTIN, Summit, N. J. Filed Feb. 25, 1889. Serial No. 301,093. (No model.)



Claim.—1. A radiator composed of a coil or series of connected pipes incased in tubes of terra-cotta, substantially as and for the purpose set forth.

2. A radiator composed of a series of pipes connected together by a box common to all the pipes, the said pipes and box being surrounded by casings of terra-cotta conforming in shape thereto, as set forth.

410,845. CAR OR OTHER CHAIR. OSBORNE R. MICHAUD, St. Louis, Mo. Filed Nov. 19, 1888. Serial No. 291,203. (No model.)



Claim.—1. In combination with a seat, a partition hinged near the middle of the length of said seat and folding down laterally, arranged to divide said seat into two compartments when upright, substantially as set forth.

2. In combination with a chair-frame and a chair-back hinged thereto, a tie-rod extending from said back to said frame and provided with perforations arranged in series for adjusting the inclination of said chair-back, a bolt which passes through one or another of said perforations at will, and means for shifting said bolt from one to another of said perforations, consisting of a lever, toggle-arms, and links connecting said lever to said bolt, and a spring arranged to force said bolt into one of said perforations when left free thus to operate, substantially as set forth.

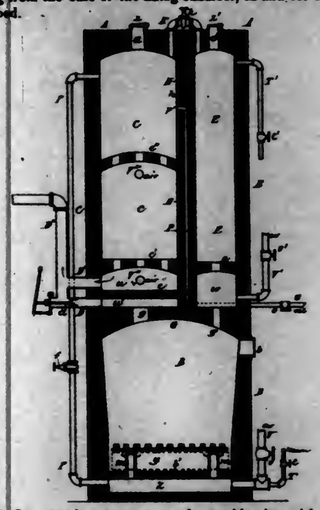
3. In combination with a chair-frame and chair-back hinged thereto, a tie-rod extending from said back to said frame and provided with perforations arranged in series for adjusting the inclination of said chair-back, a bolt passing through one or another of said perforations at will to complete the connection, a spring bearing against an attachment of said bolt to force it into one of said perforations, a lever having two handles, one at each end, and two fulcra, one near each handle, a bar vertically movable and jointed to said lever between said fulcra, in order that it may move with the vibration of said lever, a pivoted arm on which said bolt is mounted, and a toggle connecting said bar to said arm for operating said bolt, substantially as set forth.

4. In combination with a seat-frame and a seat-back hinged thereto, a partition hinged near the middle of the length of said seat, folding laterally, bolts for locking said partition and said back in their bearings, and a shaft connected to said bolts to withdraw them at will, substantially as set forth.

410,846. CUPOLA GAS-GENERATING FURNACE. MARCELLUS A. HOBART, Chicago, Ill. Filed Apr. 2, 1889. Serial No. 305,927. (No model.)

Claim.—1. In a cupola gas-generator, the combination of the fuel and decomposing chamber, the gas-fixing chamber and the steam-superheating chamber separated one from the other by a vertical partition and connecting at the bottom with such fuel-chamber, a steam-supply pipe connecting with the top of the superheating-chamber, supply-pipes for gas and oil vapor, and a gas-outlet pipe connecting with the fixing-chamber, as and for the purpose described.

2. In combination with the fuel and decomposing chamber placed in the base of the cupola, the superheating and fixing chambers placed above, the arch at the top of the fuel-chamber, having openings for gaseous products leading into such superheating and fixing chambers, a valve-pipe connecting the chambers at the top, and an escape-pipe leading from the base of the fixing-chamber, as and for the purpose described.



3. In a cupola gas-generator, the combination, with the fuel and decomposing chamber, of the regenerative portion of the cupola placed above and divided by a vertical partition into a gas-fixing chamber and a steam-superheating chamber, each connecting at the bottom with the fuel-chamber and having at the top an escape-opening for products of combustion, and a closing lid and pipes for supplying air, steam, and oil or vapor to the chambers, and a gas-eduction pipe, whereby the heat of the gaseous products arising from the bed of fuel while it is being heated may be better stored and utilized for fixing gas and superheating steam, as described.

4. In a cupola gas-generator, the hollow partition-wall for separating the fixing-chamber from the superheating-chamber having its space filled with dry sand or equivalent material for closing cracks which may occur in the wall, as described.

5. In a cupola gas-generator, the combination, with the fuel and decomposing chamber placed in the base of the cupola, of the regenerative portion of the cupola placed above and divided by a hollow vertical partition-wall into a gas-fixing chamber and a steam-superheating chamber, and an oil-vaporizing pipe or coil arranged in the space of such wall, and a vapor-pipe leading therefrom into the fixing-chamber, for the purpose described.

6. In combination with the fuel-chamber, the fixing-chamber and superheating-chamber arranged and connecting, as described, a distributing-chamber *z*, arranged below the ash-pit, having air and steam supply pipes, a pipe for water-gas leading from chamber *z* to the top of the fixing-chamber, a valved pipe connecting the tops of the fixing and superheating chambers, and a steam-supply pipe connecting with the top of the superheating-chamber, as and for the purpose described.

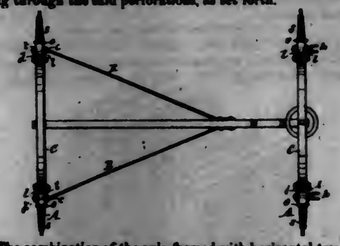
7. In combination with the fuel-chamber of the cupola, the supply and distributing chamber *z*, arranged below the ash-pit, perforated channels *m*, communicating with such chamber and extending into the ash-pit, the steam and air supply pipes connecting with chamber *z*, and an escape-pipe for water-gas leading from such chamber to the fixing-chamber of the cupola, for the purpose described.

410,847. SPRING-VEHICLE. HARVEY A. MOYER, Syracuse, N. Y. Filed Dec. 5, 1888. Serial No. 292,704. (No model.)

Claim.—1. The combination of the axle formed with horizontal transverse perforations, reach-brace attachments extending through said perforations, and a cross-spring hung on said attachments, substantially as specified and shown.

2. The combination of the axle formed with the downward offsets A″ A″ and with the perforations *a a* between the inner faces of said offsets and spindles of the axle, the reach-braces B B, extending through the said perforations, the cross-spring C in the same vertical plane with the axle, and links *l l*, connecting the cross-spring with the reach-braces at opposite sides of the axle, substantially as described and shown.

3. The combination of the axle formed with horizontal transverse perforations and shaft-shackles provided with attaching bolts or shanks extending through the said perforations, as set forth.



4. The combination of the axle formed with horizontal transverse perforations, shaft-shackles provided with attaching-shanks extending through said perforations, and a cross-spring over the axle in the same vertical plane therewith and hung on the attaching-shanks of the shaft-shackles, as set forth.

5. The combination of the axle formed with the downward offsets A″ A″ and with the perforations *a a* between the inner faces of said offsets and spindles of the axle, the shaft-shackles *b b*, formed with the attaching-shanks *b′*, extending through the perforations *a a*, the cross-spring in the same vertical plane with the axle, and links *l l*, connecting said spring with the shanks *b′*, substantially as described and shown.

410,848. COUPLING FOR WATER-CLOSET BOWLS. TRESSNY McILVAIN, Wakefield, assignor of one-half to the Smith & Anthony Stove Company, Boston, Mass. Filed May 31, 1889. Serial No. 312,715. (No model.)



Claim.—The combination of the socketed boss *b*, having the inwardly-projecting flange *b″*, the flanged threaded nipple *c*, having the flange *c′*, the elastic ring *d*, the annular wedge *e*, and the nut *f*, engaged with the threaded nipple and formed to bear against the outer end of the boss, whereby, when said nut is turned against the boss, the wedge is forced into the ring and the nipple is drawn outwardly, as and for the purpose specified.

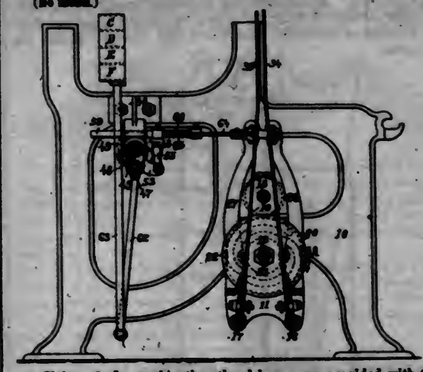
410,849. THILL-COUPLING. ANDREW J. CORBIN, Toledo, Ohio. Filed Apr. 22, 1889. Serial No. 308,152. (No model.)



Claim.—1. In a thill-coupling, the combination, with a draw-iron formed with a transverse circular recess having a longitudinal slot communicating therewith and provided with a circumferential groove within the side of said recess, of a cylinder working in said recess and formed with a recess corresponding in width to the slot of the draw-iron, said cylinder being provided with a lug upon its exterior adapted to enter the circumferential groove in the circular recess, and a thill-iron having a cross-bar adapted to rest within the recess of the cylinder, substantially as shown and described.

2. In a thill-coupling, the combination, with a draw-iron formed with a transverse circular recess having a longitudinal slot opening into the same, said recess being provided with a circumferential groove within the sides of the same, of a cylinder working in said recess and formed with a recess corresponding in width to the slot in the draw-iron, and provided on its exterior with a lug adapted to engage the circumferential groove of the draw-iron, a thill-iron having a cross-bar reduced on its front side, said cross-bar adapted to be inserted within the recess of the cylinder, and an elastic packing placed between said cross-bar and the bottom of the recess, substantially as and for the purpose described.

410,850. SHUTTLE-BOX-OPERATING DEVICE FOR LOOMS. EPHRAIM E. ORDELL, Ware, Mass. Filed July 14, 1888. Serial No. 280,035. (No model.)



Claim.—1. In combination, the driven gear provided with the hub, the two cams mounted upon said hub, the pivoted arms or levers provided with movable bolts, and the bell-cranks for moving the bolts out of connection with one cam and into connection with the other cam, substantially as and for the purpose herein shown and described.

2. In a shuttle-box-lifting device, the arms or levers provided with the bolts, the cams, and the bell-cranks for operating the said bolts, in combination with the racks, the shaft having the disk provided with the gear mounted at one end and the gear mounted on the other end of said shaft and operating the gear carrying the arm provided with the crank-pin through the intermediate gear, the crank-arm, the gear, the crank-pin, and the intermediate gear or pinion, the said crank-arm being provided with a sleeve upon which is mounted the disk provided with a gear, the shuttle-boxes, and connections from the crank-pin to the shuttle-boxes, substantially as described.

3. In a shuttle-box-lifting device, the combination, with the arms 26 and 27, provided with the bolts 28 29, the cams 22 and 23, provided with the ways 24 38 39 25, and the bell-cranks 32 33, connected with the bolts 28 29 and operated by the pattern-chain through the rods 34 35, of the racks 59 60, the crank 46, (and the gears 45, 48, 49, 52, and 44, the shaft 50, the sleeve 41, the arm 42, and the pin 66,) the shuttle-boxes, and connections from the crank-pin 47 to the shuttle-boxes, as described.

4. In combination, the racks 59 60, the shaft 50, the gear 52, the gear 45, having the crank-pin 47, the intermediate gear 48, the gear 49, and the crank-arm 42, provided with the gear 44, the shuttle-boxes, and connections from crank-pin 47 to the shuttle-boxes, substantially as described.

5. In a shuttle-box-lifting device, the arms or levers 26 27, pivoted to the frame-piece and provided with the bolts 28 29 and the bell-cranks 32 33, having the springs 36 37, for holding one arm of each of said bell-cranks depressed, the said bell-cranks being pivoted on said arms and connected to and operating the bolts 28 29, in combination with the racks 59 60, the shaft 50, the disk 51, having the depressions 57 and the gear 52, the gear 45, having the arm 46, carrying the crank-pin 47, attached thereto, the intermediate gear 48, the gear 49, the crank-arm 42, provided with the sleeve 41, having the disk 43, provided with the depressions 57, and the gear 44, mounted on said disk, and the pivoted arms 55, carrying the rolls 56 and provided with the springs 58, for holding said rolls in contact with the said disks 43 and 51, the shuttle-boxes, and connections from crank-pin 47 to the shuttle-boxes, substantially as described.

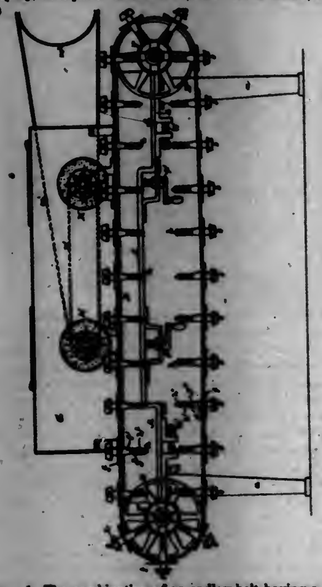
6. In a shuttle-box-lifting device, the combination, with the shuttle-boxes and connections to the pin 47, the sleeve 41, and arm 42, the racks 59 and 60, and the gears 44 and 52, of the shaft 50, provided with the gear 49, the intermediate gear 48, the stud-pin 67, the gear 45, connected to and adjustable with the crank 46, the crank 46, the crank-pin 47, and the stud-pin 66, constructed to adjust the throw of the crank to the shuttle-boxes, as described.

7. In a shuttle-box-operating device for drop-box looms, the combination, with the two racks for operating the drop-box mechanism, of the skipper mechanism consisting of the bell-crank levers 32 33, the cams 22 23, the bolts 28 29, and the arms 26 27, as described.

8. A device for controlling the drop-boxes of a loom, consisting of the bell-crank levers 32 33, operated from the pattern-chain, the

cams 23 23, and the bolts 28 29, the arms 26 and 27, the racks 59 and 60, the cranks 42 and 46, the mechanism intermediate the racks and the cranks, and the connection between the crank 46 and the drop-boxes, as described.

410,851. MACHINERY FOR POLISHING SHEET-METAL ARTICLES. FRANK. W. PERRY, Philadelphia, Pa., assignor to the Have Fruit Jar Company, same place. Filed Feb. 15, 1889. Serial No. 300,022. (No model.)



Claim.—1. The combination of an endless belt having a series of independent work-holding chucks, means for traversing said belt, and rotating brushes for acting on the articles on the chucks as the latter are carried past the brushes by the belt, substantially as specified.

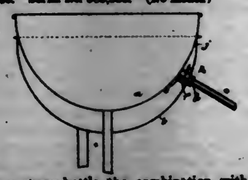
2. The combination of the rotating brushes, the endless belt having a series of chucks with rotatable work-holding heads, and means for traversing said belt, substantially as specified.

3. The combination of the endless belt, the drums therefor, the chucks having spring-holding pins, a rod having an expander for said pins, and a presser for operating the said rod as it passes around the opposite belt-drums, substantially as specified.

4. The combination of the endless belt and its work-holding chucks with the vertical and horizontal rotary brushes and adjustable bearings for the shafts of said brushes, substantially as specified.

5. The combination of the two sets of rotating brushes with the endless belt carrying the work-holding chucks, means for traversing the belt, and a frame having guides for vertically supporting and laterally confining said belt, substantially as specified.

410,852. STEAM-KETTLE. JOHN PEPPERER, New York, N. Y. Filed Apr. 1, 1889. Serial No. 306,005. (No model.)



Claim.—1. In a steam-kettle, the combination, with the jacket and steam-inlet pipe, of the combined pipe-connecting bush and laterally-distributing nozzle, consisting of an ordinary pipe-connecting bush having the chambered nozzle *e* on the inner end and the lateral issues *f* through the sides and being secured in the jacket, substantially as described.

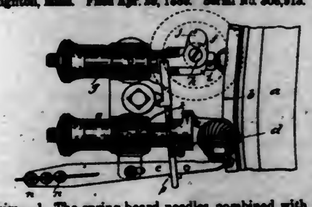
2. The combination, with a steam-kettle, of a distributing-nozzle located within the steam-space connected with the steam-pipe, and having laterally-directed issues distributing the steam laterally to the contiguous portion of the kettle, except in the direction of the junction of the kettle and jacket above the pipe-connection, and said nozzle being located in one side of the jacket near said junction, substantially as described.

410,853. KING-BOLT SOCKET. WILLIAM S. REDDEN, St. Louis, Mo., assignor to the Kingsland & Douglas Manufacturing Company, same place. Filed June 21, 1888. Serial No. 315,092. (No model.)



Claim.—As a means for re-enforcing the king-bolt of a vehicle to prevent breakage of the same, a ball-joint 11, formed upon a plate 14, secured to the axle and surrounding the king-bolt, and having a hole in its apex which fits the king-bolt snugly, about which hole the king-bolt swings as a center, the interior of the said ball-joint being cut away taperingly from the apex to the plate 14 in the direction of the length of the axle, the curved downward extensions 23 upon the plate 14, over which the head of the king-bolt rides, and the ball-socket 12, formed upon the plates 27 and embracing said ball-joint and secured to the timbers 7 and 8, that support the vehicle, the said ball-socket 12 being cut away taperingly from the apex of the ball-joint 11 to its own top in the direction of the length of the axle, and having a curved top over which the pin 26, which secures the king-bolt in place, may ride, the said plates 14 and 27 being constructed to permit play between them, substantially as and for the purpose set forth.

410,854. CIRCULAR-KNITTING MACHINE. JAMES POLLITOWT, Stoughton, Mass. Filed Apr. 20, 1889. Serial No. 308,913. (No model.)



Claim.—1. The spring-beard needles, combined with the presser-wheel and the stud or spindle on which it turns, a crank arm or lever to which said stud is affixed, a rod connected with said arm, the yarn-guide, and a fulcrumed drop-wire provided with a latch-pin co-operating with said yarn-guide, as set forth.

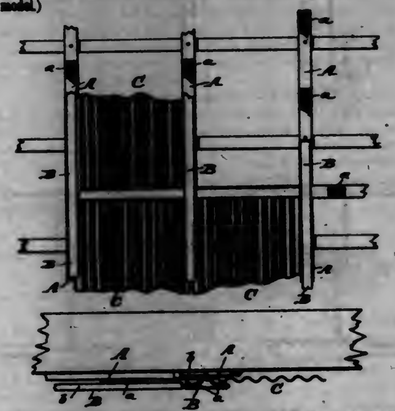
2. The spring-beard needles, combined with the presser-wheel and its stud and movable stud-support, a rod connected with said support, a yarn-guide, a fulcrumed drop-wire provided with a latch-pin, said drop-wire being constructed as a compound lever, and means for adjusting one part of the drop-wire with respect to the other, as set forth.

410,855. SUSPENDERS. MAYER REISS, Chicago, Ill. Filed Feb. 19, 1889. Serial No. 300,423. (No model.)



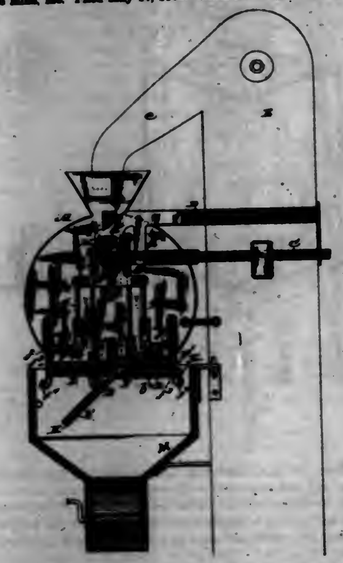
Claim.—Suspenders having, in combination, the web-straps A, grippers C, consisting of two jaws, one having two side slots *j* and a tang *l* adjoining each slot and provided with a turn-button, and the other having an offset *m* and two right angles and two slots *n* in the offset, and a tongue *o* between the said two offset slots, a portion of each end of the said offset on one jaw occupying one of said side slots on the other jaw, and a hook connecting the grippers to the web-straps, as shown and described.

410,856. METALLIC CEILING AND SHEETING STRIP. LOUIS LEE L. HAGEMEYER, Cincinnati, Ohio, assignor of one-half to Charles H. Harder, Fishkill, N. Y. Filed Mar. 14, 1889. Serial No. 303,288. (No model.)



Claim.—In combination with the combined ceiling and sheeting strips for retaining the sides of the ceiling-plates, the short strips constructed the same as said side strips for retaining the ends of adjacent plates, said short strips fitting in said side strips in a manner substantially as set forth, and for the purpose specified.

410,857. AUTOMATIC GRAIN-SCALE. KASPER H. SCHAFER, Linn's Mills, Mo. Filed May 17, 1889. Serial No. 311,169. (No model.)



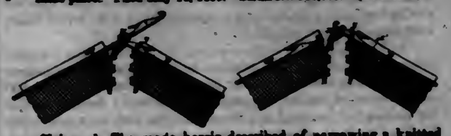
Claim.—1. The combination of the weighing-hopper, the scale-beam, the arm D, the bell-crank levers, the rods G G', the cross-bar *d'*, and the pivoted door B, substantially as described.

2. The combination of the weighing-hopper, the pivoted two-part door, the bell-crank levers, the spring-catches, and the guards, substantially as described.

3. The combination of the weighing-hopper, the arm D, the scale-beam, the pivoted two-part bottom, the spring-catches, the bell-crank levers, the rods G G', the cross-bar *d'*, and the guards, substantially as described.

4. The combination of the weighing-hopper, the arm D, the scale-beam, the pivoted two-part bottom, the spring-catches, the bell-cranks, the rods G G', the cross-bar *d'*, the guards, the bars H I, the rods J J' and the valve d^4, substantially as described.

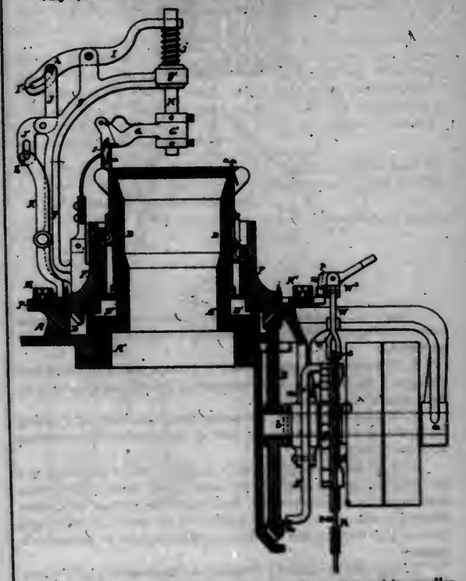
410,858. ART OF NARROWING KNITTED WEBS. ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, same place. Filed May 16, 1889. Serial No. 310,965. (No model.)



Claim.—1. The mode herein described of narrowing a knitted web, said mode consisting in transferring a stitch directly from one needle to another by bringing the receiving-needle into position to take the stitch from the needle on which it was formed, and then operating the latter needle so as to cast the stitch, substantially as specified.

2. The mode described of effecting the narrowing of a knitted web, said mode consisting in raising the stitch to be transferred, bringing forward the receiving-needle into position to take said stitch, and then operating the needle on which the stitch was formed, so as to cast said stitch, substantially as specified.

410,859. KNITTING-MACHINE. ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, same place. Filed July 8, 1889. Serial No. 316,894. (No model.)



Claim.—1. The combination of the needle-carrier and its needles, means for operating the latter, and a needle-picking tool projecting into the line of the needles, whereby its movement may be arrested by contact with a projecting needle of the carrier, and the picker thus brought into position for acting on said needle, substantially as specified.

2. The combination of the needle-carrier and its needles, the needle-picking tool arranged to be stopped by a projecting needle, and a tool-carrier having a yielding connection with the picking-tool, whereby one may have movement independently of the other, substantially as specified.

3. The combination of the needle-carrier and its needles, the needle-picking tool occupying such relation to the needles as to be stopped by a projecting needle of the set, and a tool-carrier having a frictional connection with the picking-tool, substantially as specified.

4. The combination of the needle-carrier and its needles, a needle-picking tool projecting into the line of the needles, whereby its movement may be arrested by contact with a projecting needle of the car-

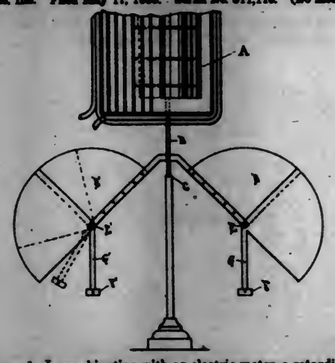
rier, means for moving the picking-tool so as to cause such contact of the same with the needles, and means for moving the picking-tool in line with the movement of the needles, so as to move the engaged needle into operative or inoperative position, substantially as specified.

5. The combination of the needle-carrier and its needles, the cam-box and its needle-operating cams, a needle-picking tool occupying such relation to the needles as to be stopped by a projecting needle of the set, and a tool-carrier having a yielding connection with the picking-tool and connected to the cam-box so as to be moved therewith, substantially as specified.

6. The combination of the needle-carrier and its needles, a needle-picking tool occupying such relation to the needles as to be stopped by a projecting needle of the set, means for moving the picking-tool across the set of needles, and cams and intervening devices whereby the picking-tool is moved in a direction in line with the needles after reaching the limit of its transverse movement, substantially as specified.

7. The combination of the needle-carrier and its needles, a needle-picking tool occupying such relation to the needles as to be stopped by a projecting needle of the set, means for moving the picking-tool across the set of needles, two sets of cams and intervening devices whereby the picking-tool is moved in a direction in line with the needles after reaching the limit of its transverse movement, and means for throwing said sets of cams into operation alternately, substantially as specified.

410,860. ELECTRIC METER. MASSAMBRES H. M. SLATTERY, Fort Wayne, Ind. Filed May 17, 1889. Serial No. 311,116. (No model.)



Claim.—1. In combination with an electric motor, a retarding device consisting of a folding fan presenting a variable surface to the atmosphere.

2. In combination with an electric motor, a retarding device consisting of a fan revolving in the atmosphere and folding upon itself by the action of centrifugal force.

3. In an electric motor, a retarding device consisting of a folding fan revolving in the atmosphere, with an adjustable weight attached to its movable portion.

4. In an electric-motor meter, a retarding device consisting of a fan revolving against atmospheric pressure and having one portion fixed rigidly to the motor-shaft, with a movable portion or portions adapted to slide over the fixed portion by the action of centrifugal force at high velocity, and so reduce the area exposed to atmospheric pressure.

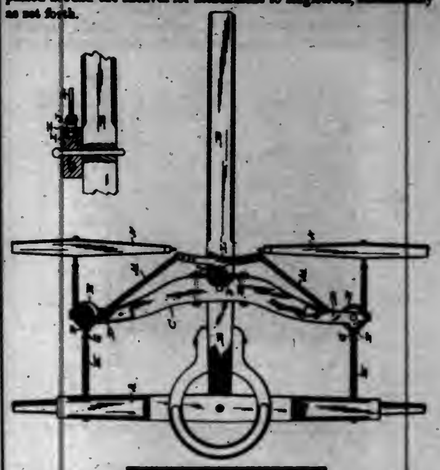
5. In an electric motor, a retarding device consisting of a revolving fan divided into sections adapted to slide together at high velocity.

410,861. WHIFFLETREE. LEVI W. SMITH, East Troy, Wis. Filed May 7, 1889. Serial No. 309,995. (No model.)

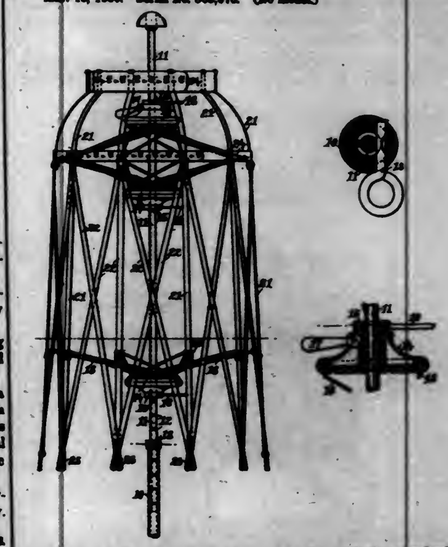
Claim.—1. A whiffletree provided with means for attachment to the stay-chains of a wagon, sheaves journaled to the whiffletree, a swivel connected to said whiffletree, a plate pivoted to the swivel, and chains or analogous means connected to the plate and passed around the sheaves for attachment to singletrees, substantially as set forth.

2. A wooden whiffletree, castings fitted on the ends thereof and provided with rearwardly-extended guard-loops having eyes for connection with the stay-chains of a wagon, sheaves having their bearings in the castings, a plate pivotally connected to said whiffletree, and chains or analogous devices passed around the sheaves within the guard-loops for attachment to singletrees, substantially as set forth.

3. A whiffletree provided with means for attachment to the stay-chains of a wagon and having its front edge provided with a central recess, sheaves journaled to the whiffletree, a swivel having a head fitted in said recess, a stay-plate secured to said whiffletree and provided with a bearing for said swivel, a plate pivotally connected to the swivel, and chains or analogous means connected to the plate and passed around the sheaves for attachment to singletrees, substantially as set forth.



410,862. DRESS-FORM. JOHN R. STONE, Providence, R. I. Filed Mar. 18, 1889. Serial No. 303,670. (No model.)



Claim.—1. In a dress-form, the combination, with the standard 11, provided with the grooves 12, of the tube 10, and the locking device 13, consisting of a cylindrical portion, part of which is cut away, and a loop forming a handle constructed to adjust the height of the dress-form and secure the same by turning the locking device, as described.

2. In a dress-form, the combination, with the vertical ribs forming the skirt of the dress-form and the standard, of two or more disks constructed to be turned horizontally, and provided with mechanism for securing the same in the desired position, and braces pivotally connected with the disks and with the vertical ribs, the whole constructed so that by turning the disks the tangential position of the braces is changed to the radial position, or vice versa, and the vertical ribs are expanded or contracted, as described.

3. The combination, in a dress-form, with the vertical ribs and tangential braces pivotally connected with the vertical ribs and with a disk supported on the standard at the lower part of the dress-form, of ribs pivotally connected with the vertical ribs near the upper part and secured to the lower part of the next rib, as described.

4. In a dress-form, the combination, with the standard 11, of two or more disks 14, constructed to turn horizontally, the braces 16, pivotally connected with the disk or disks and with the vertical ribs, and the ribs 21 and 22, and the cam-levers 17, constructed to secure the dress-form in the expanded condition, as described.

5. In a dress-form, the combination, with the standard 11, the vertical ribs 21 and 22, and the bands 24, of the disks 14, braces 16, pivotally connected with the disks 14 and the vertical ribs 21, and the cam-levers 17, constructed to expand the dress-form to the adjustment of the bands, as described.

6. In a dress-form, the combination, with the standard 11, of the sleeve 15, provided with the cam-lever 16, the disk 14, and cam-lever 17, and the braces 16, pivotally connected with the vertical ribs of the dress-form, and with the disk 14, constructed to expand or contract the dress-form by partial rotation of the disk 14, as described.

410,863. RUNG-BORER. JAMES SWAN, SEYMOUR, CONN. Filed Jan. 2, 1889. Serial No. 295,163. (No model.)



Claim.—1. A bung-borer consisting of a body, shank, and leading-screw cast in a single piece, the body being hollow and tapered and having a slot 6 through it, said slot being highest upon one side to form a reaming cutting-edge and the bottom being closed, with the exception of an opening 8, which is made highest upon one side to form a curved cutting-edge extending from the base of the leading-screw to the outer edge.

2. In a bung-borer, a hollow body having a closed rounded bottom, a leading-screw, and an opening through said bottom, one edge of which is made highest to form a cutting-edge, which extends from the base of the leading-screw to the outer edge of the opening, the smallest diameter of the body being at a distance above said cutting-edge.

3. A bung-borer consisting of a tapering hollow body having a slot with a cutting-edge, the bottom of said body being closed and rounded, as shown, and provided with a leading-screw and an opening leading from said screw to the outer edge, said opening being highest upon one side and having a cutting-edge, the smallest diameter of said body being at a distance above said cutting-edge, so that a barrel may be bored through without friction upon the side of the hole.

410,864. CARDING-MACHINE. CYRUS A. TAFT, Whittinsville, Mass., and EDWARD S. CLARK, Providence, R. I., executors of GUSTAVUS B. TAFT, deceased. Filed Jan. 4, 1889. Serial No. 295,469. (No model.)



Claim.—1. The combination, with the frame of a carding-engine, the main carding-cylinder, and a shield or escutcheon, substantially as described, of a fastening and adjusting device consisting of a threaded sleeve adjustably secured in the frame and a bolt constructed to hold the shield against the sleeve, as described.

2. The combination, with the frame of a carding-engine and the carding-cylinder, of the threaded sleeve *m*, the shield *d*, and screw-bolt *l*, constructed to secure and adjust the shield, as described.

410,865. PROCESS OF MAKING ZIRCONIUM NITRATE. FELIX THIELE, New York, N. Y., assignor of one-half to William C. Conrad, same place. Filed July 19, 1889. Serial No. 318,049. (No specimens.)

Claim.—The process herein described of making water-soluble nitrate of zirconium, which consists, first, in subjecting the zirconium ores to the action of hydrochloric acid, then heating it with sulphuric acid, so as to form sulphate of zirconium, and, finally, mixing it with a solution of nitrate of barium, so as to form by reaction therewith pure nitrate of zirconium, substantially as set forth.

410,866. STEAM-ENGINE. JAMES T. WARREN, Hanson, assignor to himself and JOHN T. WARREN, Boston, Mass. Filed Apr. 13, 1889. Serial No. 306,987. (No model.)

Claim.—1. The combination of the cylinders, the steam-valve, the butterfly-valve, the rectangular frame provided with the piston-rods, and mechanism, substantially as herein shown and described, for operating the valves.



2. The combination of the cylinders, the butterfly-valve, the steam-valve provided with the cam, the cut-off rod provided with the tappets, the levers, and the rectangular frame carrying the piston-rods, substantially as herein shown and described.

3. The combination of the cylinders 6 6, the butterfly-valve 8, provided with the arm 20, the steam-valve 12, having the cam 21 secured to the stem thereof, and the rectangular frame 16 16, carrying the piston-rods 14 14, substantially as herein shown and described.

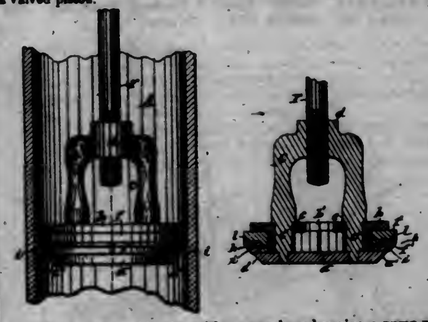
4. The combination of the cylinders 6 6, the butterfly-valve 8, provided with the arm 20, the steam-valve 12, having the cam 21 secured to its stem, the rectangular frame 16 16, carrying the piston-rods 14 14 and the finger 19, the cut-off rod 23, the tappets 25 25, and the levers 29 29, arranged and operating substantially as herein shown and described.

5. The combination of the cylinders 6 6, the butterfly-valve 8, provided with the arm 20, the steam-valve 12, having the cam 21 secured to its stem, the rectangular frame 16 16, carrying the piston-rods 14 14, the finger 19, and the uprights 22 22, supporting the slotted way 26, the cut-off rod 23, carrying the tappets 25 25 and supported on the uprights 22, and the levers 29 29, substantially as herein shown and described.

6. The combination of the cylinders 6 6, the butterfly-valve 8, provided with the arm 20, the steam-valve 12, having the cam 21, secured to its stem, the rectangular frame 16 16, carrying the piston-rods 14 14, the finger 19, and the uprights 22 22, supporting the slotted way 26, the cut-off rod 23, carrying the tappets 25 25 and supported on the uprights 22, the levers 29 29, and the locking-plate 32, substantially as herein shown and described.

410,867. PUMP-PISTON. BENJAMIN H. WELLS, Oneida, N. Y., assignor of one-half to Edward B. French, same place. Filed Mar. 30, 1889. Serial No. 304,982. (No model.)

Brief.—The movable packing acts as a valve, making the piston a valved piston.



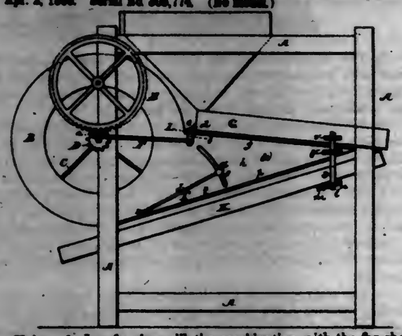
Claim.—In combination with a pump barrel or pipe, a pump-piston composed of a solid piston-head formed with a water-passage between its periphery and inside of said barrel or pipe and having the edge of its under side beveled, a follower secured to said piston-head and formed with a similar water-passage at its periphery and with an opening in its center, a ring formed with a circumferential rabbet and divided into segments seated movably radially between the piston-head and follower, and a ring also divided into segments seated movably radially in the aforesaid rabbet and breaking joints with the same, the lower of said rings having its bottom edge beveled, substantially as described and shown.

410,868. LOCOMOTIVE-SPRING. JOHN A. WHEELOCK and PETER LYDEN, St. Paul, Minn. Filed July 12, 1889. Serial No. 317,457. (No model.)



Claim.—As an improved article of manufacture, a locomotive-spring having its upper or supporting leaf formed at the ends by means of dies to receive suitable hangers or links, whereby the central portion of the body of the leaf is given the desired shaping or curvature, while the edges of the leaf are left straight or in alignment with the main body of the leaf, substantially as described.

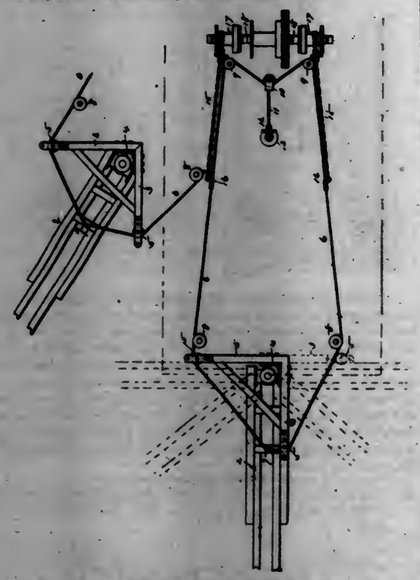
410,869. FANNING-MILL. THOMAS M. RALEY, Dublin, Ind. Filed Apr. 2, 1889. Serial No. 305,774. (No model.)



Claim.—1. In a fanning-mill, the combination, with the fan-shaft and its pinion, of the pitman and the transverse lever connected by its middle portion to the upper shoe, the lower shoe having the notched brackets on its under side near its upper end, and the pivoted swinging levers connected to the upper shoe by their shorter arms, and engaging by lugs at the ends of their longer arms the notched brackets of the lower shoe, substantially as specified.

2. In a fanning-mill, the combination of the fan-shaft, having a pinion on its end provided with a wrist-pin, a transverse lever pivoted at one end to the casing, a pitman connected to the downwardly-bent end of said lever, the upper shoe pivoted to the middle portion of said lever, notched bracket *m*, and swinging levers pivoted at their upper ends to the upper shoe and having at their lower ends lugs adjustably engaging notches of the brackets *m* of the lower shoe, substantially as specified.

410,870. CRANE. HENRY M. BARNHART, Marion, Ohio. Filed June 3, 1889. Serial No. 313,011. (No model.)



Claim.—1. The combination, with a mast and swinging crane, of a cable attached to the latter, and arms loosely supported so as to be moved by and in advance of the crane, for the support of the cable outside of the line between the point of attachment to the crane and the axis around which the latter swings, substantially as set forth.

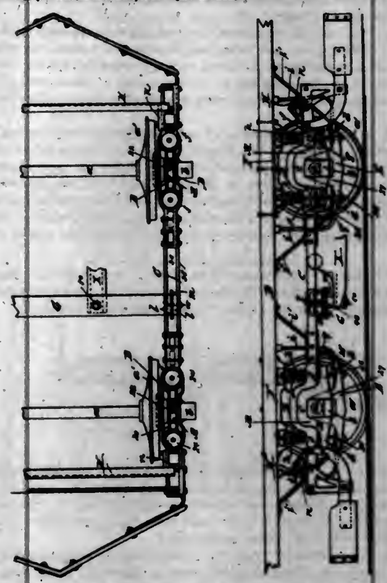
2. The combination, with a mast and a swinging crane mounted thereon, of an endless cable attached to the crane, and arms loosely supported on the mast on opposite sides of the crane, so as to be moved by the crane for retaining the cable outside of the line between the point of attachment to the crane and the axis around which the latter swings, substantially as set forth.

3. The combination, with a mast and a swinging crane mounted thereon, of an endless cable secured to the crane and strung over sheaves, and movable arms loosely supported on the mast for retaining the cable outside of the line between the point of attachment to the crane and the axis around which the latter swings, the said arms adapted to be moved by the derrick, substantially as set forth.

4. The combination, with a support, a mast, and a swinging crane mounted thereon, of an endless cable secured to the crane and strung over sheaves, movable arms loosely supported on the mast for retaining the cable outside of the line between the point of attachment to the crane and the axis around which the latter swings, a snatch-block for keeping the cable taut, and winding-drums for moving the cable, substantially as set forth.

5. The combination, with a support, a mast thereon, and a swinging crane supported by the latter, of a pair of swinging arms loosely supported in the mast and extending at right angles to each other, said arms having sheaves in their ends, an endless cable secured to the crane and strung over the sheaves in the arms and the other sheaves, a snatch-block for keeping the cable taut, winding-drums, and flexible devices connecting the cable to said drums, substantially as set forth.

410,871. ELECTRIC AND CABLE RAILWAY CARS. FREDERICK A. BROWN, Springfield, and LOUIS PFINDER, Boston, Mass. Filed May 23, 1888. Serial No. 311,751. (No model.)



Claim.—1. The combination, with the car-body and the journal-boxes for the car-wheel axles, of braces secured to and pending from said car-body, and the shoe and brace connections E E below the journal-boxes, comprising risers engaging said boxes and extensions to which said braces are connected, step-extensions *d* for said journal-boxes, beam-connected yokes B B, having extensions *f f*, cushions between said step and yoke extensions, and springs between and supporting the car-body from the said yokes, substantially as described.

2. The combination, with the sill of a car-body, of a sill-plate comprising a main plate 28, adapted to be secured to the sill, and one or more supplemental plates 30, supported from and below said main plate and adapted to receive the connection therewith of the upper ends of the spring-bolts, substantially as described.

3. The combination, with the journal-boxes for the car-wheel axles, the sill of the car-body, and sill-plates, each comprising a main plate 28, adapted to be secured to the sill, and the supplemental perforated plates 30, supported from and below said main plate, of the braces secured to and pending from the car-body, and shoe and brace connections E, having risers 27, engaging the journal-boxes, and the extensions 26, to which said braces are connected, and having the perforations 34, the steps *d d*, supported from the journal-boxes, having the perforations 33, the beam-connected yokes B B, comprising the extensions *f f*, having the perforated webs 24, cushions *g* between and supporting said yoke-extensions from said steps *d*, springs between and supporting said car-sills from said yoke-extensions, and the spring-bolts *j* between and connected to said supplemental portions 32 of the sill-plates and said brace-connections, passing through the perforations of said yoke-webs and step and through the said cushions *g* and springs A, substantially as described.

4. In a truck, the combination, with a longitudinal beam, as the yoke-beam C, of separable blocks having grooves 38 therein, the clevis *m*, and means for confining the said blocks together upon said beam and to embrace the middle portion of said clevis.

5. In a truck, the combination, with the beam comprising double bars 35 35, of the separable blocks *l l*, having the grooves 38 and flanges 46, the clevis *m*, and the bolt 45, passing through said double-barred beam and said blocks, substantially as and for the purpose described.

6. In a truck, the combination, with a beam C, of the separable blocks *l l*, having the grooves 38 and matching tongue and groove 47, the clevis *m*, and means for confining the said blocks together and upon the said beam, substantially as and for the purpose described

7. The combination, with the outer extension of a yoke B, of a bracket-plate *n*, provided with the laterally-extending angular flange 50, formed to fit and be connected with one end portion of a brake-supporting angle-iron, substantially as described.

410,872. PROCESS OF MAKING WEISS-BEER EXTRACT. CHRISTIAN L. BOSTON and CHARLES C. KERNS, Kansas City, Mo. Filed Nov. 24, 1888. Serial No. 291,781. (Specimens.)

Claim.—1. The described process of producing weiss-beer extract—namely, by mixing wheat and barley malt in about the proportions of two parts of wheat-malt to one part of barley-malt, subjecting them to mashing, in the manner stated, then extracting the wort from the mash, then mixing the wort with a decoction of hops, and boiling the whole for the evaporation of the water.

2. The process of manufacturing weiss-beer extract, which consists in intimately mixing ground wheat-malt and barley-malt in the proportion of about sixty-seven to thirty-three, respectively, adding water at a temperature of about 40° Reaumur, and allowing the mixture to soak, adding a further quantity of water and maintaining the temperature at about 70° Reaumur until the saccharine matter has been produced from the amylaceous matter, adding a decoction of hops, and subsequently evaporating until the desired consistency is reached, as set forth.

410,873. COMBINED ROLLER AND SEED-SOWER. THOMAS A. BUTLER, Oliver Springs, Tenn. Filed May 18, 1889. Serial No. 311,571. (No model.)



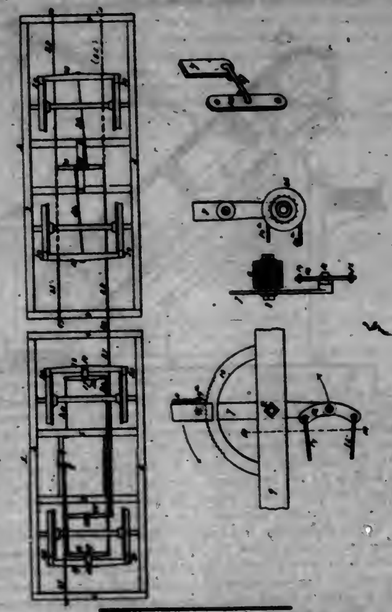
Claim.—1. In a combined roller and seeder, the combination, with the side beams B and transverse braces *c*, of the end-frame sections A, having standards *a* and flanges *b*, supports *d* upon the inner sides thereof, and the hopper-sections D E, substantially as and for the purpose specified.

2. The frame consisting of the end sections A, having standards *a* with flanges *b*, the side beams B, and transverse braces *c*, in combination with the hopper-sections D E, the former being adjustable, and the distributing-roller F, and the rollers G H, substantially as and for the purpose described.

410,874. CAR-BRAKE. HIRAM A. BUTTERFIELD, St. Louis, Mo. Filed June 18, 1888. Serial No. 314,606. (No model.)

Claim.—1. The combination, in a car-brake, of a hand-lever and an equalizer carried thereby and connected with the brake systems of two cars, substantially as and for the purpose set forth.

2. The combination of the brake systems upon two cars, each system being substantially alike at both ends of the cars and the two systems adapted to couple together, and a hand-lever with an equalizer connected thereto, the equalizer being connected with the systems of the two cars, respectively, substantially as and for the purpose set forth.

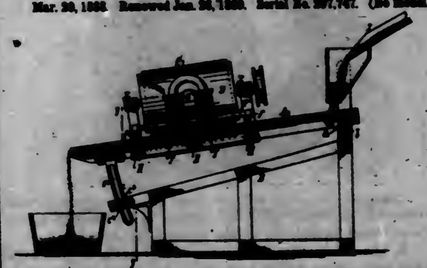


410,875. PROCESS OF MAKING BARRELS OF MUSICAL INSTRUMENTS. CHARLES C. CARPENTER, Jr., and LOUIS A. BOOTT, Groton, N. Y., assignors to I. A. Barter & Co., same place. Filed Feb. 13, 1889. Serial No. 299,765. (No model.)



Claim.—The process herein described of forming cylinders for musical instruments and other machines, consisting in forming a flat pattern, then making a thin electrotype therefrom, and then bending this electrotype into a cylinder, substantially as shown and described.

410,876. PROCESS OF SEPARATING MAGNETIC FROM NON-MAGNETIC PARTICLES. GORDON CORELISS, Glens Falls, N. Y. Filed Mar. 20, 1888. Renewed Jan. 30, 1889. Serial No. 297,747. (No model.)

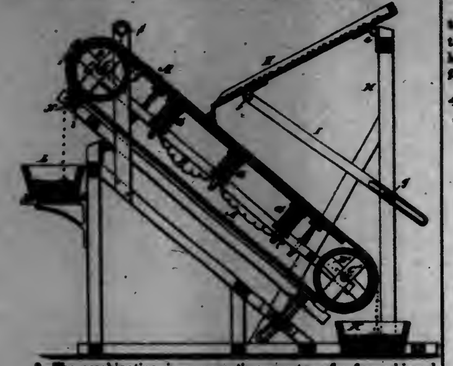


Claim.—The within-described process for separating magnetic from non-magnetic particles, which consists in exposing a running stream of liquid containing the substances to be separated to the action of a magnet, lifting the magnetic particles carried by said stream up from and out of contact with the stream, and finally conducting the particles which have followed the attraction of the magnet into a suitable receptacle.

410,877. MAGNETIC SEPARATOR. GORDON CORELISS, Glens Falls, assignor to the Cooking Ore Dephosphorizing Company, New York, N. Y. Filed Jan. 31, 1889. Serial No. 298,044. (No model.)

Claim.—1. The combination, in a magnetic separator, of an endless belt A, a magnet F, situated within said belt close to its upper strand and extending in the direction of the belt up to the highest

point of said upper strand, or nearly so, a frame constructed to retain said belt and magnet in an inclined position, and a trough situated above the belt and the magnet, substantially as described.

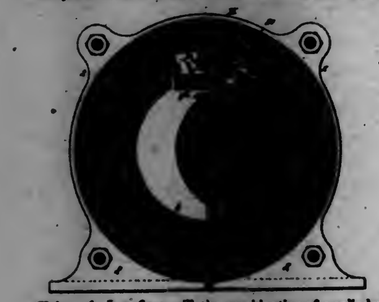


2. The combination, in a magnetic separator, of a frame hinged at one end and movable into different positions to vary its angle of inclination, an endless belt supported and retained by said frame, a magnet located within said belt and secured to and movable with the frame, whereby the magnet preserves its position relative to the belt when the inclination of the frame is changed, means for adjusting and holding the belt and magnet carrying frame, and a trough arranged over said frame to deposit the mass to be separated on the belt over the magnet, substantially as described.

3. The combination, in a magnetic separator, of an inclined frame having two opposite rollers, one of which is provided with annular grooves in its external surface, the endless belt passing round the pulleys, and the magnets supported by the frame within the belt and made to extend into said annular grooves, substantially as described.

4. The combination, in a magnetic separator, of an endless belt A, a magnet situated within said belt close to its upper strand and extending in the direction of the belt, a frame constructed to retain said belt and magnet in an inclined position, a trough situated above the belt and the magnet, and a spray-pipe S, extended across the highest portion of the belt, substantially as described.

410,878. FLOUR-MILL. NICHOLAS CRESSLING, St. Louis, Mo., assignor of two-thirds to Henry Stanley and Emil C. Teuscher, both of same place. Filed May 28, 1888. Serial No. 275,096. (No model.)



Claim.—1. In a flour-mill, the combination of a cylinder, a roller eccentrically arranged within the cylinder, and feed-trough and discharge-trough located side by side, substantially as set forth.

2. The combination of a cylinder, a roller eccentrically arranged within the cylinder, feed-trough and discharge-trough located side by side, and a diaphragm 22, substantially as and for the purpose set forth.

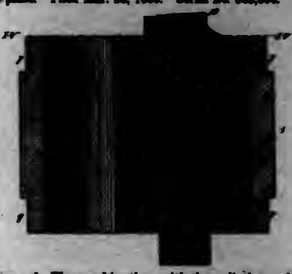
3. In a flour-mill, the combination of a cylinder, a roller eccentrically arranged within the cylinder, feed-trough and discharge-trough located side by side, a chute 15 on the delivery side of the feed-trough, and a diaphragm 22 on the discharge side of the mill, substantially as and for the purpose set forth.

4. In a flour-mill, the combination of a cylinder, a roller eccentrically arranged within the cylinder, a trough for discharging the ground stuff located at the top of the cylinder, and a diaphragm 22, substantially as and for the purpose set forth.

5. In a flour-mill, the combination of a cylinder, a roller eccentrically arranged within the cylinder, feed-trough and discharge-trough located side by side having a partition between them, the diaphragm 22, and brushes 26 and 26 on the partition and diaphragm, respectively, substantially as and for the purpose set forth.

6. In a flour-mill, the combination of a cylinder, a roller eccentrically arranged within the cylinder, and feed-trough for delivering the material and discharge-trough for discharging the ground stuff, located side by side at the top of the cylinder, substantially as and for the purpose set forth.

410,879. FLOUR-MILL. NICHOLAS CRESSLING, St. Louis, Mo., assignor of two-thirds to Henry Stanley and Emil C. Teuscher, both of same place. Filed Mar. 28, 1888. Serial No. 268,096. (No model.)

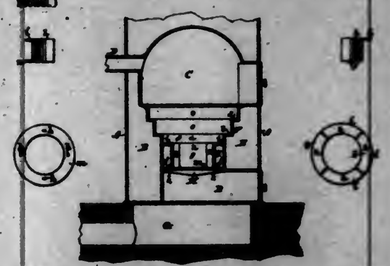


Claim.—1. The combination, with the cylinder and eccentrically-arranged roller, of a feeding device delivering the material at different heights between the grinding-surfaces, substantially as described.

2. The combination, with the cylinder and eccentrically-arranged roller, of a feeding device delivering the material at different heights between the grinding-surfaces, consisting of a casing 21, narrowed down to a point at its forward end, having a number of inclined ways or partitions 24 25 26, extending rearwardly from top to bottom, the lower beyond the one above, substantially as described.

3. A feeding device for delivering material to an eccentric roller-mill, consisting of the casing 21, having a chute 23 and inclined bottom 27, and narrowed down to a point 22, and the inclined ways 24 25 26, the ways extending farther back from the top toward the bottom, substantially as described.

410,880. FIRE-POT FOR HOT-AIR FURNACES. SAMUEL DARLING, Providence, R. I. Filed May 18, 1888. Serial No. 311,307. (No model.)



Claim.—1. A hot-air-furnace fire-pot having a chamber at its lower part provided with a grate and one or more enlarged offset chambers in its upper part, the lower chamber above the grate being adapted for holding and burning the coal required for heating the room in mild weather, and the lower chamber, together with the upper offset chamber or chambers and the same grate, being adapted for the cold and coldest weather, substantially as described.

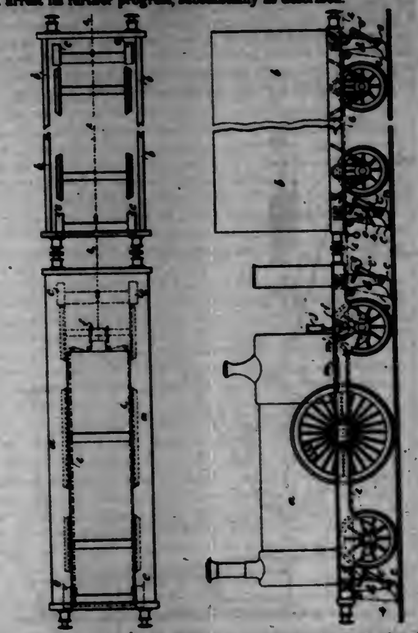
2. A hot-air-furnace fire-pot provided with a grate and having within its chamber a smaller removable fire-pot wall which forms an offset central chamber of less depth than the original chamber and of less area than the grate, substantially as described.

3. A hot-air-furnace fire-pot provided with a grate and one or more enlarged offset chambers in its upper part, and having within its lower chamber an additional offset chamber formed by a removable surrounding wall which forms a central chamber of less depth than the said lower chamber and of less area than the grate, substantially as described.

410,881. CAR-BRAKE. PIETRO F. DE FERRARA, Florence, Italy. Filed July 16, 1888. Serial No. 317,572. (No model.)

Claim.—1. The improved brake apparatus, which consists of spring-impelled brake-blocks adapted to descend upon and hug the rails of a railway, and suitable mechanism for withdrawing said brake-blocks, substantially as described.

2. The frictionally-fixed brake-blocks c, having flanges c' and projecting arms c', in combination with springs g, tending to forcibly press said brake-blocks onto the rails and so elevate the train or tram-car and arrest its further progress, substantially as described.

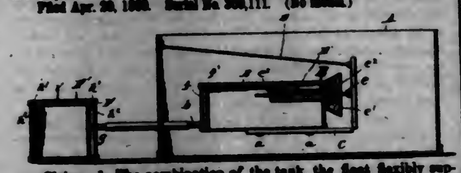


3. In combination with friction brake-blocks, the mechanism for applying said brake-blocks to the rails, consisting of a winding-drum f, carrying a ratchet-wheel l, and upon which chains c, leading from the brake-blocks, are wound to raise said blocks, a pawl l', having a hand-lever l', engaging with said ratchet-wheel, and means actuating such mechanism, substantially as described.

4. The combination, with the friction brake-blocks, the winding-drum f, and a chain connecting said blocks and drum, of an anti-concussive spring m, one end of which is connected, by means of a chain m', to said winding-drum and the other end to the under framing of the locomotive, substantially as described.

5. In combination with the brake-blocks, the means for retaining said brake-blocks in their raised position when the vehicles are to be uncoupled, consisting of the ratchet-wheel n, pawl o, and spring-catch o', for keeping said pawl out of the teeth of the ratchet-wheel when the vehicles are running, substantially as described.

410,882. STOCK-WATERER. JOHN H. DEWEY, Shell Rock, Iowa. Filed Apr. 20, 1888. Serial No. 308,111. (No model.)



Claim.—1. The combination of the tank, the float flexibly supported therein, its valve and operating mechanism therefor, and the watering-trough having pipe-connection with the float, substantially as set forth.

2. The combination of the tank, the float flexibly supported therein, its valve, and operating-lever composed of two hinged or pivoted together arms, one having a sliding connection with the float and the other arm being connected to the valve-stem and having connection with the tank, and means to effect the withdrawal of more or less of the contents of the float, substantially as specified.

3. The combination of the tank, the float, its valve, and operating mechanism, said float having a discharge-tube and a vent-tube connecting with a vent-chamber having a narrow air-passage near the top of the float, substantially as set forth.

4. The combination of the tank, the float, its valve, and operating mechanism therefor, the discharge-pipe of said float, and the trough having connection with the discharge-pipe of the float, said trough having a slotted cover having one end held by means of a cross-bar of said trough and let into the upper end of the trough, the opposite end of said cover being retained in position by a cross-bar or other means inserted through staples or keepers at that end of the trough, substantially as set forth.

410,883. APPARATUS FOR UNLOADING BOATS. JAMES M. DODGE, Philadelphia, Pa., assignor to the Dodge Coal Storage Company, same place. Filed Dec. 3, 1888. Serial No. 292,513. (No model.)

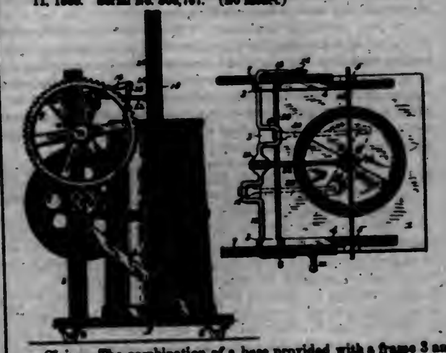


Claim.—1. In an apparatus or contrivance for discharging coal or other material from vessels or barges to a given point or locality on shore while the said vessels or barges may be at variable distances from and at different levels relatively to the point of discharge of the material, the combination of the following instrumentalities, arranged and operating together in substantially the manner hereinbefore specified, viz: first, a stationary conveyer-trough extending from the point of discharge of the material down into the water; second, a movable conveyer-trough extension having its inner end movably supported within the said stationary conveyer-trough; third, a suitable float for supporting the highermost portion of said trough-extension in close proximity to and parallel with the deck of the barge or vessel to be unloaded, and, fourth, an endless chain provided with flights which travel within and convey the material shoveled from the hold of the vessel into the extension-trough, along through the latter, and also thence upwardly through the stationary conveyer-trough.

2. In combination with the stationary conveyer-trough extending down into the water, a conveyer-trough extension bearing at one end on and both longitudinally and pivotally movable relatively to the stationary trough, and a conveyer-chain having its flights arranged and operating within said stationary trough, and also within said movable trough-extension, substantially in the manner and for the purposes hereinbefore set forth.

3. In combination with the stationary inclined conveyer-trough, a horizontal branch or extension thereof bearing at one end thereon and longitudinally and pivotally movable relatively thereto, and a conveyer-chain operating in conjunction with said extension of said stationary trough, means for vertically supporting the outer end of said extension, substantially as and for the purpose hereinbefore set forth.

410,884. CHURN. JAMES P. FREEBURNS, Hope, Ind. Filed Apr. 11, 1888. Serial No. 269,767. (No model.)

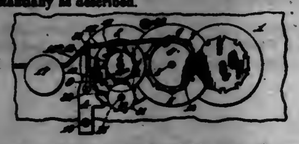


Claim.—The combination of a base provided with a frame 3 and slotted uprights 5, a rock-shaft 12, journaled upon the said frame, suitable mechanism for operating this shaft, a churn and dasher, an arm 22, rigidly connected to the said rock-shaft, rods secured to the churn-dasher and working in the slots in the said uprights, and pivotal links connecting the forward end of the arm 22 to one of the rods secured to the dasher, as and for the purpose set forth.

410,885. REGISTERING MECHANISM. PIERCE FORD, Tucson, Ariz., assignor of one-half to William W. Flewelling, same place. Filed Apr. 9, 1888. Serial No. 269,665. (No model.)

Claim.—1. In a registering mechanism for fluid-meters, the com-

bination, with a series of disks connected together and having the shaft of the units-disk provided with a ratchet, of a drop-lever having a pawl to engage the ratchet, a train of gearing, a lift actuated by said gearing for raising the lever and permitting it to drop, and a rotary shaft for connecting with the measuring-wheel of a meter geared to and continuously driving the train of gearing which rotates the lift, substantially as described.



2. In a registering mechanism for fluid-meters, the combination of a series of connected registering-disks mounted on separate shafts, and the shaft of the units-wheel having a ratchet-wheel, a pivoted drop-lever having a pawl engaging the ratchet-wheel, a shaft having a revolving lift for raising the drop-lever, a shaft for connecting with the measuring-wheel of a meter, and a train of gearing driven by the measuring-wheel shaft and connected with the lift to continuously rotate the latter, substantially as described.

3. In a registering mechanism for fluid-meters, the combination of a series of connected registering-disks mounted on separate shafts, and the shaft of the units-disk having a ratchet-wheel, a pivoted drop-lever having a weight and a pawl which engages the ratchet-wheel, a bell-crank lever having one arm connected with the drop-lever, a shaft having a revolving toothed lift acting on the other arm of the bell-crank lever, a shaft for connecting with the measuring-wheel of a meter, and a train of gearing driven by the measuring-wheel shaft and connecting with the lift to continuously rotate the latter, substantially as described.

4. In a registering mechanism for fluid-meters, the combination of a series of connected registering-disks mounted on separate shafts, and a shaft of the units-disk having a ratchet-wheel and a pinion, a pivoted weighted drop-lever having a pawl engaging the ratchet-wheel, a bell-crank lever having one arm engaging the drop-lever, a shaft having a revolving lift provided with teeth which engage the bell-crank lever and the pinion on the shaft of the units-disk, a shaft for connecting with the measuring-wheel of a meter, and a train of gearing driven by the measuring-wheel shaft and connecting with the lift to continuously rotate the latter, substantially as described.

5. In a registering mechanism for fluid-meters, the combination of a series of registering-disks mounted on separate shafts connected by the stop-plates 5 and circular plates 8, and the shaft of the units-disk having a ratchet-wheel 14, a pivoted drop-lever 15, having a pawl 16, engaging the ratchet-wheel, a bell-crank lever 32, having one arm engaging the drop-lever, a shaft having a revolving toothed lift 30, engaging the other arm of the bell-crank lever, a shaft 29, for connecting with the measuring-wheel of a meter, and a train of gearing driven by the measuring-wheel shaft and connecting with the lift to continuously rotate the latter, substantially as described.

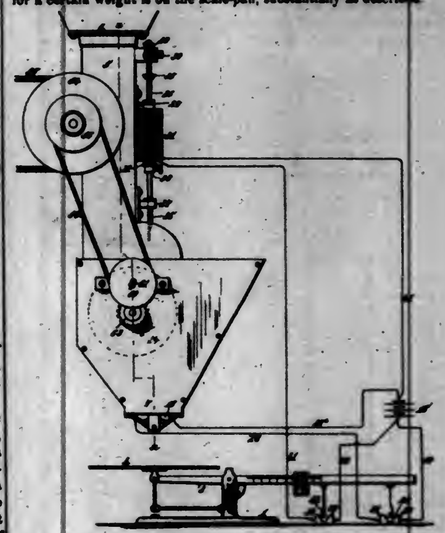
6. In a registering mechanism for fluid-meters, the combination of a series of registering-disks, each mounted on a separate or independent shaft, the stop-plates and circular plates for connecting the shafts of the registering-disks, a drop-lever for operating the units-registering disk, a revolving lift which raises the drop-lever and permits it to drop to rotate the units-registering disk, and a shaft for connecting with the measuring-wheel of a meter, geared to and rotating the lift, substantially as described.

410,886. APPARATUS FOR WEIGHING AND PUTTING UP PACKAGE-TEA, &c. OWEN A. GILL, Baltimore, Md. Filed May 6, 1889. Serial No. 309,972. (No model.)

Claim.—1. In an apparatus for weighing package-tea and other material, the combination of a scale, a conduit for conveying a stream of material to the scale, a gate having an armature and arranged for the purpose of reducing the said stream to a smaller stream immediately preceding the time the required quantity for a certain weight is on the scale, an electro-magnet for holding the gate and releasing it to partially close to reduce the size of the stream, as stated, an electrical generator, a circuit including the electro-magnet, and a circuit-closer operated by the scale-beam, substantially as described.

2. In an apparatus for weighing package-tea and other material, the combination of a weighing-scale, a conduit for conveying the material, a force-feed for advancing the material in a stream to the scale, a gate having an armature and electro-magnetic gate mechanism operated by the scale-beam to release the gate for the latter to partially close and diminish the stream of material advanced by the force-feed to a smaller stream immediately preceding the time the required quantity for a certain weight is on the scale, substantially as described.

3. In an apparatus for weighing package-tea and other material, the combination of a weighing-scale, a conduit for the material, a rotating force-feed arranged in the conduit for advancing the material in a stream to the scale, a cut-off valve having an armature and located beneath the force-feed, electro-magnetic valve mechanism operated by the scale-beam for releasing the cut-off valve to permit it to entirely close, a sliding gate located above the force-feed for diminishing the stream advanced by the force-feed to a smaller stream, and means whereby the gate is partially closed to diminish the size of the stream advanced by the force-feed before the required quantity for a certain weight is on the scale-pan, substantially as described.



4. The combination, with a weighing-scale, of a conduit for conducting the material to the scale-pan, a driven force-feed for advancing the material to the scale-pan, a movable gate, and electro-magnet and armature devices which hold the gate open and release it to partially close and diminish the flow of material immediately preceding the time the required quantity for a certain weight is on the scale-pan, substantially as described.

5. The combination, with a weighing-scale, of a conduit for conducting the material to the scale-pan, a driven force-feed arranged to force the material through a passage-way toward the scale-pan, a vertically-movable gate for governing the passage-way, a rod carrying the gate and having an armature, an electro-magnet for holding the gate raised, an electric circuit including the magnet and a battery, and a circuit-closer operated by the scale-beam to break the circuit and drop the valve immediately preceding the time the required quantity for a certain weight is on the scale-pan, substantially as described.

6. The combination, with a weighing-scale, of a conduit having a delivery-mouth, a cut-off valve which governs the flow of material through said mouth, a driven force-feed for advancing the material to the delivery-mouth, a gate adjacent to the force-feed, and electro-magnetic mechanisms, including two circuits, and each operated by the scale-beam for first partially closing the gate to diminish the quantity of material advanced by the force-feed and subsequently to close the cut-off valve, substantially as described.

7. The combination, with a conduit for conducting the material to a weighing-scale, of a force-feed in the conduit, a vertically-movable gate adjacent to the force-feed, a rod having an armature and carrying the gate, a cut-off valve for governing the flow of material through the delivery-mouth, an electro-magnet in an electric circuit, and devices for raising the gate-carrying rod by the opening of the cut-off valve to place the armature in the field of the magnet, substantially as described.

8. The combination, with a conduit for conducting the material to a weighing-scale, of a force-feed for advancing the material to the scale-pan, a cut-off valve for governing the delivery-mouth of the conduit, a gate for governing the quantity of material advanced by the force-feed, means for opening the gate by the opening movement of the cut-off valve, electro-magnets for respectively holding the gate and valve open, electric circuits, and circuit-closing devices operated by the scale-beam to first break the circuit of the gate-holding magnet and to subsequently break the circuit of the valve-holding magnet, substantially as described.

9. The combination, with a conduit for conducting the material to a weighing-scale, of the sliding cut-off valve having a tripping-dog, a pivoted lever arranged in the path of the dog, a vertically-moving rod carrying a gate, a lever pivotally connected with the gate-rod, a flexible connection between the two levers, and electro-magnets for respectively holding the valve and gate in their open positions, substantially as described.

10. The combination, with a conduit for conducting the material to a weighing-scale, of the sliding cut-off valve having a tripping-dog a pivoted lever in the path of the dog, a vertically-movable rod carrying a gate, an extensible and contractible lever pivotally connected with the gate-rod, a flexible connection between the two levers, and means for holding the valve and gate open and automatically releasing them at different times, substantially as described.

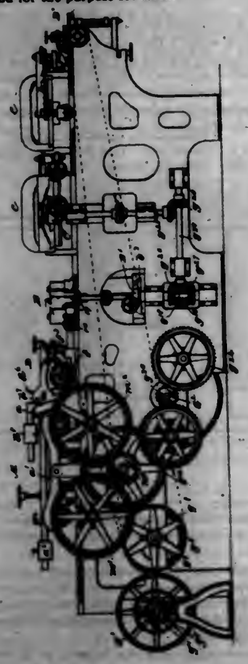
11. The combination, with a conduit for conducting material to a weighing-scale, of a force-feed in the conduit, a vertically-movable rod carrying a gate, an electro-magnet, an adjustable armature on the rod below the magnet, and an adjustable stop on the rod to limit the ascent and descent of the gate, substantially as described.

12. The combination, with a conduit for conducting the material to a weighing-scale, of a force-feed in the conduit, a driven wheel for moving the force-feed, a cut-off valve below the force-feed for closing the delivery-mouth of the conduit, and a slip-pulley which permits the force-feed to cease rotating under resistance of accumulated material between the cut-off valve and force-feed when the valve is closed, while permitting the driven wheel to continuously revolve, substantially as described.

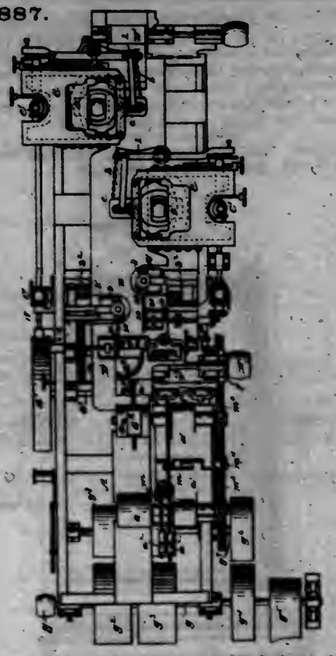
410,887. MOLDING-MACHINE. CHARLES L. GOEHRING, Allegheny, Pa. Filed Mar. 2, 1889. Serial No. 301,760. (No model.)

Claim.—1. In combination with a rotating cutter-head mounted in bearings and reciprocated laterally toward and from the material, a reciprocating chip-breaker moving transversely to the line of reciprocation of the cutter-head, with mechanism for automatically actuating both the chip-breaker and cutter-head to cause them to move in unison and proportionally, substantially as and for the purpose set forth.

2. In combination with a feeding mechanism for advancing the material and a rotating cutter-head movable transversely of the material in a plane intersecting the latter, a chip-breaker supported to reciprocate in unison with the cutter-head and in a direction substantially parallel with the line of feed of the material and transverse to the plane of the motion of the cutter-head, with devices for automatically controlling the movements of both the cutter-head and the chip-breaker, as and for the purpose set forth.



410,887.



3. In a molding-machine such as described, the combination, with a feeding mechanism for advancing the material and a laterally-reciprocating rotating cutter-head, of a pattern-cam for controlling the movements of said cutter-head, an automatically-reciprocating chip-breaker comprising a spring-bar attached to a slide movable in guides substantially parallel with the face or edge of the material, the end of said bar engaging the surface of the material in advance of the cutter-head, and a pattern-cam driven in unison with the reciprocating support of the cutter-head and operating upon the slide carrying the bar to reciprocate the latter, substantially as set forth.

4. In combination with a rotating cutter-head movable transversely of the material, an automatically-adjustable chip-breaker comprising an elastic bar mounted on a slide reciprocating longitudinally in ways, the latter adjustably secured to the frame, as and for the purpose set forth.

5. In combination with the feeding mechanism and the laterally-reciprocating cutter-head, a chip-breaker mounted to reciprocate longitudinally of the material and transversely of the line of movement of the cutter-head, and a driving mechanism uniting the feeding mechanism and the actuating devices for reciprocating the cutter-head and chip-breaker, substantially as set forth.

6. In a machine such as described, the combination, with a reciprocating slide, such as that carrying the cutter-head, and a pattern-cam controlling the movements of said slide, of a sectional driving-shaft united by collars and bolts to permit of rotary adjustment, the said pattern-cam being secured to one section of the shaft, substantially as described, and for the purpose set forth.

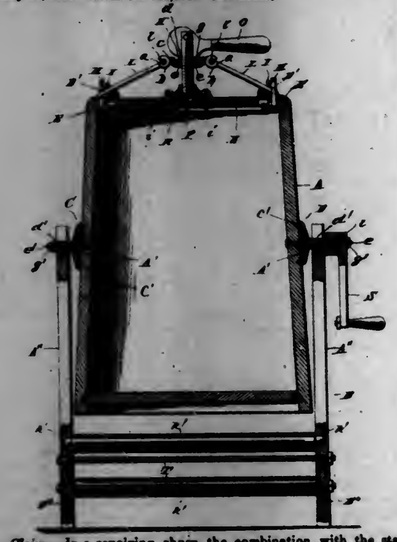
7. In a molding-machine such as described, the combination, with the pattern-cam for controlling the motion of the cutting mechanism, of a driving-shaft formed in sections united by adjustable collars, and a box keyed to one of said sections and formed or provided with guides upon which the pattern-cam is secured for radial adjustment, as set forth.

8. In combination with a driving-shaft, as g^{12}, formed in sections and united by collars and bolts, as described, the hub or box secured to one section of the shaft, a driving mechanism connected to the other section of the shaft, and a pattern-cam fitted to said hub or box and radially adjustable thereon, substantially as and for the purpose specified.

9. In a molding-machine such as described, and in combination with the two oscillatory reciprocating cutting mechanisms and their actuating devices, a pattern-cam controlling the motion of each cutting mechanism, a sectional driving-shaft for each of the cams, said sections being united by an adjustable coupling, and the two shafts connected by intermediate gearing to rotate in unison, as set forth.

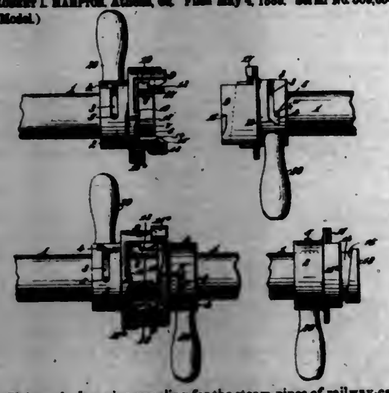
10. In a molding-machine such as described, the combination of a reciprocating slide, an oscillating arbor-frame pivotally connected to and reciprocated by said slide and carrying a rotating cutter, actuating devices controlling the oscillatory reciprocating movements of the arbor-frame, and a spring flexibly attached to the arbor-frame to vibrate in a frame substantially parallel with the movement of the arbor-frame about its axis, substantially as described.

410,888. CHURN. FREDERICK H. HAMAN, Wapakoneta, Ohio. Filed May 29, 1889. Serial No. 312,502. (No model.)



Claim.—In a revolving churn, the combination, with the stave and the hollow-journal casting having a base fitting the outer surface of the stave and provided with inner spurs to engage said stave, of the bolt extending outwardly through the stave and journal-casting and provided with a nut in its outer end, substantially as specified.

410,889. COUPLING FOR STEAM-PIPES OF RAILWAY-CARS. ROBERT I. HAMPTON, Athens, Ga. Filed May 4, 1889. Serial No. 309,650. (Model.)

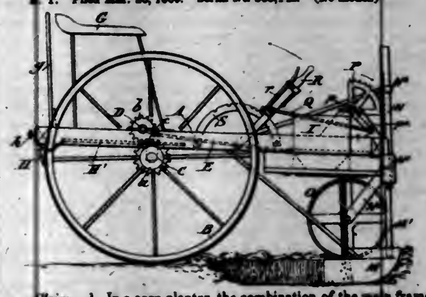


Claim.—1. In a pipe-coupling for the steam-pipes of railway-cars, a coupling-section provided with segmental shoulders on opposite sides, a sleeve having recesses or pockets permitting the entrance of said shoulders, each section having a pin running in a slot in its sleeve, the latter having a bayonet-recess at one end with an inclined wall to direct the pin therein, and each sleeve being provided with an outer and inner flange projecting from the flat face of the sleeve, said flanges having interior and exterior channels, the forward walls thereof cut upon the same pitch, substantially as described.

2. In a pipe-coupling for the steam-pipes of railway-cars, the combination, with each coupling-section provided with segmental shoulders, one having a guide-lug and the other a pocket or seat, of a sleeve having a limited rotary movement on said section by a pin running in a slot in the sleeve and having a bayonet-recess at one end provided with an inclined wall to guide the pin therein, each sleeve having two flanges located at different distances from the center, the outer flange having an interior and the inner flange an exterior channel, with the outer walls cut at a similar pitch, and a catch-lug being formed on the flat face of the sleeve between said flanges, adapted to engage a notch on the exterior flange, substantially as described.

3. In a coupling for the steam-pipes of railway-cars, a coupling-pipe section having an interior divided steamway wholly surrounded by an insulating-space packed with any non-conducting material, an air-passage being provided on each side of the dual steamway, substantially as described.

410,890. CORN-PLANTER. JAMES C. HARE, Rondout-on-the-Hudson, N. Y. Filed Mar. 23, 1889. Serial No. 305,142. (No model.)

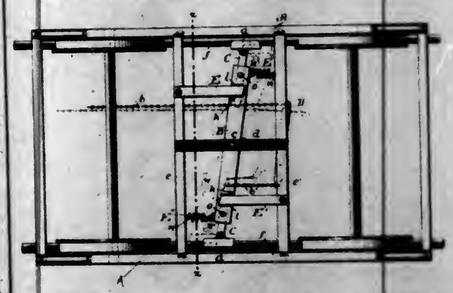


Claim.—1. In a corn-planter, the combination of the main frame, the driving-wheels, the shaft D, the clutch *d*, and lever *g*, for operating it, the seed-hoppers, the slides therefor, the center slide connected to the hopper-slides, and the connecting-rod between said center slide and the shaft D, all arranged substantially as described.

2. In a corn-planter, the combination of axle C, having wheels B B, the center slide F, movable in ways F' F' in the main frame, the seed-boxes I I, having perforated bottoms K, the seed-slides J, having openings J', said center slide being connected to the seed-slides by the cross-bars *i i*, the connecting-rod E, the shaft D, having a crank *c*, pivoted to the connecting-rod E, and the clutch *d*, whereby the shaft D is connected or disconnected with the driving-wheels, substantially as described.

3. In a corn-planter, the combination of the main frame A, the axle C, having wheels B B, the horizontal shaft D, the clutch *d* thereon, gear *a* on wheel B, and the gear on shaft D, meshing with gear *a*, the center slide F, movable in ways F' F' in the main frame, the connecting-rod E, connecting the shaft D with said slide, and the seed-slides J J, connected by cross-bars *i i* with the center slide F, all substantially as described.

410,891. CAR-BRAKE. JOHN W. HARVEY, Kansas City, Mo. Filed Jan. 17, 1889. Serial No. 296,565. (No model.)



Claim.—1. In a car-brake, the combination, with a car-truck frame and bolsters, of the lever B, carrying a supplemental lever provided with a brake-shoe adapted to bind against the rail, and a chain or rod for operating said levers, substantially as shown and described.

2. In a car-brake, the combination, with a car-truck frame and bolsters, of a lever carrying supplemental levers upon either end, said levers being provided with brake-shoes adapted to bear against the rail, the lever D, and chain *b b'*, for operating the levers, substantially as shown and described.

3. The combination, with the bolsters, of the lever B, provided with inclined faces near either end, and the arms E E', secured to the bolsters and beveled at their inner ends and adapted to bear upon the inclined faces of the lever B, substantially as shown and described.

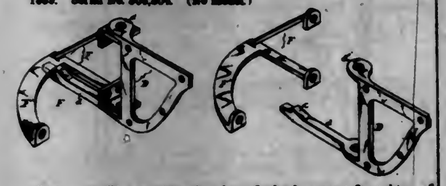
4. The combination, with the bolsters, of the lever B, provided with inclined faces near either end, the inwardly-extending arms E E', beveled at their inner ends, the spring *k*, and the cross-piece *d'*, all arranged and adapted to operate substantially as shown and described.

5. The combination, with the bolsters, of the lever B, second lever D, and supplemental levers C, carrying the brake-shoes on their outer ends, the chains for operating the levers, and the springs for throwing them back when released, substantially as shown and described.

6. The combination, with the bolsters, of the lever B, second lever D, and supplemental levers C, carrying the brake-shoes at their outer ends, the chains *b b'* and arms E E', and the springs for throwing the levers and shoes to their normal positions, substantially as shown and described.

7. In a car-brake, the combination, with the bolsters, of the levers B and D, chains operating said levers, the supplemental levers carrying the brake-shoes and attached to the ends of the main lever B, the arms E E', the springs E', the spring *k*, and the cross-piece *d'*, all arranged and adapted to operate substantially as shown and described.

410,892. TABLE-LEAF SUPPORT. REINERT HEIM, Philadelphia, Pa., assignor of one-half to Theodore Heim, same place. Filed Apr. 8, 1889. Serial No. 306,304. (No model.)



Claim.—1. The combination, in a fly-leaf support for tables, of the pivoted frame with a stationary frame having a segment at the rear of the pivot-point of the pivoted frame, with an extension of the pivoted frame passing under said segment, substantially as described.

2. The combination, in a fly-leaf support for tables, of the pivoted frame D, with a frame F, having a segment F', with an extension *d* of the pivoted frame bearing against the under side and the inner edge of the segment, so that the segment will relieve the pivots from the downward strain, substantially as described.

3. The combination of the frame D, having pivot projections *d d'*, with a frame F, having a segment, and pivot projections *f f'*, with pivot-pins which pass through said projections, and an extension of the pivoted frame adapted to bear against the segment, substantially as described.

410,893. SINKER FOR BUTTER-JARS. LARSS S. HEDBERG, Gardner, Mass. Filed May 31, 1889. Serial No. 311,908. (No model.)

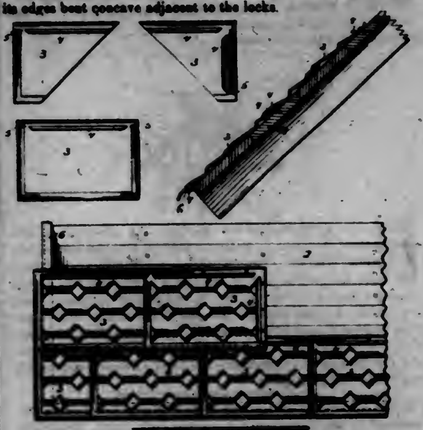


Claim.—In a butter-jar, the combined sinker and compresser provided with a vertically-projecting rim having strips interspaced upon and projecting from the rim, and with a knob interiorly of said rim, the sinker having in its bottom a series of apertures or perforations, substantially as set forth.

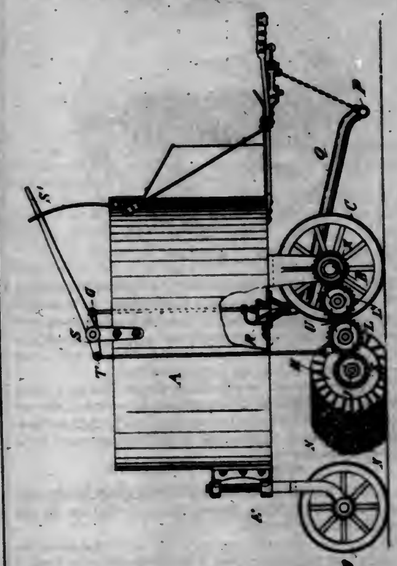
410,894. METALLIC SHINGLE. JULIUS HERRING, Minneapolis, Minn. Filed May 9, 1889. Serial No. 310,203. (No model.)

Claim.—1. A metallic shingle provided with interwed locks along adjacent edges on opposite sides, the edges being concave next the locks, and slits in the ends parallel with the sides of the shingle at the diagonally-opposite corners extending to the ends of the locks.

2. A reversible metallic shingle having the locks 4 arranged along its adjacent edges on one side and along the other edges on its opposite side, the slits 5 next to the outer ends of said locks, and having its edges bent concave adjacent to the locks.



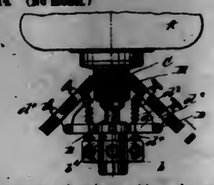
410,895. APPARATUS FOR REMOVING SNOW AND CLEANING ROADWAYS. AUGUSTE HERSCHER, Berlin, Germany. Filed Mar. 14, 1889. Serial No. 303,393. (No model.)



Claim.—1. A machine for washing and scrubbing pavements, consisting of a wheeled axle, a water-tank having an opening and closing valve in its bottom for the discharge of water, a water-pipe leading from the valved part of the tank toward the front of the machine, and provided at its forward extremity with a jet-pipe, a vertically-swinging frame pivotally connected with the wheeled axle, a cylinder having helical rubbers and journaled in said frame, gearing for revolving the cylinder from the wheeled axle, and means for raising the cylinder-frame and opening and closing the tank-valve, substantially as described.

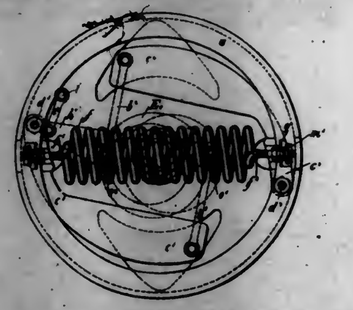
2. The combination of a water-tank with a vehicle for transporting the same, and for imparting motion from the wheels thereof to an obliquely-arranged helically-clothed cylinder, with a jet-tube arranged to deliver water in advance of the cylinder, and a valve regulating the flow of water of such jet-tubes, controlled by a three-armed rock-shaft, one arm of which closes the valve leading to the jet-tube simultaneously with the other arm lifting a frame supporting the cylinder, substantially as and for the purposes set forth.

410,896. COMMUTATOR-BRUSH FOR DYNAMO-ELECTRIC MACHINES OR MOTORS. RUDOLF HOFFMANN, Zurich, assignor to the Maschinenfabrik Oerlikon, near Zurich, Switzerland. Filed June 20, 1888. Serial No. 278,614. (No model.)



Claim.—In a dynamo-electric machine, the combination, with the commutator, the yoke D, seated on the hub *b'* of the bearing-box *b* and provided with the arms *d' d'*, the clamps d^3, hinged or pivoted at their outer ends to the ends of the arms *d'* of the yoke, the springs d^5, directly connected at one end to the free ends of the brush-clamps d^3 and at the other end directly connected to the arms *d'* of the yoke, and the brushes E, held in the clamps by suitable screws, of the hand-lever G, pivoted on the switch-board, and the rod F, connecting the arm *d'* and the hand-lever, all constructed and arranged substantially as and for the purpose specified.

410,897. STEAM-ENGINE GOVERNOR. RUDOLF HOFFMANN, Zurich, assignor to the Maschinenfabrik Oerlikon, near Zurich, Switzerland. Filed Sept. 28, 1888. Serial No. 286,695. (No model.)



Claim.—1. The governor herein described, consisting of a casing, the spiral spring arranged diametrically in said casing, the levers pivoted at one of their ends in said casing and connected near said ends with the ends of the said spring, the rods having their outer ends connected to said levers, and the disks connected to the inner end of said levers, substantially as and for the purpose described.

2. The governor herein described, consisting of a casing, a spring arranged diametrically therein, levers pivoted at one end to the casing and near said ends connected to the ends of the springs, and concentric disks connected to the free ends of said levers, substantially as and for the purpose described.

410,898. MACHINE FOR CASTING PHOTOGRAPHIC DRY-PLATES. MARIUS KATTENTIDT, Hamelin, Prussia, Germany. Filed Apr. 22, 1889. Serial No. 308,122. (No model.)

Claim.—1. In combination, the frame, the conveying-bands, the vessel *c*, containing the mixture, and a brushing-roller *e* in front of said vessel, whereby the plates are cleaned for the reception of the mixture, substantially as described.

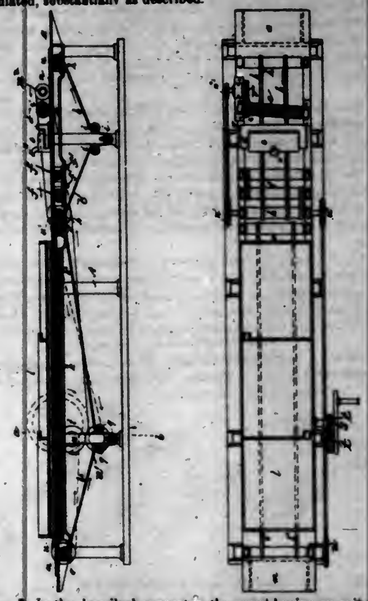
2. In combination, the frame, the band-conveyers, the vessel *c*, the rollers *f*, located beneath the bands to operate upon the under side of the plates, and the doctors *f' f'*, operating to scrape the rolls, substantially as described.

3. In combination, the frame, the conveyer-bands, the vessel *c*, and a suitable support therefor, the said vessel having an exit-slit *c'* and being pivotally connected to its support, whereby the escape of the mixture may be prevented by tilting the vessel, substantially as described.

4. In combination, the frame, the conveyer-bands, the vessel *c*, and the heating-chamber *d*, the said vessel *c* being pivotally supported by said heating-chamber, substantially as described.

5. In combination, the frame, the vessel *c*, and a suitable support therefor, said vessel having an exit-slit *c'* and being pivotally connected to its support, and having also an inlet-opening extending upwardly in an inclined direction, substantially as described.

6. In combination, the frame, the vessel *c*, said vessel having an exit-slit *c'* and an air-cock, by which the flow of the mixture may be regulated, substantially as described.



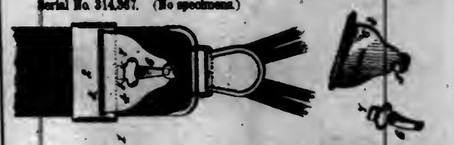
7. In the described apparatus, the vessel having an exit-opening *c'*, the movable piece *l'*, the cord packing, and the screw-bottom, substantially as described.

8. In combination, the frame, the vessel *c*, and the means for drying the plates, consisting of the warming-plates below the plates and the water-reservoir above the same, substantially as described.

9. In combination, the frame, the vessel *c*, the bands, and the cooling-reservoir above the bands, said reservoir having its bottom inclined to the edge, substantially as described.

10. In combination, the frame, the conveyer-bands, the vessel *c*, and the cooling-reservoir, said reservoir having compartments arranged to allow the water to overflow from one to another, substantially as described.

410,899. BUCKLE. JOHN KENNEDY, Birmingham, assignor to the Osborne & Cheesman Company, Ansonia, Conn. Filed June 15, 1889. Serial No. 314,367. (No specimens.)



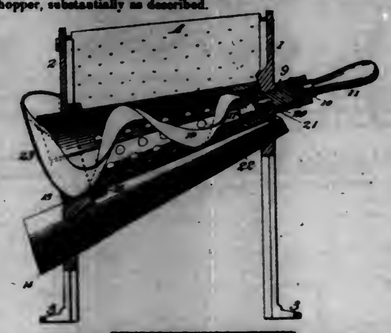
Claim.—1. As an improved article of manufacture, a sheet-metal suspender-buckle comprising a box-frame and having a swinging clamping-lever, a hook and a spring-hook guard composed of a separate piece of metal superior to the metal of the frame and lever and attached by a fastening, substantially as shown and described.

2. In a suspender-buckle, a buckle-plate provided with a hook at its lower extremity and having a guard-strip formed of a separate piece of spring metal provided at one end with a tang or leg adapted to be inserted in a slot formed in the buckle-plate between the hook and the journaled or pivoted end of said plate, substantially as described.

410,900. FRUIT OR ICE CUTTER. HENRY T. KIRK, Rushville, Mo., assignor of one-half to John P. Antes, same place. Filed Sept. 24, 1888. Serial No. 286,267. (No model.)

Claim.—1. In a fruit or ice cutter, the combination, with the frame and hopper and a rotating cylinder provided with integral cutting-knives on its surface and openings in front of said knives, of a spirally-formed scraper fitting the interior of said cylinder and adapted to discharge the material cut by the knives, substantially as described.

2. In a fruit or ice cutter, the combination, with the grooved and apertured front and rear parts 1 2 and the side portions 5 and rods 6, forming the frame and hopper, of the rotating cylinder mounted in the frame, the inclined contoured chute or spout below the cylinder, the spirally-formed scraper, and the spring-actuating pressure-lid hinged to one side of the hopper and normally pressing upon the material in the hopper, substantially as described.



410,901. CENTER-REST FOR LATHES. JOSEPH KLINGENSMITH, Springfield, Ill. Filed June 13, 1889. Serial No. 314,131. (No model.)



Claim.—1. In a center-rest for lathes, the combination of the tapering shank B with the head A, pierced by a transverse hole C, having a longitudinal slit D and spring-jaws *a'*, substantially as shown and described, and for the purpose stated.

2. In a center-rest for lathes, the combination of the shank B, the split head A, and the jaws *a'*, forming a tool-rest, substantially as shown and described, and for the purpose stated.

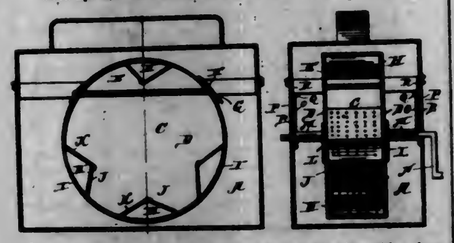
3. In a center-rest for lathes, the combination of the shank B with the split head A, having its upper edge a^4 rounded, substantially as shown and described, and for the purpose stated.

4. In a center-rest for lathes, the combination of the shank B, the head A, pierced by the transverse hole C, and the spring-jaws *a'*, having inclined upper faces, substantially as shown and described, and for the purpose stated.

5. In a center-rest for lathes, the combination of the shank B with the split head A, having spring-jaws *a'*, supporting lugs a^6, pierced by an axial hole a^5, substantially as shown and described, and for the purpose stated.

6. In a center-rest for lathes, the combination of the shank B the split head A, pierced by a transverse hole C, the spring-jaws *a'*, having inclined edges, and the end lugs a^6, pierced by an axial hole a^5, substantially as shown and described, and for the purpose stated.

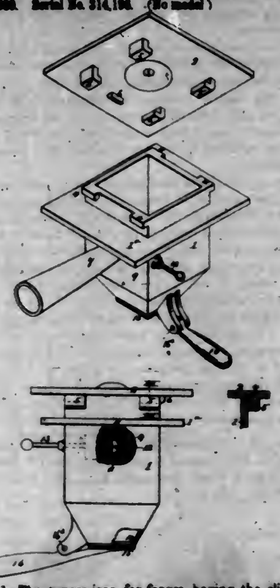
410,902. WASHING-MACHINE. JOHN KNOBLE, Wilmot, Ohio. Filed Apr. 8, 1889. Serial No. 306,368. (No model.)



Claim.—1. In a washing-machine, the combination, with a drum or cylinder having a series of circumferentially-arranged V-shaped buckets, of metallic straining-plates connecting the inner edges of said buckets with the periphery of the drum or cylinder, substantially as and for the purpose set forth.

2. The combination, with a boiler the sides of which are provided with suitable notches or bearings, of the herein-described revolving drum or cylinder, the sides of which are connected by V-shaped buckets, and metallic straining-plates extending from the inner edge of each of said buckets to the bottom of the next adjoining bucket, said drum or cylinder being provided with a suitable hinged cover, pintles or journals, and a crank or handle, substantially as set forth.

410,903. TUYERE-IRON. FRANK G. KOEHLER, St. Louis, Mo. Filed June 14, 1889. Serial No. 314,196. (No model.)

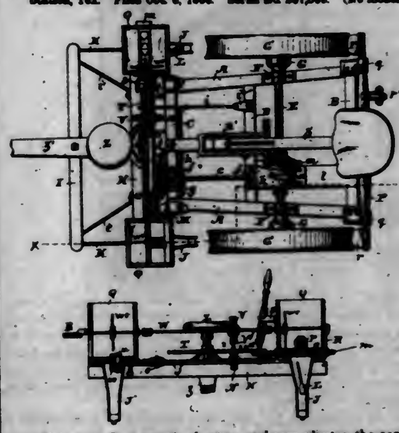


Claim.—1. The tuyere-iron for forges, having the slide-valve 8 and gate 15, with weighted handle, substantially as and for the purpose set forth.

2. The tuyere-iron for forges, having the removable top 2, secured to the body by means of the lugs 4 and angle-lugs 5, substantially as set forth.

3. The tuyere-iron for forges, having the removable top 2, secured to the body 1 by lugs 4 and 5, the slide-valve 8 and gate 15, with weighted handle or counter-balance 16, all substantially as set forth.

410,904. COTTON AND CORN PLANTER. CLEMENT LEVOT, Latexo Station, Tex. Filed Oct. 8, 1888. Serial No. 287,569. (No model.)



Claim.—1. In a combined cotton and corn planter, the combination of the frame, the axle mounted therein, the shifting bevel-gear *a*, the lever *x*, for shifting said gear, the pinion *b*, meshing with said gear, the driving-shaft *c*, carrying said pinion, the gear-wheel *d* on said shaft, the pinion *e*, meshing with said gear-wheel, the shaft *j*, carrying the said pinion and also toothed wheel *w*, the sprocket-wheel N on said shaft, the shaft W, carrying the agitators w^2 and sprocket-

wheel V, the sprocket-chain V', passing over said sprocket-wheels N V, the eccentric *g* on the driving-shaft, the rod *h*, connected to said eccentric, the lever *i*, connected to said rods, and the plate T, carrying the slide *m*, adapted to be reciprocated by said lever *i*, all of said parts being arranged and operating substantially as and for the purpose described.

2. In a combined cotton and corn planter, the combination of the driving-gear *a*, the shaft *c*, carrying the gear-wheels *b* and *d*, operated by the gear *a*, the shafts *j*, carrying the pinion *e* and toothed wheel *w*, the shaft W, carrying the agitators w^3, the sprocket-wheels N and V on said shafts, the eccentric *g* on the driving-shaft, the rod *h*, connected to said eccentrics, the lever *i*, connected to said rod, and the slide *m*, operated by said lever, substantially as and for the purpose described.

3. In a planter, the combination of the frame, the cross-bars H and I, hinged thereto, the hoppers Q, mounted on said bars, the transverse shaft W, carrying the agitators w^3, mounted in the hoppers, the transverse shaft *j*, carrying the toothed wheel *w* and pinion *e*, the shaft *c*, carrying the gear-wheel *d*, meshing with said pinion, and the gear-wheel *d*, meshing with the driving-gear, the driving-gear *a*, the sprocket-wheels N and V, and the sprocket-chain V', passing over said sprocket-wheels, substantially as and for the purpose described.

4. In a planter, the combination of the driving-gear *a*, the driving-shaft *c*, having the gear *b*, meshing therewith, the eccentric *g* on the driving-shaft, the rod *h*, connected to said eccentric, the lever *i*, connected to the rod, the plate T, adapted to be engaged by said lever, the slide *m*, connected to said plate T, the plate *o*, fitting in said slide *m*, and the cut-offs resting on the plate *o*, all arranged and operating substantially as and for the purpose described.

410,905. ATTACHMENT FOR MAIL-BOXES. ROBERT B. LEWIS, New York, N. Y., assignor of two-thirds to Harry V. Snead, same place, and William B. Fonda, Morristown, N. J. Filed Feb. 14, 1889. Serial No. 299,838. (No model.)



Claim.—1. An attachment for mail-boxes, consisting of a receptacle 3, having its back formed with a curved top 6, adapted to shed water rearwardly, a cover 7, hinged in rear of the front edge of the curved top, and a stop arranged to arrest the cover before the center of gravity of the latter passes over its hinge, so that the cover will fall automatically to closed position when released after being raised, substantially as described.

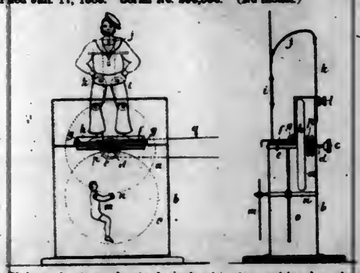
2. An attachment for mail-boxes, consisting of a receptacle 3, having its back formed with a curved top 6, adapted to shed water rearwardly, a cover 7, formed with shoulders 11 at its ends and hinged in rear of the front edge of the curved top, and the stops 10 on the ends of the receptacle, to which the cover is hinged and against which the shoulders abut to arrest the cover before the center of gravity of the latter passes over its hinge, so that the cover will fall automatically to closed position when released after being raised, substantially as described.

410,906. PISTON-VALVE. ALVAH LOOMIS, St. Albans, Vt., assignor of one-half to John W. Brough, same place. Filed Nov. 23, 1888. Serial No. 291,630. (No model.)



Claim.—The combination of the rod, the tubular body applied thereto and provided with the flanges E, the disks placed upon the ends of the body, the packing-rings, shaped as shown, and the springs for forcing the rings outward, substantially as shown.

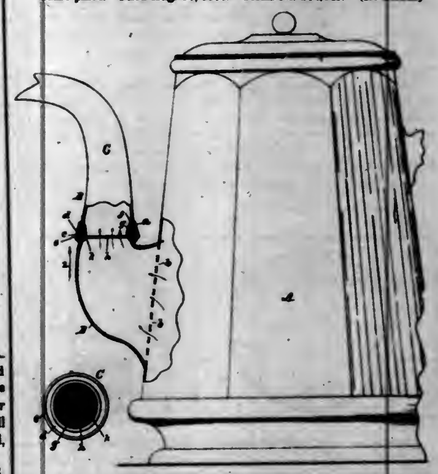
410,907. MECHANISM FOR OPERATING DANCING, ACROBATIC, AND OTHER TOY FIGURES. GEORGE F. LOTTICKS, London, England. Filed Jan. 17, 1889. Serial No. 296,598. (No model.)



Claim.—1. A mechanical toy having, in combination, the following elements, namely: a shaft carrying thereon both a fly-wheel and a cam-piece adapted to impart an intermittent action to a plate or platform, a plate resting on such piece and vibrated by it, and a dancing figure upheld by means of a spring and operated by the cam-piece acting on said plate, all substantially as set forth.

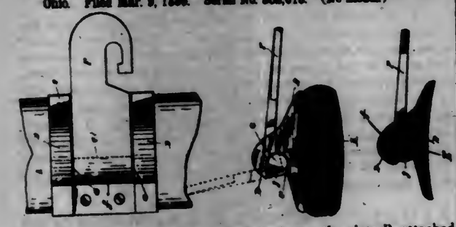
2. The combination, in a mechanical toy, of a shaft carrying a fly-wheel, a triangular piece or, its described equivalent on said shaft, a hinged platform vibrated by such piece, an adjustable spring-support, and a dancing figure suspended on such spring above said platform, all substantially as set forth.

410,908. SPOUT FOR VESSELS. PATRICK MALONEY and GEORGE ROBERTSON, Red Creek, N. Y., assignors of one-third to Gabriel A. Jacobs, same place. Filed Aug. 30, 1888. Serial No. 284,145. (No model.)



Claim.—A vessel-spout consisting of an upper and a lower section joined to each other and the lower section joined to the vessel, the lower section being formed with an internal thread and the upper section formed with an extended threaded part to enter said threaded lower section, and a strainer having its periphery made conical and inserted in a conical seat in said extended threaded part, so as to keep its place on account of the friction at its tapered periphery, substantially as described.

410,909. HAME ATTACHMENT. DAVID J. MARTIN, Covington, Ohio. Filed Mar. 9, 1889. Serial No. 302,615. (No model.)



Claim.—1. The combination of the hame, the plate B, attached thereto, having curved lugs D D, formed with enlarged recesses *c c*, with the hame-hook F, having studs G G flattened at one side and removably engaging lugs D, substantially as and for the purpose specified.

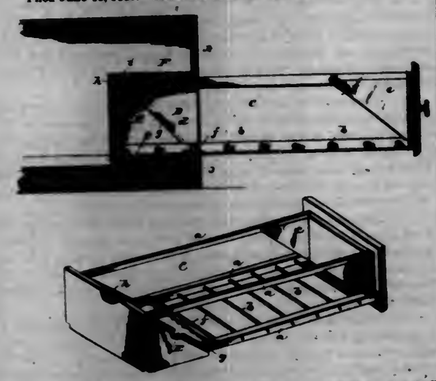
2. The combination of the hame and the plate B, secured thereto, having curved lugs D D, shoulder C, and depression E, with the hook F, having enlargement *f*, and flattened cylindrical studs G G, all substantially as specified.

410,910. DOUBLETREE ATTACHMENT. STEPHEN MARTIN, Peoria, Ill. Filed Apr. 26, 1889. Serial No. 308,671. (No model.)



Claim.—The socket-cap C, closed at its outer end to protect the end of the doubletree over which it is secured, said cap having a yoke D, the sides of which join the sides of the cap, and the grooved seat *b*, in combination with the plates *d e*, connected to the singletree, the former having an annular flange to engage with the grooved seat, and a central bolt to secure the socket-cap upon the doubletree and the single-tree thereto, substantially as and for the purpose described.

410,911. REFRIGERATOR. NATHANIEL D. MERTZ, Plum River, Ill. Filed June 15, 1889. Serial No. 314,346. (No model.)

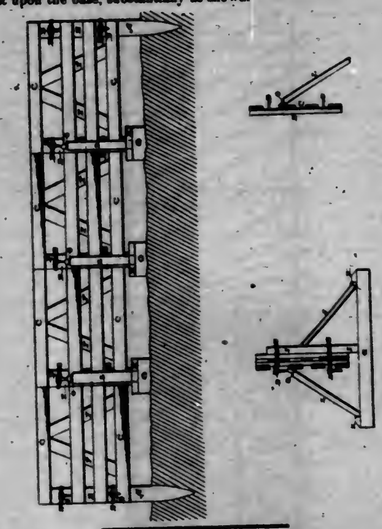


Claim.—1. The combination, with the box and the strips D F, secured within the same, of the drawer, the strips E, secured thereto at the rear end, the piece *c* at the rear bottom end of the drawer, and the transverse strip *f* on the forward end of the piece *c*, substantially as shown and described, and for the purpose specified.

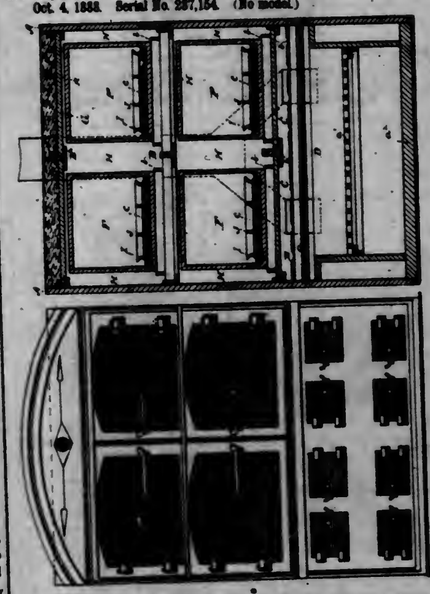
2. The combination, with the box, the strips D, the piece F, and the rabbeted piece *i* on the under side of the piece F, of the drawer, the piece *c* at the rear bottom end thereof, the strips E, secured to the rear end of the drawer, and the rabbeted piece *h* on the rear end of the drawer, substantially as shown and described.

410,912. FENCE. JOHN D. MILLER, Ottoville, Ohio. Filed Apr. 5, 1889. Serial No. 306,378. (No model.)

Claim.—The combination of the end posts A, which are to be driven into the ground, the base-pieces G, the posts I, rigidly secured thereto, the stationary brace J, the panels of the fence attached by wire loops to the posts I, and the loose braces L, which are attached at their upper ends to the panels, and which have their lower ends to rest upon the base, substantially as shown.



410,913. BAKING-OVEN. JOHN H. MILLER, Newark, Ohio. Filed Oct. 4, 1888. Serial No. 287,154. (No model.)

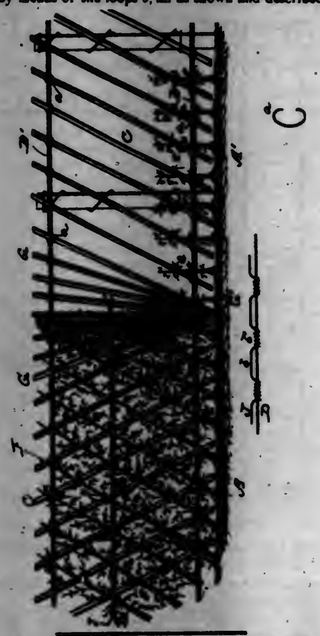


Claim.—The baking-oven consisting of the furnace having the lower air-chamber containing air-receiving pipes provided with air-outlet apertures or openings intermediately of their ends, said air-receiving apertured pipes being arranged in proximity with the fire or combustion chamber, substantially as and for the purpose set forth.

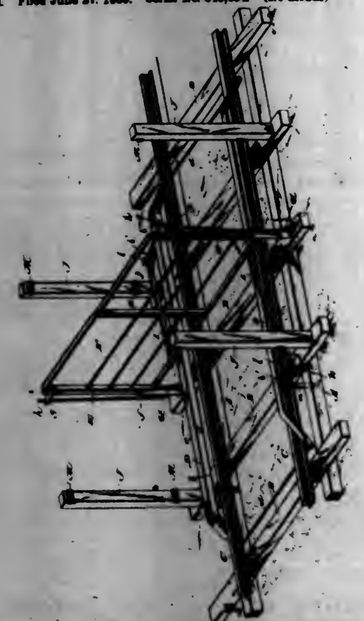
410,914. HEDGE. PHARES M. MIELLER, Hagerstown, Md. Filed June 20, 1889. Serial No. 316,018. (No model.)

Claim.—A hedge fence comprising in combination, first, a series of posts and horizontal wires secured thereto; second, series of poles inclined as shown and secured to the top and bottom horizontal wires by means of clamps, said poles arranged at certain points to form compound angular braces, and, third, a series of oppositely-inclined

growing stalks planted in the ground and secured to the central horizontal wire by means of the loops *b*, all as shown and described.



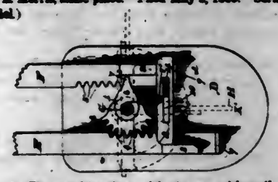
410,915. RAILWAY-GATE. FREDERICK M. MORTELIUS, West Perry, Pa. Filed June 27, 1889. Serial No. 315,834. (No model.)



Claim.—1. The combination, with the vertical posts arranged on each side of the track or way and provided with torsional springs secured at their base, of a horizontally-swinging gate-section hung on each post and provided with a projecting arm engaging said torsional spring, horizontal pivoted strips longitudinally movable, as described, and carrying offsets, and a rod connecting the offset of each strip with the adjacent gate-section, substantially as set forth.

2. The combination, with the vertical posts arranged on each side of the track or way and each provided with a torsional spring secured at its base, of a horizontally-swinging gate-section hung on each post and provided with a projecting arm engaging said torsional spring, horizontal pivoted strips extending on either side of the closing-point of the gates, longitudinally movable, as described, and each provided with an offset located oppositely relative to the offset of the other strip, and oppositely-extending rods, each connecting its offset to the adjacent gate-section, whereby said strips move in unison and when the springs are inoperative will hold the gate-sections in an open position, substantially as set forth.

410,916. MECHANISM FOR OPERATING THREE-THROW SWITCHES. HENRY M. HOBSON, Louisville, Ky., assignor of one-half to Edward R. Morris, same place. Filed May 8, 1889. Serial No. 309,992. (No model.)



Claim.—1. The combination, with the movable rail-points, of the switch-rods connected to said points and having the teeth on their opposing edges and a revolvable casting located between said rods and adapted to reciprocate either rod, according to the direction in which said casting is turned, substantially as and for the purpose described.

2. The combination, with a reciprocating switch-rod, of a revolvable casting for moving said rod endwise and a locking device arranged to be operated by the casting to normally engage the switch-rod and to release the same when the rod is moved, substantially as and for the purpose described.

3. The combination, with a pair of reciprocating switch-rods, of a locking device normally engaging with said rods to lock them against movement and a revolvable casting adapted to move one of said rods and at the same time disengage said locking device from said rod without releasing the locking device from the other rod, substantially as and for the purpose described.

4. The combination, with a pair of reciprocating switch-rods, of a revolvable casting for moving either of said rods and a locking device arranged to travel in a line transversely across the path of said switch-rods and adapted to be operated by said casting to lock one rod against movement when the other rod is actuated by said casting, substantially as and for the purpose described.

5. The combination of the reciprocating switch-rods, a revolvable casting for moving either of said rods at will, and a locking-slide connected with said casting and limited to movement at right angles to the line of movement of said rods, said slide being normally engaged with the rods and adapted to be withdrawn from engagement with one rod when it is moved without releasing the other rod, substantially as and for the purpose described.

6. The combination of the reciprocating switch-rods having the fixed stops, a revolvable casting adapted to operate either of said rods and having a projection or arm, and a locking-slide movably fitted at one side of the stops on the rods and having the arm or projection of the casting engaging therewith, substantially as and for the purpose described.

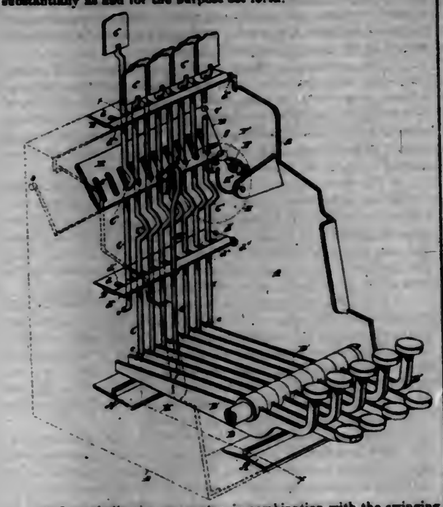
7. The combination of the switch-rods having the fixed stops, a longitudinally-slotted locking-slide fitted between the stops on each side, a stationary guide fitted in the slot of the slide, and a revolvable casting adapted to engage the locking-slide when it is turned in either direction to operate one or the other of the switch-rods, substantially as and for the purpose described.

410,917. CASH REGISTER AND INDICATOR. JOHN F. PFEIFER, Cincinnati, Ohio. Filed June 13, 1889. Serial No. 314,104. (No model.)

Claim.—1. In an indicating apparatus, in combination with a movable indicating device provided with a shoulder, the locking-wing provided with a slot whose outer end is adapted to be engaged by the rod-shoulder, substantially as and for the purpose specified.

2. In an indicating apparatus, in combination with the swinging wing provided with a series of slots, a series of movable indicator-rods passing through such slots, and each provided with a locking-shoulder, substantially as and for the purpose shown.

3. In an indicating apparatus, in combination with the swinging wing provided with a series of slots, the series of indicator-rods passing through such slots, and each provided with a locking-shoulder having an inclined face to engage the end of the respective slot in the wing to swing the latter as the rod is moved into indicating position, substantially as and for the purpose set forth.



4. In an indicating apparatus, in combination with the swinging wing provided with a series of slots, the series of rods passing through such slots and provided with shoulders situated below the outer ends of the respective slots when the rods are down, substantially as and for the purpose described.

5. In an indicating apparatus, in combination with the swinging locking-wing provided with the series of slots extending in planes at right angles to the axis of its motion, the series of indicator-tablet-bearing rods projecting up through such slots and each having a shoulder with oppositely-inclined upper and lower sides situated on the rod, so as to stand below the respective slot end when the rod is down, substantially as and for the purpose specified.

6. In an indicating apparatus, in combination with the swinging locking-wing provided with the series of slots extending in planes at right angles to the axis of its motion, the series of indicator-rods passing up through the slots, and each provided with a locking-shoulder adapted to stand below the outer end of the respective slot in the wing when the rod is down, and having its upper side inclined and its lower side curved, substantially as and for the purpose shown.

7. In combination with the series of reciprocating indicator-rods, each provided with a locking-shoulder having its upper side inclined downward away from the rod, the swinging locking-wing provided with the series of slots at right angles to its axis, through which the rods pass, and pivoted at the side of the series of rods opposite to the locking-shoulders and above the level of the shoulders when the rods are down in their normal positions, substantially as and for the purpose set forth.

8. In an indicating apparatus, in combination with a series of movable keys and the series of indicator-rods adapted to be actuated by the keys and each provided with a locking-shoulder, the swinging locking-wing provided with slots at right angles to its axis, through which the indicator-rods pass, substantially as and for the purpose described.

9. In combination with a series of movable keys, the series of shouldered indicator-rods, each adapted to be raised by one of the keys, and the swinging locking-wing hinged at a point above the shoulders on the rods, and having a series of slots through which the rods pass, substantially as and for the purpose specified.

10. In combination with the series of key-levers and the swinging locking-wing provided with a series of slots, the series of vertically-movable indicator-rods adapted to be raised by the key-levers passing up through the slots in the wing, and each provided with a locking-shoulder with inclined upper side situated so as to stand below the wing when the respective rod is down, substantially as and for the purpose shown.

11. In combination with the series of keys and the swinging locking-wing provided with the series of slots, the series of indicator-tablet-bearing rods passing up through the slots in the wing, each adapted to be raised by one of the key-levers, and provided with a wing-engaging shoulder with oppositely-inclined rounded surfaces on its upper and lower sides, substantially as and for the purpose set forth.

12. In combination with the series of shouldered movable rods and the slotted wing, an alarm mechanism adapted to be operated by the wing, substantially as and for the purpose described.

13. In combination with a series of keys and the series of shouldered rods to be actuated thereby, the slotted locking-wing and an alarm mechanism adapted to be operated by the movement of the wing, substantially as and for the purpose specified.

14. In combination with the swinging slotted locking-wing, the series of movable indicator-rods, each having a shoulder with its under side in position to be engaged by the wing when the rod has been raised into locking position and its upper side adapted to engage the wing and swing it out of locking position as the rod is being raised, an alarm-sounding device, and means carried by the wing for actuating such device to sound an alarm as the wing is raised by the movement of an indicator-rod, substantially as and for the purpose shown.

15. In combination with the shouldered indicator-rods and the slotted locking-wing, a pawl or trip carried by the latter and alarm-sounding mechanism engaged by such trip or pawl, substantially as and for the purpose set forth.

16. In combination with the series of shouldered indicator-rods and the swinging locking-wing, alarm-sounding mechanism and an adjustable trip on the wing for actuating such mechanism, substantially as and for the purpose described.

17. In combination with the shouldered indicator-rods and the swinging locking-wing, a spring-retracted bell-striking lever, a pivoted pawl on the wing for engaging the striking-lever, and the set-screw on the wing for adjusting the pawl, substantially as and for the purpose specified.

18. In combination with the series of shouldered rods and the locking-wing therefor, the draw or till lock adapted to be tripped by the wing, substantially as and for the purpose shown.

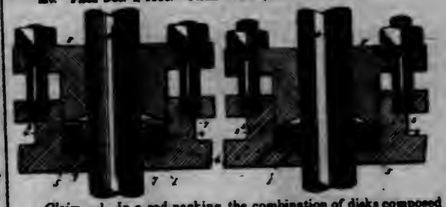
19. In combination with the series of shouldered indicator-rods and the slotted swinging locking-wing, a movable bolt or latch adapted to be tripped by the wing, substantially as and for the purpose set forth.

20. In combination with the series of shouldered indicator-rods and the swinging slotted locking-wing therefor, a bolt or latch having an adjustable bearing to be engaged by the wing, substantially as and for the purpose described.

21. In combination with the swinging wing and the bolt or latch adapted to be tripped thereby, an alarm-striking mechanism, and means carried by the wing for actuating the same, substantially as and for the purpose specified.

22. In combination with the shouldered indicator-rods and the swinging locking-wing therefor, the bolt or latch adapted to be tripped by the wing and an alarm mechanism actuated by the movement of the wing to sound an alarm, substantially as and for the purpose shown.

410,918. PISTON-ROD PACKING. HARRY H. PHILPER, St. Louis, Mo. Filed Dec. 4, 1888. Serial No. 292,617. (No model.)



Claim.—1. In a rod-packing, the combination of disks composed of layers of textile fabric and rubber, and a surrounding covering lapping past the body 1 at each end, substantially as and for the purpose set forth.

2. The combination, in a rod-packing, of disks laid flat together, each disk composed of layers of textile substance and india-rubber, and a surrounding rubber covering stuck fast to the circumference of the body, composed of said disks and lapping past said body, substantially as set forth.

410,919. PEN-CLEANER. RALPH W. POPE, Elizabeth, N. J. Filed Oct. 12, 1886. Serial No. 215,909. (No model.) Patented in England Nov. 2, 1886, No. 14,052.



Claim.—1. A pen-cleaner consisting of the combination of strips

of fibrous material placed side by side, and an external binding material covering opposite ends and binding the strips together, substantially as described.

2. A pen-cleaner consisting of strips of paper or other similar material formed into a block, as shown, and a holder for the same having sides converging from the upper edges.

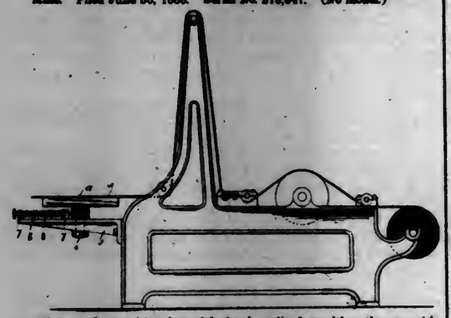
3. A pen-cleaner consisting of strips of paper, in combination with a base or holder having vertical ends and sides converging inwardly from the upper edge.

4. A pen-cleaner consisting of laminæ of paper and a base carrying the same having side walls converging through the upper portions and vertical through the lower portions.

5. A holder consisting of a metal base, having side walls projecting from said base, the inner surfaces of a portion of which walls converge through their upper portions.

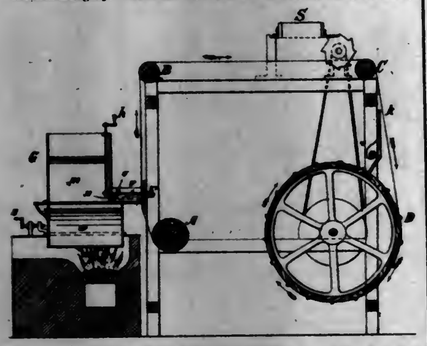
6. A pen-cleaner consisting of a block formed of flat strips of paper or other material placed side by side, and a holder for the same pressing against the sides of the block and thereby holding the strips in position.

410,920. BOX-COVERING MACHINE. ALBERT G. POTTER, Lynn, Mass. Filed June 30, 1888. Serial No. 278,647. (No model.)



Claim.—In combination with the described machine, the movable form arranged to receive the blanks from the machine, and an automatic locking device arranged to automatically stop the movement of the former when it has reached a certain position, and to hold it against movement until released, substantially as described.

410,921. MACHINE FOR COATING PAPER. JOSEF PRASCH, Vienna, Austria-Hungary. Filed June 15, 1889. Serial No. 314,391. (No model.)



Claim.—1. The combination, with a vessel containing liquefied substance, of a frame, an axle journaled in one end thereof and carrying the paper to be coated, guide-rollers journaled in opposite upper portions of said frame over which the paper is passed, a shaft carrying a suitable drum, said drum also having the paper secured thereto and the shaft further provided on one end with a band-pulley and on the opposite end with a grooved wheel, a sieve mounted in standards in the upper portion of the frame, a shaft having mounted upon its inner end a toothed wheel and on its outer end a pulley-wheel, an endless pulley-band passing around the upper and lower pulleys, and a fixed screen secured to the frame, substantially as set forth.

2. The combination, with a vessel containing a liquefied substance, of a frame, an axle journaled at one end thereof and carrying the paper to be coated, guide-rollers journaled in opposite upper portions of said frame and over which the paper passes, a shaft carrying a suitable drum, to which the paper is secured, said drum provided with a series of radial projections or fingers, a bar pivoted in the frame-work adapted to engage said projections, a sieve arranged upon the upper portion of the frame, means for actuating said sieve, and a fixed screen secured to the frame, substantially as set forth.

3. The combination, with a frame provided with suitable rollers, over which the paper to be coated is passed, of a vessel consisting of a lower compartment or water-containing receptacle, an upper reservoir or liquid-containing receptacle, and a communicating laterally-extending open-ended vessel, into which the liquid passes and comes in contact with the paper as it moves over the rollers, and a fixed screen secured to the frame, substantially as set forth.

4. The combination, with a frame provided with suitable rollers, over which the paper to be coated is passed, and also provided with a fixed screen, of a vessel consisting of a lower compartment or water-containing receptacle, an upper reservoir or liquid-containing receptacle, and a communicating laterally-extending and open-ended vessel, the paper to be coated passing between this open-ended vessel and the fixed screen, substantially as set forth.

5. The combination, with the frame provided with suitable rollers, over which the paper to be coated is passed, and also provided with a fixed screen, of a vessel consisting of a lower compartment or water-containing receptacle, and an upper reservoir or liquid-containing receptacle, said latter receptacle having an open side, so that the liquid will come in contact with the paper as the same is moved, and also provided with an orifice for regulating the level of the substance in the compartments, substantially as set forth.

6. The combination, with a frame provided with suitable rollers, over which the paper to be coated is passed, and also provided with a fixed screen, of a vessel consisting of a lower compartment or water-containing receptacle, an upper reservoir or liquid-containing receptacle, and a communicating open-ended laterally-extending vessel in which the liquid passes and comes in contact with the paper as it moves over its rollers, and a slide or valve for closing communication between the reservoir and laterally-extending vessel, substantially as set forth.

7. The combination, with a frame provided with suitable rollers, over which the paper to be coated is passed, and also provided with a fixed screen, of a vessel consisting of a lower compartment or water-containing receptacle, an upper reservoir or liquid-containing receptacle, and a communicating laterally-extended open-ended vessel in which the liquid passes and comes in contact with the paper as it moves over its rollers, and means for adjusting the vessel, so that the open side of the laterally-extending portion thereof presses to the requisite degree against the paper, substantially as set forth.

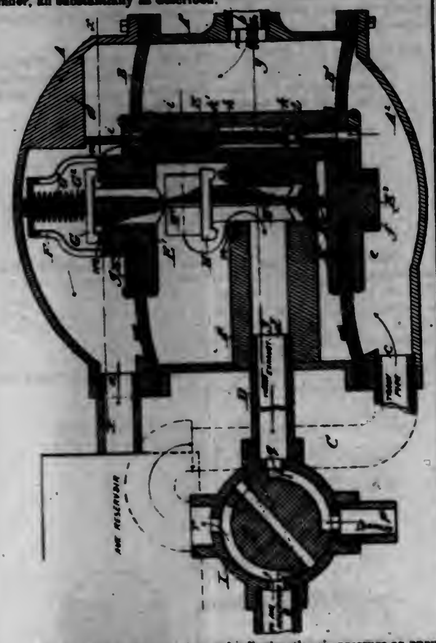
410,922. AIR-BRAKE. NATHANIEL J. PRITCHARD, Roanoke, Va., assignor to the Pritchard Brake Company, same place. Filed Oct. 20, 1883. Serial No. 288,618. (No model.)

Claim.—1. In a pneumatic brake system, the herein-described device for applying and relieving the pressure on the brakes, consisting, essentially, in the combination, with an inclosing-case, of two flexible diaphragms arranged transversely within the case to divide it into three chambers, the ports in said chambers leading to the auxiliary reservoir, brake-cylinder, main supply-pipe, and the exhaust-port, an air-passage between the upper and lower chambers, a valve in said passage, an exhaust-valve in the middle chamber, and an outlet-valve between the upper and middle chambers, all substantially as described.

2. In a pneumatic brake system, a device for applying and relieving the pressure on the brakes, consisting in the combination of an inclosing-case, two flexible diaphragms arranged therein, so as to divide said casing into three chambers, the ports in said chambers leading to the auxiliary reservoir, the brake-cylinder, the main supply or train pipe, and the exhaust-port, a valve for controlling the air communication between the end chambers of the casing, the valve for controlling communication between the upper and middle chambers, and the exhaust-valve in the middle chamber, all arranged in the manner and for the purpose set forth.

3. The herein-described device for applying and relieving the pressure on railway-brakes, consisting in the combination of an inclosing-case, two flexible diaphragms arranged within the same to divide it into three chambers, the upper of said chambers having a port leading into the auxiliary reservoir, the middle chamber having a port leading into the brake-cylinder and an exhaust-port, and the lower chamber having a port where the main supply-pipe enters, the air-passage between the upper and lower chambers containing a valve, the exhaust-valve in the middle chamber, and the outlet-valve between the upper and middle chambers, all arranged substantially as described.

4. In a device for applying and relieving the air-pressure in pneumatic railway-brakes, the combination of an inclosing-case, two flexible elastic diaphragms arranged therein to make a triple chamber, suitable ports in the inclosing-case leading to the auxiliary reservoir, the main pipe, the brake-cylinder, and the exhaust, a valve for permitting the passage of air between the upper and lower chambers, an exhaust-valve in the middle chamber for controlling the exhaust, and an outlet-valve between the upper and middle chambers for permitting the flow of air from the auxiliary reservoir to the brake-cylinder, all substantially as described.



5. In a device for applying and relieving the air-pressure on pneumatic railway-brakes, the combination of the engineer's valve, the main air-supply pipe, and the device for applying and relieving the pneumatic pressure on the brakes, consisting, essentially, of an inclosing-casing, two flexible diaphragms arranged within the same to divide it into three chambers, the upper of said chambers having a port leading into the auxiliary reservoir, the middle chamber having a port leading into the brake-cylinder and an exhaust-port, and the lower chamber having a port where the main supply-pipe enters, the air-passage between the upper and lower chambers containing a valve, the exhaust-valve in the middle chamber, and the outlet-valve between the upper and middle chambers, all substantially as described.

6. In a device for applying and relieving the pressure to air-brakes, the combination of an inclosing-case made in three parts, two flexible diaphragms secured between the junctions of these parts to divide the casing into three chambers, the upper of said chambers having a port leading into the auxiliary reservoir, the middle chamber having a port leading into the brake-cylinder and an exhaust-port, and the lower chamber having a port where the main supply-pipe enters, a central casting attached to and supported by the flexible diaphragms, a valve arranged in said casting for controlling the communication between the two end chambers, a valve likewise arranged in connection with the casting for controlling communication between the upper and middle chambers, and an exhaust-valve in the middle chamber, all substantially as described.

7. The combination of the inclosing-case having suitable ports leading to the auxiliary reservoir, brake-cylinder, main supply-pipe and exhaust, the two flexible diaphragms secured within said case, a central casting attached to and supported by said diaphragms, and having an air-passage which affords a connection between the chamber below the lower diaphragm and that above the upper diaphragm, a valve within said passage, an outlet-valve carried by the upper end of said casting to afford communication between the air-drum and the brake-cylinder, and an exhaust-valve, all arranged substantially as described.

8. The combination of the inclosing-case, consisting of the main cylindrical portion A′ and the end portions A and A², flexible elastic diaphragms B and B′, secured within the casing, the central casting attached to and supported by said diaphragms, the air-passage through said casting, the exhaust-valve H, and the outlet-valve G, all arranged substantially as described.

9. The combination, with the inclosing-case having suitably-arranged ports and the diaphragms within said case, of the central casting attached to and supported by said diaphragms, and consisting of the eccentric vertical stem E, having the air-passage through it containing a valve, the upper flat portions E′, having a sleeve E², and the lower flat portion E′, connected to the lower diaphragm, the valve G, arranged in connection with the sleeve E², and the exhaust-valve H, arranged in connection with the tubular extension A³ on the casing, substantially as described.

10. The combination of the inclosing-case, the two flexible diaphragms, the central casting attached to and supported by said diaphragms, the slotted valve-cover F, secured to the upper end of said casting, the valve G, having a stem G′, enveloped by a spring G³, and also having downwardly-projecting wings G⁴, and the exhaust-valve H, arranged in connection with the tubular extension A³ of the casing, and having upper wings H′ and lower wings H³, carrying a stem H⁴, all substantially as described.

11. The combination of the casing, the two diaphragms B and B′, secured within it, the air-passage running through said casting between the chamber below the lower diaphragm and that above the upper diaphragm, the valve within said passage consisting of a rod *i*, whose upper end is adapted to come into contact with an enlargement *a′* on the casing, collars *k* and *k′* on the two parts of said rod, which is divided near its lower end, and enveloping spring *j* between said collars, and a ball *l*, all substantially as described.

12. The combination of the inclosing-case, two diaphragms B and B′, arranged within it, the central casting consisting of the eccentric vertical stem E, having flat portions E′ and E², that are secured to said diaphragms, and having an air-passage that affords connection between the two ends of the casing, a valve within said air-passage having a projecting rod *i*, adapted to come into contact with an enlargement *a′* on the casing, an outlet-valve G on the upper end of the central casting, and an exhaust-valve H, for controlling the exhaust-port, substantially as described.

13. The combination of the inclosing-casing, two diaphragms B and B′, arranged within it, suitable ports leading to the main parts of the brake system, an exhaust-valve controlling the exhaust-port, and a central casting supported and carried by the two diaphragms, and having a valve that controls the flow of air from the auxiliary reservoir to the brake-cylinder, substantially as described.

14. The combination of the diaphragms and the casing having an internal projecting extension A³ at the point where the exhaust-port is located, suitably-arranged ports, a valve for regulating the flow of air from the lower end to the upper end of the casing, and the valve for regulating the flow of air from the air-drum to the brake-cylinder, and an exhaust-valve H, having upper wings H′ and lower wings H³, terminating in a stem H⁴, substantially as described.

410,923. MEANS FOR SECURING STEREOTYPE-PLATES. DAVID REID, Melbourne, Victoria. Filed Aug. 13, 1888. Serial No. 282,601. (No model.) Patented in Victoria July 6, 1888, No. 5,803; in New South Wales July 9, 1888, No. 768; in New Zealand July 26, 1888, No. 3,134, and in England Aug. 11, 1888, No. 11,631.



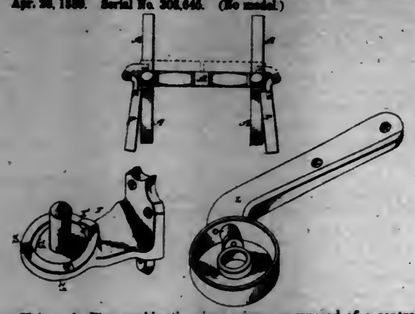
Claim.—1. An adjustable double-dovetail key B, consisting of an upper and a lower part suitably connected together, substantially as herein described and explained.

2. An adjustable double-dovetail key consisting of an upper and lower section, in combination with adjusting-screws E, having an annular shoulder or flange upon which the upper section rests, said screws working in threaded bearings formed in the lower sections, substantially as and for the purposes specified.

3. An adjustable dovetail key for securing stereotype-plates to their base-blocks, composed of two sections, one of which is formed of a plurality of longitudinal strips, and means, substantially as described, for adjusting one of said sections, substantially as and for the purposes specified.

4. The combination, substantially as herein described, with a base-block and stereotype-plate, of an adjustable double-dovetail key for securing the plate to the block, said key being composed of a lower section provided with screw-threaded openings, and an upper section formed of a plurality of longitudinal strips provided with unthreaded openings of less diameter than those in the lower section, in combination with adjusting-screws having a threaded portion of the same diameter as the threaded bearings in the lower key-section, and a head of less diameter than the openings in the upper section to form a shoulder upon which the strips of said upper section rest, substantially as and for the purposes specified.

410,924. MIRROR. JOSEPH H. RICHARDSON, Jersey City, N. J. Filed Apr. 26, 1889. Serial No. 308,645. (No model.)



Claim.—1. The combination, in a mirror composed of a central mirror and two side mirrors which fold back of it, whereby two mirrors are formed, one front and one back of the supporting central frame, the mirror supported therein, and the two side mirrors, of projecting hinges secured to the edges of the supporting-frame, and projecting arms secured to the side mirrors, having their inner ends pivoted to said hinges and curved outward when they are opened, whereby when they are closed the curve is reversed, thus allowing the side mirrors to close back of the central mirror, substantially as shown and described.

2. The combination, with the supporting-frame, the large mirror supported therein, and the side mirrors, of projecting hinges secured to the frame and the side mirrors, one of said hinges provided with two inclines in a line with and extending toward the supporting-frame, and the other with a roller, whereby the side mirrors will automatically move either forward or backward from a vertical line with the central mirror, thus opening or closing, substantially as specified.

3. The combination, with the supporting-frame, the large mirror supported therein, and the side mirrors, of hinges secured to the said frame, having a rise or projection on its outer side in a line with the length of the central mirror, and inclines extending therefrom toward the supporting-frame, arms secured to the side mirrors, having their inner pivoted ends curved outward when they are open, and a roller journaled therein, whereby the side mirrors automatically close and open and fold at the back of the central mirror, for the purpose described.

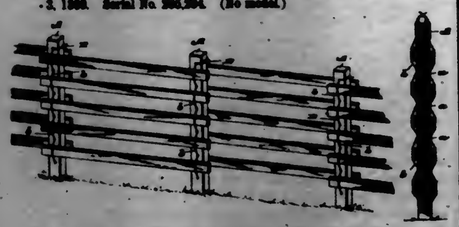
4. The combination, with the supporting-frame, the large mirror supported therein, the side mirrors, and hinges secured to the said frame, having projections on their outer and inner sides in a line with the length of the central mirror and with inclines connecting them, of arms secured to the side mirrors, and a roller journaled thereon in such relation to the projections and inclines as to cause the side mirrors to automatically open, close, and assume the proper angle to the central mirror when open, for the purpose shown and described.

410,925. COMPOSITION FOR KINDLING FIRES. ARNOLD RIMPAU, Brunswick, Germany. Filed Apr. 13, 1889. Serial No. 307,168. (No specimens.)

Claim.—1. The herein-described composition for kindling fires, composed of dried and pulverized peat impregnated with a mixture of resin, naphtha, and mineral black, in about the proportions stated, solidified and broken up into lumps of suitable size, substantially as set forth.

2. The herein-described fuel composed, consisting of peat, resin, naphtha, and mineral black solidified and broken into lumps.

410,926. FENCE. PETER H. ROSBURG, Farwell, Mich. Filed Jan. 3, 1889. Serial No. 295,304. (No model.)



Claim.—1. A fence consisting of vertical posts provided with a longitudinal series of transverse perforations, a length of wire seated centrally in the bottom perforation, with its ends crossing each other in the succeeding ones to form loops between the perforations on each side of a post, and the rails having the ends of one panel seated in the loops at the opposite side of a post from the loops in which the rail ends in the next adjacent panel are seated, substantially as described.

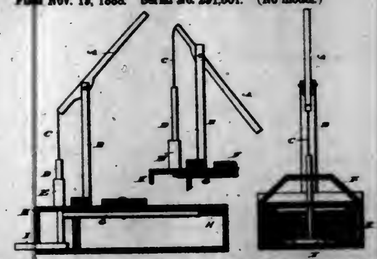
2. A fence consisting of vertical posts provided with transverse perforations inclined from the horizontal, a wire seated in the said perforations, with its ends crossing in each succeeding one, and the rails having their ends in adjacent panels seated in the loops at opposite sides of a post, substantially as described.

410,927. MACHINE FOR UNITING SOLES AND UPPERS OF BOOTS OR SHOES. STILLMAN W. ROBINSON and SIBLE P. WATT, Columbus, Ohio, assignors to the Wire Grip Fastening Company, Boston, Mass. Filed Oct. 26, 1888. Serial No. 289,217. (No model.)



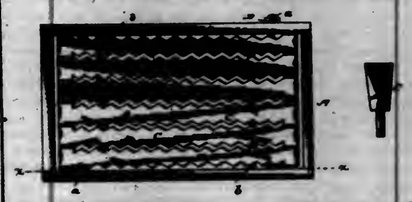
Claim.—The combination, with the spindle-piece A, constructed as described and having internally-located spring-actuated grippers B, of the gripper-carriers C, thread-ring E, having prongs *e*, pronged coupling D, adapted to be made to interlock with the prongs of said thread-ring, the grippers G, grip-ring F, and ring I, arranged, connected, and adapted to be operated substantially as described.

410,928. CAR-COUPLING. ARISTIDE ROMAIN, New Orleans, La. Filed Nov. 19, 1888. Serial No. 291,301. (No model.)



Claim.—In a car-coupling, the combination, with the draw-head constructed as described and provided with the longitudinal slot L in the roof thereof, of the slide-bar G, arranged within the draw-head and having a front vertical portion, as shown, the slide-block F on the outside of the head and secured to the bar G by a bolt passing through the slot, the standard B, the hand-lever pivoted thereto, the pin secured to the lever, the frame E, secured to the forward upper end of the head and having an aperture for the passage of the pin, and the springs backing the slide-bar, substantially as secified.

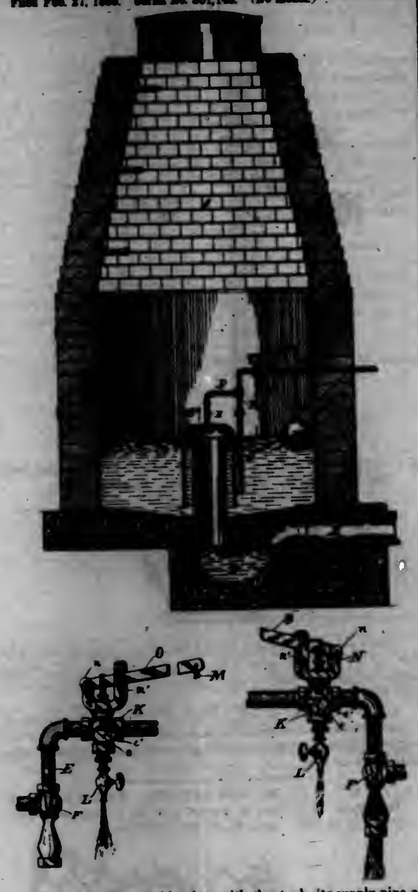
410,929. GRATE-BAR FOR FIRE-ENGINES. ROBERT ROSS, Calliope, Iowa. Filed Oct. 17, 1888. Serial No. 288,410. (No model.)



Claim.—1. A furnace grate-bar having its opposite sides of serpentine or corrugated form, and the projected and cut-out portions both tapering from above downwardly the depth of the bar, whereby, when two bars are placed in position and reciprocated in opposite directions, a grinding action will be caused on clinkers or the like coming between them, substantially as specified.

2. A furnace grate-bar having its opposite sides of serpentine or corrugated form, and the projected and cut-out portions both tapering from above downwardly the depth of the bar, in combination with a furnace, the rock-shafts having bearings for said bars, the bar connecting the rock-shafts, and a lever for rocking one of the shafts, substantially as specified.

410,930. FLUSHING-TANK. ANDREW ROSEWATER, Omaha, Nebr. Filed Feb. 27, 1889. Serial No. 301,169. (No model.)



Claim.—1. The combination, with the tank, its supply-pipe and outlet siphon-pipe, of the vertical pipe S, connected with the supply-pipe and having its lower end terminating at a point above the lower end of the short leg of the siphon, the valve, and the float connected with said valve, substantially as and for the purpose specified.

2. The combination, with the tank, its supply-pipe and siphon outlet-pipe, of the ejector or jet F in said supply-pipe, the cock L, and the vertical pipe S, connected with the ejector or jet, and having its lower end terminating at a point above the lower end of the short leg of the siphon, the valve, and the float connected with said valve, substantially as and for the purpose specified.

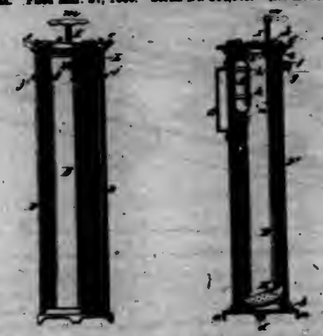
3. The combination, with the tank, the supply-pipe, and the siphon outlet-pipe, of the vertical pipe S, the ejector or jet F in the supply-pipe and connected with the pipe S, the valve, and the float in the tank connected with said valve, substantially as and for the purpose specified.

4. The combination, with the tank, its supply-pipe and its siphon outlet-pipe, of the ejector or jet F in the supply-pipe, the pipe D, connecting the supply-pipe with the siphon, the vertical pipe S, connected with the ejector or jet and having its lower end terminating at a point above the lower end of the short leg of the siphon, the valve K, the cock L, and the float connected with the valve, all arranged and operating substantially as and for the purpose specified.

5. In a flushing-tank, the combination, with the supply-pipe provided with a partition having a valve-opening therein, and siphon exhaust-pipe, of the vertical pipe connected with the supply-pipe, the cock, the U-shaped bracket secured to the supply-pipe, having its shorter arm bifurcated and its longer arm slotted longitudinally, the valve-rod carrying on its lower end the valve and having its upper end slotted, the lever hinged in the bifurcated arm of the U-shaped bracket and passing through the slots of the valve-rod and longer arm, and the float connected to the free end of the lever by means of a chain, substantially as set forth.

6. In a flushing-tank, the combination, with an air-exhaust pipe from the siphon, of an ejector or jet connected therewith, a supply-pipe connected to the ejector or jet and provided with a depending cock for filling the tank, a valve for automatically causing an intermittent flow of a portion of the inflowing water to the jet or ejector supply-pipe, whereby a consequent intermittent exhaustion of the air from the siphon-pipe is attained, and a pipe connected to the jet or ejector for discharging the water admitted thereto, substantially as set forth.

410,931. FIRE-EXTINGUISHER. THOMAS B. ROMER, Sioux Falls, Dak. Filed Mar. 27, 1889. Serial No. 304,972. (No model.)



Claim.—The combination, with the upper and lower castings and the tube seated at its ends in grooves therein, of the rods D, holding said parts together, and the transverse bolts passed through said rods and engaging said tube near its upper end, substantially as shown and described.

410,932. HEEL-BURNISHING MACHINE. SIMON ROSS, Jr., Linwood, Ohio. Filed Dec. 10, 1888. Serial No. 294,066. (No model.)



Claim.—1. In a heel-burnishing machine, the combination, with the oscillating arm or standard 1, having a stock A, of a burnisher 6 and a clamping-screw 10, passing through the burnisher and the stock, and by which screw the burnisher is adjustable in the arc of a circle on the stock to different angles relative thereto, substantially as described.

2. The combination, with a stock A, of the burnishing-tool composed of a series of rigid plates clamped immovably and rigidly together and adjustably secured to said stock to constitute an inflexible burnishing-face, substantially as described.

3. The combination, with a stock A, of the burnishing-tool composed of a series of rigid plates rigidly clamped together by a clamping-screw, and by the same screw said tool secured on and bodily adjustable at different angles to the stock, substantially as described.

4. In a heel-burnishing machine, the combination, with the oscillating arm or standard 1, having the stock A, of the burnisher 6, comprising a series of plates having a rigid concave burnishing-face, and the clamping-screw 10, passing through the plates and the stock, and by which screw the burnisher is adjustable in the arc of a circle on the stock to different angles relative thereto, substantially as described.

5. In combination with the reciprocating stock 3, reversible burnisher 6, provided with a concave and convex edge, whereby the tool may be reversed for use, substantially as described.

6. The combination, with a tool-carrier, of a clamping-screw extending through and supported by the carrier, and a burnisher journaled on the screw and adjustable to different positions in the arc of a circle by said clamping-screw, substantially as described.

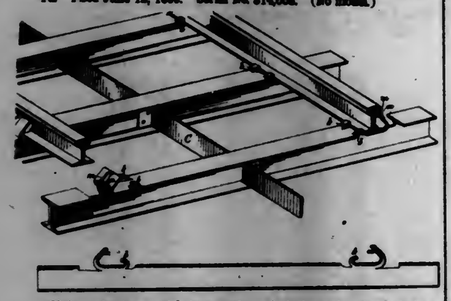
7. The burnisher 6, composed of a series of plates 7, arranged side

by side, and the pin or rivet 8, passing through the plates at one end, in combination with a tool-carrier and a clamping-screw 10, extending through the carrier, and on which the other ends of the plates are hung for adjusting the burnisher to different positions in the arc of a circle, substantially as described.

8. The burnisher-tool 6, comprised of a series of plates 7 and adjustably attached to the shank A, provided with slots *a* and tongues *b*, substantially as herein specified.

9. In combination with a burnisher 6, the top-piece burnisher C, supported on the stock 3, and held to its work by the spring 16, substantially as described.

410,933. RAILWAY CROSS-TIE. EDWARD SAMUEL, Philadelphia, Pa. Filed June 12, 1889. Serial No. 314,033. (No model.)



Claim.—1. A combined cross-tie and chair made of rolled-shape or beam iron or steel, having a web and top plate, and having the web partly severed, and that portion of the top plate thus freed bent in the direction of the length of the beam, so as to form a rail-retaining lip, substantially as set forth.

2. A combined cross-tie and chair made of rolled-shape iron or steel, having bent portions forming retaining-lips for the inner flanges of the rails, and having other bent portions forming outer retaining-lips for the rails, said outer bent portions being composed of the top flanges of the beam and portions of the web, substantially as described.

3. The combination of a combined cross-tie and chair made from rolled-shape or beam iron or steel, and having bent portions forming pockets for the rails, with angle-pieces secured to the web of the rail and serving to prevent its lateral movement, substantially as specified.

410,934. GATE-LATCH. CALVIN M. SANDERS and JOHNSON H. SANDERS, Woodland Mills, Tenn. Filed May 4, 1889. Serial No. 309,567. (No model.)



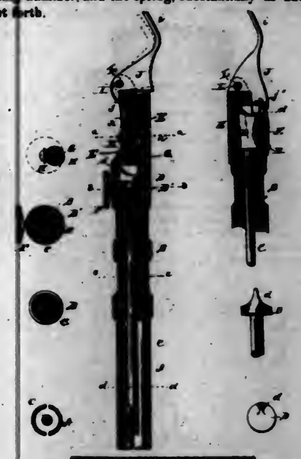
Claim.—1. A reversible gate-latch consisting of a shell or case having a removable side 2 and the longitudinal slots 7 in its opposite sides, a reciprocating bolt fitted in the shell, the brackets fitted snugly around said shell and its removable side near the ends thereof to confine the shell and its removable side in place, a knob detachably connected to the bolt and operating in one of the slots in one side of the case, and a keeper, all arranged and combined for service substantially as herein shown and described.

2. A reversible gate-latch consisting of a shell or case having an open side and longitudinal recesses 7 formed in the edges of the walls thereof adjoining said open sides and the recesses 12 in the solid angles or corners thereof and forming the shoulders 13, a removable side 2, provided with the ribs or flanges 8, arranged to fit in the recesses 7, and with the recesses 14, the angular brackets fitted in the recesses 12 14 to confine the shell and its removable side securely in place, a reciprocating bolt, a knob detachably connected to said bolt, and a keeper, all arranged and combined for service substantially in the manner and for the purpose herein shown and described.

410,935. DENTAL PLUGGER. FERDINAND SCHMIDT, Dennels, Prussia, Germany. Filed Apr. 13, 1889. Serial No. 307,116. (No model.) Patented in Germany Apr. 4, 1888, No. 46,379.

Claim.—1. In a dental plugger of the described class, the combination of the revolving shaft and cam, the pivoted oscillating hammer or plugger-head formed on its end with the point or striker, and the spring, substantially as set forth.

2. In a dental plugger of the described class, the combination of the revolving shaft and cam, the reciprocating slide-bar, the pivoted oscillating hammer, and the spring, substantially as and for the purpose set forth.



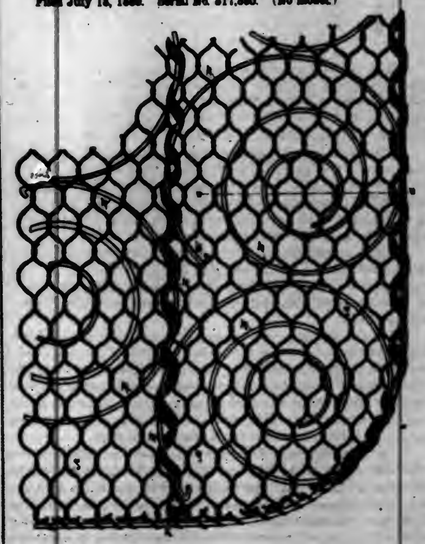
410,936. BAKING-PAN. JOHN J. SEIFERT, Gilmore City, Iowa. Filed Mar. 30, 1889. Serial No. 305,422. (No model.)



Claim.—1. A baking-pan having plates or gutters secured to its sides and the shield or section having lower inclined sides entering said gutters and inclosing the upper portions of said sides, substantially as set forth.

2. The baking-pan having V-shaped plates or gutters secured to its sides, the shield or section having an upper flat portion and lower inclined sides and forward flanged portions, and a ring-handle, substantially as set forth.

410,937. WOVEN-WIRE MATTRESS. WILLIAM S. SEYMOUR, Philadelphia, Pa., assignor of one-half to Elmer E. Gray, same place. Filed July 18, 1889. Serial No. 317,995. (No model.)



Claim.—1. In a woven-wire mattress, the combination, with a woven-wire fabric, of perpendicular springs, the terminal coils of said springs being connected with said fabric and being under lateral tension, whereby the tendency of the coils to expand keeps the fabric taut.

2. In a woven-wire mattress, the combination, with a woven-wire fabric, of extra wire cables intertwined therewith and perpendicular springs whose terminal coils are held in a state of lateral tension between adjacent cables, the distance between the cables being less than the diameter of the terminal coils when not under tension.

3. In a woven-wire mattress, the combination, with perpendicular springs, of a woven-wire fabric for the top of the mattress and a woven-wire fabric for the bottom of the mattress, the terminal coils of said springs at top and bottom being connected with said fabrics under a state of lateral tension, whereby both sides of the mattress are kept taut and the mattress is reversible.

4. In a woven-wire mattress, the combination, with a woven-wire fabric, of extra wire cables intertwined therewith, said cables being located beneath the surface of the fabric, and perpendicular springs whose terminal coils are held in a state of lateral tension between adjacent cables, the distance between the cables being less than the diameter of the terminal coils when not under tension.

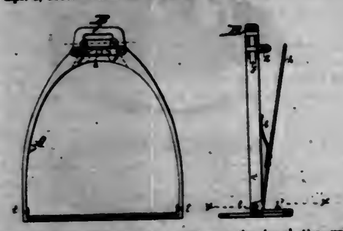
410,938. OIL-CAN. AZ B. SHAW, Boston, Mass. Filed Apr. 4, 1888. Renewed Mar. 12, 1889. Serial No. 303,063. (Model.)



Claim.—1. The described oil-can, having body A, spring-bottom B, and discharge-pipe C, in combination with the false bottom E, with opening *c*, but otherwise imperforated, and with the vertical tube F, leading therefrom to the discharge-pipe, substantially as set forth.

2. The combination of the body A, elastic bottom B, and discharge-pipe C with the false bottom E, opening *c*, vertical tube F, and inlet and outlet valves, substantially as set forth.

410,939. STIRRUP. HENRY G. SELLON, Dülmen, Prussia, Germany. Filed Apr. 1, 1889. Serial No. 305,696. (No model.)



Claim.—1. In combination, the stirrup, the head, the gripping and supporting dogs pivoted to the head and engaging with the stirrup to detachably connect them, means for holding said dogs in position, and means, substantially as described, on the stirrup and operating independently of the other parts for releasing the dogs, substantially as described.

2. In combination, the stirrup, the head, the gripping and supporting dogs pivoted to the head and engaging with the stirrup to detachably connect them, a movable holding-wedge for the dogs, and means for moving said wedge to engrip the dogs, substantially as described.

3. In combination, the stirrup, the head, independently-movable detachable connections between the head and stirrup, and a frame pivoted to the stirrup and normally disengaged from the detachable connection and arranged to bear upon the said connection when moved, substantially as described.

4. In combination, the stirrup, the head, the detachable connections between, and a pivoted frame acting upon said detachable connections, said frame having a tread portion *h'*, by which it is held normally out of action, substantially as described.

5. In combination, the stirrup, the head, the detachable connection between, comprising a wedge, a spring for holding said wedge in normal position, and means for automatically forcing said wedge aside against the spring-pressure, substantially as described.

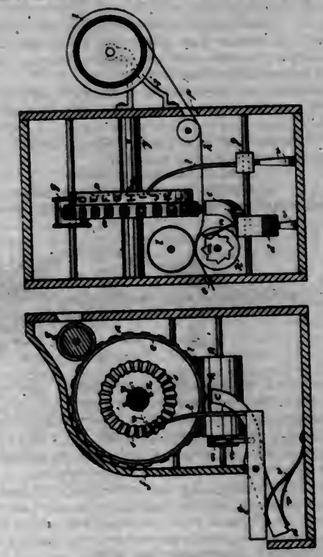
6. In combination, the stirrup, the head, independently-movable detachable connections between the head and stirrup, a frame arranged to bear upon said connections when moved, and a spring for keeping said frame normally out of contact with the connections, substantially as described.

7. In combination, the stirrup having the dovetailed chamber the head, the dogs pivoted thereto and extending into said chamber, and the wedge between the dogs, substantially as described.

410,940. SOLUTION OF BENZOIC SULPHIMIDE IN OILS, &c. ADOLPH SEMMER, Berkeley, Cal. Filed Apr. 24, 1888. Serial No. 309,080. (No specimens.)

Claim.—As a new composition, the solution of benzoic sulphimide, in that class of ingestible carbon compounds which is insoluble in water, but soluble in bisulphide of carbon.

410,941. TYPE-WRITING MACHINE. WILLIAM G. SPIDER, New York, N. Y., assignor of one-half to George H. Clarkson, Philadelphia, Pa. Filed Nov. 3, 1888. Serial No. 289,870. (No model.)



Claim.—1. The combination of the stationary shaft, the wheel fitted to turn loosely on the shaft, duplex ratchet in the disk of the wheel, and the opposing impelling and holding pawls acting on respective sides of the ratchet, substantially as described.

2. The combination of the stationary shaft, the wheel fitted to turn loosely on the shaft, duplex ratchet in the disk of the wheel, the impelling spring-pawl rigidly attached to a key, the spring holding-pawl inserted in the shaft with relation to the wheel-hub for a controlling-pin thereto and acting on the duplex ratchet opposite to the impelling-pawl, and the controlling-pin in the shaft on the opposite side of the wheel, substantially as described.

3. The type-wheel and indicator-wheel made in one structure of stamped sheet metal, comprising the hub *w*, disk *x*, and the wheel-rims *a* and *c*, and having the duplex ratchet in the disk, substantially as described.

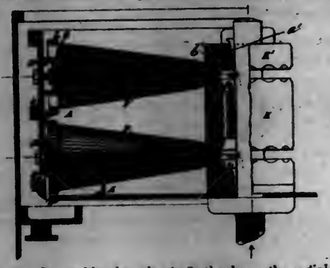
4. A letter-wheel provided with an integral hub, ratchet, and letter-rim, the whole being stamped up out of a single piece of sheet metal, as set forth.

5. The combination, with a suitable casing having a sight-opening, of a stationary shaft provided with a type-wheel *a* and indicator-wheel *c*, having a ratchet *s*, a key-lever *g*, and a spring-pawl *t*, for operating said ratchet and letter-wheel, the paper-feed rollers *l k*, the latter having a ratchet *m*, and a printing-key *d*, provided with hammer *e* and pawl *n*, whereby said key *d* will simultaneously operate the feed-rollers *l k* and press the paper against the letter-wheel *c*, substantially as and for the purpose set forth.

6. A letter-wheel provided with an integral hub and ratchet, the whole being stamped up out of a single piece of sheet metal, as set forth.

7. A letter-wheel provided with an integral hub, ratchet, and type and indicator rims, the whole being stamped up out of a single piece of sheet metal, as set forth.

410,942. CENTRIFUGAL MACHINE. CARL STEFFEN, Vienna, Austria-Hungary. Filed Nov. 23, 1887. Serial No. 255,900. (No model.)



Claim.—1. In combination, the shaft, the drum, the radial forms, and the rings K K' on said shaft, having seats for the forms and arranged upon each side of the same, with means for securing said rings to the shaft, substantially as described.

2. In combination, the shaft, the drum, the radially-arranged forms, having open inner ends, the rings, having seats for said forms, said rings being upon each side of the forms and at a slight distance apart, and the hollow shaft having outlets opening into the spaces between the rings, substantially as described.

410,943. LANTERN. WILLIAM C. STEWART and JAMES A. BLAKELEY, Bellaire, Ohio. Filed July 2, 1888. Serial No. 278,745. (No model.)



Claim.—1. In a tubular lantern, the combination, with the base, side tubes, central tube, globe, and globe-supporting disk, of a lever pivoted to said base and provided with loop N, surrounding the burner-cones and hinged to said globe-supporting disk, and with a locking-hook L, engaging with the flange of said globe-supporting disk, substantially as described, and for the purposes mentioned.

2. In a tubular lantern, the combination, with the base, side tubes, central tube, globe, and globe-supporting disk provided with a hinge O thereon, of a lever pivoted to said base and secured to said disk by means of said hinge and provided with a locking-hook L, for the purpose mentioned, substantially as set forth.

3. As an improvement in lanterns, a globe connected to the central tube at its upper end, a base, a supporting-disk for said globe, and a lever pivoted on the base and connected to said disk, and having an integral latch-arm engaging with said disk, substantially as set forth.

410,944. GAS GENERATOR AND BURNER. JOSEPH G. STRENT, Dallas, Tex. Filed Apr. 11, 1889. Serial No. 306,775. (No model.)



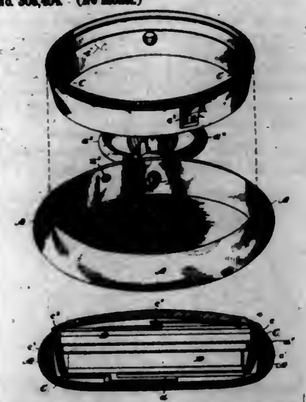
Claim.—1. An oil-vapor generator and burner, consisting of a casing containing a filling of porous incombustible substance and provided at its upper portion with a plurality of burner-tips, an oil-supply pipe extending in the filling lengthwise of the casing and having perforations, and an air-supply pipe extending through the filling and provided with a plurality of air-jet tubes arranged in a plane above the oil-supply pipe, projecting upward through the packing to a point above the same and registering with the burner-tips at the upper portion of the casing, for inducing the flow of vaporized oil through the filling to the burner-tips and producing a blow-pipe action, substantially as described.

2. An oil-vapor generator and burner, consisting of a casing containing a filling of porous incombustible substance and provided at its upper portion with a plurality of burner-tips, a perforated oil-supply pipe extending through the filling, and an air-supply pipe extending through the filling and opposite ends of the casing, having at its opposite external ends the valves for the admission of air at either end of the pipe and provided with a plurality of air-jet tubes arranged in a plane above the oil-supply pipe, projecting upward through the packing to a point above the same and registering with the burner-tips at the upper portion of the casing, substantially as and for the purposes described.

3. An oil-vapor generator and burner, consisting of a casing containing a filling of porous incombustible substance and provided at its upper portion with a plurality of burner-tips, a perforated oil-supply pipe extending through the filling, and a coiled air-supply pipe located in and heated by the filling, and having portions of its coils provided with air-jet tubes located in a plane above the oil-supply pipe, extending through the filling to a point above the same, and registering with the burner-tips at the upper portion of the casing, substantially as and for the purposes described.

4. An oil-vapor generator and burner, consisting of a casing containing a filling of porous incombustible substance and provided at its upper portion with a plurality of burner-tips, a perforated oil-supply pipe extending through the filling, and a coiled air-supply pipe located in the filling, extending through opposite ends of the casing, provided with valves at its ends for receiving air at either end, and having portions of its coils provided with air-jet tubes located in a plane above the oil-supply pipe, extending through the filling, and registering with the burner-tips at the upper portion of the casing, substantially as and for the purposes described.

410,945. WATCH-CASE. WILLIAM C. TAFT and PAUL J. MORAND, Chicago, Ill.; said Morand assignor to said Taft. Filed Apr. 24, 1889. Serial No. 308,404. (No model.)



Claim.—1. A watch-case in which the center and back are integral and are combined with a movement-ring that is adapted to be fitted into and automatically locked within said center, substantially as and for the purpose specified.

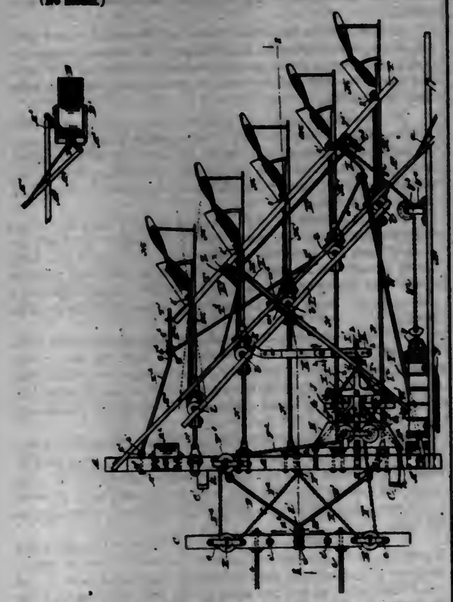
2. A watch-case in which are combined an integral center and back, a movement-ring that is adapted to fit within said ring, and a spring-latch which operates to lock said ring in place, substantially as and for the purpose shown.

3. A watch-case in which the center and back are integral and are combined with a removable movement-holding ring, which, when placed within said center, is automatically locked therein, substantially as and for the purpose specified.

4. A watch-case in which are combined an integral center and back, a movement-ring that is adapted to be fitted into and automatically locked within said center, and a glass bezel which is adapted to engage with the outer portion of said ring, substantially as and for the purpose set forth.

5. A watch-case in which are combined an integral center and back, a movement-ring that is adapted to fit into said center, a spring-latch which operates to lock said ring in place, and a glass bezel that engages with the outer portion of said ring, substantially as and for the purpose shown and described.

410,946. GANG-PLOW. AUGUST B. VERLEMANN and THEODORE A. VERLEMANN, Augusta, Me. Filed May 3, 1889. Serial No. 309,670. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the plow-frame having a front cross-beam, the engine-beam, and the diagonal draft-rods crossed at their outer ends, hinged to the front beam of the plow-frame and supported on the engine-beam, on which they are free to slide transversely to the line of draft.

2. The combination, substantially as hereinbefore set forth, of the plow-frame having a front cross-beam, the engine-beam, the diagonal draft-rods hinged to the front beam of the plow-frame, crossed at their outer ends and sliding upon a bolt or bar suspended from the engine-beam and extending through eyes or loops on the outer ends of the draft rods.

3. The combination, substantially as hereinbefore set forth, of the plow-frame having a front cross-beam, the engine-beam, the diagonal draft-rods hinged to the front beam of the plow-frame and crossed at their outer ends, and the horizontal rod or bar on the engine-beam, and secured thereto by three eyebolts, said horizontal bolt or rod extending through eyes or loops in the outer ends of the draft-rods, which are free to slide on the horizontal rod between the central eye-bolt and the end ones.

4. The combination, substantially as hereinbefore set forth, of the plow-frame, a plow mounted therein, the engine or draft-power, and connections between the plow and the draft-power for moving the plow horizontally in the frame.

5. The combination, substantially as hereinbefore set forth, of the plow-frame having a front cross-beam, a series of plows connected with the front beam by vertical pivots, the engine or draft-power, and connections between the engine and the plows, whereby they may be moved horizontally relatively to their frame.

6. The combination, substantially as hereinbefore set forth, of the plow-frame, a series of plows mounted therein, the plow-connecting beam L, the cross-head, the link connecting the cross-head with the plow-connecting beam, the engine or draft-power, and flexible connections between the engine or draft-power and the cross-head.

7. The combination, substantially as hereinbefore set forth, of the plow-frame, the plows flexibly connected therewith, the plow-connecting beam, the cross-head, a link connecting the cross-head to the plow-connecting beam, the chains secured to the front side of the front cross-beam of the plow-frame and to opposite arms of the cross-head, and the sheaves or pulleys on the plow-frame and on the cross-beam of the engine, over which the chains extend.

8. The combination, substantially as hereinbefore set forth, of the plow-frame, the plows flexibly connected therewith, the plow-connecting beam, the oscillating cross-head, the link connecting the cross-head to the plow-connecting beam, the platform on which the cross-head is mounted and which is hinged to the front cross-beam of the frame, and flexible connections between the cross-head and the engine or draft-power.

9. The combination, substantially as hereinbefore set forth, of the plow-frame, a series of plows mounted therein, the plow-beams, the draft-rods flexibly connected to the plow-beams and to the front cross-beam of the plow-frame, the diagonal plow-connecting beam, the cross-head, the link connecting the cross-head with the plow-connecting beam, and the platform on which the cross-head is mounted, hinged to the front beam of the frame and resting on one or more of the draft-rods to which the plow-beams are connected.

10. The combination, substantially as hereinbefore set forth, of the plow-frame, the plows mounted therein, the rear plow-connecting beam to which the plows are attached, and the bar T' at one end of the frame, yieldingly connected with the plow-connecting beam T and flexibly connected to the front cross-beam.

11. The combination, substantially as hereinbefore set forth, of the plow-frame, the diagonal rods W and W', the brackets on the ends of the rods, the shaft journaled in the ends of said brackets, a drum on each end of the shaft, the rear plow-connecting beam, the flexible connection between each drum and the plow-connecting beam near each end, and a chain for operating the shaft and drums.

12. The combination, substantially as hereinbefore set forth, of the plow-frame, a series of plows mounted therein, the plow-beams, the draft-rods flexibly connected with the plow-beams and with the front beam of the plow-frame, the front plow-connecting beam, and vertical guide-rods extending through eyes or guides in the plow-connecting beam.

13. The combination, substantially as hereinbefore set forth, of the front beam of the plow-frame, the draft-rods extending rearwardly therefrom, and the caster-wheels secured to the draft-rods and adjustable thereon both vertically and horizontally.

14. The combination, substantially as hereinbefore set forth, of the plow-frame, a plow, a plow-beam circular in cross-section at its front end, a clevis having a circular socket on the end of the plow-beam, a break-pin connecting the plow-beam to the clevis, and a draft-rod connecting the clevis to the plow-frame.

15. The combination, substantially as hereinbefore set forth, of a plow, the plow-beam, a draft-rod, and a coupling for connecting the plow-beam with the draft-rod, having a flat horizontal circular link *m'*, connected with the plow-beam and hinged between a bifurcated end *o* of the coupling and adjustably connected with the draft-rod.

16. The combination, substantially as hereinbefore set forth, of a plow-beam, a draft-rod screw-threaded on its rear end, a coupling having a socket screw-threaded to receive the screw-threaded end of the draft-rod and serrated on its outer end, a washer serrated on its face and adapted to engage with the serrated end of the coupling and provided with a lug or feather engaging with a groove in the rear end of the draft-rod, and a clamping-nut on the screw-threaded end of the draft-rod for holding the washer in engagement with the coupling.

17. The combination, substantially as hereinbefore set forth, of the plow-frame, a plow mounted therein, a beam T above the plow, a vertical rod S, secured to the plow-beam, the frame S', secured to the beam T, through which the rod S extends, and the chain V, connecting the plow-beam with the beam T.

18. The combination, substantially as hereinbefore set forth, of the plow-frame, the beam T, the vertical rod S, secured to the plow-beam, the frame S', having a yielding cross-piece S^2, and a rod U, connected to the front end of the plow-beam and extending through a perforation in the lower end of the rod S, for the purpose specified.

19. The combination, substantially as hereinbefore set forth, of the plow-frame, a series of plows mounted therein, the draft-rods connected to the front cross-beam of the plow by vertical and horizontal pivots and connected to the plow-beam by couplings having vertical and horizontal pivots, the front plow-connecting beam having eyes or guides through which extend guide-bars on the couplings, the rear plow-connecting beams, the oscillating cross-head, connections between the oscillating cross-head and the front plow-connecting beam, the engine or draft-power, and connections between the engine or draft-power and the oscillating cross-head.

410,947. BOILER-STAND. JACOB VOEGTLEY, St. Louis, Mo. Filed Jan. 14, 1889. Serial No. 296,576. (No model.)

Claim.—1. A metallic boiler-stand consisting of a ring A and three crossed and interlocked legs B, secured to the ring, substantially as described.

2. The combination of a metallic ring containing three slots with the metallic legs penetrating said slots and crossing each other, and so constructed as to interlock with said ring at their tops and with each other at the point of their crossing, thus forming a stand without the use of screws or other fastenings, substantially as set forth.

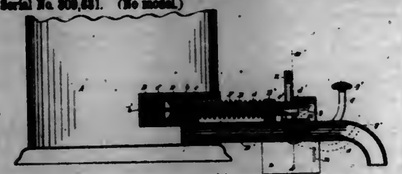
3. A boiler-stand leg B, constructed with a head b', a hook b^2 at the under side, and a projection b^3 at the upper side, substantially as described.

4. The combination of the ring A, having depressions a^3 and oblong slots a^2, and the crossed and interlocked legs B, having oblong heads b', by which the legs are secured to the ring, substantially as described.



5. A boiler-stand consisting of the ring A, formed with a flange a', depressions a^3, and slots a^2, and the legs B, formed with hooks b^3, projections b^2, and heads b', substantially as described.

410,948. COIN-CONTROLLED MEASURING-FAUCET. CLARENCE O. WHITE, Minneapolis, Minn., assignor of part to Charles L. Travis, O. A. Pray, and Charles R. Chute, all of same place. Filed May 6, 1889. Serial No. 309,681. (No model.)



Claim.—1. The combination, with a faucet, of valves, one moving in advance to open the induction-port and the other following to close said port, substantially as described.

2. The combination, with a faucet having a valve-seat and an induction-port, of separable valves normally held in contact to close said port and means for operating and connecting said valves, whereby, when one valve is moved to open the induction-port, it starts the other to close the same automatically, substantially as described.

3. A faucet having an induction-port and provided with separable valves for opening and closing said port, one valve following the other, as set forth, in combination with a coin-receiving chute and a pivoted lever for operating the valve mechanism when a coin is dropped into the chute, substantially as described.

4. The combination, with a faucet provided with a communicating valve-seat section, of a pair of valves in said valve-section normally in contact and closing its induction-port, the outer of said valves being loosely mounted, a spring attached to the stem of the inner valve and compressible on the stem of the inner valve by the movement of the outer valve, and an inlet behind the inner valve, substantially as described.

5. The combination, with a tank, of a faucet constructed of two communicating sections, a pair of valves in one of said sections normally in contact and closing the induction-port, the outer of said valves being loosely mounted on the stem of the inner valve and provided with a stem extending to the exterior of the tank, coiled springs on the valve-stems, compressible by the movement of the outer valve, an inlet behind the inner valve, and a coin-controlled device for operating said outer valve, substantially as described.

6. The combination, with a faucet having a valve-seat provided with an inlet-aperture and with induction and eduction ports, of valves operating to open and close said ports, substantially as set forth.

7. The combination, with a faucet provided with an induction-port and with an inlet-aperture, as set forth, of a differentially-timed valve device for opening and closing said port, substantially as described.

8. The combination, with a faucet, of valves and mechanism for operating said valves with a differential movement to open and close the induction-port, and a coin-controlled device for actuating said mechanism, substantially as described.

9. The combination, with a faucet, of the perforated valve D, having a tubular stem, the valve C, provided with a stem passing through valve D, and mechanism for operating said valves to open and close the induction-port, substantially as described.

10. The combination, with a faucet, of valves for opening and closing the induction-port, one valve being closed upon the stem of the other, and mechanism for operating said valves, substantially as described.

11. The combination, with a faucet, of differentially-timed valves for opening and closing its induction-port, valve-stems located one within the other, a coin-controlled device for actuating said valves, and springs for returning the valves to their normal position, substantially as set forth.

12. The combination, with a faucet having a valve-seat provided with an induction-port, of a pair of differentially-timed valves working in said seat, stems for said valves, spiral springs surrounding the stems, a device on one of the valve-stems for regulating the tension of the spring, and a coin-controlled device for actuating the valves, substantially as described.

13. The combination, with a tank, of a faucet composed of two communicating sections, a pair of valves operating in one of said sections to open and close the induction-port, the outer valve being loosely mounted on the stem of the inner valve, and being provided with a stem having on its extremity a notched or slotted arm, and a coin-controlled device for operating said valves, substantially as set forth.

14. The combination, with a faucet, of differentially-timed valves for opening and closing the induction-port, stems for said valves, springs, one of high and the other of low tension, surrounding said stems, a coin-receiving chute, and a pivoted two-armed lever for actuating the valves when a coin is dropped into the chute, substantially as set forth.

15. A faucet having a valve-seat provided with an induction-port, valves operating in said seat to open and close said port, a stem attached to the inner valve and passing through the body of the outer valve, and a spring upon said stem, whereby the outer valve can move in advance of the other to open the induction-port, substantially as set forth.

16. The combination, with a faucet having the valve-seat section B and the discharge-spout section B', of the valve C, having stem c, threaded at its outer end, the longitudinally-perforated valve D, provided with hollow stem d, the spiral springs E F, the threaded collar d', slotted arm d', coin-receiving chute K, and pivoted lever G, substantially as set forth.

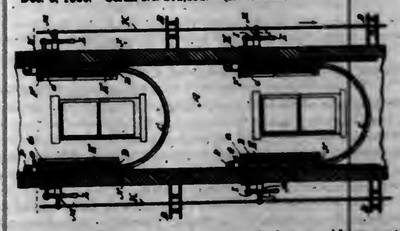
17. The combination, with a faucet having an induction-port, of a differentially-timed valve device for opening and closing said port, and a coin-controlled mechanism for actuating said valve device, substantially as set forth.

410,949. CHURN. SOLOMON WHITNEY, Manhattan, Kans. Filed Jan. 31, 1888. Serial No. 262,585. (No model.)



Claim.—The combination of the cylinder or body having at one end an extension provided with a socket, the rod having an angular end resting in a corresponding socket in the frame-work and its opposite end resting in the socket of the said extension, and the dasher having a sleeve or tubular portion connected to said rod, substantially as set forth.

410,950. HATCHWAY. PHILIP G. WIRTZ, Hoboken, N. J. Filed Dec. 6, 1888. Serial No. 292,532. (No model.)



Claim.—1. The combination, with a shaft A, a guideway extending in a direction across the shaft, and shutters adapted to travel in said guideway to transversely close the shaft, of detents G, adapted to engage said shutters, and a rod or connection K, connected to said detents, said rod or connection being adapted to release said detents, substantially as set forth.

2. The combination, with a shaft A, a guideway extending in a direction across the shaft, and shutters adapted to travel in said guideway to transversely close the shaft, of detents G, adapted to engage said shutters, and rods or connections K, located at opposite sides of the shaft and connected to said detents and to one another, said rods or connections being adapted to release said detents, substantially as set forth.

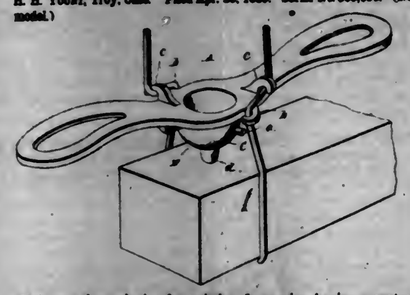
3. The combination, with a shaft A, a guideway extending in a direction across the shaft, and shutters adapted to travel in said guideway to transversely close the shaft, of detents G, adapted to engage said shutters, a rod or connection K, connected to said detent, and a handle L, connected to said rod, substantially as set forth.

4. The combination, with a shaft A, a guideway extending in a direction across the shaft, and shutters adapted to travel in said guideway to transversely close the shaft, of detents G, adapted to engage said shutter, a rod or connection K, adapted to release said detents, actuating-handles L for said rod K, and a rock-shaft M, made to connect said handles L, substantially as set forth.

5. The combination, with a shaft A, a guideway extending in a direction across the shaft, and shutters adapted to travel in said guideway to transversely close the shaft, of detents G, adapted to engage said shutters, a rod or connection K, adapted to release said detents, and stops N for said shutters, substantially as set forth.

6. The combination, with a shaft A, a guideway extending in a direction across the shaft, and shutters adapted to travel in said guideway to transversely close the shaft, of detents G, adapted to engage said shutters, a rod or connections K, adapted to release said detents, and restoring-cords O, connected to said shutters, substantially as set forth.

410,951. TWISTING DEVICE FOR FENCE-WIRES. WILLIAM H. H. YOUNT, Troy, Ohio. Filed Apr. 23, 1889. Serial No. 308,096. (No model.)



Claim.—A lever device for twisting fence-wire, having a central body provided with the convex boss C, lateral oblique legs a on said boss, a central pivot-point d, the lateral horizontal edge hooks b, and the vertical hooks c at right angles to said edge hooks, substantially as specified.

410,952. SPRING-SCALE. EDWARD F. BUSSMAN, Frankfort, assignor of one-half to John R. Shaak, Ilion, N. Y. Original application filed Oct. 20, 1888, Serial No. 288,962. Divided and this application filed May 3, 1889. Serial No. 309,605. (No model.)



Claim.—1. The combination of the backing B and a spring secured to said backing and bent outwardly therefrom with an indicator-finger, a weight-engaging device pivoted to a support mounted on the backing B, and a connection between said spring and weight-engaging device, substantially as and for the purpose specified.

2. The combination of the backing B and the spring A secured thereto and bent outwardly therefrom, a spring-scale F, an indicator-finger E, pivoted to the backing B, and a connection G between said spring and indicator-finger with a weight-engaging device pivoted to the backing and a connection between said spring and weight-engaging device, substantially as and for the purpose described.

3. The combination of the backing B, the spring A secured thereto and bent outwardly therefrom, the weight-engaging device pivotally supported upon the backing B, and a connection D between said spring and weight-engaging device with an indicator-finger E, pivoted to a support of the backing B, and a link G, pivoted to separate supports upon said spring and backing, substantially as and for the purpose set forth.

410,953. AIR-TIGHT COVERING FOR ELECTRIC CABLES. DAVID BROWN, Jr., Philadelphia, Pa., assignor to the Electric Cable Construction and Maintenance Company, same place. Filed Dec. 20, 1888. Serial No. 293,110. (No model.)



Claim.—1. An electric cable consisting of dry fibrous-covered wires saturated with an insulating material and having an incasement of tin-foil and rubber strips vulcanized, substantially as described.

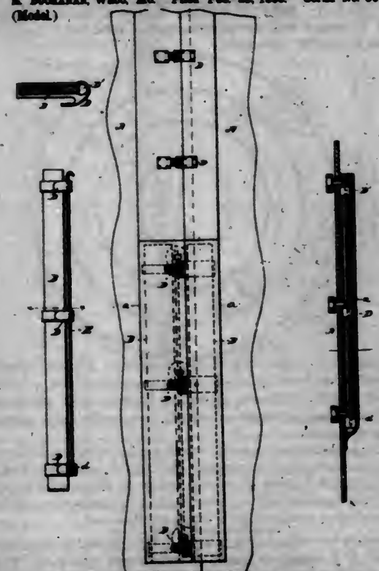
2. An insulated bunch of wires having a covering composed of a layer of tin-foil, an outer covering of rubber, with an exterior wrapping of fibrous material having a rubber coating, said parts being combined substantially as described.

3. An electric cable consisting of wires having a fibrous covering with a saturation of insulating material, the latter being provided with a dry-powder coating, one or more layers of tin-foil surrounding said wires, one or more layers of rubber surrounding said tin-foil, and an exterior wrapper of fibrous material having a rubber coating, said parts being combined substantially as described.

4. An electric cable composed of fibrous-covered wires saturated with insulating material and coated with a dry powder, and an incasement of tin-foil and rubber, substantially as described.

5. An electric cable composed of fibrous-covered wires saturated with insulating material, having an impervious incasement consisting of tin-foil and rubber and an exterior wrapping of painted braid, substantially as described.

410,954. COMBINED DRESS STAY AND FASTENER. LAURENA R. BUCHANAN, Waco, Mo. Filed Feb. 25, 1889. Serial No. 301,065. (Model.)

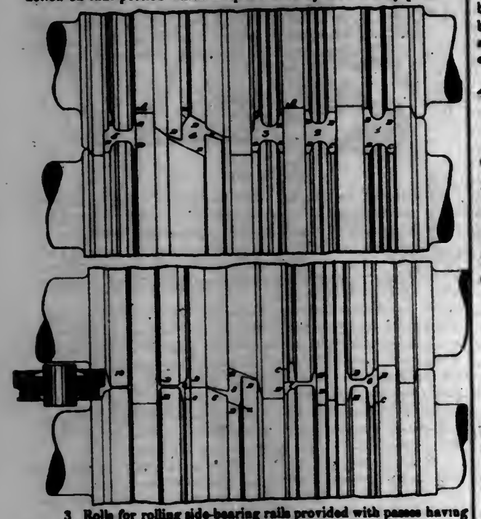


Claim.—The combination, with the strips of fabric A, of the steels B, one of which has hooks with guides D' therein, and a pocket, as d, at its lower end, and the other provided with eyes, and the wire E, substantially as described.

410,955. ROLLS FOR ROLLING SIDE-BEARING RAILS. FREDERICK CELLEY, Johnstown, Pa., assignor to the Johnson Company, of Kentucky. Filed Feb. 26, 1889. Serial No. 301,260. (No model.)

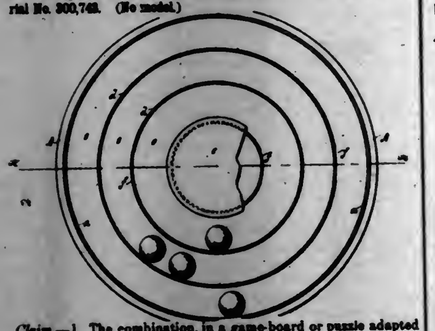
Claim.—1. Rolls for rolling side-bearing rails provided with an oblique dummy pass having a projecting angle or corner, as x, substantially as and for the purpose described.

2. Rolls for rolling side-bearing girder-rails provided with edging-passes and oblique dummy passes, so that said edging-passes exert their live action on that part of the lower flange of the metal being rolled which is not operated on by the dummy passes, and their dead action on that portion which is operated on by said dummy passes.



3. Rolls for rolling side-bearing rails provided with passes having the respective conformations indicated by the numbers 1 to 10, inclusive.

410,956. GAME OR PUZZLE. CHARLES M. CRANDALL, Waverly, N. Y., assignor to Moses Lyman, same place. Filed Feb. 21, 1889. Serial No. 300,743. (No model.)



Claim.—1. The combination, in a game-board or puzzle adapted to be held in the hand, of a base having a continuous wall, a central pen, and a series of interior concentric fences, each of said fences having an opening arranged alternately on opposite sides, substantially as described.

2. A game-board or puzzle constructed to be held in the hand, having, in combination, a base provided with a continuous wall, a central pen, and a series of interior concentric fences, each of said fences being provided with an opening, which openings are out of line with each other, substantially as shown and described.

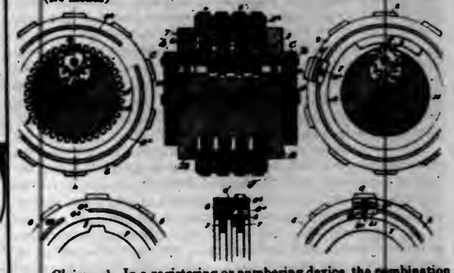
410,957. WINDOW-CLEANING CHAIR. SAMUEL H. CROOK, New York, N. Y., assignor of one-half to Isidor Bremer, same place. Filed Apr. 24, 1889. Serial No. 308,262. (No model.)



Claim.—1. The combination of a window-cleaning chair having short legs adapted to rest on the sill, and provided with a hook attached to the under side of the seat, with a keeper attached to the sill of the window-casing, substantially as set forth.

2. A window-cleaning chair composed of a seat and a back, the bow of which passes through openings of the seat to some distance below the same, so as to form short inclined legs for the seat, a hook attached to the under side of the seat, and transverse holes for fastening the bow to the seat, substantially as set forth.

410,958. NUMBERING DEVICE. CHARLES H. DAVIES, Brooklyn, N. Y. Filed Jan. 24, 1887. Renewed Dec. 15, 1888. Serial No. 293,760. (No model.)

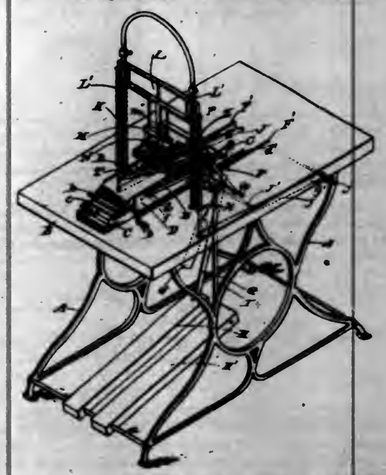


Claim.—1. In a registering or numbering device, the combination of concentric wheels and gear-wheels attached thereto, gear-pinions for driving the same with a spline and with mechanism, substantially such as described, for disengaging said pinions from said gear-wheels and for engaging them with said spline, substantially as and for the purpose specified.

2. A cipher-block O, having a recess O′, combined with a wheel carrying said cipher-block, and also with an adjacent wheel having a flange O^2 and a space O^2, substantially as herein described.

3. A depressible cipher-block O, having a recess O′ and a spring O^4, combined with a wheel carrying said cipher-block, and also with an adjacent wheel having a flange O^2 and a space O^2, substantially as herein described.

410,959. CIGAR-BUNCHING MACHINE. JOSEPH DE LA MAR, Poughkeepsie, assignor of one-half to Frederick Bostwick, Pine Plains, N. Y. Filed Sept. 21, 1883. Serial No. 286,963. (No model.)



Claim.—1. In a cigar-bunching machine, a reciprocating carriage-frame carrying a roller-board, a rolling-belt, and a removable mold having a yielding bottom, in combination with a treadle, counterpoise, and connecting rods and levers for reciprocating said carriage-frame, and a plunger for ejecting the tobacco from the mold when the latter arrives beneath it, substantially as described.

2. In a cigar-bunching machine, the combination of a reciprocating carriage consisting of a pair of side plates carrying a mold having a yielding bottom, a roller-board, and roller-belt stretched over said board and passing around suitable rollers, and mechanism, substantially as described, for reciprocating said carriage, in the manner and for the purpose described.

3. In a cigar-bunching machine, a reciprocating carriage consisting of side plates carrying a mold having a yielding bottom, a rolling-board mounted between said plates and having a slight reciprocal movement independent of the carriage, whereby the bight is formed, and a roller-belt stretched over said board and suitable rollers, substantially as described.

4. In a cigar-bunching machine, a reciprocating carriage consisting of side plates, a roller-board having a slight reciprocal movement independent of said carriage, thereby forming a bight in the roller-belt, and a roller-belt stretched over said board and suitable rollers, in combination with a mold supported on the side plates of said carriage and having a yielding bottom, a plunger arranged to press down through said mold and press the filler into said bight, and a sliding finger-roller mounted in a stationary framing, all arranged and adapted to operate as described.

5. In a cigar-bunching machine, a sliding carriage consisting of side plates and a rolling-board, and a roller-belt arranged on the board and adapted to have a bight formed therein, in combination with a removable mold having a yielding bottom and supported on said side plates and normally situated directly above the bight in said roller-belt, a plunger arranged to force the filler from said mold into said bight, a finger-roller situated above said belt, and suitable forms or molds into which the rolled bunches are discharged, and mechanism, substantially as described, for reciprocating said carriage, in the manner and for the purpose set forth.

6. In a cigar-bunching machine, the combination of a rolling-board, a roller-belt stretched over said board and around a bunching-roller, said board having an independent reciprocal movement, whereby a bight is formed between the same and said bunching-roller, a mold arranged upon the carriage and normally situated directly over said bight, and a plunger for forcing the filler into the bight, substantially as described.

7. In a cigar-bunching machine, a reciprocating carriage consisting of side plates, a rolling-board mounted between the same and capable of having a slight independent reciprocal movement imparted to it, and a roller-belt passing over said board and around suitable rollers, in combination with a finger-roller situated above said belt and mounted in a stationary framing provided with slots in which said roller slides, a filler-mold arranged on the carriage and having a yielding bottom, a plunger arranged to force the filler from said mold, a treadle, counterpoise, and connecting-rods and levers for reciprocating said carriage, substantially as described.

8. In a cigar-bunching machine, a reciprocating carriage consisting of side plates carrying a filler-mold having a yielding bottom and a rolling-board having an independent reciprocal movement, and a roller-belt stretched over said board and suitable rollers, in combination with a plunger for forcing the filler from said mold into the bight, a spring-actuated finger-roller situated above said belt and mounted in a stationary frame provided with slots in which said roller slides, suitable stops for holding said roller in position, and a treadle, counterpoise, and connecting-rods and levers for operating the machine, all arranged and adapted to operate in the manner and for the purpose substantially as described.

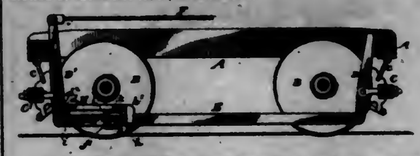
9. In a cigar-bunching machine, the combination of a hopper having a perforation in its bottom, a reciprocating carriage carrying a filler-mold, and a plate arranged to close the bottom of said hopper and having a perforation which registers with the perforation in the hopper and also that of the filler-mold, substantially as and for the purpose set forth.

10. In a cigar-bunching machine, the combination of a hopper having an opening at its bottom, a plate normally closing said opening and having a perforation arranged to register therewith, a reciprocating carriage carrying a filler-mold, a plate secured to said carriage above said mold and having an aperture arranged to register with the aperture in said upper plate, and also having elongated slots, and lugs on said upper plate sliding in said slots, in the manner and for the purpose substantially as described.

11. In a cigar-bunching machine, a hopper having a bottom consisting of a spring-actuated slide perforated to register with the filler-mold, in combination with a reciprocating carriage-frame carrying a filler-mold, a rolling-board and roller-belt, a plate covering the bottom slide of the hopper and provided with slots, and pins or lugs in said sliding bottom which engage said slots, substantially as described.

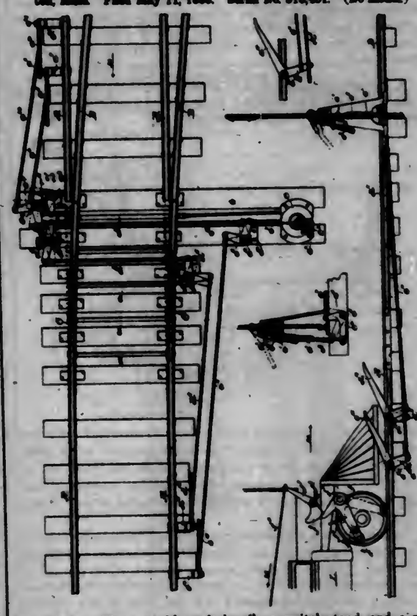
410,960. AUTOMATIC BRAKE-ADJUSTER. REMUS D. RAMEY, Watertown, assignor of one-half to William A. Foster, Corning, N. Y. Filed Sept. 22, 1888. Serial No. 286,092. (No model.)

Claim.—1. In a brake mechanism, a brake-lever, a short connection pivoted thereto, a brake-rod adapted to slide upon the short connection, a rod pivoted by means of a slot and pin to the brake-lever and having at its inner end a strap or shackle, combined with a dog applied to or within the strap or shackle and a dog or dogs applied to or within the said short connection, substantially as set forth, the first dog being adapted to grip the brake-rod as the brake-lever is moved to shorten said rod, and the second dog or dogs to detain the brake-rod and prevent its return movement upon the opposite motion of the brake-lever, as described.



2. In a brake mechanism, a brake-lever, a brake-rod, and a shackle connected to said lever carrying a dog, combined with a second shackle, also carrying a dog, and with a link or rod connecting the brake-lever with said second shackle, the construction and operation being such that the brake-rod passing through said shackles shall be adjusted longitudinally as the result of the motion given to them by the movement of the brake-lever, substantially as set forth.

410,961. AUTOMATIC RAILWAY-SWITCH. RICHARD S. RAMSAY, Manchester, N. H., assignor of one-half to Abram W. Gilman, Boston, Mass. Filed May 11, 1888. Serial No. 310,401. (No model.)

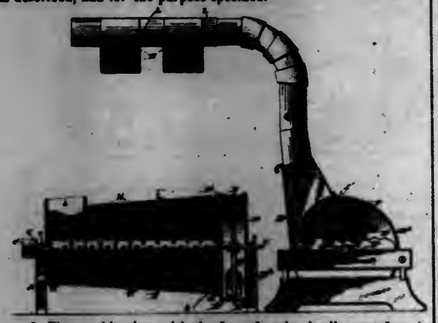


Claim.—The movable switch-rails, a switch-stand, and a vertically-movable operating-lever, and mechanism intermediate between the said lever and switch-rails, whereby the said switch may be moved into one or another position by said operating-lever, and means controlled by the vertical movement of the said operating-lever for locking the said switch-rails in one or another position, combined with two track-levers located one at a greater distance from the switch-rails than the other and on the same side of the said switch-rails, to be acted upon and depressed by a moving train, and intermediate connecting-mechanism between the said track-levers and the said switch-rails and operating-lever, one of the said track-levers when depressed raising the operating-lever vertically to unlock the switch-rails, while the other of the said track-levers when depressed moves the said switch-rails into desired position, and means for automatically locking the switch-rails in such position, substantially as described.

410,962. SEED-COTTON CLEANER AND DISTRIBUTER. JAMES W. ELLIOTT, Columbus, TEX., assignor of one-half to George Whiting, same place. Filed May 21, 1888. Serial No. 274,371. (No model.)

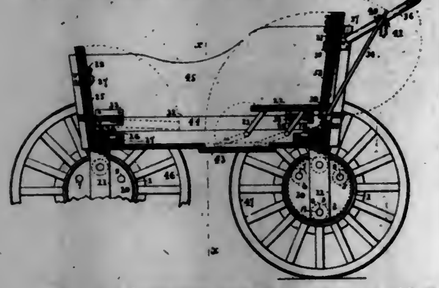
Claim.—1. The combination, with the cylinder and drum, of a shaft mounted in bearings on the frame and extending through the

said cylinder and provided with the blades E of varying length, a fan located in the drum, a pipe leading tangentially out from said drum, said pipe having openings formed therein, and guides secured on said pipe over said openings, said guides having wire sides, substantially as described, and for the purpose specified.



2. The combination, with the fan, of a pipe leading out from its casing, said pipe having discharge-openings therein, and guides having bands or sleeves surrounding said openings and retained in place and allowed a lateral movement by said bands or sleeves surrounding said pipe, said sleeves being in width equal to the width of the said discharge-openings, substantially as and for the purpose specified.

410,968. FOLDING BABY-CARRIAGE. JOHN ELLIS, Jersey City, assignor of one-half to William T. Wallis, East Orange, N. J. Filed Sept. 29, 1888. Serial No. 286,720. (No model.)



Claim.—1. In combination, substantially as described, with the body of a vehicle and a wheel thereof, an arm pivoted at its upper end at or near the top of the vehicle-body, upon the lower end of which arm the wheel is journaled, and mechanism connected with said body at or near its bottom, whereby the swinging motion of said arm is stayed.

2. In combination, substantially as described, with a vehicle-body and four wheels, the forward pair being arranged to have a different width of track from the rear pair, an arm for each wheel pivoted at its top to the body of the vehicle and having at its bottom the journal of the wheel, and means connected with the body of the vehicle, whereby said arm is stayed from oscillation.

3. In combination, substantially as described, the body of a vehicle and its four wheels, an arm for each wheel pivoted to the body of the vehicle and having at its lower end the journal for the wheel, the pivots for the two arms on each side of the vehicle being separated by a distance nearly equal to the distance from each pivot to the ground.

4. In combination, substantially as described, with the body of a vehicle and a wheel thereof, an arm pivoted to the body and having at its lower end a journal for the wheel, said arm being composed of two parts, a spring interposed between the upper and lower parts of said arm, and means whereby said arm may be stayed from oscillation.

5. In a vehicle, in combination, substantially as described, with a folding body and a wheel thereof, an arm pivoted to a side of said body, so as to swing longitudinally, having the journal of the wheel at its lower end and adapted to be swung up at the side of the body.

6. In combination, substantially as described, with a vehicle-body adapted to having its sides folded over upon one another, four arms, two of which are pivoted to each side and swing in parallel longitudinal planes, and four wheels journaled at the ends of said arms.

7. The combination, substantially as described, of the bottom of a body, the ends hinged thereto, the sides, each consisting of two sections hinged at different elevations above the bottom of the body, wheels, and the arms upon which the wheels are journaled, and which are pivoted to the upper sections of the sides of the body.

8. The combination, substantially as described, of the bottom of the body, the sides thereof, each composed of two sections hinged together at different elevations above the bottom, the wheels, and the arms upon which the wheels are journaled, and which are pivoted to the upper sections of the sides.

9. In a vehicle having a folding body, the combination, with each side of said body, of two arms pivoted thereto and a wheel journaled upon the end of each arm and so arranged that the wheel upon one arm may be swung up to overlap the wheel upon the other arm, substantially as described.

10. In a vehicle having a folding body, the combination, with each side of said body, substantially as described, of two arms pivoted thereto and swinging longitudinally, a wheel journaled to each arm, and mechanism whereby the oscillation of said arms may be stayed.

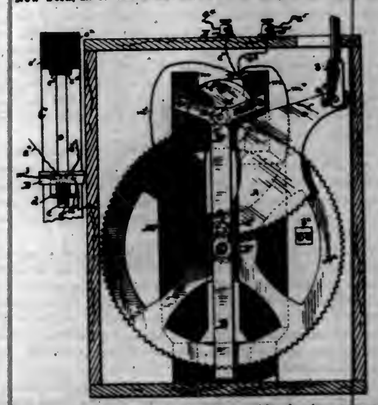
11. In a vehicle having a folding body, the combination, with each side of said body, of a wheel, an arm pivoted to the body and upon which the wheel is journaled, a stop, an overhanging lip, and a bolt, whereby the said arm may be held securely in a vertical position when required, substantially as described.

12. The combination, with the flexible strip 53, of a link pivotally connected with each end thereof and braces adapted to extend from the free end of each of said links outward against the said flexible strip and having one end detachably secured, substantially as described, whereby, when in use, the flexible strip is held in the bowed form adapted for a rocker and when not in use it may be permitted to straighten out and the links and braces folded thereon, as set forth.

13. In combination with a baby-carriage having folding wheels to adapt it to be converted into a cradle-body, the flexible strip 53, a link hinged to each end of said flexible strip, means for detachably securing the end of each of said links to the bottom of the cradle-body, and braces hinged to the free ends of said links and adapted to abut against the flexible strip, whereby the baby-carriage may be converted into a cradle, substantially as described.

14. In combination, the vehicle-body, the wheels thereof, the arms pivotally connected to said body and upon which the said wheels are journaled, whereby the said wheels may be swung so as to overlap each other at the sides of the body, and the rockers adapted to have attachment to said vehicle-body, whereby the same may be converted into a cradle, substantially as described.

410,964. MAGNETO-ELECTRIC MACHINE. ARDEN S. PITCH, New York, N. Y. Filed June 20, 1889. Serial No. 314,949. (No model.)



Claim.—1. In a magneto-electric machine having two separate circuits, one including the rotary armature, magnet-coils, and connections inside the machine and the other comprising the working-circuit outside the machine, the combination, with the armature-operating device, of a circuit-controller common to both said circuits and having motion concurrently with said armature-operating device, and fixed contacts connected with said circuits and in electrical relation to said circuit-controller to maintain the inside circuit closed and the outside circuit open or broken during the movement of said operating device in the direction to rotate the armature and to establish electrical connection between said inside and outside circuits at the conclusion of said movement of said operating device, substantially as and for the purpose set forth.

2. In a magneto-electric machine having two separate circuits, one including the rotary armature, magnet-coils, and connections inside the machine, and the other comprising the working-circuit outside the machine, the combination, with the rotary armature-operating device adapted to rotate said armature by a single movement in one direction, of a circuit-controller common to both said circuits and carried by said armature-operating device, and having movement therewith, and comprising fixed contacts connected with said circuits and in electrical relation to said circuit-controller to maintain the inside circuit closed and the outside circuit open or broken during said movement of said operating device, and to establish electrical connection between said circuits at the conclusion of said movement, substantially as and for the purpose set forth.

3. In a magneto-electric machine having two separate circuits, one including the rotary armature, magnet-coils, and connections inside the machine and the other comprising the working-circuit outside the machine, the combination, with the rotary armature and a pinion fixed on the arbor thereof, of a gear engaging said pinion, a clutch-pinion on the shaft of said gear and adapted to rotate said gear in one direction only, and a toothed segment engaging said clutch-pinion and adapted to rotate it through a single revolution, together with a circuit-controller common to both said circuits and carried by said segment, and adapted in its movement therewith in the direction to rotate said armature to maintain said inside circuit closed and said outside circuit open, and to establish electrical connection between said circuits at the conclusion of said movement, substantially as and for the purpose set forth.

4. In a magneto-electric machine having two separate circuits, one including the rotary armature, magnet-coils, and connections, and spring-terminals for said coils carried by an insulating-support, and the other comprising the main or working circuit having spring-terminals carried by said insulating-support, the combination, with the operating device adapted to rotate the armature by a single movement in one direction only, of a circuit-controller consisting of a metal block carried by and moving with said operating device, and provided with bearing-faces for the terminals of the magnet-circuit, and with a channel in its face for the traverse of the terminals of the working-circuit during its movement with said operating device in the direction to rotate the armature, and with insulated switch-plates adapted to engage the terminals of similar polarity of both said circuits at the conclusion of its said movement, substantially as and for the purpose set forth.

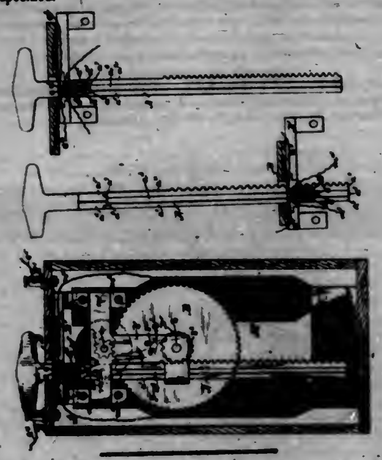
5. In a magneto-electric machine having the separate magnet-circuit and working-circuit, as described, the combination, with the rotary armature-operating device adapted to rotate said armature by a single movement in one direction, of a circuit-controller C, carried by and moving with said armature-operating device and consisting of a metal block having bearing-faces for the spring-terminals d d' of said magnet-circuit, and a channel c in its face for the traverse of spring-terminals c c' of the working-circuit during its movement with the said operating device in the direction to rotate the armature, and the switch-plates c^3 c^4, provided with the extensions c^5 c^6, adapted to enable said terminals of the magnet-circuit to establish connection with said plates before leaving said bearing-faces of the controller, and thereafter to establish connection between the terminals of similar polarity of both circuits, substantially as and for the purpose set forth.

6. In a magneto-electric machine of the class described having an inclosing-case, the combination, with the segment A, adapted to actuate the gearing by a single movement in one direction to rotate the armature, and provided with the extension-arm a^3, of a lever b', fulcrumed on the exterior of the inclosing-case, and a rod b, pivotally connecting said arm and lever through an opening in the case-wall, substantially as and for the purpose set forth.

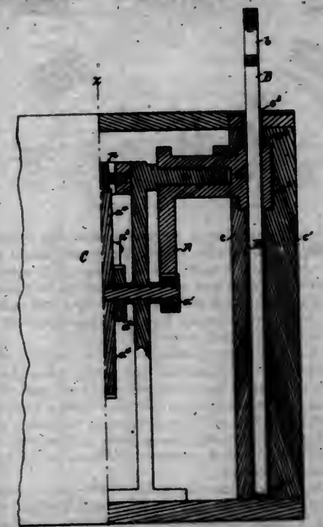
410,965. MAGNETO-ELECTRIC MACHINE. ARDEN S. PITCH, New York, N. Y. Filed June 20, 1889. Serial No. 314,950. (No model.)

Claim.—1. In a magneto-electric machine having one circuit comprising the magnet, rotary armature, and connections and another and separate circuit comprising the working-circuit, the combination, with a reciprocatory rack-bar, which operates by a single movement in one direction to rotate said armature, of a circuit-controller carried by and adapted to move concurrently with said rack-bar and fixed contacts connected with said circuits and in electrical relations with said circuit-controller to maintain said circuits, respectively, closed and open during the reciprocation of said bar, and to establish connection between said circuits at the conclusion of the movement of said bar in the direction to effect the rotation of the armature, substantially as and for the purpose specified.

2. In a magneto-electric machine having one circuit comprising the magnet-armature and connections and terminals d d' and another and separate circuit comprising the working-circuit and terminals c c', the combination, with the armature, of the reciprocatory rack-bar A, adapted by a single movement in one direction to effect the rotation of said armature, and provided with the longitudinal faces c' c^2, for engagement and traverse by said terminals d d', and the longitudinal channel c^2, for traverse by said terminals c c' during the reciprocation of the bar, together with the described plates c^3 and c^4, located on said bar to engage, respectively, the said terminals of similar polarity of both said circuits at the conclusion of said movement of said bar to effect the rotation of said armature, substantially as and for the purpose specified.



410,966. MAGNETO-ELECTRIC MACHINE. ARDEN S. PITCH, New York, N. Y. Filed Aug. 21, 1889. Serial No. 321,482. (No model.)



Claim.—1. In a magneto-electric machine, the combination, with the armature-operating device adapted to swing or rotate in its movement to operate the armature for the generation of an electric current, of a bar seated in or upon said armature-operating device and adapted to slide or move longitudinally therein and transversely thereof, substantially as and for the purpose set forth.

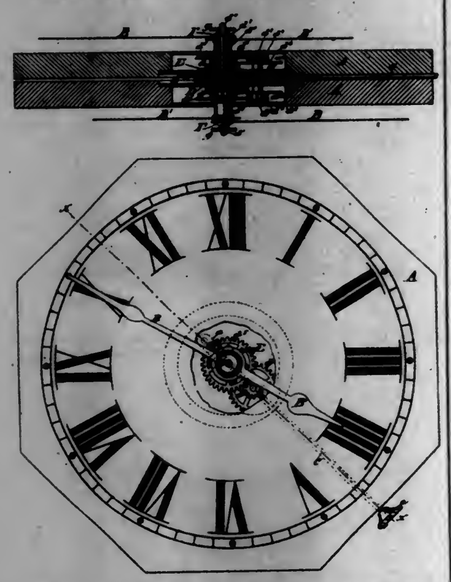
2. In a magneto-electric machine, the combination, with a journaled toothed segment for operating the rotary armature to generate an electric current, of a bar seated in or upon said segment and adapted to slide or move longitudinally therein and transversely thereof, substantially as and for the purpose set forth.

3. In a magneto-electric machine, the combination, with a journaled toothed segment for operating the rotary armature to generate an electric current and provided with a lateral extension or hub in

which is a transverse slot, of a bar seated in and adapted to play longitudinally in said slot in said hub, substantially as and for the purpose set forth.

4. In a magneto-electric machine, the combination, with a journaled toothed segment for operating the rotary armature to generate an electric current and provided with a laterally-extended hub having a transverse slot, of an inclosing-case having therein an apertured partition through which said hub extends and in which it has bearing, together with a bar seated and having play longitudinally in said slotted hub outside said partition, and a lid or wall on said case provided with a slotted aperture to permit the bar to project exteriorly of the inclosing-case, substantially as and for the purpose set forth.

410,967. TIME-INDICATOR. PETER G. GHOUD, Brooklyn, assignor to the New York School Book Clearing House, New York, N. Y. Filed Jan. 28, 1889. Serial No. 297,361. (No model.)



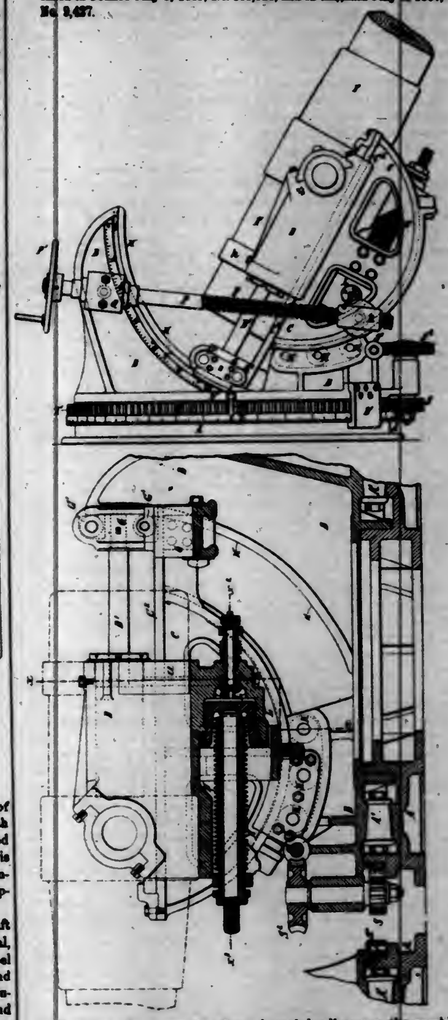
Claim.—1. In a time-indicator, the combination, with a dial, of a shaft extending to the exterior of the indicator and parallel with the said dial, a gear-wheel on said shaft, a cannon-pinion operated from said gear-wheel, a fixed stud upon which said cannon-pinion is loosely mounted, a minute-hand deriving motion from said cannon-pinion, and a train of gears operated from the cannon-pinion to operate an hour-hand, substantially as specified.

2. In a time-indicator, the combination, with a dial, of a shaft extending to the exterior of the indicator and parallel with said dial, a gear-wheel on said shaft, a layer-wheel with which said gear-wheel engages, a cannon-pinion connected to said layer-wheel, a fixed stud upon which said layer-wheel and cannon-pinion are mounted, a minute-hand deriving motion from said cannon-pinion, an hour-hand, and a train of gears operated from the cannon-pinion to operate the hour-hand, substantially as specified.

3. In a time-indicator, the combination, with a dial, of a shaft extending to the exterior of the indicator and parallel with said dial, a gear-wheel on said shaft, a cannon-pinion operated from said gear-wheel, a fixed stud upon which said cannon-pinion is mounted, a spring placed upon said stud, so as not to be capable of rotation, said spring being outside the minute-hand and bearing against the same, and a nut engaging said stud outside said spring, substantially as specified.

4. In a time-indicator, the combination, with a back plate, of a shaft extending to the exterior of the indicator, a gear-wheel mounted on said shaft, a stud rigidly secured in said back plate, a cannon-pinion loosely mounted on said stud and with which said gear-wheel engages, a minute-hand deriving motion from said cannon-pinion, an hour-hand, a train of gears operated from the cannon-pinion to operate the hour-hand, and a spring arranged intermediate of said cannon-pinion and back plate, substantially as and for the purpose specified.

410,968. GUN-CARRIAGE. JEAN B. G. A. CANET, Paris, France, assignor of one-half to Sir Joseph Whitworth & Co., (Limited,) Manchester, England. Filed July 11, 1888. Serial No. 279,602. (No model.) Patented in France July 3, 1886, No. 169,981, and in England July 3, 1887, No. 9,427.



Claim.—1. In a mounting for a breech-loading gun, the combination of a cradle or its equivalent in which the gun is mounted, and which is open at the rear to permit access to the breech of the gun, a top carriage having a bearing surface or slide upon which the said cradle is supported and moves in the recoil, and a base or under carriage upon which the said top carriage is supported and is arranged to turn about a horizontal axis extending through a point between the ends of the said bearing surface or slide, for the purposes above specified.

2. In a mounting for a breech-loading gun, the combination of a cradle or its equivalent in which the gun is mounted, and which is open at the rear to permit access to the breech of the gun, a top carriage having bearing-surfaces or slides upon which the said cradle is supported and moves in the recoil, an under carriage provided with bearing-surfaces on which the said top carriage is movable (for elevating the gun) through an arc of a circle the chord of which is in a plane extending through or parallel to the said bearing surfaces or slides on the top carriage, and a brake for controlling the recoil and return movement of the gun, for the purposes above specified.

3. In a gun-mounting, the combination of a cradle or frame in which the gun is rigidly secured, cheeks upon which the said cradle or frame is supported and arranged to slide, and an under carriage upon which the said cheeks are supported and are arranged to turn about a horizontal axis intersecting the longitudinal axis of the gun, substantially as and for the purposes set forth.

4. In a gun-mounting, the combination of a cradle or frame in which the gun is mounted, segmental cheeks upon which the said cradle or frame is supported and arranged to slide, an under carriage upon which the said cheeks are supported and are movable about a horizontal axis, a hydraulic brake for controlling the recoil movement of the said cradle upon the said cheeks, and a recuperator connected by suitable channels or passages with the cylinder of the said brake, for effecting the return movement of the said cradle after the recoil, substantially as and for the purposes set forth.

5. In a gun-mounting, the combination of a cradle or equivalent support for the gun, a segmental top carriage upon which the said cradle is supported and arranged to slide, an under carriage upon which the said top carriage is supported and is movable through an arc of a circle, and elevating mechanism comprising a screw fitted to rotate in a bearing attached to the said under carriage, and a nut in which the said screw works and which is attached to the top carriage, the said nut being made in halves, substantially as above described, so that the gun after being elevated may be released to permit its return to the loading position by gravity, as above specified.

6. In a gun-mounting, the combination of a cradle or equivalent support for the gun, a top carriage upon which the said cradle is supported and arranged to slide, an under carriage upon which the said top carriage is supported and is movable through an arc of a circle, an elevating-screw, a bearing in which the said screw is fitted to rotate and which is attached to the said under carriage so that it is capable of angular movement or adjustment, and a nut in which the said screw works and which is attached to the said top carriage so that it is capable of angular movement or adjustment, substantially as and for the purposes set forth.

7. In a gun-mounting, the combination of a cradle or equivalent support for the gun, a top carriage upon which the said cradle is supported and arranged to slide, an under carriage upon which the said top carriage is supported and is movable through an arc of a circle, an elevating-screw, a bearing in which the said screw is fitted to rotate and which is attached to the said under carriage so that it is capable of angular movement or adjustment, a nut in which the said screw works and which is attached to the said top carriage so that it is capable of angular movement or adjustment, and means, substantially such as above described, for releasing or disengaging the said nut from the said screw, substantially as and for the purposes set forth.

8. In a gun-mounting, the combination of a cradle for the gun, a top carriage provided with a bearing surface or slide upon which the said cradle is supported and moves in the recoil, an under carriage upon which the said top carriage is supported and is movable about a horizontal axis extending through a point between the ends of the said bearing surface or slide, a brake for controlling the movement of the said cradle upon the top carriage, and a recuperator connected with the said brake, and whereby the gun, after its recoil, will be automatically run out to the firing position at any angle of elevation, the center of gravity of the gun, cradle, and top carriage when the gun is run out being forward of the said horizontal axis, so that the gun will gravitate to the loading position, but being sufficiently near to the said axis to insure the gravitation of the gun to its firing angle when loaded, substantially as and for the purposes set forth.

9. In a gun-mounting, the combination of a cradle for the gun, a segmental top carriage upon which the said cradle is supported and arranged to slide, and an under carriage or turn-table provided with arc-shaped bearing-surfaces upon which the said top carriage is supported and against which the force of the recoil is exerted, substantially as and for the purposes set forth.

10. In a gun-mounting, the combination of a cradle for the gun, bearing surfaces or slides upon which the said cradle is supported and moves in the recoil, hydraulic brakes for controlling the recoil movement of the cradle on the said slides, and means, comprising a cylinder L, connected with the brake-cylinders, and a piston M, working in the said cylinder L, substantially as above described, for storing up energy during the recoil and utilizing such energy for effecting the return of the gun to its firing position, all substantially as set forth.

11. In a gun-mounting, the combination of a cradle for the gun, bearing surfaces or slides upon which the said cradle is supported and moves in the recoil, hydraulic brakes for controlling the recoil movement of the cradle on the slides, means, comprising a cylinder L, connected with the brake-cylinders, and a piston M, working in the said cylinder L, substantially as above described, for storing up energy during the recoil and utilizing such energy for effecting the return of the gun to its firing position, a loaded valve which permits the flow of liquid from the brakes into the said cylinder L, but prevents its return to the said brakes, and a by-pass provided with an adjustable valve for permitting and controlling the return of the liquid from the said cylinder to the brakes, all substantially as and for the purposes set forth.

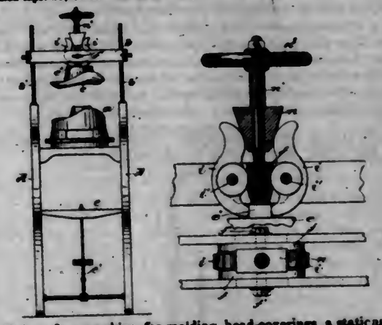
12. The combination of the base-plate A, the turn-table or under carriage B, supported thereon, the segmental cheeks C C', supported on the said turn-table and arranged to turn about a horizontal axis, the cradle E, arranged to slide upon the said cheeks, hydraulic brakes D, for controlling the movement of the said cradle on the said cheeks, means, comprising a cylinder L, connected with the brake-cylinders, and a piston M, working in the said cylinder L, substantially as above described, for storing up energy during the recoil and utilizing it to effect the return of the gun to the firing position, and elevating mechanism comprising a screw-shaft P, a bearing Q, in which the said screw-shaft turns and which is secured in the under carriage, and a nut through which the said screw-shaft works and which is secured in one of the said cheeks, the said bearing and nut being capable of angular movement, all substantially as and for the purposes set forth.

13. The combination of the under carriage B, the cheeks C C', provided with bearing surfaces or slides and supported upon the said under carriage so that they are movable thereon through an arc of a circle, the cradle E, supported upon the said bearing surfaces or slides and arranged to move thereon in the recoil, the screw P, the bearing Q, in which the said screw is fitted to rotate and which is attached to the said under carriage so that it is capable of angular movement or adjustment, a nut in which the said screw works and which is formed in two parts connected by a hinge-joint and is attached to one of the said cheeks so that it is capable of angular movement or adjustment, the cam *f*, connected with the two parts of the said nut by screws *g*, extending through slots in the said cam, and the lever f^2, for operating the said cam, all substantially as and for the purposes set forth.

14. The combination of the under carriage B, provided with the arc-shaped bearing-surfaces H and with the rollers K, the segmental cheeks C C', provided with the brackets G and rollers G', the cradle E, provided with the brakes D, the piston-rods D' of which are fixed in the said brackets G, and means, substantially such as above described, for turning the said cheeks about a horizontal axis, substantially as and for the purposes set forth.

15. The combination of the under carriage B, the cheeks C C', the cradle E, provided with the hydraulic brakes D, means, comprising the cylinder L, connected with the brake-cylinders, and the piston M, working in the said cylinder L, substantially as above described, for storing up energy during the recoil and utilizing it for effecting the return of the gun to its firing position, the loaded valve O, and the by-pass *b*, provided with the adjustable valve *c*, all substantially as and for the purposes set forth.

410,969. RAT-HOLDING MACHINE. JAMES HEDGES, Foxborough, Mass., assignor of three-fourths to Green Bros., Kirby & Co., same place. Filed Apr. 26, 1889. Serial No. 308,603. (No model.)

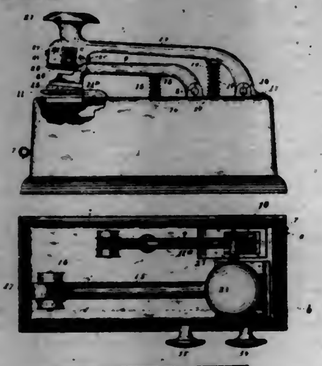


Claim.—In a machine for molding head-coverings, a stationary mold, a reciprocating crown-head, and a movable mold detachably connected to said crown-head by means of the grippers *i*, pivoted in said crown-head, the wedge-block *n*, interposed between the grippers, and the rod *n'*, screw-tapped in a nut in the crown-head and carrying the wedge-block and adapted to be rotated to adjust the wedge-block vertically between the grippers to engage and release the movable block, substantially as described.

410,970. COMBINED DATING AND CUTTING MACHINE. GEORGE J. HILL, Buffalo, N. Y., assignor of two-thirds to John T. Story, Albert B. Fox, and Frederick G. Fox, all of same place. Filed Oct. 20, 1887. Renewed June 7, 1889. Serial No. 313,495. (No model.)

Claim.—A dating and cutting press consisting of the base or body, a dating-die, an ink-ribbon for supplying it with ink, a pivoted

arm kept up to its normal position by a spring and carrying a platen and side projecting piece 27, in combination with a pivoted arm kept to its upward position by a spring, a cutting-die, and a drawer provided with a lock for receiving the cuttings, substantially as and for the purposes described.



410,971. CURRY-COMB. FREDERICK W. HOSFER, Freeport, Ill. Filed May 7, 1889. Serial No. 309,877. (No model.)

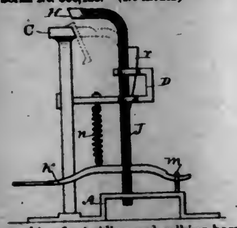


Claim.—1. The combination, with the parallel toothed ribs, of the transverse spring-coils secured to the ribs, covering their ends and cushioning the lateral margins of the comb, substantially as set forth.

2. The combination, with the parallel toothed ribs and the spring-coils passed, respectively, through apertures in the opposite ends of the ribs, of the hand-loop of spring-wire engaging said coils and bending back and forth in substantially the same plane.

3. The combination, with a series of parallel toothed ribs lying in the same plane, and a handle-loop substantially parallel to said ribs, of two transverse coiled springs having their spirals passed through apertures in the corresponding ends of the handle-loop and the ribs, whereby all the parts are united, forming a curry-comb flexible along lines parallel to the handle-loop, substantially as set forth.

410,972. HORSESHOE-ANVIL. JACOB HOSER, Anita, Iowa. Filed Apr. 5, 1889. Serial No. 306,135. (No model.)



Claim.—1. A machine for holding and calking horseshoes, comprising an anvil on the top of a post fixed to a suitable base, a frame and bearing fixed to the post to support a staff carrying a jaw, a jaw or clamping device adapted to engage the anvil and provided with a supporting-staff that extends down through the bearing, a cam fixed to the staff to press it toward the anvil as the staff descends in its bearing, a treadle pivoted to the staff and connected with the base, and a spring connected with the treadle to lift the staff and jaw constructed and combined to operate in the manner set forth, for the purposes stated.

2. The base A, the post B, having an anvil C on its top, the frame D, fixed to the post, the jaw H on a staff J, having a cam *r*, the treadle *k*, and a spring *n*, constructed, arranged, and combined substantially as shown and described, to operate in the manner set forth, for the purpose stated.

410,973. APPARATUS FOR SCORING BILLIARDS. WILLIAM HIGGINS, Liverpool, County of Lancaster, England. Filed Nov. 30, 1888. Serial No. 292,355. (No model.) Patented in England Apr. 30, 1888, No. 6,163.



Claim.—1. The combination, with the closed case, the scale thereon, and the pointers sliding over the scale to register points made, of a visibly-registering device and a registering device concealed within the case, each actuated by the movement of a pointer to the limit of its path, substantially as set forth, whereby the games completed are registered both visibly and secretly by means beyond the reach of the players or other unauthorized persons.

2. The combination, with a closed case provided with an external point-scoring scale and having its walls slotted parallel to said scale, of bars sliding in the slots, respectively, pointers fixed to the outer ends of the bars to pass along the scale, numbers upon the exterior of the case, pivoted disks normally concealing said numbers, and means whereby each bar, when pushed to its limit, may release the corresponding disk, allowing it to fall and display the concealed number beneath, substantially as set forth.

3. The combination, with the closed case provided with the hopper at the top and the locked compartment at the bottom, of the hopper-slide and its lever operated only from said compartment, the downwardly-inclined conduit leading from the hopper to a point above the compartment, the perforated spring-supported valve-bar closing the lower end of said conduit, the balls lying in said conduit, the cut-out block secured to the valve-bar, and the scoring-pointers automatically actuating said valve-bar when pushed forward in scoring, substantially as set forth.

4. The combination, with the case provided with the scale and the parallel slots upon each side thereof, of the bars sliding in the slots, respectively, the pointers upon the outer ends of the bars, the rollers upon the inner ends of the bars, the pivoted spring-actuated T-shaped bar normally obstructing the path of the rollers, and the key adapted to hold said bar out of its normal position, substantially as set forth.

5. The combination of the case, the ball-conduit therein, the balls moving freely in the conduit, the spring-supported valve-bar closing the exit from said conduit, the locked compartment below the exit, the external scale upon the case, the pointers passing along the scale, the internal rollers carried with the pointers, and the oblique pivoted levers crossing the path of the rollers and engaging said valve-bar, substantially as and for the purpose set forth.

410,974. SUPPORT FOR SPINNING-SPINDLES. GILMAN JACKSON, Roller Springs, Ill., assignor to George Draper & Sons, Hopedale, Mass. Filed Nov. 3, 1887. Serial No. 254,159. (No model.) Patented in England June 6, 1888, No. 8,893.



Claim.—The supporting-tube, an upper bearing, and a loose step therein, and an elastic support therefor, combined with a spindle free to move laterally at its lower end and having a conical point projecting slightly into the step, thereby enabling the lower end of the spindle to tip the step, as described.

410,975. MACHINE FOR SLOTTING UMBRELLA-STICKS. JOHN B. JESSOP, Camden, N. J., and JACOB K. WEBB, Philadelphia, Pa., assignors of one-third to Leonard H. Ladd, Philadelphia, Pa. Filed Feb. 27, 1889. Serial No. 301,204. (No model.)

Claim.—1. A machine for slotting umbrella-sticks, &c., having a base, a rising and falling table, a slide working on said table and provided with a clamping device, and a plunger with cutters above said table, said parts being combined substantially as described.

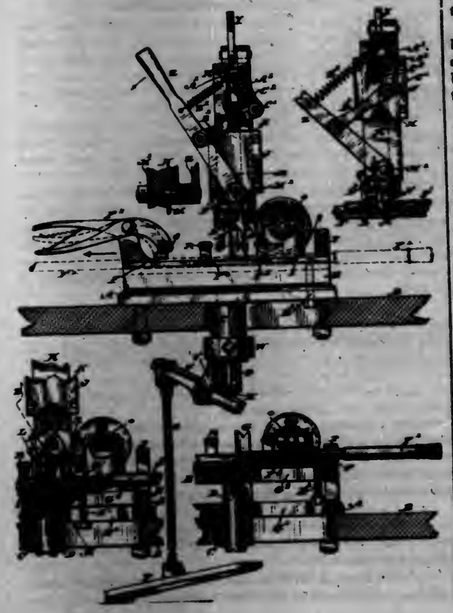
2. A machine for slotting umbrella-sticks, &c., having a base, a rising and falling table guided on said base, a channeled slide working on said table and provided with a clamping device secured thereto and adapted to hold the stick operated on in position, a rotary saw journaled above said table, and a stop above and connected with said base for limiting the rising motion of the said table, said parts being combined substantially as described.

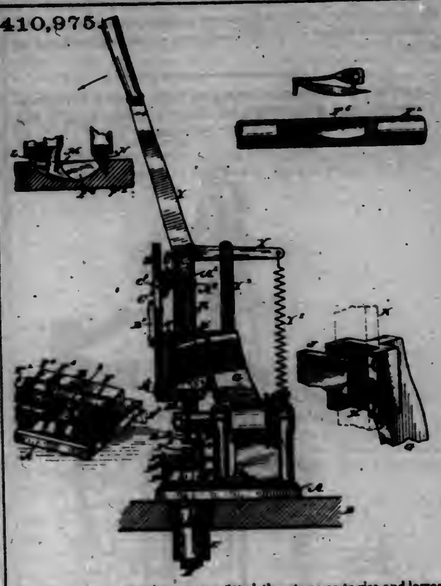
3. A machine for slotting umbrella-sticks, &c., having a base, a rising and falling table guided on said base, a channeled slide working on said table, a rising and falling plunger working in a guide secured to the device, said guide being above the table and said plunger carrying cutters, and a rotary saw journaled in bearings secured to the base, said parts being combined substantially as described.

4. A saw, a rising and falling table, and a slide on said table, in combination with a plunger above said slide carrying a cutter which is adapted to vibrate thereon, whereby a kerf may be formed by said saw, and one end of the same gouged out by said cutter, substantially as described.

5. A plunger carrying two cutters, and a vibrating cutter between the same, said parts being combined substantially as described.

6. A vibrating cutter mounted upon a plunger, and a rising and falling cutter fitted to said plunger, said parts being combined substantially as described.





7. A plunger having a cutter fitted thereto so as to rise and lower, in combination with a cam which engages with the shank or stock of said cutter, and a lever for operating said cam, substantially as described.

8. A plunger having a vibrating cutter mounted thereon, and a rising and falling cutter fitted thereto, in combination with a cam which engages with the shank or stock of the rising and falling cutter, and a lever which is connected with the shafts of the vibrating cutter, and the cam for simultaneously operating both shafts and their connected parts, substantially as described.

9. A rising and falling table, a slide fitted on said table, and a saw mounted above the slide, in combination with a plunger carrying cutters adapted to pierce the wood at the end of the kerf formed by the saw, and a vibrating cutter fitted between said cutters adapted to gouge the wood at one end of said kerf.

10. A rising and falling table, and a slide fitted thereon, in combination with a bolt which depends from said slide and passes through slots in the table and base of the machine, one end of the slot in the base being enlarged to permit the head of the bolt to pass through the same when the table is properly raised, substantially as described.

11. A plunger carrying a vibrating cutter and a rising and falling cutter, in combination with a cam which engages with the shank or stock of said rising and falling cutter, a lever which is connected with the axis of said cutter, and a toggle, one limb of which is secured to the axis of the cam and the other limb pivoted to said lever for simultaneously operating both cutters, substantially as described.

12. A rising and falling table, cutters above the same, a rising and falling plunger carrying saw, and a cutter, in combination with a stop connected with said table, whereby the article that has been cut is stripped off the cutter when the plunger rises, substantially as described.

13. A saw, a rising and falling table, and a cutter, in combination with the stop P, rising from the base or bed of the machine, and the stop R, rising from said table, substantially as described.

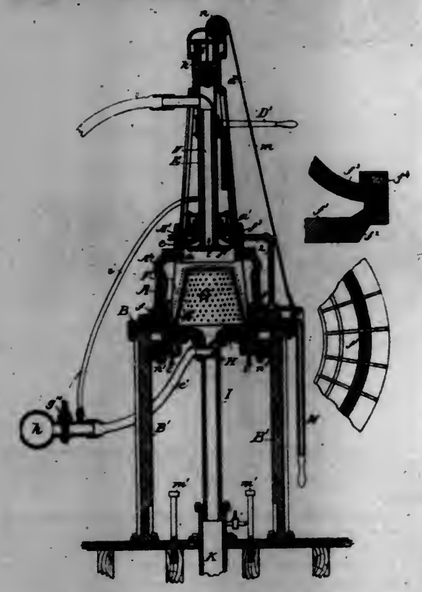
410,976. DIAPHRAGM FOR ELECTROLYTIC APPARATUS. GEO. KREBS, Frankfort-on-the-Main, Prussia, and JULIUS MARX, Ulm-on-the-Danube, Würtemburg, Germany. Filed Jan. 9, 1889. Serial No. 296,908. (No model.) Patented in France Dec. 14, 1887, No. 187,009; in Italy June 19, 1888, XXII, 23,169, XLVI, 191, and in Belgium July 4, 1888.



Claim.—In electrolytic apparatus, a diaphragm consisting of a liquid inclosed between two or more partitions having perforations therethrough of considerable size, which are too large to act osmotic-

ally by themselves, in contradistinction to diaphragms of porous clay or animal membrane, or similar partitions, as fully set forth and described.

410,977. MACHINE FOR MOLDING PULP. FRANK. H. KEYES, Peterborough, assignor of one-half to P. C. Cheney Co., Manchester, N. H. Filed June 6, 1887. Serial No. 240,621. (No model.)



Claim.—1. The combination of the former, the chamber inclosing the same and provided with a cylinder located above the former, the flexible partition or diaphragm surrounding the former and connected at the ends with said chamber, the independently-movable end piece operated in said cylinder, and means for operating said end piece and diaphragm, substantially as described.

2. The combination of the former, the chamber inclosing the same and provided with a cylinder located above the former, the flexible partition or diaphragm surrounding the former, and the piston having a working fit in said cylinder, and a perforated piece fitted in said cylinder and connected with said piston, a chamber or recess between said piston and perforated piece, and means for producing suction in the said chamber, substantially as described.

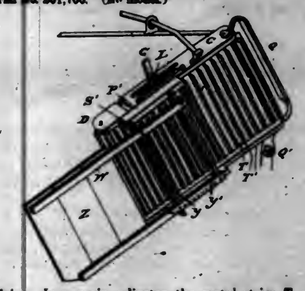
3. In a pulp-molding machine, the combination of a former to support the material while being acted upon, a flexible partition surrounding the former, an outer chamber A, provided at its upper end with an enlargement A^3 to admit of an increased deposit of material on the former opposite the same, and means for forcing fluid in said chamber, to apply pressure to the material on the former through the flexible partitions, substantially as described.

410,978. DEVICE FOR TYING BAGS. MADISON C. KIMBALL, Elkhead, Pa., assignor of one-half to Charles L. Pattison, same place. Filed July 12, 1889. Serial No. 317,330. (No model.)



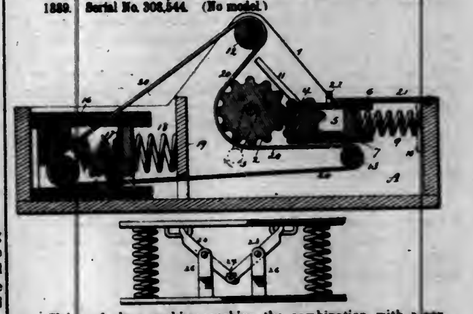
Claim.—The bag or package fastener consisting of the double binding-cord and the link or clasp having its sides curved outward in opposite directions at the center, forming seats or bearings for the said cord, said cord being passed before doubling through said link or clasp, substantially as set forth.

410,979. GRAIN-ADJUSTER. THOMAS B. KIRKWOOD, Milton, Ind., assignor of one-half to Henry Stokes, same place. Filed Jan. 29, 1889. Serial No. 261,706. (No model.)



Claim.—In a grain-adjuster, the metal stripe T, with edge T', bent at right angles, fastened by rivets *u* to leather bands V V, the lever G, bearing I, extension-bar H, with notch M, the cross-pieces E F, connecting the sides of the frame A B C D, the pieces A C and B D being formed with slot J in side piece C for receiving lever G, and with grooves O O in side pieces A B C D of frame, and the slides N N, working therein, substantially as and for the purposes therein named.

410,980. WASHING-MACHINE. HENRY W. KRISTE, Charleston, S. C., assignor to Laura Frances Kriste, same place. Filed Apr. 26, 1889. Serial No. 308,544. (No model.)



Claim.—1. In a washing-machine, the combination, with a corrugated washing-roller journaled in fixed bearings, and a corrugated washing-roller mounted in yielding bearings, and idle-rollers, one of said idle-rollers being mounted in yielding bearings, of an endless belt passing around the idle-rollers and partially around the washing-roller mounted in fixed bearings, substantially as set forth.

2. In a washing-machine, the combination, with a pair of corrugated washing-rollers, and idle-rollers, of an endless belt passed around the idle-rollers, and spring-cushions for one of the corrugated rollers and one of the idle-rollers, substantially as set forth.

3. In a washing-machine, the combination, with a box and frame, of a pair of corrugated rollers mounted therein, a spring-cushion for forcing one of said rollers toward the other, idle-rollers, an endless belt passing around the idle-rollers and bearing against one of the corrugated rollers, and a spring-cushion for one of the idle-rollers, whereby the endless belt is maintained under tension, substantially as set forth.

4. In a washing-machine, the combination, with a water-tight box, a frame projecting from the top of the box, and a pair of corrugated washing-rollers, one of which has a spring-cushion back of it, of an idle-roller in the top of the frame, one in the bottom and forward end, and a spring-cushioned one in the rear end, and an endless belt passed over the idle-rollers and in contact with one of the corrugated rollers, substantially as set forth.

5. In a washing-machine, the combination, with a water-tight box, a frame, and a pair of corrugated washing-rollers, one of said rollers being journaled in spring-cushioned slide-blocks, of idle-rollers, one of which is journaled in spring-cushioned slide-blocks, an endless belt, and a pivoted cover, substantially as set forth.

6. In a washing-machine, the combination, with a box, corrugated and idle rollers, of an endless belt, and spring-cushions consisting of cross-pieces, springs, and balance-levers between these springs, substantially as set forth.

7. In a washing-machine, the combination, with corrugated washing-rollers, idle-rollers, and an endless belt passing around said idle-rollers and bearing against one of the corrugated rollers, of guard-fingers projecting over one of the corrugated rollers, substantially as set forth.

410,981. AUTOMATIC RACE-COURSE. FRED H. LAPE, Minneapolis, Minn., assignor to the National Automatic Device Company, same place. Filed Feb. 21, 1889. Serial No. 300,760. (No model.)



Claim.—1. In a toy race-track, the combination, with a rotary shaft, of arms or rods journaled thereon and carrying miniature figures, and means for securing the arms to said shaft during its period of rotation and for releasing them therefrom when the motion of the shaft is arrested, so that they can revolve thereon by acquired momentum, substantially as and for the purpose set forth.

2. The combination, with a revolvable shaft and actuating mechanism therefor, of one or more collars loosely mounted on said shaft, each having a figure connected therewith, and escapement and clamping devices for temporarily releasing the actuating mechanism and locking said collars to the shaft, substantially as described.

3. The combination, with a revolvable shaft under tension, of one or more collars loosely mounted on said shaft, each having a figure connected therewith, and escapement and clamping devices for temporarily releasing said shaft and locking said collars to the shaft, substantially as described.

4. The combination, with a revolvable shaft under tension, of one or more collars loosely mounted on said shaft, each having a figure connected therewith, escapement and clamping devices for temporarily releasing said shaft and locking said collars to the shaft, and a coin-controlled device for operating said escapement and clamping devices, substantially as described.

5. The combination, with a graduated or shouldered shaft under tension, of a series of collars loosely mounted on said shaft, each having a figure connected therewith, and escapement and clamping devices for temporarily releasing said shaft and clamping said collars to the shaft, substantially as described.

6. The combination, with a shaft under tension, of a series of collars loosely mounted on said shaft, each having a figure connected therewith, an escapement-wheel for said shaft, and a lever for controlling said escapement and for clamping said collars to said shaft, substantially as described.

7. The combination, with a graduated or shouldered shaft under tension, of a series of collars loosely mounted thereon, each having a figure connected therewith, an escapement-wheel for said shaft, a lever for controlling said escapement and for clamping said collars together and to the shaft, and a coin-controlled device for operating said lever, substantially as described.

8. The combination, with a graduated or shouldered shaft under tension, of collars loosely mounted thereon, having figures connected therewith, the escapement-wheel for said shaft, the combined escapement and clamping lever, and the controlling and tripping cylinder having a coin-slot adapted to hold a coin in position to operate said lever as the cylinder is revolved to drop the coin, substantially as described.

410,982. COMPOUND SPINNING-SPINDLE. JAMES LEES, Lucknow, Ontario, Canada, assignor to George Draper & Sons, Hopedale, Mass. Filed June 5, 1889. Serial No. 313,167. (No model.)

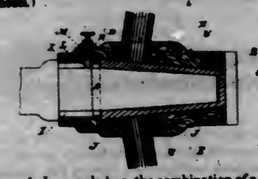


Claim.—1. The socketed or chambered whirl-section and bearings therefor, combined with a bobbin-carrying section mounted loosely in the socket of the whirl-section, and a friction-block interposed between the lower end of the bobbin-carrying section and a part of the whirl-section on which the bobbin-carrying section rests, substantially as described.

2. The socketed or chambered whirl-section and bearings therefor, combined with a bobbin-carrying section mounted loosely in the socket of the whirl-section, and with a friction-block *c*, and a flexible or yielding packing, as *c'*, interposed between the said whirl-section and bobbin-carrying section, substantially as described.

3. The combination, with the chambered whirl-section and bearing therefor, and a bobbin-carrying section mounted loosely in the socket of the whirl-section, of the flexible section connected at one end positively to the chambered whirl-section and at its other end to the bobbin-carrying section, and having an intermediate flexible section *f'* to permit the bobbin-carrying section to tip freely laterally in any direction, substantially as described.

410,988. HUB-ATTACHING DEVICE. JOHN H. LYLE and EDWARD C. WARD, Parsons, Kans. Filed Sept. 17, 1888. Serial No. 286,001. (No model.)

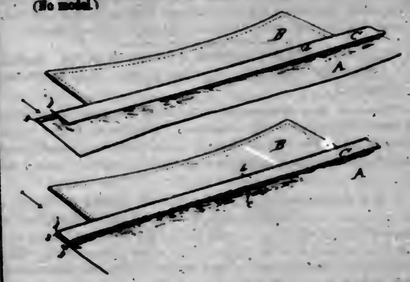


Claim.—1. In an axle-box, the combination of a continuous groove around the inside of an axle-box with one or more grooves running from the said continuous groove to the end of the axle-box, adapted to admit lugs made or put on a spindle, or to admit the ends of a pin extending through a spindle and forming pins or lugs thereon, and also adapted for conducting oil or other lubricator from an axle-box to and lubricating the shoulder of a spindle or axle, against which the hub rubs while revolving.

2. The combination of a screw-lever mounted on the side of a hub with a lock-bolt to be operated through the side of an axle-box and hub, or either of them, whereby when said screw-lever is turned the said lock-bolt is pressed into or drawn out of a groove or other opening, substantially as and for the purpose hereinbefore specified.

3. In a hub-fastening device, the combination, with a spindle having lugs thereon, or having a pin through it to form one or more lugs thereon, of an axle-box having a continuous groove around its inside, with one or more longitudinal grooves running from said continuous groove to the end of the axle-box, adapted to let the axle-box pass over said lugs and admit said lugs into said continuous groove to operate therein as the hub revolves over them around the spindle, and having a hole through the side of the axle-box, and with a screw-lever mounted on the side of the hub, and connected with a lock-bolt and operated through the side of the hub and axle-box, or through either of them, by simply turning said screw-lever, whereby the said lock-bolt is lowered into the axle-box and securely locks said lugs in said continuous groove, and thus fastens the hub, or whereby by simply turning said screw-lever the reverse way said lock-bolt is drawn out, and thus the hub is unfastened, so that it can be pulled off of the spindle, substantially as and for the purpose specified.

410,984. WOOLEN SHIRT. SOLON MARSH, Chicago, Ill., assignor to Henry H. Hart, same place. Filed Mar. 8, 1889. Serial No. 302,867. (No model.)



Claim.—The combination, in a shirt composed of woolen fabric provided with an inelastic fortifying neck-strip overlying the collar its full length, the upper edge of the shirt-body being overturned to form a welt *w*, the upper edge of said strip being overturned to form welt *w'*, the collar B, having its lower edge interposed between the said welts, firmly held in position by a continuous line of stitching *b*, extending through said welts and collar, and a welt w^3, composed of a return at the lower edge of the strip C, said welt w^3 being connected to the body A by a continuous row of stitching *c*, substantially as described.

410,985. NUT-WRENCH. JOHN B. HEIM, Port Huron, Mich., assignor of one-half to Benj. J. Kaiser. Filed Mar. 21, 1889. Serial No. 304,202. (No model.)

Claim.—1. A wrench comprising the jaw G, having shank *g* and teeth *g'* on the rear portion of shank *g*, the part A, having jaw D, groove J', and apertured head C, the said aperture and groove J' being in line and adapted to receive shank *g*, and the part B, symmetrical with the grooved part of A, hinged to the head C, and having a corresponding groove J and a toothed portion A, substantially as described.



2. The hereinbefore-described wrench, consisting of the parts A and B, which form the handle, the part A having groove J' in its rear portion, jaw D and apertured head C at its front end, the part B being symmetrical with the rear groove part *g* A and having groove J and toothed portion A hinged to the head C, the spring F and catch E, and the jaw G, having shank *g*, which is adapted to work in the apertured head C and in the grooves J J', said shank having teeth *g'*, substantially as described.

410,986. CARRYING-SHEAVE. ANTON MILL, Cincinnati, Ohio, assignor of one-half to Herman Bruckman, same place. Filed Dec. 8, 1888. Serial No. 292,996. (No model.)



Claim.—1. A sectional pulley consisting of the rim 3, having an annular concave seat in one side and formed integral with the spokes 2 and hub 1, the rim 4, having an annular convex bearing fitting the concave seat and formed with inwardly-projecting lugs 5, and bolts engaging the lugs and connecting the rims together, substantially as described.

2. A sectional pulley consisting of the rim 3, having an annular concave seat in one side and formed integral with the spokes 2 and hub 1, the detachable rim 4, having an annular convex bearing fitting the concave seat and formed with the wearing-groove 6 entirely within it, and bolts 7, uniting the rims, substantially as described.

3. A sectional pulley consisting of the rim 3, formed integral with the spokes 2 and hub 1, the rim 4, formed with the cable receiving and bearing groove 6 entirely within it, and having its inside provided with inwardly-projecting lugs 5, coincident with the spokes, and bolts 7, connecting the lugs with the spokes, substantially as described.

410,987. DYNAMO-ELECTRIC MACHINE OR MOTOR. FRANCIS J. PATTEN, New York, N. Y. Filed July 3, 1889. Serial No. 316,894. (No model.)

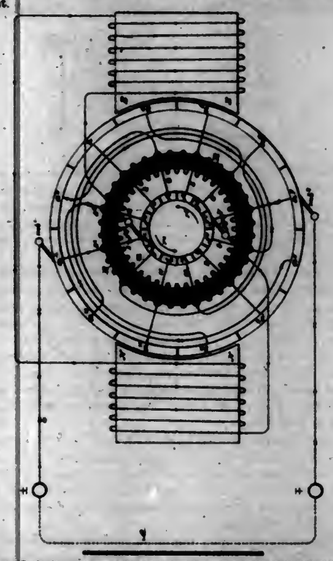
Claim.—1. In a dynamo-electric machine or motor, a Gramme-ring armature provided with a collector the adjacent bars of which are connected to the ring-winding at points respectively contiguous to and opposite to the said adjacent segments in rotation around the ring.

2. In a dynamo-electric machine or motor, a Gramme ring provided with two sets of collector-bars, the bars of one set connected to successive coils of the ring in rotation and the other set having adjacent bars connected to the ring-winding at points respectively contiguous to and opposite to the said adjacent segments in rotation around the ring.

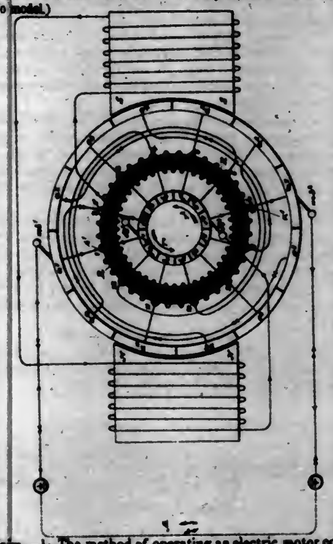
3. In a dynamo-electric machine or motor, an armature provided with a commutator or collector the adjacent bars of which are connected to the ring-winding at points respectively contiguous to and opposite to the said adjacent segments in rotation around the ring.

4. A dynamo-electric machine or motor provided with two sets of collector-bars, one set having adjacent bars connected to successive points of the armature-winding in rotation, the other set having adjacent bars connected alternately to points of the ring-winding contiguous to and opposite to the said bars in rotation around the ring.

5. In a dynamo-electric machine or motor, an armature provided with two sets of collectors or commutators and two pairs of brushes, one collector having successive bars or segments connected in rotation to successive points of the armature-winding and the brushes bearing thereon connected to the field-circuit, the adjacent bars of the other collector being connected in succession to bars of the first collector that lie, respectively, contiguous to and diametrically opposite to the said adjacent segments in rotation around the ring, and the brushes bearing on this collector connected to a source of alternating current.



410,988. METHOD OF OPERATING ELECTRIC MOTORS. FRANCIS J. PATTEN, New York, N. Y. Filed July 24, 1889. Serial No. 318,508. (No model.)



Claim.—1. The method of operating an electric motor connected in an alternating-current circuit, which consists in giving a constant polarity to a continuously-wound armature by delivering the alternating impulses successively to opposite sides of the armature-winding.

2. The method of operating an electric motor connected in an alternating-current circuit, which consists in giving a constant polarity to a continuously-wound armature-circuit by sending the opposite impulses of current successively to opposite sides of the armature-winding, and in giving a constant polarity to the field-magnet by a similar and simultaneous delivery of the same impulses to the field-circuit.

410,989. BRAKE-SHOE. JAMES FALLON, Selma, Ala., assignor of one-third to Edward G. Gregory, same place. Filed July 8, 1889. Serial No. 316,927. (No model.)

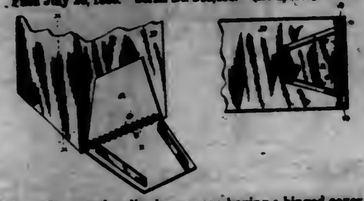


Claim.—1. The combination, with the brake-shoe, of the rods and the perforated plate, substantially as described.

2. The combination, with the shoe, of the rods provided with shoulders near their rear ends, substantially as described.

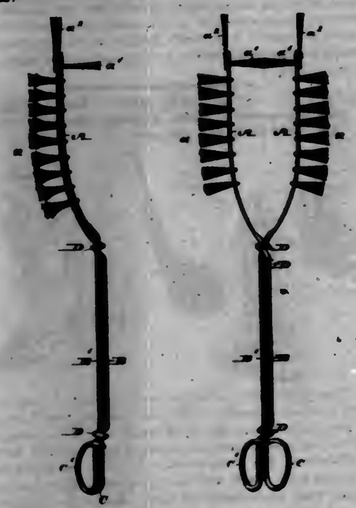
3. The combination of the brake-shoe and the rods, the latter being provided with a coating of boiled linseed-oil and mineral paint, as described.

410,990. MERCHANDISE-BOX. GEORGE H. RATHBUN, Chicago, Ill. Filed July 30, 1888. Serial No. 281,156. (No model.)



Claim.—The merchandise box or case having a hinged cover provided upon its inside with converging cleats or guides spaced apart at their approaching ends, said lid or cover having applied to its hinge-pintle a spring the action of which is to hold the lid tightly closed, substantially as set forth.

410,991. BRIDLE. JOSEPH RAFFETY, Buena Vista, assignor of one-half to Louis Conte, Camden, N. J. Filed Aug. 30, 1888. Serial No. 284,143. (Model.)



Claim.—1. In a brush, the combination of the curved heads of wire, having bristles on their sides and ends, shanks carried by said heads, and eyes on one of the shanks, forming bearings for the other shank, substantially as described.

2. In a brush, the combination of the brush-heads, the shanks, and the handles, one of said shanks having eyes integral therewith, forming bearings for the other shank as a journal, substantially as and for the purpose described.

3. In a brush, the combination of the curved brush-heads, shanks, and the handles formed on said shanks, the head carrying bristles, and handles having their ends bent so as to construct or form stops when the brush-heads are opened, substantially in the manner and for the purpose described.

4. In a brush, the combination of the curved heads having bristles on their ends at right angles to each other, shanks having handles formed with said heads, one of the shanks being bent around the other at a suitable place to form bearings for the device, substantially as described.

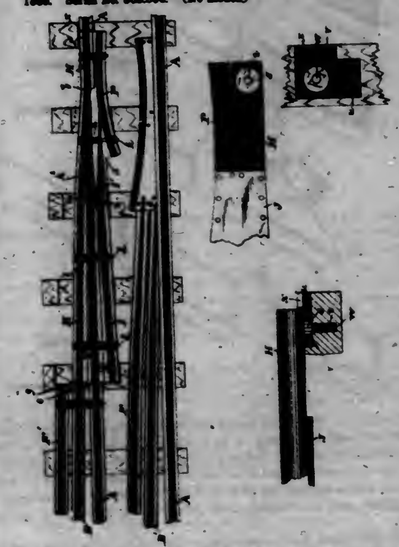
5. In a brush, the combination of heads of wire carrying bristles at their ends and sides, the shanks formed with handles carried by the heads, and eyes or loops on one of the shanks, forming bearings for the other, substantially as described.

6. In a brush, the combination of the heads, shanks on said heads, handles formed with the shanks, and stops or abutments on the handles adapted to contact when the brush is open to limit the opening of the heads, substantially as described.

7. An opening and closing brush having handles provided with stops or abutments, which contact when the brush is opened and limit the opening of said brush, substantially in the manner and for the purpose described.

8. An opening and closing brush consisting of wire heads with shanks and handles, the said heads being curved and having bristles thereon, and one of said shanks being adapted to partially rotate upon the other, said parts being combined substantially as described.

410,992. RAILROAD-SWITCH. JOHN T. RIDDEY, Baltimore, Md., assignor of one-fifth to William D. Jenkins, same place. Filed Mar. 16, 1889. Serial No. 303,506. (No model.)



Claim.—1. The combination, with the main-track rails A, one of which is broken and the other unbroken, and the siding-rails B B', of a switch placed in the broken rail of the main track, said switch comprising three rails, to wit: the middle rail A', having a pivoted point, and the inside rail I, also having a pivoted point, both of these rails to connect alternately with the main-track rail A, and the outside rail H, to connect normally with the siding-rail B, all three of the switch-rails being secured together, and all turning on a pivot at the end of the said outside rail, for the purpose set forth.

2. The switch herein described, comprising a base-plate J, an outside rail H, pivoted at one end, a guard-rail P, a middle rail A', and an inside rail I, all of these said rails being secured to the base-plate, a pivoted point A^3, continuing from the middle rail and by a spring kept normally in contact with the said outside rail, and a pivoted point I', continuing from the inside rail and by a spring kept normally in contact with the said guard-rail.

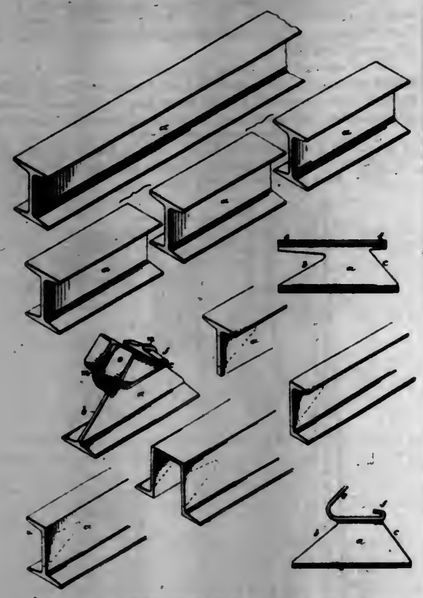
3. The combination, in a switch, of a rail H, pivoted at one end and having a bend *g*, a shorter rail A', secured permanently alongside of the bent rail and movable by the same pivot, a pivoted point A^3, continuing from the said shorter rail and having its free end normally in contact with the said bent rail, the main-track rail A, and a siding-rail B.

4. The combination, in a switch, of the main-track rails A, siding-rails B B', safety siding-rails F F', to run parallel to and connect with the siding-rails, and a switch comprising three rails, to wit: the middle rail A', having a pivoted point, and the inside rail I, also hav-

ing a pivoted point, both of these rails to connect alternately with the main-track rail A, and the outside rail H, to connect normally with the siding-rail B, all three of the switch-rails being secured together and all turning on a pivot at the end of the said outside rail, for the purpose set forth.

5. In a switch, the combination of the plate embracing in one piece the chair *x* and a bearing having a socket *v*, the main-track rail, and the switch-rail having on its under side a pivot-boss *s*.

410,993. PROCESS OF MAKING RAILROAD-RAIL CHAIRS. EDWARD RAWSON, Philadelphia, Pa., assignor to William Wharton, Jr., and Company, Incorporated, same place. Filed June 12, 1888. Serial No. 314,004. (No model.)



Claim.—1. The mode herein described of forming a railway-rail chair, said mode consisting in, first, producing a bar or blank in the form of a beam or shape having a top plate and web; second, cutting the web the desired distance to permit the top portion to be turned up, and, finally, bending the portion of the top plate freed by the severing of the web, thus forming a rail-retaining lip, substantially as set forth.

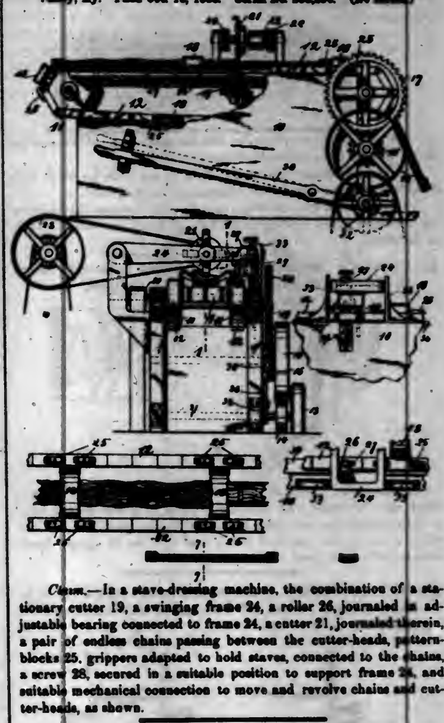
2. The mode herein described of forming a railway-rail chair, said mode consisting in, first, rolling a shape or beam having a top plate and web; second, cutting this beam or shape into suitable lengths; third, cutting the web the desired distance to permit the top portion to be turned up, and, finally, bending the portion of the top plate freed by the severing of the web to form a rail-retaining lip, substantially as described.

3. The mode herein described of forming a railway-rail chair, said mode consisting in, first, producing a beam or shape having a top plate and web; second, cutting out portions of the web at the proper places; third, dividing the beam or shape into suitable lengths to make the chairs, and, finally, bending the portion of the top plate freed by the severing of the web to form a rail-retaining lip, substantially as set forth.

4. The process herein described of forming a railway-rail chair, said process consisting in, first, forming a shape or beam having a top plate or web; second, dividing said beam into sections; third, cutting the web at a point some distance below the top plate, and, finally, bending said freed portion of the top plate with its adhering web to form a ribbed rail-retaining lip, substantially as set forth.

5. The process herein described of forming a railway-rail chair, said process consisting in, first, forming a beam or shape having a top plate and web; second, cutting the outer portions of the web the desired distance to permit the top portion to be turned up, and, finally, bending the two ends of the top plate thereby freed from the web and thus forming opposite rail-retaining lips, substantially as and in the manner set forth.

410,994. STAVE-DRESSING MACHINE. CHARLES SCHEER, Rose's Valley, Ky. Filed Oct. 16, 1888. Serial No. 288,208. (No model.)



Claim.—In a stave-dressing machine, the combination of a stationary cutter 19, a swinging frame 24, a roller 26, journaled in adjustable bearing connected to frame 24, a cutter 21, journaled therein, a pair of endless chains passing between the cutter-heads, pattern-blocks 25, grippers adapted to hold staves, connected to the chains, a screw 28, secured in a suitable position to support frame 24, and suitable mechanical connection to move and revolve chains and cutter-heads, as shown.

410,995. LIFTING-JACK. MAJOR A. STEWART, Kingston, Ind., assignor of one-half to William K. Stewart, same place. Filed July 8, 1889. Serial No. 316,947. (No model.)

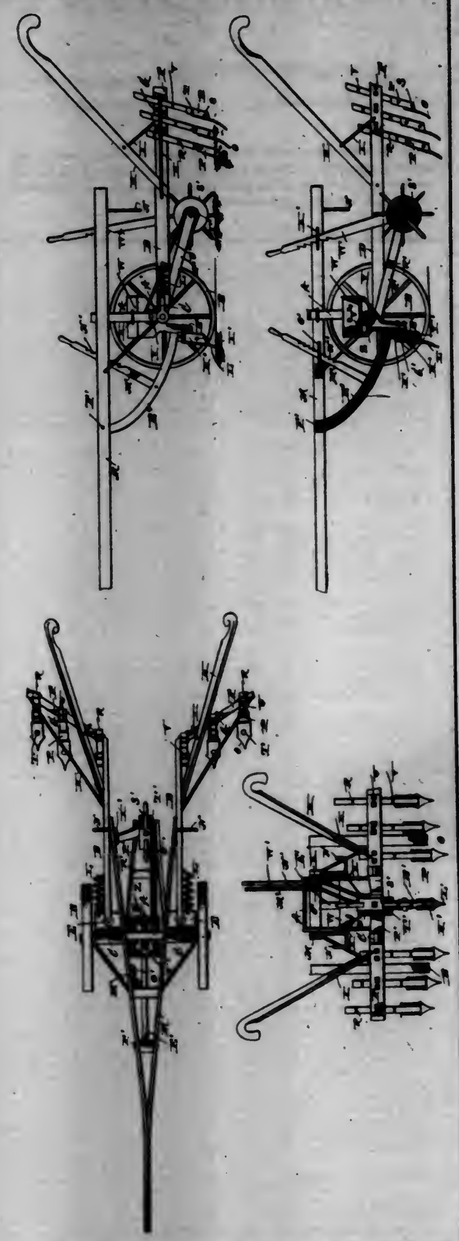


Claim.—The lifting-jack described, consisting of the base, the slotted standard supported thereon, the operating-lever fulcrumed on said standard, the inner face of the handle of the lever at its junction with the cam extending at substantially a right angle, as shown, and the lifting-block free to move vertically in the slot of the standard and formed with central web having convexed lower face and with rear and front guide-pieces, the lower edge of the front one being convexed and the lower edge of the rear one inclined upward, substantially as herein shown and described, and for the purpose specified.

410,996. COMBINED CULTIVATOR AND PLANTER. JAMES D. SPEARER, Grayson, assignor of one-half to G. R. Arnold, Dearborn, Mo. Filed Feb. 20, 1889. Serial No. 300,549. (No model.)

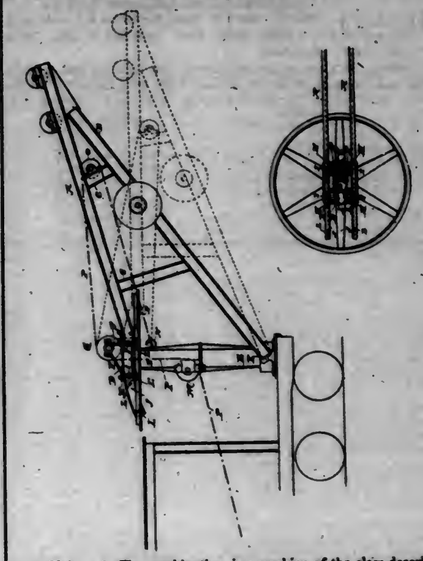
Claim.—1. In a planter, the combination, with the seed-spout, of the draft-rod having its rear end movable vertically on the seed-spout, the furrow-opener attached to the draft-bar by means of a pivoting-bolt and a break-pin and guided on the seed-spout, and the lever adapted to raise and lower the draft-bar, substantially as described.

2. In a cultivator, the combination, with the arched axle, of the hinge-plate on the spindles thereof, the beams D, pivotally connected to said hinge-plate and having the oblique arms F, the vertically-adjustable standard secured on said arms, and the cultivating teeth or shovels secured to said standards, substantially as described.



3. The combination of the axle, the frame-bars M, having hooks N, the hinge-plates C, mounted loosely upon the spindles of the axle, the cultivator-beams connected pivotally to said hinge-plates by vertical bolts, and the contractile springs connecting the cultivator-beams with the outer rear corners of the hinge-plates, substantially as set forth.

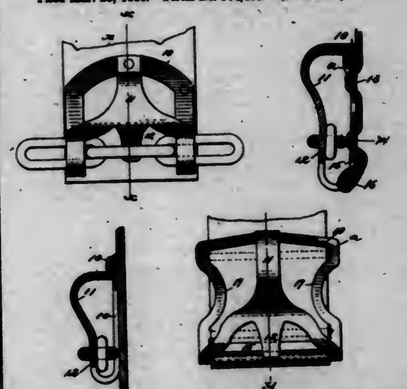
410,997. DERRICK. JOHN THOMPSON, Bucyrus, Ohio, assignor to the Bucyrus Foundry and Manufacturing Company, same place. Filed June 7, 1888. Serial No. 313,501. (No model.)



Claim.—1. The combination, in a machine of the class described and shown, of upper and lower braces, the rearward ends of the upper braces being formed on the arc of a circle struck from the base of the lower braces and provided with a plurality of bolt-holes, a casting turning on the head of the mast, to which the ends of the upper braces are bolted, and means whereby the crane may be adjusted to different elevations to admit of the coincidence of different bolt-holes in the upper braces with those in the casting, substantially as set forth.

2. The combination, in a machine of the class described and shown, of the upper braces A, the rearward ends whereof are curved as shown and provided with a plurality of bolt-holes, the lower braces B, set in a rotary socket at the foot of the mast, a rotary casting D, set on the top of the mast and provided with bolt-holes, substantially as described, and means for hoisting and lowering the braces, substantially as and for the purposes set forth.

410,998. BACK-BAND HOOK. FRANCIS A. YOST, Paducah, Ky. Filed Mar. 23, 1889. Serial No. 304,465. (No model.)

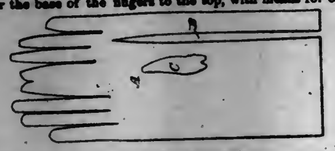


Claim.—A back-band hook consisting of the plate 10, provided with the outwardly and upwardly curved and bifurcated arm 11, forming trace-supporting loops, the said arm having its upper end secured to the upper part of the plate and provided with the tongue 12, pro-

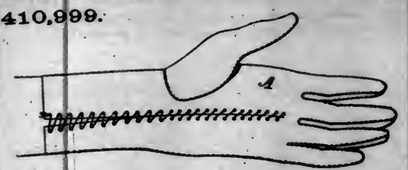
jecting downwardly from the body of the arm, substantially as herein shown and described.

410,999. GLOVE. ABNER M. YOUNG, Providence, R. I., assignor of one-half to Abby C. Smith, Boston, Mass. Filed May 13, 1889. Serial No. 310,611. (No model.)

Claim.—A glove constructed with an opening in the palm portion from near the base of the fingers to the top, with means for closing



410,999.



the same, said opening being formed by the removal of a piece of the material, whereby the fullness of the glove in the palm of the hand is removed and the strain of the material opposite the thumb is obviated, substantially as shown and described.

PHOTO LITH NORRIS PETERS WASHINGTON D.C.

PATENT LAW OF WESTERN AUSTRALIA.

(The following copy of the new patent law lately passed by the Western Australian Government has been supplied from an official copy by Messrs. W. P. Thompson & Co., Liverpool, England, for publication.)

No. V.

An Act to amend and consolidate the Law relating to Patents for Inventions. [Assented to, 30th November, 1888.]

Whereas it is desirable to amend and consolidate the law relating to Patents for Inventions: Be it enacted by his Excellency the Governor of Western Australia and its Dependencies, by and with the advice and consent of the Legislative Council thereof, as follows:—

1. This Act may be cited as "The Patent Act, 1888."

2. This Act, except where it is otherwise expressed, shall come into operation on the first day of January, One thousand eight hundred and eighty-nine.

3. For the purposes of this Act, and save so far as the context requires a different meaning, the following words shall have the meanings in this section assigned to them, namely:—

"The Registrar" shall mean the Registrar of Patents.

"The Court" shall mean the Supreme Court of this Colony.

"Prescribed" shall mean prescribed by any of the schedules to this Act, or by regulations under this Act.

"Examiner" shall mean any skilled person or persons to whom the Registrar shall refer questions concerning Patents under this Act.

"Foreign vessel" shall mean vessel belonging to any other state or colony.

4. The Patent Office shall be attached to the Department of the Registrar General, or to a branch of such Department, and shall be under the immediate control of the Registrar of Patents, who shall be appointed by the Governor.

5. Any act or thing directed to be done by or to the Registrar may, in his absence, be done by or to any officer for the time being in that behalf authorized by the Registrar General.

6. There shall be a seal for the Patent Office, to be called "The Seal of the Patent Office," and impressions thereof shall be judicially noticed and admitted in evidence.

7. Any person, whether a British subject or not, may make an application for a patent, or two or more persons may make a joint application for a patent, and a patent may be granted to them jointly.

8. (1.) An application for a patent must be made in the form set forth in the First Schedule to this Act, or in such other form as may be from time to time prescribed, or in a form as like thereto as the circumstances will permit; and must be left at the patent office in the prescribed manner.

(2.) An application must contain a statutory declaration by the applicant, or, in the case of a joint application, by one of the applicants, to the effect that one or more of the applicants is or are in possession of an invention, whereof one or more of the applicants claims or claim to be the true and first inventor or inventors, or to which one or more of the applicants claims or claim to be entitled as legal representative or representatives, or under a bequest in the will of the true and first inventor, and for which the applicant or applicants desires or desire to obtain a patent. The application must be accompanied by either a provisional or complete specification, and must state an address in Perth for the reception of notices and other communications with respect to the application or invention.

(3.) A provisional specification must describe the nature of the invention, and be accompanied by drawings, if required.

(4.) A complete specification, whether left on application or subsequently, must particularly describe and ascertain the nature of the invention, and in what manner it is to be performed, and must be accompanied by drawings, if required.

(5.) A specification, whether provisional or complete, must commence with the title, and in the case of a complete specification must end with a distinct statement of the invention claimed.

9. The Registrar shall, if he think fit, refer any application to an examiner, who shall ascertain whether the nature of the invention has been fairly described, and the application, specification, and drawings (if any) have been prepared in the prescribed manner, and the title sufficiently indicates the subject-matter of the invention, and shall report thereon to the Registrar.

10. (1.) If the examiner reports that the nature of the invention is not fairly described, or that the application, specification, or drawings has not or have not been prepared in the prescribed manner, or that the title does not sufficiently indicate the subject-matter of the invention, the Registrar may require that the application, specification, or drawings be amended, before he proceeds with the application.

(2.) Where the Registrar requires an amendment, the applicant may appeal from his decision to the Attorney General.

(3.) The Attorney General shall, if required, hear the applicant and the Registrar, and may make an order determining whether and subject to what conditions (if any) the application shall be accepted.

(4.) The Registrar shall, when an application has been accepted, give notice thereof to the applicant.

(5.) If after an application has been made, but before a patent has been sealed, an application is made, accompanied by a specification bearing the same or a similar title, the Registrar, if he think fit, may refer the question to an examiner, who shall report to the Registrar whether the specification appears to the examiner to comprise the same invention; and, if he reports in the affirmative, the Registrar shall give notice to both applicants that he has so reported. Where the examiner reports in the affirmative, the Registrar may determine, subject to an appeal to the Attorney General, whether the invention comprised in both applications is the same, and, if so, he may refuse to seal a patent on the application of the second applicant.

11. (1.) If the applicant does not leave a complete specification with his application, he may leave it at any subsequent time within nine months from the date of application, and the Registrar may, on payment of the prescribed fee, extend such time to ten months.

(2.) Unless a complete specification is left within nine months, or such extended time, the application shall be deemed to be abandoned.

12. (1.) Where a complete specification is left after a provisional specification, the Registrar may, if he think fit, refer both specifications to an examiner for the purpose of ascertaining whether the complete specification has been prepared in the prescribed manner, and whether the invention particularly described in the complete specification is substantially the same as that which is described in the provisional specification.

(2.) If the examiner reports that the conditions hereinbefore contained have not been complied with, the Registrar may refuse to accept the complete specification unless and until the same shall have been amended to his satisfaction; but any such refusal shall be subject to appeal to the Attorney General.

(3.) The Attorney General shall, if required, hear the applicant and the Registrar, and may make an order determining whether and subject to what conditions, if any, the complete specification shall be accepted.

(4.) Unless a complete specification is accepted within twelve months from the date of application, or such extended time not exceeding fifteen months from the date of the application, as the Registrar on payment of the prescribed fee may allow, then (save in the case of an appeal having been lodged against the refusal to accept) the application shall, at the expiration of the said twelve months, or such extended time, become void.

(5.) Reports of examiners shall not in any case be published or be open to public inspection, and shall not be liable to production or inspection in any legal proceeding, other than an appeal to the Attorney General under this Act, unless the court or officer having power to order discovery in such legal proceeding shall certify that such production or inspection is desirable in the interests of justice, and ought to be allowed.

13. On the acceptance of the complete specification, the Registrar shall advertise the acceptance in the *Government Gazette* of Western Australia; and the application and specification or specifications with the drawings (if any) shall be open to public inspection.

14. (1.) Any person may, at any time within two months from the date of the advertisement of the acceptance of a complete specification, give notice at the patent office of opposition to the grant of the patent on the ground of an applicant having obtained the invention from him, or from a person of whom he is the legal representative, or on the ground that the invention has been patented in this Colony on an application of prior date, or on the ground of an examiner having reported to the Registrar that the specification appeared to him to comprise the same invention as is comprised in a specification bearing the same or a similar title, and accompanying a previous application, but on no other ground.

(2.) Where such notice is given, the Registrar may require the applicant to give security to an amount not exceeding Twenty-five pounds for the costs of the opposition; and if the security so required is not given within the said two months, the opposition shall lapse.

(3.) Where such notice and such security, if required, is given, the Registrar shall give notice of the opposition to the applicant, and shall, on the expiration of the said two months, after hearing the applicant and the person so giving notice, if desirous of being heard, decide on the case, but subject to appeal to the Attorney General.

(4.) The Attorney General shall, on such appeal, hear the applicant and any person so giving notice and being, in the opinion of the Attorney General, entitled to be heard in opposition to the grant, and shall determine whether the grant ought or ought not to be made.

(5.) The Attorney General may, if he thinks fit, obtain the assistance of an expert, who shall be paid such remuneration as the Attorney General shall determine.

(6.) The Attorney General or the Registrar, as the case may be, may, after decision, make such order as may be thought fit for the payment of costs by the applicant to the party giving notice or *vice versa*, and such order may be made a rule of the Court on an application *ex parte*.

15. Where an application for a patent has been abandoned, or become void, the specification or specifications and drawings (if any) accompanying or left in connection with such application shall not at any time be open to public inspection or be published by the Registrar.

16. (1.) If there is no opposition, or, in the case of opposition, if the determination is in favor of the grant of a patent, the Registrar shall cause a patent to be sealed with the seal of the Patent Office.

(2.) A patent shall be sealed as soon as may be, and not after the expiration of fifteen months from the date of application, except in the cases hereinafter mentioned, that is to say—

(a.) Where the sealing is delayed by an appeal to the Attorney General, or by opposition to the grant of the grant of the patent, the patent may be sealed at such time as the Attorney General may direct.

(b.) If the person making the application dies before the expiration of the fifteen months aforesaid, the patent may be granted to his legal representative and sealed at any time within six months after the death of the applicant.

(c.) Where the Registrar has extended the time for leaving or the time for accepting the complete specification, or both such times, the total period of time so extended shall be added to the period of fifteen months above provided.

17. Every patent shall be in duplicate, and one duplicate shall be deposited in the Patent Office, and every patent shall be dated and sealed as of the day of the application: Provided that no proceedings shall be taken in respect of an infringement committed before the publication of the complete specification: Provided also, that in case of more than one application for a patent for the same invention, the sealing of a patent on one of those applications shall not prevent the sealing of a patent on an earlier application.

PROVISIONAL PROTECTION.

18. Where an application for a patent in respect of an invention has been accepted, the invention may during the period between the date of the application and the date of sealing such patent be used and published without prejudice to the patent to be granted for the same; and such protection from the consequences of use and publication is in this Act referred to as provisional protection.

PROTECTION BY COMPLETE SPECIFICATION.

19. After the acceptance of a complete specification, and until the date of sealing a patent in respect thereof, or the expiration of the time for sealing, the applicant shall have the like privileges and rights as if a patent for the invention had been sealed on the date of the acceptance of the complete specification: Provided that an applicant shall not be entitled to institute any proceeding for infringement, unless and until a patent for the invention has been granted to him.

PATENT.

20. A patent may be granted to several applicants jointly, although some or one of them only are or is the true and first inventors or inventor.

21. Every patent, when sealed, shall have effect throughout the Colony of Western Australia.

22. (1.) The term limited in every patent for the duration thereof shall be fourteen years from its date.

(2.) But every patent shall, notwithstanding anything therein or in this Act, cease if the patentee fails to make the prescribed payments within the prescribed times.

(3.) If, nevertheless, in any case, by accident, mistake, or inadvertence, a patentee fails to make any prescribed payment within the prescribed time, he may apply to the Registrar for an enlargement of the time for making that payment.

(4.) Thereupon the Registrar shall, if satisfied that the failure has arisen from any of the above-mentioned causes, on receipt of the prescribed fee for enlargement, not exceeding Ten pounds, enlarge the time accordingly, subject to the following conditions:

(a.) The time for making any payment shall not in any case be enlarged for more than six months:

(b.) If any proceeding shall be taken in respect of an infringement of the patent committed after a failure to make any payment within the prescribed time, and before the enlargement thereof, the Court before which the proceeding is proposed to be taken may, if it shall think fit, refuse to award or give any damages in respect of such infringement.

AMENDMENT OF SPECIFICATION.

23. (1.) An applicant or a patentee may, from time to time, by request in writing left at the Patent Office, seek leave to amend his specification, including drawings forming part thereof, by way of disclaimer, correction, or explanation, stating the nature of such amendment and his reasons for the same.

(2.) The request and the nature of such proposed amendment shall be advertised in the *Government Gazette*, and at any time within one month from its first advertisement any person may give notice at the patent office of opposition to the amendment.

(3.) Where such notice is given, the Registrar shall give notice of the opposition to the person making the request, and shall hear and decide the case, subject to an appeal to the Attorney General.

(4.) The Attorney General shall, if required, hear the person making the request and the person so giving notice, and being, in the opinion of the Attorney General, entitled to be heard in opposition to the request, and shall determine whether, and subject to what conditions, if any, the amendment ought to be allowed.

(5.) Where no notice of opposition is given, or the person so giving notice does not appear, the Registrar shall determine whether, and subject to what conditions, if any, the amendment ought to be allowed.

(6.) When leave to amend is refused by the Registrar, the person making the request may appeal from his decision to the Attorney General.

(7.) The Attorney General shall, if required, hear the person making the request and the Registrar, and may make an order determining whether, and subject to what conditions, if any, the amendment ought to be allowed.

(8.) No amendment shall be allowed that would make the specification, as amended, claim an invention substantially larger than or substantially different from the invention claimed by the specification as it stood before amendment.

(9.) Leave to amend shall be conclusive as to the right of the party to make the amendment allowed, except in case of fraud; and the amendment shall in all courts and for all purposes be deemed to form part of the specification.

(10.) The foregoing provisions of this section do not apply when and so long as any action for infringement or other legal proceeding in relation to a patent is pending.

24. In an action for infringement of a patent, and in a proceeding for revocation of a patent, the Court or a Judge may order that the patentee shall, subject to such terms as to costs and otherwise as the Court or a Judge may impose, be at liberty to apply at the Patent Office for leave to amend his specification by way of disclaimer, and may direct that in the meantime the trial or hearing of the action shall be postponed.

25. Where an amendment by way of disclaimer, correction, or explanation has been allowed under this Act, no damages shall be given in any action in respect of the use of the invention before the disclaimer, correction, or explanation, unless the patentee establishes to the satisfaction of the Court that his original claim was framed in good faith and with reasonable skill and knowledge.

26. Every amendment of a specification shall be advertised in the *Government Gazette* of Western Australia.

COMPULSORY LICENSES.

27. If on the petition of any person interested it is proved to the Governor in Council that, by reason of the default of a patentee to grant licenses on reasonable terms—

(a.) The patent is not being worked in this Colony; or

(b.) The reasonable requirements of the public with respect to the invention cannot be supplied; or

(c.) Any person is prevented from working or using to the best advantage an invention of which he is possessed; the Governor in Council may order the patentee to grant licenses on such terms as to the amount of royalties, security for payment, or otherwise, as the Governor in Council, having regard to the nature of the invention and the circumstances of the case, may deem just, and any such order may be enforced by mandamus.

REGISTER OF PATENTS.

28. (1.) There shall be kept at the Patent Office a book called the Register of Patents, wherein shall be entered the names and addresses of grantees of patents, notifications of assignments and of transmissions of patents, of licenses under patents, and of amendments, extensions, and revocations of patents, and such other matters affecting the validity or proprietorship of patents as may from time to time be prescribed.

(2.) The Register of Patents shall be *primâ facie* evidence of any matters by this Act directed or authorized to be inserted therein.

(3.) Copies of deeds, licenses, and any other documents affecting the proprietorship in any letters patent or in any license thereunder, must be supplied to the Registrar in the prescribed manner for filing in the Patent Office.

FEES.

29. There shall be paid, in respect of the several matters and things described in the Second Schedule to this Act, the fees in that schedule mentioned; and such fees shall be levied and paid to the credit of the general revenue of the Colony.

EXTENSION OF TERM OF PATENT.

30. (1.) A patentee may, after advertising in manner directed by any rules made under this section his intention to do so, present a petition to the Governor in Council, praying that his patent may be extended for a further term; but such petition must be presented at least six months before the time limited for the expiration of the patent.

(2.) Any person may enter a caveat, addressed to the Clerk of the Executive Council at the Council Office, against the extension.

(3.) If the Governor in Council shall be pleased to refer any such petition to the Supreme Court, the Court shall proceed to consider the same, and the petitioner and any person who has entered a caveat shall be entitled to be heard by himself or by counsel on the petition.

(4.) The Court shall, in considering their decision, have regard to the nature and merits of the invention in relation to the public, to the profits made by the patentee as such, and to all the circumstances of the case.

(5.) If the Court report that the patentee has been inadequately remunerated by his patent, it shall be lawful for the Governor in Council to extend the term of the patent for a further term not exceeding seven, or, in exceptional cases, fourteen years; or to order the grant of a new patent for the term therein mentioned, and containing any restrictions, conditions, and provisions that the Court may think fit.

(6.) It shall be lawful for the Governor in Council to make, from time to time, rules of procedure and practice for regulating proceedings on such petitions, and subject thereto such proceedings shall be regulated according to the existing procedure and practice in patent matters of the Court.

(7.) The costs of all parties of and incident to such proceedings shall be in the discretion of the Court; and the orders of the Court respecting costs shall be enforceable in like manner as other orders of the Court.

REVOCATION.

31. (1.) No proceeding by *scire facias* to repeal a patent shall be taken.

(2.) Revocation of a patent may be obtained on petition to the Court.

(3.) Every ground on which a patent might, at the commencement of this Act, be repealed by *scire facias* shall be available by way of defense to an action for infringement, and shall also be a ground of revocation.

(4.) A petition for revocation of a patent may be presented by—

(a.) The Attorney General:

(b.) Any person authorized by the Attorney General:

(c.) Any person alleging that the patent was obtained in fraud of his rights, or of the rights of any person under or through whom he claims:

(d.) Any person alleging that he, or any person under or through whom he claims, was the true inventor of any invention included in the claim of the patentee:

(e.) Any person alleging that he, or any person under or through whom he claims an interest in any trade, business, or manufacture, had publicly manufactured, used, or sold, within this Colony, before the date of the patent, anything claimed by the patentee as his invention.

(5.) The plaintiff must deliver with his petition particulars of the objections on which he means to rely; and no evidence shall, except by leave of the Court or a Judge, be admitted in proof of any objection of which particulars are not so delivered.

(6.) Particulars delivered may be from time to time amended by leave of the Court or a Judge.

(7.) The defendant shall be entitled to begin, and give evidence in support of the patent; and if the plaintiff gives evidence impeaching the validity of the patent, the defendant shall be entitled to reply.

(8.) Where a patent has been revoked on the ground of fraud, the Registrar may, on the application of the true inventor made in accordance with the provisions of this Act, grant to him a patent in lieu of and bearing the same date as the date of the revocation of the patent so revoked, but the patent so granted shall cease on the expiration of the term for which the revoked patent was granted.

CROWN.

32. A patent shall have to all intents the like effect as against Her Majesty the Queen, Her heirs and successors, as it has against a subject, excepting always that the officers or authorities administering any department of the service of the Crown may, by themselves, their agents, contractors, or others, at any time after the application, use the invention for the services of the Crown on terms to be before or after the use thereof agreed on, with the approval of the head of the department, between those officers or authorities and the patentee, or, in default of such agreement, on such terms as may be settled by the Court after hearing all parties interested.

LEGAL PROCEEDINGS.

33. (1.) In an action or proceeding for infringement or revocation of a patent, the Court may, if it think fit, or on the request of either of the parties to the proceeding, call in the aid of an assessor specially qualified, and try and hear the case wholly or partially with his assistance; the action shall be tried without a jury, unless the Court shall otherwise direct.

(2.) The remuneration, if any, to be paid to an assessor under this section shall be determined by the Court and be paid in the same manner as the other expenses of the execution of this Act.

34. (1.) In an action for infringement of a patent, the plaintiff must deliver with his statement of claim, or, by order of the Court or a Judge, at any subsequent time, particulars of the breaches complained of.

(2.) The defendant must deliver with his statement of defense, or, by order of the Court or a Judge, at any subsequent time, particulars of any objections on which he relies in support thereof.

(3.) If the defendant disputes the validity of the patent, the particulars delivered by him must state on what grounds he disputes it, and if one of those grounds is want of novelty must state the time and place of the previous publication or user alleged by him.

(4.) At the hearing no evidence shall, except by leave of the Court or a Judge, be admitted in proof of any alleged infringement or objection of which particulars are not so delivered.

(5.) Particulars delivered may be from time to time amended, by leave of the Court or a Judge.

(6.) On taxation of costs regard shall be had to the particulars delivered by the plaintiff and by the defendant; and they respectively shall not be allowed any costs in respect of any particular delivered by them, unless the same is certified by the Court or a Judge to have been proven or to have been reasonable and proper, without regard to the general costs of the case.

35. In an action for infringement of a patent, the Court or a Judge may, on the application of either party, make such order for an injunction inspection or account, and impose such terms and give such directions respecting the same and the proceedings thereon as the Court or a Judge may see fit.

36. In an action for infringement of a patent, the Court or a Judge may certify that the validity of the patent came in question; and if the Court or a Judge so certifies, then in any subsequent action for infringement, the plaintiff in that action, on obtaining a final order or judgment in his favor, shall have his full costs, charges, and expenses as between solicitor and client, unless the Court or Judge trying the action certifies that he ought not to have the same.

37. Where any person claiming to be the patentee of an invention, by circulars, advertisements, or otherwise, threatens any other person with any legal proceedings or liability in respect of any alleged manufacture, use, sale, or purchase of the invention, any person or persons aggrieved thereby may bring an action against him, and may obtain an injunction against the continuance of such threats, and may recover such damage (if any) as may have been sustained thereby, if the alleged manufacture, use, sale, or purchase to which the threats related was not in fact an infringement of any legal rights of the person making such threats: Provided that this section shall not apply if the person making such threats with due diligence commences and prosecutes an action for infringement of his patent.

MISCELLANEOUS.

38. It shall be lawful for the Registrar, with the sanction of the Governor, to license fit and proper persons to be patent agents for transacting business under the provisions of this Act, and, upon proof to the Registrar satisfaction of the malfeasance or incapacity of any such licensed patent agent, or on non-payment of any annual fee for any such license, as prescribed by the Second Schedule hereto, and with such sanction as aforesaid, to revoke any such license.

39. Every patent may be in the form in the First Schedule to this Act, and shall be granted for one invention only, but may contain more than one claim; but it shall not be competent for any person in an action or other proceeding to take any objection to a patent on the ground that it comprises more than one invention.

40. (1.) If a person possessed of an invention for which he is entitled to obtain a patent dies without making application for a patent for the invention, application may be made by, and a patent for the invention granted to, the legal representative of the inventor, or to any person to whom the inventor may have bequeathed or assigned the right to obtain the patent.

(2.) Every such application must be made within six months of the decease of such person, and must contain a declaration by the legal representative that he believes such person to be the true and first inventor of the invention.

41. A patent granted to the true and first inventor shall not be invalidated by an application in fraud of him, or by provisional protection obtained thereon, or by any use or publication of the invention subsequent to that fraudulent application during the period of provisional protection.

42. A patentee may assign his patent for the whole of the Colony or any place or in any part thereof.

43. If a patent is lost or destroyed, or its non-production is accounted for to the satisfaction of the Registrar, the Registrar may at any time cause a triplicate thereof to be sealed and delivered to the person entitled thereto.

44. For the purpose of any application or opposition or other matters requiring the decision of the Registrar or the Attorney-General, they or either of them may, and at the request of any party to be heard shall, issue summonses under the seal of the Patent Office for the attendance of witnesses, and may examine witnesses on oath and administer oaths for that purpose under this part of the Act, and every witness so summoned shall be bound to attend at the time and place mentioned in such summons on being paid his expenses according to the scale for the time being allowed to witnesses on trials in local courts, and to continue in attendance until the matter shall have been disposed of, and to produce any document in his power, possession, custody, or control which he shall by such summons be required to produce.

45. The Attorney-General may from time to time make, alter, and rescind rules regulating references and appeals to the Attorney General, and the practice and procedure before him under this part of this Act; and in any proceeding before the Attorney General under this part of this Act, he may order costs to be paid by either party, and any such order may be made a rule of the Court.

46. The exhibition of an invention at an industrial or international exhibition, certified as such under the hand of the Registrar, or the publication of any description of the invention during the period of the holding of the exhibition, or the use of the invention for the purpose of the exhibition in the place where the exhibition is held, or the use of the invention during the period of the holding of the exhibition by any person elsewhere, without the privity or consent of the inventor, shall not prejudice the right of the inventor or his legal personal representative to apply for and obtain provisional protection and a patent in respect of the invention or the validity of any patent granted on the application, provided that both the following conditions are complied with, namely:

(a.) The exhibitor must, before exhibiting the invention, give the Registrar the prescribed notice of his intention to do so; and

(b.) The application for a patent must be made before or within six months from the date of the opening of the exhibition.

47. Where the invention is one which admits of being represented by a model, the Registrar may require the patentee to furnish him with a model of the invention on payment to the patentee of the cost of the manufacture of the model; the amount to be settled in case of dispute by the Attorney General.

48. (1.) The inventor of any improvement in instruments or munitions of war, his executors, administrators, or assigns (who are in this section comprised in the expression the inventor) may (either for or without valuable consideration) assign to the Colonial Secretary, on behalf of Her Majesty, all the benefit of the invention and of any patent obtained or to be obtained for the same; and the Colonial Secretary may be a party to the assignment.

(2.) The assignment shall effectually vest the benefit of the invention and patent in the Colonial Secretary on behalf of Her Majesty, and all covenants and agreements therein contained for keeping the invention secret and otherwise shall be valid and effectual, (notwithstanding any want of valuable consideration,) and may be enforced accordingly by the Colonial Secretary for the time being.

(3.) Where any such assignment has been made to the Colonial Secretary he may at any time before the application for a patent for the invention, or before publication of the specification or specifications, certify to the Registrar his opinion that, in the interest of the public service, the particulars of the invention and of the manner in which it is to be performed should be kept secret.

(4.) If the Colonial Secretary so certifies, the application and specification or specifications, with the drawings (if any,) and any amendment of the specification or specifications, and any copies of such documents and drawings, shall, instead of being left in the ordinary manner at the Patent Office, be delivered to the Registrar in a packet sealed by authority of the Colonial Secretary.

(5.) Such packet shall, until the expiration of the term or extended term during which a patent for the invention may be in force, be kept sealed by the Registrar, and shall not be opened save under the authority of an order of the Colonial Secretary, or of the Attorney General.

(6.) Such sealed packet shall be delivered at any time during the continuance of the patent to any person authorized by writing under the hand of the Colonial Secretary to receive the same, and shall, if returned to the Registrar, be again kept sealed by him.

(7.) On the expiration of the term or extended term of the patent, such sealed packet shall be delivered to any person authorized by writing under the hand of the Colonial Secretary to receive it.

(8.) Where the Colonial Secretary certifies as aforesaid, after an application for a patent has been left at the Patent Office, but before the publication of the specification or specifications, the application, specification, or specifications, with the drawings, (if any,) shall be forthwith placed in a packet sealed by authority of the Registrar, and such packet shall be subject to the foregoing provisions respecting a packet sealed by authority of the Colonial Secretary.

(9.) No proceeding by petition or otherwise shall lie for revocation of a patent granted for an invention in relation to which the Colonial Secretary has certified as aforesaid.

(10.) No copy of any specification or other document or drawing, by this section required to be placed in a sealed packet, shall in any manner whatever be published or open to the inspection of the public, but save as in this section otherwise directed, the provisions of this part of this Act shall apply in respect of any such invention and patent as aforesaid.

(11.) The Colonial Secretary may, at any time by writing under his hand, waive the benefit of this section with respect to any particular invention, and the specifications, documents, and drawings shall be thenceforth kept and dealt with in the ordinary way.

(12.) The communication of any invention for any improvement in instruments or munitions of war to the Colonial Secretary or to any person or persons authorized by him to investigate the same or the merits thereof, shall not, nor shall anything done for the purposes of the investigation, be deemed use or publication of such invention so as to prejudice the grant or validity of any patent for the same.

49. No person shall receive a patent or an instrument in the nature of letters patent under this Act for an invention or discovery which has been previously patented in Great Britain or any other country, but it shall be lawful for the Governor in his discretion, on the application of any person being the holder or assignee of any patent granted or issued in Great Britain or any other country for any new discovery or invention, and upon such proof as the Governor may deem sufficient, that such person is the *bona fide* holder or assignee of the said patent, and that the same is in full force, and upon payment to the Colonial Treasurer of the sum of Fifteen pounds, to grant letters of registration under the seal of Western Australia to the holder of such patent as aforesaid or his assignee, and such letters of registration shall be deposited in the Patent Office, and shall be deemed to be letters patent issued under this Act for such invention or improvement, and shall have the same force and effect as letters patent issued thereunder; and shall inure to the benefit of the holder during the continuance of the original patent in the country in which it was issued or granted, and no longer, and all the provisions of this Act shall apply to such letters of registration in the same way *mutatis mutandis*, and as fully as to letters patent or an instrument in the nature of letters patent issued under this Act.

50. The Governor may make regulations for carrying into effect the provisions of this Act, and for regulating the amount, collection, and disposal of the fees in the schedules hereto, and may also from time to time rescind, alter, or vary any such regulations. All such regulations shall, upon publication in the *Government Gazette* of Western Australia, be in force and effect. A copy of every such regulation shall be laid upon the table of the Legislative Council within fourteen days from the issue thereof, or, if the Legislative Council be not sitting, then within fourteen days after the commencement of the next ensuing session. Provided that, until such regulations be made, the fees in the Schedule to this Act contained shall be the fees payable in respect of the matters to which they are respectively applicable.

51. The Act intituled "An Act to regulate Grants of Patents for Inventions in the Colony of Western Australia" is hereby repealed, but without prejudice to the past operation thereof, or to any letters patent lawfully granted or assigned thereunder.

52. The Act 50 Vict., No. 5, is hereby repealed in so far as it relates to Patents, and the Officer therein described as Registrar of Patents, Designs, and Trade-Marks shall be and be called Registrar of Designs and Trade-Marks.

53. Nothing in this Act shall take away, abridge, or prejudicially affect the prerogative of the Crown in relation to the granting of any letters patent or to the withholding of a grant thereof.

In the name and on behalf of the Queen I hereby assent to this Act.

F. NAPIER BROOME, *Governor.*

—

SCHEDULES.

The First Schedule, (*Section* 8,) *Forms of Application, &c.*

FORM A—*Form of Application for Patent.*

I, of in do solemnly and sincerely declare that I am in possession of an invention for that I am the true and first inventor thereof; and that the same is not in use by any other person or persons to the best of my knowledge and belief; and I humbly pray that a patent may be granted to me for the said invention.

And I make the above solemn declaration conscientiously believing the same to be true, etc.

Declared at , in , this day of 18 .

Before me,

Justice of the Peace.

[NOTE.—This declaration must be accompanied by the statement of an address in the city of Perth in Western Australia for the reception of all notices and other communications with respect to the application or invention.]

FORM B—*Form of Provisional Specification.*

I, , of , in , do hereby declare the nature of my invention for to be as follows:—

Dated this day of , 18 .

FORM C—*Form of Complete Specification.*

I, of in of do hereby declare the nature of my invention for and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:

* * * * * *

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1.
2.
3. &c.,

Dated this day of 18 .

FORM D—*Form of Patent.*

Victoria, by the grace of God, of the United Kingdom of Great Britain and Ireland, Queen, Defender of the Faith: To all to whom these presents shall come greeting:

Whereas of in , hath by his solemn declaration represented unto us that he is in possession of an invention for that he is the true and first inventor thereof, and that the same is not in use by any other person to the best of his knowledge and belief:

And whereas the said inventor hath humbly prayed that we would be graciously pleased to grant unto him (hereinafter together with his executors, administrators, and assigns, or any of them, referred to as the said patentee) our Royal Letters Patent for the sole use and advantage of his said invention:

And whereas the said inventor hath by and in his complete specification particularly described the nature of his invention:

And whereas we being willing to encourage all inventions which may be for the public good, are graciously pleased to condescend to his request:

Know ye, therefore, that we of our especial grace, certain knowledge, and mere motion do by these presents, for us, our heirs and successors, give and grant unto the said patentee our especial license, full power, sole privilege, and authority, that the said patentee by himself, his agents, or licensees, and no others, may at all times hereafter, during the term of years herein mentioned, make, use, exercise, and vend the said invention within in such manner as to him or them may seem meet, and that the said patentee shall have and enjoy the whole profit and advantage from time to time accruing by reason of the said invention, during the term of fourteen years from the date hereunder written of these presents: and to the end that the said patentee may have and enjoy the sole use and exercise and the full benefit of the said invention, we do by these presents for us, our heirs and successors, strictly command all our subjects whatsoever within that they do not at any time during the continuance of the said term of fourteen years, either directly or indirectly, make use of or put in practice the said invention, or any part of the same, nor in anywise imitate the same, nor make or cause to be made any addition thereto or subtraction therefrom, whereby to pretend themselves the inventors thereof, without the consent, license, or agreement of the said patentee in writing under his hand and seal, on pain of incurring such penalties as may be justly inflicted on such offenders for their contempt of this our Royal command, and of being answerable to the patentee according to law for his damages thereby occasioned: Provided that these our letters patent are on this condition, that, if at any time during the said term it be made to appear to us, our heirs or successors, or to our Supreme Court that this our grant is contrary to law, or prejudicial or inconvenient to our subjects in general, or that the said invention is not a new invention as to the public use and exercise thereof within , or that the said patentee is not the first and true inventor thereof within this as aforesaid, these our letters patent shall forthwith determine, and be void to all intents and purposes, notwithstanding anything hereinbefore contained: Provided also, that if the said patentee shall not pay all fees by law required to be paid in respect of the grant of these letters patent, or in respect of any matter relating thereto at the time or times, and in manner for the time being by law provided; and also if the said patentee shall not supply or cause to be supplied, for our service all such articles of the said invention as may be required by the officers or commissioners administering any department of our service in such manner, at such times, and at and upon such reasonable prices and terms as shall be settled in manner for the time being by law provided, then, and in any of the said cases, these our letters patent, and all privileges and advantages whatever hereby granted shall determine and become void notwithstanding anything hereinbefore contained: Provided also, that nothing herein contained shall prevent the granting of licenses in such manner and for such considerations as they may by law be granted: and lastly, we do by these presents for us, our heirs and successors, grant unto the said patentee that these our letters patent shall be construed in the most beneficial sense for the advantage of the said patentee. In witness whereof we have caused these our letters to be made patent this one thousand eight hundred and and to be sealed as of the said one thousand eight hundred and [Seal of Patent Office.]

—

The Second Schedule, (*Section* 29,) *Fees to be paid in respect of the several matters hereunder specified:—*

	£	s.	d.
For every application for a patent accompanied by a provisional specification only	1	10	0
Examiner's fee on reference of application with provisional specification, not exceeding	3	3	0
For every application for a patent accompanied by a complete specification	4	0	0

	£	s.	d.
Examiner's fee on reference of complete specification, not exceeding	3	3	0
On extending the time for leaving complete specification	0	5	0
On extending the time for acceptance of complete specification	0	5	0
On every patent before the expiration of four years from its date	4	0	0
And before the expiration of seven years	4	0	0
On filing every amended or substituted specification	1	0	0
On notice of opposition to grant of patent	0	10	6
On every summons to witness	0	5	0
On hearing of every opposed application	1	0	0
On extension of patent	20	0	0
On filing every disclaimer or memorandum of alteration	1	10	0
For every office copy (including the seal) per folio of seventy-two words	0	0	6
On filing every certificate voiding a patent	0	5	0
On deposit of any assignment, deed, license, or other document affecting proprietorship of patent	2	0	0
On delivering triplicate patent after loss, etc	2	0	0
On every search, including inspection	0	2	6
Annual fee for license to patent agent	2	10	0
Certified copies or extracts sealed with the seal, at per folio	0	1	0
For every matter or thing not above provided for	0	5	0

Third Schedule, (*Section* 30.)

Attorney General settling letters of registration	1	3	6
Crown Solicitor	1	1	0

PATENTS REGULATIONS OF JAPAN.

Imperial Ordinance No. LXXXIV.

PATENTS REGULATIONS.

Promulgated December 18, 1888.

Article I.—Any person who has invented any useful technical process, machinery, manufactured or other article, or any improvement on any useful technical process, machinery, manufactured or other article, may secure a patent for the same under these regulations.

Art. II.—For inventions specified below patents will not be granted—

1. Articles of food or drink, or of fashion.
2. Medicines or methods of compounding the same.
3. Articles that have been in public use prior to the application for a patent.

NOTE.—This provision shall not apply in the case of articles that have been in public use for purposes of trial during a period of not more than two years.

Art. III.—Persons desirous of obtaining patents shall apply to the Minister of State for Agriculture and Commerce, transmitting also a written detailed statement with diagrams of each invention.

NOTE.—Such application, statement, and diagrams shall be submitted to the Patents Bureau.

Art. IV.—Every application for a patent shall be placed by the Director of the Patents Bureau before the judges of the Bureau for their examination. If such inspection is satisfactory, the invention shall be duly registered after the approval of the Minister of State for Agriculture and Commerce has been obtained, and a patent certificate shall be issued in due form.

Art. V.—The patent certificate shall be signed by the Minister of State for Agriculture and Commerce and the Director of the Patents Bureau, and handed to the applicant together with his detailed statement and diagrams.

Art. VI.—Patents will be issued for 5, 10, and 15 years, computed from the date of registration.

Art. VII.—In the case of an invention the unrestricted use of which will be for the public interest, or which is of military importance, or should be maintained in secrecy, the Minister of State for Agriculture and Commerce may affix conditions to or decline to grant a patent, or may affix conditions to or withdraw a patent already granted.

In such an event the Minister of State for Agriculture and Commerce may award such compensation as he shall deem suitable to an inventor or patentee.

Art. VIII.—Any person who has invented an improvement upon an already existing patent and desires to secure a patent for such improvement, should first consult the original patentee, and send in his application after having obtained the consent of the latter to use the original invention together with his own. In the event of such consent being withheld, the inventor of the improvement may still send in his application, stating the circumstances, and the Minister may grant him the required patent, but shall fix an amount of compensation to be given by him to the original patentee.

Art. IX.—When a patentee, or an inventor about to apply for a patent dies, his rights and privileges shall go to his heir.

Art. X.—Patents granted to the following classes of inventions shall be held invalid, and none shall be issued in future:—

1. Such as have proved neither new nor useful.
2. Such as are found to come under Art. II.
3. Inventions in the case of which an important fact has been willfully omitted from the detailed statement.
4. Inventions in the case of which some fact not necessary in the working of the same has been willfully inserted in the detailed statement.

Art. XI.—When the judges of the Bureau decide that a patent should not be issued, the Director of the Bureau shall transmit a written report of their examination to the applicant.

Art. XII.—Any person who objects to the above decision may send in an application for a re-examination, stating his grounds for the same. In such an event the judges will re-examine the invention, and should their decision be again adverse, a written statement to that effect will be transmitted to the applicant.

Art. XIII.—When it appears that an invention for which a patent is applied coincides with another for which a patent has been requested or granted, the parties concerned shall be informed of the points of resemblance and required to send in to the Bureau full particulars of their inventions. The judges will then decide the question of priority, and a statement of their decision shall be sent to the parties concerned.

Art. XIV.—When under the foregoing article an existing patent is withdrawn and another issued, the term of the latter shall be computed from the date of registration of the former.

Art. XV.—Any one dissatisfied with decisions under Arts. XII. and XIII. may claim the arbitration of the Patents Bureau.

Art. XVI.—A patentee who finds that his patent rights conflict with those of other patentees may claim the arbitration of the Bureau to secure his rights.

Art. XVII.—Any person who finds that an invention for which a patent has been granted falls under Art. X., may claim the arbitration of the Bureau to decide the question of validity.

Art. XVIII.—When arbitration is required, the Director of the Bureau shall consider the matter with the assistance of not less than two arbitrators.

Art. XIX.—No objection can be raised against the arbitration of the Patents Bureau nor can there be any appeal or resort to a law court.

Art. XX.—When persons affected by the judgment provided by Art. XIII., or by the arbitration of the Patents Bureau, request that evidence should be heard, the Director of the Bureau may require a Peace Court to collect the same.

Art. XXI.—Costs incurred under Arts. XVI. and XVII. shall be borne in accordance with the practice in civil suits.

Art. XXII.—A patent may be sold or transferred or made property in common, with or without conditions, or may be hypothecated, but an application to have such sale, transfer, or hypothecation registered must be sent to the Patents Bureau, and no sale, transfer, or hypothecation shall be held as legally valid towards a third party unless registered.

Art. XXIII.—No official of the Patents Bureau shall apply for or become the owner of a patent while employed in the Bureau.

NOTE.—An official falling heir to a patent shall not come under the above provision.

Art. XXIV.—Patents shall become invalid in the following cases:—

1. When the invention has, without any proper reason, not been practically applied in public for three years after the date of the certificate.
2. When practical use of the invention has, without proper reason, been suspended for a period of three years.
3. When a patentee has imported and sold patented articles from abroad, or has ignored the fact that articles liable to infringe on his rights have been imported and sold.

Art. XXV.—A patentee who has lost his certificate or had it defaced or mutilated, may apply for a new one, stating at the same time the circumstances of the case.

Art. XXVI.—When a patentee discovers that his detailed statement or diagrams were imperfect, he may apply for a revised patent certificate to secure the efficacy of his patent, sending in at the same time a revised detailed statement and diagrams.

NOTE.—This provision shall not apply where important changes in an invention are involved.

Art. XXVII.—When a patentee discovers that he has inserted as his own in his detailed statement something that was not his, he may apply to have the same corrected.

Art. XXVIII.—Applications under the two foregoing articles shall be considered by the Judges of the Bureau. Any persons dissatisfied with the decision of the judges in such a case may apply for re-examination under Art. XII.

Art. XXIX.—Patentees shall affix to their articles such trade marks as are fixed by the Minister of State for Agriculture and Commerce.

Art. XXX.—The following fees shall be paid by persons making applications with reference to patents:—

1. For application to secure a patent—3 *yen* for each invention.
2. For application for registration of sale, transference, hypothecation, &c.—3 *yen* for each invention.
3. For reissue of a patent certificate—1 *yen* for each certificate.
4. For revision of a patent certificate or correction of a detailed statement—5 *yen* for each invention.
5. For a claim for arbitration—7 *yen* for each case.

Art. XXXI.—The following fees shall be paid by persons receiving patent certificates, or revised patent certificates:—
1. A patent for 5 years ..... 10 *yen*.
2. A patent for 10 years ..... 15 *yen*.
3. A patent for 15 years ..... 20 *yen*.

Art. XXXII.—The Patents Bureau shall print and sell at reasonable prices to the public, detailed statements of patented inventions and official reports regarding the same.

Art. XXXIII.—Anyone may, on payment of a suitable fee, receive permission from the Bureau to copy documents or prepare diagrams relating to patents.

Art. XXXIV.—Any person infringing the patent of another shall be held liable for the payment of an indemnity to such other patentee.

Art. XXXV.—Three years shall be regarded as the full term of liability for indemnity.

Art. XXXVI.—Anyone who imitates and employs or sells an imitation of a patented invention, or who employs the same or sells it to others with previous knowledge of the fact of such imitation, or uses the patented technical process of another, shall be liable to major confinement for not less than one month and not more than one year, or to a fine of not less than 20 *yen* and not more than 200 *yen*. Persons who import from abroad for use or sale any article in witting violation of the rights of a patentee, or who, with knowledge of the fact, use or sell imported articles that infringe patent rights, shall be liable to similar punishment.

Art. XXXVII.—Under any of the foregoing circumstances the articles or apparatus in respect of which an offence has been committed shall be confiscated and handed over to the patentee whose rights have been infringed; and in the case of articles which have been sold their value shall be exacted from the offender and handed to the patentee.

Art. XXXVIII.—Persons who fraudulently obtain patent rights or who apply to unpatented articles patent marks or marks resembling the same, or who sell such articles with previous knowledge of those facts, shall be liable to major confinement for a period of not less than 15 days and not exceeding 6 months, or a penalty not less than 10 *yen* and not exceeding 100 *yen*.

Art. XXXIX.—For offences under Art. XXXVI. the criminal investigation shall take place on the initiation of an action by the party injured, and in such a case a judge may on the motion of the injured party suspend the use or sale of the articles on which the cause is based.

Art. XL.—A patentee who neglects to affix a patent mark as provided in Art. XXIX. to his goods cannot appeal or sue for indemnity on account of alleged damages.

Art. XLI.—When a defendant wishes to show that a patent is null and void, he may lay such fact before the Court, and shall, within 30 days subsequently, apply to the Patents Bureau for arbitration as laid down in Art. XVII. In such an event the Court shall suspend judgment pending the conclusion of such arbitration.

Art. XLII.—The provisions of the Penal Code as to the concurrence of several offences shall not apply to offences under these regulations.

Art. XLIII.—Detailed rules for the carrying out of these regulations will be specially prepared by the Minister of State for Agriculture and Commerce.

Art. XLIV.—These regulations shall come into force on February 1st, 1889.

Art. XLV.—The Patents Regulations (Notification No. 7, April, 1885) shall be abolished on the date these regulations come into force.

NOTE.—Patents secured under the former Patents Regulations shall have the same validity as those secured in accordance with the present regulations. Any application for a patent which may not be settled on the date these regulations come into force, will be settled in accordance with the present Patents Regulations.

PATENT LAW OF PERU.

(The following translation of the law of 1869 has been made by Messrs. W. P. Thompson & Co., of Liverpool, Manchester, and London.)

Law of November 28, 1869.

Article 1. Any discovery or invention in any branch of industry whatsoever, gives the author the exclusive right to work it to his profit, under the conditions and during the time determined by this law. This right is derived from a patent granted by the Government.

Art. 2. The following are considered inventions and discoveries: 1st. New industrial products. 2nd. New processes or the new application of known processes for obtaining an industrial product.

Art. 3. The following cannot be patented: 1st. Pharmaceutical preparations or remedies of any kind whatever. 2nd. Plans or combinations of credit or finance. 3rd. Processes having for their object the use of known methods for the improvement of an industry the exercise of which is free within and without the territory of the Republic.

Art. 4. In the third case of the preceding article, will be admitted and then only in cases of necessity, proposals relating to contracts allowed by the laws.

Art. 5. The duration of the patents cannot exceed the term of ten years, and the proprietors shall pay every year a tax of (100) one hundred soles (dollars.)

Art. 6. The applicants for patents of invention or of importation must present themselves at the Prefecture of the department in which they may desire to establish their industry or at the Prefecture of the department in which they reside if it is to be established in two or more departments.

Art. 7. Their application must contain: 1st. The specification of the invention or of the object which it is proposed to introduce. 2nd. The drawings or models necessary for understanding the same. 3rd. The list and explanation of the models presented. 4th. The clear and precise indication or determination of the principal object and of the details which constitute the invention and the specification of its methods of application. 5th. The duration of the patent. 6th. The indication of the guarantees presented for the realization of the product.

Art. 8. This application shall be written in Spanish and, in conformity, as regards the metric system of weights and measures, with that in use in the Republic. In the case of an application for patent bearing the signature of a foreigner, this latter must expressly reject all diplomatic intervention with regard to the patent applied for, and must submit, absolutely and exclusively to the laws and tribunals of the Republic. Without this condition his application will not be taken under consideration.

Art. 9. The prefects will, with regard to the application for patent, take the opinion of the municipality, the treasury or agent of the treasury, or other functionaries according to the nature of the case and will consult experts if required. After having fulfilled these formalities they will forward the documents, with the specification, plans, models, &c., to the proper authorities at the expense of the person interested.

Art. 10. The Minister of the said department will take the opinion of the treasury of the Supreme Court and of any other functionaries which he may consider necessary to consult and, according to the information he may receive, will grant or refuse the patent.

Art. 11. A prolongation of the duration of patents as well as changes or alterations in the terms of the same can only be granted by a resolution of the legislature, made at the request of the persons interested and for just causes founded on proved facts and authentic documents.

Art. 12. The proprietor of a patent alone may work such patent during the period of its duration. Any other person desiring to do so must be authorized by him or must be put in his place and stead by a contract of transfer or by any other means provided by the laws.

Art. 13. The patents are void and of non effect in the following cases: 1st. If the discovery, invention or application be not new. 2nd. If the object of the patent do not come under the terms of art. 2. 3rd. If the patent refer to principles, methods systems, or theoretical or scientific discoveries for which no industrial application is shown. 4th. If the discovery, invention or application be contrary to order and public safety, or to the laws without exemption, in this case, from the penalties imposed upon manufacturers or merchants of prohibited objects. 5th. If it should appear that the applicant for a patent has fraudulently obtained privilege for an object different to and distinct from the invention. 6th. If, on working the invention it be found not to agree with the specification annexed to the application. 7th. If the patent have been obtained in infraction of any of the provisions of the present law. 8th. If, at the same time as the patent there be given pecuniary grants not included in the budgets of the Republic, or contrary to the laws. Authorizations relating to changes, additions or improvements not contained in the original patent are also void and of non effect.

Art. 14. A discovery, invention or application will not be considered new which prior to the date of application for the patent shall have had, in Peru or elsewhere, sufficient publicity to enable it to be put in practice.

Art. 15. The proprietor will forfeit his rights if, 1st, he do not pay the annuity or tax fixed in art. 2. 2nd. If he do not put in practice the discovery or invention within two years or any term which may be stated on the Letters Patent unless he can legally justify his delay. 3rd. If he introduce objects manufactured abroad and similar to those protected by his patent with the sole exception of the models of machines the introduction of which may be authorized by the Government after due investigation.

Art. 16. Whoever shall by means of advertisements, prospectuses marks or otherwise give himself the title of proprietor of a patent without legally possessing such patent or after it has gone void shall be punished by a fine of fifty (50) to a thousand (1000) soles (dollars) without exempting him from the penalties incurred for the crime of forgery.

Art. 17. All persons who may be justly interested will have the right to demand the voidance or lapsing of a patent. The public prosecutor will take part in the action and if the patent be declared null or lapsed, from whatever cause, notice will be given thereof by the said prosecutor.

Art. 18. Any infringement of the rights of a proprietor of a patent, whether in the manufacture of the products or in the use of processes mentioned in the application will constitute the crime of adulteration and will be punished, according to the importance of the case, by a fine in favor of the person interested and by the confiscation of the objects manufactured.

Art. 19. All privileges or patents at present in force and which have been granted in conformity with provisions prior to this law, will remain in force for the whole period for which they have been granted.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 48—No. 12. TUESDAY, SEPTEMBER 17, 1889. PRICE—$5 per year.

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Changes in Classification.

(ORDER No. 573.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 2, 1889.

The following changes are directed in Division IV:

New Class 189, Iron Structures, and sub-classes thereunder are established, as follows:

1. Jails.
2. Buildings.
3. Grilles.
4. Metallic ceilings.

The following sub classes are established:

In Class 14, Bridges:
11. Flooring.
12. Truss, Bow-string.

In Class 108, Roofing:
8. Flashing.

In Class 150, Fire Escapes and Ladders:
20. Fluid-check.
21. Fly-check.
22. Escapement-check.
23. Governor-check.

ROBERT J. FISHER,
Acting Commissioner.

Additional Sub-Classes.

(ORDER No. 579.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 3, 1889.

The following additional sub-classes are hereby established in Division XXVI:

In Class 171, Electricity, Generation:
121. Inductoriums—
122. Induction-coils.
123. Transformers, Rotary.
124. Transformers, Stationary.
125. Pyro-magneto-electric devices.

In Class 172, Electricity, Motive-Power:
126. Motors, Reciprocating.

ROBERT J. FISHER,
Acting Commissioner.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

48 O G—12—1

Issue of September 17, 1889.

Patents	412—No.	411,000 to No. 411,411, inclusive.
Designs	5—No.	19,314 to No. 19,318, inclusive.
Trade-Marks	32—No.	17,015 to No. 17,046, inclusive.
Labels	7—No.	6,014 to No. 6,020, inclusive.
Reissue	1—No.	11,080.
Total issue	457	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nebraska	4	....
Arizona Territory	....	....	Nevada	1	....
Arkansas	1	....	New Hampshire	3	....
California	4	1	New Jersey	24	....
Colorado	1	....	New Mexico Territory	1	....
Connecticut	14	....	New York	51	5
Dakota Territory	3	....	North Carolina	....	....
Delaware	....	....	Ohio	30	1
District of Columbia	6	1	Oregon	1	1
Florida	....	....	Pennsylvania	44	....
Georgia	5	....	Rhode Island	6	....
Idaho Territory	....	....	South Carolina	1	....
Illinois	34	2	Tennessee	5	....
Indian Territory	....	....	Texas	2	....
Indiana	8	....	Utah Territory	1	....
Iowa	5	....	Vermont	....	....
Kansas	6	....	Virginia	3	1
Kentucky	4	1	Washington Territory	....	....
Louisiana	3	....	West Virginia	....	....
Maine	4	2	Wisconsin	3	....
Maryland	6	....	Wyoming Territory	....	....
Massachusetts	50	....	United States Army	....	....
Michigan	13	....	United States Navy	....	....
Minnesota	9	....			
Mississippi	....	....	Total to citizens of the United States	371	16
Missouri	14	1			
Montana Territory	....	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Germany	11	....
Australia	....	....	Italy	....	1
Austria-Hungary	....	....	Japan	1	....
Belgium	1	....	Mexico	....	....
Bermuda	....	....	New South Wales	....	....
Brazil	....	....	New Zealand	....	....
Canada	7	....	Norway	....	....
Chili	....	....	Scotland	5	....
Costa Rica	....	....	Spain	....	....
Cuba	....	....	Sweden	....	....
Curaçoa	....	....	Switzerland	2	....
Denmark	1	....			
England	16	2	Total to citizens of foreign countries	46	23
France	2	20			

DESIGNS.

19,314.—APPAREL-COLLAR.—*Frederick Beiermeister, Jr.*, Troy, N. Y. Application filed July 17, 1889. Serial No. 317,810. Term of patent 14 years.

19,315.—HOSE-CARRIAGE BODY.—*Warren C. Gleason* and *James C. Ryan*, Chicago, Ill. Application filed May 22, 1889. Serial No. 311,741. Term of patent 7 years.

19,316.—GRAVE-MARKER.—*Henry F. Jenks*, Pawtucket, R. I. Application filed July 5, 1889. Serial No. 316,572. Term of patent 14 years.

19,317.—ARTIFICIAL FEATHER.—*Hugo H. Plaut*, New York, N. Y. Application filed January 19, 1889. Serial No. 296,949. Term of patent 3½ years.

19,318.—CURTAIN.—*William T. Smith*, Philadelphia, Pa. Application filed May 13, 1889. Serial No. 310,649. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

17,015.—CHEWING-GUM.—*Frank J. Banta*, Lima, Ohio. Application filed July 13, 1889. Used since March 1, 1889.
"The words 'SWEET CLOVER.'"

17,016.—PILLS OF ESSENCE OF TAR.—*A. Bertelli & Co.*, Milan, Italy. Application filed June 4, 1889. Used since December, 1884.
"The device of a hand holding a serpent."

17,017.—CHAMPAGNE-WINE.—*Joseph Bollinger*, Ay, France. Application filed July 18, 1888. Used since 1883.
"The representation of a comet and the word 'BOLLINGER.'"

17,018.—NATURAL MINERAL-SPRING WATER.—*David Wolfe Brown*, Washington, D. C. Application filed August 6, 1889. Used since July 1, 1889.
"The word 'MAGNOLIA.'"

17,019.—COTTON THREAD.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1854.
"The word 'ALGÉRIEN.'"

17,020.—COTTON THREAD.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1854.
"The representation of a stocking."

17,021.—COTTON THREAD.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1873.
"The representation of a whip and the word 'FOUET.'"

17,022.—COTTON THREAD.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1840.
"The words 'A LA CROIX ROUGE.'"

17,023.—COTTON THREAD.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1856.
"The representation of a hooked needle and the words 'AU CROCHET.'"

17,024.—COTTON THREAD.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1872.
"The representation of a glove and the words 'AU GANT.'"

17,025.—COTTON THREAD.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1868.
"The words 'A LA LYRE' and the representation of a lyre."

17,026.—COTTON LACE.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1861.
"The representation of an acorn and the words 'AU GLAND.'"

17,027.—COTTON THREAD.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1865.
"The representation of a hand and the words 'A LA MAIN.'"

17,028.—COTTON THREAD.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1833.
"The letters 'C B.'"

17,029.—COTTON LACE.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1862.
"The representation of a cross and the words 'A LA CROIX.'"

17,030.—COTTON THREAD.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1867.
"The representation of a human foot and the words 'AU PIED.'"

17,031.—COTTON THREAD.—*Les Fils de Cartier-Bresson*, Paris, France. Application filed August 21, 1888. Used since 1874.
"The representation of an acorn and the words 'AU GLAND.'"

17,032.—COMMERCIAL NOTE WRITING-PAPER.—*H. S. Crocker & Co.*, San Francisco, Cal. Application filed July 19, 1889. Used since 1876.
"The pictorial representation of a lake surrounded with mountains, with its foreground of rocks and trees, and the words 'COMMERCIAL NOTE.'"

17,033.—MEDICINE AGAINST SEA-SICKNESS.—*Eugène Fournier*, Paris, France. Application filed June 11, 1888. Used since May, 1885.
"The word 'PELAGINE.'"

17,034.—LIQUOR EXTRACTED FROM CHERRIES.—*Dubonnet Frères*, Paris, France. Application filed July 18, 1888. Used since September, 1884.
"The words 'ROYAL MONTMORENCY.'"

17,035.—PAINTS, COMPOSITIONS, ANTI-CORROSIVES, AND ANTI-FOULERS.—*Suter, Hartmann & Rahtjens Composition Company, (Limited.)* London, England. Application filed December 14, 1888. Used since January, 1884.
"The representation of an open hand."

17,036.—SHOE-ELASTIC, BOOTS, AND SHOES.—*Herbert & Rapp Company*, Brockton and Boston, Mass. Application filed June 20, 1889. Used since June 13, 1889.
"The representation, in any colors, of the rear half of a Congress shoe with upper part turned back, showing inside of the right-hand portion, on which is a strip with 'HUB GORE, &c. On the lower part are the words 'THE ELASTIC IN A CONGRESS SHOE IS CALLED 'GORE.'"

17,037.—CHAMPAGNE.—*Krug & Co.*, Rheims, France. Application filed July 17, 1889. Used since March, 1865.
"A hand-roll with the word 'KRUG.'"

17,038.—PARCHMENTIZED PAPER.—*The Leatheroid Manufacturing Company*, Kennebunk, Maine, and Boston, Mass. Application filed August 2, 1889. Used since May 6, 1861.
"The word 'LEATHEROID.'"

17,039.—CHOCOLATE.—*Menier*, Paris, France. Application filed July 16, 1888. Used since 1836.
"The word 'MENIER.'"

17,040.—UNDERWEAR.—*J. Meyer & Co.*, New York, N. Y. Application filed July 24, 1889. Used since July 1, 1889.
"The block-letter 'M' printed within an ellipse which is surrounded by a design approximately diamond-shaped."

17,041.—METALLIC PENS.—*Poure, O'Kelly & Co.*, Boulogne, France. Application filed July 18, 1888. Used since March, 1885.
"The representation of the cross of the Legion of Honor upon a groundwork of pens set in lines."

17,042.—GLYCERINE-CREAM.—*Joseph Simon*, Paris, France. Application filed June 11, 1888. Used since 1876.
"The picture of Figaro."

17,043.—CATHETERS, BOUGIES, STOMACH, RECTUM, AND VAGINA TUBES, SPECULA AND EUREKA TUBES.—*Henry Bedford Sleeman*, London, England. Application filed November 15, 1888. Used since November 2, 1888.
"A triangle and the letters 'P. P. W.'"

17,044.—AXLE AND SHAFTING GREASE AND OIL.—*Rufus D. Stetson*, Chicago, Ill. Application filed August 2, 1889. Used since March 1, 1881.
"The word 'CHALLENGE.'"

17,045.—LIGHT BREAD, CAKES, PIES, AND ALL BAKERY PRODUCTS.—*Benjamin H. Smith*, Kansas City, Mo. Application filed August 9, 1889. Used since June 1, 1889.
"The words 'NEW PROCESS.'"

17,046.—LIQUID REMEDY FOR INTERNAL AND EXTERNAL USE.—*John F. Venner*, Portland, Oreg. Application filed May 31, 1889. Used since April 20, 1889.
"The letters 'O E R' arranged in a monogram."

LABELS.

6,014.—Title: "DIEHL'S SAUSAGE."—*George H. Diehl*, Chicago, Ill. Application filed August 23, 1889.

6,015.—Title: "DART." (For a dress-stay.)—*Austin Kelley*, Brooklyn, N. Y. Application filed August 20, 1889.

6,016.—Title: "UNDER-ARM." (For a dress-stay.)—*Austin Kelley*, Brooklyn, N. Y. Application filed August 20, 1889.

6,017.—Title: "SIDE-BACK." (For a dress-stay.)—*Austin Kelley*, Brooklyn, N. Y. Application filed August 20, 1889.

6,018.—Title: "ONE SOLID FOOT OF CHEWING TOBACCO FOR 10 CTS." (For tobacco.)—*L. P. Stovall & Co*, Danville, Va. Application filed August 7, 1889.

6,019.—Title: "VOELCKER'S PRUNE SYRUP LAXATIVE."—*Jacob C. H. Voelcker*, Louisville, Ky. Application filed August 19, 1889.

6,020.—Title: "WHITE PINE." (For a cough cure.)—*Robert J. Watt*, Greenwich, N. Y. Application filed August 19, 1889.

PATENTS

GRANTED SEPTEMBER 17, 1889.

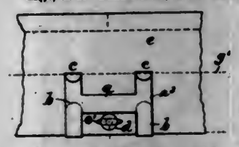
411,000. BOLT. EMELD ARENBERG, Peekskill, N. Y. Filed July 13, 1889. Serial No. 317,570. (No model.)

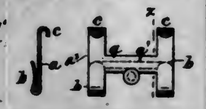


Claim.—1. A bolt-head formed from one piece of metal into two square sections, one above the other, one section having its sides stand at an angle of forty-five degrees with the sides of the other, substantially as shown.

2. A bolt-head formed from one piece of metal into two or more sections, arranged one above another, the relative position of their sides being symmetrically angled, substantially as shown and described.

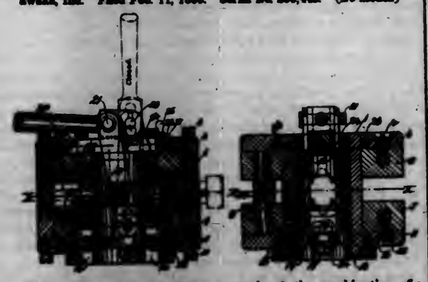
411,001. NECKTIE-FASTENER. HENRY W. ATWATER, East Orange, N. J. Filed Dec. 5, 1888. Serial No. 292,693. (No model.)





Claim.—The holder for necktie, constructed from sheet metal, substantially as herein described, with the bar *a*, having cross-pieces a^2 at its extremities, each cross-piece being provided at opposite sides of the bar with spring-clip *b* and hook *c*, respectively, and the bar being adapted to bear upon the upper side of the collar-button shank to support the holder, as and for the purpose set forth.

411,002. BOLT-THREADING MACHINE. JAMES A. BRUNER, Mishawaka, Ind. Filed Feb. 11, 1889. Serial No. 299,445. (No model.)



Claim.—1. In a screw-cutting turret-head, the combination of a turret-post with its upper and lower opening and closing turret-jaws, and their cutting-dies arranged around their peripheries, and mechanism for operating the said jaws, substantially as and for the purpose described.

2. In a screw-cutting turret-head, the combination of a turret-post with its upper and lower opening and closing turret-jaws and their corresponding pairs of dies adjustably secured around their peripheries, substantially as and for the purpose described.

3. In a screw-cutting turret-head, the combination of the receding and approaching turret-jaws mounted and moving freely on a suitable supporting-post, with their corresponding pairs of cutting-dies arranged around their peripheries and having their cutting-faces turned inwardly, substantially as and for the purpose described.

4. In a screw-cutting turret-head, the combination of an upper receding and approaching turret-jaw with a similar lower turret-jaw mounted and adapted to rotate on a suitable post, said upper and lower jaws having radial grooves formed on their inner surfaces coincident with the radial centers of the cutting-dies, substantially as and for the purpose described.

5. In a screw-cutting turret-head, the upper and the lower receding and approaching turret-jaws mounted and adapted to rotate on a suitable post, said jaws having radial grooves formed on their inner surfaces and arranged in opposite pairs to coincide with opening formed in turret-post in line of centers of cutting-faces of dies, substantially as and for the purpose described.

6. In a screw-cutting turret-head, the combination of an upper receding and approaching turret-jaw and its guide-pins secured perpendicularly to its inner surface, with a lower receding and approaching turret-jaw, the latter jaw being provided with guide-holes formed therein to loosely receive said guide-pins, substantially as and for the purpose described.

7. In a screw-cutting turret-head, the combination of an upper receding and approaching turret-jaw and its guide-pins secured perpendicularly to its inner surface with a similar lower turret-jaw provided with guide-holes to freely receive said guide-pins, said jaws arranged to be rotated simultaneously, substantially as and for the purpose described.

8. In a screw-cutting turret-head of the character described, the combination of an upper turret-jaw and its cap secured thereto and an upper cross-head arranged to slide in guides formed in turret-post, and having its projecting ends inserted into an annular groove formed between the surfaces of the said upper turret-jaw and its cap, with a lower turret-jaw, cap, and cross-head of like construction, and toggle-links connecting said cross-heads for opening and closing said jaws, substantially as and for the purpose described.

9. In a screw-cutting turret-head, the combination of an upper receding and approaching turret-jaw and a lower receding and approaching turret-jaw with their expanding springs contacting with inner surfaces of said jaws, substantially as and for the purpose described.

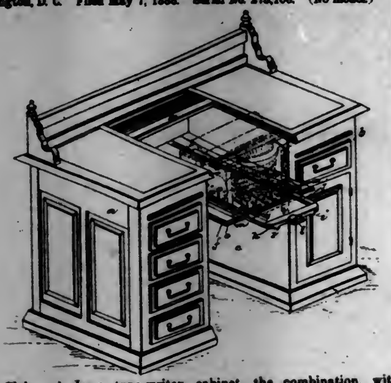
10. In a screw-cutting turret-head, the combination, with the turret-post, the turret-jaws, and their cross-heads, of the character described, of an interchangeable stop-pin arranged to be inserted into stop-holes formed in top turret-cap and top cross-head, substantially as and for the purpose described.

11. In a screw-cutting turret-head of the character described, the combination, with the post 1, fulcrum 22, carrying turret-cap 3, and its upper disengaging jaw 2, having adjustable dies 5 arranged around its periphery and adjusted by the screws 6, of the lower disengaging turret-jaw 7 and its cap 11, said jaw 7 having adjustable dies 9 arranged around its periphery and adjusted by the screws 10, and means for opening and closing the jaws, substantially as and for the purpose set forth.

12. In a screw-cutting turret-head, the combination, with the upper disengaging turret-jaw 2 and its cap 3, mounted on post 1 and having the guide-pin 8 secured thereto, and their spring 26, encircling said pins, of the lower disengaging turret-jaw 7 and its cap 11, said jaw provided with holes to loosely receive said guide-pins and limited in its motion by its cap 11, connecting with end of said guide-pins, substantially as and for the purpose described.

13. In a screw-cutting turret-head, the combination of the turret-post and its upper and lower disengaging jaws with the cross-piece sliding in the slots 14 and having its ends inserted in the annular groove 15, the toggles 18, hinged to bolt 16 by the pin 19 on their lower ends and on their upper ends to the handle 20 by the pin 21, and handle fulcrumed by the pin 23 to the fulcrum 22, sliding in notches 24, formed on turret-post 1, and having its ends inserted in grooves 25, formed in cap 11, all substantially as and for the purpose described.

411,003. TYPE-WRITER CABINET. LOTHER G. BILLING, Washington, D. C. Filed May 7, 1888. Serial No. 273,108. (No model.)



Claim.—1. In a type-writer cabinet, the combination, with stationary ends connected by a back, with a well between them and a dust-board in the well, of a platform pivoted in the well and having its side and rear edges provided with felt, cloth, rubber, or other flexible material, whereby the spaces between the platform, the dust-board, and the sides of the well are filled up, substantially as and for the purposes described.

2. In a type-writer cabinet having a well and usual dust-board therein, a pivoted platform in said well, combined with flexible packing-strips arranged upon its sides and rear end to exclude rising dust, and also to insulate the platform from the cabinet and impede or intercept the transmission of sound, substantially as described.

3. In a type-writer cabinet having an open-front well to receive the machine, a platform pivoted in said well and adapted to be moved toward the operator, combined with a machine-carriage arranged upon the face of the platform and adapted to be moved thereon toward the operator, substantially as and for the purpose described.

4. In a type-writer cabinet having an open-front well to receive the machine, a platform pivoted in said well and adapted to be moved toward the operator, and having parallel dovetail grooves in its face, combined with slides having rails arranged in said grooves, and thereby secured to the platform, and constituting a carriage to receive the machine and adapted to be moved toward the operator, substantially as described.

5. In a type-writer cabinet having an open-front well, a platform pivoted in said well and adapted to be moved toward the operator, and having grooves in its face, combined with a machine-carriage comprising slides and rails fitted in said grooves, and also adapted to be moved toward the operator additionally to the movement of the platform, the slides being provided with sockets to receive the usual feet of the machine, and turn-buttons to lock the machine to the slides and incidentally to fix the slides in given position, substantially as described.

6. In a type-writer cabinet having an open-front well, the pivoted platform for moving the machine toward the operator for use and back again for disuse, having longitudinal grooves in its face, and a traversing carriage provided with rails fitted to slide in said grooves and adapted to receive the machine and further move it toward the operator, combined with a screw to retain the carriage in adjusted position, substantially as described.

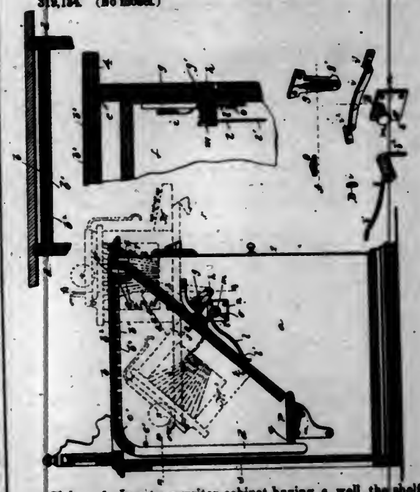
7. In a type-writer cabinet having an open-front well, the pivoted platform for moving the machine toward the operator for use and back again for disuse, and provided with face grooves, combined with a carriage adapted to further move the machine toward the operator, and having rails fixed to it and fitted to slide in said grooves and of a height greater than the depth of the grooves to elevate the carriage slightly above and so insulate it from the platform, substantially as described.

8. In a type-writer cabinet, the sides *a b* and open-front well *c* between them, combined with the platform pivoted in said well and adapted to move toward the operator and having grooves in its face, and the machine-carriage adapted to further move the machine toward the operator, and having parallel slides constructed with rails which are fitted in said grooves, and the cross-piece connecting the slides at their outer or leading ends and provided with a handle, substantially as described.

9. In a type-writer cabinet, the combination of a platform arranged in a horizontal plane for supporting the machine for use within the cabinet and having grooves in its face, a machine-carriage having slides and rails fitted to said grooves and adapted to be drawn forward beyond the front of the cabinet, and so as to project over the front edge of the platform and well into the lap of the operator, stationary pins on the platform, and intercepting movable pins on the carriage to arrest the forward movement of the carriage, substantially as described.

10. In a type-writer cabinet, the platform arranged in a horizontal plane for supporting the machine for use within the cabinet, combined with an extension for receiving the machine, movable upon the platform and adapted to be projected not only beyond the front of the cabinet, but also over the outer end of the platform, thus to place the machine well out of the cabinet and into the lap of the operator, as desired, substantially as described.

411,004. CABINET FOR TYPE-WRITERS. LOTHER G. BILLING, Washington, D. C. Original application filed Mar. 22, 1888, Serial No. 268,134. Divided and this application filed July 30, 1889. Serial No. 318,184. (No model.)



Claim.—1. In a type-writer cabinet having a well, the shelf for the machine, and arms for supporting the shelf rigidly secured to the shelf at points forward of a line drawn midway between its ends and projecting below said shelf, and pivots for said arms arranged near the front of the cabinet, all constructed and arranged to throw the front of the shelf out of the well and beyond the front of the cabinet when the shelf is brought into a horizontal position, and guides for said arms, which also serve to limit their throw, substantially as shown.

2. The cabinet or desk having end sections, combined with a shelf arranged between such sections, arms secured rigidly to the sides of the shelf and projecting below the shelf and pivoted to the cabinet at their lower ends, and guides or ways embracing said arms, whereby the shelf is not only pivoted and guided in its movements, but it and the end sections are intimately and securely united, substantially as described.

3. The cabinet or desk having a well, a shelf arranged in said well, arms secured rigidly to the sides of the shelf and pivoted to the cabinet within the well, and guides or ways embracing said arms and controlling the extent of their movement, combined with the coiled springs arranged in conjunction with the shelf, so as to tend to throw the shelf into horizontal position, substantially as described.

4. In a cabinet, the combination, with the shelf and its pivoting-arms, of guides or ways about which the shelf moves, and on which it takes bearings in its positions of use and disuse, substantially as described.

5. In a cabinet, the combination, with the shelf and its pivoting-arms, of segmental cervilinear ways receiving and guiding such arms and forming bearings for the shelf, and stops in the ends of said ways to arrest the arms and shelf in their two positions, substantially as described.

6. In a type-writer cabinet, the combination, substantially as shown and described, of the two sides and a back connecting them and having a well or recess bounded on three sides by said sides and back, a flat top for the well, a platform pivoted in said well and adapted to be inclined rearward and inclosed in the well by the sides and top and provided with hooks to engage loosely the inner walls of the base of the type-writing machine and permit such machine to

be slipped back upon the inclined platform so as to be inclosed within the well by the top, sides, platform, and back, and to be drawn forward beyond the front of the desk when the well is uncovered and the platform is brought into a horizontal position.

7. In a type-writer cabinet, the pivoted shelf provided with hooks to engage the machine, and guide-pins for keeping the machine in place on the shelf, and at the same time admitting of its being freely moved, substantially as described.

8. In a cabinet, the shelf pivoted out of its center of gravity within said cabinet, combined with coiled springs of slightly greater resistance than the combined weight of the shelf and the type-writing machine, and arranged beneath the shelf and in the rear of its pivots and attached to the side walls of the recess on opposite sides of the shelf, and having their free ends extended toward the rear of and engaging said shelf, whereby the springs are held in tension by said shelf, so that the said springs tend to force the shelf into a horizontal position and are overcome by the weight of the machine and shelf under the manipulation of the operator and permit the shelf to gain an inclined position without jar or shock, substantially as described.

9. In a cabinet, the combination, with the sides and the shelf pivoted in the well between said sides, of coiled springs and fastenings therefor, consisting of headed studs, upon which the coils of the springs are slipped when free from tension, and by the heads of which the coils are retained by their decrease in diameter when under tension, posts for locking one end of the springs, and plates from which the studs and posts rise, and by which they and the springs are secured to the cabinet, substantially as described.

411,005. CORN AND FERTILIZER DROPPER. JOHN P. BIRMINGHAM, Lexington, Va., assignor of one-half to Andrew T. Staton, same place. Filed June 17, 1889. Serial No. 314,853. (No model.)

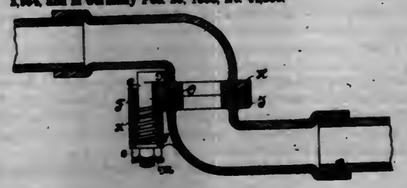


Claim.—1. The combination, with the frame, and the bifurcated arm N, fitting a socket in the platform on said frame, of the wheel B, having a lateral lug, the lever M, the slide carried thereby, the removable pin connecting said lever and arm N, and the cord O, connecting said pin with the side bar of the frame, substantially as described.

2. The combination, with the frame, the wheel, and the slide, of the transverse bar *m*, connecting said slides, the levers L M, the latter formed with elongated slot *r*, through which said bar *m* passes, and the former with an open-ended slot O, the standards, and the transverse rods *b*, connecting the upper ends of said standards and engaging the slot *e* of the lever L, and provided with a step *g*, substantially as shown and described, and for the purpose specified.

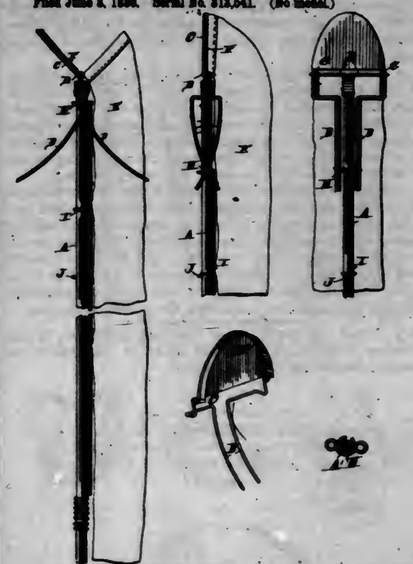
3. The combination, with the hopper, the slides working vertically in guides therein, the wheel B, having the lugs upon opposite sides thereof, the transverse bar *m*, connecting the upper ends of the slides, and the roller *n* on said bar between the slides, of the standards, transverse bar *p*, connecting the upper ends thereof, the lever having its free end arranged in the path of one of the lugs on the wheel, and its other end bifurcated and engaging the bar connecting the standards, and connected with the bar connecting the slides, and the lever having its free end arranged in the path of the other lug on the wheel, and having its rear end slotted and engaging the bar connecting the slides, and a support for the said lever between its ends, substantially as shown and described.

411,006. PIPE-CONNECTION FOR PNEUMATIC BRAKES. LUDWIG BLATZ, Cannstad, Würtemberg, Germany. Filed Mar. 26, 1888. Serial No. 304,390. (No model.) Patented in England Feb. 27, 1888, No. 2,934, and in Germany Feb. 29, 1888, No. 44,358.



Claim.—In pipe-connections for pneumatic brakes and the like, the combination, with two sections of pipe, of flanges H J in the ends thereof, respectively, an annular space between said flanges, a ring O therein, sockets on one of said flanges, hooked bolts G N in said sockets, and springs K, operating on said hooked bolts, substantially as and for the purpose set forth.

411,007. FRUIT-GATHERER. CHARLES J. BLOOM, Atchison, Kans. Filed June 5, 1889. Serial No. 313,541. (No model.)

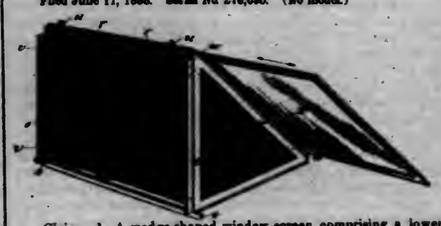


Claim.—1. The combination of the handle, the jaws mounted thereon and having depending crossed arms, and the operating-rod mounted on the handle and provided with rings or eyes engaging the crossed arms of the jaws, as set forth.

2. The combination of the handle, the pin projecting therefrom, the jaws mounted on the handle and having depending crossed arms, and the operating-rod mounted on the handle and having rings or eyes engaging the crossed arms and provided with an offset adapted to impinge against the pin projecting from the handle, as set forth.

3. In a fruit-gather, the handle having the lateral arms B, the jaws mounted thereon and consisting of wire frames C, which are fulcrumed on the arms B, and are provided with the integral depending crossed spring-wire arms D, and the operating-rod provided with rings or eyes H, which slide on the crossed arms D, for the purpose set forth.

411,008. WINDOW-SCREEN. LUDWIG W. BRAUN, Chicago, Ill. Filed June 11, 1888. Serial No. 276,695. (No model.)



Claim.—1. A wedge-shaped window-screen comprising a lower horizontal rectangular frame, an upper inclined rectangular frame, the outer edge of which rests upon the outer edge of the lower frame, and a pair of triangular end frames connecting said upper and lower frames at the ends thereof, all of said frames being covered with wire-gauze substantially as and for the purpose described.

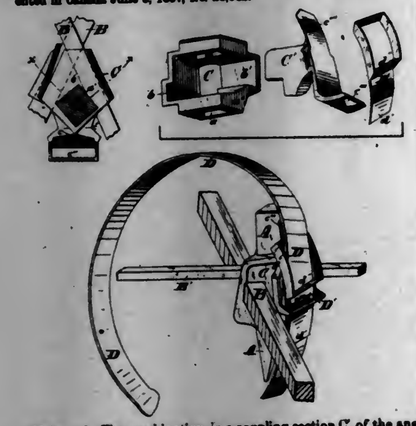
2. A hollow wedge-shaped window-screen comprising a lower horizontal rectangular frame, an upper inclined rectangular frame hinged thereto at the outer edge thereof, and a pair of triangular end frames hinged to said upper frame and connecting and supporting the same upon the lower frame, all of said frames being covered with wire-gauze, substantially as described.

3. A hollow wedge-shaped window-screen comprising a lower horizontal rectangular frame provided with a strip to rest upon the window-sill between the stiles of the frame thereof, an upper inclined rectangular frame hinged to the lower frame at the outer edge thereof and provided with cleats adapted and arranged to abut against the upper sash of the window, and triangular end frames hinged to said upper frame at the ends thereof, connecting the same with and supporting it upon the lower frame, all of said frames being covered with wire-gauze, and lock-bolts upon said triangular frames adapted and arranged to engage corresponding sockets in the bottom frame, whereby the frame may be locked in position, substantially as described.

4. In a hollow wedge-shaped window-screen, the combination, with the lower horizontal rectangular frame, the upper inclined rectangular frame connected therewith at the outer edge thereof, and a pair of triangular end frames connecting said upper and lower frames at the ends thereof, all of said frames being covered with wire-gauze, of a removable cover for said upper frame, having a sliding connection therewith, substantially as and for the purpose described.

5. In a hollow wedge-shaped window-screen, the combination, with the lower horizontal rectangular frame, the upper inclined rectangular frame hinged thereto at the outer edge thereof, and a pair of triangular end frames hinged to said upper frame at the ends thereof, connecting the same with and supporting it upon the lower frame, all of said frames being covered with wire-gauze, of guide-strips along the upper and lower edges of said upper frame, and a removable shade guided and working between said strips, substantially as described.

411,009. HARROW. AUSTIN CALLANDER, Merrickville, Ontario, Canada. Filed Feb. 27, 1889. Serial No. 301,383. (No model.) Patented in Canada June 8, 1887, No. 26,912.



Claim.—1. The combination, in a coupling-section C, of the angular face, the top *c*, cheek *c'*, mortise *c²*, neck *c³*, upwardly-tapering tongue *c⁴*, and stirrup *c⁵*, substantially as set forth.

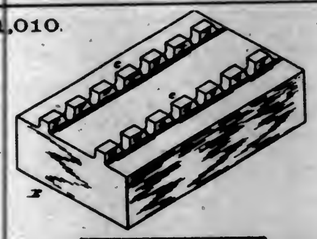
2. In a harrow, the combination of the bulls B B', crossing each other at an angle and held in a coupling, the main body of a coupling C, having mortises for the free insertion of the bulls and for the tight insertion of the tooth A, a loose section C', having a mortise for the tooth A, and faces pressing against the bulls when wedged in the main body by said tooth, the tooth A passing through the main body of the coupling and the loose piece C' and wedging the latter against the bulls, said loose piece provided with an attachment *c⁶*, *c⁷*, and *c⁸*, substantially as set forth.

3. In a harrow, the combination of the bulls B B', crossing each other at an angle and contained in a coupling, the main body C of a coupling provided with mortises for the free insertion of the bulls and a vertical mortise for a straight harrow-tooth, a loose coupling-piece C', provided with faces impinging on the bulls, and a mortise to be engaged by the harrow-tooth and locked in said body, said piece C' being provided with an attachment *c⁶* *c⁷* *c⁸*, for the reception of a spring-tooth, the straight tooth A, passing through said coupling and engaging the loose piece and wedging the bulls, the spring-tooth D, and the spring-tooth clip D', substantially as set forth.

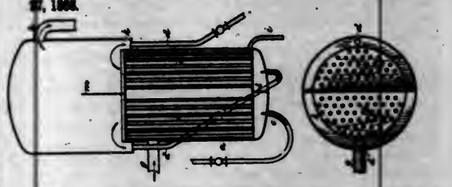
411,010. PAVING-BRICK. HORACE R. CAMP, Talladega, Ohio. Filed May 2, 1889. Serial No. 309,382. (No model.)

Claim.—As an improved article of manufacture, a paving-brick having on one side one or more serrated ridges, substantially as shown, and for the purpose specified.

411,010.



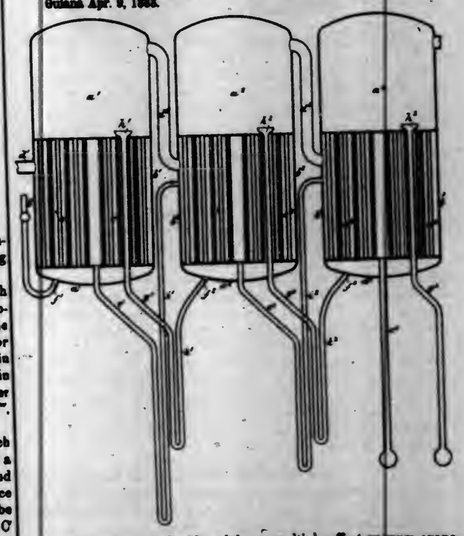
411,011. EVAPORATING APPARATUS. ALFRED CHAPMAN, Liverpool, England. Filed Oct. 6, 1888. Serial No. 287,441. (No model.) Patented in England Feb. 6, 1888, No. 1,782, and in British Guiana Mar. 27, 1888.



Claim.—1. In an evaporating-pan, the steam-drum *c* and the tubes *b* therethrough for the upward flow of the liquid, in combination with the recess or well *k*, the bottom of which is below the upper ends of said tubes *b*, and a downflow-tube *d*, extending from the bottom of said recess or well, substantially as set forth.

2. In an evaporating-pan, the combination, with the steam-drum *c*, and with the tubes *b*, for the upward flow of the liquid, of the partitions *l* and *m*, recess or well *k*, and downflow-tubes *d*, exterior to the pan, substantially as set forth.

411,012. VACUUM EVAPORATING APPARATUS. ALFRED CHAPMAN, Liverpool, England. Filed Oct. 6, 1888. Serial No. 287,442. (No model.) Patented in England Feb. 20, 1888, No. 2,511, and in British Guiana Apr. 9, 1888.

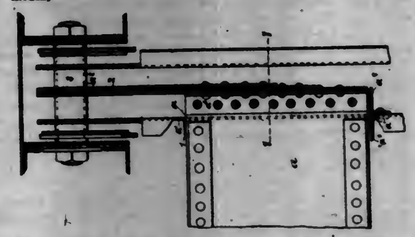


Claim.—1. In a double, triple, or multiple effect vacuum evaporating apparatus, the steam-drums thereof, wherein different degrees of pressure are maintained, in combination with depending bent tubes or inverted siphons connecting adjacent drums, said tubes or siphons conveying the water of condensation from one steam-drum to the next in the series, and said tubes or siphons extending below said drums a sufficient distance to maintain a column of water of sufficient height to balance the difference in barometric pressure between adjacent drums, substantially as set forth.

2. In a double, triple, or multiple effect vacuum evaporating apparatus, the evaporating-pans thereof, wherein different degrees of pressure are maintained, in combination with depending bent tubes or inverted siphons connecting adjacent pans, said tubes or siphons conveying the saccharine liquid from one pan to the next in the series, and said tubes or siphons extending below said pans a sufficient distance to maintain a column of saccharine liquid of sufficient height to balance the difference in barometric pressure between adjacent pans, substantially as set forth.

3. In a double, triple, or multiple effect vacuum evaporating apparatus, the evaporating-pans thereof, wherein different degrees of pressure are maintained, and the steam-drums, in combination with depending bent tubes or inverted siphons connecting adjacent steam-drums, and depending bent tubes or inverted siphons connecting adjacent evaporating-pans, said tubes or siphons extending below said pans and drums a distance determined by the relative pressures in said pans and drums, substantially as set forth.

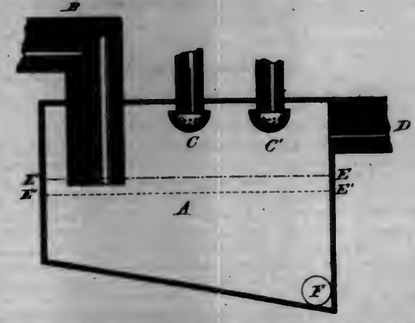
411,013. CONSTRUCTION OF METALLIC STRUCTURES. FRANK H. CILLEY, Boston, Mass. Filed Mar. 25, 1889. Serial No. 304,563. (No model.)



Claim.—1. The herein-described combination of beam *a*, post *a'*, and support *a²*, the post being provided with an opening to allow the beam to pass through it clear of the lower wall of the opening, all substantially as and for the purpose set forth.

2. The herein-described combination of beam *a*, post *a'*, and support *a²*, with a safety-iron *a³*, secured to the post *a'*, crosswise thereto, substantially as and for the purpose set forth.

411,014. PROCESS OF CONDENSING FUMES FROM METALLURGIC FURNACES. FREDERIC P. DEWEY, Washington, D. C. Filed Feb. 20, 1888. Serial No. 265,743. (No model.)



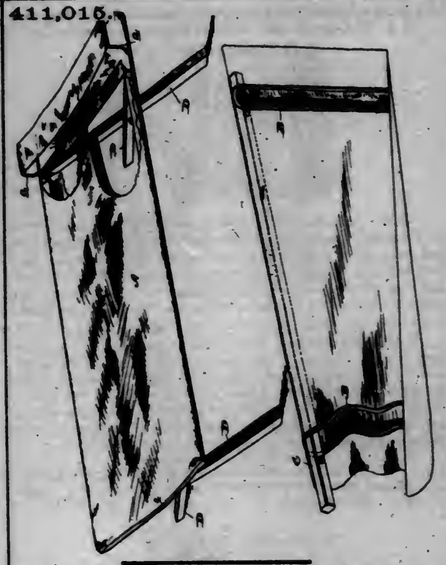
Claim.—The process of catching and saving the fumes arising from metallurgic operations, which consists in subjecting such fumes to the action of an organic chemical bath, as herein described.

411,015. CAMP-BED. JOHN DICK, Toronto, Ontario, Canada. Filed Sept. 12, 1888. Serial No. 285,166. (No model.)

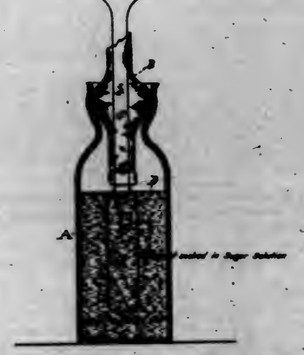
Claim.—1. As an improved article of manufacture, a camp-bed composed of a fabric bag A, folded and closed at its ends and edges with a space between the folds, and one of said folds formed with the transverse openings B at a point remote from the ends, and a frame inserted in said openings and serving to stretch and support said bag, substantially as shown and described.

2. The camp-bed described, consisting of the bag-shaped stretcher A, folded, as described, and closed at the ends and edges, and one of said folds provided at a point remote from each end with the transverse openings B, the removable and detachable side rails C, inserted in said openings B, and the detachable legs D, all arranged and operating substantially as shown and described.

411,016.



411,016. MANUFACTURE OF CARBON FILAMENTS. THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Oct. 20, 1888. Serial No. 74,780. (No model.)



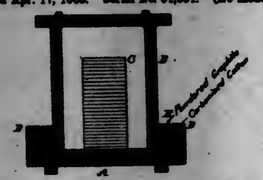
Claim.—1. The method of ascertaining the character of the carbon filament intended for use in an incandescing electric lamp, consisting in immersing the filament in a non-oxygenated liquid inert under the conditions described and then raising the filament to a red heat by passing an electric current therethrough, substantially as set forth.

2. The method of changing the resistance of a carbon filament, consisting in coating it with a carbonizable material, then immersing it in a liquid, and then raising it to a red heat by passing an electric current therethrough, said carbonizable material not being soluble in the liquid, and the gas of said liquid not being decomposable when the filament is at a red heat, substantially as set forth.

3. The method of carbonizing, consisting in raising a conductor in a liquid in the presence of a carbonizable material to a heat sufficient to carbonize the material by passing an electric current through said conductor, the liquid used not being decomposable under such heat, substantially as set forth.

4. The method of changing the resistance of a carbon filament and ascertaining its character and resistance, consisting in coating it with a carbonizable material, immersing it in a liquid, said carbonizable material not being soluble in the liquid used, and said liquid not being decomposable when heated in the presence of carbon, and then raising it to a red heat by the passage of an electric current therethrough, substantially as set forth.

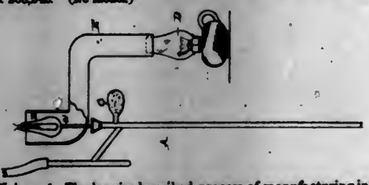
411,017. CARBONIZING-FLASK. THOMAS A. EDISON, Menlo Park, N. J. Filed Apr. 17, 1888. Serial No. 91,361. (No model.)



Claim.—1. A carbonizing-flask constructed of a material—such as plumbago or nickel—capable of withstanding a high temperature and composed of a base with a raised edge, a cover resting on said base within the raised edge and leaving a space between said cover and edge, a luting—such as graphite—capable of withstanding a high temperature placed in said space, and an absorbent of oxygen placed in the joint between the parts of the flask, substantially as set forth.

2. A carbonizing-flask constructed of a material—such as plumbago or nickel—capable of withstanding a high temperature and composed of a base with a raised edge, a cover resting on said base within the raised edge and leaving a space between said cover and edge, a luting—such as graphite—capable of withstanding a high temperature placed in said space, and a body of carbonized cotton placed in the joint between the parts of the flask, substantially as set forth.

411,018. MANUFACTURE OF INCANDESCENT ELECTRIC LAMPS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed July 17, 1886. Serial No. 208,242. (No model.)

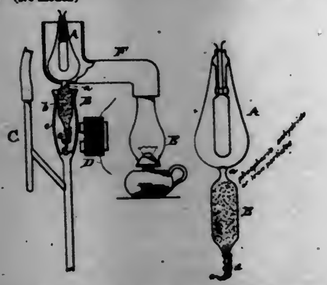


Claim.—1. The herein-described process of manufacturing incandescent electric lamps, consisting in externally heating the lamp-globe during the process of exhaustion.

2. The herein-described process of manufacturing incandescent electric lamps, consisting in exhausting the globe by a Sprengel vacuum-pump and at the same time heating such globe externally.

3. The herein-described process of manufacturing incandescent electric lamps, consisting in heating the lamp-globe by a current of heated air or gas during the process of exhaustion.

411,019. MANUFACTURE OF INCANDESCENT ELECTRIC LAMPS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed July 20, 1886. Serial No. 208,501. (No model.)



Claim.—1. The herein-described method of removing moisture from the inclosing-globe of an incandescent electric lamp, which consists in hermetically sealing said globe to a sealed chamber containing a material capable of absorbing or decomposing such moisture and then externally heating said globe.

2. The herein-described method of exhausting an incandescent electric lamp, which consists in hermetically sealing the lamp to a sealed chamber containing a material capable of absorbing or decomposing such moisture, heating said lamp, and afterward withdrawing the air from said lamp.

3. The herein-described method of exhausting an incandescent electric lamp, which consists in hermetically sealing such lamp to a sealed chamber containing a material capable of absorbing or decomposing such moisture, heating the lamp, forming an opening in said receptacle, and withdrawing the air from the lamp through said opening.

4. The herein-described method of exhausting an incandescent electric lamp, which consists in hermetically sealing the lamp to a sealed chamber containing a material capable of absorbing or decomposing such moisture, heating the lamp, attaching the said receptacle to an air-exhausting apparatus, forming an opening in said receptacle, and exhausting the lamp by means of said apparatus.

5. The herein-described method of exhausting an incandescent electric lamp, which consists in hermetically sealing such lamp to a sealed chamber containing a material capable of absorbing or decomposing such moisture, heating the lamp, attaching said receptacle to an air-exhausting apparatus, forming an opening in said receptacle by the attraction of a magnet for a magnetic body attached to said receptacle, and exhausting the lamp by means of said apparatus.

6. The herein-described method of exhausting an incandescent electric lamp, which consists in hermetically sealing the lamp to a sealed chamber containing a material capable of absorbing or decomposing such moisture, heating the lamp, and then withdrawing the air from the lamp and at the same time heating it again.

7. The combination, with an incandescent electric-lamp globe, of a sealed receptacle hermetically sealed thereto containing a material capable of absorbing or decomposing moisture and having a magnetic body attached to it, substantially as and for the purpose set forth.

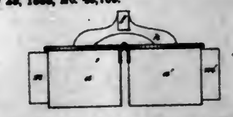
8. The combination, with an incandescent electric-lamp globe, of a receptacle hermetically sealed thereto containing a material capable of absorbing or decomposing moisture and having a sealed hooked end, and a coil of iron wire hung on said hooked end, substantially as and for the purpose set forth.

411,020. MANUFACTURE OF CARBON FILAMENTS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Dec. 6, 1886. Renewed Feb. 11, 1889. Serial No. 299,557. (No model.)

Claim.—1. The method of making carbon filaments for electric lamps, consisting in forming filaments from a plastic refractory material, baking said filaments, coating said filaments with carbon, and then removing the refractory material by a solvent, substantially as set forth.

2. The method of making carbon filaments for electric lamps, consisting in forming filaments from a plastic refractory material, baking said filaments, heating said filaments in the presence of a decomposable compound containing carbon, and then removing the refractory material by a solvent, substantially as set forth.

411,021. POCKET-INKSTAND. ERNST BERLINER, Berlin, Germany. Filed June 3, 1889. Serial No. 312,954. (No model.) Patented in Germany July 20, 1888, No. 46,769.



Claim.—1. In folding or pocket inkstands, the combination of two hinged receptacles *a a'* and a hinged frame *A* with tube *l* on said frame and tubes *m m'* on said receptacles, respectively.

2. The combination of two receptacles *a a'*, hinged together at their upper edge, a frame *A*, hinged thereto at *g*, and having hooks *o o*, adapted to hold said receptacles closed, substantially as set forth.

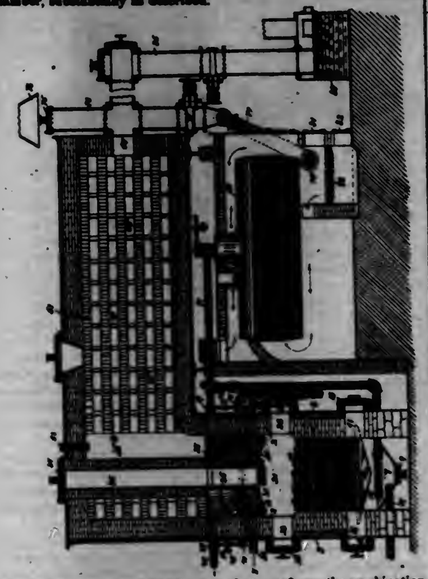
3. The combination of two hinged receptacles *a a'*, open above and closed below and adapted to be folded together and so close each other, two bottles *t* and *s* in said receptacles, and springs *v*, substantially as set forth.

4. The combination of two hinged receptacles *a a'*, adapted to be folded together, as set forth, tubes on said receptacles, and a pen-holder having a button *n* and screw-threaded part adapted to be inserted in said tubes and to hold the inkstand closed, substantially as set forth.

411,022. APPARATUS FOR THE MANUFACTURE OF GAS. VINCENT L. RILEY, Minneapolis, Minn. Filed Jan. 28, 1889. Serial No. 297,762. (No model.)

Claim.—1. In an apparatus for the manufacture of gas, the combination, with a combustion-chamber and a superheater, of radiating arches between said combustion-chamber and superheater formed with openings 33, extending vertically and laterally through the leg of said arches, passage-ways 31, extending around the wall of the cupola and communicating with said openings 33, and pipes 30, connecting with said passage-ways for forcing separate blasts of air through said openings into the combustion-chamber, substantially as and for the purposes set forth.

2. In an apparatus for the manufacture of gas, the combination, with a combustion-chamber and a superheater connected therewith, of a series of arches above said combustion-chamber, with passages between the legs of the arches for the passage of gases from the combustion-chamber to the superheater, and a magazine 35, extending downward through said arches and opening into said combustion-chamber, substantially as described.



3. In an apparatus for the manufacture of gas, the combination, with a cupola having a combustion-chamber and arches over said combustion-chamber, having passages between the legs of the arches for the flow of gases from the combustion-chamber, of a horizontal superheater-chamber connected with the cupola above said arches, a boiler arranged underneath said superheater-chamber, the pipe 73, communicating with the end of said superheater-chamber, and the pipe 79, connecting said pipe 73 with the space beneath the boiler, whereby the waste gases from the superheater-chamber may be used to heat said boiler, and thus supply steam for the cupola, and the radiated heat of the boiler is utilized in heating the superheater-chamber, substantially as described.

4. In an apparatus for the manufacture of gas, the combination, with the cupola 2, having the combustion-chamber 1, the series of arches 27, the fuel-magazine 35, extending through said arches, steam and oil pipes opening into the passages between the legs of said arches and air-passages in said arches opening into the combustion-chamber, of the superheater-chamber 51, connected with the cupola and arranged with an inclosed space 35* between said chamber and magazine 35, and the air-pipe 53, opening into said space, substantially as and for the purposes set forth.

5. In an apparatus for the manufacture of gas, the combination, with the cupola 2, of the horizontal superheater-chamber 51, arranged at one side of the cupola, the boiler 59, arranged underneath the superheater-chamber, the pipe 79, adapted to convey the waste gases of the superheater underneath the boiler, and the pipe 71, arranged to convey steam from said boiler to the steam-pipes of the cupola, substantially as described.

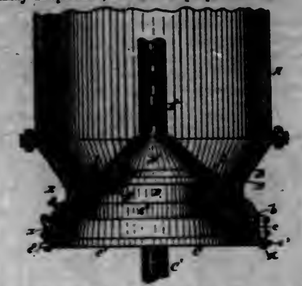
411,028. MACHINE FOR MAKING CURVED PIPE. PERRY J. FISH, Akron, Ohio. Filed Jan. 30, 1889. Serial No. 298,060. (No model.)

Claim.—1. In a press of the kind shown, a ring provided with an elliptical opening and adjustably mounted upon the mandrel and operating to retard at desired points the moving mass of clay and impart curvature to the issuing pipe, substantially as described.

2. In a press of the kind shown, the combination of the mandrel provided with a ledge, a ring having an elliptical opening and adapted to rest on said ledge, and means for moving said ring on said ledge, substantially as shown and described, and for the purpose specified.

3. The combination of the mandrel, the ring having the elliptical opening embracing said mandrel and adjustably connected thereto, and the annulus also embracing the mandrel above the point of location of the ring, substantially as shown, and for the purpose described.

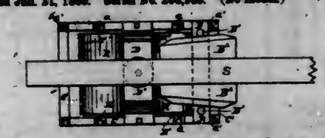
4. The combination of the cylinder-head and the hook pivotally connected therewith and capable of outward vertical movement of the inner die with its outwardly-extending lug for engaging said hook, substantially as specified, and for the purpose stated.



5. The combination, with the cylinder of a sewer-pipe press, of a hook pivotally connected therewith and capable of outward vertical movement for sustaining the inner socket-die upon the lower head of the cylinder, substantially as shown and described.

6. In a press for sewer-pipe, the combination, with the mandrel having an annular outer ledge, of a ring adapted to fit said mandrel and rest on said ledge and having an internal groove to form a dam for the clay escaping between said ring and mandrel, substantially as shown and described.

411,024. HOUSE-MOVING TRUCK. GEORGE GANT, Wichita, Kans. Filed Jan. 21, 1889. Serial No. 296,989. (No model.)



Claim.—1. A truck for moving buildings, consisting of the combination of a frame, as set forth, of the cylindrical rolls R, having the cast heads R^3, extension-hubs E', and axle F, upon which said frame is mounted, of the central cross-plate D, having secured thereto the pivotal plate D', and of the shoulder-lugs *a* and *a'*, secured to said frame at either end thereof, substantially as and for the purpose set forth.

2. In the house-moving truck described, in combination with the frame thereof bearing a central pivotal support and mounted on two rolls, one of which is in advance of its fellow, the shoulder-lugs *a* and *a'*, arranged in sets at either end of the truck-frame, whereby a truck may be turned and guided by means of a lever, in the manner substantially as and for the purpose set forth.

3. In the truck described, the metal frame thereof, consisting of the combination of the side bars C and Z, cross-bars C' and W, cross-plate D, having the central pivot-plate D' and the brace-bars Z' and *t*, and tie-rods *n*, arranged as set forth, and the shoulder-lugs *a* and *a'*, secured to the upper bars thereof, substantially as and for the purpose specified.

4. In the house-moving truck described, in combination with the frame thereof bearing a central pivotal support and a portable sill S, mounted upon said support, the bolster B, having the arms B' B'' and adapted to be seated on the truck-frame and hold the truck parallel with said sill by means of wedge-blocks or their equivalent, substantially as and for the purpose set forth.

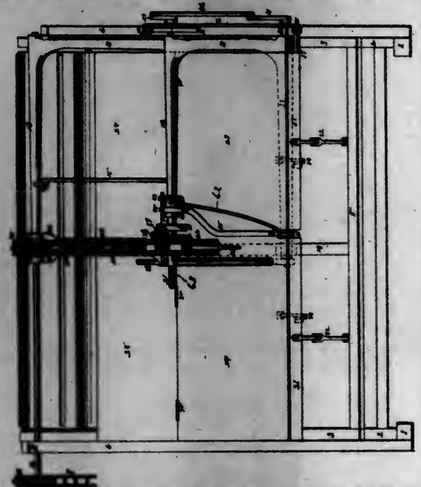
5. In combination with the house-moving truck described, the bolster B, having the opposite extending arms B' and B'' and adapted to be seated upon the truck-frame and hold the truck in a fixed position with relation to its portable sill by means of wedge-blocks, in the manner substantially as and for the purpose specified.

6. In the compound truck described for moving buildings, the combination, with the two rear individual trucks, of the portable sills S, the bolsters B and wedge-blocks B^2, for holding said trucks in a fixed position with relation to said sills, and the means set forth for guiding and turning the individual forward trucks, substantially as and for the purpose specified.

7. In the compound truck described, the individual trucks thereof, each consisting of a double roll bearing one roll in advance of its fellow, a carriage-frame having a central pivotal support, and a set of shoulder-lugs *a* and *a'* at either end thereof adapted to be engaged by a lever to turn and guide each truck individually, in combination with the portable sills S and means of transportation, substantially as and for the purpose specified.

411,025. GRAIN-BINDER. GEORGE GRIESMER, Jr., Belvidere, Ill. Filed Apr. 21, 1887. Serial No. 235,700. (No model.)

Claim.—1. The combination of the grooved cam fixed on the overhanging arm of the binder-supporting frame, a dog-carrying arm fixed on the binder-shaft, a constantly-driven wheel loosely mounted on said shaft, a pin on said wheel, a dog pivoted to the arm and adapted to traverse the groove in the cam, and a sliding bolt in the cam-groove for withdrawing the nose of the dog from engagement with the pin, and thereby unlocking the said arm, and hence the binder-shaft, from the driving-wheel, substantially as set forth.



2. The combination, with the binding mechanism, the binder-shaft, and a suitable support for the same, of a grooved cam located on the shaft-support, a dog secured to the shaft in position to traverse the cam-groove, a driven wheel loosely mounted on the shaft in position to engage the free arm of the dog, and thereby cause the shaft to rotate with the wheel, an endwise-sliding bolt mounted in the shaft-support to control the action of the dog, a gavel-receiving arm in engagement with the endwise-sliding bolt, and a spring to hold the gavel-receiving arm, substantially as set forth.

3. The combination, with the grooved cam fixed on the overhanging tubular arm, of the supporting-frame, the binder-shaft, a dog to traverse the cam-groove fixed to rotate with the shaft, a driven wheel loosely mounted on the shaft, an endwise-moving bolt entering the cam-groove to control the movements of the dog to throw it into or out of engagement with the driven wheel, and the gavel-receiving arm, substantially as set forth.

4. The combination, with the trip-lever, a gavel-receiving arm pivoted centrally to the long arm of the lever, the upper end of the gavel-receiving arm having an engagement with the lever to limit the rearward movement of its upper end, and a spring in engagement with the gavel-receiving arm adapted to act directly upon the gavel-receiving arm and through the gavel-receiving arm on the lever, substantially as set forth.

5. The combination of a hinged binding-table, a guard-board pivoted to the lower edge of the binding-table and provided with an arm fixed thereto and depending below the hinge between the board and the table, as described, a link connecting said arm with the supporting-frame, so that as the table descends the link and the arm on the board fold inward, and means for raising and lowering the hinged binding-table, substantially as set forth.

6. The combination of a hinged binding-table, a guard-board pivotally secured to the lower edge of the table and provided with an arm fixed thereto and depending below the hinge between the board and the table, as described, a link connecting the depending arm with the supporting-frame, so that as the table descends the link and the arm on the board fold inward, a rock-shaft, a jointed connection between the rock-shaft and the free end of the hinged binding-table, and means for operating the rock-shaft, substantially as set forth.

411,026. SIRUP-FAUCET. EDWIN HAAS, Philadelphia, Pa. Filed May 10, 1889. Serial No. 310,208. (No model.)

Claim.—1. A hollow plug of the character described, provided with an exit-aperture, in combination with a sleeve projecting through the bottom of said plug, and a stem projecting through said sleeve and bearing a stop for the closing of said aperture, substantially as described.

2. A hollow plug of the character described, having an aperture at the top thereof, and an exit-aperture at the bottom, in combination with a sleeve extending into said plug, a stem passing through said sleeve, and two stops on said stem, one of said stops closing said upper and one said lower aperture, substantially as described.



3. A hollow plug having a top and a bottom aperture, in combination with a sleeve extending into the same, a cross-piece borne upon said sleeve, a plug on said cross-piece disposed to close the upper aperture, and a depending plug on said cross-piece for the purpose of closing the lower aperture, substantially as described.

4. A hollow plug adapted to be screwed into the bottom of a jar, and having a top and a bottom aperture, in combination with a sleeve covered with rubber extending into said plug, and a stem projecting through said sleeve and bearing a stop for each of said apertures, substantially as described.

5. A hollow plug of the character described, having an upper and a lower aperture, in combination with a stem bearing an upward-extending post bearing a stop for the upper aperture and a valve for the lower aperture, and washers adapted to be placed upon said posts, substantially as described.

6. A plug of the character described, having an upper and a lower aperture, and a sleeve extending into the bottom thereof, said sleeve being covered with rubber, in combination with a stem passing through said sleeve, a post extending upward and borne upon said stem and bearing a stop for said upper aperture and a valve for the lower aperture, and supplementary washers adapted to be placed upon said post, substantially as described.

7. A hollow plug of the character described, having an upper and a lower aperture, and a sleeve extending into the same, in combination with a stem passing through said sleeve, a post on said stem bearing a stop for said upper aperture, a depending stem bearing a stop for said lower aperture, and washers adapted to be placed upon said post, substantially as described.

8. A hollow plug of the character described, having an upper and a lower aperture, and a sleeve extended into said plug, in combination with a stem passing through said sleeve and bearing a stop for each of said apertures, and a lever pivoted to the bottom of said plug, pivotally attached to said stem and provided with a weight and a forward-projecting arm, substantially as described.

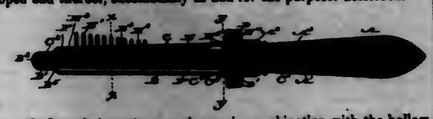
411,027. CLAY FENCE-POST. WILLIAM H. HERRON, Edgewater, Ind. Filed June 6, 1889. Serial No. 313,370. (No model.)



Claim.—The clay-post coupling-rod D, made with an eye *d* at one end, in combination with a cross rod or bolt E, arranged near the top of a one-piece ground-section B, as and for the purpose described.

411,028. HAIR CURLING AND CRIMPING DEVICE. ISAAC W. HEYBURN, Philadelphia, Pa. Filed Feb. 7, 1889. Serial No. 298,970. (No model.)

Claim.—1. In combination with the handle A and metal rod C, secured thereto, the hollow casing B, open at one end and adapted to be passed over said rod C, having slot B^2 in one side thereof, together with spring E, secured at one end to said casing B, extending forward within the same, having comb $E' E^2$ secured to its free extremity, said comb fitted to operate transversely in said slot B^2, said comb normally retracted within said casing by the backward tension of said spring E, and adapted to be thrust outwardly through said slot against said tension by the insertion of the said rod C into said casing B from said open end thereof, substantially as and for the purposes described.



2. In a hair curler or crimper, in combination with the hollow casing B, having contracted free end B', forming a bearing within, the internal detachable heating-rod C C', said rod supported in said bearing at the free end of said casing, and having its intermediate portion C extended along within said casing, separated from the inner walls thereof by the interposed air-space F, extending around said rod, the heat of said rod conveyed to said casing by radiation through said air-space F, substantially as described.

3. In a hair curler or crimper, the longitudinal casing B, open at one end, and having a concentric contraction B' at the opposite end, in combination with a central heating-rod C, having non-conducting handle A, and a concentrically enlarged part C^3 upon said rod near said handle, so that when said rod is inserted in said casing the free end thereof will be supported in said contraction B' and the enlarged portion thereof C^3 will fill the open end of said casing, together with the annular radiation-space F, formed thereby between the sides of said rod C and said casing B, substantially as described.

4. In combination with the handle A and heating-rod C, secured thereto, the external casing B, provided with slot B^2 in one side thereof, and the comb $E' E^2$, permanently secured within the said casing and adapted to be projected outward through said slot B^2 by the advance of said rod C in said casing, together with the non-conducting hand-piece D, surrounding the open end of said casing, substantially as described.

5. In a hair curler or crimper, in combination with the longitudinal casing B, open at one end and provided with slot B^2 in one side thereof, the elongated spring E, extended forward within said casing and provided with the hair-grasping part E', adapted to be forced out through said slot B^2, the rear end of said spring E extended along the outer side of said casing, and the perforated hand-piece D, fitted around the open end of said casing and adapted to clamp the free end E^3 of said spring E against the outer side of said casing and hold the same in place, together with the central rod C C' adapted to be inserted into the said casing B from its open end by its advance therein force the said part E' outward through said slot B^2, the said spring E retracting the same by its backward tension when the said rod C has been withdrawn, substantially as described.

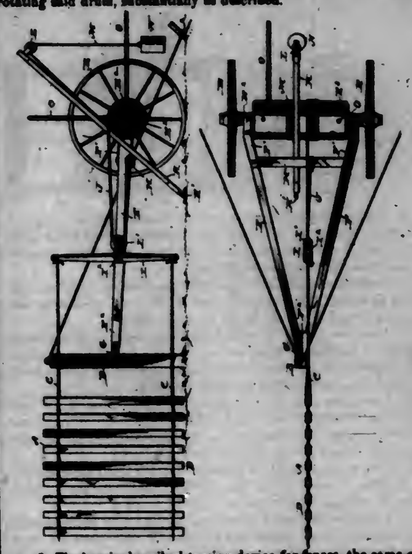
6. In combination with the laterally-slotted hollow casing B, open at one end, the detachable rod C, adapted to be inserted therein, and the spring-mounted comb $E E^2 E' E^3$, said comb $E' E^2$ projected transversely through the slot B^2 by the advance of said rod C in said casing B, the downwardly-bent tip E^3 of said spring E E^2 adapted to rest upon said rod C and prevent contact of the body of said spring $E E^2$ or comb $E' E^2$ therewith, substantially as and for the purposes described.

7. In combination with a hollow casing, open at one end, and an internal heating-rod, of a like cross-section tapered and contracted at its free end and adapted to be inserted into and withdrawn from said casing, the comb E, contained within said casing, adapted to be thrust transversely outward or withdrawn through a slot in the side of said casing by the advance or withdrawal of said heating-rod longitudinally therein, substantially as described.

8. As an article of manufacture, a device for curling or crimping hair, consisting of a non-conducting handle A, metallic heating-rod C, attached thereto and extended longitudinally therefrom, a hollow casing B, open at one end and slotted at B^2 in one side thereof, a contained spring E, secured to said casing and provided with comb $E' E^2$ at its free end, stop B^3 within said casing, and C^3 upon said rod, said stops B^3 and C^3 by engaging with each other adapted to prevent the complete rotation of said rod within said casing when the same is inserted therein and operated by said handle A, substantially as described.

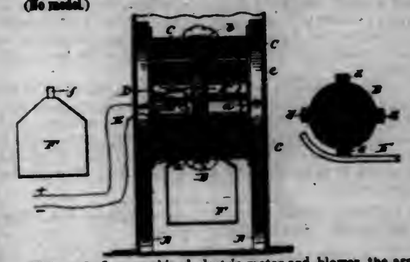
411,029. TENSION-MACHINE FOR USE IN CONSTRUCTING FENCES. WARREN W. HEISTAND, Hubbard, Ohio. Filed July 8, 1889. Serial No. 316,709. (No model.)

Claim.—1. In a fence-making machine, the combination, with a vertical tension-rod having a pulley secured thereto, of a rotatable cylinder or drum to the rear of the tension-rod, a transverse timber in advance of and adjacent to said drum, a rope secured to said transverse timber, passed through the pulley upon the tension-rod, and wound around said drum, an independent rope or chain secured to and wound around the drum in an opposite direction and passed over a pulley to the rear of and upon a higher plane than the drum and carrying upon its free end a weight, and means, as the levers O, for rotating said drum, substantially as described.



2. The herein-described tension device for fences, the same comprising, in combination, the wheels, the axle provided with a drum, as described, the timbers F, loosely sleeved at their rear ends upon the axle and united at their forward ends and provided with a metal pike, as described, a cross-timber connecting the timbers F at a point slightly in advance of the drum, the timber I, the pulley attached thereto, the rope J, secured to the cross-timber, passed through the pulley, and wound around the drum, the brace-timber K, between the cross-timber and drum, carrying at its upper end a pulley, and a rope or chain M, wound around the drum in a direction opposite to that of the chain J, passed over the pulley at the upper end of the brace-rod, and its free end provided with a weight, substantially as described, and for the purpose specified.

411,030. COMBINED ELECTRIC MOTOR AND BLOWER. CHARLES J. HEILMANN, Port Lee, N. J. Filed May 6, 1889. Serial No. 309,896. (No model.)



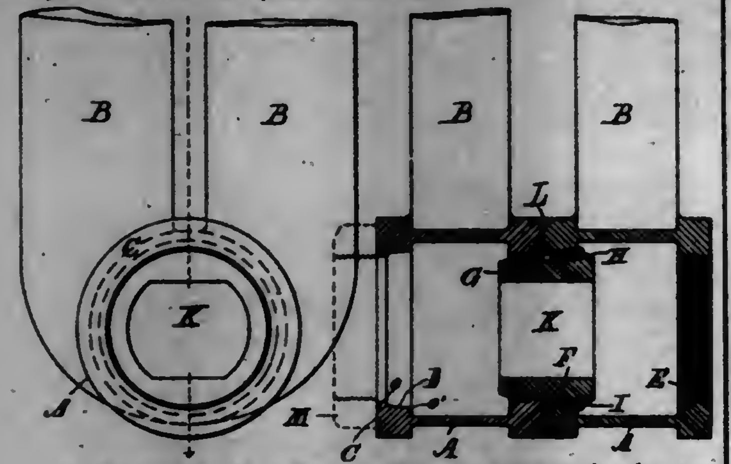
Claim.—1. In a combined electric motor and blower, the armature of the motor formed of a non-magnetic wheel having iron strips or armatures placed on each side thereof, in combination with the fan-blades attached direct to the periphery of the wheel.

2. The combination, with an electric motor and blower combined, of two standards, as A A, in which said motor and blower are mounted, air-passages through said standards, and a blower-casing inclosing the whole structure and provided with air-passages corresponding with the air-passages in the standards, substantially as described.

411,031. COUPLING FOR RADIATOR-SECTIONS. JOHN J. HOGAN, New York, N. Y. Filed Apr. 10, 1889. Serial No. 306,899. (No model.)

Claim.—1. A coupling for radiator-sections, screwed to enter

within the same, and provided with a conical packing in one side of the joint, as and for the purpose set forth.



2. The coupling for radiator-sections, consisting in the plug provided with the neck F, the screw G, and packing I, and fitted to the conical seat D, and the screw-thread E, formed upon the adjacent sections, as and for the purpose set forth.

3. A radiator-section provided with the chamber A, having apertures at opposite sides furnished, respectively, with the conical seat D and the thread E, as and for the purpose set forth.

4. As a new article of manufacture, a coupling or connection consisting in the sleeve having at one end the threaded portion and at the opposite end a divided conical collar fitted in a groove or neck upon the sleeve, substantially as herein set forth.

5. A coupling-plug for radiator-sections, consisting in the neck F, provided with the screw G upon its smaller end, and the larger end of the neck being made smaller than the bottom of the thread upon the screw G, as and for the purpose set forth.

6. A coupling-plug for radiator-sections, consisting in the conical neck F, screw G, and packing I, and with means for turning by a key or wrench, substantially as herein set forth.

7. A radiator composed of sections having upon their opposite sides the conical seats D and screw-threads E, and united by plugs provided with screw-threads and conical packings, substantially as herein set forth.

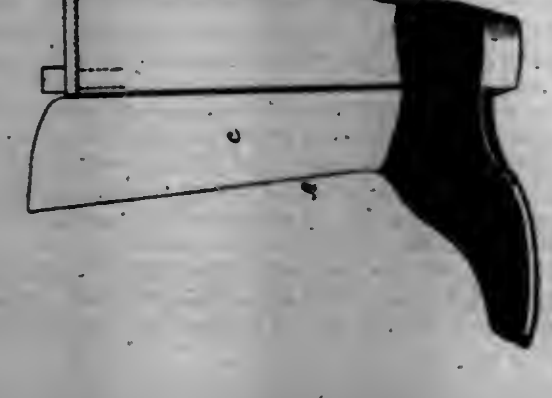
8. The combination, with two radiator-sections having apertures formed, respectively, with a screw-thread and with a conical seat, of a sleeve having a screw-thread at one end, and a divided conical collar fitted to the other end, as and for the purpose set forth.

9. The combination, with a radiator-section provided with the chamber A, having apertures at opposite sides, furnished, respectively, with the conical seat D, having shoulder *o*, and with the thread E, of the annular packing fitted to such seat, and the coupling-plug provided with the cone F, the screw G, and with the collar H, adapted to bear upon the outer edge of the packing, substantially as herein set forth.

10. The combination, with a radiator-section provided with the chamber A, having apertures at opposite sides furnished, respectively, with the conical seat D, having shoulder *o* and corner *d'*, and with the thread E, of the annular packing fitted to such seat, and the coupling-plug provided with the cone F, the screw G, and with the collar H, rounded in contact with the edge of the packing and operated to expand the same outwardly over the corner *d'*, as and for the purpose set forth.

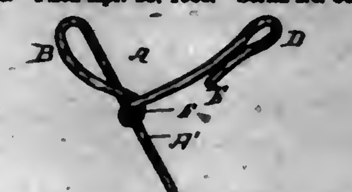
11. The combination, with a radiator-section provided with the chamber A, having apertures at opposite sides furnished, respectively, with the conical seat D, having shoulder *o*, and with the thread E, of the annular packing beveled internally, as set forth, and the coupling-plug provided with the cone F, the screw G, and collar H, tapered externally to fit within the flared edge of the packing, as and for the purpose set forth.

411,082. BOOT. CHARLES C. HOUGHTON, Worcester, Mass. Filed Apr. 10, 1889. Serial No. 306,661. (No model.)



Claim.—A boot having an upper the parts of which are severally formed with their foot and leg portions integral, the leg or top part of said boot being of dry or unoiled stock and the foot part of oiled stock or leather in its original oiled condition, substantially as set forth.

411,083. SHOCK OR BUNDLE TYER. WILLIAM W. HUFFMAN, Houston, Ohio. Filed Apr. 26, 1889. Serial No. 308,580. (No model.)

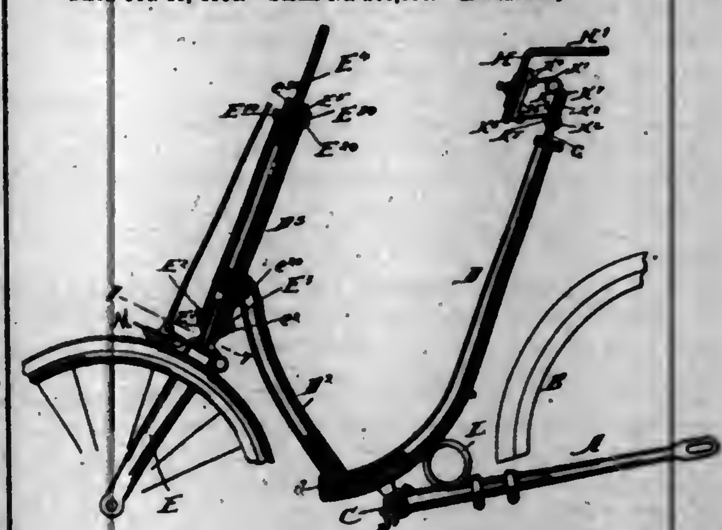


Claim.—A bundle-tyer formed from the single piece of wire A, bent back upon itself at B, twisted around itself at C, forming a bight for the twine, and the open loop D, extending at right angles to the main wire, as and for the purpose set forth.

411,084. PROCESS OF BATING. ALBERT HULL, West Winsted, Conn. Filed Dec. 24, 1888. Serial No. 294,535. (No specimens.)

Claim.—In preparing hides and skins to be tanned, the method of neutralizing the lime in hides and skins by subjecting them to the action of a solution of gallic acid and water and subsequently removing the gallic acid and neutralized lime therefrom by washing and working, substantially as set forth.

411,085. VELOCIPEDE. THOMAS B. JEFFERY, Ravenswood, Ill. Filed Oct. 15, 1888. Serial No. 288,096. (No model.)



Claim.—1. In a velocipede, a rigid frame intermediate the driving-wheel fork and the steering-wheel fork, and made of tubular parts successively joined together, each joint being made by diverging lugs on the end of one of the joined parts clasping the other part, said end abutting against the side of the clasped part, substantially as set forth.

2. In a velocipede, in combination with the rear driving-wheel fork or frame, a frame pivoted thereto and comprising the steering-head and a seat-supporting arm, said steering-head and said arm being connected together by a cross-arm joined to the lower end of each, each of said junctions being made by diverging lugs on the end of one of the joined parts clasping the other part, said end abutting against the side of the clasped part, substantially as set forth.

3. In a velocipede, in combination with the fork, the upwardly-concave fitting E', terminating the fork at the upper end, the steering-head terminating at the lower end in a fitting E^2, having the flange e^2, adapted to fit outside the upper edge of the fitting E', and having a central boss adapted to enter the concavity of E', said boss having a ball-bearing groove on its under face, and the balls located in the concavity of the fitting E' and in said groove, and the steering-rod rigid with the fork and extending through the head, and a suitable stop-bearing for the upper end of the head, secured to the rod above the latter, substantially as and for the purpose set forth.

4. In combination with an axle and the part which revolves thereon, a sleeve on the axle constituting the bearing at one end for the revolving part and longitudinally extended beyond the portion which constitutes such bearing, and a clamp embracing such longitudinal extension, whereby the latter may be contracted about the axle to bind the sleeve thereon, substantially as set forth.

5. In combination with an axle and the part which revolves thereon, a sleeve located on the axle and serving as the bearing of the revolving part and longitudinally extended beyond the part which constitutes such bearing, and having the end or edge of such longitudinally-extended part oblique, and a stud projecting from the axle in contact with such oblique end, whereby the rotation of the sleeve

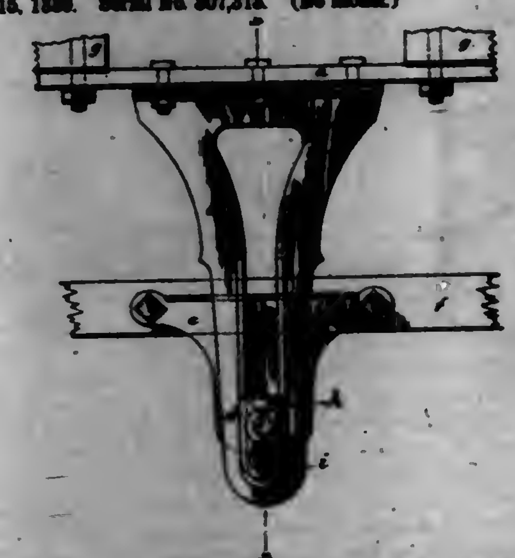
on the axle tends to adjust it longitudinally thereon, substantially as set forth.

6. In combination with an axle, a sleeve thereon which has the bearing for the part which revolves upon the axle, said axle having a stop which abuts against the end of the sleeve, one of said abutting parts having an oblique edge, whereby the rotation of the sleeve causes it to be adjusted longitudinally thereon, substantially as set forth.

7. In combination with an axle, a sleeve located thereon, constituting an adjustable bearing and extended longitudinally on the axle beyond the part which serves as a bearing, a clamp encircling such extended part, whereby it may be contracted to bind the sleeve onto the axle, a stop fixed on the axle and abutting against the end of the sleeve, one of said abutting parts having an oblique edge, whereby the rotation of the sleeve causes it to be adjusted longitudinally, a clamp being secured at one point to the box, whereby it serves both to adjust and to secure the sleeve in adjusted position, substantially as set forth.

8. In a velocipede, in combination with the wheel, a spring-arm rigidly secured to the fork on both sides of the vertical plane of the wheel, and the brake-shoe attached to the spring-arm intermediate the points at which it is thus secured and overhanging the wheel, substantially as set forth.

411,086. STEADYING DEVICE FOR VEHICLE-BODIES. GEORGE JOHNSON, St. John's Hill, Battersea, County of Surrey, England. Filed Apr. 15, 1889. Serial No. 307,313. (No model.)



Claim.—In combination, the wagon-body, the axle, the pendant secured rigidly to the body and extending to a point below the axle and having its lower portion slotted, the bracket secured rigidly to the axle and also extending to a point below the same, the pin projecting from said bracket through the slotted lower end of the pendant, and the block on the pin and within the slot.

411,087. APPARATUS FOR MAKING INFUSIONS OR SOLUTIONS. CHARLES JONES, Woodford, assignor to James Childs, London, England. Filed Apr. 22, 1889. Serial No. 308,088. (No model.) Patented in England Oct. 10, 1887, No. 13,736.

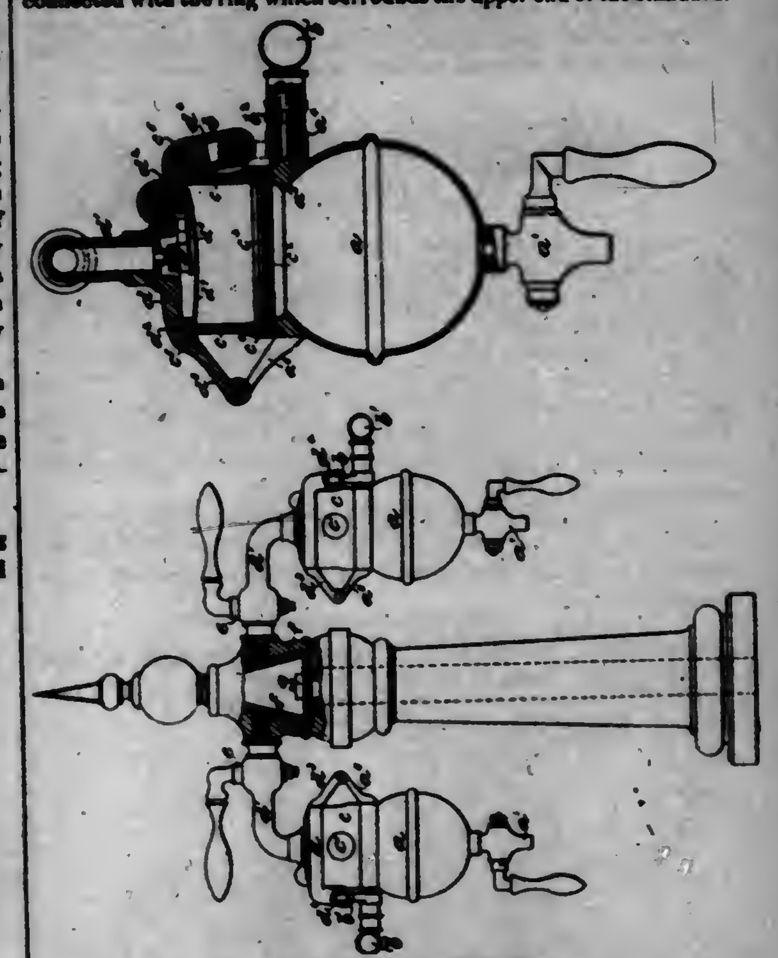
Claim.—1. The combination, substantially as hereinbefore set forth, of the cover, the pipe fixed to the cover through which boiling water is supplied, the receiver hinged to the cover, the holder interposed between the cover and the receiver and removable therefrom, a perforated bottom held between the holder and the receiver, and a catch for locking the receiver to the cover.

2. The combination, substantially as hereinbefore set forth, of the cover, the pipe to which it is attached and through which boiling water may be admitted, the receiver, the removable holder interposed between the cover and the receiver, and the float-valve in the receiver to allow escape of air while the receiver is filling and which closes when the receiver is sufficiently full.

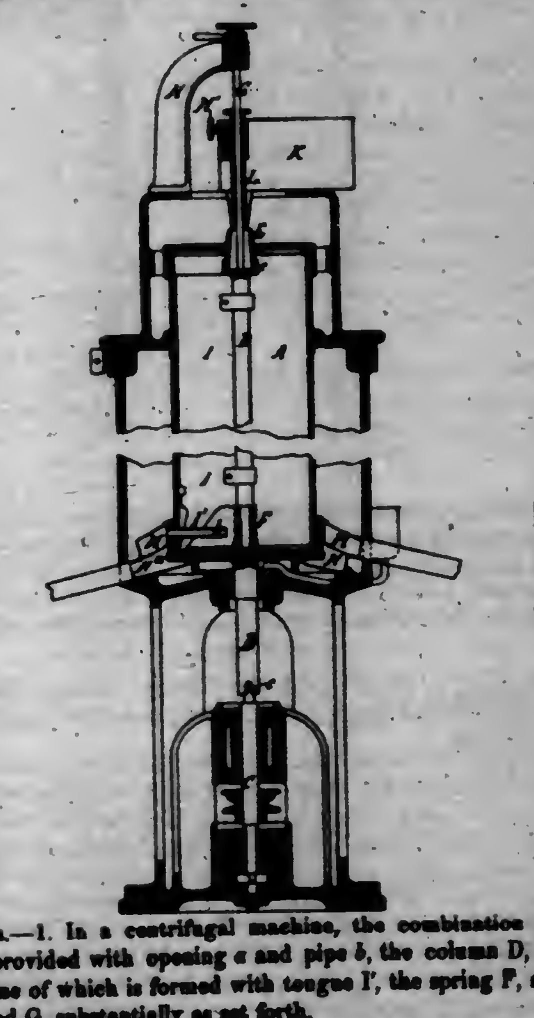
3. The combination, substantially as hereinbefore set forth, of the cover, the pipe to which it is secured, the receiver, the holder interposed between the cover and the receiver and removable therefrom, the handle for the holder, the perforated bottom piece held between the cover and the receiver, the float-valve a^2, and the draw-off tap a' at the bottom of the receiver.

4. The combination, substantially as hereinbefore set forth, of the cover, the supply-pipe to which it is secured, the receiver, the holder interposed between the cover and the receiver, the perforated bottom piece between the holder and the receiver, and the automatic valve d^2, interposed between the holder and the supply-pipe to shut off the supply of water when the holder is removed.

5. The combination, substantially as hereinbefore set forth, of the hollow standard through which boiling water is supplied and which is provided with an orifice at its upper end, a ring surrounding the upper end of the standard and adapted to turn thereon to open and close the orifice, the receiver, the cover, the holder interposed between the receiver and the cover, and a pipe leading from the cover and connected with the ring which surrounds the upper end of the standard.



411,088. CENTRIFUGAL CREAM-SEPARATOR. SVEN JOHNSON, Copenhagen, Denmark. Filed July 17, 1888. Serial No. 280,234. (No model.)

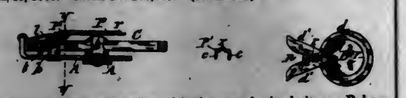


Claim.—1. In a centrifugal machine, the combination of the drum A, provided with opening *a* and pipe *b*, the column D, having vanes I, one of which is formed with tongue I', the spring F, and adjustable rod G, substantially as set forth.

2. In a centrifugal machine, the combination of the drum A, provided with the opening *a*, the vane I, having tongue I', and means for supporting and adjusting said vane I, substantially as set forth.

3. In a centrifugal machine, the combination of the drum A, screw-threaded rod G, the column D, carrying vanes I, one of which is formed with the tongue I', and the spring F, substantially as set forth.

411,089. ANIMAL-TRAP. HARRY R. KELLEY, Niagara Falls, assignor to the Oneida Community, (Limited,) Community, N. Y. Filed Jan. 11, 1889. Serial No. 296,065. (No model.)

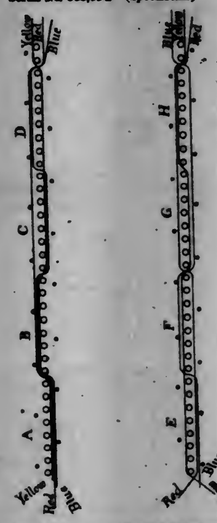


Claim.—1. In combination with the post *b*, the bait-pan P, having the shank P', formed with downward flanges *c c* and ears *e e* in one piece and hinged by said ears to the aforesaid post, substantially as described and shown.

2. In combination with the spring-actuated jaw, the bait-pan P, having the shank P', formed with flanges *c c*, terminating with perforated ears *e e*, projecting beyond the top of the aforesaid shank, and the retaining catch or latch *l*, having its free end lying between the ears *e e* and adapted to engage the under side of the shank P', substantially as described and shown.

3. In combination with the frame A, spring-actuated jaw C, and its retaining latch or catch, the bait-pan P, formed with the toe *t*, for limiting the upward movement of the bait-pan, substantially as described and shown.

411,040. WOVEN FABRIC. DAVID B. KERR, Frankford, Pa. Filed Apr. 4, 1889. Serial No. 305,924. (Specimens.)

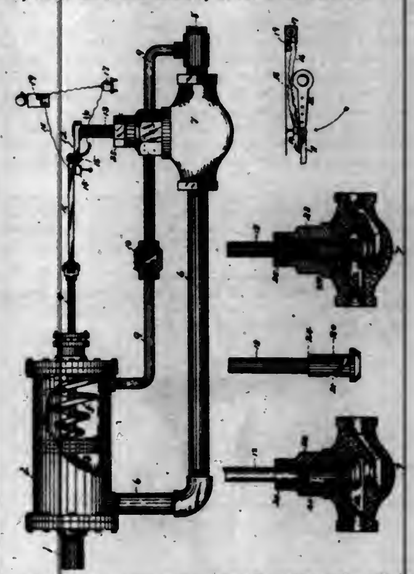


Claim.—A woven fabric composed of a figuring-warp and a binder-warp and three weft-threads, each different in color, each color single in a shed in parts of the face and back of the fabric and parallel and contiguous in one shed, with each of the other colors in other portions of the figures or grounds, as herein specified and set forth.

411,041. REGULATOR AND CUT-OFF. ORLANDO S. KING and HOMER H. SWANEY, McKeesport, Pa. Filed Mar. 15, 1889. Serial No. 303,457. (No model.)

Claim.—1. A combined regulator and cut-off consisting of a cylinder to receive the high pressure, a piston with a coiled spring at its back moving in said cylinder, a piston-rod, a connecting-rod pivoted to said piston-rod and to a crank turning a valve-stem, a valve-stem having a spiral and a straight groove cut therein to track a pin set in the valve-shell, a spring in said valve tending to seat it, a high-pressure pipe leading from the front of the cylinder to the valve, a leakage-pipe having a check-valve leading from the rear of the cylinder to the low-pressure main, and an alarm brought into circuit by the straightening of the connecting-rod and crank when the pressure ceases, all substantially as shown and described.

2. A combined regulator and cut-off consisting of a cylinder to receive the high pressure, a piston with a coiled spring at its back moving in said cylinder, a piston-rod, a connecting-rod pivoted to said piston-rod and to a crank turning a valve-stem, a valve-stem having a spiral groove cut therein to track a pin set in the valve-shell, a spring in said valve tending to seat it, a high-pressure pipe leading from the front of the cylinder to the valve, and a leakage-pipe having a check-valve leading from the rear of the cylinder to the low-pressure main, all substantially as shown and described.



3. A combined regulator and cut-off consisting of a cylinder to receive the high pressure, a piston with a coiled spring at its back moving in said cylinder, a piston-rod, a connecting-rod pivoted to said piston-rod and to a crank turning a valve-stem, a valve-stem having a spiral and a straight groove cut therein to track a pin set in the valve-shell, a spring in said valve tending to seat it, a high-pressure pipe leading from the front of the cylinder to the valve, a leakage-pipe having a check-valve leading from the rear of the cylinder to the low-pressure main, and an alarm brought into circuit by the straightening of the connecting-rod and crank when the pressure ceases, all substantially as shown and described.

4. A combined regulator and cut-off consisting of a cylinder to receive the high pressure, a piston with a coiled spring at its back moving in said cylinder, a piston-rod, a connecting-rod pivoted to said piston-rod and to a crank turning a valve-stem, a valve-stem having a spiral groove cut therein to track a pin set in the valve-shell, a spring in said valve tending to seat it, a high-pressure pipe leading from the front of the cylinder to the valve, and a leakage-pipe having a check-valve leading from the rear of the cylinder to the low-pressure main, all substantially as shown and described.

5. A combined regulator and cut-off consisting of a cylinder to receive the high pressure, a piston with a coiled spring at its back moving in said cylinder, a piston-rod, a connecting-rod pivoted to said piston-rod and to a crank turning a valve-stem, a valve-stem having a spiral and a straight groove cut therein to track a pin set in the valve-shell, a spring in said valve tending to seat it, a high-pressure pipe leading from the front of the cylinder to the valve, and an alarm brought into circuit by the straightening of the connecting-rod and crank when the pressure ceases, all substantially as shown and described.

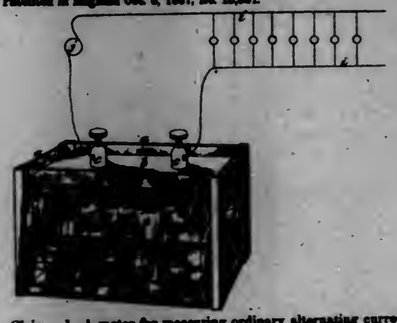
6. A combined regulator and cut-off consisting of a cylinder to receive the high pressure, a piston with a coiled spring at its back moving in said cylinder, a piston-rod, a connecting-rod pivoted to said piston-rod and to a crank turning a valve-stem, a valve-stem having a spiral and a straight groove cut therein to track a pin set in the valve-shell, a spring in said valve tending to seat it, and a high-pressure pipe leading from the front of the cylinder to the valve, all substantially as shown and described.

7. A combined regulator and cut-off consisting of a cylinder to receive the high pressure, a piston with a coiled spring at its back moving in said cylinder, a piston-rod, a connecting-rod pivoted to said piston-rod and to a crank turning a valve-stem, a valve-stem having

a spiral groove cut therein to track a pin set in the valve-shell, a spring in said valve tending to seat it, a high-pressure pipe leading from the front of the cylinder to the valve, and an alarm brought into circuit by the straightening of the connecting-rod and crank when the pressure ceases, all substantially as shown and described.

8. A combined regulator and cut-off consisting of a cylinder to receive the high pressure, a piston with a coiled spring at its back moving in said cylinder, a piston-rod, a connecting-rod pivoted to said piston-rod and to a crank turning a valve-stem, a valve-stem having a spiral groove cut therein to track a pin set in the valve-shell, a spring in said valve tending to seat it, and a high-pressure pipe leading from the front of the cylinder to the valve, all substantially as shown and described.

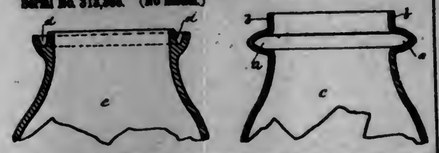
411,042. ELECTRIC METER. HAROLD W. ARLLS, London, County of Surrey, England. Filed July 30, 1888. Serial No. 281,445. (No model.) Patented in England Oct. 6, 1887, No. 13,561.



Claim.—1. A meter for measuring ordinary alternating currents of electricity, consisting of an electrolytic cell, metallic electrodes suspended therein, a means for indicating the precipitation of metal from the said electrodes, and electric-current connections from the said electrodes to a supply source of ordinary alternating currents of electricity, substantially as and for the purpose herein described.

2. In a meter for ordinary alternating currents of electricity, the combination of two copper plates in a dilute solution of sulphuric acid, an air-sealing layer on the surface of the said solution, electrical connections to the said plates, and a weight-indicating mechanism, substantially as and for the purpose herein described.

411,043. METHOD OF FORMING THE NECKS OF FRUIT-JARS. CHRISTIAN F. LUDE and CHARLES LUDE, Pittsburg, Pa. Filed June 6, 1888. Serial No. 313,268. (No model.)



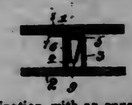
Claim.—The herein-described method of forming the necks of jars, consisting of providing an unfinished jar with an annular outwardly-projecting hollow bead *a* and an upwardly-projecting flange *b*, reheating the said bead *a* and flange *b*, and by means of a suitable tool form an annular groove *d* in the top surface of the neck, whereby the lid of the jar may be properly attached, substantially as described.

411,044. THILL-COUPLING. FRANCIS J. MILLER, Carrollton, Ky. Filed Jan. 9, 1889. Serial No. 296,231. (No model.)



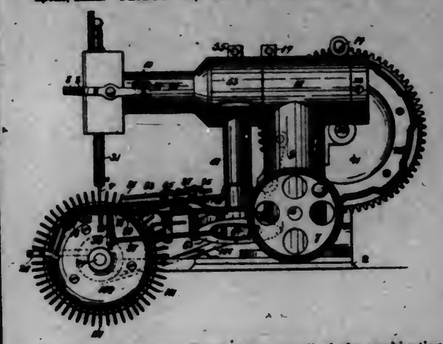
Claim.—The thill-coupling E, consisting of the embracing-plates *b*, connected by the plate *b'* and bound in position by the nuts b^2, and of the forwardly-projecting opposite ears b^3, recessed as at b^4 and having the transverse recesses b^5, in combination with the thill C, having the thill-iron D, terminating in the T-head *d*, mounted in the recesses b^5, and with the spring c^3, bent as at c^4 and projected as at c^5, provided with the block c^6 at one end and with the supporting-plate *c* at the opposite end, which plate is formed with the thumb-lug c' and rearwardly-projecting shoulders c^2, adapted to take into the recesses b^5, substantially as specified.

411,045. FASTENER FOR ENVELOPES, BOXES, &c. FRANK J. MILLER, Upper Lehigh, Pa. Filed Apr. 27, 1889. Serial No. 308,814. (No model.)



Claim.—The combination, with an envelope, of the disk 2, connected to the inside of its rear wall and provided with the lug 3, bored as at 4, projected through and disposed at a right angle to said wall, and having the annular internal recess 5, and of the disk 1, mounted on the outside of the flap of the envelope and having the spring-tongue 6, bent as at 7 and 9, and secured to the disk, as at 8, and passing through the flap, said tongue being adapted for insertion in the bore 4 and to take under the shoulder therein, substantially as specified.

411,046. CROCHETING-MACHINE. GUSTAVE D. HEMMER, Minneapolis, Minn. Filed Feb. 16, 1889. Serial No. 300,294. (No model.)



Claim.—1. In a machine of the class described, the combination, with a longitudinally-reciprocating and laterally-movable needle, of a longitudinally-reciprocating and laterally-movable looper arranged to reciprocate transversely to the line of reciprocation of said needle, and means for moving said needle and looper laterally in the same direction in unison with each other, substantially as described.

2. The combination, with a feed-wheel having a step-by-step movement, of a longitudinally-reciprocating and laterally-movable needle, and a longitudinally-reciprocating and laterally-movable looper arranged to reciprocate transversely to the line of reciprocation of said needle, substantially as described.

3. The combination, with a notched and spurred feed-wheel, of a longitudinally-reciprocating and laterally-movable needle, and a longitudinally-reciprocating and laterally-movable looper arranged to reciprocate transversely to the line of reciprocation of said needle, substantially as described.

4. The combination, with a reciprocating and laterally-movable needle, of a reciprocating and laterally-movable looper arranged to reciprocate transversely to the line of reciprocation of said needle, and provided with a sliding latch, substantially as described.

5. The combination, with a reciprocating needle, of a reciprocating looper arranged to reciprocate transversely to the line of reciprocation of said needle, and provided with a sliding latch and a reciprocating stitch-caster engaging said looper, substantially as described.

6. The combination, with a reciprocating needle, of a reciprocating looper arranged to reciprocate transversely to the line of reciprocation of said needle, and provided with a sliding latch, a reciprocating stitch-caster, and a swinging loop-holder, substantially as described.

7. The combination, with an oscillating arm 21 and a reciprocating needle supported upon said arm, of a depending arm secured upon said oscillating arm and moving therewith, and a longitudinally-reciprocating looper supported upon said depending arm and arranged to reciprocate transversely to the line of reciprocation of said needle, substantially as described.

8. The combination, with the oscillating arm 21 and the reciprocating needle supported upon said arm, of the adjustable wheel 41,

provided with the cam-groove 45, and the adjustable stud 47, engaging said groove and connected to the arm 21, substantially as described, and for the purpose set forth.

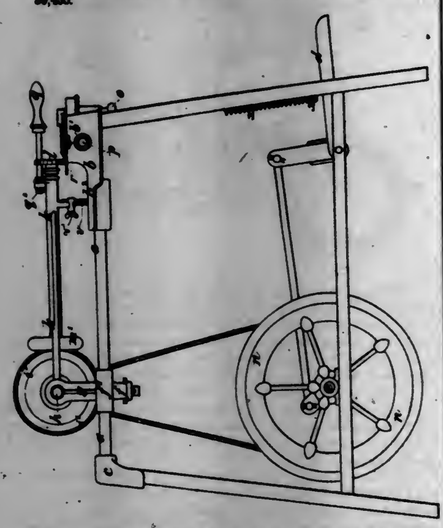
9. The combination, with the hollow oscillating arm 21 and the hollow depending arm 51, supported thereon, of the shaft 25, arranged in said arm 21, the shaft 57, arranged in said depending arm, the needle-bar connected with said shaft 25, the cam-disk 63, secured to said shaft 57, and the reciprocating looper supported upon said arm 51 and arranged to be operated by said cam-disk, substantially as described.

411,047. PROCESS OF EXTRACTING PRECIOUS METALS FROM THEIR ORES. JOHN S. MAC ARTHUR, Pollokshields, County of Renfrew, Scotland. Filed Dec. 13, 1887. Serial No. 257,801. (No model.)

Claim.—1. The mode herein described of extracting gold from its ores, which consists in dissolving the gold out of the ore by treating the latter to the action of perbromide of iron, substantially as set forth.

2. The mode herein set forth of extracting gold from its ores by first removing the silver, copper, lead, and zinc by means of ferric salts, and then subjecting the ore thus freed from these metals to the action of perbromide of iron, all substantially as described.

411,048. APPARATUS FOR SHARPENING THE CUTTERS AND FINGERS OF REAPING AND MOWING MACHINES. ROBT. MCGREGOR, Leigh, County of Lancaster, England. Filed July 3, 1886. Serial No. 207,620. (No model.) Patented in England July 1, 1886, No. 8,607; in France July 31, 1886, No. 177,711, and in Germany Aug. 15, 1886, No. 39,495.



Claim.—1. The combination of a fixed frame with a frame universally jointed to the fixed frame and carrying a revolving spindle and grinding-wheel, substantially as specified.

2. The combination of a fixed frame and a piece movable thereon, with a fork swiveled on the said movable piece, a movable frame upon the swiveled fork, and a revolving grinding-spindle carried by the movable frame, all substantially as set forth.

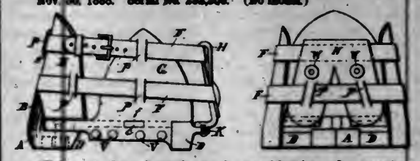
3. The combination of a fixed frame and a cross-piece adapted to slide thereon, with a swiveled fork mounted upon the sliding piece, a movable frame on the fork, and a revolving grinding-spindle carried by the movable frame, all substantially as set forth.

4. The combination of a fixed frame and driving devices thereon, with the horizontally-movable frame, a fork swiveled vertically on the latter, the frame *k*, pivoted horizontally to the fork, and a rotary grinding-wheel mounted in the frame *k* and driven from the fixed frame, all substantially as specified.

5. The combination of the frame with a spring-bolt and clip *o*, having an extra claw *o'*, as and for the purpose specified.

6. The combination of the fixed frame having parallel tubes or bars *a* and the sliding cross-piece *f f'*, adapted thereto, with a fork swiveled in the cross-piece and a movable grinding-frame pivoted to the fork and carrying a revolving grinding-spindle, all substantially as specified.

411,049. HORSE-BOOT. ANDREW MCKAY, Philadelphia, Pa. Filed Nov. 30, 1888. Serial No. 292,202. (No model.)

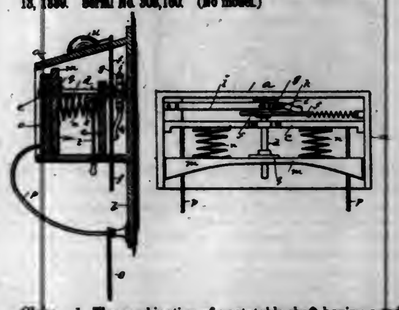


Claim.—1. In a horse-boot, the combination of a toe-piece A, constructed with slots *a* and recesses *b*, side pieces D, and connecting-bolts J, as shown and described.

2. In a horse-boot, the leather side pieces G, in combination with iron side pieces D, having ribs, so that the leather sides may be fastened on the edges of the irons D by rivets, as shown, described, and for the purpose specified.

3. In a horse-boot, the combination of a back piece H with side pieces G and D, toe-piece E and A, and straps F F, all substantially as shown and described.

411,050. ADVERTISING AND STREET-ANNOUNCING APPARATUS. GEORGE W. MCKENZIE, Van Fort, and WILLIAM I. MILLER, Denver, assignors of one-third to R. H. Marks, Denver, Pa. Filed Mar. 13, 1889. Serial No. 303,160. (No model.)



Claim.—1. The combination of a rotatable shaft having a radial detent, a series of plates each having a radial slot, through which the detent on the shaft is successively passed as the plates are discharged one after another, a spring-controlled follower which normally presses the series of plates against one another and the detent on the shaft, and mechanism connected to the shaft for rotating the latter axially a predetermined distance at suitable intervals, whereby the radial detent on the shaft aligns successively with the slots in the plates to permit them to be forced off the shaft by the spring-follower, substantially as and for the purpose described.

2. The combination of a rotatable shaft having a detent, a series of slotted plates, a case within which the plates are housed, the guides *p*, passing through the plates and extending below the case, and mechanism for forcing the series of plates in one direction so as to expel the front exposed plate from the case when the detent on the shaft enters the slot therein, whereby the ejected plate is caused to slide on the guides and assume a position below the case with its rear side exposed, all arranged and combined substantially as described.

3. The combination of a rotatable shaft having a radial detent, a series of slotted plates through which said shaft passes, a lever secured to the shaft for turning it axially a predetermined distance, and a spring-controlled follower bearing against the plates, arranged and combined for service, substantially as and for the purpose set forth.

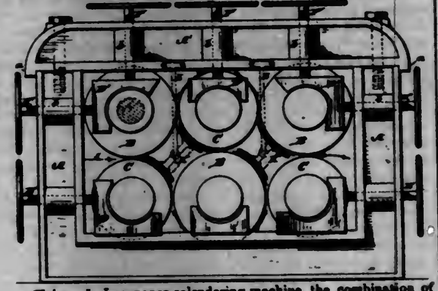
4. The combination of a suitable inclosing-case, a spring-controlled follower housed therein, a series of slotted name-plates arranged one in rear of the other and in front of the follower, an axially-turning shaft passing through the series of name-plates and having a radial detent at its outer extremity, and a lever for turning said shaft a predetermined distance to adjust its detent in line with the slot of the front plate of the series, arranged and combined for service, substantially as described, for the purpose set forth.

5. The combination, with a series of name-plates and a detaining device adapted to engage said plates to prevent the expulsion thereof from the inclosing-case, of a spring-controlled follower normally bearing against the plates, and a locking device arranged at a point some distance in rear of the normal position of the follower, whereby the follower can be held out of engagement with the plates to enable the latter to be adjusted, substantially as and for the purpose described.

6. The combination, with a series of name-plates and a detaining device therefor, of a spring-controlled follower having a slotted plate on its rear side, and a pivoted hook having a lifting-rod, which is arranged at a point some distance in rear of the normal position of the follower and in such a position that it enters the slot of the plate thereon when the follower is forced rearwardly, substantially as described.

7. The combination of an inclosing-case, a spring-controlled follower, a series of slotted name-plates arranged one in rear of the other and in advance of the follower, a shaft having a radial detent and passing through the slots of the name-plates, the fixed guides passing through the name-plates near the lower edges and extending below the case, a lever connected to the shaft, and a toothed wheel carried by the shaft and held in restraint by one or more pawls, all arranged and combined substantially as and for the purpose described.

411,051. PAPER-CALENDERING MACHINE. JOHN MCLAUGHLIN, Lee, Mass. Filed July 13, 1888. Serial No. 279,574. (No model.)



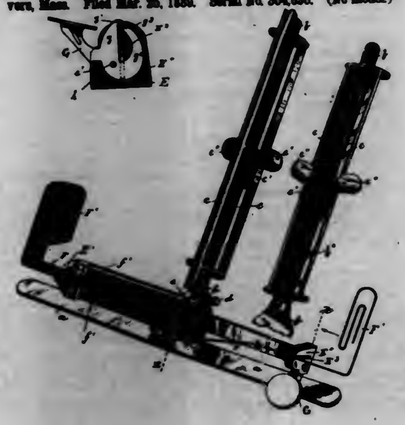
Claim.—1. In a paper-calendering machine, the combination of a series of calender-rolls arranged in sets, with each four rolls of the series in proximity and opposite to one another, substantially as described, to form double rows with four points of contact between each four rolls of the series, substantially as and for the purposes described.

2. In a calendering-machine, the combination of a series of calender-rolls arranged in horizontal sets, with two rolls in each set and one roll of each set over its mate, the rolls of the sets being contiguous to each other and to the rolls of the next set, to form four points of contact between each four rolls of the series, substantially as and for the purposes described.

3. In a calendering-machine, the combination of a series of calender-rolls arranged in horizontal sets and movable toward each other, movable journal-boxes for the journals of the rolls, and set-screws for adjusting said boxes and rolls horizontally, whereby the pressure between the rolls can be regulated, substantially as and for the purposes described.

4. In a calendering-machine, the combination of a series of calender-rolls arranged in horizontal sets, movable journal-boxes for the journals of the rolls, and set-screws bearing vertically and horizontally against said boxes for adjusting the boxes both horizontally and vertically to regulate the pressure between the rolls, substantially as and for the purposes described.

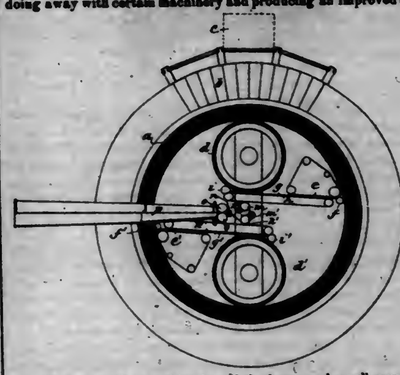
411,052. MUSIC-LEAF TURNER. JONAH R. NIGHTINGALE, Danvers, Mass. Filed Mar. 25, 1889. Serial No. 304,630. (No model.)



Claim.—The leaf-turner as described, consisting of a plate *a* and bar *b*, hinged to it, and the bar E, detachably secured to said bar *b*, said bar E having pivoted to it a series of spring-pressed leaf-turners F F, and the said bar *b* having hinged to it the spring-pressed clamping-jaws *c c*, as described, and a locking and releasing device for the leaf-turners, substantially as and for the purpose set forth.

411,053. WOOL-COMBING MACHINE. DAVID P. HOMER, Lawrence, Mass. Filed May 21, 1888. Serial No. 274,515. (No model.)

Brief.—The sliver is taken directly from the aprons to the mouth of a delivery tube or trumpet at the same level as the combs, thereby doing away with certain machinery and producing an improved sliver.

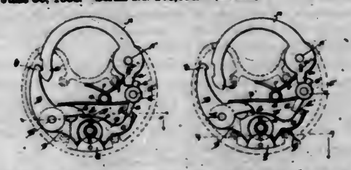


Claim.—1. The combination of the large and small combs and drawing-off rolls and aprons of a wool-combing machine with a single delivery-tube having its receiving end substantially at the level of the aprons and guides by which the fiber from the aprons taken from all the combs is directed without twist into the said tube, substantially as described.

2. The combination of the large and small combs and drawing-off rolls and aprons of a wool-combing machine with a single stationary guide-tube into which the united fiber from both aprons is carried and calender-rolls and a delivery-tube having its mouth opposite the said guide-tube, into which delivery-tube the sliver is carried from the guide-tube by the calender-rolls, substantially as described.

3. The combination of the large and small combs and drawing-off rolls and aprons of a wool-combing machine with a stationary delivery-tube having its receiving end substantially at the level of the aprons, and adjustable binders by which the fiber from the aprons is directed into the said tube, and means for fastening said binders in adjusted position, substantially as described.

411,054. PADLOCK. JONAS R. OPAL, Lake Linden, Mich. Filed June 30, 1888. Serial No. 278,631. (Model.)



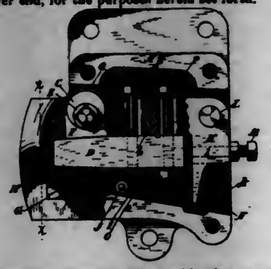
Claim.—1. The combination, with a bow and a pivoted catch for retaining the bow in locked position, of a tumbler for actuating said catch, a rock-arm for locking the tumbler when the bow is locked, and an arm projecting from the bow for engaging and actuating said rock-arm, whereby the tumbler will be released when the bow is depressed, substantially as set forth.

2. In a padlock, the combination, with a bow, of a catch and a tumbler, each pivoted at one end upon the same arbor, an arm projecting from the catch adapted to engage the tumbler, a rock-arm for locking the tumbler when the bow is locked, and an arm projecting from the bow for actuating said rock-arm, substantially as set forth.

411,055. SAW-TOOTH SWAGE. C. OSCAR FOSTER and ALVIN D. FOSTER, Grand Rapids, Mich. Filed Jan. 28, 1889. Serial No. 297,812. (No model.)

Claim.—1. In a saw-tooth swage, and in combination, a case, a bell-crank lever pivoted therein, a lifting-cap secured to the upper side, and a die secured to the under side of the horizontal arm thereof,

and having the vertical arm thereof prolonged and diminished toward the lower end, for the purposes herein set forth.



2. In a saw-tooth swage, and in combination, a case constructed as described, having a bed-plate A and ledges A′ and A″ and a cap B, a bell-crank lever journaled in said case, provided with a die secured to the under side of the horizontal arm, and a set-screw adapted for adjusting the die arranged in the vertical arm, a tooth-stop arranged upon the ledge A″ and having a notch engaging with the vertical arm of said lever, and a pin J, arranged as described, and for the purpose specified.

3. In a saw-tooth swage, and in combination with a case having a bed-plate having ledges A′ and A″ and a cap B, and an anvil arranged in ledge A″, substantially as described, the clamping or grip jaws H and H′, the jaw H provided with an adjusting-screw, whereby it may be adjusted more or less toward the anvil, and the jaw H′ provided with its spring and hand-lever, substantially as described.

4. In a saw-tooth swage, and in combination with the bed-plate A and ledge A″ and the clamping-jaws H H′, as described, the anvil G, consisting of a cylindrical steel plug having one flat top and one rearwardly-inclined face arranged in said ledge A″, substantially as described.

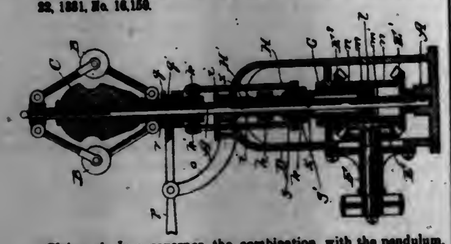
5. In a saw-tooth swage, substantially as described, and in combination, the lever K, pivoted in said case, having the lifting-cap Q and the die D secured upon the upper and lower sides of the horizontal arm thereof, respectively, and provided with the cam O and block F, for the purpose specified, the anvil G, and the clamping-jaws H H′, arranged as described, and for the purpose herein specified.

6. In a saw-tooth swage, and in combination with a case having a ledge A″ and an anvil G, arranged as described, and a bell-crank lever supporting a die and a lifting-cap upon its horizontal arm, and having a cam and block for lifting the same, substantially as described, and a vertical arm provided with an adjusting-screw for the die and a prolonged and diminished extension, pivoted in said case, a tooth-stop arranged upon said ledge, connected to said vertical arm, whereby the same is moved toward and away from the anvil, and clamping-jaws H and H′, arranged substantially as described.

7. In a saw-tooth swage, substantially as described, and in combination with the anvil G and the bell-crank lever K, having the die D, lift Q, cam O, and block F, and the vertical arm N, arranged as described, tooth-stop I, arranged as described, provided with the pin J and engaging with the arm N, for promoting its longitudinal movement, substantially as described and set forth.

8. In a saw-tooth swage, and in combination, the lever K, pivoted in the case, having the lift Q and the die D secured to its horizontal arm, and provided with the cam O and block F, and having the arm N for engaging the tooth-stop I, in combination with the anvil G, jaws H and H′, with their set-screw and hand-levers, respectively, and the tooth-stop I, arranged substantially as described.

411,056. GOVERNOR. STEPHEN GRANT, Chicago, Ill. Filed Mar. 12, 1889. Serial No. 302,940. (No model.) Patented in Germany Mar. 22, 1881, No. 16,159.



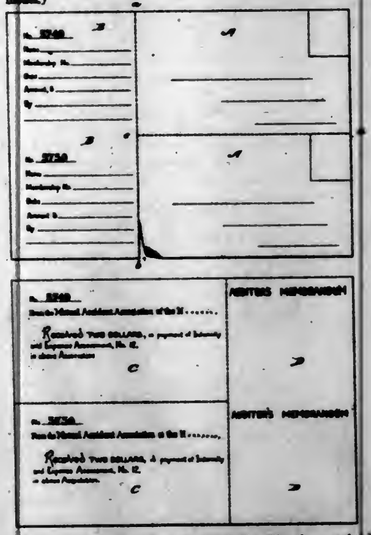
Claim.—1. In a governor, the combination, with the pendulum, driving-shaft, and connecting medium between the governor and the valve to be controlled, of a vertically-movable screw H and a vertically-immovable screw H′, both surrounding the governor-spindle and connected to rotate together, and interlocking mechanism actuated by the rise and fall of the pendulum to rotate the screw respectively in opposite directions, and thereby actuate the said connecting medium between the governor and valve to regulate the valve, substantially as described.

2. In a governor, the combination, with the pendulum, driving-shaft, and connecting medium between the governor and valve to be controlled, of a vertically-movable screw H and a vertically-immovable screw H′, both surrounding the governor-spindle and connected to rotate together, a miter-gear E on the driving-shaft, miter-gears F and F′ on the spindle and in mesh with the wheel E, and clutch mechanism actuated by the rise and fall of the pendulum, alternately to interlock the screw with the respective miter-gears on the spindle, and thereby turn the screw and produce action upon the said connecting medium to regulate the valve, substantially as described.

3. In a governor, the combination, with the pendulum, driving-shaft, and connecting medium between the governor and the valve to be controlled, of a vertically-movable screw H and vertically-immovable screw H′, both surrounding the governor-spindle and connected to rotate together, a miter-gear E on the driving-shaft, miter-gears F and F′ on the spindle and in mesh with the wheels E, flanges n on the respective wheels E and F′ and provided with clutch-teeth o, and clutch-teeth m′, connected with the screw and extending between the toothed flanges n, whereby the rise and fall of the pendulum alternately interlocks the screw with the miter-gears on the spindle, and by the resultant turning of the screw actuates the said connecting medium to regulate the valve, substantially as described.

4. A governor comprising, in combination, a rotary spindle A, supported by a suitable frame D and carrying a pendulum B, a weight C, having a sleeve-extension r loosely surrounding the spindle, a sliding collar g on the said sleeve-extension to engage with the lever b, leading to the valve to be controlled, a vertically-movable screw H, having a key g, and a vertically-immovable screw H′, having a key-sleeve g′, and both loosely surrounding the spindle, a toothed flange l on the lower end of the screw H, nuts k and k, respectively surrounding the screws H and H′, and connected, respectively, with a collar k′ on the sleeve-extension r and with the collar g, miter-gears F and F′, surrounding the spindle on opposite sides of the toothed flange l, and a miter-gear E, in mesh with the wheels F and F′ and actuated by the driving-shaft, substantially as and for the purpose set forth.

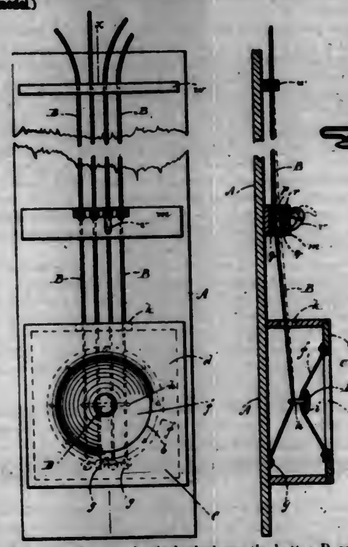
411,057. STUB-IDENTIFICATION RECEIPT-BLANK. THOMAS S. GREGORY, Chicago, Ill. Filed June 14, 1888. Serial No. 277,125. (No model.)



Claim.—1. The herein-described stub-identification receipt-blanks, comprising, in combination, permanent stubs and detachably-connected coupons, each bearing matter complemental of the other, whereby one may be identified by the other, and composed of stiff paper, whereby the coupons are adapted for transmission through the mail, said coupons having space upon one side to receive an address and the necessary postage and a space on the reverse side for the reception of the communication, substantially as described, and for the purpose set forth.

2. The herein-described stub-identification receipt-blanks, comprising a series of sheets bound together to form a book, and each sheet composed of a permanent stub and a coupon detachably connected thereto, the stub and coupon each bearing matter complemental of the other, whereby one may be identified by the other, and made of stiff paper, whereby the coupon is adapted for transmission through the mail, and having a space upon one side to receive an address and the necessary postage and a space on its reverse side for the reception of the communication, substantially as described, and for the purpose set forth.

411,058. MECHANICAL TELEPHONE. CARL M. RADFORD, Concord, N. H., assignor to himself, Frank L. Hood, Groton, and Freeman Emerson, Wakefield, Mass. Filed June 14, 1889. Serial No. 314,211. (No model.)



Claim.—1. In a mechanical telephone, the button D, comprising the head i and laterally-elongated loop h, substantially as described.

2. In a mechanical telephone, a transmitter, a button disposed in the diaphragm thereof and provided with an elongated shank, and a series of conducting-wires secured within the transmitter and passing through said button-shank, substantially as described.

3. In a mechanical telephone, a transmitter provided with a cone-shaped metallic diaphragm, a button secured in the apex thereof and provided with an elongated shank or loop, a series of conducting-wires passing through said loop, and mechanism for independently deadening or preventing said wires from vibrating, substantially as described.

4. In a mechanical telephone, a body-plate, a transmitter secured thereto and provided with a cone-shaped diaphragm, a button for said diaphragm having a laterally-elongated loop-shank, conducting-wires secured within said transmitter and passing through said loop, a bar on the body-plate provided with a wire-slot having a non-resonant lining, and cam-levers on the bar for forcing the wires against said lining, substantially as and for the purpose set forth.

5. In a mechanical telephone, a body-plate, a transmitter having a cone-shaped metallic diaphragm, a button disposed in the apex thereof and provided with a laterally-elongated loop, conducting-wires passing through said loop and in contact therewith, a bar secured to the body-plate and provided with a wire-slot having a non-resonant lining, pins projecting into said slot, and cam-levers pivoted to said pins, substantially as and for the purpose set forth.

6. In a mechanical telephone provided with a series of conducting-wires, a slotted bar through which the wires pass, said slot being lined with a non-resonant substance, and mechanism for forcing said wires into engagement with the slot-lining, substantially as and for the purpose set forth.

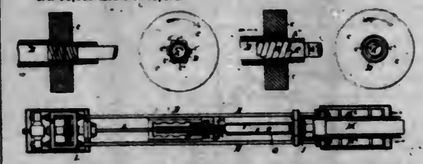
7. In a mechanical telephone, the bar m, provided with the wire-slot p, having the non-resonant lining q, in combination with the cam-levers v and pins r, substantially as set forth.

8. The plate A and transmitter C, having the diaphragm f, in combination with the button D, wires B, bar m, levers v, and pins r, substantially as described.

411,059. ART OF RENDERING PAPER INIMITABLE. ADOLPH EHRAPORT, Cincinnati, Ohio, assignor to the Strobridge Lithographing Company, same place. Filed Apr. 13, 1889. Serial No. 307,166. (No specimens.)

Claim.—The herein-described process of rendering paper inimitable, consisting in rubbing ink upon the face of a lithographic plate by means of another plate and transferring to paper by lithographic process the design so produced.

411,060. APPARATUS FOR THE MANUFACTURE OF METAL TUBES. JAMES ROBERTSON, Glasgow, County of Lanark, Scotland. Filed Dec. 14, 1888. Serial No. 293,564. (No model.) Patented in England Nov. 20, 1884, No. 15,782; in Germany Sept. 17, 1885, No. 36,614; in France Sept. 22, 1886, No. 171,280; in Belgium Sept. 22, 1886, No. 70,382; in Italy Aug. 13, 1886, No. 20,382, and in Austria-Hungary Feb. 6, 1888, No. 36,813 and No. 65,481.



Claim.—1. The herein-described rotary die for drawing down metal tubes or rods, said die having internal rounded acting edges to displace or draw down the metal as the die is rotated and forced over the tube or rod, all substantially as described.

2. The herein-described rotary die for drawing down metal tubes or rods, said die having internal rounded acting edges with intermediate grooves for lubricating the acting edges, displacing or drawing down the metal as the die is rotated and forced over the tube or rod, all substantially as described.

3. The herein-described rotary die for drawing down metal tubes or rods, said die having internal rounded acting edges in the form of a screw thread or threads to displace or draw down the metal as the die is rotated and forced over the tube or rod, all substantially as described.

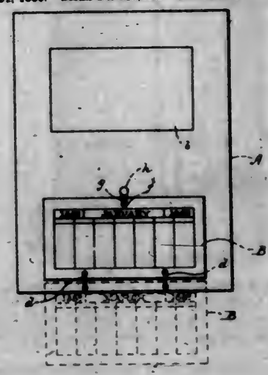
4. The combination of an internal mandrel for tubes with a rotary die having rounded acting edges to displace or draw down the metal of the exterior of the tube as the die is rotated and forced over the metal, all substantially as set forth.

5. The combination of an internal rotary mandrel, with rounded acting edges to form the interior of a tube, with a rotary die having rounded acting edges to displace or draw down the metal of the exterior of the tube, all substantially as described.

6. The combination of a rotary die, having rounded acting edges to draw down or displace the metal of the exterior of a rod or tube, with a hydraulic ram to force the die over the metal and means to rotate the die, all substantially as described.

7. The combination of a rotary die, having rounded acting edges to draw down or displace the metal of the exterior of a tube, with a mandrel for the interior of the tube, a hydraulic cylinder and ram carrying the die, and means for rotating the said ram, all substantially as described.

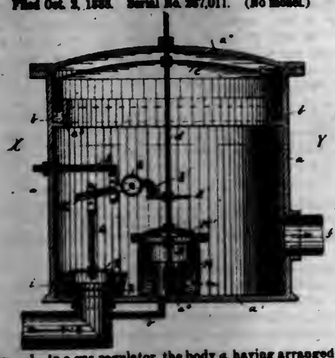
411,061. CALENDAR. RACHEL A. ROBINSON, Boston, Mass. Filed June 21, 1889. Serial No. 315,194. (No model.)



Claim.—1. A calendar comprising a body and a series of grouped cards hinged by their lower edges thereto, said cards being respectively imprinted with the days of one month and of the second succeeding month on opposite faces, substantially as described.

2. In a calendar, indicating-cards hinged to the body thereof, each card being imprinted on its face with the days of a month and on its reverse with the days of the second succeeding month in an inverted position, and held in position on said body by a catch or loop, substantially as set forth.

411,062. GAS-REGULATOR. WILLIAM C. ROBERT, Hyde Park, assignor of two-thirds to William Threlkeld and Charles L. Hunt, Boston, Mass. Filed Oct. 2, 1888. Serial No. 287,011. (No model.)

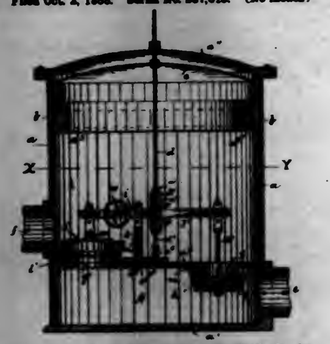


Claim.—1. In a gas-regulator, the body *a*, having arranged within it the liquid-seated gas-holder *c* and liquid-seated cup D, connected rigidly to said gas-holder, combined with the balanced valve *g*, the inlet and outlet pipes *e f*, a pipe or channel *o*, leading from the pipe *e* to below the cup D, and a weighted pivoted lever K, connected in one end to the valve *g* and having its free end resting on a disk *d'*, secured to the stem of the gas-holder, substantially as and for the purpose set forth.

2. In a gas-regulator, the body *a*, having arranged within it the liquid-sealed gas-holder *c* and liquid-sealed cup D, connected together by means of the stem or rod *d*, combined with the balanced valve *g*, the pivoted and weighted lever K, connected to said valve and having roller *k'* in its free end adapted to rest on a washer *d'*, secured to the gas-holder stem *d*, substantially as and for the purpose set forth.

3. In a gas-regulator, the body *a*, having inlet-passage *e*, covered by a balanced valve *g*, a liquid-sealed cup D, and pipe or passage *o*, leading from the inlet *e* to said cup, a liquid-seated gas-holder arranged within the body *a* and connected to the cup D, and a pivoted weighted lever K, connected in one end to the valve *g* and having its free end resting on a disk or projection on the gas-holder stem, substantially as and for the purpose set forth.

411,063. GAS-REGULATOR. WILLIAM C. ROBERT, Hyde Park, assignor of two-thirds to William Threlkeld and Charles L. Hunt, Boston, Mass. Filed Oct. 2, 1888. Serial No. 287,012. (No model.)



Claim.—1. In a gas-regulator, a case or body having a liquid-seated gas-holder arranged within it and having its stem connected to a pivoted lever, combined with a pair of balanced valves arranged on opposite sides of the said gas-holder stem, substantially as and for the purpose set forth.

2. In a gas-regulator, the case or body *a*, having arranged within it a liquid-seated gas-holder and a pair of balanced valves, combined with a lever pivoted to the fulcrum or post *k* and to the said valves and connecting mechanism between said lever and the gas-holder, said valves and their connecting mechanism being all contained within and inclosed by the gas-holder or bell, substantially as and for the purpose set forth.

3. In a gas-regulator, the body *a*, having arranged within it the liquid-seated gas-holder *c*, and a pivoted lever connected to a pair of balanced valves, as described, said lever being loosely connected to the stem of the gas-holder by the medium of the yoke N, in which the said valve-actuating lever is free to adjust itself during the vertical movement of the gas-holder, so as to automatically change the leverage of said lever, as described, for the purpose of compensating for variations in the displacement of the liquid seal for the gas-holder, said valves and their connecting mechanism being all contained within and inclosed by the gas-holder or bell, substantially as and for the purpose set forth.

4. In a gas-regulator, the body *a*, having arranged within it the liquid-seated gas-holder *c*, a pair of balanced valves pivoted to the lever I, said lever being pivoted to the stationary fulcrum or post *k*, as described, in combination with the yoke N, swiveled to the gas-holder stem and provided with the anti-friction rollers *o p* and the lower guide a^2, substantially as and for the purpose set forth.

5. In a gas-regulator, the body *a*, having arranged within its upper end the liquid-seated gas-holder *c*, and having a valve-box A in its lower end, with a perforated plate or diaphragm a^4 between said parts, combined with a pair of balanced valves connected together and to the gas-holder by means of the weighted lever I, pivoted to the stationary post or fulcrum *k*, said valves and their connecting mechanism being all contained within and inclosed by the gas-holder or bell, substantially as and for the purpose set forth.

6. In a gas-regulator, the case or body *a*, having valve-box A and supply and delivery pipes *e f*, as described, combined with a pair of balanced valves connected together by means of a pivoted lever and a liquid-seated gas-holder arranged within said case or body, said gas-holder having its stem loosely connected to the valve-lever, said valves and their connecting mechanism being all contained within and inclosed by the gas-holder or bell, substantially as and for the purpose set forth.

411,064. RAIL-JOINT. HENRY W. SCHEELE and AUGUST H. SCHEELE, Cross Plains, Wis. Filed Mar. 16, 1889. Serial No. 303,594. (No model.)

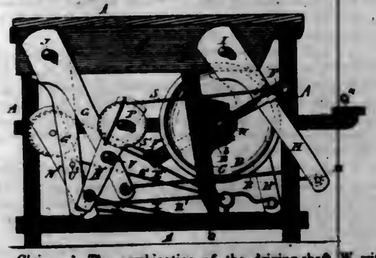


Claim.—1. A rail having its end beveled and interiorly grooved and provided with an inclined swell, combined with a second rail having beveled end and an inclined swell, and the transverse bolts and nuts for securing said rails, substantially as described.

2. A rail having its end beveled and interiorly grooved and provided upon its outer face with a beveled swell, combined with a second rail having its end beveled and provided with a ridge fitting the groove of the other rail and having formed upon its outer face a swell, and the transverse bolts passed through said rails and through the ridge and groove, substantially as described.

3. The combination, with the two beveled ends of two adjacent rails, one formed with a ridge and the other with a groove to receive said ridge, both of said rails being provided with elongated holes and inclined swells, of the bolts passed through said holes and provided with nuts adapted to bear flat against said inclined swells, substantially as and for the purpose specified.

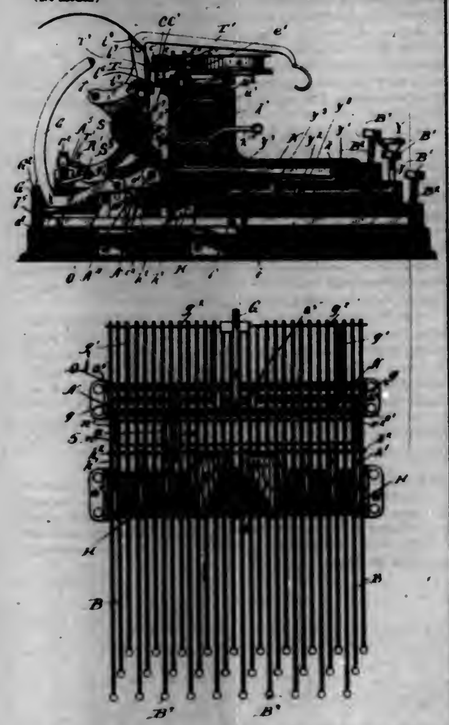
411,065. MOTIVE POWER. JOHN P. SCHROCKER, Franklin Grove, Ill. Filed Aug. 30, 1888. Serial No. 283,295. (Model.)



Claim.—1. The combination of the driving-shaft W with the swinging lever G, double-fulcrumed lever N, pulley P, band S, and crank E, arranged, substantially as described, in connection with a duplicate set of parts, and for the purposes set forth.

2. The combination, with the frame A A A, beams A' A^1, posts C C', and blocks B *b* B' *b'*, of the swinging lever H, foot-rest K, swinging lever G, connecting-rod R, double-acting lever N, pulley P, band S, and crank E, arranged, substantially as described, in connection with a duplicate set of parts, and for the purposes set forth.

411,066. TYPE-WRITING MACHINE. SAMUEL J. SHEPARD, Chicago, Ill., assignor of two-thirds to Fred W. Munson, Logansport, Ind., and Louis L. Munson, Chicago, Ill. Filed Aug. 28, 1888. Serial No. 283,457. (No model.)



Claim.—1. The combination, with a rotatable sliding type-sleeve, of a series of stop devices for limiting the longitudinal movement of said type-sleeve and a multiple number or set of two or more key-levers for actuating each of said stop devices, substantially as specified.

2. The combination, with a series of key-levers arranged in sets of two or more in each set, of a series of levers H—one for each set of type-levers—a series of stop devices D, a longitudinally-sliding type-sleeve C, and mechanism for connecting said stop devices D with said type-sleeve, substantially as specified.

3. The combination of rotatable longitudinally-sliding type-sleeve C, rotatable shaft C', upon which said type-sleeve reciprocates, type-sleeve frame or shuttle C^3, stop-pins D, bent levers F F', a series of bent levers H—one for each stop-pin—and a series of key-levers B, arranged in sets with two or more in each set, adapted to operate a single bent lever H, substantially as specified.

4. The combination of rotatable longitudinally-sliding type-sleeve C, its shaft C', and carriage or shuttle C^3, having pins c^4 c^4, and forked levers F F', for reciprocating said sleeve in either direction, substantially as specified.

5. The combination, with rotatable horizontally-sliding type-sleeve C, its shaft C', and carriage C^3, of bent levers F F' and a series of vertically-sliding stop-pins D, adapted to engage said carriage C^3 and limit its movement, and provided with shoulders or projections *d* to engage and operate said bent levers F F', substantially as specified.

6. The combination, with a rotatable sliding type-sleeve having type arranged in longitudinal rows or lines thereon, of a series of sliding stop-pins D, for limiting the longitudinal movement of said type-sleeve, a series of key-levers, and connecting mechanism for sliding said type-sleeve to bring the separate type longitudinally into position for printing and actuating said stop-pins by the movement of said key-levers, substantially as specified.

7. The combination, with a reciprocating type-sleeve, of a series of stop-pins D to limit the longitudinal movement of said sleeve and connecting mechanism for operating said type-sleeve from said stop-pins, substantially as specified.

8. The combination, with a series of stop-pins D, having pins or projections *d*, of the bent levers F F', having arms f^2 extending over said projections *d*, and a sliding type-carriage connected with and operated by said bent levers F F', substantially as specified.

9. The combination, with a series of stop-pins D, having pins or projections *d*, of the bent levers F F', having arms f^2 extending over said projections *d*, and a sliding type-carriage connected with and operated by said bent levers F F', said type-carriage being provided with shoulders adapted to engage said stop-pins, and thereby limit the movement of the type-carriage, substantially as specified.

10. The combination, with type-carriage or shuttle C^3, having pins or projections c^4, of forked bent levers F F', pivoted on opposite sides of the normal position of said type-carriage, whereby the type-carriage can be moved in either direction, substantially as specified.

11. The combination, with a reciprocating type-carriage C^3, having pins c^4, of bent levers F F', having forked upper ends *f'* and horizontal arms f^2, the inner prongs f^{12} of said forks *f* being shorter than the outer ones, and vertically-sliding pins D, having shoulders *d*, for operating said bent levers, substantially as specified.

12. The combination, with a rotatable shaft C', mounted in fixed bearings, of a type-sleeve C, reciprocating thereon and having two or more faces or lines of types, a series of key-levers arranged in transverse rows or ranks and in sets of two or more keys in a set, a single connecting mechanism for each set of key-levers to reciprocate the type-sleeve, and an impression-hammer G, operated by said key-levers and adapted to strike said type-sleeve, substantially as specified.

13. The combination, with a rotatable sliding type-sleeve having two or more faces or lines of types, of a series of key-levers arranged in transverse rows or ranks in sets of two or more keys in a set, a single connecting mechanism for each set of key-levers to reciprocate said type-sleeve, and an impression-hammer G, operated by said key-levers, substantially as specified.

14. The combination, with a rotatable shaft C', journaled in fixed bearings on the frame of the machine, of a type-sleeve C, reciprocating thereon and having two or more faces or lines of types, a series of key-levers arranged in transverse rows or ranks and in sets of two or more keys in a set, a single connecting mechanism for each set of key-levers to reciprocate the type-sleeve, a single type-sleeve-rotating mechanism for each rank or row of keys, and an impression-hammer G, operated by said key-levers and adapted to strike said type-sleeve, substantially as specified.

15. The combination, with a rotatable sliding type-sleeve having two or more faces or lines of type, of a series of key-levers arranged in transverse rows or ranks and in sets of two or more keys in a set, a single connecting mechanism for each set of key-levers to reciprocate the type-sleeve, and a single type-sleeve-rotating mechanism for each rank or row of keys, substantially as specified.

16. The combination, with a rotatable sliding type-sleeve, of a series of keys arranged in transverse rows or ranks and in sets, a series of corresponding key-levers, a common mechanism for communicating longitudinal reciprocating movement to said type-sleeve from each set of key-levers, and a common mechanism for communicating a rotary movement to said type-sleeve from each row or rank of keys excepting one, substantially as specified.

17. The combination, with a rotatable type sleeve C, its shaft C', and carriage or shuttle C^3, of a three-toothed gear c^6, secured to said shaft C', the shaft-turning device M, and a bent lever N, having an arm extending over an alternating series of key-levers B, substantially as specified.

18. The combination, with a rotatable type-sleeve C, its shaft C', and carriage or shuttle C^3, of a three-toothed gear c^6, secured to said shaft C', shaft turning device M, and a bent lever N, having an arm extending over alternating series of key-levers B, said series of key-levers B having projections b^2, adapted to engage the cross-bar of said lever N, substantially as specified.

19. The combination of rotatable sliding type-sleeve C, its shaft C', and carriage or shuttle C^3, with bent levers F F', vertically-sliding stop-pins D, bent levers H, key-levers B, arranged in sets, each set of key-levers operating one of said bent levers H, bent lever N, an alternating series of said key-levers B, having projections b^2, engaging said lever N, type-sleeve-turning device M, and gear c^6 on said shaft C', substantially as specified.

20. The combination of rotatable sliding type-sleeve C, its shaft C', and carriage or shuttle C^3, with bent levers F F', vertically-sliding stop-pins D, bent levers H, key-levers B, arranged in sets, each set of key-levers operating one of said bent levers H, bent lever N, an alternating series of said key-levers B, having projections b^2, engaging said

lever N, type-sleeve-turning device M, and gear c^4 on said shaft C, bent lever O, an alternating series of said key-levers B being provided with projections b^3 to engage said lever O, and a type-sleeve-turning device M', operated by said lever O, substantially as specified.

21. The combination, with the rotatable sliding type-sleeve and its shaft C, furnished with three-toothed gear or cam c^3, of the key-levers and connecting mechanism engaging said three-toothed gear for turning the type-sleeve shaft, and a set-key lever and connecting mechanism for rotating the type-sleeve shaft to bring another series of the type-sleeve faces into operation, substantially as specified.

22. The combination, with rotatable sliding type-sleeve C and its shaft C, furnished with gear c^2, of the key-levers and connecting mechanism engaging said gear c^2 for turning the type-sleeve shaft, and a loose gear c^7 on said shaft C, for setting or adjusting the radial position of the shaft and allowing the shaft to rotate freely when operated by the key-levers, substantially as specified

23. The combination, with rotatable sliding type-sleeve C and its shaft C, furnished with gear c^2, of the key-levers and connecting mechanism engaging said gear c^2 for turning the type-sleeve shaft, and a loose gear c^7 on said shaft C, for setting or adjusting the radial position of the shaft and allowing the shaft to rotate freely when operated by the key-levers, and a sliding rack for revolving said gear c^7, substantially as specified.

24. The combination, with rotatable sliding type-sleeve C and its shaft C, furnished with gear c^2, of the key-levers and connecting mechanism engaging said gear c^2 for turning the type-sleeve shaft, and a loose gear c^7 on said shaft C, for setting or adjusting the radial position of the shaft and allowing the shaft to rotate freely when operated by the key-levers, and a sliding rack for revolving said gear c^7, and two set-key levers P' P^3, for giving different movements to said rack, substantially as specified.

25. The combination, with a sliding rotatable type-sleeve, its shaft, the key levers, and mechanism for operating said sleeve from the key-levers, of a loose gear c^7, for adjusting the radial position of the type-sleeve shaft, a sliding rack P, set-key lever P', its shank p^3 furnished with notch p^3 to engage the key-board and hold the set-key lever in position, substantially as specified.

26. The combination, with a sliding rotatable type-sleeve, its shaft, the key-levers, and mechanism for operating said sleeve from the key-levers, of a loose gear c^7 on said shaft C, sliding rack P, having projection p, and set-key levers P' and P^3, engaging said projection p, substantially as specified.

27. The combination, with a sliding rotatable type-sleeve, its shaft, the key-levers, and mechanism for operating said sleeve from the key-levers, of a loose gear c^7 on said shaft C, said gear c^7 having a projection c^8, and said type-sleeve shaft having a pin or projection c^9, substantially as specified.

28. The combination, with sliding rotatable type-sleeve C, shaft C, and shuttle C^2, of vertically-sliding stop-pins D, having pins or projections d, pivoted bent levers F F', operated by said stop-pins and connected to said shuttle, and spring-lever K, having a forked or T-shaped end adapted to bear against both said bent levers, substantially as specified.

29. The combination, with sliding rotatable type-sleeve C, shaft C, and shuttle C^2, of vertically-sliding stop-pins D, having pins or projections d, pivoted bent levers F F', operated by said stop-pins and connected to said shuttle, and spring-lever K, having a forked or T-shaped end adapted to bear against both said bent levers, and operating-levers H, having horizontal arms A, said lever K being provided with a foot K^2, adapted to be operated by horizontal arms A of said levers H, substantially as specified.

30. The combination, with the paper-holder carriage R, having rack R^3, of the vertically-vibrating lever K, having gears L^2 L^4, one adapted to oscillate upon the other the distance of one tooth, and a pawl L^3, substantially as specified.

31. The combination, with the paper-holder carriage R, having rack R^3, of the vertically-vibrating lever K, having gears L^2 L^4, one adapted to oscillate upon the other the distance of one tooth, a pawl L^3, and a spring L^5, connecting said gear L^2 L^4, substantially as specified.

32. The combination, with the paper-holder carriage R, having rack R^3, of the vertically-vibrating lever K, having gears L^2 L^4, one adapted to oscillate upon the other the distance of one tooth, a pawl L^3, and a spacing key-lever connected with and adapted to operate said lever K, substantially as specified.

33. The combination, with a sliding rotatable type-sleeve, of a series of stops for limiting its longitudinal movement, a series of key-levers, and connecting mechanism for both rotating and sliding said type-sleeve by the movement of one and the same key-lever, substantially as specified.

34. The combination of a sliding rotatable type-sleeve C, a horizontal shaft upon which said type-sleeve reciprocates in a line parallel to the paper-roller, the paper-carriage and paper-roller, and an impression-hammer, the key-levers, and mechanism for reciprocating and rotating said type-sleeve from and by the key-levers, one and the same key-lever operating to both rotate and slide the type-sleeve, substantially as specified.

35. The combination of a sliding rotatable type-sleeve C, a horizontal shaft upon which said type-sleeve reciprocates in a line parallel to the paper-roller, the paper-carriage and paper-roller, and an impression-hammer, the key-levers, and mechanism for reciprocating and rotating said type-sleeve from and by the key-levers, said key-levers having rear ends which strike against and operate said impression-hammer, one and the same key-lever both rotating and sliding said type-sleeve, substantially as specified.

36. The combination of a sliding rotatable type-sleeve with key-levers B, impression-hammer U, its pivot or rock-shaft g, and foot or cross-bar g^2, and connecting mechanism through which said type-sleeve is both rotated and slid by one and the same key-lever, substantially as specified.

37. The combination, with a sliding rotatable type-sleeve, of a paper-carriage, a storage paper-roller mounted thereon, having a hinged clamp for clamping the edge of the paper, a hinged paper-feed frame having a limited opening movement to feed the paper the space of one line, and a paper-clamp lever pivoted to said paper-feed frame, substantially as specified.

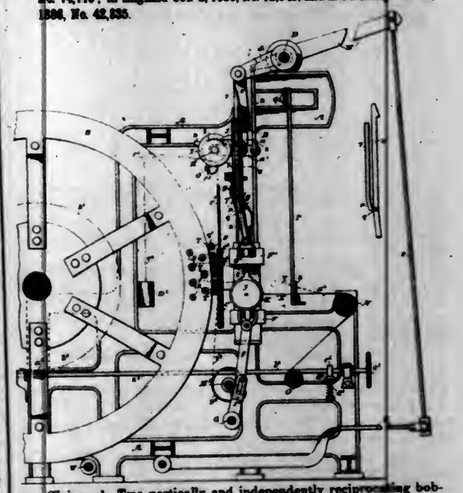
38. The combination, in a type-writer, of a paper-carriage R with paper-roller S, hinged paper-clamp S', thumb-wheel S^2, crank s^1, and slotted link s^3, connected to said hinged clamp S, whereby said clamp is opened and held open when the paper-roller is turned in the reverse direction, substantially as specified.

39. The combination, in a type-writer, of a paper-carriage R with paper-roller S, hinged paper-clamp S', thumb-wheel S^2, crank s^1, and slotted link s^3, connected to said hinged clamp S', whereby said clamp is opened and held open when the paper-roller is turned in the reverse direction, and a spring s^5, for holding said clamp S' closed, substantially as specified.

40. The combination of spools V V', ribbon v, ratchet-wheels v^2, having hubs v^3, pawls U, lever u, vibrating lever K, said hubs v^3 having grooves v^4, and plug v^5, substantially as specified.

411,067. LOOM FOR WEAVING TUFTED FABRICS. (Métier à tisser.)

ARTHUR SERET, Roubaix, France, assignor of one-half to Jules Leon Ferdinand Saulnier, same place. Filed May 8, 1888. Serial No. 273,172. (No model.) Patented in France Sept. 18, 1886, No. 178,612; in Belgium Oct. 2, 1886, No. 74,713; in England Oct. 2, 1886, No. 12,543, and in Germany Oct. 15, 1886, No. 42,835.



Claim.—1. Two vertically and independently reciprocating bobbin-beams and bobbin-carriers mounted in and between said bobbin-beams, said carriers resting upon but detachable from the lower of said bobbin-beams, and said carriers having notches at their upper ends, the notches on alternate carriers being located on opposite sides, in combination with two independently-sliding bars adapted to said notched carriers, said bars being mounted on the upper of said bobbin-beams on opposite sides of said carriers, whereby either half or all of said bobbin-carriers may be connected with said upper bobbin-beam.

2. A vertically-reciprocating bobbin-beam and the vertically-reciprocating main operating-beam, in combination with a rock-shaft

located beneath said bobbin-beam, lever-arms secured to said rock-shaft, links connecting said lever-arms with said bobbin-beam, crank-arms connected with said rock-shaft, and hooked rods pivoted to said crank-arms and co-operating with the main operating-beam, substantially as set forth.

3. Two vertically and independently movable bobbin-beams and the vertically-reciprocating main operating-beam, in combination with hooked rods pivotally connected with the upper only of said bobbin-beams, and co-operating with said main operating-beam when said upper bobbin-beam is to be raised, and means for moving said lower bobbin-beam independently of said upper bobbin-beam, substantially as set forth.

4. The vertically-reciprocating main operating-beam and the upper vertically-movable bobbin-beam, in combination with hooked and notched rods pivotally connected with said bobbin-beam and co-operating with said operating-beam to raise said bobbin-beam, and spring-catch levers which engage the notches in said hooked rods when the same are raised, whereby said bobbin-beam may be held in an elevated position, substantially as set forth.

5. The main operating-beam, the upper bobbin-beam, the notched bobbin-carriers, and the sliding bars mounted on the bobbin-beam, which engage said notched carriers, in combination with rock-shafts mounted on said bobbin-beam, lever-connections between said shafts and said sliding bars, lever-arms secured to said shafts, and hooked rods pivotally connected with said lever-arms and co-operating with said main operating-beam, substantially as set forth.

6. A swinging and laterally-movable batten having batten-teeth and the main operating-beam of the loom, in combination with a rock-shaft from which said batten is suspended, a cam on said shaft for moving said batten laterally, a hooked rod co-operating with said main beam, and lever-connections between said hooked rod and said rock-shaft, substantially as set forth.

7. A rotary drum and a series of rollers journaled in said drum near its periphery, upon which the pile warp-threads are wound, in combination with a gear-wheel on said drum, a rotary shaft having a hand-wheel, and a worm on said shaft engaging said gear-wheel, substantially as set forth.

8. A rotary drum and rollers journaled therein, upon which the pile warp-threads are wound, in combination with a sliding rotary clutch member adapted to said rollers, a weight connected with said rotary clutch member by an intervening cord for giving tension thereto, and means for sliding said clutch member, substantially as set forth.

9. A rotary drum and a series of rollers journaled therein, upon which the pile warp-threads are wound, in combination with pile-carrying bars removably mounted on said drum, to which the ends of the pile warp-threads are secured.

10. A rotary drum and a series of rollers journaled therein, upon which the pile warp-threads are wound, in combination with a pile-carrying bar removably mounted on said drum, to which the ends of the pile warp-threads carried by one of said rollers are secured, and a nipping bar or rod for securing the ends of said threads to said pile-bar, substantially as set forth.

11. A rotary drum, a series of rollers journaled therein, upon which the pile warp-threads are wound, and a pile-carrying bar removably mounted on said drum, to which the ends of the pile warp-threads are secured, in combination with sliding bars which engage said pile-bar and move it from said drum, and mechanism for actuating said sliding bars, substantially as set forth.

12. A rotary drum, a series of rollers journaled therein, upon which the pile warp-threads are wound, and a pile-carrying bar removably mounted on said drum, to which the ends of the pile warp-threads are secured, in combination with curved or cam-shaped sliding bars which engage said pile-bar and move it from said drum, guide-rollers upon which said sliding bars rest and travel, and mechanism for actuating said sliding bars, substantially as set forth.

13. A rotary drum, a series of rollers journaled therein, upon which the pile warp-threads are wound, a pile-carrying bar removably mounted on said drum and to which the ends of the pile warp-threads are secured, and sliding bars which engage said pile-bar and move it from said drum, in combination with a rock-shaft, levers connecting said rock-shaft to said sliding bars, a pivoted sway-beam, a lever-arm connecting said sway-beam to said rock-shaft, the main operating-bar B, and a hooked rod pivoted to said sway-beam and co-operating with said main operating-bar, substantially as set forth.

14. The pile-warp drum, the ground-warp bobbins, and mechanism for actuating said bobbins, in combination with a reciprocating pile-thread-shifting frame located between said pile-warp drum and said ground-warp bobbins, the pile warp-threads passing through said shifting-frame.

15. A vertically-reciprocating pile-thread-shifting frame, and weights connected therewith by intermediate cords and pulleys, whereby said frame is normally held in an elevated position, in combination with a rotary shaft beneath said frame, drums on said shaft, straps connecting said drums and said frame, the main operating-bar B, a hooked rod co-operating with said main bar, and a cord or strap connected at opposite ends to said hooked rod and to said shaft, substantially as set forth.

16. A vertically-reciprocating pile-thread-shifting frame, weights connected therewith by intervening cords and pulleys, a rotary shaft, drums on said shaft, straps connecting said drums with said shifting-frame, the main operating-bar B, a hooked rod co-operating with said bar, and a cord or strap connected at opposite ends to said rod and to said shaft, in combination with a second gravitating hooked rod, and a cord connecting the same with said rotary shaft, said gravitating hooked rod being brought into co-operation with the main operating-beam when the shaft has been rotated by the instrumentality of the first-named hooked rod, substantially as set forth.

17. The vertically-reciprocating bobbin-beams, bobbin-carriers, the bobbins thereon, and the pile-warp rollers, in combination with a laterally-movable comb mounted on each of said beams, between the teeth of which the pile warp-threads pass, and means for moving said comb laterally, substantially as set forth.

18. The vertically-reciprocating bobbin-beams, bobbin-carriers, the bobbins thereon, and the pile-warp rollers, in combination with a laterally-movable comb mounted on each of said bobbin-beams, between the teeth of which the pile warp-threads pass, the lateral movement of the comb on one beam being double that of the comb on the other beam, and mechanism for moving said combs laterally, substantially as set forth.

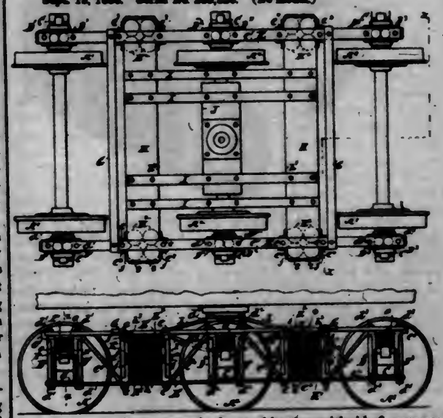
19. A vertically-reciprocating bobbin-beam and a laterally-movable comb mounted on said beam, in combination with a rock-lever pivoted to said bobbin-beam, one arm of which is connected with the comb, and stationary tappets fixed to the frame-work of the loom, which are encountered by the other arm of said rock-lever, substantially as set forth.

20. Two reciprocating bobbin-beams and the bobbins for carrying the ground warp-threads mounted in and between the same and supported alternately by each of said beams, in combination with rollers upon which the pile warp-threads are wound, a movable bar, to which the ends of the pile warp-threads are secured, which bar carries the pile-threads between the bobbins and one of said bobbin-beams when the latter has been separated from the bobbins, and mechanism for carrying said movable bar between said bobbin-beams, substantially as set forth.

21. Two reciprocating bobbin-beams and the bobbins for carrying the ground warp-threads, mounted in and between the same and supported alternately by each of said beams, in combination with rollers, upon which the pile warp-threads are wound, a vertically-movable pile-thread-shifting frame between said pile-rollers and said ground-warp bobbins, and a movable pile-carrying bar which carries the pile-threads through said shifting-frame and between said bobbins and one of said bobbin-beams, substantially as set forth.

411,068. CAR-TRUCK. (Truck de wagon.)

WILLIAM H. H. SMITH, Brooklyn, N.Y. Filed Sept. 12, 1888. Serial No. 285,226. (No model.)



Claim.—1. In a car-truck, the combination, with side frames provided with bearings, of a bolster made in three parts, comprising upper, middle, and lower parts, and springs arranged between the lower and middle parts, and other springs arranged in pairs between the middle and upper parts, substantially as specified.

2. In a car-truck, the combination, with side frames provided

with bearings for three pairs of wheels, of two bolsters connected together and severally composed of three parts, comprising an upper, a central, and a lower part, springs arranged between the lower and middle parts of each of said bolsters, and springs arranged between the middle and upper parts of each bolster, substantially as specified.

3. In a car-truck, the combination, with frames provided with bearings, of a bolster comprising an upper, a middle, and a lower beam, spiral springs arranged near the ends between the lower and middle beams, and other spiral springs between the middle and upper beams, substantially as specified.

4. In a car-truck, the bolster, comprising the upper, the middle, and the lower portions, extending across the truck, and spiral springs arranged between the upper and middle portions, and other spiral springs arranged between the middle and lower portions, substantially as specified.

5. In a car-truck, the combination of a side frame having two longitudinal bars, one above the other, and pedestal-jaws consisting of pieces fitted and secured between the two longitudinal bars by means of bolts extending transversely through the said bars and lengthwise through the pedestal-jaws, substantially as specified.

6. In a car-truck, the combination, with a side frame and an oil-box working within pedestal-jaws comprised in said side frame, of a rocker supported upon the oil-box, and a stirrup supported upon the rocker and engaged with said pedestal-jaws, substantially as specified.

7. In a car-truck, the combination, with a side frame and an oil-box working within pedestal-jaws comprised in said side frame, of a rocker supported upon the oil-box, and a stirrup consisting of two upright bars and a cross-bar, the cross-bar resting upon the rocker and the upright bars being engaged with the pedestal-jaws, substantially as specified.

8. In a car-truck, the combination, with a side frame and an oil-box working within pedestal-jaws comprised in said side frame, of a rocker supported upon the oil-box, and a stirrup consisting of a cross-bar resting upon the rocker, two upright bars engaging with the pedestal-jaws and provided with vertical slots receiving lugs with which the rocker is provided, substantially as specified.

411,069. METHOD OF BURNING CLAY FOR BALLAST.

CHARLES M. SNYDER, Mount Pleasant, Iowa. Filed Mar. 5, 1889. Serial No. 301,962. (No model.)

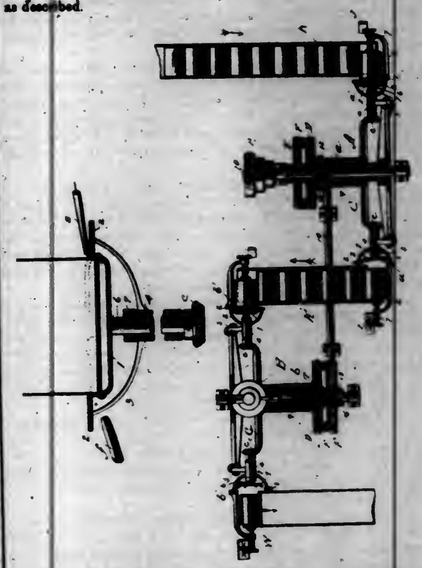


Claim.—The method herein shown of burning clay and other earths into suitable material for railroad-ballast and other like purposes, consisting in forming a series of deep trenches A in the earth parallel with each other, with standing walls of earth left in its natural state to be burned between said trenches, with said trenches filled with coal or other suitable fuel and fired, and the loose clay or earth excavated in forming said trenches placed in suitable layers interspersed with coal over said filled and fired trenches and intermediate standing walls, so as to ignite and burn it to proper consistency in harmony with said standing walls B by the fire in said furnaces or trenches A, substantially as shown, for the purposes specified.

411,070. CAN-SOLDERING MACHINE.

JOHN SOLTER, Baltimore, Md., assignor of one-half to George L. Kreba, same place. Filed May 27, 1889. Serial No. 312,262. (No model.)

Claim.—1. In combination, the two vertical can-carriers with separate can holding and releasing devices for each can, and a conveyer between them for transferring the cans from one carrier to the other and inverting them in relation to their can-seats, substantially as described.



2. In combination, a series of can-seats on a movable support with can-holders and means for releasing the cans when they are approximately in a horizontal position, a second series of can-seats with automatic can-gripping devices, and a conveyer for transferring the cans in approximately a horizontal position from one series of seats to the other and inverting them in relation to the can-seats, substantially as described.

3. In combination, the two vertical wheels, the conveyer between them arranged to receive the can in a horizontal position from one wheel and convey and hold it in line with the can-seats of the other wheel, and cause it to be inverted in relation thereto, and separate automatic gripping and releasing devices for each of the cans, substantially as described.

4. In combination, a vertical table in which a feed-station and a discharge-station are arranged approximately opposite, a second vertical table having a feed-station positioned in relation thereto similar to that of the first feed-station to the first wheel, and a conveyer between the discharge-station of the first wheel and the feed-station in the second wheel for transferring the can in an inverted position to the second table, substantially as described.

5. In a can-seat, the ring having a depressed portion to allow feeding of solder to the seam, substantially as described.

6. In combination, the can-seat, the ring, the flame-tube below said ring, and the solder-tube arranged opposite and above the ring, said ring having a depressed portion to allow the feeding of solder, substantially as described.

411,071. METAL-SEAMING MACHINE.

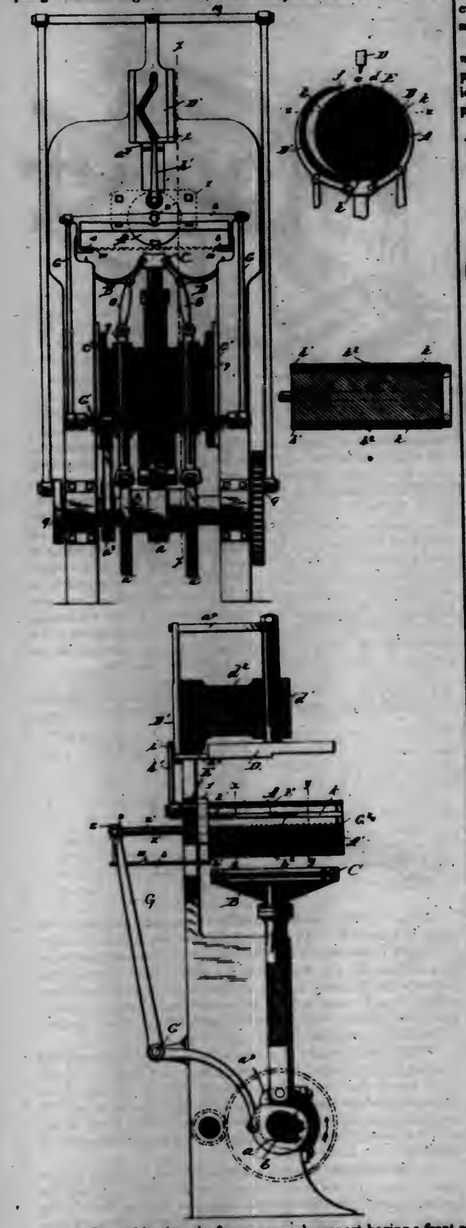
JOHN SOLTER, Baltimore, Md., assignor of one-half to George L. Kreba, same place. Filed May 28, 1889. Serial No. 312,263. (No model.)

Claim.—1. In combination, the former for supporting the work, having a recess to receive a crimper and having a blade *f*, a revoluble crimper within said recess of the former, said crimper being formed with a recess, and a plunger co-operating with said recessed crimper to unite the edges of the metal, said crimper acting in connection with the blade *f* to crimp the united edges, substantially as described.

2. In combination, the former or work-support, the plunger, the revoluble crimper, and an operating-connection from said crimper to the plunger for moving the crimper, substantially as described.

3. In combination, the work-support, the plunger, the crimper, the crank-arm connected thereto, and the cam moving with the plunger for operating said crank-arm, substantially as described.

4. In combination, the former or work-support having a front recessed portion, a revoluble crimper therein extending approximately half way to the rear, and a plunger to act in conjunction with said crimper in the front portion for uniting the edges of the blanks, the said former having a rear part constituting a second former or work-support, the said plunger also having a rear part constituting a second plunger for finishing the seams, substantially as described.



5. In combination, the former or work-support having a front recessed portion, a revoluble crimper therein extending approximately half-way to the rear, and a plunger to act in conjunction with said crimper in the front portion for uniting the edges of the blanks, the said former having a rear part constituting a second former or work-support, said rear part being grooved to finish the seam, the said plunger also having a rear part constituting a second plunger to act in conjunction with the grooved rear part for finishing the seams, substantially as described.

6. In combination, the former, the revoluble crimper for uniting the metal, and the discharge comprising the automatic lever G, discharge-bars for engaging the metal, and the connection between the same and the lever, substantially as described.

7. In combination, the former supported at one end, means for uniting the material, including a plunger, a grip C, and means for positively reciprocating said grip to and from the former and for rigidly holding the same to support the former during the impact of the plunger, substantially as described.

411,072. RIDING-SADDLE.

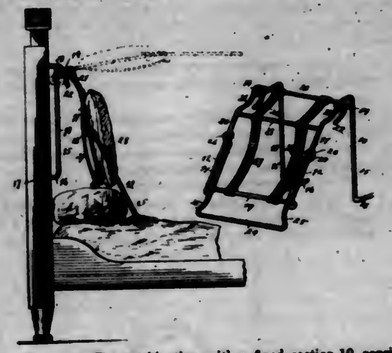
JOHN B. SULLIVAN, Jefferson City, Mo. Filed Mar. 23, 1889. Serial No. 304,735. (No model.)



Claim.—The combination of the fork and the pommel, said fork being in two parts, and said pommel having the two long projections extending from the lower end of the neck forward and sidewise upon the fork parts, respectively, and secured in position by screws passing into the fork at right angles to its vertical length, and the single short projection extending directly downward from the rear side of the pommel opposite the center and against the rear face of the fork, and held in place by screws passing into the fork in line with its width, whereby said pommel is secured to said fork by means of said projections and screws.

411,073. MOSQUITO-NET FRAME AND SHAM-PILLOW HOLDER.

WILLIAM TRUMBO, Mount Vernon, Ind. Filed May 20, 1889. Serial No. 275,445. (No model.)



Claim.—1. The combination, with a fixed section 10, consisting of cross-bar 13, standards 15, and eyes 14, produced at the intersection of the cross-bar and standards, of the frame-section 11 and the side-frame section 12, the former having an inclined portion 21 and hooks 22, adapted to enter the eyes 14 of the said section 10, the frame-section 11 having a cross-bar 19 at its outer end, and the section 12 having its side arms looped at their inner ends around the side arms of section 11 and bearing in advance of said looped ends on the cross-bar 19, all combined to operate substantially as and for the purpose specified.

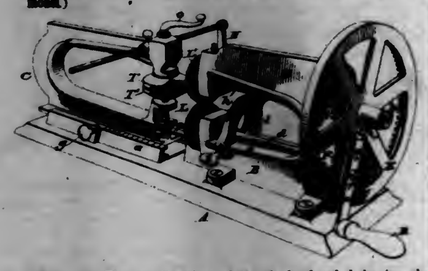
2. The improved mosquito-net frame and sham-pillow holder, comprising a fixed section 10, consisting of a cross-bar 13, standards 15, and eyes 14, produced at the intersection of said cross-bar and standards, a body-frame 11, having an inclined portion 21 formed in the side bars near the extremity, hooks 22, produced at the extremity of said side bars, strips 27, extending longitudinal of the said section 11, and a second body-section 12, connecting with and sliding upon the first body-section, as described, whereby the device may be adjusted to and held in horizontal position and extended to form a net-holder, substantially as and for the purpose specified.

3. The combination, with a fixed section 10, consisting of a cross-bar 13, standards 15, and the eyes 14, formed at the intersection of the standards and cross-bar, of the body-frame 11, having an inclined portion 21 produced upon side bars near their extremities, hooks 22, formed in said side bars at the extremities, brace-bar 23, strips 27, extending longitudinally of the said section 11, a sham pillow secured

upon said strips, and a second body-section 12, connected with and adapted to slide upon the first body-section, substantially as and for the purpose specified.

4. In a combined sham-holder and set-frame, the combination, with the eyes 14 and the frame 11, having hooks 22 engaging said eyes and movable in a longitudinal direction in said eyes, whereby the section 11, when adjusted to horizontal position, may be held therein, of the frame 12, connected with and sliding along the frame 11, whereby the device, when adjusted to horizontal position, may be extended, substantially as and for the purposes specified.

411,074. ROTARY SHEARS. CHARLES THOMAS and JOHN W. HAVILAND, Elmira, N. Y. Filed May 27, 1889. Serial No. 312,204. (No model.)



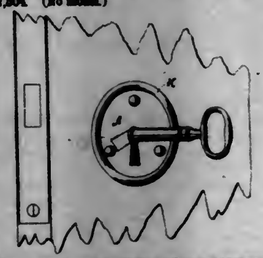
Claim.—1. The combination of the shafts *d* and *h*, having the rotary blades L L', secured to one end, and the intermeshing pinions F and G, rigidly secured at their opposite ends, with the internal gear-wheel E, arranged to engage with one of said pinions and thereby impart an increased velocity to the cutters, substantially as and for the purpose set forth.

2. In combination with the gear-wheel E and the intermeshing pinions F G, arranged to impart motion to the rotary cutters L L', the crank R, adjustably secured to said wheel E, whereby the power applied may be increased or decreased to adapt the machine to cut metal of varying thicknesses, as herein set forth.

411,075. COMPOUND FOR SETTLING COFFEE. MARY P. R. TILTON, New York, N. Y. Filed Jan. 30, 1889. Serial No. 297,980. (No specimens.)

Claim.—The herein-described composition of matter to form a clarifier for coffee and similar decoctions, which consists of a crystalline compound of albumen, gelatine, starch, and sugar intimately mixed together in about the proportions specified.

411,076. KEY-FASTENER. ELI C. TOWNSEND, New York, N. Y., assignor of one-half to Stephen J. Cox, same place. Filed Oct. 8, 1888. Serial No. 287,204. (No model.)

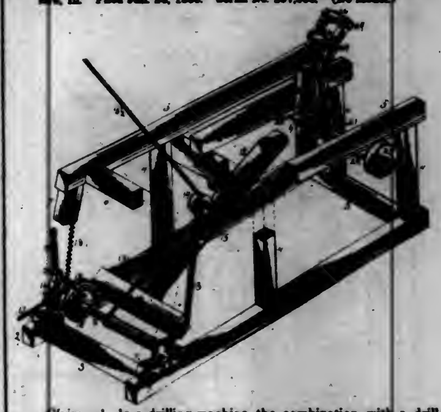


Claim.—A key-escutcheon consisting of two concentric circular plates with corresponding key-holes, the openings for the axial line of the key being placed in the center of the plates, the superimposed plate being permanently fixed, while the subjacent plate is capable of a limited rotation around the axial line of the key-shank by means of its projecting raised rim, and by the rotation of the subjacent plate the key-hole is occluded and the key securely held in place, substantially as set forth and described.

411,077. OINTMENT. HUGH G. TUBLEY, Dorchester, Ontario, Canada. Filed Jan. 28, 1889. Serial No. 297,300. (No specimens.) Patented in Canada Oct. 3, 1887, No. 27,712.

Claim.—The herein-described ointment, to be used for the treatment of diseases of horses—such as greasy legs, curbs, splints, or any other callous deposits—consisting of iodine, iodide of potassium, corrosive sublimate, cantharides, sulphate of copper, Prussian blue, arsenic, and hog's lard, in the proportions specified.

411,078. ROCK-DRILLING MACHINE. ROMAIN B. DYER, Rockford, Ill. Filed Jan. 28, 1889. Serial No. 297,802. (No model.)



Claim.—1. In a drilling-machine, the combination, with a drilling attachment, of a lowering device to said attachment, consisting of a ratchet-wheel, a pallet, an operating-handle attached to the pallet, and a spring connected with the pallet, the tension of the spring tending to hold the operating-handle raised and the advanced tooth of the pallet in engagement with the ratchet-wheel, substantially as set forth.

2. In a drilling-machine, the combination, with the main frame, of a rope-shaft journaled therein, two ratchet-wheels keyed to the rope-shaft, a ratchet-lever for engaging one of said ratchet-wheels to wind the rope about the shaft, a pallet engaging the other ratchet-wheel for letting out rope, and provided with an operating-handle, an operating-lever pivoted about said shaft, a sheave engaged with said lever, a rope wound about the rope-shaft, passed around the sheave, and provided with a drilling-tool, a main drive-shaft journaled in the opposite end of said main frame, and a cam upon said shaft for depressing the said operating-lever, substantially as set forth.

411,079. COMBINATION-TOOL. WARREN R. VAN VLIET, East Stroudsburg, Pa. Filed Sept. 26, 1888. Serial No. 286,419. (No model.)



Claim.—1. The combination, with a suitable steel blade, of the handle B, composed of the section C and the claw E, and the section F, having a similar claw E' and provided with a recess designed to receive a corkscrew, and attached to the section C by the pin *f*, that projects from the latter into an opening in the former, a corkscrew pivoted in said recess, and the sleeve holding the section F closely against the section C, with its inner or upper end against the shoulder D, substantially as specified.

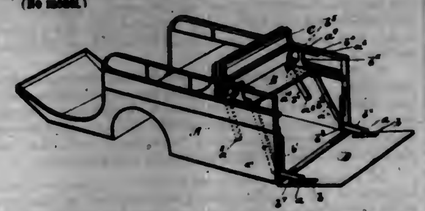
2. The combination, with a suitable blade, of the handle composed of the section C, provided with the shoulder D, claw E, pin *f*, and half of the hammer-head G, the section F, provided with the claw E, the opposite half of the hammer-head G, and having a recess in one of its sides and an opening for the pin *f*, a corkscrew pivoted in said recess, and the sleeve holding the sections closely together, substantially as described.

3. The combination, with a suitable blade and the larger handle-section C, secured to the blade and having the shoulder D, of the smaller handle-section F, provided with the recess *h'* on its inner face and the stop-pin h^2 in said recess, the corkscrew H, with its outwardly-bent end pivoted in the side or wall of said recess, and the sleeve I, holding said sections firmly together, substantially as specified.

4. The herein-described combination-tool, comprising the steel blade A, having the sharp edge *a*, the opposite serrated or toothed edge *a'*, the larger handle-section C, provided with the shoulder D, the pin *f*, the claw E, and one-half the hammer-head G, the smaller handle-section provided with the claw E', the opposite half of the hammer-head, the recess *h'*, the stop-pin h^2 in said recess, and an opening for

the pin *f*, the corkscrew H, pivoted in the recess *h'*, and the sleeve I, holding the two sections together, substantially as specified.

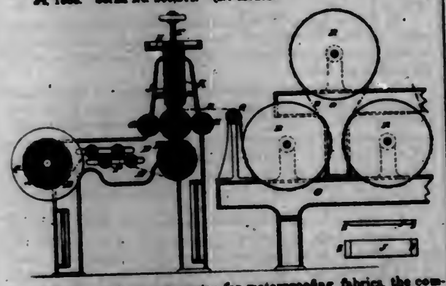
411,080. VEHICLE-SEAT. HARLAN P. WELLS and JAMES STOCKFORD, Jr., Amesbury, Mass. Filed Mar. 5, 1889. Serial No. 302,094. (No model.)



Claim.—1. The within-described automatically-reversible seat, which consists of the seat B, having the braces b^3, levers b^2, and brackets b^4, and the lazy-back C, having the arm-shanks a^3, with the slots b^4 and holes for the reception of the pivot-bolts a^5, in combination with the pivot-bolts a^5 a^6 a^6, connecting-bars b^7, having the shoulders b^8, metallic braces b', brackets b, and hinged rear end D, constructed and arranged substantially as described, for the purposes set forth.

2. In a seat for vehicles of the class herein named, the automatically-reversible lazy-back C, with the arm-shanks a^3, having the slots b^4 and the hole for the reception of the pivot-bolts a^5, in combination with said pivot-bolt a^5, secured in the body A, and the brackets b^4 of the seat B, substantially as described and set forth.

411,081. APPARATUS FOR WATERPROOFING TEXTILE FABRICS. THOMAS F. WILEY, Rawden, near Leeds, England. Filed Sept. 24, 1888. Serial No. 286,311. (No model.)



Claim.—1. In an apparatus for waterproofing fabrics, the combination of a mass of solid waterproofing material, a hollow cylinder of flexible material adapted to contain water arranged adjacent to the mass of waterproofing material, and guides for the fabric to direct it between the said flexible cylinder and the mass of waterproofing material, substantially as set forth.

2. In an apparatus for waterproofing fabrics, the combination of a slab of solid waterproofing material, a holder therefor in which it slides, a cylinder of flexible material adapted to contain water held opposite the edge of the said slab of material, and guides for the fabric which direct it to partially encircle the said cylinder to cause it to revolve, substantially as set forth.

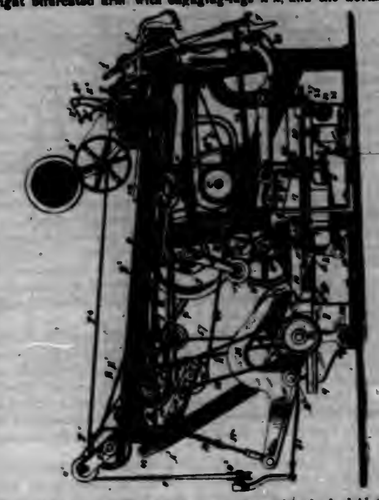
3. In a machine for waterproofing fabrics, the combination of a mass of solid waterproofing material, a hollow cylinder of flexible material adapted to hold water, and the supporting-rollers F, G, and H, which hold the said hollow cylinder against the mass of waterproofing material, substantially as set forth.

4. In a machine for waterproofing fabrics, the combination, with the devices for feeding the fabric through the machine, of a slab of solid waterproofing material of greater length than the width of the fabric to be waterproofed, and having its ends beveled, and a holder for the slab of waterproofing material, substantially as and for the purpose set forth.

411,082. SPINNING-MULE. EDWARD WHERRY, Worcester, assignor to the Davis & Furber Machine Company, North Andover, Mass. Filed Nov. 7, 1888. Serial No. 290,231. (No model.)

Brief.—The invention consists in improvements upon the machine described in Letters Patent No. 370,840, dated September 20, 1887, and has for its object to provide mechanism of superior efficiency and practical utility for the purposes intended.

Claim.—1. The combination, substantially as described, of the backwardly and forwardly movable roll-beam D, supported by guides *a* on the frame and provided with the trip-piece *d*, the rocker-shaft R, mounted in bearings on the beam-supporting frame and provided with fingers R' R^2 R^3 and arm R^4, the escapement lever L, having the upright bifurcated arm with engaging-lugs *i i*, and the horizontal



arm L', fulcrumed at its angle in connection with the bed A', the rod *l*, connecting the arm L of said lever with the arm R^4 of the rock-shaft, and the cam-shaft I, having the escapement-wheel fitted for engagement by said lugs *i i* on the escapement-lever, all arranged and operating as set forth.

2. The escapement-lever constructed with a bifurcated top carrying the steel detents *i*, and having the arm L, and the spring-brake L^5, acting against said arm, in combination with the escapement-ratchet having its teeth externally disposed, the connecting-rod *l*, rocker-shaft R, and its actuating mechanism, substantially as and for the purpose set forth.

3. The combination, with the draft-scroll and in-drawing scroll, of a yielding take-up or tension band connecting both of said scrolls, and a spring connected to said band by a running attachment for simultaneously giving tension on both of said scrolls, while the take-up is free to adjust itself to the action of either scroll, substantially as set forth.

4. The combination of the scrolls J and K, the drums J^3 and K^3, the band or strap O, guide-sheaves O', pulley O^2, and spring O^3, substantially as and for the purposes set forth.

5. The combination, with the scrolls and tension take-up strap, of the take-up drum mounted to turn loose on the shaft or hub of one of the scrolls, the scroll-hub provided with a ratchet-wheel J^4, and the pawl J^5, pivoted to the drum and engaging said ratchet, substantially as and for the purpose set forth.

6. The combination, with the back shaft, the auxiliary scroll, and scroll-rope winding thereon, of the adjustable rope-holding hub provided with means for the attachment of the end of the scroll-rope thereto, mounted loose upon said shaft adjacent to the end of said auxiliary scroll, said hub and scroll being formed with intermatching lugs and notches that prevent backward rotation of said rope-holding hub when the adjacent end faces of said hub and scroll are brought together, substantially as set forth.

7. The combination, with the movable roll-beam, the roving-delivering rolls, the roll-operating chain, and the sprocket-wheels that carry said chain, of an auxiliary starting-clutch in connection with the roving-delivering-roll shaft, a chain and operating-gear to rotate said clutch, and an actuating-dog attached to the stationary part of the machine, that engages and imparts movement thereto as said roll-beam approaches the spindles, as set forth, for starting the roving feed an instant before the roll-beam reaches its forward limit of movement.

8. The combination, with the roving-carrier or roll-beam, roving-delivery rolls, their drive-chain, and sprocket-wheel E^2, internally ratcheted at *c*, of the disk or wheel E^3, mounted on the roll-shaft and carrying the pawl c^2, the swinging arm E^5, the connecting-chain E^6, strap d^3, and spring D^5, and dog a^6, substantially as and for the purpose set forth.

9. The combination of the carrier 10, longitudinally-movable plate 17, its top edge having the level and inclined portions and carrying nut 18 and cam-block 22, the slide 20, having the pin 19, the cop-forming bar 21, hinged at its rear end to said slide, the cop-builder

arm X, having roll *x*, that travels on said bar, the stop-dog 24, the shaft 14, having screw-threads 15, the pulley 25, pawl 26, ratchet 27, chain 28, arm 29, weight 30, and sheave 31, for rotating said shaft, all arranged for operation substantially as set forth.

10. The combination, with the movable carrier having the cop-builder mechanism supported thereon and the quadrant-arm that governs the action of the winding-chain, of an inclined guide supported on said carrier, a quadrant-operator that receives its movement from said guide, and connections for transmitting motion from said quadrant-operator to the quadrant-arm, substantially as described, whereby said arm is caused to act in unison with the action of the cop-builder mechanism.

11. The combination, with the carrier having cop-builder mechanism mounted thereon and the quadrant-arm that governs the action of the winding-chain, of an adjustable inclined guideway supported and hinged upon said carrier, a movable brace and slide-block for raising and depressing the free end of said guideway, a quadrant-operator that receives movement from said guideway, connections for transmitting motion from the quadrant-operator to the quadrant-arm, and means, substantially as described, for adjusting the inclination of said guideway simultaneously with the adjustment of the cop-builder plate, for the purposes set forth.

12. In a spinning-machine, in combination with the winding-drum, winding-chain, fallers, and faller-locking mechanism, the quadrant and cop-builder mechanism arranged for conjunctive action, substantially as described, means for operating the quadrant, together with the cop-builder, an adjuster-shaft with an actuating-ratchet, and a plurality of engaging-screws, whereby both the quadrant and cop-builder are controlled or adjusted at the same operation simultaneously, as set forth.

13. The combination of the carrier 10, the cop-builder plate 17, longitudinally movable on the carrier, the adjustable guide 32, its support 33, and the slide-block 34, the adjusting-shaft 14, supported in bearings on said carrier and provided with a screw-thread 15, engaging with a nut fixed to said cop-builder plate, and a screw-thread 16, engaging a threaded opening in the slide-block, and the rod 35, having one of its ends connected with the cop-builder plate and its other end extending through an opening in said slide-block, screw-threaded, and provided with adjusting-nuts, for the purpose set forth.

14. The combination, with the adjusting screw-shaft mounted on the carrier and the actuating-gear for said carrier, of the loose pulley 25, the interchangeable ratchet-wheel 27, keyed on the shaft, the pawl 26, pivoted on said pulley, the chain 28, attached to said pulley, the swinging arm 29, pivoted to a stationary support with its movable end attached to said chain, a counter-weight 30, and the sheave 31, connected with said carrier for imparting intermittent rotative action to said shaft, substantially as set forth.

15. The adjustable inclined guide 32, its supporting-brace 33, and slide-block 34, in combination with the carrier 10, adjusting-shaft 14, having the screw-thread 16, quadrant-operator 38, having a shoe 36, that works on said guide, quadrant-arm 40, carrying the sheave 41, connections for transmitting motion to said arm from the quadrant-operator, and means, substantially as described, for moving said carrier backward and forward, substantially as set forth.

16. The combination, with the movable roll-beams carrying the sheave d^9, the winding-drum C^9 on the cylinder-shaft, and the winding or quadrant chain 44, of the arm 40, swinging on an axis at A^2 and provided with a sheave 41, that carries said chain, the quadrant-operator 38, fulcrumed at A^2 and having connection for moving said arm, the cop-builder carrier 10, an adjustable hinged guide 32 thereon for actuating said quadrant-operator, a slide-block and hinged brace supporting said guide, the cop-builder plate, the adjusting-shaft having screw-threads 16 and 15, respectively fitted for moving said slide-block and the cop-builder plate, and the rod 35, provided with an adjustable stop or nuts, connecting said slide-blocks and cop-builder plate, substantially as and for the purpose set forth.

17. The quadrant-arm 40, having an upwardly-extending end 42, to which the end of the winding-chain is attached, in combination with the cylinder winding-drum, winding-chain 44, guide-sheave 41, roll-beam D, sheave d^9, quadrant-operator 38, operator-connections 39, and means for actuating said quadrant-operator, substantially as and for the purpose set forth.

18. The combination of the cylinder winding-drum, winding-chain 44, quadrant-arm 40, quadrant-operator 38, adjustable quadrant-operator guide 32, its movable support-block 34 and brace 38, adjusting-shaft 14, with screw-threads 16, an interchangeable ratchet 27 on said shaft, a pawl 26, pivoted on the rotating sheave-disk 25 and engaging with said ratchet, and means, substantially as described, for operating the same, as and for the purpose set forth.

19. The adjustable inclined bar 32, having its hinged supporting-brace, and slide-block 34, adapted to move past the center or vertical plane of the hinging axis of the brace, in combination with the reciprocating carrier 10, quadrant-operator 38, actuated by said inclined bar, and the adjusting-screw 16, mounted in bearings on the reciprocating carrier for shifting said slide-block and support, substantially as set forth.

20. The inclined guideway 32, having an oil-well 37 formed in the lower end thereof, and the bearing-shoe on the end of the quadrant-operator adapted to dip into the oil-well, in combination with the quadrant-operator, the movable carrier whereon said guideway is supported, and means, substantially as set forth, for imparting motion thereto.

21. The combination, with the cop-builder and quadrant-operator mechanisms, of the reciprocating carrier having a bearing-boss on its lower side and a support or pillow-block 8, provided with a bearing-surface on which said boss slides, a depression or channel at the ends thereof, and an upwardly-extending lip or flange surrounding said bearing-surface, substantially as and for the purpose set forth.

22. In combination with the roll-beam or roving carrier D, winding-chain 44, and cop-builder arm X, the swing-lever 46, carrying a pulley 47, that engages said chain, a ratcheted actuating-bar 48, connected with said lever, a lifting-lever 50, for raising and depressing the ratcheted end of said actuating-bar, a connection 51, for moving said lifting-lever with the cop-builder arm, and a lug or detent 49 connected with the roll-beam that engages the ratcheted end of said actuating-bar and imparts movement thereto, for the purpose set forth.

23. The combination of the cylinder C, drum C^9, winding-chain 44, roll-beam D, carrying guide-sheave d^9 and lug 49, quadrant-arm 40, carrying-sheave 41, connecting-chain 39, quadrant-operator 38, adjustable incline 32, its lifting-arm 33 and slide-block 34, reciprocative carrier 10, with the cop-builder mechanism, and adjusting-shaft 14, with screws 15 and 16, mounted on the reciprocating carrier, the cop-builder arm X, faller-lock F, fallers f, take-up lever 46, carrying-sheave 47, ratcheted actuating-bar 48, lifting-lever 50, connection 51, and operating-detent 49, substantially as and for the purposes set forth.

24. The spring-bar 52, in combination with the faller-lock mechanism, roll-beam D, having the detent 49, take-up actuating-bar 48, its lifting-lever 50, and connecting-chain 51, substantially as and for the purpose set forth.

25. The combination, substantially as described, of the roll-beam D, the chains D^4, attached thereto, the sprocket-wheels B', the back shaft B, a scroll or disk M, fixed on said shaft and carrying a stud 62, a counterbalanced lever mounted upon a screw-threaded hub fixed on said shaft adjacent to the disk and provided with a stud 61 for engagement with said stud 62, and an operating-connection 57, attached to the arm of said lever, and means for imparting motion thereto, for the purpose set forth.

26. The combination, substantially as described, of the back shaft B, the scroll or disk M, fixed thereon and carrying the stud 62, the counterbalanced lever 58, fulcrumed upon a screw-threaded hub fixed on said shaft and carrying the pin 61, the worm-wheel 54, carrying a crank, and connection 57, for operating said lever, a swinging bracket whereon said worm-wheel is mounted, having the spring-arm 55, the cam-shaft I, provided with a cam that engages said arm, and a worm-screw 56 and shaft for operating said worm-wheel, for the purposes set forth.

27. The combination, with the quadrant-arm, its chain, and the winding-drum on the cylinder-shaft in a spinning-machine, of a frictional belt acting on said drum in opposition to the draft of the chain with force sufficient for winding the chain thereon when slack, but whose force is easily overcome by the draft of the chain-operating mechanism in action when winding up the yarn, substantially as set forth.

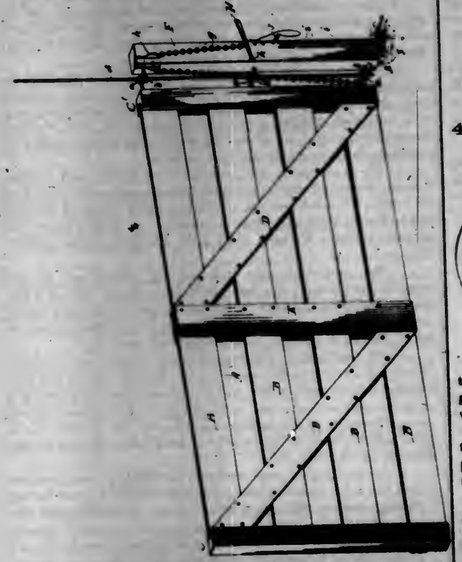
28. The combination, with the winding-chain 44, winding-drum C^9, and auxiliary shaft Q, of the friction-belt 71, its pulley 70, and the counterweighted lever 72, carrying a tightening-pulley 73, that is pressed against said belt by the counter-weight to give friction on the winding-drum for winding up the quadrant-chain, substantially as set forth.

29. The combination, substantially as described, with the faller-lock, escapement-lever, and roll-beam, of the trip-bar 76, pivoted upon the faller-lock, with its rear end in line with a lug on said escapement-lever L, and having the lug or stud 78 near its forward end, the upright lever 80, pivoted at its lower end and its upper end at position to engage the roll-beam, and centrally provided with an adjustable plate 79, for engaging the lug 76 on said trip-bar, all arranged and operating substantially as and for the purpose set forth.

30. The combination, with the movable roll-beam D and counter-faller *f'*, of a lever 85, one end of which is connected with the counter-faller by a cord or chain 87 and its opposite end having a cam or inclined surface on which the roll-beam engages when at backward position, substantially as and for the purpose set forth.

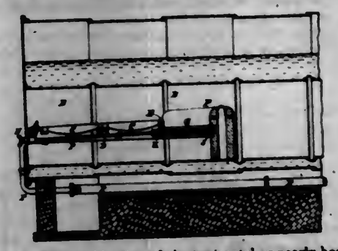
31. The combination, with the movable roll-beam, the indicator-clock, and indicator-operating mechanism mounted thereon, of a guideway *a*, upon which the roll-beam travels, provided with a depression having the inclined surface 98 formed thereon, and the pawl actuating bar 97, arranged to drop into said depression and receive movement from said incline as the roll-beam passes over the same, substantially as set forth.

411,088. FARM-GATE. Byron L. Zimmerman, Belle Centre, Ohio.
Filed June 26, 1888. Serial No. 278,305. (No model.)



Claim.—The combination of a gate hinged, as shown, upon a vertical rod supported by its hinge-post, a pulley pivoted in a slot of said post, a chain passing over the pulley and connecting the lower hinge-eye of the gate with a lever fulcrumed upon the post, and a pin adjustable in a series of holes in the hinge-post to secure the lever in any position desired.

411,084. STEAM-BOILER OR OTHER FURNACE. James H. Ahrendale, Pelton, County of Mid-Lothian, Scotland. Filed Jan. 24, 1889. Serial No. 297,412. (No model.)



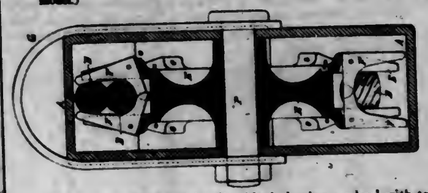
Claim.—The combination of the horizontal or nearly horizontal fire-bars of a furnace and the bridge, with a perforated hearth-slab or grating between the inner ends of the fire-bars and the bridge, and having central trunnions, upon which it is mounted, with a longitudinal spindle fitted to the square end of one of the trunnions and extending out beyond the front of the boiler and having there a clamp by which the spindle may be turned.

411,085. PILE FABRIC. William H. Ramsden, Bridgenorth, County of Salop, England. Filed Nov. 22, 1887. Serial No. 256,206. (No model.)

Claim.—As an article of manufacture, a cut pile fabric having pattern-warps forming the pile, of which only one-half or less are at any time buried in the back or ground of the fabric, the remaining portion where they appear in the fabric being merely bound therein by weft-threads, and weft-threads, filling-threads at the back of the fabric, and ground-chains which bind the pile warp, filling-threads, and wefts in the body of the fabric, all substantially as described.



411,086. SELF-LOCKING DIFFERENTIAL HOIST. Charles F. Batt, Brooklyn, N. Y. Filed June 27, 1888. Serial No. 315,801. (No model.)



Claim.—1. A differential pulley-block having a wheel with two turns of the rope passing over the wheel, one on top of the other, and gripping devices to grip the outer turn and lock the pulley under the weight of the load, all substantially as described.

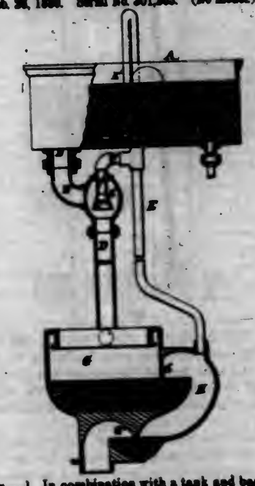
2. A differential pulley-block having a wheel with two turns of the rope passing over the wheel, one on top of the other, and gripping-levers carried by the wheel, to be acted on by the inner turn of rope to grip the outer turn, all substantially as described.

3. A differential pulley-block having a wheel with a single deep groove, two turns of rope passing over the wheel, one on top of the other in this groove, and gripping-levers pivoted in notches in the flanges of the grooved wheel, to be acted on by the inner turn of the rope to grip the outer turn, all substantially as described.

4. A differential pulley-block having a wheel, two turns of rope passing over the wheel, one on top of the other, and gripping-levers on opposite sides of the rope, to be acted on by the inner turn to grip the outer turn, all substantially as described.

5. A differential pulley-block having a wheel, two turns of rope passing over the wheel, one on top of the other, and pairs of gripping-levers to be acted on by the inner turn to grip the outer turn, the two levers of each pair being on opposite sides of the rope and out of line with each other, all substantially as described.

411,087. WATER-CLOSET. Albert F. Bleser, Columbus, Ohio. Filed Feb. 26, 1889. Serial No. 301,363. (No model.)



Claim.—1. In combination with a tank and basin having a cham-

ber H, a chamber C in the long leg B of the flushing-siphon, a bent air-pipe E E', extending upward and then bent downward, so as to connect chamber H and the water in the tank above the minimum level, and a connecting-pipe F F', extending laterally from E into the interior of chamber C and opening downward, substantially as set forth.

2. In combination with a tank and basin having a chamber H, a chamber C in the long leg B of the flushing-siphon, a bent air-pipe E E', extending upward and then bent downward, so as to connect chamber H and the water in the tank above the minimum level, and a connecting-pipe F F', extending laterally from E into the interior of chamber C and opening downward, terminating in a bell-mouth, substantially as set forth.

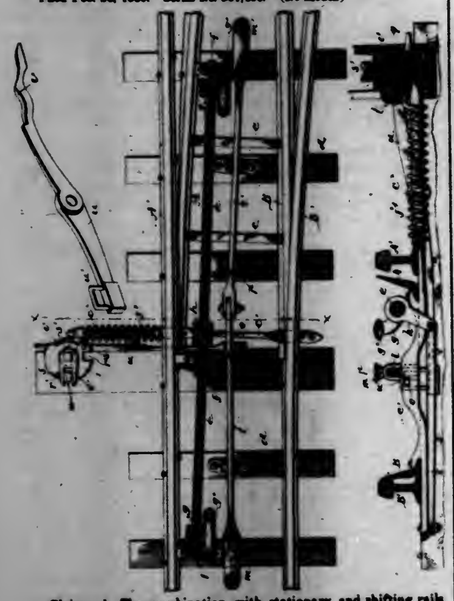
3. In combination with a tank and siphon and basin having a chamber H, a chamber C in the flushing water-passage, a pipe E E', terminating slightly above the level of the mouth of the short leg of the siphon, and a connecting-pipe F F', terminating in the downwardly-opening bell-mouth F² in the chamber C, substantially as set forth.

411,088. ARC LAMP. FREDERICK R. BOARDMAN, London, County of Surrey, England, assignor of one-half to Bernst Carl Wilhelm Peterson and Mads Peter Hardt, same place. Filed Aug. 14, 1888. Serial No. 282,751. (No model.)



Claim.—In an arc lamp, the combination of one or more solenoids, each having a core attached to a vertical rack-bar, a marble block with an aperture therethrough, two electrodes in connection with said block, one of which is movable, a horizontal rack-bar attached to said movable electrode, a pinion with which the rack-bars engage, and the circuits and connections, substantially as described.

411,089. RAILWAY-SWITCH. ARCH BOUGHER, Mooclova, Ohio. Filed Feb. 23, 1889. Serial No. 301,490. (No model.)



Claim.—1. The combination, with stationary and shifting rails, of a double-acting spring-actuated latch for locking the shifting rails in one position, said latch having shoes on its outer ends, and means for engaging said shoes, whereby the latch is raised and the shifting rails are allowed to assume their normal position, substantially as set forth.

2. The combination, with stationary and shifting rails and tie-rods connecting the latter, one of said tie-rods having a notch or recess therein, of a double-acting latch located between and parallel with the tracks in position to be actuated by a car and normally bearing upon said tie-rod and adapted to enter the notch when the latter is in position beneath the latch, substantially as set forth.

3. The combination, with stationary and shifting rails and tie-rods connecting the latter, one of said tie-rods having a notch or recess therein, of a pair of spring-actuated pivoted levers comprising a double-acting latch, one of said levers being adapted to drop into the notch when the latter comes beneath the latch, substantially as set forth.

4. The combination, with stationary and shifting rails and tie-rods, of a latch for engaging one of said tie-rods, a rock-shaft connected with one of the tie-rods, and treadles on the rock-shaft, whereby the latter is rocked, substantially as set forth.

5. The combination, with stationary and shifting rails and tie-rods connecting the latter, one of said rods having a notch or recess in its upper edge and a bearing-surface beneath the stationary rails, of a rock-shaft, treadles, a lug projecting from the shaft, a pitman connecting the outer end of said lug with the tie-rod, and a latch for engaging the latter, substantially as set forth.

6. The combination, with stationary and shifting rails, treadles whereby the switch may be operated from a passing train, and a latch for holding the rails in position, of means whereby the switch is shifted and locked by hand, and a lever operated by the shifting device and adapted to remove the latch which holds the shifting rails, substantially as set forth.

7. The combination, with stationary and shifting rails, tie-rods connecting the latter, and a latch for locking the tie-rods, of a pivoted lever adapted to engage the latch at one end and having a curved bearing-surface at the other end, and devices for engaging the curved end of the arm to raise the latch, substantially as set forth.

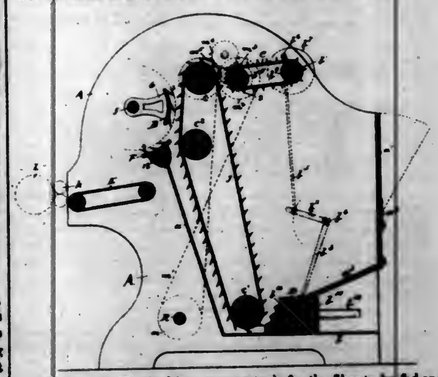
8. The combination, with stationary and shifting rails, a notched tie-rod, and a latch, of a switch-stand, a turning post thereon, said post having a bearing-arm thereon, and a latch-operating lever having a curved bearing-surface at one end in position to be depressed by the contact therewith of the bearing-arm, whereby the opposite end is raised and the latch is removed from the notch in the tie-rod, substantially as set forth.

9. The combination, with stationary and shifting rails, a notched tie-rod, and a double-acting spring-actuated latch, said tie-rod having a yielding extension and a spiral spring thereon, of a switch-stand having a notched plate on its top, a turning post, a locking device thereon, a bearing-arm on its lower end, secured to one end of the spring, and a lever extending transversely beneath the rail with one end beneath the latch and the other end beneath the bearing-arm, said latter portion having a rounded surface, substantially as set forth.

10. The combination, with stationary and shifting rails, a latch, rock-shaft, and means for operating said shaft and latch, of a switch-stand, a turn-post, a handle for locking the latter, and a bearing-arm on the post, a lever extending beneath the rails, with one end under the latch and the other in position to be engaged by the bearing-arm on the turn-post, substantially as set forth.

411,090. FEEDING MECHANISM FOR MACHINES FOR TREATING WOOL. WILLIAM C. BRAMWELL, Hyde Park, Mass. Filed June 23, 1887. Serial No. 242,708. (No model.)

Brief.—The machine is specially designed to feed long-fibered wool in fleece form, or after the wool has been once washed.



Claim.—1. The feed box or receptacle for the fiber to be fed and the toothed elevating-apron therein, combined with a horizontally-reciprocating pusher located at the bottom of the said feed box or receptacle, and with means for actuating the said pusher to cause it to act upon the said fiber at the bottom of the said receptacle and impale it upon the teeth of the said elevating-apron, substantially as set forth.

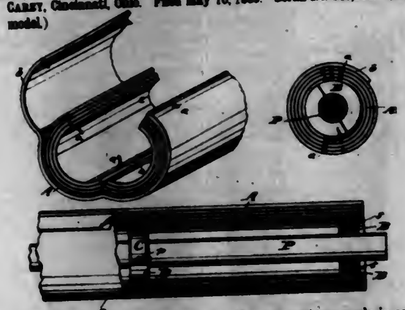
2. A receptacle for the wool or other fiber to be fed, a toothed elevating-surface therein, and a reciprocating pusher, combined with a comber or evener composed of a toothed apron to co-operate with the said elevating-surface, substantially as described.

3. A receptacle for the wool or other fiber to be fed, a toothed lifting-surface therein, a reciprocating pusher, and an apron comber or evener, substantially as described, combined with a segmental clearer or stripper located at the rear side of the toothed elevating-surface, and with a fixed holder, to operate substantially as described.

4. A receptacle for fiber and an elevating-apron therein having needle-pointed teeth, and the vibrating stripper located at the rear side of the said elevating-apron and having two or more rows of substantially straight needle-pointed teeth, substantially as described, set dodging, combined with a holder also located at the rear side of the said elevating-apron and having two or more rows of needle-pointed teeth, the motion of said stripper being of such extent, substantially as described, as to enable the stripper to strip the teeth of the elevating-apron and of the said holder, and to be in turn cleared by the holder, substantially as set forth.

5. A receptacle for the fiber and an elevating-apron therein having needle-pointed teeth, and a vibrating stripper located at the rear side of the said elevating-apron and having two or more rows of needle-pointed teeth set dodging, combined with a holder also located at the rear side of the said elevating-apron and having two or more rows of needle-pointed teeth, the motion of the stripper being of such extent, substantially as described, as to enable it to clear the teeth in the elevating-apron and the teeth in the holder, the teeth of the said stripper being in turn cleared by the holder, and with a reciprocating pusher, and means to move it intermittingly to impale the fiber at the bottom of the mass in the said receptacle upon the teeth of the said elevating-apron, substantially as set forth.

411,091. COVERING FOR STEAM PIPES OR BOILERS. PHILIP CAREY, Cincinnati, Ohio. Filed May 10, 1889. Serial No. 310,301. (No model.)

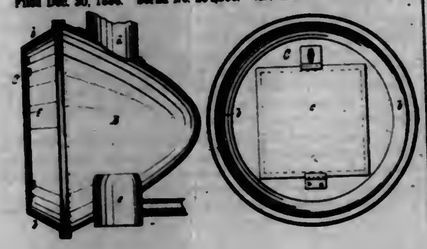


Claim.—1. A removable covering for steam-pipes, made in sections and composed of a continuous roll of flexible material coated on one or both sides with magnesia, fossil-meal, slaked lime, or other pulpy fire-proof composition, and partially bisected, substantially as and for the purpose described.

2. In a removable covering for steam-pipes, the combination, with a fire-proof coated flexible material rolled into layers, of pegs or nails inserted therein to bind the layers together, in the manner and for the purpose specified.

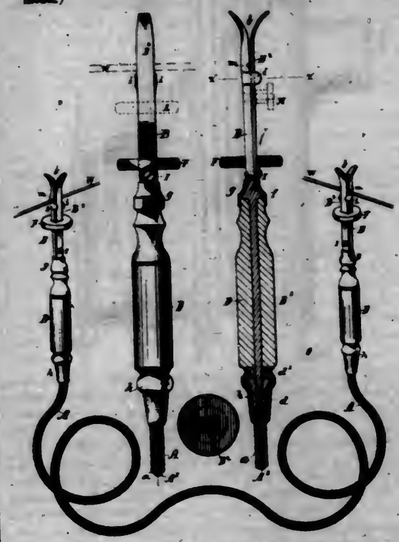
3. In a removable covering for steam-pipes, the combination, with a flexible fire-proof material rolled into layers, of composition rings formed in semi-cylindrical parts strengthened and hinged by wire or other flexible material embedded in the same, substantially as and for the purpose described.

411,092. MAGIC LANTERN. JAMES R. COLT, New York, N. Y. Filed Dec. 20, 1888. Serial No. 294,200. (No model.)



Claim.—The combination of the lamp, the parabolic reflector having the chimney *d* secured to one side and a burner-case to the opposite side, and the hood C, having the window *c*, the burner of the lamp being received within the burner-case, by which the reflector is supported, and the reflector and hood constituting the combustion-chamber, substantially as and for the purpose described.

411,093. INSTRUMENT FOR CONNECTING LINE-WIRES. WILLIAM H. CORBLIN, Worcester, Mass., assignor of one-half to Herbert H. Fairbanks, same place. Filed Apr. 10, 1889. Serial No. 306,907. (No model.)



Claim.—1. An instrument for the purpose specified comprising a flexible conductor provided at each of its respective ends with a metal bar having a transverse notch or recess near its end for the reception of the line-wire of an electric-lighting circuit, and a spring or jaw adapted for pressing the wire into said notch and holding it in connection therewith, substantially as set forth.

2. An instrument for the purpose specified comprising a flexible insulated wire-conductor provided at its two ends with metal bars, each having a seat or notch across its face adapted for receiving and holding the line-wire, in combination with a movable jaw on the side of said bar overlying said seat, and a jaw-clamp for locking the jaw thereon, all substantially as described.

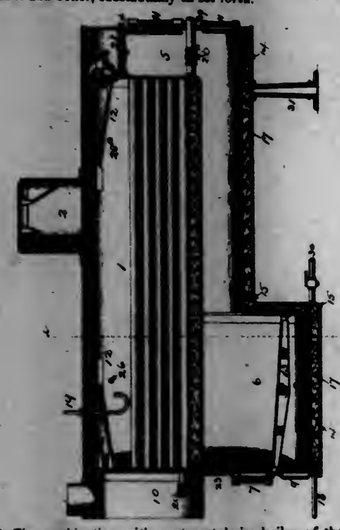
3. In an instrument for the purpose specified, the combination of the flexible conductor, the metal attaching-bars coupled at their shanks to the respective ends of said conductor, and each having a seat or notch for receiving the line-wire, with slide-ears adjacent thereto, the spring-jaw overlying said notch and retained laterally by said ears, the handles of non-conducting material arranged on the shanks of said attaching-bars, and a locking disk or slide for positively clamping the jaws upon the line-wire, substantially as set forth.

4. The combination of the conducting metal bar B, having a notch or seat for holding the wire, and the shank B', shouldered at *f* and threaded at its end, the non-conducting handle D, fixed on the shank of said bar, the jaw *b*, overlying the wire-holding seat, the flexible insulated conductor A, the coupling *d*, connecting said conductor to the end of the bar-shank, the insulating-ferrules *g* and *h*, and the non-conducting sliding disk F, fitted over the bar and jaw for forcing them together, substantially as shown and described.

411,094. STEAM-BOILER. JOHN DIRK, Mendville, Pa. Filed Nov 1, 1887. Renewed Mar. 9, 1889. Serial No. 302,762. (No model.)

Claim.—1. The combination, with a return tubular boiler, of a double casing or water-jacket having open ends, a curved lower portion extending the full length of the boiler and combustion-chamber and horizontally across and beneath the fire-box, combustion-chamber, and boiler, and vertically on each side thereof and constituting, respectively, the bottom of the ash-pit, the bridge-wall, and the bottom of the flue, head-plates closing the open-ended water-jacket and open-ended combustion-chamber and provided with doors to permit of ready access being had to said combustion-chamber and boiler-

flues and one or more feed-pipes, and a circulating-pipe connecting the jacket and boiler, substantially as set forth.



2. The combination, with a return tubular boiler, of the double-walled casing or water-jacket herein described, of U form in cross-section, extending from the front of the fire-box to the rear thereof upwardly to form the bridge-wall and thence horizontally to the rear of the combustion-chamber and extending across the bottom and up the sides thereof and constituting the bottom of the furnace-flue, the water-space between the walls of said casing or jacket being closed at the top by a bar or flanged joint, and said casing being removably attached to the boiler by suitable means, as by flanged plates, and suitable supply and circulation pipes connecting said jacket and boiler, substantially as and for the purpose set forth.

3. The combination, with a return tubular boiler, of an open-ended water-jacket of U form in cross-section, within which the boiler is removably set, said jacket extending horizontally across the bottom of the fire-box and vertically upward at the rear thereof to constitute the bridge-wall and thence along the combustion-chamber to the end thereof and forming the bottom of the flue and thence vertically up the sides thereof and also of the boiler, an open-ended combustion-chamber, cast-iron heads closing the open ends, respectively, of said jacket and of the combustion-chamber and provided with suitable doors to permit of ready access to said combustion-chamber and boiler-tubes, and suitable water supply and circulation pipes connected with the boiler and jacket respectively, substantially as set forth.

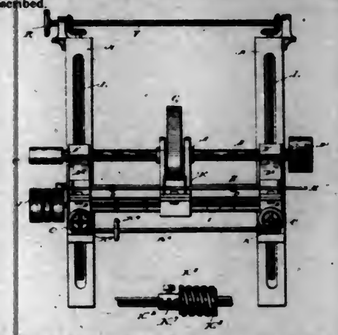
4. The combination, with a return tubular boiler, of an open-ended combustion-chamber and an open-ended water-jacket of U form in cross-section, within which the boiler is removably set and braced, said jacket surrounding the entire bottom and sides of the fire-box and combustion-chamber, and the sides of the boiler extending the entire length thereof and also constituting the bridge-wall and the flue-bottom, head-plates secured to the respective ends of the jacket to close the water-space therein and also the respective ends of the combustion-chamber, water-supply pipes, and a water-circulating pipe connecting the respective sides of the jacket and the boiler and having a suitable blow-off, substantially as set forth.

411,095. ROLL-GRINDER. PATRICK F. DOOLEY, Malone, N. Y. Filed Dec. 7, 1888. Serial No. 292,941. (No model.)

Claim.—1. The combination, in a roll-grinding machine, of the laterally-movable brackets carrying the shaft and the grinding-wheel, the screws K^3, engaging and adapted to move the brackets, the shaft K^2, and the worm-gears connecting the latter to the screws K^3, whereby the brackets may be operated simultaneously, substantially as described.

2. The roll-grinding machine comprising the vertical standards, the brackets movable vertically thereon, the non-revolable bar H, connecting the brackets, the traversing carriage mounted on said bar, the screw-shaft to operate the carriage, the driving-shaft journaled in the brackets and connected to the screw-shaft to rotate the latter, and the grinding-wheel having its bearings in the carriage and feathered on the driving-shaft, substantially as described.

3. In a roll-grinding machine, the combination of the standards, the brackets movable vertically thereon, the driving-shaft B', mounted on said brackets and having the pulley C', the bar H, connecting the brackets, the carriage traveling on said bar, the sleeve journaled in the carriage and feathered on the driving-shaft, the grinding-wheel secured to the said sleeve, the screw-shaft to operate the carriage, and connections, substantially as specified, between the driving-shaft and screw-shaft, whereby they are operated simultaneously, substantially as described.



4. The combination, in a roll-grinding machine, of the laterally-movable brackets carrying the shaft and the grinding-wheel, the screws K^3, engaging and adapted to move the brackets, the shaft K^2, and the worm-gears connecting the latter to the screws K^3, one of said worm-gears having a set-screw K^4, so that it may be rigidly secured to the shaft or rendered loose thereon, whereby the brackets may be moved simultaneously or independently of each other, substantially as described.

411,096. SHIPPING-CAN FOR PERISHABLE ARTICLES. DAVID H. EATON and AMBROSE C. EATON, Waverly, N. Y. Filed June 14, 1889. Serial No. 314,321. (No model.)



Claim.—1. The combination, with an outer cylinder or jacket provided with a series of vertical corrugations, of an inner receptacle mounted in the jacket and supported out of contact with the walls thereof, substantially as specified.

2. The combination, with the jacket of a shipping-can provided with a series of corrugations, said corrugations extending through its length, forming air-passages, of a vertical collar secured upon the inner surface and at the bottom of the jacket and extending below the same, substantially as specified.

3. In a shipping-case, an outer jacket provided with a series of corrugations disposed from top to bottom, a collar mounted within and at the upper end of the jacket and extending above the same, and a stiffening-collar mounted in the lower end of the jacket within the same and extending below the same, in combination with an inner receptacle having a bead resting on the upper collar depending within the jacket and terminating a short distance above the lower end thereof, substantially as specified.

4. A shipping-can the receptable of which is provided with a cover consisting of a disk adapted to enter the receptacle and a superimposed metallic cap having a series of perforations forming an air-chamber, the perforations being so relatively arranged as to form draft-passages, substantially as specified.

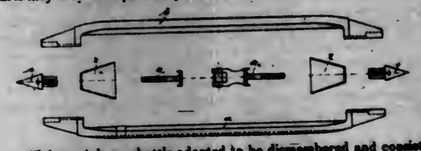
5. A shipping-can the inner receptacle of which is provided with a cover consisting of a disk having a superimposed metallic cap perforated and provided with corrugations extending from each perforation to its opposite perforation, substantially as specified.

6. In a shipping-case, the combination, with an outer jacket

formed of sheet metal, wood, or other material and corrugated from top to bottom, a collar arranged in the upper end of the same and projecting above the jacket, and a collar arranged in the lower end and projecting below the same, of a can or receptacle arranged within the jacket and provided with a cover having an annular flange and a superimposed air-chamber, and pliable cover-fastening clips inserted between the upper edge of the jacket and its upper collar and adapted to turn over the bead of the cover, substantially as specified.

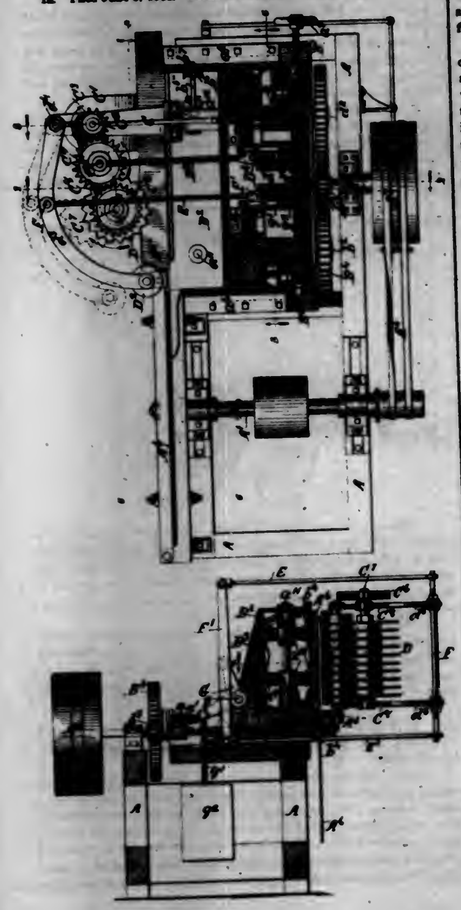
411,097. LOOM-SHUTTLE. JULIUS ISAAC and EBERHARD WERNER-BURGER, Cannstadt, Wurtemburg, Germany. Filed June 18, 1888. Serial No. 314,570. (No model.)

Brief.—In case of the breakage or wearing out of any of the parts they may be replaced by others.



Claim.—A loom-shuttle adapted to be dismembered and consisting of two longitudinal pieces *a* and *b*, two holders *z z*, two points *s s*, with inner screw-thread, two screw-threaded cramps $b' b^2$, the latter of which serves as spindle-support, and the spindle *c*, substantially as and for the purpose set forth.

411,098. RESAWING-MACHINE. ROBERT FISHER, Chicago, Ill. Filed June 5, 1888. Serial No. 276,066. (No model.)



Claim.—1. In a resawing-machine, the combination, with the main frame, of the carriage-box frame adjustably mounted thereon and provided with the lower angular edges a^4 a^4, the angle bed-plates a^5 a^5, the cap-plates a^6 a^6, the screw-shafts having a threaded engagement with the under side of said box-frame, the pinions mounted on said screw-shafts, the hand operating-shaft, and the pinions mounted thereon and which engage with the companion pinions on the screw-shafts, substantially as and for the purpose set forth.

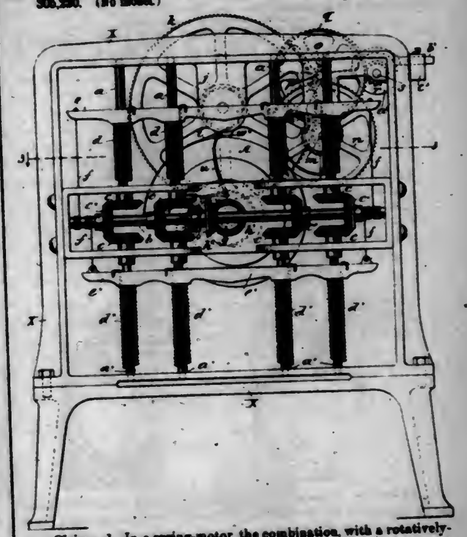
2. In a resawing-machine, the combination, with the main frame, of the adjustable carriage-box frame mounted thereon, the vertical shafts a^{11} a^{12}, journaled thereon, the sprocket-pulleys mounted on said shafts, the lag feed-chain carried by said pulleys, the pinion *b*, mounted on the lower end of the shaft a^{11}, the pinion b', the horizontal shaft b^2, the gear-wheel B^4, the pinion b^3, and the counter-shaft A^2, substantially as and for the purpose set forth.

3. In a resawing-machine, the combination, with the rotating toothed feed-roller arranged vertically and yielding laterally, of the bifurcated swinging bracket-arm in which said feed-roller is journaled, the lag feed-chain moving in a vertical plane, said toothed roller and feed-chain being located upon and pressing against opposite sides of the material in the line of the saw, and the carrying-shafts upon which said lag-chain is mounted, substantially as and for the purpose set forth.

4. In a resawing-machine, the combination of the lag feed-chain consisting of a number of rectangular plates arranged vertically and hinged together, as described, the vertical shafts and sprocket-wheels upon which said lag-feed is mounted, the toothed feed-roller, the laterally-swinging bifurcated bracket-arm in which said feed-roller is mounted, the presser-roller located in advance of and on the same side with the feed-roller, the curved swinging arms d^2 d^2, and the stationary shaft upon which the rear ends of said curved arms are pivoted, substantially as and for the purpose set forth.

411,099. SPRING-MOTOR. PARKER J. GATES, Darien, Pa., and ROSSMER H. GATES, Brooklyn, N. Y. Filed Mar. 30, 1889. Serial No. 305,290. (No model.)





Claim.—1. In a spring-motor, the combination, with a rotatively-mounted shaft, as *b*, of a rotatively-mounted spring-arbor geared therewith, a helical spring on said arbor and secured at one end thereto, a slide-bar secured to the other end of said spring and adapted to move in a direction parallel to the longitudinal axis of the spring, and a flexible connector attached at one end to said slide-bar and secured at its other end to said shaft *b*, and adapted to wind about

said shaft, as set forth, whereby said spring is caused to exert two forces tending simultaneously to rotate said shaft.

2. In a spring-motor, the combination, with a rotatively-mounted shaft, as *b*, of a rotatively-mounted spring-arbor geared to said shaft *b*, a helical spring on said arbor and secured at one end to the same, a slide-bar secured to the other end of said spring and adapted to move in a direction parallel to the longitudinal axis of the spring, a flexible connector attached at one end to the slide-bar and secured to and winding about the shaft *b* at its other end, the fusee and its shaft geared to the shaft *b*, the drum *j*, the connector *i*, which connects and winds on said fusee and drum, the power-shaft *a*, and the train of gears intermediate between said drum and power-shaft, substantially as set forth.

3. In a spring-motor, the combination, with the shaft *b*, of the rotating spring-arbors *a*, two or more, geared to said shaft *b*, the springs *d* on said arbors, secured at one end to the respective arbors, the bar mounted to slide on the spring-arbors and secured to the springs thereon, and the flexible connectors secured to the respective ends of said slide-bar and winding on the shaft *b*, substantially as set forth.

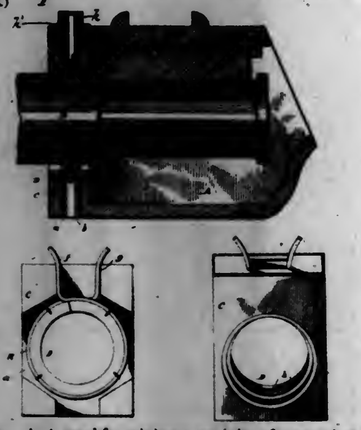
4. In a spring-motor, the combination, with the spring from which the power is derived, a drum *j*, and a flexible connector winding on said drum, of a fusee driven by said spring and communicating its motion to said drum through said connector, said fusee being in the form of a volute of the character described, and having a pitch which varies with the variations in the angle made by the intermediate portion of the connector *i* with a line which passes through the axes of the fusee and drum, whereby the regulation effected by the fusee is rendered uniform, as set forth.

5. In a spring-motor, the combination, with a drum *j* and a flexible connector *i*, of a fusee A in the form of a volute whereof the pitch varies with the variations in the angle made by the straight intermediate portion of the connector *i* with a line which passes through the axes of said drum and fusee, whereby the regulation effected by the fusee is rendered uniform, as set forth.

6. In a spring-motor, the combination, with a helical spring from which the power is derived, of a longitudinal tension applier and torsional-tension applier, whereby the spring may be put under longitudinal and torsional tension, for the purpose set forth.

7. In a spring-motor, the combination, with a helical spring from which the power is derived, and the power-shaft, of intermediate mechanism between said spring and power-shaft, whereby the spring is put under longitudinal and torsional tension and reacts under both tensions simultaneously on the power-shaft, said mechanism consisting of a longitudinal-tension applier and a torsional-tension applier, substantially as described.

411,100. DUST-GUARD FOR CAR-AXLE BOXES. CHARLES W. HAYES, Washington, D. C. Filed Jan. 28, 1887. Serial No. 225,904. (No model.)



Claim.—1. A guard for axle-boxes, consisting of a case adapted to be inserted in the guard-recess of the axle-box, and having a recess in which is confined a freely-moving plate, perforated to embrace the axle and form a bearing portion therefor, the said recess being larger than the plate in both vertical and horizontal dimension, and an anti-friction-bearing substance located in the bearing-surface of said plate, substantially as set forth.

2. The combination, in a guard for axle-boxes, of a case adapted to be inserted in the guard-recess of the axle-box and having a recess in which is confined a freely-movable plate, adapted to embrace the axle and vibrate bodily therewith, and comprising an annular section separated at its upper side, an anti-friction-bearing substance located in the bearing portion of said plate, and a spring E, secured to said annular section and having extended ends by which it may be operated, substantially as set forth.

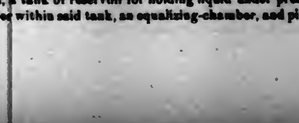
3. The combination, with a car-axle box having a guard-recess, of a guard in said recess and having a portion extending above said box, and a cap adapted to incase the projecting portion of the guard, substantially as set forth.

4. The combination, with a guard for axle-boxes, of a cap therefor, and curved springs *n n*, depending from said cap, substantially as set forth.

5. The combination, with a guard for axle-boxes, said guard having a case proper confining a freely-moving bearing portion, of an outer metallic sheeting for said guard-case, substantially as set forth.

6. The combination, with an axle-box, of a guard therefor having a yielding bearing portion, an operating-spring therefor connected thereto and having extended ends, and a cap or case for said guard adapted to cover the guard and extended ends above the top of the axle-box, substantially as set forth.

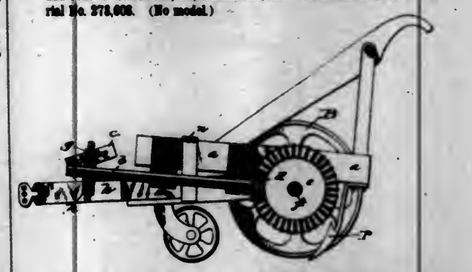
411,101. SUSPENDER-BUCKLE. EDWARD A. HILL, Chicago, Ill. Filed May 13, 1889. Serial No. 310,510. (No model.)



Claim.—1. A suspender-buckle composed of an upper and lower section united by a hinge-joint, the upper section being of sheet metal and provided with a slot and its lower edge armed with teeth, and the lower section formed from wire with a passage for the web and carrying a bearing-plate for the toothed plate to confine the web thereon, substantially as specified.

2. A suspender-buckle composed of an upper and a lower section hinged together, the lower section being formed from wire and provided with a bearing-plate, forming a passage for the web, and the upper section having a slot for the passage of the web and teeth journaled on the upper transverse portion of the lower frame, substantially as specified.

411,102. COTTON-CHOPPING MACHINE. GEORGE E. HUDSLAY and JOHN T. CHAMBERS, Jr., Barnesville, Ga. Filed June 27, 1888. Serial No. 278,603. (No model.)

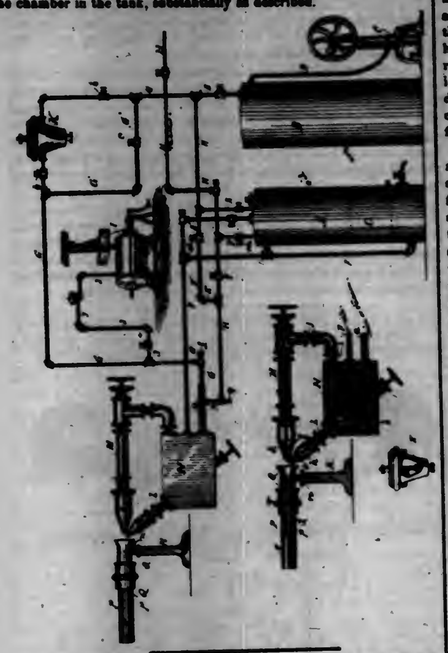


Claim.—1. In combination, a main frame, a driving-axle, a cutter-shaft supported by the main frame and having geared connections with the axle, a supplemental frame hinged to the main frame, with bearing-wheels for the supplemental frame, whereby the operator by elevating the main frame at its front end may throw the cutters more or less out of work, substantially as described.

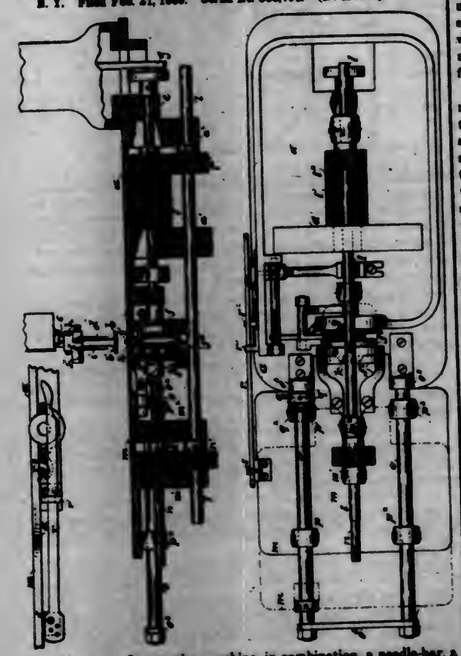
2. In combination, a main frame, a cutter-shaft carried thereby, a supplemental frame hinged to the main frame forward of the axle, and stops for limiting the upward movement of the main frame, said stops being connected to the supplemental frame, substantially as described.

411,103. APPARATUS FOR BURNING HYDROCARBON OILS. JOHN B. HULL, Baltimore, Md. Filed June 13, 1888. Serial No. 276,951. (No model.)

Claim.—An atomizer composed of a hydrocarbon-liquid-discharge pipe within a fluid-pressure-equalizing chamber and having a nozzle thereon, a fluid-discharge pipe having a nozzle contiguous and at an angle to the liquid-discharge nozzle for atomizing the liquid, a retort, tube, or burner into which the atomized liquid is directed and burned, a tank or reservoir for holding liquid under pressure, a steam-chamber within said tank, an equalizing-chamber, and pipes for supplying the fluid-discharge pipe and equalizing-chamber with steam from the chamber in the tank, substantially as described.



411,104. MULTIPLE SEWING-MACHINE. FERDINAND KERR, Newark, N. J., assignor of three-fourths to Holmes & Strauss, New York, N. Y. Filed Feb. 21, 1889. Serial No. 300,791. (No model.)



Claim.—1. In a sewing-machine, in combination, a needle-bar, a needle affixed thereto, a second needle affixed thereto, a shuttle-driver and shuttle-race, and means for supporting the same, whereby they are maintained in a fixed position, so that the shuttle controlled thereby shall co-operate with the first needle, a second shuttle-driver and shuttle-race, a carriage, upon which the same are mounted, said carriage having a range of movement to carry the shuttle-driver and shuttle-race from a position to sew in co-operation with the second needle into a position beyond the range of adjustment of the needle without disturbing the fixed position of the needle upon the needle-bar, and connections whereby the first and second shuttle-drivers are actuated from the same prime mover, substantially as described.

2. In a sewing-machine, in combination, a needle-bar, a needle affixed thereto, a second needle affixed thereto, means whereby the second needle may be affixed thereto at varying distances from the first needle, a shuttle-race fixed upon the frame of the machine in such a position that the shuttle contained therein would co-operate with the first needle, a shuttle-driver for operating said shuttle, a second shuttle-race and shuttle-driver, a carriage upon which the same are mounted, said carriage having a range of movement sufficient to move the shuttle-driver and shuttle-race from position to sew with said second needle into a position beyond the range of adjustment of the needle, means of adjustment whereby the position of said second shuttle-race and shuttle-driver may be adjusted upon said carriage, so that the shuttle belonging thereto may be located to correspond with the position of said second needle upon the needle-bar, and means for actuating said first and second shuttle-drivers from the same prime mover, substantially as described.

3. In a sewing-machine, in combination, two needles, two rotary shuttle-drivers, a shuttle-race for each, said rotary shuttle-drivers being mounted face to face upon the ends of two shafts in alignment with each other, connections whereby one of said shafts and one of said shuttle-races is secured in a fixed position upon the frame of the machine, a carriage upon which the second shaft and shuttle-race are secured, a shaft *l*, extending from the driving mechanism of the first shuttle-driver and in proximity with said second shaft, and mechanical connections whereby said second shaft may be driven for all positions of the carriage, substantially as described.

4. In a sewing-machine, in combination, two needles, a shuttle-race and shuttle-driver arranged to drive a shuttle to co-operate with the first-named needle, a shuttle-race and shuttle-driver arranged to drive a shuttle to co-operate with the second needle, a carriage upon which said second shuttle-race and shuttle-driver are mounted and adapted to move the same from a position to sew with the second needle into a position remote therefrom, a stop whereby the inward motion of said carriage is arrested in each position as to locate the second shuttle properly to sew with the said second needle, a latch whereby said carriage is held against said stop, and connecting mechanism whereby said first and second shuttle-drivers are actuated from the same driving mechanism, substantially as described.

5. In a sewing-machine, in combination, two needles, a shuttle-race and shuttle-driver adapted to drive a shuttle to co-operate with the first needle, a shuttle-race and shuttle-driver adapted to drive a shuttle to co-operate with the second needle, a carriage upon which said second shuttle-race and shuttle-driver are mounted and adapted to carry the same from a position to sew with the said second needle to a position remote therefrom, a stop whereby the inward motion of said carriage is arrested to present the said second shuttle in proper position to sew with the said second needle, a latch whereby said carriage is held against said stop, means of adjustment for said stop, said latch, and said second needle, whereby the distance between the two seams may be varied, and connecting mechanism whereby said first and second shuttle-drivers are actuated from the same prime mover, substantially as described.

411,105. CARD-CYLINDER. CARL R. KRAUSSE, Philadelphia, Pa., administrator of Karl Ludwig Krausse, deceased; said administrator assignor to the Decker Machine Company, of Pennsylvania. Filed Mar. 20, 1889. Serial No. 303,996. (No model.)

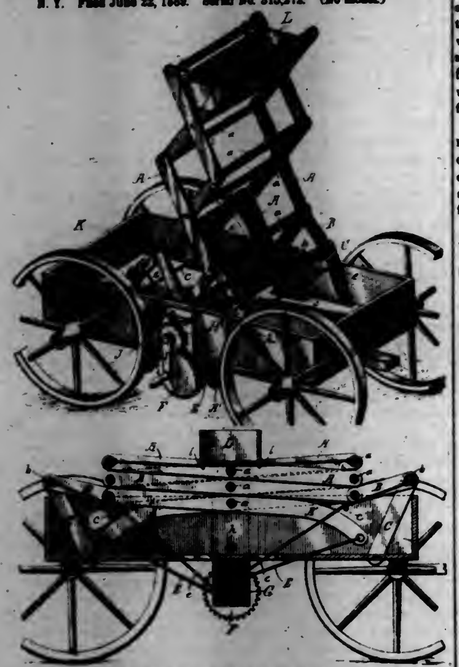


Claim.—1. A card-cylinder having a central shaft, an open metal bracing, and a circumferential wall of plaster-of-paris that is on the outside, on the inside, and passes through the interstices of said metal bracing, substantially as described.

2. A hollow card-cylinder having an outer shell of plaster-of-paris and an inner shaft A, in combination with the disks D D, which close the open ends of said cylinder as specified.

3. A card-cylinder composed of a central shaft A, a set of rings or hoops *b*, carried thereby, and metal bracing *e f*, connecting said hoops or rings, and a plaster-of-paris shell E, which is traversed by said bracing, substantially as herein shown and described.

411,106. FIRE-ESCAPE. ALEXANDER W. LIEBHER, Jamestown, N. Y. Filed June 22, 1889. Serial No. 315,272. (No model.)

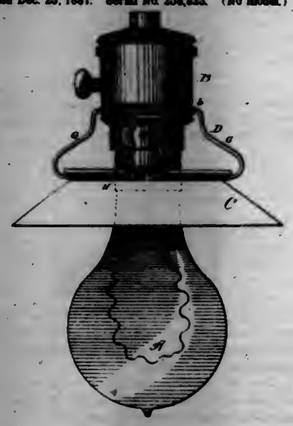


Claim.—1. In a fire-escape, the combination, with the supporting-frame K, lazy-tongs A, and rods *a*, of the braces B C, rods *b*, rods *c*, drum G, spur-wheels F, pinions H, crank-handles I, pawls J, and carriage L, substantially as and for the purposes specified.

2. In a fire-escape, the combination, with the supporting-frame K, lazy-tongs A, rods *a*, ropes E, and drum G, of the braces B C, rods *b*, rods *c*, and ropes *e*, as and for the purposes described.

3. In a fire-escape, the combination, with the supporting-frame K, lazy-tongs A, and rods *a*, of the toggle-jointed braces B C and rods *b* and *c*, as and for the purposes described.

411,107. LAMP-SHADE HOLDER. CHARLES G. PERKINS, Hartford, Conn. Filed Dec. 23, 1887. Serial No. 258,223. (No model.)

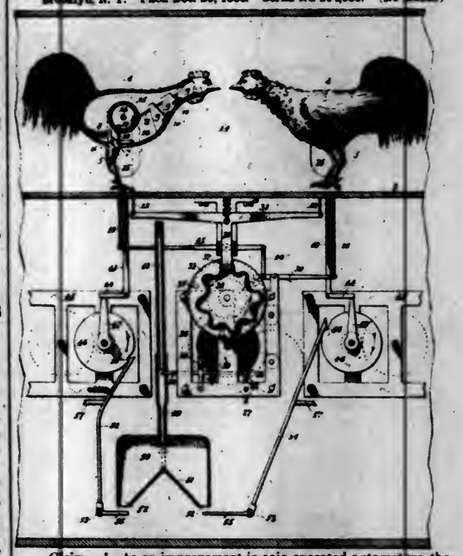


Claim.—1. The combination, with a shade-holder for lamps, of a spring-ring for grasping the lamp, a spring-ring for grasping the shade, two fluted or corrugated arms connecting the two rings and located one on each side of the opening in the shade-ring, and a sliding catch, as and for the purpose described.

2. The combination, in a shade-holder for lamps, of two open spring-rings, one adapted to connect with the lamp and the other with the shade, secured together by a plurality of arms or braces, two of which are corrugated, fluted, or notched, and are located on opposite sides of the opening in the ring which supports the shade, the said fluted, corrugated, or notched arms being embraced by a sliding catch, which is adapted to hold the shade-ring closed against its own spring force.

3. The combination, in a shade-holder for lamps, with a spring-ring for grasping the lamp and a spring-ring for grasping the shade, of pairs of fluted arms connecting the two rings, the individuals of each pair being located, respectively, on the opposite sides of the openings between the sections of the shade-ring, and adjustable links for holding the individuals of each pair together, as set forth.

411,108. COIN-OPERATED AUTOMATON. ARTHUR M. PIERCE, Brooklyn, N. Y. Filed Dec. 29, 1888. Serial No. 294,833. (No model.)



Claim.—1. As an improvement in coin-operated automatons, the figures of two cocks in a fighting attitude, a common motor adapted to actuate the necks and legs of both of said cocks, and an independent motor for each cock, one of said independent motors being arbitrarily controlled by the weight of a coin and adapted to move the respective cock to which it is attached.

2. In a coin-operated automaton, two figures having their movable parts connected to a common motor and the bodies each connected with independent motors, each of said motors having a tripping-lever adapted to be actuated by the weight of a coin.

3. As an improvement in coin-operated automatons, the figures of two cocks in a fighting attitude, the necks of said figures being articulated, as shown and described, and provided with connections to a common motor.

4. As an improvement in coin-operated automatons, the figures of two cocks in a fighting attitude, the legs of said figures being articulated and having connections to a common operating-motor independent of the other movable parts of the figures.

5. As an improvement in coin-operated automatons, the figures of two cocks in a fighting attitude, the movable legs and necks of said figures having independently-operating connections to a common motor.

6. The combination, with the two articulated figures, each provided with an independent motor, of a coin-chute having branches leading to the tripping-lever of said independent motors, and a tripping-lever beneath each of said branches and adapted to control the movements of said independent motors, substantially as shown and described.

7. The combination, with the articulated figures, each connected with a common motor and each provided with an independent motor, of a coin-chute terminating in branches leading to the tripping-levers of said independent motors, and the tripping-levers, substantially as shown and described.

8. The combination of the coin-chute, the tripping-lever connected with the common motor, the branches below said chute and the tripping-levers, and the independent motors beneath said branches, substantially as set forth.

9. A coin-operated automaton in which are comprised two articulated figures, each movably supported on independent horizontal pivots connected with independent motors.

10. A coin-operated automaton in which are comprised two articulated figures, the movable parts of said figures having connection with a common motor, a movable supporting-pivot for each figure having connection with an independent motor, a coin-chute, a lever controlling the common motor branches of said coin-chute, and levers controlling the independent motors and arranged beneath each of said branch coin-chutes, substantially as shown and described.

11. The combination, with the two figures having their necks and legs articulated, as set forth, of a common actuating-motor having connection with the figures, a coin-chute, and a tripping-lever adjacent to said coin-chute and adapted to operate by the weight of a coin.

12. In a coin-operated automaton, the combination, with the actuating-motor, of a figure having a neck composed of a series of blocks hinged to each other and a cord passing from the head through said hinged blocks and connecting with the coin-actuated motor.

13. In a coin-operated automaton representing cocks in a fighting attitude, the combination, with the legs pivoted to the body and normally held in a vertical position by a spring, of connections between the legs and the coin-actuated motor.

14. In a coin-operated automaton, the combination, with the coin-controlled motor, of a vertically-movable yoke having connections with said motor, a horizontal shaft carried by said yoke, and a tube mounted upon said shaft supporting the figure.

15. In a coin-operated automaton of the character herein specified, the combination, with the horizontal shaft, of the tube journaled upon said shaft, the figure fixed to said tube, and the pulleys over which the cords connected to the movable parts of the figure and with the coin-actuated motor pass, pivoted in said tube, substantially as shown and described.

16. In a coin-operated automaton of the character herein specified, the combination, with the figure having an articulated neck and a cord passing therefrom, of an arm fixed to a vertically-movable bar bearing a pin engaging with a cam-wheel upon the coin-controlled actuating-motor, said cord being attached to the movable bar, substantially as shown and described.

17. In a coin-operated automaton of the character herein specified, the combination, with a wheel upon the coin-actuated motor, provided on one side with a stud, of a vertically-movable lever against which said stud is adapted to strike and connections between said lever and the pivoted legs of the figure.

18. In a coin-operated automaton of the character herein specified, the combination, with the coin-actuated motor bearing a wheel having a cam upon one side and a stud or studs upon the other, of connections to the articulated legs and necks of the two figures adapted to be alternately actuated by the rotation of said wheel upon the coin-controlled motor.

19. The combination, with the coin-chute, of the horizontal lever projecting into said chute and provided with two fingers, one of which is adapted and arranged to enter a notch in a disk upon the motor with which said lever is connected and the other to engage with the fly of the motor, substantially as shown and described.

20. The combination, with the fixed coin-chute having a slidable portion, of a tripping-lever projecting into the slidable portion and controlling the movement of a motor, substantially as shown and described.

21. The combination, with the fixed coin-chute having a slidable portion, of the receptacle into which the slidable portion projects, substantially as shown and described.

22. The combination, with the fixed coin-chute having a slidable portion, of the receptacle beneath said chutes having a A-shaped bottom and independent branch chutes, substantially as shown and described.

23. The combination, with the fixed coin-chute having a slidable portion entering a receptacle provided with a A-shaped bottom and branch chutes, of the levers projecting beneath said branch chutes and controlling the movements of independent motors, substantially as shown and described.

24. In a coin-operated automaton of the character herein specified, the combination, with coin-controlled actuating-motor, the yoke supporting the horizontal shaft, rotatable tube, and figure, of the slotted partition between said yoke and figure and the slide over said slot, substantially as shown and described.

25. In a coin-operated automaton of the character herein specified, the combination, with the coin-controlled actuating-motor and the slidable yoke bearing the horizontal shaft, of the rotatable tube mounted upon said shaft and supporting the figure and provided with a toothed wheel, and the rack with which the teeth of said wheel mesh, substantially as shown and described.

26. In a coin-operated automaton of the character herein specified, the combination, with the slidable yoke bearing the horizontal shaft supporting the movable figure, of the downwardly-projecting stem of said yoke, terminating in a horizontal foot, and the arm upon the motor adapted and arranged to engage with said foot, substantially as shown and described.

411,109. MECHANISM FOR THE MANUFACTURE OF TUBES. JAMES ROBERTSON, Glasgow, County of Lanark, Scotland. Filed July 7, 1887. Serial No. 243,617. (No model.) Patented in England Nov. 20, 1884, No. 15,752; in Germany Sept. 17, 1885, No. 36,814; in France Sept. 22, 1885, No. 171,280; in Belgium Sept. 22, 1885, No. 70,262, and in Italy Aug. 30, 1886, No. 20,262.



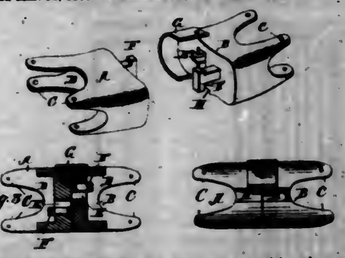
Claim.—1. The herein-described mechanism for forming tubes, comprising long holding-dies for firmly grasping the metal to be operated on, in combination with a rotating mandrel for piercing the metal as it is held in the dies, and means, substantially as described, for applying end pressure to force the mandrel into the metal, all substantially as set forth.

2. The herein-described rotary mandrel for forming tubes by piercing billets, said mandrel having grooves with rounded acting edges to displace the metal as the mandrel is rotated and forced into the billet, substantially as specified.

3. The combination of a rotating grooved mandrel having rounded acting edges for forming tubes by piercing billets of metal with long holding-dies for firmly grasping the metal to be operated on, and means, substantially as set forth, for applying end pressure to force the mandrel into the metal, all substantially as described.

4. The combination of a rotating mandrel for forming tubes by piercing billets of metal with a pair of long half-dies for firmly grasping the metal to be operated on, and a ram to force the dies with the billet up to the rotating mandrel, all substantially as described.

411,110. HORSE-COLLAR FASTENER. JOHN T. ROUNDTREE, New Hampton, Mo., assignor of one-half to J. W. Coulter and R. H. Grantham. Filed Mar. 30, 1889. Serial No. 305,961. (No model.)

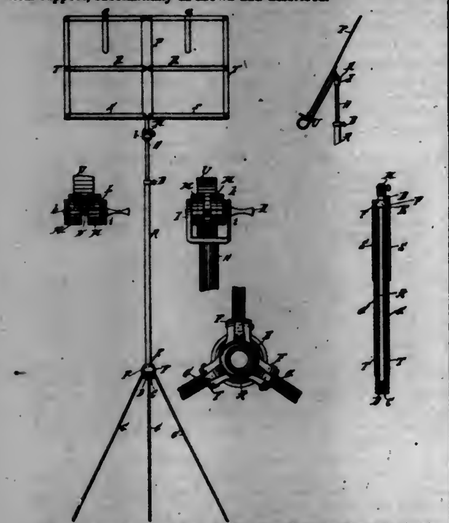


Claim.—A collar coupling or fastening comprising the two parts or sections adapted to be attached to the ends of a divided horse-collar, the meeting face of each section being provided with a T-shaped slot and a projecting T-shaped lug adapted to engage the lug and slot of the opposing section, said parts or sections being provided on their under sides with grooves to form a seat for the hame-strap, and one of said sections being provided with a shield extending laterally from its rear edge, so as to cover the joint between the two sections, substantially as set forth.

411,111. MUSIC-STAND. AUGUSTUS W. SIBLEY, Stamford, Conn., assignor of one-half to John H. Christie, same place. Filed Feb. 9, 1889. Serial No. 299,303. (No model.)

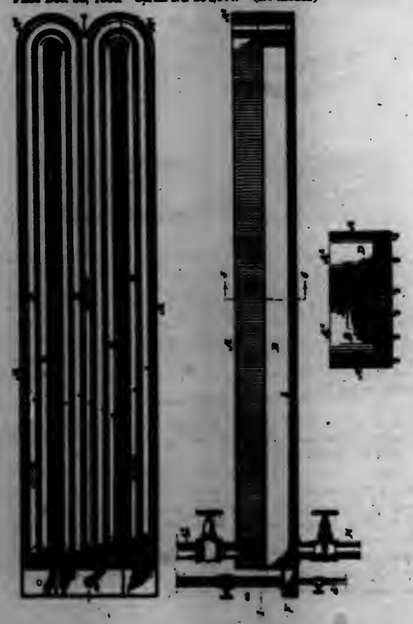
Claim.—1. In a music-stand, the combination, with the music-rest, of a strap secured at one end to the back thereof, passing to the bottom of the music-rest and bending back upon itself, forming a loop, where it is again secured to the music-rest, said strap being movably connected to a clamp mounted upon a vertical support and consisting of two notched disks, through which the strap passes, the disks being perforated for the reception of a supporting and holding screw, substantially as shown and described.

2. The combination, with the strap secured to the music-rest, of the slotted disks embracing said strap, and the thumb-screw passing through said disks, and the supporting-yoke mounted upon the vertical support, substantially as shown and described.



3. A music-stand consisting of a central supporting-tube having a runner thereon, to which the legs are adjustably pivoted, and carrying at one extremity an adjustable vertical support bearing a clamp consisting of two notched disks provided with an adjusting-screw, in combination with a music-rest, the sides or wings whereof are adapted to swing parallel to the center bar of the rest, said rest being connected to the adjustable notched disks by a strap secured to the back of the center bar, passing to the bottom of the rest and bending back upon itself, forming a loop, the whole arranged to fold together, substantially as shown and described.

411,112. DEFECATING-PAN. MARCUS DUNBAR, Fort Scott, Kans. Filed Dec. 28, 1888. Serial No. 294,677. (No model.)



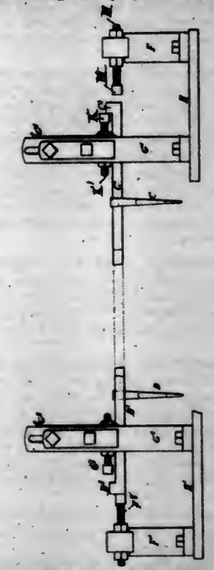
Claim.—1. The combination of the pan having longitudinal partitions therein dividing the pan into opposite side channels and a central channel communicating with each other at one end of the pan, but closed at the opposite end of the same, with heating-pipes in said channels, juice-supply pipes communicating with the closed ends of the side channels, and a juice-discharge pipe communicating with the closed end of the central channel, substantially as specified.

2. The combination of the pan having partitions forming opposite side channels and a central channel communicating with each other at one end of the pan, but closed at the opposite end of the pan, with pipes for supplying juice to the closed ends of the side channels, a pipe for discharging the juice from the closed end of the central channel, heating-pipes located in said channels, a steam-supplying box for said pipes at the closed end of the central channel, and discharge-boxes at the closed ends of the side channels, whereby the steam in the heating-pipes and the juice in the pan are caused to travel in opposite courses, substantially as specified.

3. The combination of the outer casing of the pan with the longitudinal partitions therein less in height than the outer casing, and forming within the pan opposite side channels and a central channel communicating with each other at one end of the pan, but closed at the opposite end of the same, heating-pipes in said channels, pipes supplying juice to the closed ends of the side channels, and a pipe for discharging the juice from the closed end of the central channel, substantially as specified.

4. The combination of the pan having one end in the form of a pair of segments meeting at or about the longitudinal center of the pan, with longitudinal partitions forming in the pan opposite side channels and a central channel communicating with each other at the segment end of the pan, but closed at the opposite end of the pan, juice-supply and discharge pipes, and heating-pipes in the channels, substantially as specified.

411,113. STRAIGHT-KNITTING MACHINE. GEORGE TOMPLEMAN, Nottingham, England. Filed Dec. 28, 1888. Serial No. 294,677. (No model.) Patented in England May 26, 1887, No. 7,538, and May 3, 1888, No. 6,690.

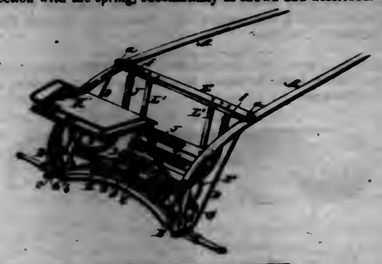


Claim.—1. In combination with the narrowing-slide H, its bracket G', mounted thereon, the slide G, carrying the supplemental stop K and mounted on such bracket, the bracket F and its adjustable stop, and the splicing-thread-carrier bar having at its end the catch-knob D^3, all substantially as and for the purposes set forth.

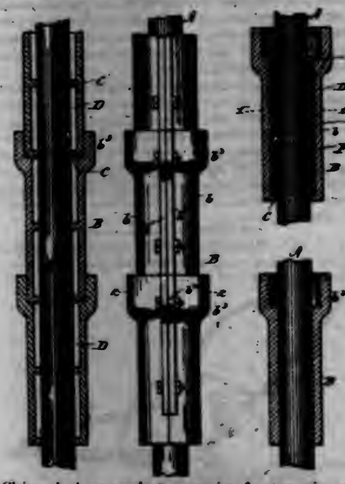
2. In combination with slide H, its bracket G', slide G, stop K, bracket F and its adjustable stop, and the splicing-thread carrier having a catch-knob D^3, the slide H', bracket G^4, the slide mounted thereon and carrying an adjustable stop, and bracket F' and its adjustable stop, and splicing-thread-carrier bar D', having a catch-knob D^3 at its end, the combination being and operating substantially as set forth.

411,114. ROAD-CART. JOSEPH W. VORWICK, Monmouth, Ill. Filed June 20, 1888. Serial No. 316,695. (No model.)

Claim.—The combination, with the thills and axle, of the loops attached to the thills, the spring-shackles formed with spring-loops loosely hang on said loops, the transverse spring hang on the shackles, the head-block secured centrally to the spring, the seat-bars pivotally connected with the thills at their forward ends, the horizontal arms c on the head-block and attached to the seat-bars, and the seat-bar connection with the spring, substantially as shown and described.



411,115. PIPE-COVERING. ISAAC P. WISTAR, Philadelphia, Pa. Filed Oct. 2, 1888. Serial No. 286,974. (No model.)



Claim.—1. A non-conductor covering for steam-pipes or analogous fixtures, composed of semi-cylindrical sections or shells having a bell-mouth at one end and edge flanges, and bolt-and-nut connections passing through said edge flanges, substantially as set forth.

2. A non-conductor covering for steam-pipes or analogous fixtures, consisting of semi-cylindrical sections or shells having at one end a bell-mouth and composed of asbestos and an indurating material as a base, substantially as set forth.

3. A non-conductor covering for steam-pipes and analogous fixtures, consisting of rigid semi-cylindrical sections or shells having at one end a bell-mouth and lugs or ribs C in their bore, and composed of asbestos and an indurating material as a base, substantially as set forth.

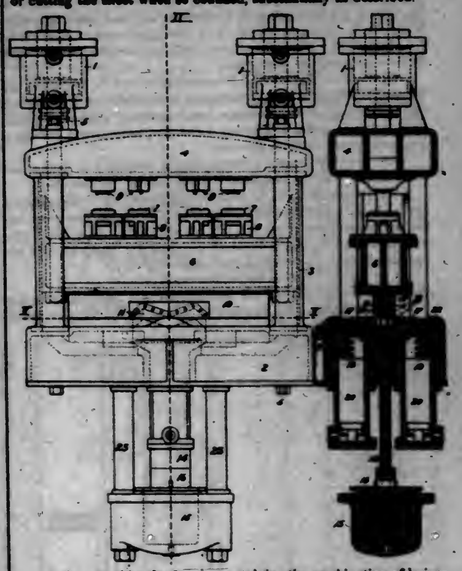
4. The rigid semi-cylindrical sections or shells b, having at one end a bell-mouth, lugs C in their bore, and a filling of loose asbestos between said lugs and said sections, consisting of asbestos and an indurating material as a base, substantially as and for the purpose set forth.

411,116. MACHINE FOR SHAPING SHEET METAL. HENRY AIKEN, Homestead, Pa. Filed May 11, 1889. Serial No. 310,426. (No model.)

Claim.—1. In a machine for shaping metal plates or sheets, a reciprocating plunger having on one side cutting-dies and on the opposite side bending and shaping dies, substantially as described.

2. The combination of the bed-plate, the entablature, and the head which reciprocates between the same, said head having on one side cutting-dies and on the opposite side bending and shaping dies, substantially as described.

3. The combination, with the knife-head and bed-plate or anvil adapted to clamp between them a metal sheet, of a knife for shearing or cutting the sheet when so confined, substantially as described.



4. In a machine for forming metal ties, the combination of knives arranged and adapted to cut in a metal plate slots *b* and a cutting and bending tool adapted to cut slits extending between and beyond the slots, thereby cutting out a piece of the metal, and to bend up lips *c* on the outer side of the slots, substantially as described.

5. The combination of the knife-head 10 and the bed-plate or anvil adapted to hold an interposed metal sheet, with a knife which moves through said bed-plate and cuts the sheet in conjunction with the knife-head 10, substantially as described.

6. The combination, with the knife-head 10, of straight-edged blades 11, secured thereto, said knife-head having an intermediate cavity, and a moving knife adapted to enter said cavity and in conjunction with the blades 11 to shear and shape an interposed metal sheet, substantially as described.

7. The combination, with the knife-head 10, of straight-edged blades 11, secured thereto, said knife-head having an intermediate cavity, and a moving knife adapted to enter said cavity and in conjunction with the blades 11 to shear and shape an interposed metal sheet, the face of said moving knife being shaped to conform to the base of said cavity, substantially as described.

8. The combination, with the knife-head 10, of straight-edged blades 11, secured thereto, said knife-head having an intermediate double-angled cavity, and a moving knife adapted to enter said cavity and in conjunction with the blades 11 to shear and shape an interposed metal sheet, substantially as described.

9. The knife-head 10, having opposite knife-blades 11 and an intermediate slot *c*, for containing the heads of bolts which secure said knife-blades in position, substantially as described.

10. The combination, with clamping mechanism for holding an interposed metal sheet, of lateral bending-sectors and racks for operating the same, substantially as described.

11. The combination, with clamping mechanism for holding an interposed metal sheet, of lateral bending-sectors and racks for operating the same, said racks being situated at the middle portions of the sectors, substantially as described.

12. The combination, with clamping mechanism for holding an interposed metal sheet, of lateral bending-sectors and racks for operating the same, and a hydraulic cylinder whose plungers are connected with the racks, substantially as described.

13. The combination, with clamping mechanism for holding an interposed metal sheet, of lateral bending-sectors and racks for operating the same, and the machine bed-plate or frame which backs and braces said racks and takes up the thrust thereof, substantially as described.

14. The combination, with the knife-head and bed-plate or anvil adapted to clamp between them a metal sheet, of a knife for shearing or cutting the sheet when so confined and a hydraulic motor whose plunger operates said knife-head, substantially as described.

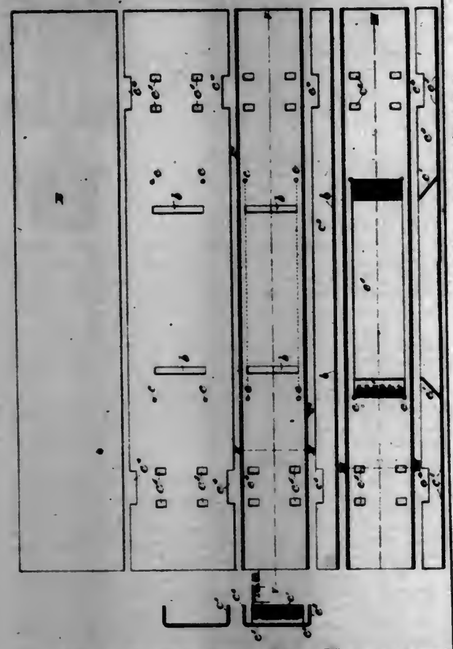
15. The combination of the bed-plate or anvil, the moving head adapted to clamp a metal sheet thereon, bending-sectors journaled at the sides of the bed-plate and adapted to bend the projecting edges of the metal sheet, mechanism for operating said sectors, and a moving knife which works through the bed-plate and engages the metal sheet, substantially as described.

16. The moving knife 13, in combination with its knife-head 14, the machine-frame having a passage or opening for the movement of the knife-head, and a bed-plate or anvil consisting of a metal casting fixed to the bed-plate and having a slot or opening for the passage of the knife, substantially as described.

17. The knife-head 14, having lateral shoulders at the end and knife-blades 13 set on said shoulders, substantially as described.

18. The combination of the machine-frame, the bending-sectors, hydraulic cylinders secured to the under side of machine-frame and having plungers connected with and operating said sectors, and a moving knife; and a hydraulic motor whose plunger is connected with and operates the same, substantially as described.

411,117. METHOD OF MAKING METAL TIES. HENRY AIKEN, Homestead, Pa. Filed May 20, 1889. Serial No. 312,043. (No model.)



Claim.—1. The method hereinbefore described of making metal ties, which consists in forming lateral flanges on a metal plate and then cutting out the middle portion of the latter, substantially as described.

2. The method hereinbefore described of making metal ties, which consists in forming on a metal plate lateral flanges and slots *b b*, and then shearing the plate on lines extending between and beyond said slots and bending lips *c'* between the sheared lines, substantially as described.

3. The method hereinbefore described of making metal ties, which consists in forming on a metal plate lateral flanges and slots *b b*, and then shearing the plate on lines extending between said slots, substantially as described.

4. The method hereinbefore described of making metal ties, which consists in forming in a metal plate slots *b b* and holes *c c*, and then shearing the plate on the lines *c c* and bending the lips *c'*, substantially as described.

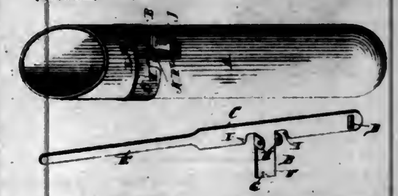
5. The method hereinbefore described of making metal ties, which consists in forming on a metal plate notches *c'* and slots *b b*, bending flanges on the plate, and shearing the plate between the said slots, substantially as described.

6. The method hereinbefore described of making metal ties, which consists in confining or clamping a metal plate, bending lateral flanges thereon, and while confined shearing out the middle portion of the plate, substantially as described.

7. The method hereinbefore described, which consists in forming on a metal plate slots *b b*, and then shearing the plate between said slots, substantially as described.

8. The method hereinbefore described, which consists in forming on a metal plate slots *b b*, and then shearing the plate between and beyond said slots and bending lips *c'* between the sheared lines, substantially as described.

411,118. HOLDER FOR SPECTACLE-CASES. JOHN J. BLOCK and JAMES F. BARRATT, Paducah, Ky. Filed May 28, 1889. Serial No. 311,894. (No model.)

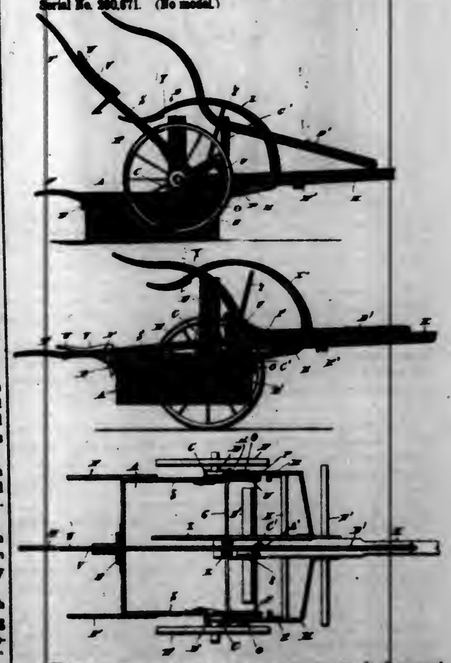


Claim.—1. The blank for a spectacle-case holder having a transverse slot at one end and a tongue at the other end and provided at an intermediate point with the lateral arm F, having the spur G and the perforated legs H, and the spurs I on the edge of the blank adjacent to the said arm F, as set forth.

2. The combination of the band having the transverse slot at one end and the tongue at its other end adapted to engage said slot and having a lateral arm F, and the plate J, pivotally mounted on the said arm F and forming a clasp therewith, as set forth.

3. A band forming a spectacle-case holder adapted to encircle the spectacle-case and hold thereon by spurs struck up from the band and engaging the case, the ends of the band being held together by a tongue-and-slot connection, and the lateral arm F on the band carrying the clasps, as set forth.

411,119. WHEELED SCRAPER. ARCHIE BROWN, Hunt, Ind., assignor of one-half to James S. Irwin, same place. Filed Nov. 13, 1888. Serial No. 290,671. (No model.)



Claim.—1. The combination of the scraper, the standards secured to and vertically movable on the sides of the same and having the spindles on which the supporting-wheels are mounted, the offset bar G, pivoted to the scraper, the tongue secured to the offset bar, and the bail or lever S, pivotally connected to the standards D and connected to the scraper, whereby the latter may be raised and lowered, substantially as described.

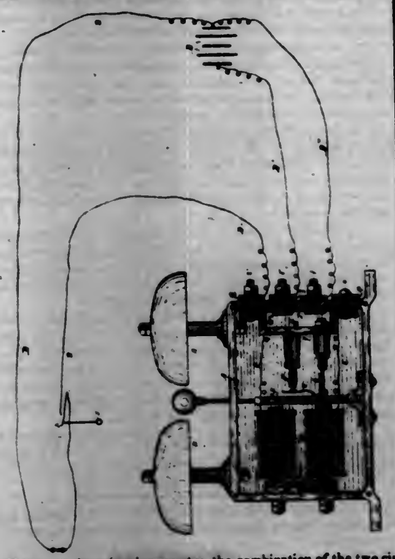
2. The combination of the scraper, the standards secured to and vertically movable on the sides of the same and having the spindles on which the supporting-wheels are mounted, the offset bar G, pivoted to the scraper, the tongue secured to the offset bar, and the bail or lever S, pivotally connected to the standards D and connected to the scraper, whereby the latter may be raised and lowered, and the gravity-hook V, pivoted to the bail or levers and adapted to engage a loop or keeper on the rear side of the scraper, whereby the latter may be turned and discharged of its contents, substantially as described.

3. The combination of the scraper mounted on wheels and adapted to tilt, the tongue, the bar C, guided vertically thereon, the gate secured to the lower end of the said bar, and the lever pivoted on the tongue and connected to the bar C, whereby the gate may be raised and lowered, substantially as described.

4. The combination of the scraper mounted on wheels and adapted to tilt, the tongue, the bar C, guided vertically thereon, the gate secured to the lower end of the said bar, and the lever pivoted on the tongue and connected to the bar C, whereby the gate may be raised and lowered, and the standard on the tongue having the shoulder to engage the lever, for the purpose set forth, substantially as described.

5. The combination of the scraper, the tongue having the brace-rods pivotally connected to the scraper and provided with the studs, the standards movable vertically in guides on the sides of the scraper and having the spindles on which the supporting-wheels are journaled, the bell-crank levers S, pivotally connected to the scraper and connected by links to the wheel-standard, the hooks P, pivoted to the scraper and adapted to engage the studs on the bounds, and the links connecting the said hooks to the bell-crank levers, substantially as described.

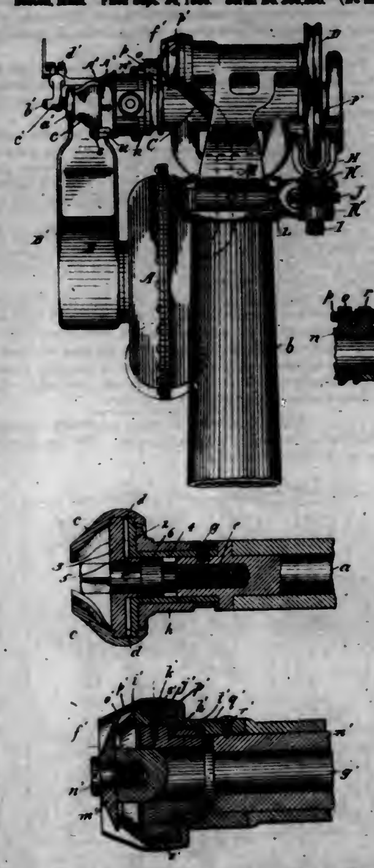
411,120. SIGNALING APPARATUS. WILLIAM R. COLE, Detroit, Mich. Filed Jan. 4, 1889. Serial No. 295,402. (No model.)



Claim.—1. In a signal apparatus, the combination of the two circuits and a battery therein, a metal case provided with the signal, an armature and magnets in said case, the metal frame having the thrown-out portion attached to the inside of one wall of the case and insulated therefrom and provided with the projections, the needle attached to one of said projections, and the spring attached at one end to the other projection, insulated therefrom and attached to the armature at the other end, substantially as set forth.

2. The metal case provided with the signal-gong, the magnets and armature in said case, the metal frame attached to one wall of the case and insulated therefrom, the needle and armature-spring attached to said metal frame, a wire attached to one of the magnets and to said frame, a post insulated from the case and frame, a wire connecting the other magnet with said post, a post contacting with the metal case, a battery, a circuit-line direct to the battery from said posts, a post insulated from the metal case, but contacting with the metal frame, a signaling-circuit line running from said latter-named post to the battery, and a suitable number of circuit-breakers in said circuit, all combined and arranged substantially as set forth.

411,121. HEEL-TRIMMING MACHINE. FRANK H. BENNETT, Lynn, assignor, by mesne assignments, to Isaac P. T. Edmands, trustee, Boston, Mass. Filed Sept. 24, 1888. Serial No. 286,202. (No model.)



Claim.—1. In a heel-trimming machine, the combination, with the cutters *c*, having grooves on their inner surfaces arranged substantially at right angles with the axis of rotation of the cutter-head, of an expansible two-part holder formed to enter said grooves and composed of a section secured to a shaft and a movable section adapted to be moved or adjusted outward crosswise of said grooves, whereby the holder is enabled to engage the sides of said grooves, substantially as set forth, the minimum conjoint width of said sections being less than that of the said grooves of the cutters, as stated.

2. In a heel-trimming machine, the combination of the shaft *a*, the holder composed of the stationary section 2, secured to said shaft, and the adjustable section fitted to said former section, said sections having curved dovetailed ends, the screw bearing against the inner end of said adjustable section for forcing the same outward, and the cutters having in their inner surfaces dovetail grooves or seats formed to receive the ends of said sections, as set forth, the minimum conjoint width of said sections being less than that of the said grooves of the cutters, as stated.

3. In a heel-trimming machine, the combination of the shaft *a*, the holder-section 2, having the sleeve 4 attached to the shaft and provided with the recess 7, the adjustable holder-section 3, formed to enter said recess, the bolt *e*, engaged, as described, with the shaft and

formed to bear against the inner end of the adjustable section, and the cutters having internal seats or grooves formed to engage the holder-sections, as set forth, the minimum conjoint width of said sections being less than that of the said grooves of the cutters, as stated.

4. In a heel-trimming machine, the combination, with a rotary cutter, of an arm or support arranged in front of the axis of the cutter, a rest pivoted at its inner end to said support and arranged to stand at right angles with the cutter as a support for the side of the heel, said rest being adapted by its pivotal connection to swing out of place and thereby avoid the shank of a boot or shoe sole, and a spring whereby said rest is normally held in a position at right angles with the axis of the cutter and permitted to yield and swing from said position, as set forth.

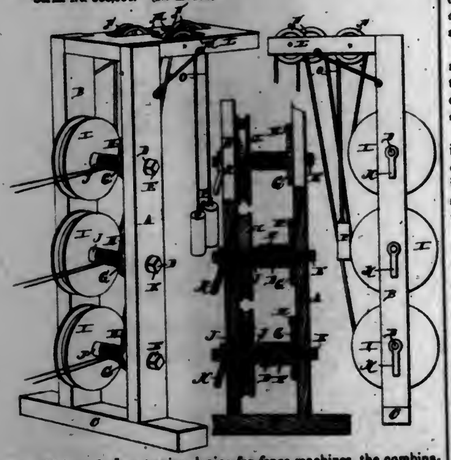
5. The combination, with the cutter-head, of the top-lift rest, the sleeve *n*, supporting said rest and adapted to slide on a fixed bearing, and the screw *p*, journaled in a lug on said bearing and engaged with a tapped socket in a lug on the sleeve *n*, as set forth.

6. In a heel-trimming machine, the combination, with the cutter-head and the rand-trimmer, of the exhaust-fan blower, the trunk or flue connected with the blower and having an enlarged mouth provided with a forwardly-projecting lip and arranged adjacent the cutter-head, the hood *p'*, and the pipe C, connecting said hood with the blower-casing, substantially as set forth.

7. In a heel-trimming machine, the combination, with the exhaust-fan blower, of the hood *p'*, having the slotted arm p^2, the screw and clamping devices for said hood, and the flexible tube connecting said hood and the blower, substantially as set forth.

8. The rand-trimmer composed of the cylindrical head *N'*, having pins *k'*, the knives having segmental flanges *j'*, formed to fit the head and provided with orifices *l'* to receive the pins *k'*, said orifices exceeding the pins in number, the flange *s'*, secured to the head as a means of keeping the knives in engagement with the pins, and the circular guard *m'*, detachably secured to the shaft of the trimmer and serving to hold the rand-trimmer on said shaft, as set forth.

411,122. TENSION DEVICE FOR FENCE-MACHINES. ANDREW J. FORSYTHE and GEORGE I. GWINN, Kokomo, Ind. Filed Apr. 25, 1889. Serial No. 308,556. (No model.)

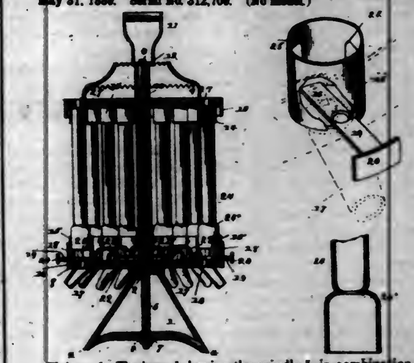


Claim.—1. In a tension device for fence-machines, the combination, with a suitable frame, of a series of horizontal shafts, sleeves suitably secured upon the said shafts and having ratchet-wheels adapted to engage pawls mounted pivotally upon the frame, wheels or disks mounted loosely upon said shafts, means for temporarily connecting said wheels and causing them to revolve with the said sleeves, and cords attached to the peripheries of said wheels, passing over suitably-arranged guide-pulleys, and having weights attached to their ends, substantially as set forth.

2. In a tension device for fence-machines, the combination of a suitable frame, a series of horizontal shafts journaled therein, sleeves suitably secured upon the said shafts and having ratchet-wheels engaging pawls which are pivoted upon the frame, wheels or disks mounted loosely upon said shafts, thumb-nuts at the outer ends of said shafts, adapted to force the said wheels into contact with said sleeves, and cords attached to the peripheries of said wheels passing over suitable guide-pulleys and having weights attached to their ends, substantially as set forth.

3. The combination of the sill, the vertical standards, the rearwardly-extending bracket at the upper ends of said standards, the sleeves secured upon shafts journaled transversely in the said standards, ratchet-wheels upon the said sleeves, pawls pivoted to one of the standards and engaging the said ratchet-wheels, wheels or disks mounted loosely upon the shafts adjacent to the said sleeves, thumb-nuts upon the outer ends of said shafts, adapted to force said wheels into contact with said sleeves, and cords attached to the peripheries of the wheels, passing over suitable guide-pulleys and provided with weights at their free ends, substantially as herein set forth.

411,123. SHOT-CANISTER. BELL HARDEN, Bellville, Tex. Filed May 31, 1889. Serial No. 312,709. (No model.)



Claim.—1. The base 1, having the spindle 5, in combination with the disk 9, having sockets 14, and with the lower disk 8, having the openings 16, said disks being mounted on the spindle, and valves 19, mounted over the openings, springs 22, connected with the valves, securing-plate 21, encircling the spindle and bearing upon the rear ends of the springs, sockets 15, and the transparent tubes 24, contracted, as at 24°, mounted in the sockets, substantially as specified.

2. In a shot-case, the base having the socket 15, forming an annular flange having one or more independent springs 25, secured upon the inside thereof, in combination with the tube 24, and the upper disk having a corresponding socket for the reception of the upper end of the tube, substantially as specified.

3. In a shot-case, the base 1, having the opening 2 and seat 3, in combination with the shaft 5, terminating in screw-threads 6 and conical end 7, the disks 8 and 9, mounted on the shaft and having interposed sleeves 10 and tubes 15, and the handle 11, having the screw-threaded shank 12, for binding the disks on the shaft, substantially as specified.

4. The disk 8, having the series of perforations 16, the perforated flange 18, the shot-tubes 15, mounted therein, the gate 19, mounted over the perforations and projecting through the openings in the flange, and the springs 23, secured to the rear ends of the gate and to the disk by means of the plate 21, substantially as specified.

5. In a shot-case, the combination of the series of tubes 24, the disk 8, on which the tubes are mounted, having the perforated flange 18, and the perforations 16, which register with the tubes, the series of perforated gates 19, mounted over the perforations 16 and projecting through the perforations of flange 18, the series of springs 23, bearing against the gates, and the plate 21, securing all of the springs in place to the disk 8, as set forth.

6. A shot-case consisting of a suitable support combined with a series of tubes 24, the said tubes being provided with a contracted neck portion 24°, so as to cause the shot to pass out evenly and in such a manner as to leave the shot-line level, as set forth.

411,124. RECEPTACLE FOR SECONDARY BATTERIES. FRED. W. HUNTER, Newton, Mass. Filed Mar. 8, 1889. Serial No. 301,831. (No specimens.)

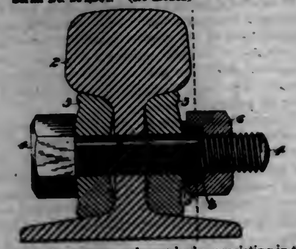


Claim.—1. As a new article of manufacture, a receptacle for secondary batteries, composed of balata as a base, combined with acid-proof material, as asbestus, in suitable quantities, substantially as shed for purposes specified.

2. As a new article of manufacture, a receptacle for secondary batteries, consisting of balata and acid-proof material, as asbestus, ground slate, or analogous substances, mixed in suitable proportions and subsequently vulcanized, substantially as described.

3. As a new article of manufacture, a vessel for secondary batteries, composed of integrally-united homogeneous flexible sheets of acid-proof material, consisting of balata and asbestus, soapstone, or analogous substances, compounded in suitable quantities, as herein stated and set forth.

411,125. NUT-LOCK. HENRY KLEMAN, Pittsburg, Pa. Filed Dec. 26, 1888. Serial No. 294,581. (No model.)

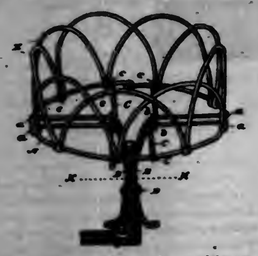


Claim.—1. An improvement in nut-locks, consisting in the combination of the plate, the bolt, the nut having a countersunk cavity on its inner face, and an annular tapering divided washer encircling the bolt and fitting within the countersunk cavity, the said washer being made of sufficient depth that when the nut is tightened on the bolt the washer shall project from the cavity and shall bear against the plate, substantially as and for the purposes described.

2. An improvement in nut-locks, consisting in the combination of the plate, the bolt, the nut having a countersunk cavity on its inner face, and an annular internally-corrugated tapering divided washer encircling the bolt and fitting within the countersunk cavity of the nut and bearing on the plate, substantially as and for the purposes described.

3. An improvement in nut-locks, consisting in the combination of the bolt, the nut having a countersunk cavity on its inner face, a tapering annular divided washer encircling the bolt, fitting within the countersunk cavity, and a pin or projection on the bolt which fits between the divided portions of the washer and prevents turning thereof, substantially as and for the purposes described.

411,126. HEATING ATTACHMENT FOR GAS-BURNERS. CHARLES LOBB, Toronto, Ontario, Canada. Filed Sept. 20, 1888. Serial No. 285,983. (No model.)



Claim.—1. A heating attachment for gas-burners, composed of a circular rim, a vessel-sustaining rim formed from bowed wires, with their ends abutting each other and secured to the rim, the angular clamping-arms having one end attached to the rim and being extended horizontally inward and bent downward, whereby they are adapted to embrace a gas-burner, the rods securing the horizontal branches of the clamping-arms to the rim, and the ring on the clamping-arms for holding the same to the burner, substantially as specified.

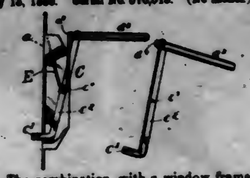
2. In a heating attachment for gas-burners, the combination, with a rim carrying suitable means for attachment to a burner, of a vessel-sustaining rim composed of bowed wires having their ends secured to the rim and abutting against each other, substantially as and for the purposes specified.

411,127. METHOD OF PRODUCING HIGH EXPLOSIVES. HOWARD MAXIM, Plainfield, Mass. Filed May 13, 1889. Serial No. 310,657. (No model.)

Claim.—1. The herein-described process of producing high explosives, consisting in dissolving gun-cotton or nitro-cellulose in a suitable solvent, adding to the dissolved nitro-cellulose nitro-glycerine, and then evaporating from the mixture the volatile solvent, substantially as set forth.

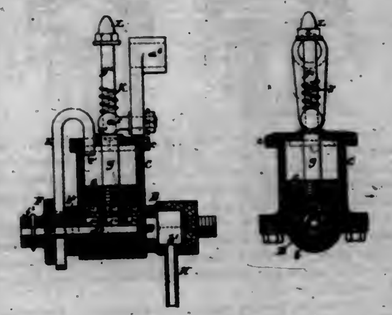
2. The process herein described for manufacturing explosives, which consists in dissolving nitro-cellulose in a volatile solvent, combining therewith nitro-glycerine, and evaporating the volatile solvent therefrom after the admixture of the nitro-glycerine.

411,128. SASH-FASTENER. HENRY H. MEYER, Atkinson, Nebr. Filed May 13, 1889. Serial No. 310,515. (No model.)



Claim.—The combination, with a window frame and sash, of the window-lock C, having the plate *a*, provided with the perforated extensions *a'*, perforated flanges *b*, and the perforation *c*, locking-lever a^3, pivoted between said flanges by means of the pin c^1, the locking-nib passing through said perforation *c*, lever-arm a^3, pivoted to the upper end of said lever-and having in its slotted end the depressions a^4, spring E, having its U-shaped end fitting in said depressions a^4, its arms passing down and coiling around the pin c^1, then up and resting against the inner face of the plate *a*, immediately under the U-shaped end *c*, substantially as shown and described, and for the purposes set forth

411,129. AUTOMATIC BELL-RINGER. FRANK W. RISENBERG and JOHN R. O'HEARNE, Omaha, Nebr. Filed Apr. 16, 1889. Serial No. 307,484. (No model.)



Claim.—1. An oscillating cylinder, in combination with a hollow trunnion having two series of ports b^2, and a valve within the trunnion, and a bell-supporting frame carrying said trunnion with a bell, substantially as and for the purpose described.

2. The trunnion B, having longitudinal chamber *b*, provided with the opening *b'* and ports b^2 and b^3, in combination with cylinder C, and the valve D, having ports d^2 and the central passage d^3, substantially as and for the purpose described.

3. The combination of the oscillating cylinder C, the trunnion B, having ports b^2, the valve D, having ports and a central passage, and the nut b^4 upon the end of said trunnion, substantially as and for the purpose described.

4. The combination of the oscillating cylinder C, the piston G, piston-rod *g*, and nut L, with the spring K upon said piston-rod, the pin a^2, perforated to receive the piston-rod, the crank-arm a^3, shafts *a* and *a'*, bell-yoke, and bell, substantially as and for the purpose described.

5. The combination of the piston G, the cylinder and its perforated cover *c*, and the bent valve-rod E, entering the perforated cover, with the valve D, the disk F, and pins *f* and *f'* upon said disk, substantially as and for the purpose described.

6. The combination of a bell-supporting frame, the trunnion B, the cylinder C, mounted upon said trunnion, the tubular valve D, the valve-rod E, the valve-disk F, having pins *f f'*, and the piston G, adapted to lift the valve-rod, substantially as and for the purpose described.

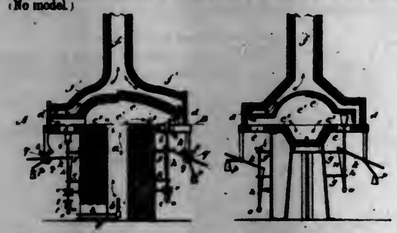
7. The combination of a bell, a bell-supporting frame, the hollow trunnion B, the oscillating cylinder C, valve D, valve-rod E, valve-disk F, piston G, and rod *g*, with the crank-pin a^2 and crank-arm a^3, substantially as and for the purpose described.

411,130. STOVE-PIPE COUPLING. ANDREW J. ROBINSON, Bethgate, Dak. Filed Mar. 19, 1889. Serial No. 303,857. (No model.)



Claim.—The herein-described pipe-coupling, comprising the band, a plate C, rigidly secured near one end thereof, having an arm D, provided with the shoulders d and d^3 and groove d', for the purpose set forth, and a link pivotally secured to the other end of the band and adapted to receive said arm, substantially as set forth.

411,131. FURNACE FOR HEATING GLASSWARE. HERMANN SCHULER-BERGE, Rochester, Pa. Filed Nov. 19, 1888. Serial No. 291,293. (No model.)

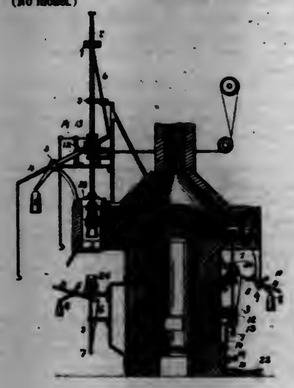


Claim.—1. A furnace for heating glassware, consisting in a combustion-chamber provided with a floor over which the gases of combustion pass and which is provided with a glory-hole or glory-holes accessible from below for the introduction and withdrawal of a glass article, substantially as and for the purposes described.

2. A furnace for heating glassware, consisting in a combustion-chamber and a floor provided with a glory-hole or glory-holes accessible from below, in combination with a carrying-rod located below the glory-hole and means for raising the rod thereto, substantially as and for the purposes described.

3. A furnace for heating glassware, consisting in a combustion-chamber and a floor provided with a glory-hole or glory-holes accessible from below, in combination with an upwardly-movable rotary carrying-rod located below the glory-hole and means for effecting the upward motion and revolution of the carrying-rod, substantially as and for the purposes described.

411,132. APPARATUS FOR REHEATING GLASSWARE. HERMANN SCHULER-BERGE, Rochester, Pa. Filed Dec. 31, 1888. Serial No. 295,103. (No model.)



Claim.—1. In apparatus for reheating and finishing glassware, the combination of a vertical supporting-rod, a vertically-movable bearing in which it is suspended, and stationary bearings in which it is revolvable and vertically movable, substantially as and for the purposes described.

2. In apparatus for reheating and finishing glassware, the combination, with a heating flue or furnace provided with an opening or openings admitting of the introduction of articles in a vertical direction, of a suspended carrying-rod adapted to slide vertically in bearings stationary with relation to the said opening or openings and a shaping-tool, substantially as and for the purposes described.

3. In apparatus for reheating and finishing glassware, the combination, with a heating flue or furnace provided with an opening or openings admitting of the introduction of articles in a vertical direction, of a suspended revolvable carrying-rod adapted to slide vertically in bearings stationary with relation to the said opening or openings, a shaping-tool, and means for revolving the carrying-rod, substantially as and for the purposes described.

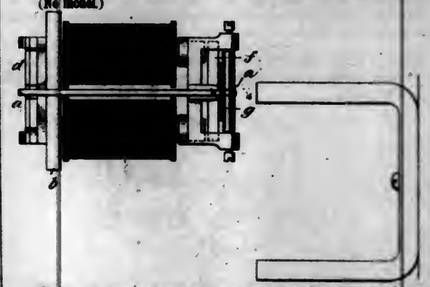
4. In apparatus for reheating and finishing glassware, the combination, with a heating flue or furnace provided with an opening or openings admitting of the introduction of articles in a vertical direction, of a suspended revolvable carrying-rod adapted to slide vertically in bearings stationary with relation to the said opening or openings, a shaping-tool, means for revolving the carrying-rod, and means for interrupting the rotation thereof, substantially as and for the purposes described.

5. In apparatus for finishing glassware, the combination of a vertically-movable carrying-rod, a shaping-tool, and a spring-arm for pressing the article on the shaping-tool, substantially as and for the purposes described.

6. In apparatus for finishing glassware, the combination of a vertically-movable carrying-rod, a shaping-tool, and a spring-arm for pressing the article on the shaping-tool, said spring-arm having a swivel-jointed end, substantially as and for the purposes described.

7. In apparatus for finishing hollow articles of glassware, a supporting-rod and a former in the path of the rod, said rod being vertically movable to cause the former to receive and shape the article, substantially as and for the purposes described.

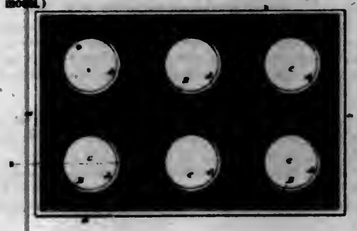
411,133. ELECTRIC POLARIZED ANNUNCIATOR. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1886. Renewed Nov. 21, 1887. Serial No. 256,773. (No model.)



Claim.—1. In an electro-magnet, the centrally-pivoted polarized armature in combination with a hook or detent, said hook or detent operating a signal device and placed near the centrally-pivoted armature, whereby said hook is struck alternatively as the armature vibrates.

2. The combination of the armature f, the striker g, and the lugs $e\,e$ with the hook or detent, and a signal device operated by said hook or detent, substantially as described.

411,134. GRATING FOR ILLUMINATING-TILES. THEODORE SHARTS, New York, N. Y. Filed May 23, 1889. Serial No. 311,791. (No model.)

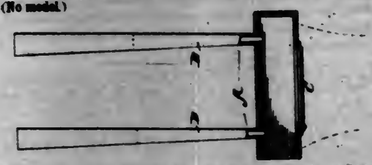


411,134.



Claim.—A grating for illuminating-tiles, having light-openings therein, surrounded by protruding rings of a different metal for the reception of lenses, said rings being rigidly united to the grating by casting the metal of the grating around that of the rings, substantially as set forth.

411,135. REED AND FLUE PIPE FOR ORGANS. JOHN STAFFORD, Lower Cove, Nova Scotia, Canada. Filed Mar. 14, 1889. Serial No. 303,302. (No model.)



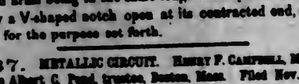
Claim.—In a pipe or flue for wind-instruments, the combination of the foot-tube having the sound-producing agent arranged without the same and the parallel imperforate tubes B B, of equal length, communicating at one end with the said foot-tube, substantially as specified.

411,136. NEEDLE. EARL SWIM, Cedar Rapids, Iowa. Filed July 1, 1889. Serial No. 316,205. (No model.)



Claim.—As an improved article of manufacture, the herein-described needle, provided with an elongated eye, one side of which being formed by a rigid arm b, having a squared end, the face of the latter being at right angles to said arm, and a spring or yielding arm b', having its end inwardly beveled and projecting nearly to the end of arm b, said arms being in the same longitudinal plane, and forming conjunctively a V-shaped notch open at its contracted end, substantially as and for the purpose set forth.

411,137. METALLIC CIRCUIT. HENRY F. CAMPBELL, Malden, assignor to Albert C. Pond, trustee, Boston, Mass. Filed Nov. 24, 1888. Serial No. 291,791. (No model.)



Claim.—1. The combination, with a metallic circuit composed of two branches or wires $a\,a'$, the branch a being an insulated conductor of high conductivity and the branch a' an uninsulated wire of lower conductivity, of a bare wire wound or bound about the said branches throughout the length of the circuit to separate and yet bind the said branches, substantially as described.

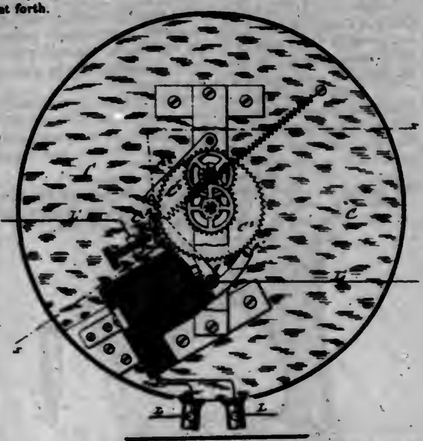
2. The combination, with the metallic circuit composed of two branches or wires $a\,a'$, the branch a being an insulated conductor of high conductivity and the branch a' an uninsulated wire of lower conductivity, of a separator wound about one of the wires or branches and a bare wire wound about the said branches throughout the length of the circuit, substantially as described.

3. The combination, with a metallic circuit composed of two branches or wires $a\,a'$, the branch a being an insulated conductor of high conductivity and small cross-section and the branch a' an uninsulated wire of lower conductivity, but of larger cross-section to effect a balance in the metallic circuit, of a bare wire wound or bound about the said branches throughout the length of the circuit, substantially as described.

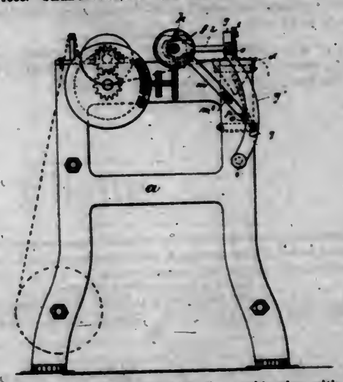
411,138. ELECTRIC-CLOCK SYSTEM. CHARLES H. CARTER, Brooklyn, N. Y. Filed Dec. 27, 1888. Serial No. 294,515. (No model.)

Claim.—1. The combination of a main circuit, a master-clock having circuit-closing devices located in the main circuit, a number of secondary clocks provided with clock-trains and having electro-magnets disposed in said main circuit, oscillating armature-levers actuated by said electro-magnets and provided with pallets for engaging said clock-trains, an auxiliary circuit composed of fixed contact-studs located adjacent to said armature-levers, and wires connecting the fulcrums of said levers with said fixed contact-studs, and a tell-tale clock located in said auxiliary circuit and operated thereby, substantially as described.

2. In an electric-clock system, the combination of a master-clock, an insulating-disk on an arbor of the clock mechanism, a radial contact-pin in said disk forming contact with the arbor, a contact-spring riding on the surface of said disk, a metallic disk on said arbor provided with an insulated segment in line with and of greater size than the contact-pin of the insulating-disk, a second contact-spring riding on the metallic disk, a shunt-circuit connected with the second contact-spring, and a resistance-coil in said shunt-circuit, substantially as set forth.



411,139. LISTING-MACHINE. THEODORE J. DERBY, Bloomfield, N. J., assignor of one-half to Walter R. William, same place. Filed Aug. 6, 1888. Serial No. 282,060. (No model.)



Claim.—1. In a listing-machine, the combination, with a listing-blade e, mounted on a reciprocating pivoted carrier and movable in a curved path, of a bed having a convex surface concentric with said path and means, substantially as described, for reciprocating the said pivoted carrier, substantially as and for the purpose set forth.

2. In a listing-machine, the combination, with a listing-blade e, mounted on a pivoted carrier and movable reciprocally in a curved path, of a reciprocating bed having a curved listing-surface to co-operate with said listing-blade and means, substantially as described, for producing the reciprocating movements of said bed and carrier, substantially as set forth.

3. In a listing-machine, the combination, with a convex listing-bed, of a driving-shaft, an eccentric f arranged thereon, vibrating arms carrying the carrier g and the listing-blade, and rod h, connecting the eccentric with said carrier, substantially as and for the purpose set forth.

4. In combination, a frame a, blade e, carrier g, eccentric f, rod h, arm g', convex bed d, plate l, rod m, and cam k, all arranged and adapted to operate substantially as and for the purposes set forth.

5. In combination, a frame a, listing-blade e, carrier g, adjusting means between the blade e and carrier g, eccentric f, and rod h, arm g', plate l, bed d, rod m, and cam k, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

411,140. SHELL FOR WINDING PAPER. GEORGE B. FARRINGTON and HELEN CURTIS, Bridgeport, Conn. Filed Nov. 10, 1888. Serial No. 290,410. (No model.)



Claim.—1. As a new manufacture, a shell for winding paper, consisting of a body formed of paper cemented together under pressure and protected at the ends by flanged metallic bushings, said bushings being concentric and of even internal diameter with the shell and the flanges of even peripheral diameter therewith.

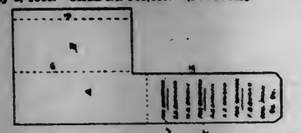
2. A shell for winding paper, consisting of a body formed of paper wound and cemented together under pressure and protected at the ends by flanged metallic hubs, each hub having an enlargement under the flange, and a groove in said enlargement to receive a key in securing the shell in place upon the shaft.

411,141. SHOE FOR GRAIN-DRILLS. CHARLES L. FOWLS, Dowagiac, Mich., assignor to the Dowagiac Manufacturing Company, same place. Filed Aug. 22, 1888. Serial No. 283,502. (No model.)



Claim.—A drill-shoe having the side plates converging at the base and a wedge-shaped bar attached between the plates at said base, substantially as set forth.

411,142. ENVELOPE-BALLOT. JOHN R. GATHRIGHT, Louisville, Ky., assignor to himself, William A. Harrivethor, and Robert M. Kelly. Filed May 6, 1889. Serial No. 309,695. (No model.)



Claim.—An envelope-ticket for secret voting, consisting of body portions A and B, a flap portion *b*, and a ticket portion L, substantially as set forth, and for the purpose specified.

411,143. CLOTH-PRESSING MACHINE. DAVID GREENER, Worcester, Mass. Filed Aug. 21, 1888. Serial No. 283,345. (No model.)



Claim.—1. In combination, the cylinder, the apron co-operating therewith, the jacket enveloping the cylinder, a moistening device co-operating with said apron, and a moistening device co-operating with said jacket, substantially as described.

2. In combination, the cylinder, a pressing device co-operating therewith, a jacket enveloping the cylinder, an apron covering the face of the pressing device, a steamer co-operating with said jacket, and a steamer co-operating with said apron, substantially as described.

3. In combination, the cylinder, the absorbent traveling surface co-operating therewith, the jacket enveloping the cylinder, a moistening device arranged to moisten said absorbent traveling surface upon the face thereof which comes next to the jacket, and a moistening device arranged to moisten said jacket, substantially as described.

4. In combination, the cylinder provided with an internal chamber for heating, the jacket enveloping the same, the absorbent traveling pressing-surface co-operating therewith, a moistening device arranged to moisten said jacket, and another to moisten said absorbent traveling surface, substantially as described.

5. In combination, the cylinder, the jacket enveloping the same, the absorbent traveling pressing-surface co-operating therewith, and moistening devices arranged to moisten, respectively, the jacket, the absorbent traveling pressing-surface, and the cloth as it is about to be pressed, substantially as described.

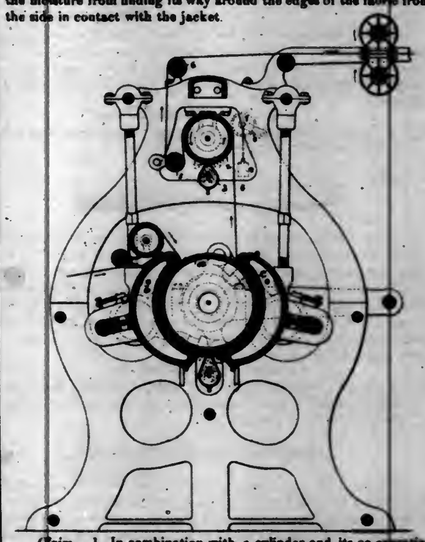
6. In combination, the cylinder, the jacket enveloping the same, the absorbent traveling pressing-surface co-operating therewith, and a moistening device arranged to moisten the jacket, substantially as described.

7. In combination, the cylinder, the jacket enveloping the same, the absorbent traveling pressing-surface co-operating therewith, and a moistening device arranged to moisten the cloth before receiving pressure between the absorbent traveling surface and the jacket, substantially as described.

8. In combination, the cylinder, the jacket enveloping the same, the absorbent traveling pressing-surface co-operating therewith, and a moistening device arranged to moisten said traveling pressing-surface, substantially as described.

411,144. CLOTH-PRESSING MACHINE. DAVID GREENER, Worcester, Mass. Filed Oct. 13, 1888. Serial No. 288,032. (No model.)

Brief.—One of the features of the case is a presser-roller (7) provided with an absorbent surface at its ends, the object being to prevent the moisture from finding its way around the edges of the fabric from the side in contact with the jacket.



Claim.—1. In combination with a cylinder and its co-operating bed-plate or bed-plates, a moisture-absorbing fabric, means for supporting the same, a moistening device or steamer for moistening said fabric, and means whereby the cloth after being pressed is held in contact with said moistened fabric without substantially compressing the cloth, substantially as described.

2. In combination with a cylinder and its co-operating bed-plate or bed-plates, a traveling moisture-absorbing fabric, means for actuating the same, a moistening device or steamer for moistening said fabric, and means whereby the cloth after being pressed is held to travel in contact with said traveling moistened fabric without substantially compressing the cloth, substantially as described.

3. In combination with a cylinder and its co-operating bed-plate or bed-plates, a traveling moisture-absorbing fabric, means for actuating and heating the same, a moistening device or steamer for moistening said fabric, and means whereby the cloth after being pressed is held to travel in contact with said traveling moistened fabric without substantially compressing the cloth, substantially as described.

4. In combination with a cylinder and its co-operating bed-plate or bed-plates, a traveling moisture-absorbing fabric, means for actuating the same, a moistening device or steamer for moistening said fabric on the side coming in contact with the cloth, and means whereby the cloth after being pressed is held to travel in contact with said traveling moistened fabric without substantially compressing the cloth, substantially as described.

5. In combination with a cylinder and its co-operating bed-plate or bed-plates, a traveling moisture-absorbing fabric, means for actuating the same, a moistening device or steamer for moistening said fabric, and means whereby the cloth after being pressed is held to travel in contact with said fabric, admitting of a slip between the cloth and the fabric, substantially as described.

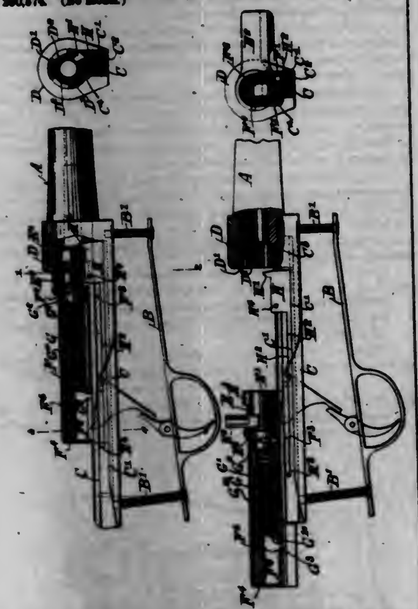
6. In combination with a cylinder and its co-operating bed-plate or bed-plates, a moisture-absorbing fabric, means whereby the same is caused to travel faster than the cylinder, and means whereby the cloth after being pressed is held to travel in contact with said fabric, admitting of a slip between the cloth and the fabric, substantially as described.

7. In combination with a cylinder and its co-operating bed-plate or bed-plates, a moisture-absorbing fabric, means for supporting the same, a moistening device or steamer for moistening said fabric, means whereby the cloth after being pressed is held to travel in contact with said moistened fabric without substantially compressing the cloth, and a yielding holder whereby the cloth is held against the moistened fabric, substantially as described.

8. In a cloth-pressing machine, in combination with a device whereby the cloth is moistened or steamed on one side, a roller presenting an absorbent surface near its ends and a comparatively smooth surface toward its middle, around which the cloth passes after being moistened or steamed, substantially as described.

9. In combination, two cylinders, a bed-plate or bed-plates operating with the first cylinder, a moisture-absorbing fabric upon the second cylinder, a steamer or moistener for supplying moisture to the said fabric, and means whereby the cloth is held in contact with said moistened fabric without substantially compressing the cloth, substantially as described.

411,145. BREECH-LOADING SMALL-ARM. PHILIP T. GODSAL, Hem, County of Buckingham, England. Filed Nov. 15, 1888. Serial No. 290,574. (No model.)



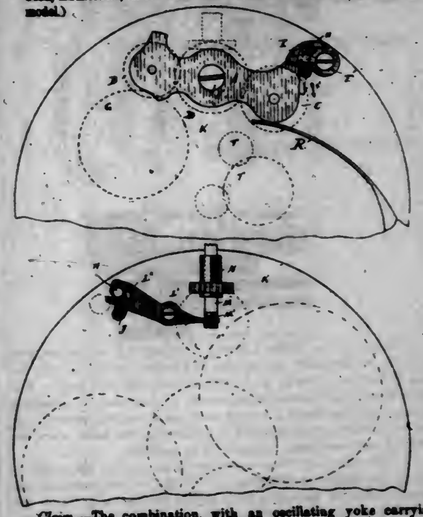
Claim.—1. The breech-action for small-arms herein shown and described, and consisting of a stock-bar C, having a lateral rib C', a lateral projection C^3, and a recess at its upper part and a flat or curved upper surface, a hollow block D, having ways D' and projections D^2, and an internal thread, a cylinder E, having radial lugs E', handle E^2, groove E^3, and an incline E^4 on the rear face of the cylinder, a hollow cylinder F, having external downward projections F', rim F^2, the front portion of the said cylinder F being cut away and forked, projections F^3, and a filling-plug F^4, a striker having a cylindrical portion G' and a rectangular portion G^{2a}, a collar G^2, with an external inclined face G^4, a striking-point at its front end and a downward projection G^3 at the rear end, a cartridge-extractor consisting of a block H, an upwardly and inwardly projecting claw H', a long stem H^2, and a stop H^3, all combined and operating as herein shown and described.

2. In a breech-action for small-arms, the combination, with the breech portion D of the barrel, of the stock-bar C, the upper face of which forms a rearward continuation of the outer edge of the lower lug of the breech portion D, a saddle-block F, adapted to fit onto and slide upon the stock-bar, and a breech-block E in front of said saddle-block, all as and for the purpose set forth.

3. In a breech-action for small-arms, the combination of a stock-bar C, forming a rearward continuation of the lower lug of the breech of the barrel and having a laterally-extending rib, an extractor H, of the form shown, arranged to slide on the said rib, and a saddle-block F, formed with downwardly-projecting parts which overlie the extractor and hold it in position, and which also serve to actuate the extractor at the proper time, as and for the purpose set forth.

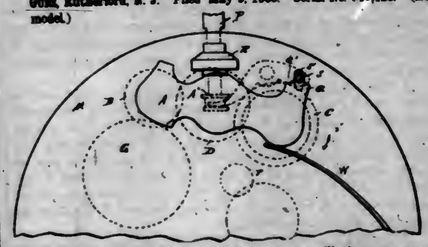
4. In a breech-action for small-arms, the safety arrangement herein shown and described, and consisting of a cylindrical block E, having at one end a ratchet-tooth E^4 and near its other end a handle E^2, a striker G', formed near its front end with a collar, the outer face of which has a ratchet-tooth G^4, a mainspring G in rear of the collar, and a saddle-block F, all combined and operating as shown and described.

411,146. STEM WINDING AND SETTING WATCH. OMAR F. GUM, Rutherford, N. J. Filed Mar. 30, 1889. Serial No. 305,492. (No model.)



Claim.—The combination, with an oscillating yoke carrying wheels for engagement with the spring-barrel wheel and the hand-setting wheels, of a tubular pinion engaged with the central wheel of the yoke, a sliding stem or push-pin in the tubular pinion and provided with an annular groove, a cam pivoted to act on one end of the yoke and provided with a pin or lateral projection passing through a slot in the main plate, a pivoted lever engaging at one end said pin or projection of the cam and at the opposite end entering the annular groove in the stem or push-pin, and a single spring acting on the yoke and tending to engage with a wheel on the same with the spring-barrel wheel of the watch, substantially as set forth.

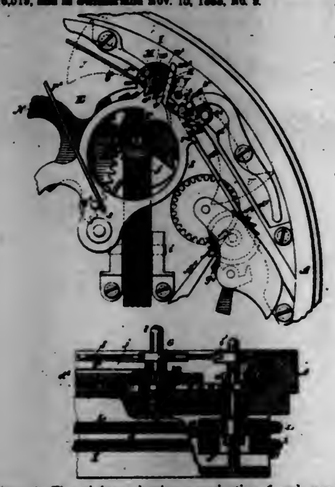
411,147. STEM WINDING AND SETTING WATCH. OMAR F. GUM, Rutherford, N. J. Filed May 9, 1889. Serial No. 310,120. (No model.)



Claim.—In a watch, the combination of an oscillating arm carrying wheels for engagement with the spring-barrel wheel and the hand-setting wheels, which yoke has an extension provided with a notch or recess in its edge, said notch or recess forming a cam-edge, a tubular pinion engaged with the central wheel on the yoke, a squared stem

or push-pin passed through the tubular pinion and provided with an annular groove at its inner end, a lever pivoted on that side of the main plate opposite the one on which the yoke is located, which lever has one end passed into the groove in the inner end of the push-pin, a pin projecting from the opposite end of said lever through a slot in the main plate and resting on the notched cam-edge of the yoke-extension, and of a spring acting on the yoke and pressing the edge of the same against said pin, substantially as set forth.

411,148. REPEATING-WATCH. EDOUARD HEUER, Bienne, Switzerland. Filed Feb. 6, 1889. Serial No. 299,223. (No model.) Patented in France Oct. 17, 1888, No. 193,640; in England Nov. 14, 1888, No. 16,519, and in Switzerland Nov. 15, 1888, No. 9.



Claim.—1. The pinion *c*, having a projection *f*, and means, substantially as described, for turning said pinion, combined with the lever F, to be actuated by said pinion, arbor *l*, carrying teeth *o*, pinion or wheel *a*, and means, substantially as described, for actuating the same, and the sleeve *q*, having teeth *p* and toothed sector H, and means, substantially as described, for returning the sector when the teeth *o p* are disengaged, substantially as specified.

2. The pinion or wheel *a* and means for turning the same, its arbor *l*, and teeth *o*, in combination with the toothed sector H, and teeth *p*, connected therewith for engaging the teeth *o*, and with the hammer J, and tooth *v*, connected with said hammer, said tooth being actuated by the toothed sector H, and means, substantially as described, for returning said sector to the actuating position when the teeth *o p* are unlocked, substantially as described.

3. The combination of a driving-train of gearing and a pinion or wheel *a* in said train, a clutch actuated by the same, and a toothed sector connected with said clutch, with a hammer and gong, a pin carried by said hammer, a segment adapted to contact said pin to turn the hammer, and a tooth *v*, connected with said segment to be actuated by the toothed sector, and with mechanism, substantially as described, for returning the toothed sector to the actuating position when the clutch is unlocked, substantially as described.

4. The combination, with a driving-train containing a pinion or wheel *a*, a clutch driven by said wheel, and a pinion *m*, connected with said clutch, of a toothed rack or segment gearing with said pinion and a spring for moving said rack in the reverse direction to its movement by the driving-train when the clutch is unlocked, substantially as described.

5. The combination of the lever F, having the incline *h*, and the pinion *c*, having the projection *f*, to engage said incline, and means, substantially as described, for actuating said pinion with a driving-train having a pinion or wheel *a* and a clutch connected with said wheel, a pinion connected with said clutch, a toothed rack or segment gearing with said pinion, and a spring for moving said rack or segment in the reverse direction to its movement by the driving-train, the projection *f* on the pinion *c* actuating the lever F to unlock the clutch, substantially as described.

6. The pinion or wheel *a* and its driving mechanism, and the clutch *o p*, sleeve *q*, toothed sector H, and finger G, carried by said sleeve, combined with the hammer J, its arbor I, the pin M, carried by the hammer, the segment *w*, having tooth *v*, sleeve R, having tooth i^3 and projection j^3, lever S, having teeth e^3 and projection T, and with mechanism, substantially as described, for returning the sector H and lever S to their actuating position, substantially as described.

7. The pinion or wheel *a* and its driving-train and a clutch connected with said wheel, a segment-rack and a pinion driven by said wheel, a hammer J, and a tooth *v*, connecting said hammer with the sector H, combined with a lever N, having a segment-rack d^3 and a projection e^3, and with a cam O, having a series of unequal projections or planes f^3, adapted to be engaged by said projection e^3, and mechanism, substantially as described, for turning the cam intermittently to present a different plane to the projection e^3, all arranged for operation substantially as described.

8. The pinion or wheel *a* and its driving-gear, a clutch connected with said wheel, a toothed sector, a pinion, and a finger or cam G, connected with said clutch, a hammer J, having a pin M, a segment *w*, having a tooth *v* to engage said sector, a sleeve R, having a tooth i^3, and a projection j^3, combined with the lever S, having teeth e^3 to engage the tooth i^3 and a projection T to be engaged by the finger or cam G, and with the lever N, having segment-rack d^3, engaging the pinion on the clutch, a projection e^3 on said lever, and a cam O, having a series of different planes f^3, means, substantially as described, for turning said cam, and means, substantially as described, for disengaging the clutch and turning the parts in the reverse direction to their movement by the wheel *a*, substantially as specified.

9. The lever F and means, substantially as described, for rocking said lever, combined with a driving mechanism having an escapement-wheel f^4, and with a lever A^3, that rests at one end against the lever F, and that is adapted to contact the escapement-wheel f^4 when said lever F is depressed, and with a spring h^4 for holding the lever A^3 in contact with the lever F, substantially as described.

10. The lever F, having the incline *i*, combined with a hand-setting lever A^4, adapted to engage said incline, and thereby to depress the lever F, substantially as described.

11. The hand-setting lever A^4, combined with a lever b^3, having a projection a^6 to be engaged by the lever A^4, and with the lever N, adapted to be contacted by the lever b^3 to stop the movement of the lever N, substantially as described.

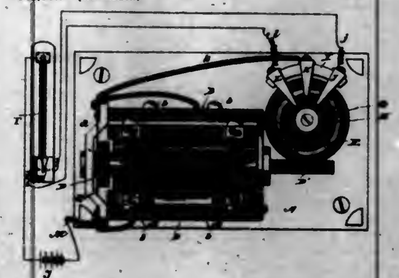
12. The lever b^3 and the lever N, adapted to be engaged by the lever b^3, combined with the lever d^4, one end of said lever d^4 being adapted to actuate the lever b^3, the opposite end of said lever d^4 passing through the casing of the watch to be engaged by the finger of the operator, substantially as described.

13. The hammer U, journaled in the plate E, and having a pin T^2, that passes through a slot in said plate, the arbor of the hammer having the tooth s^4, and the projection h^4, combined with the lever S, having the teeth r^3 to engage the teeth s^4, and with mechanism, substantially as described, for oscillating the lever S to actuate the hammer U, substantially as described.

411,149. BLUE DYE. DANIEL E. HOUGUENIN, Basle, Switzerland, assignor to Société L. Durand, Huguenin & Compagnie, same place. Filed Oct. 30, 1888. Serial No. 289,552. (No specimens.) Patented in France Oct. 3, 1888, No. 193,236.

Claim.—A compound dye for dyeing fabrics and fibers, consisting of indigo and indophenol combined, substantially as set forth.

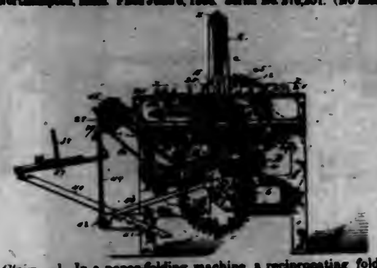
411,150. ELECTROMOTOR. MARY A. KIMBELL, Chicago, Ill., executrix of Abraham S. Kimball, deceased. Filed Apr. 1, 1889. Serial No. 305,617. (No model.)



Claim.—1. The combination, with the revolving armature-shaft of an electomotor, of an annular plate geared to rotate in unison therewith and electrically connected in the motor-circuit, said plate having cam-surfaces and contacts joined also in the motor-circuit and adapted to engage said cam-surfaces intermittently, whereby to make and break said motor-circuit, substantially as described.

2. The combination, with the threaded end of a revolving armature-shaft, of an electromotor, of a worm-wheel driven by said threaded end, an annular plate mounted on said wheel, but insulated therefrom, a contact joined in the motor-circuit and adapted to bear constantly on said plate, the latter having an interrupted portion to provide cams, and a contact joined also in the motor-circuit and adapted to engage said cams intermittently to make and break the motor-circuit, substantially as described.

411,151. PAPER-FOLDING MACHINE. JOSEPH C. KNEELAND, Northampton, Mass. Filed June 6, 1888. Serial No. 276,261. (No model.)

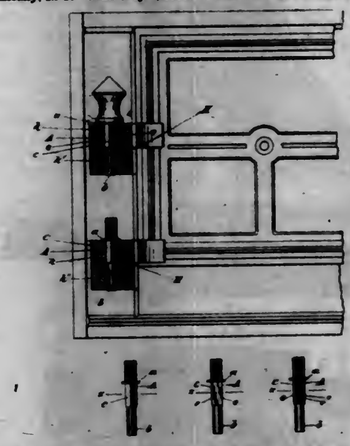


Claim.—1. In a paper-folding machine, a reciprocating folding-blade to engage the paper to be folded, two parallel fold-compressing rolls, one of which has a longitudinal rib thereon the surface of which rotates coincidingly with the surface of the adjoining roll, said rib being peripherally arranged with relation to the folding-blade to nip the fold of the paper between said rib and the surface of the adjoining roll immediately on the lowermost presentation of said paper by said folding-blade, substantially as described.

2. In a paper-folding machine, a reciprocating folding-blade to engage the paper to be folded, two parallel fold-compressing rolls, one of which has a narrow longitudinal rib thereon, said rib being arranged to nip the paper presented by said folding-blade between said rib and the surface of the other roll only at the folded portion thereof, substantially as described.

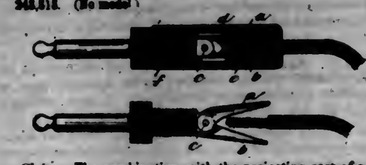
3. In a paper-folding machine, a reciprocating folding-blade to engage the paper to be folded, a fold-compressing roll and sliding journal-boxes therefor a second fold-compressing roll having a longitudinal rib thereon, said rib being peripherally arranged with relation to the folding-blade to nip the fold of the paper between said rib and the surface of the adjoining roll immediately on the lowermost presentation of said paper by said folding-blade, and springs acting against said journal-boxes to force the one roll toward the other, substantially as described.

411,152. PIN FOR HINGES OF STOVE-DOORS. DAVID C. KUHN, Albany, N. Y. Filed May 7, 1888. Serial No. 273,161. (No model.)



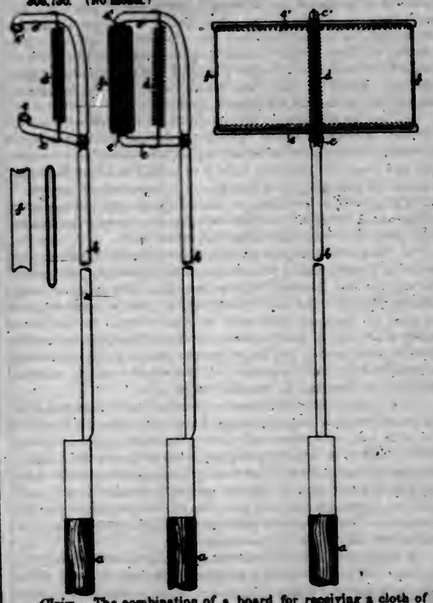
Claim.—The combination, with the upper knuckle *k* and lower knuckle *k'*, having each a pin-hole of the same diameter as the other, of the hinge-pin A, provided with a head-end shoulder *a*, and having its half portion *c* provided with three or more ridges *e e*, running parallel with the axis of the pin and projected uniformly past the line of the circumference of its cylindrical portion *b* for engagement or tight holding with the metal surrounding the hole of one of the knuckles, the cylindrical portion *b* being of smaller diameter than the pin-hole in the other knuckle, substantially as and for the purposes set forth.

411,153. TERMINAL PLUG ATTACHMENT FOR FLEXIBLE ELECTRIC CORDS. SAMUEL C. LAWRENCE, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Sept. 5, 1887. Serial No. 248,818. (No model.)



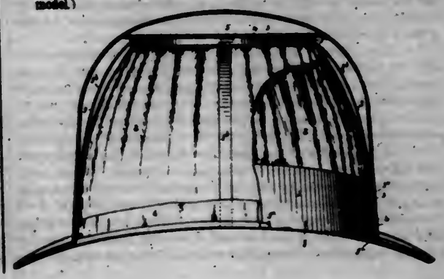
Claim.—The combination, with the projecting core of an electric cord and the insulating covering thereof, of the clasp consisting of two jaws pivoted to the stem of the plug and pressed firmly against the said core and covering by the handle placed over the said jaws and screwed upon the thread provided on the stem, substantially as shown and described.

411,154. APPARATUS FOR CLEANING WINDOWS. ARTHUR LADER, Dresden, Saxony, Germany. Filed Apr. 26, 1889. Serial No. 308,730. (No model.)



Claim.—The combination of a board for receiving a cloth of a holder, consisting of a rod and two jaws upon the rod for clamping between them the upper and lower edges of the board with the cloth upon it, one of said jaws being pivoted to said rod, and a spring for forcing said pivoted jaw toward the other jaw, both of said jaws extending at approximate right angles to the direction of the length of said rod and both upon the same side of said rod, substantially as specified.

411,155. DETACHABLE HAT SWEAT AND LINING. FRANK W. LEWIS, Brooklyn, N. Y. Filed July 17, 1889. Serial No. 317,784. (No model.)



Claim.—As a new manufacture, a detachable hat sweat and lining, the same consisting of a suitable frame-work, a lining within said frame-work and carried thereby, and a sweat, also within said frame-work and covering the lower end of the lining, the lower edge of the sweat being turned over the bottom of the frame-work and secured thereto.

411,156. MACHINE FOR FORMING SCREW-THREADS ON ARTICLES OF SHEET METAL. WILLIAM P. LEWIS, Waterbury, Conn., assignor to the Plume & Atwood Manufacturing Company, same place. Filed Apr. 24, 1889. Serial No. 308,630. (No model.)

Claim.—1. In a machine of the character described, the combination, with the plurality of lower dies each having thereon the configuration to be imparted to the finished article, and means for moving said dies step by step beneath the upper dies, of the press-gate, the upper dies, secured thereon, carried thereby and having interrupted operative surfaces complementary to those upon the lower dies and out of coincidence in the successive dies, and wedges moving with and adapted to actuate the sections of said upper dies, substantially as specified.

2. In a machine of the character described, the combination, with a plurality of lower dies each conformed to the shape of the finished article to be produced, and a rotating plate whereby said lower dies are presented seriatim to the upper dies, of a plurality of radially expansible and contractible upper dies, the gate for vertically reciprocating said dies, wedges for imparting the radial expansion and contraction thereunto, and a gripper properly timed relative to said upper dies and adapted to remove the finished work from the lower dies, substantially as and for the purpose set forth.

3. In a machine of the character described, the combination, with the lower dies and the plate whereby they are presented seriatim to said dies, of the plurality of radially expansible and contractible upper dies and means for operating their jaws toward and from the work, a cushioned pressure-block operating one or more steps in advance of the said upper dies, and a gripper carried by the gate and operating subsequent to the said upper dies and adapted to remove the finished work from the lower dies, substantially as set forth.

4. The combination, in a machine of the character described, with the lower dies and means whereby they are successively presented to the tools, of the plurality of upper threading-dies, the same being radially expansible and contractible, and the gate whereon they are mounted, the pressure-block upon the gate whereby the blanks are seated in advance of their presentation to the threading-dies, and the vertically-reciprocated and intermittently-rotated gripper operating subsequent to the threading-dies, and whereby the work is removed from off the lower dies, substantially as set forth.

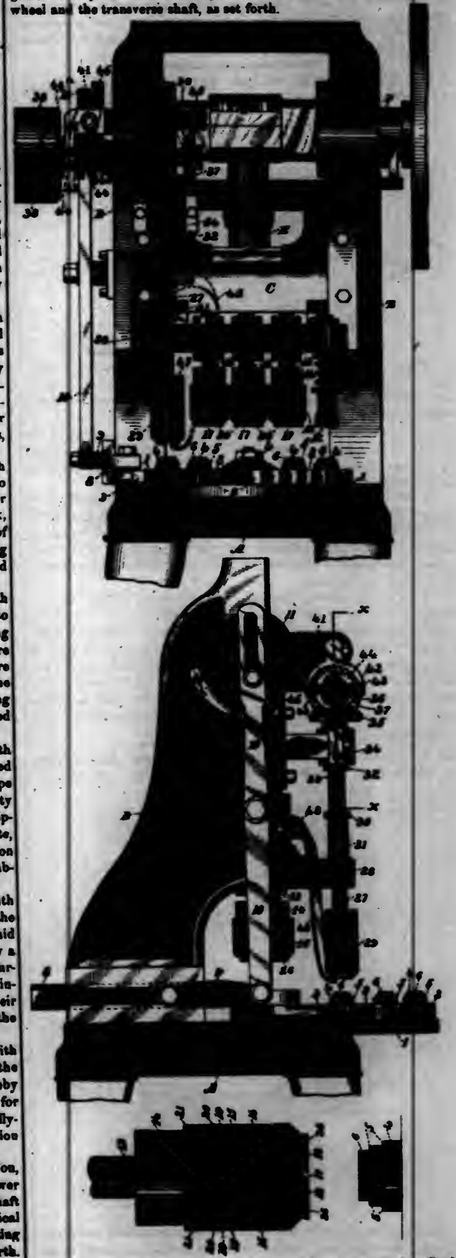
5. In a machine of the character described, the combination, with the intermittently-operated feeding-plate and the lower dies arranged in a circle upon said plate, each of said dies conformed to the shape of the article to be produced, of the reciprocating gate, the plurality of expansible and contractible threading-dies mounted upon and reciprocating with said gate, the gripper vertically operated by said gate, and means independent of said gate whereby an intermittent rotation is imparted to said gripper in addition to its vertical movement, substantially as and for the purpose specified.

6. The combination, in a machine of the character described, with the lower dies and the rotary plate whereon they are mounted, of the gate and a plurality of threading-dies arranged thereon, each of said dies being slotted vertically as to its operative surface, whereby a radial expansibility is imparted thereto, and having an inclined surface, an inclined surface secured upon the gate and engaging said inclined surface on the dies, and a spring for retaining the parts in their normal relative positions except when operated by the descent of the gate, substantially as and for the purpose set forth.

7. In a machine of the character described, the combination, with the lower dies and the means for operating them, of the dies upon the reciprocating gate, each die having a series of slots therein whereby an expansive and contractile action is imparted thereto, a wedge for effecting the radial action of the die-jaws, and a rotating and vertically-movable gripper for the removal of the work subsequent to the action of the dies, substantially as specified.

8. In a machine of the character described, the combination, with the reciprocating gate, the tools secured thereon, and the lower dies mounted beneath said gate, of the gripper and a vertical shaft upon which it is secured, a transverse shaft geared to said vertical shaft, a constantly-rotating band-wheel, and a clutch for connecting said transverse shaft with said band-wheel, substantially as set forth.

9. In a machine of the character described, the combination, with the reciprocating gate, the dies carried thereby, and the lower dies arranged beneath the gate, of the vertical shaft and the gripper arranged thereon, a short hollow shaft splined to said vertical shaft, a transverse shaft geared to said hollow shaft, a constantly-rotating band-wheel, a clutch splined to said transverse shaft, and a wedge operated independent of the band-wheel and in proper time with the gate, whereby intermittent engagement is effected between said band-wheel and the transverse shaft, as set forth.



10. The combination, in a machine of the character described, with the reciprocating gate and dies and the lower dies arranged beneath the gate, of the vertically and axially movable gripper-shaft and the gripper carried thereby, an independently-operated band-wheel, a clutch whereby the motion of the said band-wheel may be imparted to the gripper-shaft, and means operated in time with the gate and independent of the gripper-shaft, whereby the latter is intermittently engaged with the band-wheel, so as to be operated thereby, substantially as specified.

11. The combination, in a machine of the character described, with the main shaft, of the gate connected thereto and driven thereby, the dies upon the gate, the wedges whereby the radial movement is imparted to said dies, and the lower dies arranged beneath said gate, of the circular rack-plate whereon said lower dies are mounted, a reciprocating pawl adapted to engage and turn said plate step by step, a pivoted lever driven by the main shaft and adapted to actuate said pawl, and a rotary gripper operating in time with the dies, and whereby the finished work is removed, substantially as specified.

12. In a machine of the character described, the combination, with the gripper, its shaft, and the gate for imparting thereto a properly-timed vertical movement, of a hollow shaft splined to the gripper-shaft, a transverse shaft geared to the hollow shaft, an independently-rotated band-wheel, a clutch splined to said transverse shaft and carrying a friction-disk, and a sectoral wedge operated from the main shaft, and whereby the clutch is moved into engagement with the band-wheel, substantially as set forth.

13. The combination, in a machine of the character described, with the rotating feed-plate, the lower dies mounted thereon, and means for imparting properly-timed step-by-step rotation to the plate, of the reciprocating press-gate, a plurality of vertically-slotted dies whose operative surfaces are out of coincidence relative to the work movably arranged upon said gate, and wedges arranged in said dies and secured to the gate, whereby a radial movement may be imparted to their operative faces in connection with the downward stroke of the gate, substantially as set forth.

14. The combination, in a machine of the character described, with the centrally-pivoted feeding-plate and its dies and the ratchet-and-pawl mechanism, whereby a step-by-step movement is imparted thereto, of the reciprocating press-gate, a plurality of vertically-slotted dies arranged and carried thereon and movable relative thereto, and means for imparting to the sections of said dies a radial movement, a spring-cushioned presser-block, also carried by said gate, a gripper adapted to be operated by said gate, and means disconnected from said gate, whereby in addition to its vertical movement an intermittent axial rotation is imparted thereto, substantially as set forth.

15. In a machine of the character described, the combination, with a plurality of lower dies, each having a surface conformed to the shape of the finished article, and means for moving said dies step by step for presentation to the upper dies, of a reciprocating gate and a series of expansible and contractible dies mounted thereon, said dies being arranged with the interruptions between their operative surfaces out of coincidence, substantially as and for the purpose specified.

16. In a machine of the character described, the combination, with a plurality of lower dies, each having an operative surface conformed to the shape of the article to be produced, of a gate and means for reciprocating it relative to the said lower dies, an upper die having an interrupted operative surface, and means for imparting to said die an expansive and contractile movement, and a second upper die, also having radial movement, both said upper dies being carried on the gate, and the interruptions between the operative surfaces of the last-named upper die being out of coincidence with the interruptions between the surfaces of the first-mentioned upper die, whereby work having a continuous finished surface may be produced, substantially as specified.

411,157. BOTTLE OR SIMILAR ARTICLE. GEORG LEHNER and FRANZ MEMMER, Nuremberg, Germany. Filed Nov. 13, 1888. Serial No. 290,758. (Model.)



Claim.—1. As a new article of manufacture, a seamless bottle made of a single piece of metal having a neck B and wings a integral therewith, substantially as described.

2. As a new article of manufacture, the seamless bottle A, made of a single piece of metal and having the neck B and wings a integral therewith, and apertures b in said wings, substantially as described.

411,158. HAND-STAMP. MELCHIOR L. LOCHER, Sutton, Neb. Filed July 17, 1888. Serial No. 280,166. (Model.)

Claim.—1. In a hand-stamp, an outer casing having a fixed printing-surface secured thereto, in combination with a series of rotating wheels within the casing, independent printing-dies carried by said wheels, vertically-moving plungers for removing the dies from engagement with the wheels, and means for returning the dies into position, substantially as described.



2. In a hand-stamp, an outer casing having slots formed in its front service and a printing-surface fixed to its lower end, in combination with rotating wheels within the casing, independent printing-dies removably secured thereto, vertically-moving plungers for removing the dies from the wheels, means for returning the dies into position on the wheels, and finger-pieces connected with the plungers and projecting through the casing, whereby said plungers are actuated, substantially as described.

3. In a hand-stamp, the casing having the curved lower face, a curved printing-surface fixed to said curved face, an ink-roller frame having an inking-roller and curved slotted arms pivoted upon a shaft journaled in the casing, vertically-moving arms slotted on said shaft and provided with pins working in the curved slots of the arms, whereby the ink-roller frame is moved out of engagement with the curved printing-surface, and springs for returning the frame to its normal position beneath the printing-surface, substantially as herein described.

4. The combination, with the casing having the slot *c*, the walls of which are provided with grooves or guides 10, of rotating wheels within the casing, independent printing-dies removably secured to said wheels, plungers for removing the dies and projecting them through the slotted casing, and means for retracting the dies, said dies being provided with side wings 2, adapted to engage the grooves in the walls of the slot, substantially as herein described.

5. In a hand-stamp, the casing and the transverse shaft *d*, in combination with the radially-slotted disks thereon, vertically-moving plungers, the independent printing-dies fitted in the radial slots in the disk and adapted to be removed therefrom by the plungers, said dies having projections 5, and the vertically-moving plates H, connected with the plungers and having projections *p*, adapted to engage the projections on the dies to retract said dies when the plungers are moved upward, substantially as herein described.

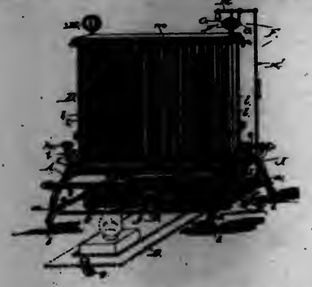
6. The casing, the transverse shaft, the slotted disk thereon, and the independent printing-dies fitted in the slotted disk and provided with the projection 5 and notch 6, in combination with vertically-moving plungers having their lower ends adapted to force the dies out of the slots in the disks, vertically-moving slotted plates H, connected with the plungers and provided with spurs or projections *p*, which engage the notches in the dies to be projected and for returning said dies into position, the open-end ring 7, fitted in the notches in the remaining dies to hold the latter in position on the disk, and means for rotating the disks to bring new dies into position beneath the plungers, substantially as herein described.

7. In a hand-stamp, the casing, with its fixed printing-surface, the transverse shaft, the slotted disks F thereon, the independent printing-dies fitted to said slotted disks, means for holding the dies on the disks, vertically-moving plungers for withdrawing the dies from the disks, and slotted vertically-moving plate H, connected with the dies and operated by the plungers to retract the dies and return them to their respective slots in the disks, in combination with a pivoted lever on plate L for temporarily holding the plungers and vertically-moving plates together, the disks M, having the cam portions *w* and shoulders *x*, the pins 14 and 15, carried by the plungers and operating the levers L, and also the disks M, whereby a partial rotation is imparted to the disks to move the dies into new positions, substantially as described.

8. In a hand-stamp, a casing, rotating wheels within provided with removable printing-dies, and means for retracting said dies when projected, in combination with the disks M, having the cam-surfaces *w* and shoulders *x*, and vertically-moving plungers for projecting the dies, said plungers being provided with pins for engaging the cam-

surfaces thereon, whereby a partial rotatition of the disks is effected to move the dice into new positions, substantially as herein described.

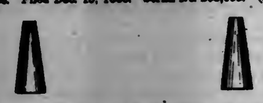
411,159. PORTABLE STEAM-RADIATOR. JOHN C. MACKEY, Detroit, Mich. Filed Jan. 16, 1889. Serial No. 296,712. (No model.)



Claim.—1. The combination of the skeleton base having the transverse supporting-rods *e*, a plate or shelf pivoted to one of said rods at one side and supported at its free end upon the opposite rod, a caster at the free end of the plate or shelf, and a heater adapted to be supported upon said plate, substantially as described.

2. The skeleton base, the lamp-supporting plate having a raised rib, and the lamps supported on the plate between the inner walls of the rib, in combination with a curved reflector having its lower end confined between the rib and body of the lamp and its upper end curved or hook-shaped, whereby it may be fitted over the foot-rail, substantially as herein described.

411,160. SPECULUM. JAMES A. MALONEY, Washington, D. C., assignor, by direct and mesne assignments, to Michael J. Colbert, trustee, same place. Filed Dec. 15, 1888. Serial No. 293,693. (No model.)



Claim.—1. As a new article of manufacture, a surgical instrument for entering the natural orifices of the body, made of paper stiffened, substantially as described.

2. As a new article of manufacture, a surgical instrument for entering the natural orifices of the body, made of paper stiffened and coated with a preservative material, substantially as described.

411,161. FLOATING LIFE-LINE. EDWARD MAYNARD, Brooklyn N. Y. Filed May 23, 1889. Serial No. 311,812. (No model.)

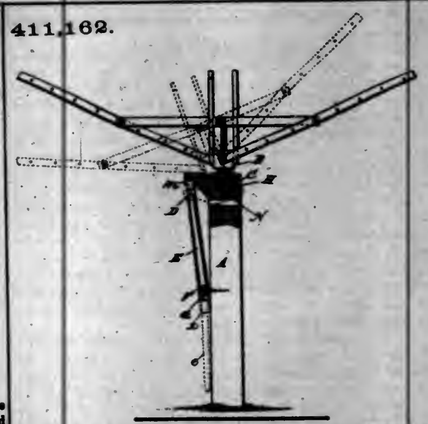


Claim.—The life line or hawser having a core of short cylinders of cork or similar wood with the strands around and inclosing the same, substantially as set forth.

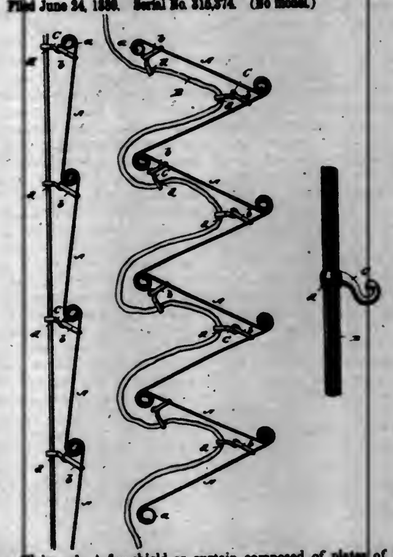
411,162. CLOTHES-REEL. HARRY G. MILLER, Winona, Minn. Filed Nov. 28, 1888. Serial No. 291,703. (Model.)

Claim.—The tilting clothes-reel herein described, consisting, essentially, of the standard having its upper end forked, the block C, having a vertical socket and a lateral arm journaled in the fork of the standard, the center piece B, carrying clothes-supporting arms and having its lower vertical stem provided with an annular groove, the pin passing through the block, and also the groove in the stem of the center piece, the arm D, pivoted at one end to the lateral branch of the tilting block, and the hand-lever pivoted to the lower end of the arm D and also pivoted to the standard, whereby the reel may be locked in a tilting position and manipulated, substantially as specified.

411,162.



411,163. FIRE-CURTAIN. HARRY G. MILLER, Winona, Minn. Filed June 24, 1889. Serial No. 315,374. (No model.)



Claim.—1. A fire shield or curtain composed of plates of non-combustible or fire-proof material, the said plates being hinged together, and wire or cable connected to the rear sides of the plates and adapted to fold with the plates and unfold to sustain the plates in an open position, substantially as specified.

2. A fire-proof curtain composed of a series of plates of non-combustible or fire-proof material, a wire or cable secured to the upper portion of each plate, and suitable means for connecting the said cable to the plates, substantially as specified.

3. In a fire-proof curtain, the combination of plates of fire-proof or non-combustible material hinged together by a close joint, eyes secured to the upper portion of each plate, a wire or cable, and hooks carried by the said wire or cable and adapted to engage the eyes in the plates, substantially as specified.

411,164. NOSE-PAD FOR EYEGLASSES. JOHN P. MOLITOR, Vallejo, Cal. Filed Jan. 28, 1889. Serial No. 297,823. (No model.)

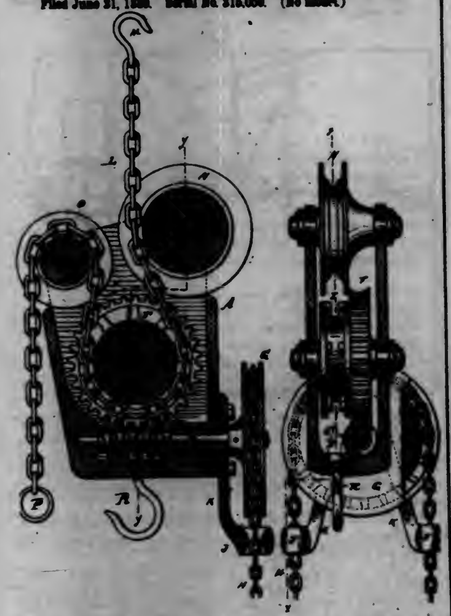


Claim.—1. A cushion-pad for the nose-bearings of eyeglasses, consisting of a soft-rubber tube *c*, having a longitudinal channel or depression *c* in its bearing-face, substantially as described.

2. A detachable cushion-pad for the nose-bearings of eyeglasses, consisting of a soft-rubber tube *c*, having a slit *i* along its back, so that it can be opened and clasped upon the bars or springs *b*, substantially as above described.

3. The cushion-pad *c*, for eyeglasses, made of soft rubber in the form of a tube and having a longitudinal slit *i* on one side and a longitudinal groove or depression *c* in its opposite or bearing side, substantially as described.

411,165. HOISTING-GEAR. O. H. HOSE HOAK, Stamford, Conn. Filed June 21, 1889. Serial No. 315,030. (No model.)



Claim.—1. In a hoisting device, the combination, with a casing or frame, of a shaft journaled in the same and provided with a worm, a worm-wheel engaged with said worm, a sprocket-wheel made integral with the worm-wheel, guide-pulleys in said frame, a hoisting-chain passed over the sprocket-wheel in the frame and over the guide-pulleys, a sprocket-wheel fixed on the outer end of the worm-wheel shaft, and an endless hand-chain passed over said sprocket-wheel, substantially as set forth.

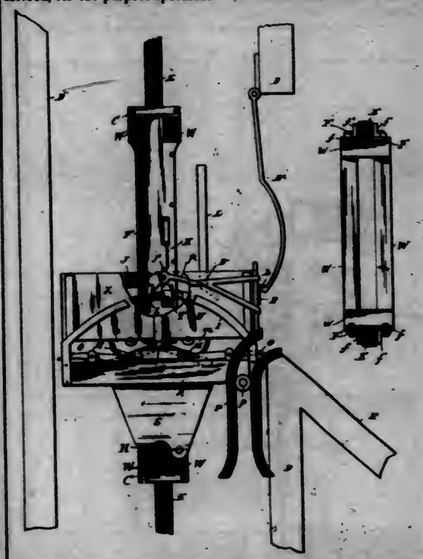
2. In a hoisting device, the combination, with a casing or frame, of a shaft journaled in the same and provided with a worm, a worm-wheel engaged with said worm, a sprocket-wheel made integral with the worm-wheel, guide-pulleys in said casing or frame, a hoisting-chain passed over said guide-pulleys and over the sprocket-wheel, a sprocket-wheel fixed on the outer end of the worm-shaft, an endless chain passed over said sprocket-wheel, and arms having guide-eyes on their ends for the endless hand-chain, substantially as set forth.

3. A hoisting-tackle composed of an exterior casing or frame, a worm in said casing, a sprocket-wheel and chain for turning the said worm, a worm gear meshing with said worm, a sprocket-wheel connected to said worm-wheel, a hoisting-chain passing over said sprocket-wheel, and suitable guide-rollers, a hook attached to the casing for supporting the load, the hoisting-tackle being adapted to climb with the load on the chain on operating the worm-gear mechanism by the hand-chain, substantially as set forth.

411,166. COAL-HOIST. JACOB CLOSS, Muscatine, assignor of one-half to John H. Burton, Columbus, Iowa. Filed Mar. 22, 1889. Serial No. 304,262. (No model.)

Claim.—1. In a coal-hoist, the combination, with the hoisting-frame, of the cage supported thereon and pivotally connected therewith to one side of a perpendicular line passing centrally through the said cage, substantially as and for the purpose described.

2. In a coal-hoist, the combination, with the hoisting-frame and the cage having the rail I, of the pawl engaging with the rail and locking the cage to the hoisting-frame, and the trip-bar for engaging with the said pawl to release it from the rail, substantially as described, for the purpose specified.



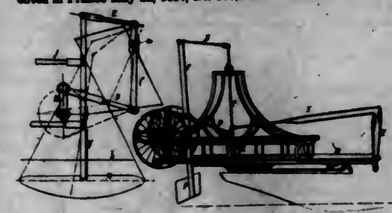
3. The combination, with the hoisting-frame and the tilting cage, of the keeper T, the stop U, and the pawl J, substantially as and for the purpose described.

4. The combination, with the hoisting-frame, the tilting cage, and the pawl for locking the cage to the frame, of the trip-bar for disengaging the pawl from the cage, the roller, and the curved guide for tipping the cage when released, substantially as set forth.

5. The combination, with the cage, of the locking-levers M and the foot-levers O, substantially as and for the purpose described.

6. The combination, with the tilting cage and the car having the stop-bar N, of the locking-levers M and the foot-levers O, substantially as described.

411,167. PADDLE HYDRO-MOTOR. EUGÈNE POMMAS, Rheims, France. Filed Dec. 7, 1887. Serial No. 257,945. (No model.) Patented in France May 28, 1887, No. 183,978.

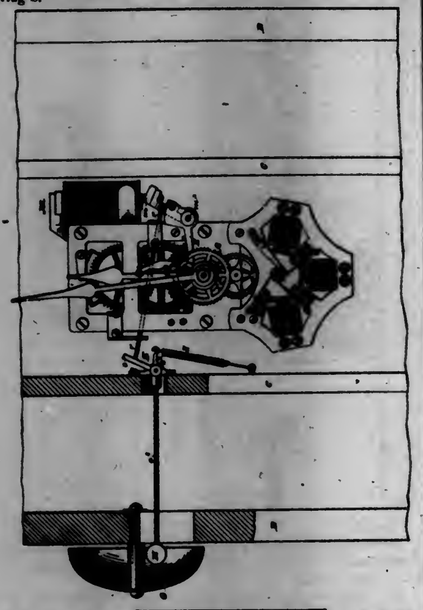


Claim.—In a hydro-motor, the combination, with a lever C, having a fixed fulcrum *a*, the bar E, articulated to the short arm of the lever C above said fulcrum, the bar D, articulated to the long arm of the lever C below said fulcrum, the bar F, articulated to the bars E D, said bar F extending downwardly below the bar D, and the bar D extending across the bar F and beyond the same, a crank to which the bar D is connected beyond the bar F, and a paddle upon the portion of the bar F below the bar D, substantially as specified.

411,168. GONG-STRIKING MECHANISM FOR SYNCHRONIZED CLOCKS. CHESTER H. POPE, Chicago, Ill., assignor to the Self Winding Clock Company, New York, N. Y. Filed May 3, 1889. Serial No. 309,490. (No model.)

Claim.—1. The combination, with a clock-train, a synchronizing mechanism, and an electro-magnet and armature for operating the same, of a gong G, a spring-retracted hammer, and a rod *r*, independent of the clock mechanism and extending from the hammer into the path of the said armature, as herein set forth.

2. The combination of a clock-train, the electro-magnet M, its armature *m*, the synchronizing device, as described, operated by said armature, the gong G, and the striking device therefor, consisting of the rod *r*, the pivoted lever E, carrying the hammer H, and the spring S.



411,169. ROTARY MEAT-TENDERER. JOHN G. SCHMIDT, Philadelphia, Pa. Filed Sept. 20, 1888. Serial No. 285,866. (No model.)

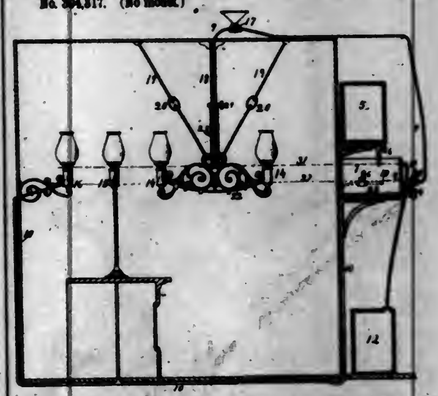


Claim.—1. The combination, with crushing-rolls journaled to standards, an apron with a serrated inner edge, a crank mounted on one of the journals of the lower roll, and scrapers arranged adjacent to said rolls, of a feeding device pivoted to said standards, substantially as and for the purposes set forth.

2. The combination, with end standards, two rollers journaled thereto and provided with knife-edged teeth arranged in rows with spaces between them, means, as described, for permitting of the actuation of said rollers, and scrapers disposed adjacent to said rollers, of a feeding device pivoted to said standards and normally engaging with the journals of the upper roller, substantially as and for the purposes set forth.

3. The combination of vertical end standards, two toothed rollers journaled thereto, scrapers arranged adjacent thereto, a crank mounted on a journal of the lower roller, a feeding device normally engaging with the journals of the upper roller and operating to rotate the same while feeding material between said rollers, and means, substantially as described, for causing the upper roller to again assume its normal operative position, substantially as and for the purposes set forth.

411,170. HYDROCARBON-LIGHTING DEVICE. THEODORE SCHUH and FREDERICK A. CODY, Rochester, N. Y. Filed Mar. 26, 1888. Serial No. 268,817. (No model.)



Claim.—1. The combination of a hydrocarbon-distributing reservoir having an opening at its top, an outlet-pipe entering the side thereof near its top, a reservoir and an overflow-receptacle, each provided with one screw-threaded aperture, and a stop-cock adapted to engage either of the said apertures, whereby the reservoir and receptacle are interchangeable.

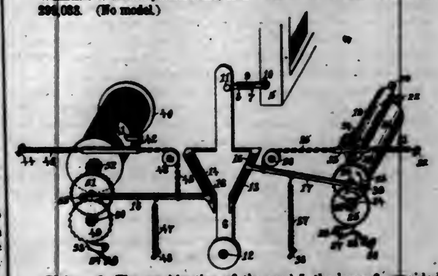
2. The combination, with a siphon-shaped hydrocarbon-distributing pipe, of a priming-cock located near the highest point of the siphon, and adapted to admit a tunnel.

3. The combination of two hydrocarbon-lamps and a hanger therefor comprising two telescoping pipes, one of which is provided with a set-screw, and two braces, each provided with a swivel screw-nut, a reservoir fixed on a level with the lamps, and a pipe connecting the said reservoir and lamps, substantially as shown and described.

411,171. SUBSTITUTE FOR GUTTA-PERCHA. CARL A. A. H. SEIBERT, Leipsic, Saxony, Germany. Filed Nov. 3, 1887. Serial No. 254,208. (No specimens.)

Claim.—A gutta-percha substitute consisting of a mixture of asphaltum, balsam of sulphur, and an easily-melting solid hydrocarbon, substantially as set forth.

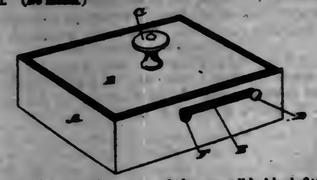
411,172. LET-OFF AND TAKE-UP MECHANISM FOR LOOMS. WILHELM C. TAUBER, Centreville, R. I. Filed Feb. 7, 1889. Serial No. 298,033. (No model.)



Claim.—1. The combination of the reed 5, the lever 6, provided with slots 13 and 14, connected to the reed by the link 7, the rack-levers 17 and 18, the ratchet-gears 25 and 49, the followers 34 and 41, the springs 31 and 43, and the chains 35 and 45, operated by the followers to lift or lower the ends of the rack-levers 17 18 in the slots 13 14, substantially as herein shown and described.

2. The combination of the reed 5, the link 7, the lever 6, provided with the diverging slots 13 14, the rack-levers 17 18, the springs 37 47, the ratchet-gears 25 and 49, and the intermediate gearing connecting the ratchet-gears to the cloth-beam and warp-beam, respectively, the springs 31 and 43, the L-shaped links 33 and 42, provided with the followers 34 and 41, and the chains 35 and 45, the said chains connecting their respective links to the respective rack-levers, all substantially as herein shown and described.

411,173. COMBINED PENCIL-SHARPENER AND PAPER-WEIGHT. ALFRED THEISEN, San Francisco, Cal. Filed Jan. 3, 1889. Serial No. 295,941. (No model.)



Claim.—1. The exterior case and the reversible block fitting into the top of the case and provided with a pencil-sharpening knife or cutter upon its lower side, substantially as described.

2. A pencil-sharpening knife or cutter fixed to a block so as to reciprocate over a surface which is adapted to hold a pencil while being sharpened, in combination with a box or case to which said block is connected so as to be reversed into the case, substantially as described.

3. The block having an inclined hole made in one end, terminating in a slot upon the face of the block through which the point of the pencil may protrude, and a knife or cutter swiveled or fulcrumed to the face of the block, so as to be reciprocated across the point of the pencil, in combination with a box or case having slots in the sides, and trunnion-pins passing through said slots and attached to the block, so that the latter may be closed into the box or reversed for use, substantially as described.

4. The block having an inclined hole made in one end and terminating in a slot upon one of the faces of the block, in combination with an arm or lever having one end fulcrumed to the block at one side of the slot, and a knife or cutter and a file fixed to the lower side of the lever so as to pass over the slot through which the pencil protrudes with a drawing cut when the lever is moved, substantially as described.

5. The lever having the cutter and file fixed to its lower surface, having each of its ends projecting so as to rest upon the surface of the block over which the lever moves and prevent the knife or file from touching said surface, and having a fulcrum-pin passing through the lever at a point between the projecting ends, substantially as described.

6. The knife or cutter fixed to the swinging lever, having its edge bent or inclined toward the surface to which the lever is fulcrumed, and having the lower edge beveled, substantially as and for the purpose herein described.

7. The block having the inclined hole made in one end and terminating in an elongated slot upon its face, through which the point of the pencil may be protruded, in combination with a lever fulcrumed at one side and slightly behind the slot, and having a knife and file section fixed to its lower surface, so that the wood and lead of the pencil may be cut away, respectively, by the knife and file making a drawing cut over the point, substantially as described.

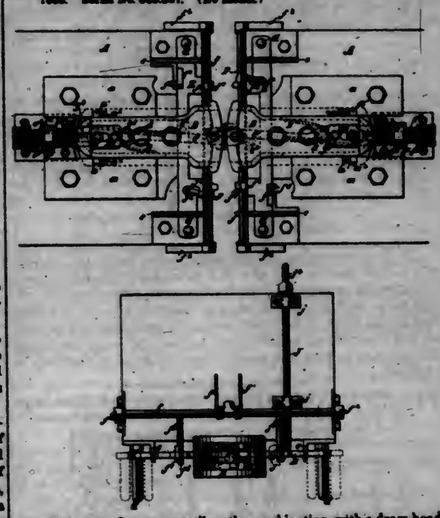
411,174. RIVET. JAMES J. UNDERHILL, Syracuse, N. Y., assignor to James L. Thomson & Co., same place. Filed May 10, 1887. Serial No. 237,719. (No model.)



Claim.—1. A rivet made from solid wire, provided with a head and two prongs, each having a rounded outer surface and a flat inner surface, said prongs being provided with cutting ends and made tapering widthwise from their junction to their cutting ends, and having a greater distance between the cutting ends of said prongs than their points of junction, substantially as and for the purpose set forth.

2. A rivet made from solid wire, provided with a head and two prongs, each having a rounded outer surface and a flat inner surface, said flat surfaces of said prongs being substantially parallel longitudinally to each other and to the rounded outer surface of said prongs, said prongs being provided with cutting ends and made tapering widthwise from their junction to their cutting ends, and having a greater distance between their extremities than their points of junction, substantially as and for the purpose specified.

411,175. CAR-COUPLING. WILLIAM C. WARNER, Paterson, N. J., assignor of one-half to Theodore Y. Kinne, same place. Filed Mar. 30, 1889. Serial No. 305,267. (No model.)



Claim.—1. In a car-coupling, the combination, with a draw-head, of a coupling-hook pivoted within the same, a spring acting on said coupling-hook to force it in one direction, a pull-rod extending upon both sides of said draw-head and adapted to contact with the coupling-hook to move the latter in one direction, and a lock for securing said pull-rod in a position into which it may be adjusted, substantially as specified.

2. In a car-coupling, the combination, with a draw-head, of a coupling-hook pivoted within the same, a spring for moving said coupling-hook in one direction, a pull-rod extending upon both sides of said draw-head and adapted to contact with the coupling-hook to move it in one direction, a rock-shaft, and an arm on said rock-shaft for locking said pull-rod in a position into which it may be adjusted, substantially as specified.

3. In a car-coupling, the combination, with a draw-head, of a coupling-hook pivoted within the same, a spring for moving said coupling-hook in one direction, a pull-rod extending to opposite sides of said draw-heads and adapted to contact with the coupling-hook to move it in one direction, a lock for securing said pull-rod in a position into which it may be adjusted, and a crank for causing the unlocking of said lock, substantially as specified.

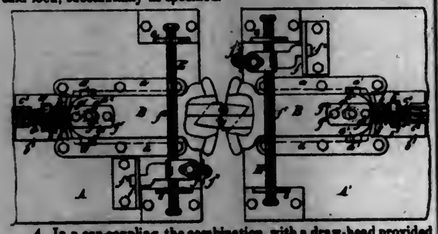
4. In a car-coupling, the combination, with a draw-head provided with a shank upon its rear end, of a spring surrounding said shank and operating to force the draw-head forward, a coupling-hook pivoted within said draw-head and provided with a shank extending through the shank of the draw-head, and a second spring surrounding said shank of the coupling-hook beyond the spring first named and operating to draw said coupling-hook inwardly, substantially as specified.

411,176. CAR-COUPLING. WILLIAM C. WARNER, Paterson, N. J., assignor of one-half to Theodore Y. Kinne, same place. Filed July 10, 1888. Serial No. 317,973. (No model.)

Claim.—1. In a car-coupling, the combination, with a draw-head, of a coupling-hook pivoted within the same, a spring acting on said coupling-hook to force it in one direction, a pull-rod extending upon both sides of said draw-head and adapted to contact with the coupling-hook to move the latter in one direction, and a lock for securing said pull-rod in a position into which it may be adjusted, substantially as specified.

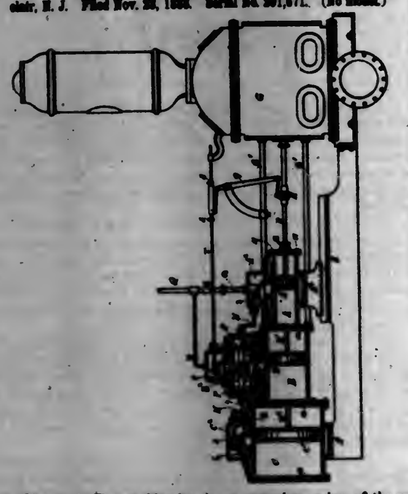
2. In a car-coupling, the combination, with a draw-head, of a coupling-hook pivoted within the same, a spring for moving said coupling-hook in one direction, a pull-rod extending upon both sides of said draw-head and having a portion adapted to contact with the coupling-hook to move it in one direction, said pull-rod also constituting a rock-shaft, an arm, and a notched piece with which said arm engages to lock said combined pull-rod and shaft against longitudinal movement, substantially as specified.

3. In a car-coupling, the combination, with a draw-head, of a coupling-hook pivoted within the same, a spring for moving said coupling-hook in one direction, a pull-rod extending to opposite sides of said draw-head and adapted to contact with the coupling-hook to move it in one direction, a lock for securing said pull-rod in a position into which it may be adjusted, and a crank for causing the unlocking of said lock, substantially as specified.



4. In a car-coupling, the combination, with a draw-head provided with a shank upon its rear end, of a spring surrounding said shank and operating to force the draw-head forward, a coupling-hook pivoted within said draw-head and provided with a shank extending through the shank of the draw-head, and a second spring surrounding said shank of the coupling-hook beyond the spring first named and operating to draw said coupling-hook inwardly, substantially as specified.

411,177. PUMPING-ENGINE. FREDERICK M. WHEELER, Montclair, N. J. Filed Nov. 22, 1888. Serial No. 291,671. (No model.)

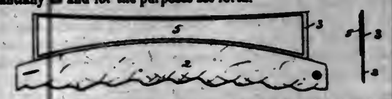


Claim.—1. The combination, in an expansion-engine, of the cylinders A B C, in line with each other, the smaller cylinder A being at one end and the larger cylinder C at the other end of the range, the piston-rods passing through the cylinders and being provided with pistons in the respective cylinders, the rear end 10 of the cylinder C being removable, the front head 11 of the cylinder A being removable, and the rear head 12 of the cylinder A being removable from the cylinder B, and supports for the cylinder A, that allow the same to be moved away from the cylinder B to give access to the piston B' for packing and repairing the same, substantially as set forth.

2. The cylinders A B C, axially in line with each other, the piston-rods, and the respective pistons, in combination with the valve-chests, valves, valve-rods, and the connecting-wrists, and a secondary valve and tappets, and valve-moving pistons for giving direct motion simultaneously to all three valves in the expansion-engine, substantially as set forth.

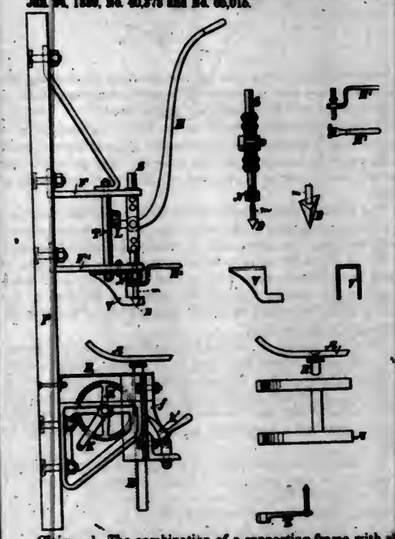
411,178. COLLAR FOR WOOLEN SHIRTS. FREDERICK R. WHITCOMB, Minneapolis, Minn. Filed Jan. 8, 1889. Serial No. 295,709. (No model.)

Claim.—1. In a shirt, the combination, with the shirt-band, of a soft woolen collar connected to said band and a stiff fabric secured to the under face of the collar, with its edge adjacent to the shirt-band curved, as shown, and lying back from the juncture of the collar to the band to leave the juncture between the collar and band soft and pliable, and to support the collar and hold the band distended, substantially as and for the purposes set forth.



2. In a shirt, the combination, with the shirt-band and collar formed of a soft woolen fabric, of a collar-support composed of a stiff fabric secured to the under side of the collar back from its edges, so as to leave a flexible margin between the edge of the support and the edge of the collar, substantially as and for the purpose set forth.

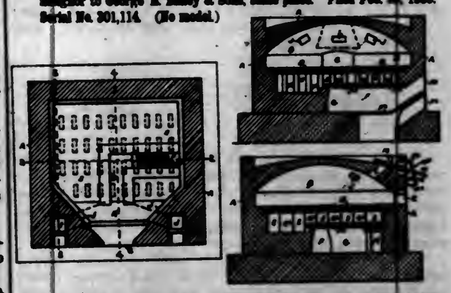
411,179. BUNG-EXTRACTOR. OSCAR WIEGAND, Remscheid, Prussia, Germany. Filed June 4, 1889. Serial No. 312,071. (No model.) Patented in Germany Aug. 12, 1888, No. 46,612, and in Austria-Hungary Jan. 24, 1889, No. 40,276 and No. 66,016.



Claim.—1. The combination of a supporting-frame with shaft S, and a spike-head having angular spindle *m*, adapted to be coupled to the shaft, and with lever H, pivoted to the frame and adapted to raise the shaft, and with a forked lever H', adapted to engage and revolve angular spindle *m*, substantially as specified.

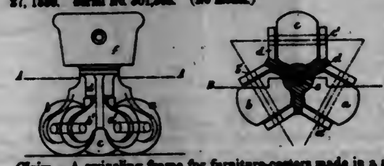
2. The combination of platform A with a rack R, supporting the platform, a toothed wheel Z, and a spring-pawl *p'*, engaging the rack, a crank K, for revolving the toothed wheel, and with a sliding spindle having a three-cornered spike-head and supported in a frame above platform A, and with a pair of levers for imparting vertical and rotary motion to said spindle, substantially as specified.

411,180. BAKER'S OVEN. GEORGE E. BAILEY, Mansfield, Mass., assignor to George E. Bailey & Sons, same place. Filed Feb. 20, 1889. Serial No. 301,114. (No model.)



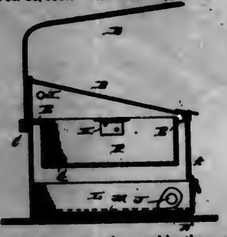
Claim.—The combination, with a baker's oven, of an oven-chamber B, closed on all sides and having a door C to enter it and a floor D, an air space or chamber E, located directly under and embracing oven-floor D, which makes a roof or top thereto and closed on all sides and at all points to the oven-chamber, a furnace F, under the floor of air-chamber E, and closed at all points to said chamber, a furnace-flue H J, leading from furnace and opening to upper portion of oven-chamber, a damper J', to open and close flue H J, an oven and escape-flue L, leading from upper portion of oven-chamber, and a damper M, to open and close flue L, substantially as described, for the purposes specified.

411,181. CASTER. EDWIN BARBER, London, England. Filed Feb. 27, 1889. Serial No. 301,262. (No model.)



Claim.—A swiveling frame for furniture-casters made in a single piece and having integral therewith three pairs of branches or arms, each provided with bearing-holes adapted to support the horizontal axis of a roller, the holes in each pair being in the same horizontal plane and in a line inclined to those in the other pairs, as set forth.

411,182. FOOT-WARMER. CHARLES H. BICKFORD and CHARLES SCHEUR, Mount Vernon, Ind., assignors, by mesne assignments, to said Scheur. Filed Feb. 26, 1889. Serial No. 301,446. (No model.)

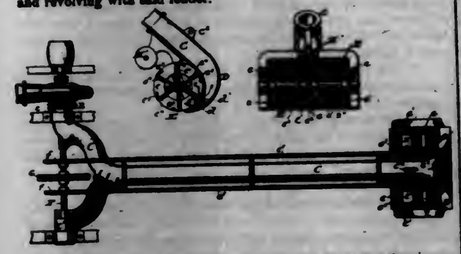


Claim.—1. In a foot-warmer, the combination, with the casing having a cleat on its rear side, of the hood having its lower edge engaging said cleat and extending upward and over the casing, as set forth.

2. The combination, with the casing containing the source of heat, of the hood detachably connected thereto and constructed of a single piece of sheet metal which extends upward from the back and then forward over the casing and out of contact therewith, said hood sliding in ways secured to the casing, as set forth.

411,183. DREDGING APPARATUS. ALPHEUS B. BOWERS, San Francisco, Cal. Original application filed Dec. 9, 1876. Divided and another application filed Apr. 27, 1885. Again divided and this application filed May 17, 1887. Serial No. 238,512. (No model.)

Brief.—It consists, mainly, of a non-rotating excavating implement attached to a suction-pipe, in combination with a suitable feeder projecting below said implement to enable it to ride over obstructions. It also consists, in part, of the combination, with said implement and pipe, of a rotary feeder; also, in the combination, with said implement, pipe, and rotary feeder, of an auxiliary rotary excavator secured to and revolving with said feeder.



Claim.—1. In combination, a suction-pipe provided with a screening device that admits spoil to said pipe, but excludes substances too coarse to pass through the raising and discharging apparatus, and a rotary excavator having its axis outside of said device, said excavator being provided with cutting edges or blades whose spoil is delivered to and through said device to said pipe.

2. In combination, a suction-pipe provided with a screening device that admits spoil to said pipe, but excludes substances too coarse to pass through the raising and discharging apparatus, and a rotary excavator provided with scraping-blades that deliver their spoil to and through said device to said pipe.

3. In combination, a suction-pipe provided with bars that admit spoil to said pipe, but exclude substances too coarse to pass through the raising and discharging apparatus, and a rotary excavator having its axis outside of said bars, said excavator being provided with cutting edges or blades whose spoil is delivered between said bars to said pipe.

4. In combination, a suction-pipe provided with a screening device that admits spoil to said pipe, but excludes substances too coarse to pass through the raising and discharging apparatus, and a rotary excavator provided with scrapers and cutting edges or blades that deliver the spoil through said device to said pipe.

5. A suction-pipe having its lower end flattened, in combination with a rotary excavator outside of and its axis transverse to said pipe, said excavator being provided with cutting edges or blades that deliver their spoil outward to said pipe.

6. A suction-pipe having its lower end flattened, in combination with a rotary excavator outside of and its axis transverse to said pipe, said excavator being provided with scraping-blades that deliver their spoil outward to said pipe.

7. A suction-pipe having its lower end flattened, in combination with a rotary excavator outside of and its axis transverse to said pipe, said excavator being provided with scrapers and cutting-edges that deliver their spoil outward to said pipe.

8. A suction-pipe having its lower end flattened and curved, in combination with a rotary excavator outside of and its axis transverse to said pipe, said excavator being provided with cutting edges or blades that deliver their spoil outward to said pipe.

9. A suction-pipe having its lower end flattened and curved, in combination with a rotary excavator outside of and its axis transverse to said pipe, said excavator being provided with scraping-blades that deliver their spoil outward to said pipe.

10. A suction-pipe having its lower end enlarged, flattened, and curved, in combination with a rotary excavator outside of and its axis transverse to said pipe, said excavator being provided with scrapers and cutting-edges that deliver their spoil outward to said pipe.

11. In combination, a suction-pipe, rotary excavator, endless actuating-chain, and sheaves H H', for holding and guiding said chain.

12. The rotary excavator E, provided with the scrapers *e'*, substantially as and for the purpose described.

13. A suction-pipe provided with a non-rotating excavating implement and a rotary feeder secured to and in combination with an auxiliary rotary excavator.

14. In combination, a suction-pipe and a rotary excavator secured to the mouth thereof, said excavator being provided with cutting edges or blades and having its axis outside of and transverse to said pipe.

15. A suction-pipe provided at or near its mouth with a fixed or non-rotating excavating device, and a feeder projecting down beyond said device to prevent this device from catching against obstructions.

16. A suction-pipe provided with a scraper, in combination with a device projecting down beyond said scraper to prevent this scraper from catching against obstructions.

17. A suction-pipe provided with a fixed or non-rotating excavating implement, and a rotary feeder projecting down beyond this implement to prevent said implement from catching against obstructions.

18. A suction-pipe provided with a screen, a scraper, and a feeder projecting down beyond this scraper to carry said scraper over obstructions.

19. A suction-pipe provided with a screen, scraper, and a rotary feeder projecting down beyond the scraper.

20. In combination, a dredge-boat, a non-rotating suction-pipe constructed and arranged to swing in a vertical plane in line with or parallel with the line of the longitudinal axis of said boat, and a rotary excavator secured to the pipe and provided with peripheral longitudinal excavating-edges that deliver their spoil outward to said pipe.

21. In combination, a dredge-boat, a non-rotating suction-pipe constructed to vary the depth of excavation by the raising or lowering of its outer end in a vertical arc, and a rotary excavator secured to said outer end and provided with longitudinal peripheral excavating-edges that deliver their spoil outward to said pipe.

22. A rotary excavator having excavating devices with outward delivery, and feeders at the sides of the cutting-faces and intermediate between said sides along said cutting-faces to prevent said devices from catching against obstructions.

411,184. STOVE-GRATE. JOHN F. BRAYER, Rochester, N. Y., assignor to the Cooperative Foundry Company, same place. Filed Mar. 6, 1888. Serial No. 302,072. (No model.)

Claim.—1. The combination, with the grate-body composed of inclined bars connected at their lower ends slightly below their upper sides, of a rotary section consisting of a central web having a series of cutting-fingers extending around the under side in the form of separate ribs, substantially as described.



2. The combination, with a grate and a support therefor, of a removable section forming a part of said grate and supported upon it, having an extension co-operating with the under side of the grate-support and holding the grate in position thereon, substantially as described.

3. The combination, with a grate and a support therefor, of a rotary grate-section supported on the grate, having a journal-extension passing beneath the grate-support and locking the grate in position thereon, substantially as described.

4. The combination, with a grate and a support therefor on which it may be oscillated, of a section adapted to be rotated supported on the grate, having a journal-extension passing beneath the support and holding the grate in position thereon, substantially as described.

5. The combination, with a grate and a support therefor, of a removable rotary section supported on the grate, having a journal-extension passing beneath the support and holding the grate in position thereon, substantially as described.

6. The combination, with a grate and a support therefor, of a rotary section supported in open bearings on the grate, having a journal-extension adapted to be passed beneath the grate-support, and a removable spindle or shaft co-operating with said section, by which it may be operated, substantially as described.

7. The combination, with a grate mounted on a support and capable of being oscillated thereon, a rotary damping-section mounted on the grate, having an extended operating shaft or spindle, of a movable plate having a recess for co-operating with the spindle when the section is to be rotated, preventing the oscillation of the grate, but adapted to be moved out of the way, permitting the oscillation of the grate when desired to shake the fire, substantially as described.

8. The combination, with a grate capable of being oscillated, a rotary section thereon having an extended operating-spindle, of a plate pivoted on the stove-body, having a recess therein adapted, when in one position, to co-operate with the said spindle and prevent oscillation, substantially as described.

9. The combination, with a rotary grate-section having an operating spindle or shaft and arranged to be rotated on the axis of said spindle, of an operating-handle adapted to be applied to the spindle end, having a projecting portion, and a stationary flange or projection with which the projection on the handle co-operates during the rotation of the grate-section for preventing the removal of the handle until it is returned to first position, substantially as described.

10. The combination, with a rotary grate-section having an operating spindle or shaft and arranged to be rotated on the axis of said spindle, of an operating-handle adapted to be applied to the spindle end, having the segmental flange, and the stationary flange or projection with which the one on the handle engages during the rotation of the grate-section, preventing the removal of the handle until returned to first position, substantially as described.

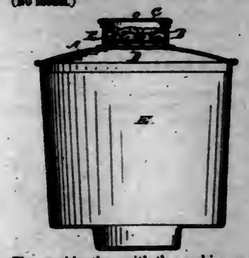
11. The combination, with an oscillating grate having a rotary section thereon, of a movable latch or projection engaging a movable portion of the grate for preventing its oscillation when the section is to be rotated, substantially as described.

12. The combination, with the grate-section having extended spindle and capable of being oscillated laterally and of being rotated on its axis at any point, of a movable plate having a recess co-operating with the spindle when the section is to be rotated and adapted to be moved out of the way to permit the section to oscillate to shake the fire, substantially as described.

13. The combination, with a grate capable of oscillation laterally, and a rotary section mounted thereon having the extended spindle and capable of rotation at any point, of a movable plate having a recess co-operating with the spindle when the section is to be rotated and adapted to be moved out of the way to permit the section to be oscillated to shake the fire, substantially as described.

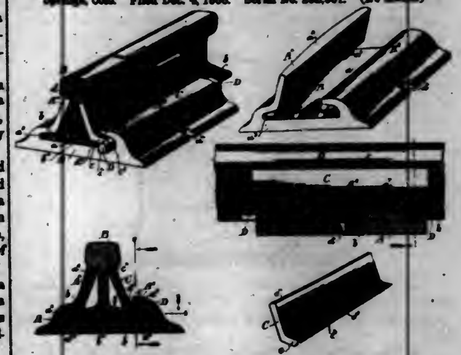
14. The combination, with the grate and a support therefor, of a rotary section supported in open bearings in the grate, having a leg, and a journal-extension adapted to be passed beneath the grate-support, and a removable plate with which said leg co-operates to prevent endwise motion of the section sufficient to release the journal-extension from the grate-support, substantially as described.

411,185. COVER FOR COOKING-VESSELS. CHARLES H. CHENEY and HORACE W. COOK, Boston, Mass. Filed Jan. 9, 1889. Serial No. 295,977. (No model.)



Claim.—The combination, with the cooking-vessel cover A, having a central opening, and a vertical annular flange B, secured around the latter and forming part of the box hereinbefore specified, of the charcoal-supporting grating D, placed within said box, and the detachable cap C, applied to the latter and having openings *c* for escape of deodorized fumes, as shown and described.

411,186. LOCK-RAIL JOINT. PRESTON C. DOUBTFIRE, Colorado Springs, Colo. Filed Dec. 4, 1888. Serial No. 292,601. (No model.)



Claim.—1. The combination, with the track-rails, of a chair having a horizontal base supporting and bearing against the bottoms of the rails and provided on each side with a longitudinal recess opposite the flanges of the rails, of two arms embracing the rails with their upper edges resting against the under surfaces of the head of the rail and having their lower edges resting upon the rail-flanges, and a wedge inserted in said recess bearing against the rail-flange and the lower edge of said arm, whereby said rails are locked in position in said chair.

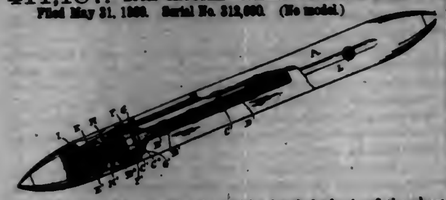
2. The combination, with the track-rails, of a chair having a flat base to support the rails and provided on each side with longitudinal recesses a^2 a^3, opposite the flanges of the rails, of an arm integral with the chair having its upper edge resting against the under surface of the rail-head, of a second and shorter arm on the opposite side of the rails, an arm or plate adapted to engage at its upper edge the under side of the rail-head and at its lower edge to engage beneath said short arm, and a wedge adapted to fit in the recess a^3 and bear against said short arm, the flanges of the rail, and the arm *c* of the plate C, substantially as described.

3. The combination of the L-shaped plate C, having its short member *c* wedge-shaped and provided upon its upper surface with corrugations c^3.

4. The combination, with the chair A, having recesses a^2 and a^3 and arms A' A^3, of the plate C, provided with grooves c^3 on the upper surface of its short wedge-shaped member *c*, grooves *c* in the upper surface of the said recesses, and a pin E, to engage said grooves c^3 and *c*, substantially as described.

5. The combination, with the track-rails, of a chair A, having supporting-base *a*, and provided on each side with longitudinal flanges A' C, embracing the rails and with their upper edges resting against the under surface of the rail-head, said arm A' being integral with the chair A, said arm resting at its lower end in the recess a^2, and being provided with corrugations c^3, which engage similar corrugations in the arm A^3, and a wedge D, located in said recess a^3 and bearing against the flanges *b* of the rails B and against the edge of the arm *c*, substantially as described.

411,187. LOOM-SHUTTLE. SUMNER A. DUDLEY, Taunton, Mass. Filed May 31, 1888. Serial No. 313,990. (No model.)



Claim.—1. The combination, with shuttle-body A, of the short stiff spindle B, bobbin-holding catches E F G and E' F' G', and spiral spring I, substantially as and for the purposes set forth.

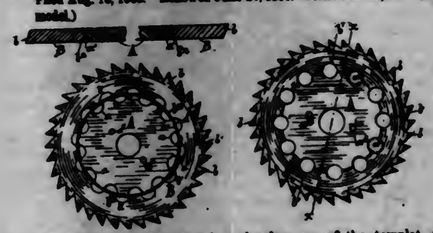
2. The combination, with the base K of the shuttle, of the bobbin-holding catches E F G and E' F' G', and spiral spring I, said parts being constructed and relatively arranged for joint operation substantially as and for the purposes set forth.

411,188. TIDY-HOLDER. FRANK A. GERA and JOHN H. GUELL, Bellevue, Ohio. Filed June 26, 1889. Serial No. 315,491. (No model.)



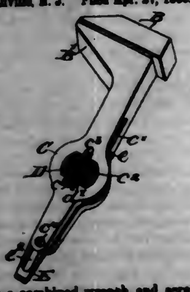
Claim.—The tidy-holder described, formed of a single piece of wire bent to form the loop *a*, the horizontal portions *b*, the vertical arms *c*, vertical inclined arms *d*, and the coiled free ends, substantially as herein shown and described.

411,189. CIRCULAR SAW. SYLVESTER P. GEST, Nashville, Tenn. Filed Aug. 16, 1888. Renewed June 27, 1889. Serial No. 315,731. (No model.)



Claim.—The combination, in a circular saw, of the templet A, having the scallops *a* and the grooves *a'*, with the ring B having the teeth *b*, the scallops *b'*, and the tenons b^3, the said scallops *a* and the said tenons b^3 being so constructed that the said tenons can be passed through the said scallops *a*, when the ring B is placed upon or removed from the templet A, for the purpose of renewing, altering, or replacing the tooth-section of the saw without removal or renewal of the templet.

411,190. COMBINED WRENCH AND SCREW-DRIVER. ISAAC A. HAZEN, Smithville, N. J. Filed Apr. 27, 1889. Serial No. 308,802. (No model.)

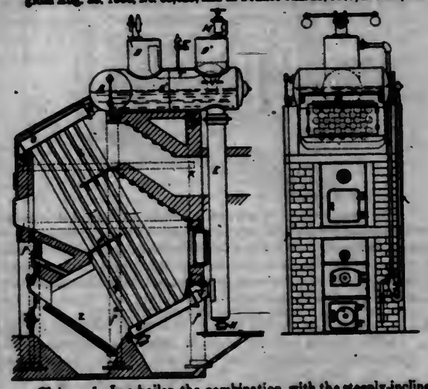


Claim.—1. In a combined wrench and screw-driver, the combination of a post carrying a lower jaw and having a longitudinal slot therein, a handle carrying an upper jaw and having a longitudinal cavity and slot therein, a recess in the said handle intersecting the said cavity, a thumb-nut in the said recess engaging the said post, an interior groove in the said nut, and a screw-driver having a lug upon its edge adapted to pass through the said interior groove, the said screw-driver being contained in the said slots in the post and handle, as and for the purposes described.

2. In a combined wrench and screw-driver, the combination of a post carrying a lower jaw and having a longitudinal slot therein, a handle carrying an upper jaw and having a longitudinal cavity and slot therein, a recess in the said handle intersecting the said cavity, a thumb-nut in the said recess engaging the said post, an interior groove in the said nut, and a screw-driver having a lug upon its edge adapted to pass through the said interior groove, the said screw-driver being contained in the said slots in the post and handle, as and for the purposes described.

3. In a combined wrench and screw-driver, the combination, with an upper and a lower jaw B' and B, respectively, of a rounded post A, attached to the said lower jaw B, a longitudinal slot *a'* in the said post A and screw-threads *a* thereon, a handle C, attached to the said upper jaw B', a longitudinal cavity *c* and slot c^2 in the said handle C, a recess c^3, extending from side to side of the said handle and intersecting the said cavity *c*, a thumb-nut D, having an interior groove *d*, contained within the recess c^3 and engaging the screw-threads *a* on the post A, a screw-driver E, resting within the slots *a'* and c^2 of the post A and handle C, respectively, a nose *e* and a lug *e'* on the said screw-driver, a slot e^2 in the screw-driver, a screw e^3 in the handle C passing through the said slot e^2, and marks d^2 and e^4 upon the nut D and handle C, respectively, all as and for the purposes described.

411,191. STEAM-BOILER. PROSPER HAMEUR, Brussels, Belgium. Filed July 8, 1889. Serial No. 316,210. (No model.) Patented in Belgium Aug. 26, 1889, No. 83,095, and in France Jan. 28, 1889, No. 195,700.



Claim.—1. In a boiler, the combination, with the steeply-inclined water-tubes and the tube-boxes at each end of the tubes, of a receiver formed in two parts having their respective steam and water spaces in free communication with each other, one of the said parts being connected to the upper tube-box and the second said part being connected with the lower tube-box, and a steam-outlet connected to the steam-space of the said second part but not directly communicating with the steam-space of the said first part of the receiver, substantially as set forth.

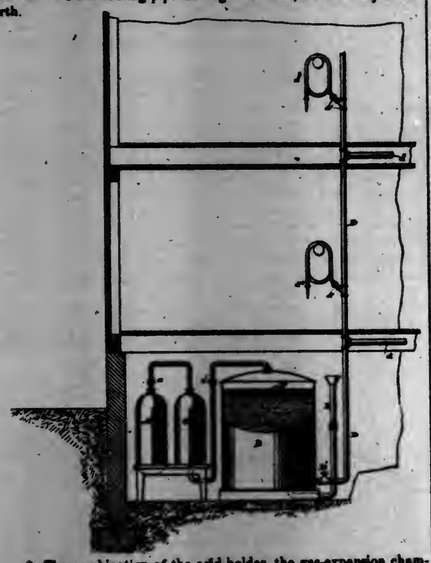
2. In a boiler, the combination, with the steeply-inclined water-tubes and the tube-boxes at the ends of the tubes, of a receiver formed in two parts placed at right angles with each other and having their respective steam and water spaces in free communication with each other, the internal steam-pipe and dip-funnel, a chamber connecting the upper tube-box to one part of the receiver, a pipe connecting the second part of the receiver with the lower tube-box, and a steam-outlet connected to the steam-space of the said second part of the receiver above the said dip-funnel, substantially as and for the purpose set forth.

3. In a boiler, the combination, with the steeply-inclined water-tubes, the tube-boxes at each end of the tubes, and the receiver communicating with the said tube-boxes, of an inclined fire-grate consisting of a series of substantially horizontal bars arranged in steps below the lower parts of said tubes, whereby the flames are caused to impinge against said tubes, substantially as set forth.

4. The combination, with a tube-box provided with a circular conical hole, of the circular plate provided with screw *c* and the flanges *a*, the plate *b'*, provided with a circular conical flange fitting between said circular plate and the edge of the hole in the tube-box, and a nut screwed upon the projecting end of screw *c* and bearing against plate *b'*, substantially as and for the purpose set forth.

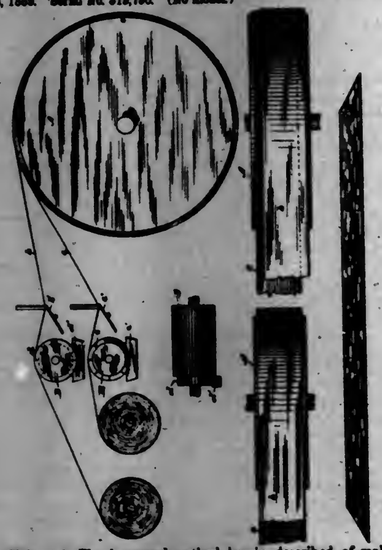
411,192. FIRE-EXTINGUISHING APPARATUS. CHARLES R. HAZEN, New York, N. Y. Filed May 17, 1888. Serial No. 311,189. (No model.)

Claim.—1. The combination of the acid-holder, the expansion-chamber connected therewith by a pipe having a cock *a*, the fluid-tank, a connecting-pipe having a cock *c* between the expansion-chamber and top of the fluid-tank, the plunger or float in the fluid-tank, and the fluid-distributing pipe having a cock D', substantially as set forth.



2. The combination of the acid-holder, the gas-expansion chamber connected therewith by a pipe having a cock *a*, the fluid-tank, a connection having a cock *c'*, leading from the gas-expansion chamber to the top of the fluid-tank, and the fluid-distributing pipe connected at the bottom of the fluid-tank, and having a cock D', substantially as and for the purpose set forth.

411,198. METHOD OF MANUFACTURING BUNDLES OF TOILET-PAPER. OLIVER H. HIGEE, Chicago, Ill., assignor to the Morgan Envelope Company, Springfield, Mass. Filed Jan. 23, 1886. Renewed Aug. 5, 1889. Serial No. 319,790. (No model.)



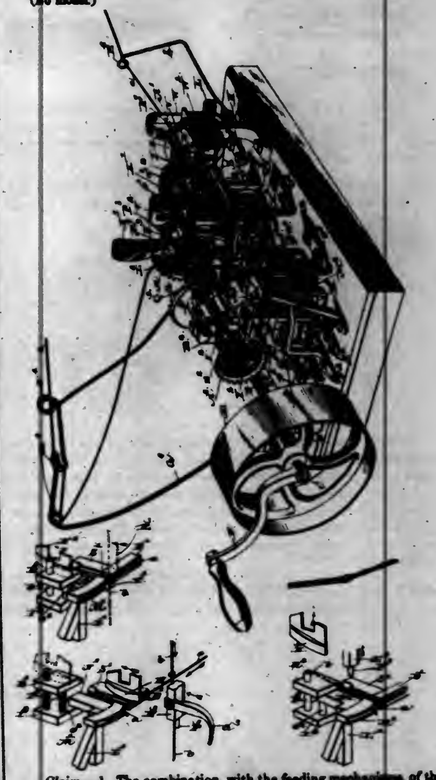
Claim.—1. The improved method herein described of making bundles of toilet-paper, consisting in winding two independent webs of paper upon each other on a winding-drum with one edge of each convolution overlapping the next preceding one, a line of gum being applied to the inner or overlapping edge of each web, removing the band thus formed from the winding-drum, and cutting it transversely into bundles, substantially as described.

2. The improved method herein described of making bundles of toilet-paper, consisting in winding two independent webs of paper upon each other on a winding-drum with one edge of each convolution overlapping the next preceding one, a line of gum being applied to the inner or overlapping edge of each web, removing the band thus formed from the winding-drum, and cutting it transversely into bundles, substantially as described.

3. The improved method of making bundles of toilet-paper, consisting in winding two independent webs of paper upon each other on a winding-drum with a line of gum between them near their edges, removing the band thus formed from the drum, and cutting it transversely into bundles, substantially as described.

4. The method of making bundles of toilet-paper, consisting in winding two independent webs of paper upon each other on a drum or cylinder and applying a line of gum to the side of each convolution adapted to come nearest the drum, removing the band thus formed, and cutting it transversely into bundles.

411,194. MACHINE FOR MAKING WIRE HINGES. DAN L. HILL, West Swanzey, N. H. Filed Feb. 13, 1889. Serial No. 299,796. (No model.)



Claim.—1. The combination, with the feeding mechanism, of the rigid jaw N', the movable jaw S', the jaws I^1 R^1, arranged at right angles to the jaws N' S', and the finger to move between the jaws N' S', for the purpose set forth, substantially as described.

2. The combination, in a machine for making wire hinges, of the movable arm or wire-guide E^1, having finger F^1, the jaws arranged in the path of the latter and adapted to be clamped together, and the movable clamping-jaws adapted to follow the wire-guide and finger, substantially as described.

3. The combination of the clamping-jaws, the feeder to direct a wire across one end of the same, and the wire feeder or guide arm having a finger adapted to move between the opposing sides of said jaws and thereby bend the wire into U form, substantially as described.

4. The combination of the pair of clamping-jaws, the feeder to direct a wire across one end of the same, the cutter to sever the wire, and the wire feeder or guide arm having a finger adapted to move between the opposing sides of said jaws, for the purpose set forth, substantially as described.

5. The combination of the stationary pair of clamping-jaws, the bending arm or finger to pass between them, and the pair of movable clamping-jaws traveling across the stationary jaws and in rear of the bending arm or finger, substantially as described.

6. The combination of the driving-shaft having the crank, the counter-shaft geared thereto and having the cams, the feed-rollers operated by said counter-shaft, the reciprocating bar D^3, operated by the driving-shaft, the standard pivoted thereto, the clamping-jaws carried thereby, the levers connected to the clamping-jaws and operated by the cams on the counter-shaft, the standard having the rigid jaw, the lever O', having the movable jaw N' and operated by one of the cams on the counter-shaft, the reciprocating oscillating frame operated by the cranked driving-shaft and having the bending arm or finger, the feed-rollers, and the cam to operate the pivoted standard, substantially as described.

7. The combination of the reciprocating standard, the clamping-jaws carried thereby, the levers connected to said jaws to operate the same, and the shaft having the cams operating said levers, substantially as described.

8. The combination, with the reciprocating bar, of the standard pivoted thereon, the movable clamping-jaws carried by said standard and having the right-angled bars, the levers having the slots engaging said bars, and the shaft having the cams operating said levers and the retracting-springs, substantially as described.

9. In a machine for making wire hinges, the combination of the reciprocating bar, the standard pivoted thereon and having the movable clamping-jaws, the cam to move the standard laterally in one direction, the spring to move the standard laterally in the reverse direction, the movable frame having the bending-finger, the levers connected to the clamping-jaws, and devices to operate said levers, substantially as described.

10. The combination of the two pairs of clamping-jaws, one pair being stationary and the other pair relatively movable, the bending-arm to travel between the relatively-stationary jaws, and the levers and cams to close the said pairs of jaws in succession, said cams and levers being adapted to open the jaws simultaneously, substantially as described.

11. The combination of the wire-feeding devices arranged at right angles to each other, with the relatively-stationary pair of clamping-jaws, the movable pair of clamping-jaws adapted to traverse the former, and the bending-arm and operating devices, substantially as described.

12. In a machine for making wire hinges, the combination of the two pairs of clamping-jaws, one pair being relatively stationary and the other pair relatively movable, the bending-arm to travel between the relatively-stationary jaws, and mechanism whereby said jaws shall be closed in succession but opened simultaneously, as set forth.

13. In a machine for making wire hinges, the combination, with the wire-guides B', the clamping-jaws N' S', and finger F^1, of the hook G, which follows in rear of the finger F^1 and engages the next succeeding portion of the wire that is fed forward through the guides B' and partly bends the same, for the purpose set forth.

14. In a machine for making wire hinges, the driving-shaft and counter-shaft geared thereto, in combination with the feed-rollers operated by the counter-shaft, the reciprocating bar D^3, operated by the driving-shaft, the clamping-jaws carried by the bar D^3, said jaws being operated by the counter-shaft, and the reciprocating oscillating frame operated by the driving-shaft and having the bending arm or finger, as set forth.

15. In a machine for making wire hinges, the driving-shaft and the counter-shaft geared thereto, in combination with the reciprocating bar D^3, operated by the driving-shaft, the clamping-jaws carried by the bar D^3 and operated by connections with the counter-shaft, and the reciprocating oscillating frame operated by the driving-shaft and having the bending arm or finger adapted to move between the opposing sides of the said jaws, as set forth.

16. In a machine for making wire hinges, the feed-rollers Y S and the guide B' for one wire *a*, in combination with the feed-rollers K^3 L^3 for the other wire *b*, the moving guide-arm E^1, having a finger adapted to come in contact with the intersecting portions of the wires, and the clamping-jaws, as set forth.

17. In a machine for making wire hinges, the feed-rollers S Y and the guide B' for one wire *a*, in combination with the feed-rollers K^3 L^3 for the other wire *b*, and the moving guide-arm E^1, having a finger adapted to come in contact with the intersecting portions of the wires, and the cutter I', to sever the wire *a* and leave the severed portion in the grasp of the finger and the clamping-jaws, as set forth.

18. In a machine for making wire hinges, the guide B' for one wire *a*, in combination with the feed-rollers K^3 L^3 for the other wire *b*, the moving guide-arm E^1, having a finger adapted to come in contact with the intersecting portions of the wires, the cutter I', to sever the wire *a* and leave the severed portion in contact with the finger, and the jaws S' N', between which the finger passes, the jaw S' being caused to move toward the rigid jaw N' and bend the severed portion of the wire *a* into the form of a staple, as set forth.

19. In a machine for making wire hinges, the guide B' for one wire *a*, in combination with the feed-rollers K^3 L^3 for the other wire *b*, the moving guide-arm E^1, having a finger adapted to come in contact with the intersecting portions of the wires, the cutter G', to sever the wire *a* and leave the severed portion in the grasp of the finger, and the jaws S' N', between which the finger passes, the jaw S' being caused to move toward the rigid jaw N' and bend the severed portion of the wire *a* into the form of a staple, the jaw S' closing against the jaw N' and thereby clinching the severed portion of the wire *a*, as set forth.

20. In a machine for making wire hinges, the moving arm or guide E^1, having the bending-finger, combined with the jaws S' N', between which the arm or guide passes to bend the wire *a*, the jaws I^1 R^1, adapted to move in front of the wire *b* and become engaged therewith and to bend the same, and the cutter carried by the guide-arm to sever the wire *b*, as set forth.

21. In a machine for making wire hinges, the jaws N' S', between which the wire *a* remains clinched, and the jaws I^1 R^1, arranged at right angles to the jaws N' S' and adapted to move rearward under and over the jaws N' S' and serve to bend the severed portion of the wire *b* in the best portion of the wire *a*, thereby linking the said bent wires together, as set forth.

411,195. SAW-MILL DOG. GEORGE M. HUSELBY, Milwaukee, Wis., assignor of one-half to E. P. Allis & Company, of same place. Filed May 16, 1889. Serial No. 311,090. (No model.)

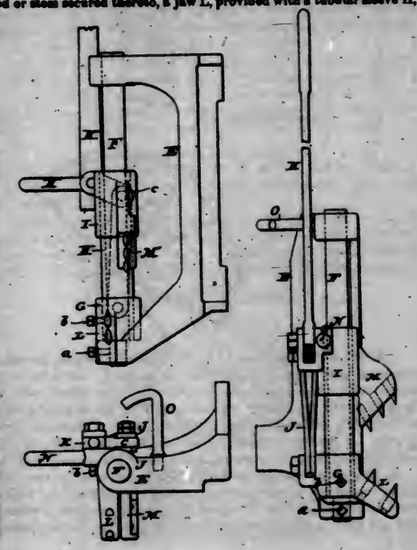
Claim.—1. In combination with a head-block or log-support, a knee, dogs mounted upon the knee and free to slide vertically relatively thereto, and an operating-lever for the dogs adapted to move therewith as the said dogs rise and fall with the timber.

2. In combination with a head-block or log-support, a knee and dogs mounted upon the knee and free to slide vertically and also to swing laterally with reference to their support, and a lever for operating the dogs, the lever and dogs being adapted to be swung out of the way, as shown.

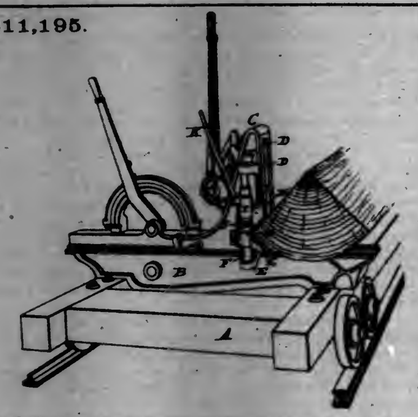
3. In combination with a head-block or log-support, a knee and dogs mounted therein and free to slide vertically relatively thereto, whereby the dogs are permitted to adjust themselves to the lowering of the timber.

4. In combination with a head-block or log-support, a knee, a rod or stem secured thereto, a jaw L, provided with a tubular sleeve H, a jaw M, mounted upon the sleeve, a lever journaled in the jaw L, and a link connecting the lever with the jaw M.

5. In combination with a head-block or log-support, a knee, a rod or stem secured thereto, a jaw L, provided with a tubular sleeve H,



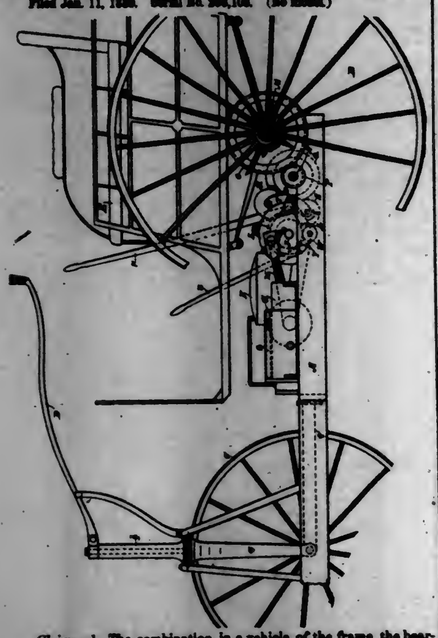
411,195.



a jaw M, mounted upon the sleeve, a lever journaled in the jaw L, a link connecting the lever with jaw M, and a stem or handle N, secured to jaw L.

6. The combination, with a saw-mill carriage, of a head-block or log-support, a knee mounted on the head-block, jaws or dogs applied to the knee in such manner as to rise and fall together, but capable of independent movement, substantially as described, and a lever connected with the jaws for causing this independent clamping movement.

411,196. VEHICLE. FRANK A. HUNTINGTON, San Francisco, Cal. Filed Jan. 11, 1889. Serial No. 296,103. (No model.)



Claim.—1. The combination, in a vehicle, of the frame, the bearing-wheels upon which it is supported, an engine by which power is transmitted to the engine-shaft, a counter-shaft from which power is transmitted directly through gearing to each of the bearing-wheels independently, said shaft being divided and having a differential driving-gear, and gearing intermediate between the engine-shaft and this shaft, whereby power is transmitted to it, substantially as described.

2. The vehicle having the independently-journaled bearing and driving wheels and a steering wheel or wheels, an engine from which power is transmitted to the driving-shaft, and frictional wheels mounted upon said shaft, a divided counter-shaft with gearing, whereby power is transmitted from it to each of the driving-wheels independently, a frictional drum upon said shaft containing a differential gear, in combination with intermediate movable friction-drums, whereby power may be transmitted from the engine-shaft to the counter-shaft, substantially as described.

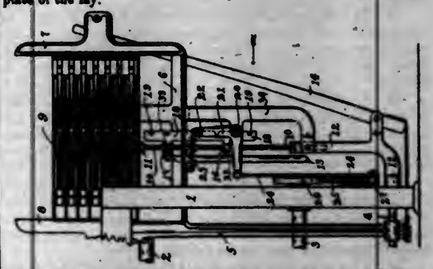
3. The vehicle mounted upon independent driving and steering wheels, independent gears by which each of the driving-wheels is propelled, a divided counter-shaft having a frictional drum and a differential gear, whereby the wheels may be driven independently at different rates of speed, in combination with an engine, an engine-shaft provided with a corresponding frictional drum, and a movable frame supporting an intermediate friction-drum between the drums upon the counter-shaft and the engine-shaft, and a lever, whereby said intermediate drum may be turned into or out of contact with the others, substantially as described.

4. The main axle having the independently-journaled bearing and driving wheels of the vehicle, a divided counter-shaft with a differential clutch mechanism and frictional drums of different sizes, and an engine and shaft having corresponding frictional drums of different sizes in plane with those upon the counter-shaft, but out of contact therewith, in combination with an intermediate segmental yoke having drums journaled in it corresponding with the different-sized drums upon the engine and counter shaft, a rocker-shaft and arm by which the movable yoke is suspended, and a lever by which said shaft is moved, so as to throw either of the rollers into contact with the corresponding drums upon the engine-shaft and counter-shaft, whereby the change of speed may be effected, substantially as herein described.

5. The vehicle having independently-driven wheels, a counter-shaft and engine-shaft with friction-wheels, and an intermediate movable yoke, with idler-wheel through which power may be transmitted from the engine-shaft drum to the counter-shaft drum, in combination with a supplemental shaft, rocker-arm and drum, and a lever for moving the same, whereby a reversal of the motion of the vehicle may be effected by throwing this supplemental drum into contact with the driving-wheels, substantially as herein described.

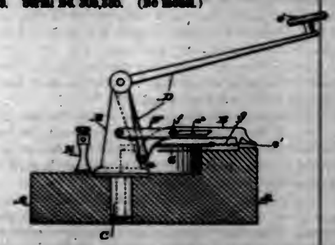
411,197. SHUTTLE-BOX-LOCKING DEVICE FOR LOOMS. GEORGE F. HUYBERS, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed Apr. 6, 1889. Serial No. 306,204. (No model.)

Brief.—The object of the invention is to prevent the vibration of the shuttle-box caused by the shifting of the boxes, and to correct any error in the alignment of the shuttle-box shelves with the race-plate of the lay.



Claim.—In a loom, the combination, with a tier of shuttle-boxes, a lifter, and guide-rod, of a locking-plate, a locking-arm, an operating-spring and operating-cam, and connections intervening between said cam and locking-arm, substantially as set forth.

411,198. TELEGRAPH-KEY. ALFRED R. JOHNSON, Carson City, Nev., assignor of one-half to Moses H. Cohn, same place. Filed Apr. 3, 1889. Serial No. 306,305. (No model.)



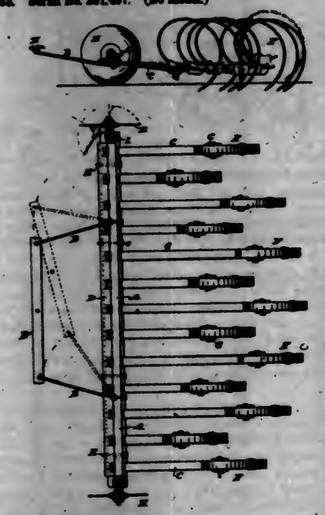
Claim.—1. The combination, with the bed-piece having electric contact-surfaces thereon and representing telegraphic characters, of a key-lever mounted in a rotary standard, and a single contact-finger pivoted to the short arm of the key-lever and adapted to move backward over the contact-surfaces when the key-lever is depressed, said contact-finger having also a vertical movement on an independent axis, substantially as described.

2. In a telegraphic key, the bed-piece having upon it the series of electric contact-surfaces representing telegraphic characters, in combination with the standard mounted on a vertical axis in the bed-piece, the elbow key-lever pivoted on the standard, whereby said lever may be moved in vertical and horizontal planes, and the contact-finger pivoted to the key-lever, so that it may be turned to and passed in electrical contact over any of the electric surfaces, substantially as described.

3. In a telegraphic key, the bed-piece having upon it the series of electric contact-surfaces representing telegraphic characters, in combination with the vertically and horizontally swinging key-lever, the contact-finger pivoted to said key-lever and adapted to be turned to and passed in electrical contact over any of the electric surfaces, said finger having a lug on its side, and the pivoted arm F, having a stud *f*, engaging the lug of the finger, for holding said finger out of contact with the electric surfaces on its return movement, substantially as described.

4. An automatic telegraph-key consisting of the bed-piece having the electric contact-surfaces representing telegraphic characters, the sleeve mounted on the bed-piece, the rotary standard carried by the sleeve, the elbow key-lever pivoted to the standard, the contact-finger pivoted to the key-lever and operating over and in contact with the electric surfaces in one direction, the pivoted arm F, having stud *f*, the lug on the contact-finger, for holding said finger out of contact in the other direction, and an electric circuit, including the contact surfaces and finger, all arranged and adapted to operate substantially as described.

411,199. HARROW. CHARLES LE DOW, Albany, N. Y. Filed July 30, 1888. Serial No. 281,497. (No model.)



Claim.—1. The combination of the flat-faced cross-bar and the flat drag-bar having a hook at its front end which engages with a straight edge of the cross-bar and forms a hinge-connection with the cross-bar.

2. An angle-iron cross-bar having slots *c'*, in combination with the drag-bars passing through said slots, and teeth on the drag-bars.

3. An angle-iron cross-bar having slots *c'* in its front and rear faces, in combination with drag-bars passing through the slots in the rear face and hinged in the slots in the front face.

4. An angle-iron cross-bar having slots *c'* in its rear side or face, in combination with drag-bars passing through said slots and hinged to the front side of the cross-bar.

5. The combination of the drag-bars and the cross-bar having rectangular slots, in which the hooked ends of the drag-bars engage.

6. The combination of the hooked drag-bars, the cross-bar having slots in which the hooked drag-bars engage, and a locking-plate common to all the drag-bars for securing them in place.

7. The combination of the slotted cross-bar, a drag-bar whose hooked end engages in said slot, and a locking-plate having tongues *d' d'*, as described, for holding the hooked end of the drag-bar in place.

8. The combination of the slotted cross-bar, the hooked drag-bars, the locking-plate, and adjustable securing devices for holding the locking-plates.

9. A cross-bar having a side or face *a*, to which the drag-bars are hinged, and a draft-connection in rear of the hinges and applied to the cross-bar below the plane of the face *a*, for the purpose set forth.

10. The combination of the cross-bar, the drag-bars flexibly connected or hinged thereto at their inner ends, the teeth on the outer ends of the drag-bars, and flexible draft devices located in substantially the same horizontal plane as the cross-bar.

11. The combination of the cross-bar, the drag-bars hinged thereto, the teeth on the outer ends of the drag-bars, the swiveled draft-rods of the cross-bar, and a cross-rod B'.

12. The combination, with the cross-bar, of the narrow plate-metal low wheels, supporting the cross-bar at each end close to the ground and adapted to permit rubbish to pass backward, and the drag-bars connected with the cross-bar, as set forth.

13. The combination, with the drag-bar and tooth, of a holder or casting which clamps the drag-bar by its outer side edges and also carries the tooth.

14. The combination, with the drag-bar and tooth, of an interposed tooth holder or casting which clamps both the drag-bar and tooth by their outer side edges.

15. The combination, with the drag-bar and tooth, of the clamping device or tooth-holder made in sections and clamped upon the tooth and bar by a bolt located between the tooth and bar.

16. The drag-bar having a hooked rear end, in combination with the sectional tooth-holder having sockets for embracing the end of the bar, and clamping devices to clamp the holder to the edges of the bar.

17. The combination of the drag-bar, a sectional tooth-holder having a seat or socket for the outer end of the drag-bar, and a separate curved socket for the curved spring-tooth, and adjustable clamping devices for securing the drag-bar and the tooth in their sockets between the sections of the holder.

18. The combination, with the cross-bar, of wheels at each end of the cross-bar having horizontal axles pivoted directly upon the cross-bar and projecting therefrom and capable of vibrating horizontally upon their pivots, for the purpose set forth.

19. The combination, with the cross-bar, of the wheels at each end of the cross-bar, their horizontally vibrating or swinging axles mounted on the cross-bar, and stops for limiting the vibration of the wheels.

20. The combination, with the axle, of a removable hub carrying the wheel and having flange *k*, and collars *k' k²*, between which the wheel is removably clamped.

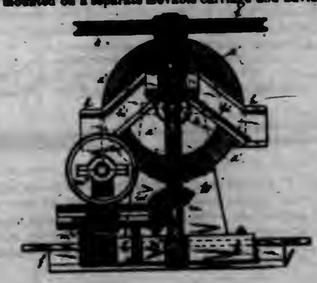
21. The combination of the hub having the shoulder *k* and lugs *k²*, of the opposing collars *k' k²*, between which the wheel is clamped, one of said collars having interior notches, through which said lugs pass, and oppositely-inclined segmental surfaces upon which said lugs travel to clamp the hub, collars, and wheel together.

22. The cross-bar having slots *c'*, through which the vibratory drag-bars pass, said slots being provided with side wearing-plates *l*.

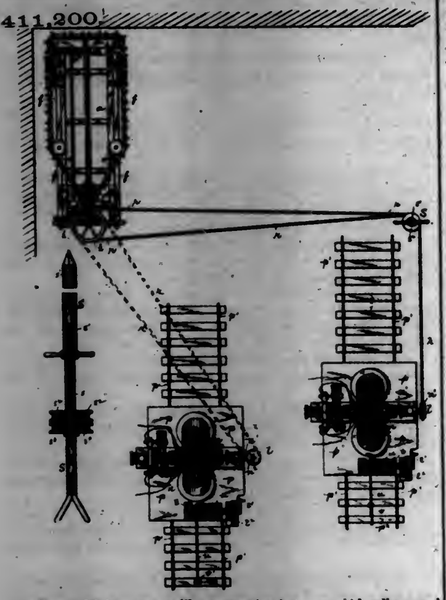
23. The combination of the slotted cross-bar and long and short drag-bars passing through said slots, the slots for the shorter bars being on a lower level than those for the others, for the purpose set forth.

411,200. MINING-MACHINE AND APPARATUS FOR OPERATING THE SAME. FRANCIS H. LOUDEN, Columbus, Ohio. Filed Sept. 19, 1883. Serial No. 305,816. (No model.)

Claim.—1. The combination, with the mining-machine having a vertical shaft at the rear end thereof, carrying a pulley thereon, and connections from said shaft to the operative parts of the machine, of a motor mounted on a separate movable carriage and having thereon



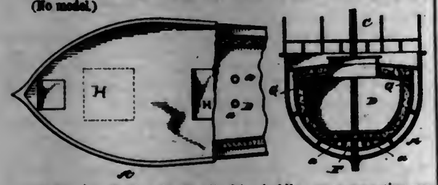
411,200.



a pulley, a driving-rope or like connection between said pulleys, and a drum or other suitable mechanism for adjusting and holding the motor in proper position for driving the mining-machine, substantially as and for the purposes set forth.

2. The combination of a mining-machine, a motor mounted upon a separate movable carriage, a driving-rope or like power connection between the motor and the mining-machine, and a drum on the motor-carriage carrying a rope to be secured to a stationary object for adjusting and holding the carriage in proper position for driving the mining-machine, substantially as and for the purposes set forth.

411,201. ICE TRANSPORTATION AND STORAGE VESSEL. RICHARD RICE, Washington, D. C. Filed Dec. 4, 1888. Serial No. 292,615. (No model.)



Claim.—1. The herein-described ice holding or transporting vessel, the main hold of which is provided with walls having non-conducting packing and a water-space beneath said hold or chamber, and drain-pipes leading from the main hold to near the bottom of the water-space, substantially as described.

2. The herein-described ice holding and transporting vessel, the main hold of which is provided with walls having a filling-space between them for the reception of non-conducting packing, the outer wall being imperforate and the inner wall of the filling-space for the sides of the vessel being provided at the top with removable strips extending the entire length of said inner wall, and rigid securing devices for said strips, substantially as described.

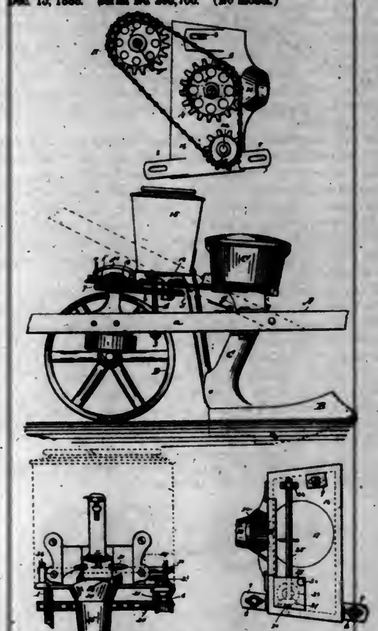
411,202. SCREW. GEORGE P. ROSS, Fenton, Mich. Filed May 31, 1883. Renewed July 22, 1889. Serial No. 318,195. (No model.)



Claim.—1. A screw headed and pointed screw having its threaded part flat on two opposite sides, while the body of the screw is circular in cross-section and vertically straight in the spaces between the threads on the other two sides of the screw, substantially as set forth.

2. A screw headed and pointed screw having its threaded part flat on two opposite sides, while the body of the screw is circular in cross-section, substantially as set forth.

411,203. PLANTER. LEVI SCOFIELD, Grand Haven, Mich. Filed Dec. 15, 1888. Serial No. 293,709. (No model.)



Claim.—1. In a planter such as described, wherein the seeding mechanism is operated from a pulley or wheel on a driving-shaft, and in combination with said shaft and a disk or plate secured thereto, two wheels loosely mounted on the shaft and connected the one to the seed and the other to the fertilizer mechanism, and an adjustable locking-pin co-operating with said wheels and disk to lock one or both wheels to the disk, substantially as set forth.

2. In a planter such as described, and in combination with the seed-feeding devices, a fertilizer attachment, and a driving-shaft common to both of said devices, independent driving-wheels loosely supported upon said shaft, a disk or arm secured to said shaft, and a pawl pivoted to one of said members and provided with an adjustable pin for co-operating with notches or perforations in said driving-wheels to connect one or both with the driving-shaft, as and for the purpose set forth.

3. In a planter such as described, the combination of the seeding mechanism and fertilizer attachment mounted upon the frame, a driving-shaft provided with a plate having a hub thereon, a loose sprocket-wheel interposed between said plate and the bearing for the shaft, a second sprocket-wheel taking its bearing on the hub of the plate and held in position by a cap, and a locking-pin adapted to lock said sprocket-wheels to the plate, substantially as described.

4. In a planter such as described, and in combination with the sprocket-wheels for actuating the seeding and fertilizer mechanism through independent sprocket chains or belts and the disk or arm attached to the driving-shaft, an arm carrying a locking-pin pivotally supported at one side of its longitudinal center, substantially as and for the purpose set forth.

5. In a planter such as described, the combination of the frame and the driving-shaft supported in bearings thereon and provided with a sprocket-wheel, a fertilizer attachment adjustably attached to the frame, so as to be movable toward and from the driving-shaft, and provided with an actuating sprocket-wheel connected to the first-named sprocket-wheel by a chain, substantially as set forth.

6. In a planter such as described, the combination, with the driving-shaft and sprocket-wheel, of the fertilizer attachment adjustably secured to the frame, so as to be movable toward and from the driving-shaft, and provided with two sprocket-wheels, the one for actuating the feeding mechanism and the other the stirrer, and a chain engaging all of the sprocket-wheels, substantially as and for the purpose set forth.

7. In a planter such as described, and in combination with the runner and the fertilizer attachment adjustably secured to the frame and provided with a spout, the conduit pivotally attached to the heel of the runner, substantially as described.

8. In a planter such as described, and in combination with the frame and the adjustable fertilizer attachment mounted thereon and provided with a tapered spout, the conduit fitting over said spout and pivotally secured at or near its lower end to the runner, substantially as described.

9. In a planter such as described, and in combination with the frame, a fertilizer attachment provided with a bottom plate having an elongated opening for the passage of a fastening-bolt within the hopper, and a covering-plate for said slot, substantially as described.

10. In a fertilizer attachment for planters such as described, the combination of the hopper and the bottom plate, the stirrer mounted upon said plate and driven by gearing within the hopper, and the casing inclosing said gearing, substantially as and for the purpose set forth.

11. In a fertilizer attachment such as described, and in combination with the bottom plate and the stirrer working within the hopper, the gearing for operating said stirrer, and the detachable casing secured to the bottom plate and co-operating with the wall of the hopper to inclose the gearing, as set forth.

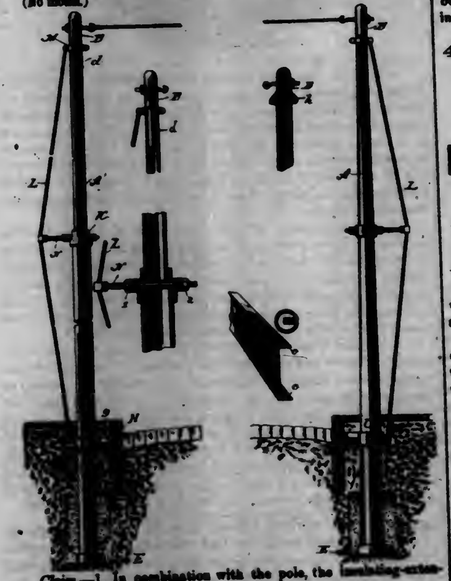
12. In a fertilizer attachment, the combination of the plate provided with a bearing for the feed-plate and for the stirrer, a detachable casing inclosing the driving-gear and forming a bearing for the stirrer, substantially as described.

13. In a fertilizer attachment, the combination of the bottom plate of the hopper provided with bearings for the feed-plate and stirrer-actuating devices, the sprocket-wheels detachably secured to the feed-plate and stirrer-actuating devices and driven by a single sprocket-chain passing around and engaging the sprocket-wheels on the driving-shaft, the feed-plate, and the actuating-shaft of the stirrer, substantially as described.

14. In a fertilizer attachment, and in combination with the bottom plate of the hopper, feeding devices, and the stirrer, with gearing for actuating the latter, a casing secured to the bottom plate and inclosing the gearing, said bottom plate being perforated beneath the casing, substantially as and for the purpose set forth.

15. In a fertilizer attachment, and in combination with the hopper, the stirrer-shaft, and the stud or shaft projected through the bottom plate and provided with a bevel-gear, the bevel-gear applied to the end of the stirrer-shaft, and the adjustable plate or abutment interposed between the end of the stirrer-shaft and the wall of the hopper, substantially as described.

411,204. POLE FOR SUPPORTING ELECTRIC CONDUCTORS. SIDNEY H. SHORT, Columbus, Ohio. Filed Nov. 6, 1888. Serial No. 290,118. (No model.)



Claim.—1. In combination with the pole, the insulating-extension and bracket, substantially as described.

2. The sleeve G, fixed to the pole and having a foot arranged to bear against the curb-stone, substantially as described.

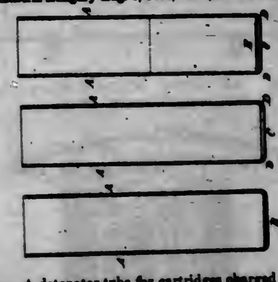
3. In combination with a metallic pole, a collar secured to the upper end, and a sleeve at its lower end, with a truss-rod L between the two, and an adjustable straining-post for the truss-rod between it and the pole, substantially as described.

4. In combination with a metallic pole made in two parts and connected by a coupling, a collar secured at the upper end thereof, and a sleeve at its lower end, a truss-rod L between the two, and an adjustable straining post or strut supported in the coupling between the two parts of the post and in connection with the rod L, substantially as described.

411,205. PROCESS OF TREATING MOLTEN METAL WITH NATURAL GAS. FRANK L. SLOCUM and HORACE W. LASH, Pittsburg, Pa., assignors to Thomas J. McTighe, New York, N. Y., and said Frank L. Slocum, trustees. Filed Mar. 15, 1889. Serial No. 303,227. (No model.)

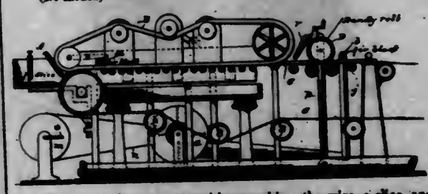
Claim.—The herein-described improvement in the art of treating metals, consisting in heating natural gas or methane to a point below the temperature at which it decomposes, and then passing it through the metals when in a molten condition, substantially as and for the purpose set forth.

411,206. PRIMER-TUBE FOR DYNAMITE CARTRIDGES. GEORGE SMITH, Glasgow, County of Lanark, Scotland. Filed June 26, 1886. Serial No. 278,281. (No model.) Patented in England June 26, 1886, No. 8,909; in France Dec. 9, 1886, No. 180,179; in Belgium Dec. 10, 1886, No. 75,503; in Germany Dec. 11, 1886, No. 41,323; in Canada Jan. 19, 1887, No. 26,813, and in Austria-Hungary Aug. 9, 1887, No. 1,073 and No. 34,645.



Claim.—A detonator-tube for cartridges charged with dynamite or similar explosive, and consisting of a tube of thin steel having an open but contracted inner end, a plating of thin copper upon this tube, and a disk of this material closing the inner end, the said disk being inserted at the outer end and retained by the contraction at the inner end, substantially as and for the purposes herein set forth.

411,207. PAPER-MAKING MACHINE. CHARLES STRESS and FREDERICK STRESS, Lafayette, Pa. Filed July 27, 1888. Serial No. 281,186. (No model.)



Claim.—1. In a paper-making machine, the wire, a slice, and a wind chest or pipe arranged next the slice and opening toward the slice, combined with a suitable blower, substantially as described.

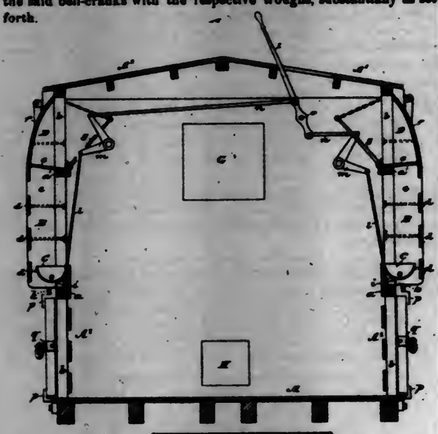
2. In a paper-making machine, a wire, a dandy-roll, and a wind chest or pipe arranged in the rear of the dandy-roll and opening toward such dandy-roll, combined with a suitable blower, substantially as described.

411,208. STOCK-CAR. STEPHEN P. TALLMAN, Dunellen, N. J. Filed Dec. 22, 1888. Serial No. 294,402. (No model.)

Claim.—1. A stock-car provided with projecting housings B B at its opposite sides, with tilting troughs C C, mounted on the outer sides of the car within said housings, and a lever-shift for simultaneously dumping said troughs outward, said lever-shift consisting of the cranks *k k* on the troughs, the bell-cranks *m m*, the operating-lever I, and the connecting-rods *l l n n*, all arranged to operate substantially as set forth.

2. A stock-car provided with outwardly-tilting troughs mounted

on the opposite sides of the car, and with a lever-shift mounted on the inner face of the end of the car for shifting said troughs simultaneously, said lever-shift consisting of two bell-cranks *m m*, an operating-lever l, fulcrumed on the end of the car and projecting through the roof thereof, rods *n n*, coupling said lever on opposite sides of its fulcrum with the respective bell-cranks, and the rods *l l*, connecting the said bell-cranks with the respective troughs, substantially as set forth.



411,209. LAMP-STOVE. WILLIAM H. WILDER, Gardner, Mass. Filed Nov. 16, 1888. Serial No. 291,012. (No model.)



Claim.—1. In a lamp-stove, the tank, the top grate, the chimney formed of sheet metal bent into elongated form and having the lighting-opening extending approximately all the way across the front or from end to end of the wick, said chimney being united at the center of the front, forming a seam intermediate of the lighting-openings, which serve to support the top grate, substantially as described.

2. In combination, the horizontal cone-plate having the cone projecting upward therefrom, the chimney having its lower edge resting upon the cone-plate, the said cone being formed with slots in its upwardly-extending wall above the surface of the cone-plate and the said chimney having a portion of its edge bent therein, substantially as described.

3. In combination, the chimney and the grate, said grate resting upon a portion of the upper edge of the chimney, whereby the said grate is supported by the metal on edge, said grate having projecting ends 13^a bent downwardly, and the said supporting-chimney having portions of its upper edge bent over the said downwardly-bent ends 13^a to connect the parts, substantially as described.

4. In combination, in a lamp-stove, the tank and the leg, said leg being formed to lie along the side of the tank and to engage with its top, and means for holding the leg at the bottom of the tank, substantially as described.

5. In combination, in a lamp-stove, the tank and the leg, said leg having a hooked upper end to engage with the tank-top, and the screw passing through the leg and engaging with the tank, substantially as described.

6. In combination, in a lamp-stove having the notched projections, the tank, the leg having its end engaging with the tank-top, the screw passing through the leg, and the notch in the projection on the tank and the nut on the inner end of the screw, substantially as described.

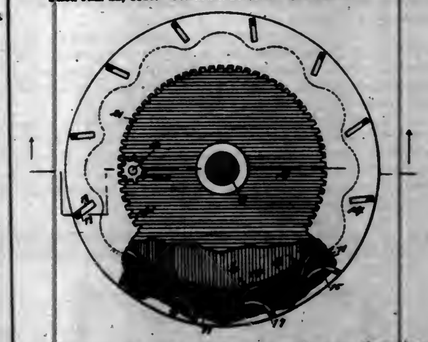
7. In combination, in a lamp-stove, the tank, the leg extending along the side of said tank and having its end engaging with the top thereof, the two projections on the leg to bear upon the corner of the tank, and the screw for drawing the leg into proper position.

8. In combination, a lamp-stove, the tank made of two parts—namely, the cover and the body portion—and a supporting-leg held to the tank and having a hooked end engaging with the cover, substantially as described.

9. In combination, in a lamp-stove, the tank provided with a rib, and a supporting-leg held to the tank and having an upward extension with a hooked end engaging with the rib, substantially as described.

10. In a lamp-stove, and in combination, the tank and the removable legs therefor, and means for removably securing the legs to the tank at or near the lower portion thereof, each of said legs having a portion extending upwardly in front of the tank-side, the upper end of which is connected to the tank, substantially as described

411,210. WATER-WHEEL. HENRY J. ADAMS, North Jay, Me. Filed Jan. 22, 1889. Serial No. 297,176. (No model.)



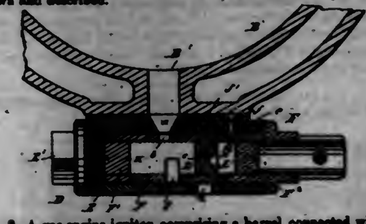
Claim.—1. The water-wheel 1, of even diameter throughout its length and provided with buckets 5, each having a downwardly and backwardly trending curved upper portion 22 and a lower portion 23, ending in a vertical line at the bottom extending from the portion 22 in a reverse spiral line, the portion 22 having a concave face 24, gradually widening at the edge or lip 25^a as it continues into the portion 23, as shown at 24^a, all of said buckets being convex on their back and concave on their face throughout their entire lengths, substantially as set forth.

2. The combination, with the water-wheel, of the casing having a cylindrical lower section and an upper section 13, having a sinuous or corrugated peripheral wall 8^a, provided with openings 10 in its concavities, the concavities and convexities of said wall being rounded or curved, the gates 15, hinged at the forward edges of said openings and shaped to fit into the said concavities over the openings 10, and means for operating said gates, substantially as set forth.

3. A water-wheel casing formed with a sinuous periphery and a cylindrical lower section, water-inlet openings in the upper sinuous section, vertical hinged curved gates for said openings, having lugs on the upper edge and a flat ring mounted to revolve on the top of the casing, having inclined slots engaging the lugs on the gates and provided with gear-teeth, and a shaft carrying a pinion engaging the gear on the ring, in combination with a water-wheel consisting of a drum-like body having a flanged top and buckets extending downward in a reverse spiral having a concave face, a convex back, and widened at the lip toward the bottom, substantially as shown and described.

411,211. IGNITOR FOR GAS-ENGINES. ISAAC F. ALLMAN, Jersey City, N. J. Filed May 28, 1889. Serial No. 311,993. (No model.)

Claim.—1. A gas-engine igniter comprising a plunger provided with two compartments, of which one is connected at all times with the engine-cylinder and the other alternately connects with the engine-cylinder and the igniting-flame, and a plug forming the partition between the said two compartments and provided with a small aperture connecting the two compartments with each other, substantially as shown and described.



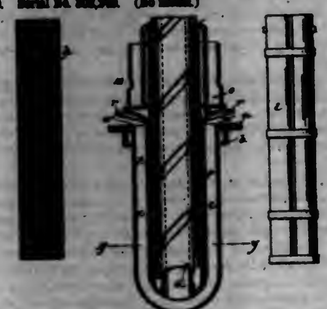
2. A gas-engine igniter comprising a barrel connected with the engine-cylinder, a plunger held to slide in the said barrel and provided with two compartments, of which one is connected at all times with the engine-cylinder and the other alternately connects with the engine-cylinder and the igniting-flame, and a plug forming the partition between the said two compartments and provided with a small central aperture connecting the two compartments with each other, substantially as shown and described.

3. A gas-engine igniter comprising a barrel connected with the engine-cylinder, a plunger held to slide in the said barrel and provided with two compartments, of which one is connected at all times with the engine-cylinder and the other alternately connects with the engine-cylinder and the igniting-flame, a plug forming the partition between the said two compartments and provided with a small central aperture connecting the two compartments with each other, and means, substantially as described, for moving the said plunger slowly outward and rapidly inward, as set forth.

4. The combination, with the gas-engine cylinder, of a barrel secured on the said cylinder and having a port opening into a passage leading to the interior of the cylinder, and a plunger held to slide in the said barrel and provided with an apertured plug dividing the said plunger into two compartments, of which one is at all times connected with the said cylinder-passage and the other alternately connects with the said barrel-port and with the igniting-flame, substantially as shown and described.

5. The combination, with the gas-engine cylinder, of a barrel secured on the said cylinder and having a port opening into a passage leading to the interior of the cylinder, a plunger held to slide in the said barrel and provided with an apertured plug dividing the said plunger into two compartments, of which one is at all times connected with the said cylinder-passage and the other alternately connects with the said barrel-port and with the igniting-flame, and means, substantially as described, for moving the said plunger in the said fixed barrel, as set forth.

411,212. LAMP. JOSEPH H. BASSELL, Bartold, Mo. Filed Mar. 7, 1889. Serial No. 302,249. (No model.)



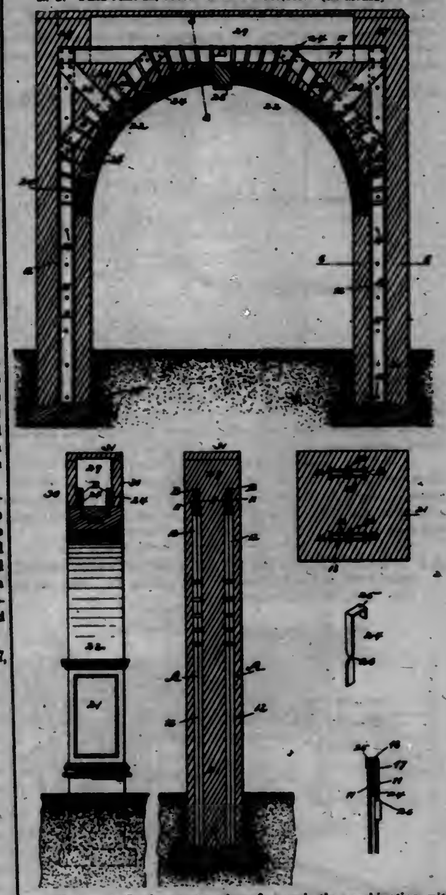
Claim.—1. The combination, with an Argand burner, of the U-shaped tube embracing the lower portion of the burner, communicating at the upper side of its bend with the lower end of the central air-tube thereof and opening at its upper ends through the cap-plate of the burner, the lower end of the outer burner-tube being open for the entrance of oil, as at *p' p'*, as set forth.

2. The combination, with the burner having the cap-plate, central air-tube *d*, and the outer tube *p*, of the U-shaped tube *c*, communicating at the upper side of its bend with the lower end of the tube *d*, and opening at its upper ends through the cap-plate, the lower end of the tube *p* being open, the ring *q* on the tube *p* above said cap-plate, and the caps projecting therefrom over the ends of tube *c*, substantially as set forth.

3. In a lamp-burner, the combination, with a tube *d*, of a U-shaped tube *c* and caps arranged in connection with each tube, substantially as described.

4. The combination, with the outer burner-tube *p*, the air-tube *d*, and the cap-plate, of a separate and independent tube of less diameter than said tubes and leading from the lower end of the tube *d* under the tube *p* and upward along the outer side thereof and opening through the cap-plate, the lower end of tube *p* being open for the entrance of oil, substantially as set forth.

411,213. CONSTRUCTION OF ARCHES. JAMES BOGERT, Yonkers, N. Y. Filed June 22, 1889. Serial No. 315,185. (No model.)



Claim.—1. In the construction of an arch, the combination, with uprights and girders uniting the uprights, of diagonal brace-plates secured to the uprights and girders, and anchors secured to the brace-plates, girders, and uprights, substantially as shown and described.

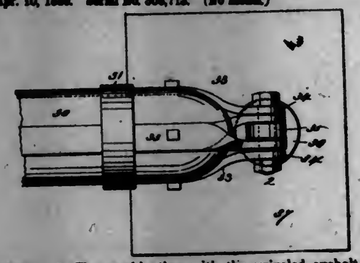
2. In the construction of an arch, the combination, with uprights and girders uniting the uprights, of diagonal brace-plates secured to the uprights and girders, and anchors carried by the brace-plates, the uprights, and girders consisting of a metal bar bent upon itself to form a hook at the upper end and twisted near the lower end, substantially as shown and described.

3. In the construction of arches, the combination, with uprights consisting of two longitudinally-flanged metal beams secured face to face, of girders uniting the uprights, comprising two L-shaped beams face to face passed between the members of the uprights and supported thereby, and anchors attached to the standards, and girders extending inward therefrom and adapted to tie the spring of the arch, substantially as shown and described.

4. In the construction of arches, the combination, with uprights consisting of two united beams having longitudinal flanges upon both faces, and girders uniting the uprights and supported thereby comprising two united beams, each having one longitudinal flange upon its outer face, of brace or tie plates secured to the uprights and girders, and anchors secured to the uprights, the girders and brace-plates projecting inward therefrom, substantially as shown and described.

5. In the construction of arches, the combination, with uprights consisting of two united beams having longitudinal flanges upon both faces, and girders uniting and supported by said uprights, comprising two L-shaped beams introduced between the members of the uprights, of diagonal brace or tie plates secured to the uprights and girders, a solid casing surrounding the uprights and girders, having an arch sprung beneath the girders and between the uprights and provided with an upper compartment, and anchors secured to the uprights, the brace-plates, and girders, and to the members comprising the said arch, substantially as shown and described.

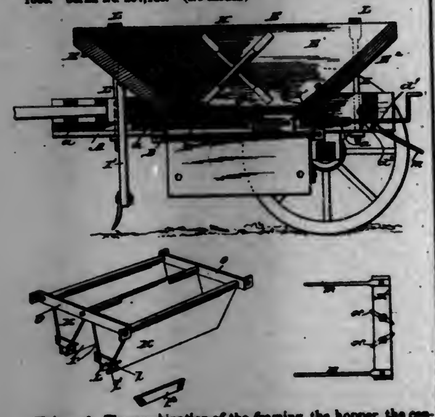
411,214. DERRICK. WILLIAM R. CHAPMAN, Brooklyn, N. Y. Filed Apr. 10, 1888. Serial No. 269,712. (No model.)



Claim.—1. The combination, with the swiveled eyebolt 35 36, of the boom 30, the straps 33, secured to the boom and provided with eyes 34 in their ends, the said ends being bent so that the eyes will register with each other and with the eye of the swivel-bolt, and the bolt 2, passed through the said eyes, substantially as described.

2. The combination, with an A-frame 100 and the swivel-bolt 36, having an eye 35 and arranged between the masts 11 11 of the said frame, of the boom 30, the straps 33, having eyes 34 in their ends and secured to the boom by bands 31, and the bolt 2, passing through said eyes, substantially as herein shown and described.

411,215. SEED-PLANTER AND FERTILIZER-DISTRIBUTER. JAMES A. CHILES and WILLIAM B. MOSS, Comanche, Ia. Filed Jan. 22, 1889. Serial No. 297,169. (No model.)



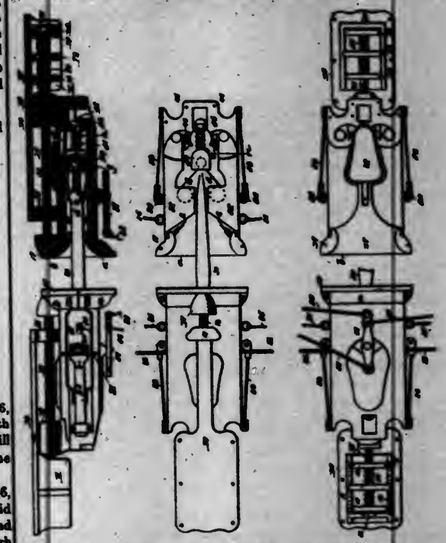
Claim.—1. The combination of the framing, the hopper, the central drill-boards, the side drill-boards, the bolts for holding the central drill-boards together, and the connecting bar or bars, all substantially as set forth.

2. The combination of the framing, the hopper, the drill-boards adjustable, whereby to drill one or two rows, and the coverer running in rear of the drill-boards and having its teeth or blades adjustable, whereby to cover one or two rows, substantially as set forth.

3. In a machine substantially as described, the combination of the drill-boards hinged at their upper edges and provided near their lower movable edges with pins or projections, and connecting-bars extended between said drill-boards and having openings to receive the pins or projections on the drill-boards, substantially as and for the purposes set forth.

4. In a machine substantially as described, the combination, with the main frame having grooves *c* and stops *c'* and provided with a discharge-opening, of the regulating-doors sliding in said grooves and having shoulders *d*, arranged to abut said stops, the hopper, and the agitator-shaft, substantially as set forth.

411,216. CAR-COUPLING. JOHN A. DEAN, North Ogden, Utah. Filed Feb. 9, 1888. Serial No. 263,502. (No model.)



Claim.—1. The combination, with a separate and independent link formed with a continuous bore, of a coupler arranged to engage said link, and sockets adapted to receive the link ends, substantially as described.

2. The combination, with a link formed with a continuous bore and with recessed headed ends, of couplers adapted to receive said link, sockets adapted to receive the link ends or heads, and jaws carried by the sockets, said jaws being arranged to enter the link-head recesses, substantially as described.

3. In a car-coupler, a coupling-link 30, formed with headed ends A A, and laterally-projecting knobbed wings *d* between said heads, the link having a longitudinal bore from end to end, substantially as set forth.

4. In a coupler, the combination, with a draw-head, of jaws pivotally mounted therein, springs arranged in connection with the jaws, means for drawing out the jaws, tongues carried by the jaws, and a socket adapted to receive the headed end of a coupling-link and provided with jaws arranged to engage said head, substantially as described.

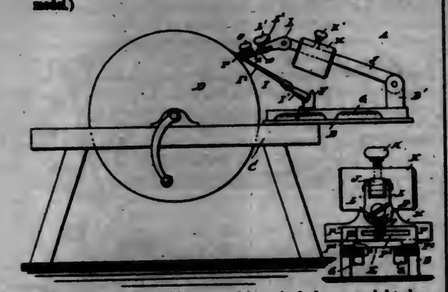
5. In a coupler, the combination, with a plate arranged for connection with the car-body and formed with a downwardly-extending apertured lug or projection 15, of a draw-bar which passes through the aperture of said lug or projection, a draw-head rigidly connected to the forward end of the draw-bar and formed with an apertured lug through which the draw-bar passes, and springs and follower-plates arranged in connection with the draw-bar, substantially as described.

6. In a car-coupler, a draw-head 17, having opposite longitudinal slots in rear of its outer end or mouth, outward-swinging hooked jaws 22, pivoted at their rear ends in the inner ends of said slots, and springs 23, pressing said jaws inwardly, substantially as set forth.

7. The combination, with a draw-head having opposite inner and outer jaws, of a link having headed ends to engage the inner jaws, and laterally-extending wings between said heads to engage the outer jaws, substantially as set forth.

8. The combination, with the draw-head having coupling-jaws, and a longitudinally-yielding socket in rear of said jaws and a tube or pipe connected therewith, of a longitudinally-bored coupling-link having its ends constructed to engage said socket and provided with wings to engage said jaws, substantially as set forth.

411,217. GRINDSTONE TOOL-HOLDER. ALEXANDER E. DEAN, Cramer's Hill, N. J. Filed Mar. 19, 1888. Serial No. 268,000. (No model.)



Claim.—1. A tool-holder comprising a bed-plate, a weighted arm pivoted on the said bed-plate and carrying a clamp for clamping the tool-blade, and a support held adjustably on the said bed-plate and adapted to receive the handle end of the tool, substantially as shown and described.

2. A tool-holder comprising a longitudinally-adjustable support adapted to receive the handle end of the tool, a pivoted arm carrying an adjustable weight, and a clamp pivoted on the said arm and adapted to clamp the tool-blade, substantially as shown and described.

3. In a tool-holder, the combination, with a bed-plate, of a support held longitudinally adjustable on the said bed-plate and adapted to support the handle end of the tool, an arm pivoted on the said bed-plate, an adjustable clamp pivoted on the said arm, and a weight held adjustably on the said pivoted arm, substantially as shown and described.

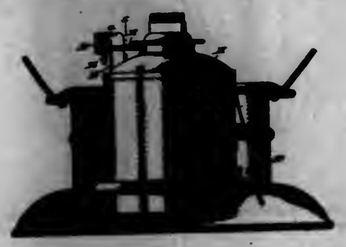
4. In a tool-holder, the combination, with a pivoted arm, a weight held adjustably on the said arm, a plate pivoted on the free end of the said pivoted arm, a second arm pivoted on the plate and adapted to be locked in place on the same, a clamp held on the second pivoted arm and adapted to receive the tool-blade, and a longitudinally-adjustable support adapted to receive the handle end of the tool, substantially as shown and described.

5. In a tool-holder, the combination, with a bed-plate having a longitudinal slot and provided with teeth on its under side, of a tool-handle support comprising a recessed body, a shank held on the said body and projecting through the said longitudinal slot, lugs held on the said shank and adapted to engage the said teeth on the bed-plate, and a button having a transverse slot and adapted to rest in the said recessed body, substantially as shown and described.

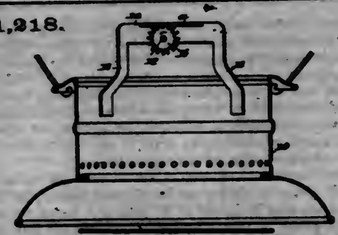
6. In a tool-holder, the combination, with a pivoted arm, of a weight held to slide thereon, a set-screw for fastening the said weight in place on the said arm, a plate hinged on the said arm and provided with notches, a second arm pivoted on the said plate and provided with teeth adapted to mesh into the said notches, and an adjustable clamp held on the said second arm and adapted to clamp the tool-blade, substantially as shown and described.

411,218. LANTERN ATTACHMENT. JOHN W. FINNEY, Hamburg, assignor of one-half to John B. Marston, Buffalo, N. Y. Filed Jan. 5, 1889. Serial No. 295,726. (No model.)

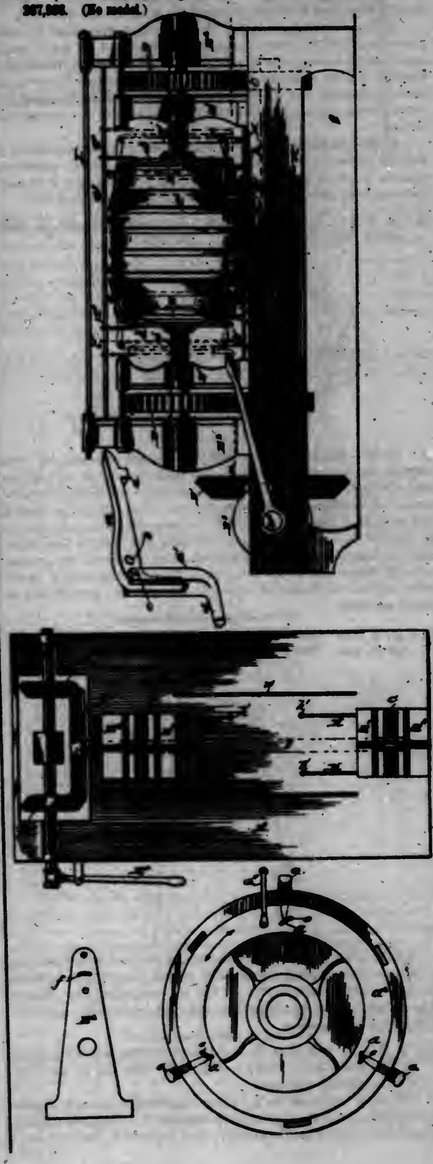
Claim.—The combination, with the base of a lantern, of the supporting-arms 15, attached to the interior of the base and projecting above the same, the segmental bar 14, attached to the upper ends of the arms 15, and provided on its inner face with the inwardly-projecting teeth *a*, separated by slots open at their inner ends, and a wick-raising spindle carrying a toothed disk or pinion 16 on its outer end adapted to engage the teeth formed upon the segmental bar, substantially as and for the purpose set forth.



411,218.



411,219. BARREL-HOOPING MACHINE. FRANK SLAMMONS and WILLIAM W. SIMMONS, Memphis, Tenn. Filed Oct. 12, 1888. Serial No. 287,893. (No model.)



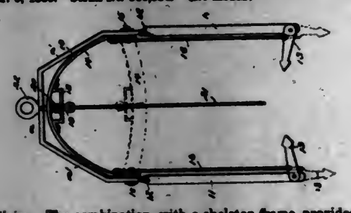
Claim.—1. The combination of the two forcing-heads E E, adapted to bear against the end hoops, and the right-and-left screw-shafts for advancing these heads upon the barrel, the base-frame A, having longitudinal guideways *w* in the same, brackets F, sliding in said guides and carrying catch-hoop F, for contracting the ends of the barrel, the arms G, for forcing the catch-hoops to place, and tripping devices, substantially as described, for throwing the arms over the catch-hoops and allowing the heads to continue to advance and to strike and force on the end hoops, as described.

2. The combination of main frame A with guide-grooves *w*, brackets F, sliding therein and carrying the catch-hoops F, the forcing-heads E E, the arms G, jointed to the heads and provided with lugs *a*, the arm-section G', jointed to arm G and provided with stud *d*, swiveling rings G^2, arranged upon the heads and provided with cam-slots *c*, receiving studs *d*, and the bar G^3, connected to the swiveling ring for operating the same, substantially as shown and described.

3. The combination of the bed-frame A, having shaft B, with gear-wheels C C, the large standards E^2, connected by rod I, small standards E', connected to the large standards at the top, the screw-shafts D', having right-and-left threads, and gear-wheels D, arranged between the large and small standards, and the heads E, having interiorly-screw-threaded hub, substantially as and for the purpose described.

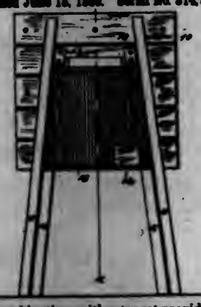
4. The combination, in a barrel-machine, with the base-frame A and the oppositely-advancing heads E E, of the rods H, connected with the heads by slides to form guides, and having seats *h'* formed in the same to receive the barrel, substantially as described.

411,220. HAY-FORK. JOSEPH S. GOSHAWKE, East Berlin, Pa. Filed Apr. 9, 1889. Serial No. 306,891. (No model.)



Claim.—The combination, with a skeleton frame provided with vertical side bars and a tine pivoted to the lower end of each of the said side bars, of a yoke or bow pivoted within the frame, above the center, connecting-rods pivoted to the bow, above its pivotal point, and to each of the said tines, a bracket secured to the under surface of the bow at the center, a spring-actuated bolt held to slide vertically through the said bracket and bow, and capable of engagement with the frame, and a rope attached to the said bolt, leading downward beyond the frame, all combined for operation substantially as herein set forth.

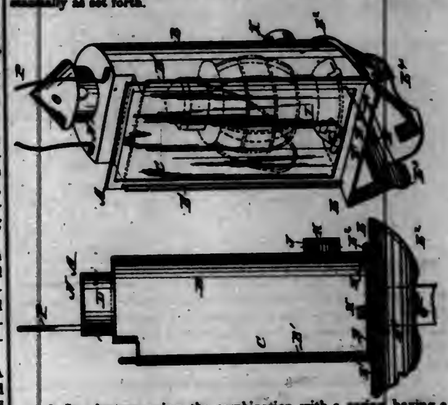
411,221. GAME BOARD OR APPARATUS. CHARLES GOOCH, Cincinnati, Ohio. Filed June 18, 1889. Serial No. 314,757. (No model.)



Claim.—The combination, with a target provided with rigid legs, of legs 12, hinged thereto, cross-strips 14 and 15, arranged between the legs 13, and a back or leaf 16, and the removable pins adapted to be received in the box formed by said legs, cross-strips, and leaf, substantially as described.

411,222. LANTERN. OLE HAMMELAND, Fort Shenton, Dak., assignor to himself and David F. Bidwell, same place. Filed Jan. 26, 1889. Serial No. 297,882. (No model.)

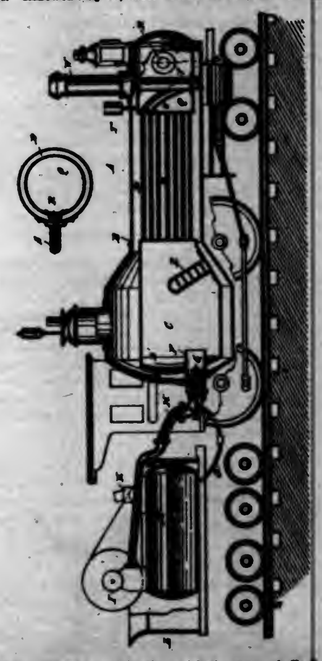
Claim.—1. A holder for a lantern, comprising a casing U-shaped in cross-section, and having a transparent slide in its front and a flange on its bottom, and a saddle provided with a platform having a marginal guideway to receive the flange of the bottom of the casing, substantially as set forth.



2. In a lantern-casing, the combination, with a casing having a flanged bottom, of the saddle E, provided with the apertured platform E', having guideways E^2 to receive the flange of the casing, and the spring-catch F on the under side of the platform, and having the upwardly-extending portion F' entering the aperture of the platform, substantially as herein shown and described.

3. The herein-described lantern-holder, consisting of the casing B, U-shaped in cross-section and provided with the vertical guideways B', the flange D' on its bottom, the catches H on its bottom, and the apertured pipes J L, the apertured caps K N, fitting on the said pipes, the transparent slide C, the apertured platform E, having the marginal guideway E^2, the saddle E^3, secured to the under side of the platform, and the spring-catch F on the under side of the platform, substantially as described.

411,223. BOILER. ISAAC HULME, Yaquina, Oreg. Filed Aug. 18, 1888. Renewed July 16, 1889. Serial No. 317,857. (No model.)



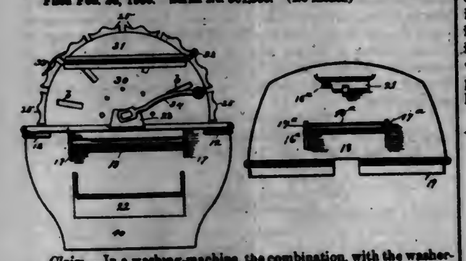
Claim.—1. The combination, with the outer shell of a boiler and an inner shell forming a burning-chamber, of a water-arch extending into the said burning-chamber from the water-chamber of the boiler, a burner injecting a mixture of air and oil against the said water-arch in the burning-chamber, flues leading from the latter, a smoke-arch into which discharge said flues, an outwardly-opening valve held in the said smoke-arch to discharge the gases into the water-chamber of the boiler, and a safety-valve connected with the said smoke-arch, substantially as shown and described.

into the said burning-chamber from the water-chamber of the boiler, a burner injecting a mixture of air and oil against the said water-arch in the burning-chamber, flues leading from the latter, a smoke-arch into which discharge said flues, and an outwardly-opening valve held in the said smoke-arch to discharge the gases into the water-chamber of the outer shell, substantially as shown and described.

2. The combination, with the outer shell of a boiler and an inner shell forming a burning-chamber, of a water-arch extending into the said burning-chamber from the water-chamber of the boiler, a burner injecting a mixture of air and oil against the said water-arch in the burning-chamber, flues leading from the latter, a smoke-arch into which discharge said flues, an outwardly-opening valve held in the said smoke-arch to discharge the gases into the water-chamber of the boiler, and a safety-valve connected with the said smoke-arch, substantially as shown and described.

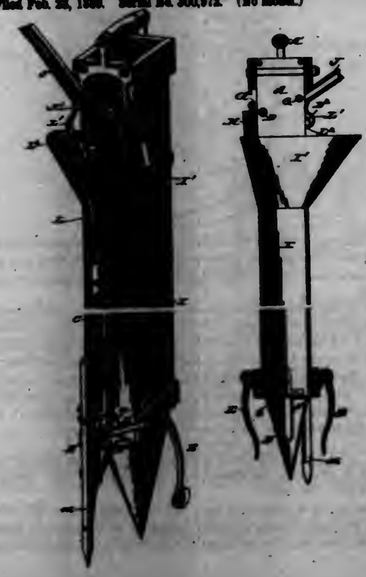
3. The combination, with the outer shell of a boiler and an inner shell forming a burning-chamber, of a water-arch extending into the said burning-chamber from the water-chamber of the boiler, a burner injecting a mixture of air and oil against the said water-arch in the burning-chamber, flues leading from the latter, a smoke-arch into which discharge said flues, an outwardly-opening valve held in the said smoke-arch to discharge the gases into the water-chamber of the boiler, pipes passing through the smoke-arch and connecting the steam-space in the boiler-shell with the steam-chests of the engines, and an exhaust-pipe passing through the boiler-shell and smoke-arch to the outside, substantially as shown and described.

411,224. STEAM-WASHER. WILLIAM KLAHR, Myerstown, Pa. Filed Feb. 28, 1889. Serial No. 301,530. (No model.)



Claim.—In a washing-machine, the combination, with the washer-body 10, provided with the pockets 22, of the cover 18, provided with opening 18', and the flap 21, hinged to the cover above the said opening, substantially as and for the purpose set forth.

411,225. TRANSPLANTER. JACOB K. HERSHEY, JACOB S. HOSHAW, and JACOB HOSTETTER, Florin, Pa., and JOSHUA W. HARSH, Staunton, Va. Filed Feb. 23, 1889. Serial No. 300,972. (No model.)

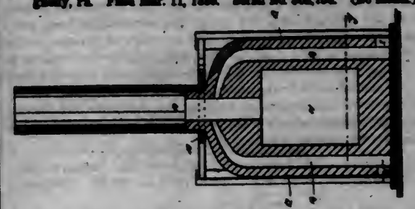


Claim.—1. The combination, with the casing and the feed-tube, of the hinged shovels, the hinged coverers, the connecting-rods, the rods having the crank-arms and the single operating-lever, substantially as set forth.

2. In a transplanter, the combination, with the casing and the hinged shovels, of the spring guard-arms, arranged substantially as set forth.

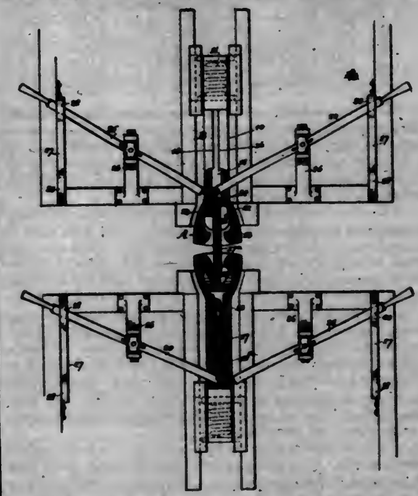
3. The combination, with the casing and the feed-tube, of the hinged shovels, the hinged coverers, the connecting-rods, the rods having the crank-arms, the coil-springs, the single operating-handle, and the spring-catch, substantially as set forth.

411,226. METALLURGICAL FURNACE. ORMSBY PEYTON, Allegheny, Pa. Filed Mar. 11, 1889. Serial No. 302,756. (No model.)



Claim.—A straight-draft metallurgical furnace 10, having a heating-chamber terminating in a neck 11 and a stack over the neck, the air-spaces 13 in the side walls of the neck extending above and below its floor-line, provided below the floor-line with the series of cold-air-inlet ports 2, opening through the outer side walls, and flues connecting the upper ends of the air-spaces with the interior of the furnace, whereby the draft will cause jets of cold air to be drawn through the ports 2 and impinged against the sides of the neck just below its floor-line, substantially as set forth.

411,227. CAR-COUPLING. JOHN W. REESOR, Watford, Province of Ontario, Canada. Filed May 21, 1889. Serial No. 311,626. (No model.)



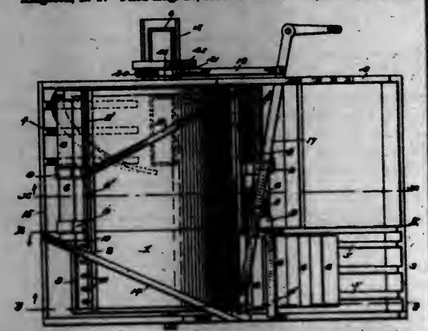
Claim.—1. In a car-coupler, the combination, with a tubular draw-head, comprising a head having an opening in its bottom and a body adapted to extend rearward beneath the car, and provided with a longitudinal slot, and guideways at each side of the said slot, of a link adapted to travel upon the said guideways, and means, substantially as shown and described, for operating the said link, as and for the purpose specified.

2. In a car-coupler, the combination, with a tubular draw-head, comprising a head having an opening in its inner side, the forward wall of which opening is upwardly inclined, and a body portion adapted to extend beneath the car, provided with a longitudinal slot, and guideways at each side of the said slot, of a link comprising a cylindrical body and an arrow-head at each end, which heads are weighted at one side and reduced at the other to travel in the slot of the draw-head, all combined for operation substantially as shown and described.

3. In a car-coupler, the combination, with a tubular draw-head, comprising a head having an opening in its inner side, the forward wall of which opening is upwardly inclined, and a body portion adapted to extend beneath the car, provided with a longitudinal slot, and guideways at each side of the said slot, of a link comprising a cylindrical body and an arrow-head at each end, one side of which heads is weighted and the opposite side reduced to travel in the slot of the draw-head, the sides of the outer head being beveled in opposite directions, as and for the purpose specified.

4. In a car-coupler, the combination, with a tubular draw-head, comprising a head proper, having a downwardly-curved upper wall, an opening in its lower face, the forward wall of which opening is upwardly inclined, and a body portion adapted to extend beneath the car and provided with a longitudinal slot, and a guideway at each side of the said slot, of a link comprising a cylindrical body and a front and rear arrow-head, weighted at one side and reduced at the other to travel in the slot of the draw-head, the forward head at its sides being oppositely beveled, a cylindrical projection extending from the center of the rear head, jointed levers fulcrumed beneath the car, and an angular rod-connection between the said levers and the rear end of the reduced portion of the rear head of the link, substantially as and for the purpose specified.

411,228. BRICK-MOLD-SANDING MACHINE. GEORGE H. SMITH, Kingston, N. Y. Filed Aug. 27, 1888. Serial No. 283,806. (No model.)



Claim.—1. In a brick-mold-sanding machine, the combination, with a supporting-frame, of a rotary sand-box, a disk mounted on the shaft of the said box and provided with pins, a lever pivoted to one side of the frame and extending across the same, and a forked lever pivoted to the first-named lever and engaging the pins of the disk, substantially as herein shown and described.

2. In a brick-mold-sanding machine, the combination, with a supporting-frame provided with a feed and delivery chute and a guide 13, of a sand-box mounted to rotate in the frame and provided with openings in its periphery and with the diagonal guide-strips 16, and the curved guide-strip 14, secured to the frame and extending diagonally over the said box, substantially as and for the purpose set forth.

3. In a brick-mold-sanding machine, the combination, with a supporting-frame provided with a feed-chute at one corner and a delivery-chute at the diagonally-opposite corner, of a sand-box mounted to revolve in the said frame and provided with a series of openings in its periphery, a guide-strip for moving the molds over the openings in the box, means for retaining the molds over said openings, and guide-strips for discharging the molds into the discharge-chute, substantially as herein shown and described.

4. A brick-mold-sanding machine consisting of a frame having a feed-chute with a brick-mold support at its lower end, a rotary sand-box having sand-discharge openings in its periphery, brick-mold ways on the rotary sand-box in line with the sand-discharge openings, with retaining projections for holding the brick-molds over the sand-discharge openings and catches for lifting the bottom mold from feed-chute onto the brick-mold ways, a diagonal strip adjacent to the said box and extending over the latter from the feed-chute, diagonal strips at the other end of the sand-box, and a curved chute adjacent to said end diagonally opposite the feed-chute, with a lateral opening and discharge-chute, a stop and guide-strip at the lower end of curved chute, and mechanism for operating the rotary sand-box, substantially as shown and described.

5. A brick-mold-sanding machine consisting of a rotary sand-box having its periphery formed with sand-discharge openings, with brick-mold-retaining guides, brick-mold guideways extending from end to end of the sand-box in line with the openings, retaining-catches located adjacent to the sand-discharge openings and in line therewith on one end of the sand-box, diagonal strips on the sand-box extending over the same from the opposite end, a feeding-chute adjacent to the end of the sand-box, having retaining-catches, a chute on the opposite side of the sand-box adjacent to the end thereof, having a stop and guide-strip at its bottom, with an adjacent opening and chute, diagonal strips on the sand-box, and a diagonal strip extending above the sand-box from the feed-chute to the opposite side, substantially as shown and described.

6. A brick-mold-sanding machine consisting of a frame 2, having mounted therein the rotary sand-box or cylinder 1, with sand-discharge openings 7, the brick-mold retaining and guide straps 9 adjacent to openings 7, the guide-strips 8', extending past the openings 7 and to the end of the cylinder on one side of the openings and having a continuation on the other side formed by means of pins 10, a chute 3, formed of slats 3', with pins 5 at their lower end adjacent to the end of cylinder 1, on which are located pins 10, diagonal strips 16 on the opposite end of cylinder, a diagonal strip 14, extending over cylinder 1 from the chute 3 to the side of frame 2, a chute 4, located diagonally on frame 2 to chute 3, with lateral opening 11, a chute 12 in frame 2 at the bottom of chute 4, and a stop and guide-strip 13 adjacent thereto, substantially as shown and described.

7. A brick-mold-sanding machine consisting of a frame 2, a feed-chute 3, formed with slats 3', and pins 5 at the lower ends of the slats, located at an upper corner of frame 2, a chute 4, located at a corner of frame 2 diagonally to chute 3, an opening 11, with external chute 12, an internal stop and guide-strip 13 in the side of frame 2 at the bottom of chute 4, a rotary sand-box or cylinder 1, mounted in frame 2, with sand-discharge openings 7 in its periphery between chutes 3 and 4, brick-mold guide and retaining straps 9, located adjacent to the openings, brick-mold guide-strips 8', extending past the openings 7, pins 10, located on the cylinder at one side of the openings and extending to the end of the cylinder adjacent to chute 3, diagonal strips 16 on the cylinder at the end adjacent to chute 4, a diagonal strip 14, extending from the chute 3 over the cylinder to the opposite side of frame 2, and means for rotating the cylinder 1, substantially as shown and described.

411,229. STAND FOR CARBOYS. JAMES F. STEVENSON, Allegheny, Pa. Filed June 12, 1888. Serial No. 314,077. (No model.)



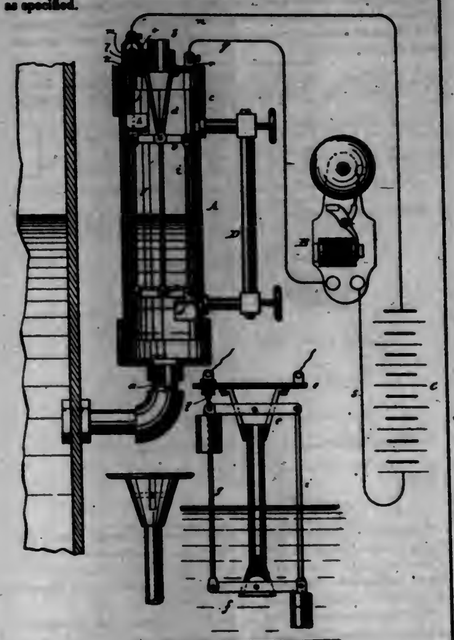
Claim.—1. A stand for carboys, consisting of the parallel rockers having the brace at their lower ends to engage the carboy and steps or bends at their upper ends to secure the carboy, substantially as described.

2. A stand for carboys, consisting of a wire bent to form rockers and having the lower closed end bent up to engage one of the lower edges of the carboy and their free ends formed with steps to engage one of the upper edges of the carboy, substantially as described.

3. The herein-described stand for carboys, consisting of the curved rockers having their lower ends turned up to form a brace for the carboy and their upper ends turned inward and formed with step-angles for securing the carboy, substantially as described.

411,230. ELECTRICAL HIGH AND LOW WATER ALARM. DANIEL H. STEBBINS, Norristown, Pa. Filed July 23, 1888. Serial No. 318,316. (No model.)

Claim.—In an electrical high and low water alarm, the combination, with the containing-vessel connected at the top and bottom with the main reservoir or boiler, of two levers *e f*, rods *g i*, connecting the said levers, floats *h j*, carried by the rods and arranged diagonally opposite each other, and the electrical connections, substantially as specified.

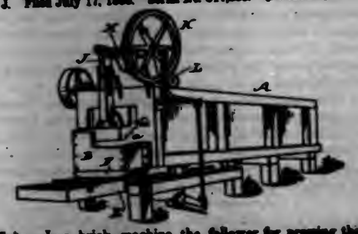


411,231. PROCESS OF THE MANUFACTURE OF ALCOHOLIC LIQUIDS. JOKICHI TAKAMINE, Tokio, Japan. Filed May 28, 1889. Serial No. 312,508. (No specimens.) Patented in England May 19, 1887, No. 7,577; in France Feb. 27, 1888, No. 183,988, and in Belgium Feb. 28, 1888, No. 80,786.

Claim.—1. The process of making alcoholic liquors, which consists in fermenting a suitable solution or wash with the aid of moyasi fungus and distilling the product, as herein set forth.

2. The process of making alcoholic liquors, which consists in fermenting a suitable solution or wash with a mixture of moto and koji and distilling the product, as herein set forth.

411,232. BRICK-MACHINE. GODFRYD VAN DEVENTER, Metuchen, N. J. Filed July 17, 1888. Serial No. 317,932. (No model.)

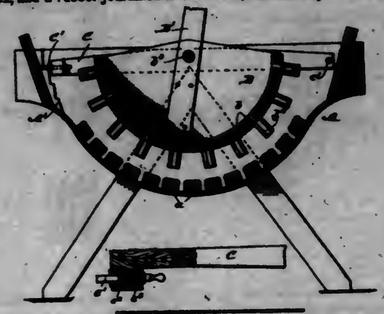


Claim.—In a brick-machine, the follower for pressing the clay into the molds, formed with its outer edge depressed or at a lower level than the opposite edge or edge next to the mixer, substantially as and for the purposes set forth.

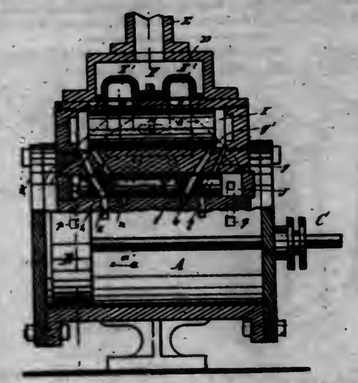
411,233. WASHING-MACHINE. IRA R. WARREN, Wesmere, Iowa. Filed Mar. 23, 1889. Serial No. 304,027. (No model.)

Claim.—1. In a washing-machine, the combination, with a suds-box A, of the stepped supports A', secured to one end thereof, the supporting-arms C, pivoted at the opposite end, the spring-bolts C', carried at the free end of the supporting-arms, and the rubber B, journaled near the center of the said arms, substantially as shown and described.

2. The combination, in a washing-machine, of a suds-box, arms pivoted at one end to the inner sides of the suds-box and carrying catches at their free ends that engage supports therefor on the said box, and a rubber journaled in said arms, substantially as described.



411,234. STEAM-ACTUATED VALVE. WILLIAM L. G. WILLIAMS, Jersey, Pa. Filed Dec. 12, 1888. Serial No. 293,245. (No model.)



Claim.—1. In a steam-actuated valve, the combination, with a cylinder and its piston, of a steam-chest communicating with the cylinder, an oscillating valve in the steam-chest, and an auxiliary piston below the steam-chest and connected with the said valve, the said auxiliary piston being operated by live steam from the cylinder, substantially as described.

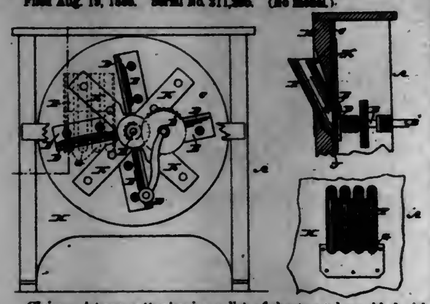
2. In a steam-actuated valve, the combination, with a main valve mounted to turn and provided with an arm, of an auxiliary piston operated by live steam from the cylinder and provided with a pin engaging the said valve-arm, substantially as shown and described.

3. In a steam-actuated valve, the combination, with a main valve mounted to turn and provided with an arm, of an auxiliary piston operated by live steam from the cylinder and provided with a pin engaging the said valve-arm, and a second auxiliary piston actuated by live steam and controlling the motion of the said first auxiliary piston, substantially as shown and described.

4. In a steam-actuated valve, the combination, with a cylinder and a piston operating therein, of a steam-chest provided with inlet and outlet ports, the former leading to the said cylinder, a valve mounted to turn in the said steam-chest and operating over the said ports, an auxiliary piston connected with the said main valve for turning the same, and an auxiliary cylinder controlling the said auxiliary piston and in communication with the said cylinder, substantially as shown and described.

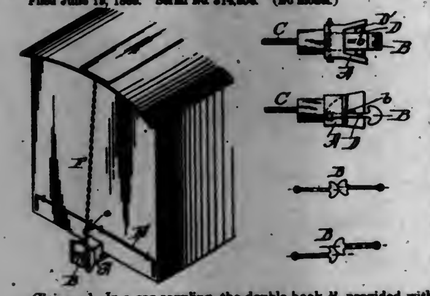
5. In a steam-actuated valve, the combination, with a cylinder and a piston operating therein, of a steam-chest provided with inlet and outlet ports, the former leading to the said cylinder, a valve mounted to turn in the said steam-chest and operating over the said ports, an auxiliary piston connected with the said main valve for turning the same, an auxiliary cylinder containing the said auxiliary piston, a second auxiliary cylinder held parallel with the said first-named auxiliary cylinder and connected with the same by inlet and outlet ports, and also connected by ports with the main cylinder, and a second auxiliary piston held to slide in the said auxiliary cylinder and provided with ports for connecting the said exhaust and inlet ports of the second auxiliary cylinder with the said main cylinder and with the main exhaust-ports, substantially as shown and described.

411,285. BEAN-CUTTER. GERHARD RUDOLPH, Philadelphia, Pa. Filed Aug. 19, 1889. Serial No. 321,285. (No model.)



Claim.—A bean-cutter having a disk of sheet metal provided with slots, blades secured to the walls of the slots and having their edges bent laterally in the direction of the feed-chutes, and a series of arms integral with each other and alternating with the slots, and a casing with vertical grooves, and a feed-chute with corrugations coinciding with said grooves, said parts being combined substantially as described.

411,286. CAR-COUPLING. WILLIAM H. BURWELL, Sparta, Ga. Filed June 19, 1889. Serial No. 314,853. (No model.)

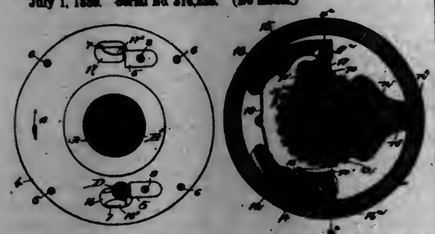


Claim.—1. In a car-coupling, the double hook B, provided with lugs D D, substantially as shown, and for the purpose specified.

2. In a car-coupling, draw-head A, double hook B, and lugs D and D', all combined, arranged, and operating substantially as shown and set forth.

3. In a car-coupling, the combination of the draw-head A, hook B, and link G, all combined and operating substantially as shown and described, and for the purpose specified.

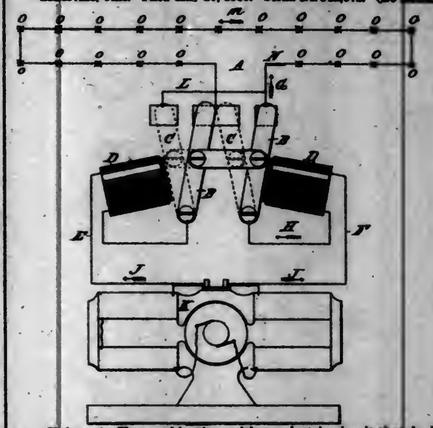
411,287. CLUTCH. WALTER B. CLIFFORD, Fitchburg, Mass. Filed July 1, 1889. Serial No. 316,228. (No model.)



Claim.—1. The combination, with a shaft adapted to be rotated in one and then in an opposite direction and a disk or crank loose thereon, of a clutch composed of a toothed wheel and pawls to engage the teeth of the wheel to positively connect the said disk or crank and the said shaft for but a portion of its first rotation in either direction, and then to automatically disengage the said clutch and leave the said disk or crank disconnected from the said shaft until the direction of rotation of the said shaft is changed, to operate substantially as described.

2. The combination, with a shaft adapted to be rotated in one and then in an opposite direction and a disk or crank loose thereon, of a clutch composed of a toothed wheel or gear fast on the said shaft and levers and clutch-pawls, and with means to release from the said wheel after but a partial rotation of the said shaft that one of the said pawls which acts as its driver, whereby the said shaft at the commencement of its rotation in either direction is enabled to positively start the disk or crank and move the same with it for but part of a rotation of the said shaft, at which time the pawl is released and the disk or crank remains at rest, while the shaft continues to rotate, substantially as described.

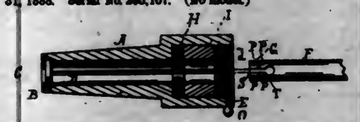
411,288. AUTOMATIC POLE-CHANGER. CYRUS A. EGBERT, Zanesville, Ohio. Filed May 20, 1889. Serial No. 312,072. (No model.)



Claim.—1. The combination, with an electric circuit that is designed to have its current flow through it in one direction at all times, of an automatic electric-current pole-changing device connected in the circuit between the dynamo-electric machine or battery and electric appliances in the circuit, substantially as set forth.

2. The combination, with an electric appliance that is designed to have its current flow through it in one direction at all times, of an automatic electric-current pole-changing device connected between the appliance and its working circuit, so that the current will flow through said pole-changer in passing to and from the appliance.

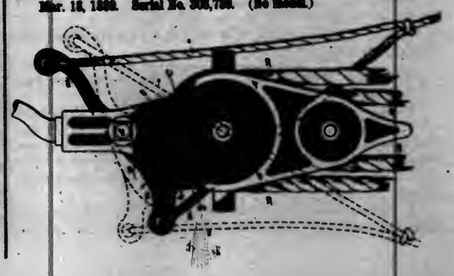
411,289. BUNG. MATHEW DELKER, Detroit, Mich. Filed Dec. 31, 1888. Serial No. 295,107. (No model.)



Claim.—1. In combination with a bung having an opening therethrough, a stopper arranged to close the opening at its lower end, said stopper having a supporting-rod projecting from its upper surface and arranged to extend upward through the bung and to lock the stopper thereto by frictional contact between the upper end of said rod and a dent cut through the walls of the bung, substantially as and for the purposes described.

2. The combination of a bung having an opening through it, a stopper arranged to close the lower end of the opening, a supporting-rod extending upward from the stopper and having a knob at its upper extremity, and the described slotted nipple connected to the pump-stem and arranged to receive and hold the said supporting-rod by means of the knob, substantially as and for the purpose described.

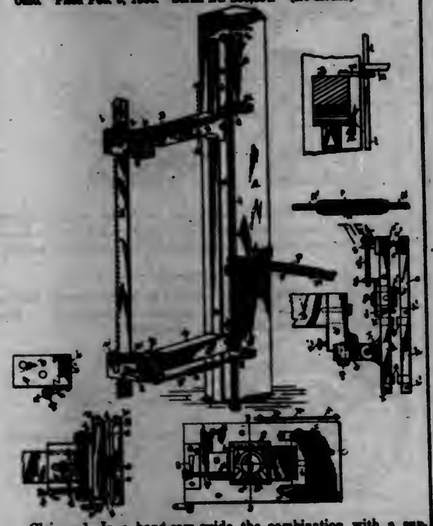
411,240. TACKLE-BLOCK. JAMES DUNN, Cleveland, Ohio. Filed Mar. 18, 1889. Serial No. 303,780. (No model.)



Claim.—1. A tackle-block and sheave, in combination with a locking device for the rope that works over the sheave, having a heel adapted to be in contact with the rope when the locking device is disengaged, an engaging-surface grooved longitudinally and convex between its ends to conform substantially to the outline of the sheave, with arms at each end of the device to attach controlling-cords, substantially as set forth.

2. In a tackle-block, the combination of the block, the sheave, and a hoisting-rope with a locking device for the rope pivoted in the block over the sheave and having the following distinguishing features: a convex grooved and ribbed engaging-surface adapted to the hoisting-rope and the sheave, a heel to make contact with the rope and draw the locking device into position, and arms extending in opposite directions to operate the locking device, substantially as set forth.

411,241. BAND-SAW GUIDE. HANNIBAL D. FIELDS, Columbus, Ohio. Filed Feb. 9, 1889. Serial No. 299,351. (No model.)



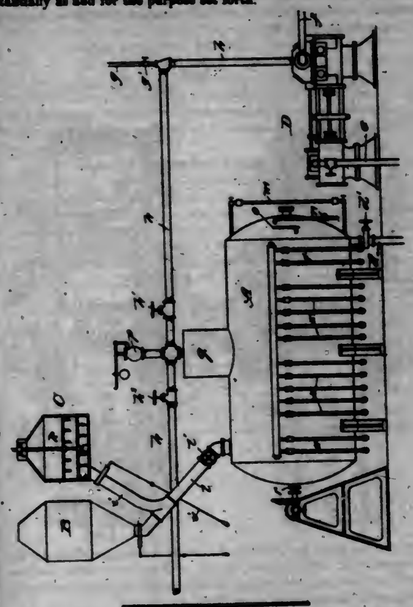
Claim.—1. In a band-saw guide, the combination, with a supporting-arm B, projecting from a column, of the connected guide-block plates c, friction-roller e, pivoted between said plates, saw-bearing strips H, having their upper beat ends adjustably clamped, as described, by strips h against the upper side of said plates c, the rear plate c being adjustably connected, as described, with said arm B, substantially as and for the purpose set forth.

2. In a saw-guide, the combination, with the connected plates c of the guide-block C, one of said plates c having a slot D, provided with an enlarged inner end, cleats d^2 above and below said enlargement, and plate F, having outwardly-projecting arm g, said plate being detachably secured to said plate c of the frame d, having half-bearing box d' and projecting arm f', bearing-box cap d^3, detachably secured on said half-bearing box and forming in connection therewith a bearing for shaft e of wheel e, and screw g', connecting said arms g and f', substantially as and for the purpose specified.

411,242. PROCESS OF BREWING ALE, BEER, AND PORTER. LOUIS FIRMIN, Chicago, Ill. Filed Apr. 4, 1888. Serial No. 269,622. (No model.)

Claim.—1. In the manufacture of beer, ale, and porter, the process of preparing the mash, which consists in mashing the cereal and boiling it under steam-pressure, removing the steam-pressure and lowering the temperature of the mash to a degree at which the diastase of malt will effect the desired conversion, mixing malt with the cooled cereal mash and stirring the mixture until the desired quantity of saccharine matter has been produced, and finally drawing off into a mash-tub and adding more malt to the mash, substantially as and for the purpose set forth.

2. In the manufacture of beer, ale, and porter, the process of preparing the mash, which consists in mashing the cereal and boiling it under steam-pressure, allowing the mash to rest, then removing the steam-pressure, then producing a vacuum on the mash, mixing malt with the cereal mash, and stirring the mixture until the desired quantity of saccharine matter has been produced, raising the temperature of the mixture, drawing off into a mash-tub, and adding more malt, substantially as and for the purpose set forth.



411,243. PROCESS OF RELIGHTING THE FLAME IN HYDRO-CARBON-FURNACES. CHARLES L. GOODRIDGE, Portland, Me. Filed Apr. 20, 1889. Serial No. 308,004. (No model.)



Claim.—1. The herein-described process of producing and sustaining an auxiliary flame for relighting a principal hydrocarbon or other flame, which consists in heating a mass of refractory material by placing it in contact with said principal flame and then conducting into contact with said refractory material a substantially-continuous supply of inflammable material independent of the main supply, substantially as shown.

2. The herein-described process of producing and sustaining an auxiliary flame for relighting a principal hydrocarbon or other flame, which consists in placing a mass of refractory material in contact with said principal flame and then continually dropping upon said refractory material a supply of inflammable material independent of the main supply, substantially as shown.

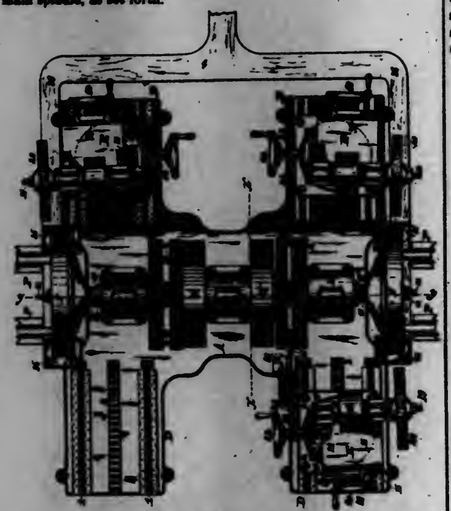
411,244. CAR-WHEEL GRINDER. PATRICK H. GRIFFIN, Buffalo, N. Y. Filed Mar. 1, 1888. Serial No. 301,573. (No model.)

Claim.—1. In machines for truing up the treads and flanges of car-wheels, the combination, with an H-shaped bed-plate, of a series of standards carrying the main spindle above and a fixed shaft below, a driving-pulley having a pinion, a spur-wheel engaging said pinion and fixed to a sleeve having a pinion engaging a spur-wheel fixed to the main spindle above, and a suitable number of slide-rests carrying emery-wheels, as described, for the purpose set forth.

2. In machines for grinding the treads and flanges of car-wheels, the combination, with the base-plate, of the head, consisting of two standards having the main spindle above and fixed counter-shaft below, said main spindle having the driving-pulley, with its pinion, the counter-shaft having the pinion and spur-wheel, the spur-wheel on said main spindle, the driving-pins in said spur-wheels, the slide-rests having emery-wheels, and the feed mechanism operated by said pins and connected with said slide-rests, as and for the purpose set forth.

3. In machines for grinding the treads and flanges of car-wheels, the combination, with an H-shaped bed-plate, of a series of standards carrying the main spindle above and a fixed shaft below, a driving-pulley having a pinion, a spur-wheel engaging said pinion and fixed to a sleeve, a pinion engaging a spur-wheel fixed to the main spindle,

and a suitable number of slide-rests carrying emery-wheels, said main spindle having expansible mandrels outside of the outer standards, as described, whereby the car-wheels are chucked directly to the said main spindle, as set forth.

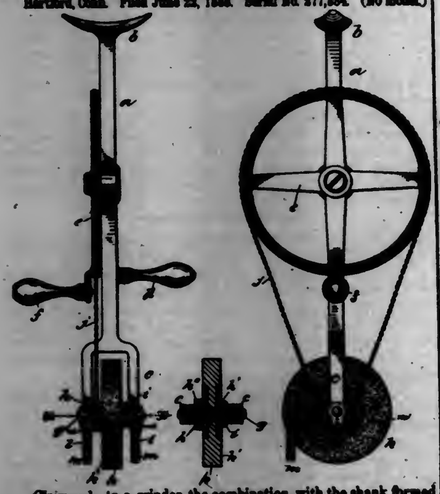


4. In machines for grinding the treads and flanges of car-wheels, the combination of the main spindle with an expansible mandrel thereon and jaws, a collar, and a revolving screw-spindle for actuating said mandrel, substantially as set forth.

5. The combination, with the spindle G G', having the spur-wheel M M', provided with the pins 29, of the lever 28, pivoted to the standard 27, the connecting-rod 30, lever 24, having pivoted pawl 25, spring 26, and the ratchet-wheel 23, and feed-screw 21, as set forth.

6. The combination, with the feed-screw 21, having the ratchet-wheel 23 and lever 24, of the pawl 25, having its tail engaged by the U-shaped spring 26, as and for the object set forth.

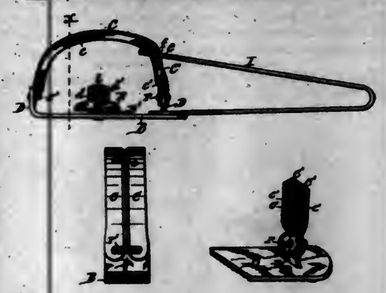
411,245. MOWING-MACHINE-KNIFE GRINDER. OWEN H. JONES, Hartford, Conn. Filed June 22, 1888. Serial No. 277,884. (No model.)



Claim.—1. In a grinder, the combination, with the shank formed with a bifurcated lower end, the branches of which are formed with opposite bearings, of a spindle engaged in said bearings, a sleeve secured upon said spindle and provided with an integral pulley at one end, a nut engaged upon the opposite end of said sleeve, an abrading-wheel secured to said sleeve between said nut and said pulley, a drive-wheel, and a connection between said drive-wheel and the pulley, substantially as set forth.

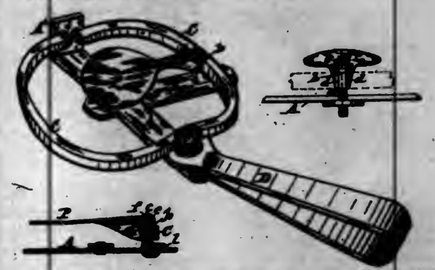
2. In a grinder, the combination, with a shank *a*, provided with a bifurcated lower end having opposite journal-bearings, of a spindle engaged in said bearings, an abrading-wheel rotating about said spindle, bearings provided at the lower ends of the bifurcated ends at right angles to the spindle-bearings, T-shaped shoes having their legs *n'* adjustably secured in said bearings, and means for rotating the said abrading-wheel, substantially as set forth.

411,246. ANIMAL-TRAP. HARRY B. KELLEY, Niagara Falls, assignor to the Oneida Community, (Limited,) Community, N. Y. Filed Jan. 11, 1889. Serial No. 296,022. (No model.)



Claim.—As an improved article of manufacture, the trap-jaws C C, formed of blanks of sheet metal bent into bow shape and crimped transversely to present broad gripping-faces, substantially as set forth and shown.

411,247. ANIMAL-TRAP. HARRY B. KELLEY, Niagara Falls, assignor to the Oneida Community, (Limited,) Community, N. Y. Filed Feb. 23, 1889. Serial No. 300,904. (No model.)



Claim.—1. In combination with the trap-base and spring-actuated jaws, a post connected to the base and oscillatory thereon and provided with a catch adapted to engage one of the jaws, and a lever fulcrumed on the said post and adapted to throw the post from the engaged jaw, as set forth.

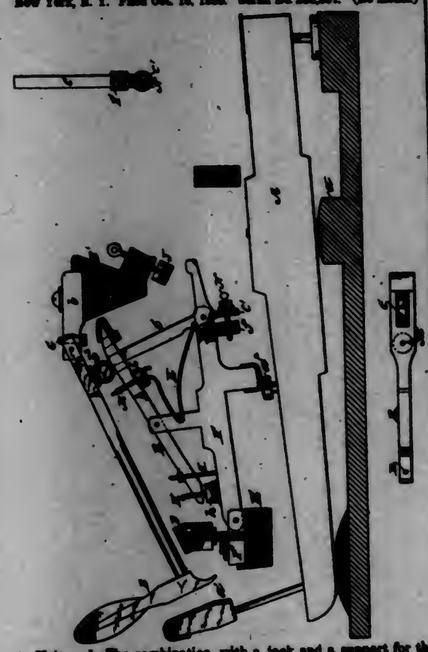
2. In combination with the trap-base and spring-actuated jaws, a post hinged to the base at a point directly under one of the jaws when in its set position and provided with a catch adapted to hold said jaw in said position, and a lever hinged to the said post and having one end bearing on the engaged jaw at the side adjacent to the post, as set forth.

3. In combination with the base A and jaw C, the post *a*, hinged to the base at a point directly under said jaw when in its set position and formed with the catch *b* and shoulder *c*, and the bait-pan formed with ears *e e*, hinged to and embracing the post, hooks *d d* at opposite sides of the post, and abutment *f* between the ears, substantially as described and shown.

4. In combination with the trap-base and spring-actuated jaws, the post *a*, hinged to the base and standing at the inner side of the jaw and formed with a catch adapted to hold the jaw in its set position, and with a stop to limit the outward movement of said post, and the bait-pan fulcrumed on said post and adapted to throw the same out of its engagement with the jaw, as set forth.

5. In combination with the trap-base and spring-actuated jaws, the post *a*, hinged to the base and standing at the inner side of one of the jaws when in its set position and formed with the stop *l*, catch *b*, and shoulder *c*, and the bait-pan P, formed with perforated ears *e e*, embracing the head of the post and hinged thereto, the hooks *d d*, adapted to bear on the inner side of the aforesaid jaw, and the abutment *f* on the bait-pan between the aforesaid ears, substantially as described and shown.

411,248. PIANO-ACTION. BENJAMIN KRAKOWER and JACOBUS RAAS, New York, N. Y. Filed Oct. 16, 1888. Serial No. 288,267. (No model.)

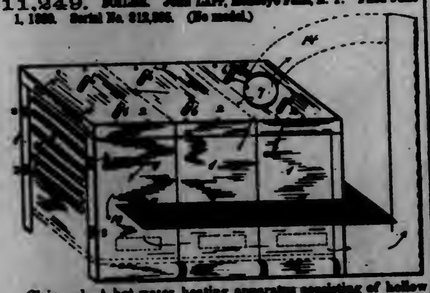


Claim.—1. The combination, with a jack and a support for the jack, of a projection, arm, or eye extending from the jack, a projection extending from the support of the jack, and a screw having a head acting against the projection, arm, or eye of the jack and engaging with the projection on the jack-support, substantially as specified.

2. The combination, with a jack and a support for the jack, of a projection, arm, or eye extending from the jack, a projection extending from the support of the jack, and a screw extending below the forward arm of the jack passing through the projection, arm, or eye of the jack and engaging with the projection on the jack-support, substantially as specified.

3. The combination, with a jack, a support for the jack, and a repeating-lever, of a spring having connection with the jack and its support, and an adjustable block on the repeating-lever bearing on one end of said spring, substantially as specified.

411,249. BOILER. JOHN LAFF, Kenosyo Falls, N. Y. Filed June 1, 1889. Serial No. 312,886. (No model.)



Claim.—1. A hot-water heating apparatus consisting of hollow sides, hollow ends, and hollow top secured together and communicating with each other through coincident ports in their vertical meeting edges, of the side ports in the lower face of the top adjacent to the outer edges and coinciding with ports in the upper edge of the sides, and water inlet and outlet pipes, and a grate and fire-pot, substantially as described.

2. A hot-water heating apparatus comprising sides and ends and top in separate sections secured together, and all being hollow and communicating together internally, and a grate and fire-pot, a casing, and a horizontal partition between the sides and ends and the casing, constituting a reverse flue, and a partition across the top provided with a damper, in combination, substantially as described.

3. A heating apparatus consisting of hollow side sections in separate pieces, hollow ends, and hollow top sections secured together and communicating with each other internally, and tubes extending from the sides into the top of the combustion-chamber and nearly across it, a grate and fire-pot, water inlet and outlet pipes, and an external casing creating flues exterior to the sides and ends and above the top, substantially as described.

4. A hot-water heating apparatus consisting of a hollow side piece, a hollow back, a hollow top provided with an opening for escape of the products of combustion, a hollow front, the sides, back, front, and top being secured together, and all communicating with each other internally, one section being cut away on one edge, and its meeting section being cut away in like manner, and means for closing the opening, and a casing and a partition between the casing and the walls of the apparatus, and water inlet and outlet pipes, substantially as described.

5. A section for a wall of a hot-water heating apparatus, comprising a vertical portion and an inwardly and downwardly contracted portion, all hollow and integral, and provided with ports in the edges to connect it to the adjoining section, and flanges for securing the lower end to the adjoining section, substantially as described.

411,250. WAISTBAND FOR TROUSERS. JOHN H. LEAVITT, Boston, Mass. Filed July 15, 1889. Serial No. 317,542. (No model.)



Claim.—1. The combination, with trousers, of a waistband curved in the direction of its length and provided with a longitudinal slit and secured to said trousers at its opposite ends and between its opposite ends and the ends of the slit, substantially as described.

2. The combination, with trousers, of a waistband curved in the direction of its length and provided with a curved longitudinal slit and secured to said trousers at its opposite ends and between its opposite ends and the ends of the slit, substantially as described.

3. The combination, with trousers, of a waistband curved in the direction of its length and provided with a curved longitudinal slit and having button-holes and stitched to the trousers at its ends and lower edge and transversely between the ends of the said band and the ends of the slit, and elastic secured to the upper and lower slitted portions of the waistband, substantially as described.

4. The waistband herein described, it consisting of two strips of cloth curved in the direction of their length and secured together at their edges, and provided with a longitudinal curved slit and having button-holes and elastic tapes secured to the upper and lower slitted portions of the waistband independent of the said button-holes, the

said elastic tape being interposed between the end of the slit and the button-hole in the upper slitted portion adjacent to the end of the said slit whereby tearing of the end of the slit is obviated, substantially as described.

411,251. PULP-BEATING ENGINE. EDWARD B. MARSHALL, Turner's Falls, Mass., assignor to the Marshall Engine Company, same place. Filed July 9, 1888. Serial No. 279,305. (No model.)



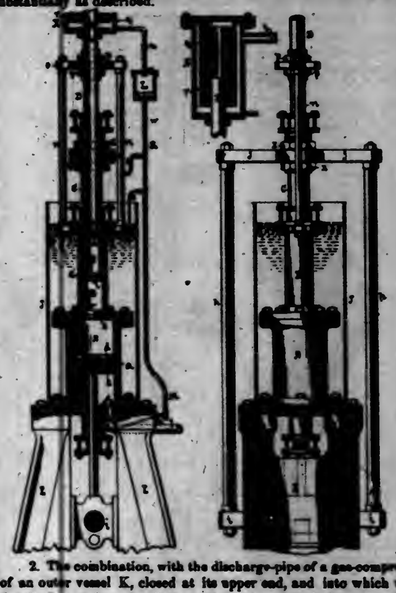
Claim.—1. In a pulp-beating machine substantially such as described, the combination of the revolving disk K, the stationary plate G, longitudinally adjustable upon the outside of the case and toward or from the said revolving disk, two or more adjusting-screws N, supported in stationary bearings on the case against longitudinal movement, but free for revolution, said screws tapped into the said plate, the said screws each provided with a toothed pinion, with a circular rack constructed to engage the pinions of the several screws, substantially as specified, and whereby under the rotation of the said rack the said screws will impart longitudinal adjustment to the said stationary plate G toward or from the revolving disk.

2. The combination of the case A, constructed with a feed-opening *a'* and one or more feed-openings, as *b*, between said feed-opening *a'* and the delivery end of the machine, the said case gradually increasing in diameter from the said feed-opening toward the delivery end, the revolving cone F within the case, the interior of the case and the surface of the cone constructed with corresponding longitudinal grinding-ribs, the longitudinal adjustable plate G at the delivery end of the machine, the cap L, secured to said plate and forming a chamber at the delivery end of the machine, and the revolving disk K in the said chamber, all substantially as described.

3. In a pulp-beating engine, a conical case, combined with a corresponding revolving cone upon the inside, the cone and case constructed with corresponding cutting or beating ribs, the case constructed with a feed-opening at its smaller end and with a chamber *d* in the bottom of the case at the smaller end opening directly from the case, substantially as and for the purpose described.

411,252. COMPOUND COMPRESSOR. GORDAY MEIKLEJOHN, Newark, N. J. Filed Nov. 10, 1888. Serial No. 291,267. (No model.)

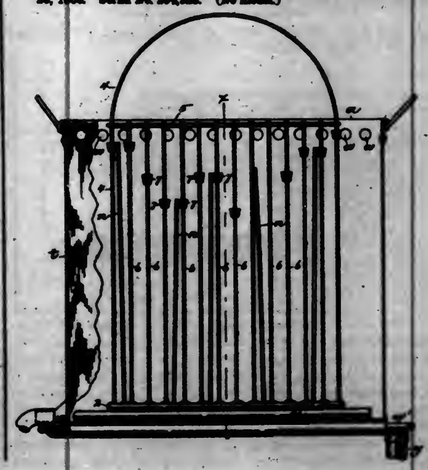
Claim.—1. In a triple-compression machine, a first fixed cylinder A, containing a reciprocating piston provided with a valved transverse passage *c* and having a cylinder-head provided with a valved passage *c*, a second cylinder B, of smaller diameter, supported upon said cylinder-head and communicating with the first cylinder through the valved passage *c*, a stationary discharge-pipe D, with a valved passage *m* at its lower end, and a reciprocating plunger-cylinder C, with a valved passage at its lower end, said plunger-cylinder forming the plunger for the second cylinder B, and also forming a reciprocating cylinder, for which the discharge-pipe D forms a stationary plunger, substantially as described.



2. The combination, with the discharge-pipe of a gas-compressor, of an outer vessel K, closed at its upper end, and into which vessel the discharge-pipe extends to near the upper end thereof, an inner hollow cylinder *q*, surrounding the discharge-pipe and forming therewith a space for the reception of the filtering material, an outlet near the upper end of the vessel K for the passage of the gas, and an outlet near the bottom of the vessel for the passage of the oil, substantially as described.

3. In a gas-compressor, the combination, with the discharge-pipe, of an outer vessel K, closed at its upper end, and into which vessel the discharge-pipe extends to near the upper end thereof, an inner hollow cylinder surrounding the discharge-pipe and forming therewith a space for the reception of the filtering material, an outlet near the upper end of the vessel K for the passage of the gas, an outlet near the bottom of the vessel for the passage of the oil, an oil-cup connected with the latter passage, and a distributing-pipe leading from the oil-cup, substantially as described.

411,253. APPARATUS FOR HOLDING AND WASHING PHOTOGRAPHIC NEGATIVES. WILLIAM K. MOODY, Boston, Mass. Filed Dec. 20, 1888. Serial No. 294,222. (No model.)



Claim.—1. In an apparatus for holding and washing photographic negatives, a support or holder composed of a base having a series of supports for the lower edge of each negative, and a series of uprights attached to said base and arranged to support the central portions of the upper edges of the negatives resting on the base, as set forth, said lower edges of the negatives resting midway between the said uprights.

2. In an apparatus for holding and washing photographic negatives, a support or holder composed of a base having bars or rods in which are depressions or grooves for the reception of the lower edges of a series of negatives, and substantially vertical rods secured to said base and arranged to support the upper portions of the negatives, as set forth, said depressions or grooves being midway between said vertical bars, as stated.

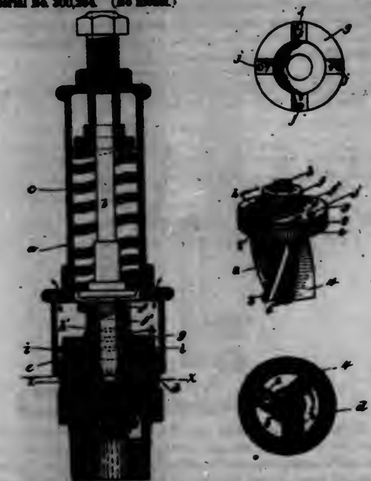
3. The negative-support composed of the marginal frame 2, the corrugated cross-rods 3, secured thereto, said frame and rods constituting a base, and the bail 4 and upright rods 6, secured to said base, as set forth.

4. The negative-support composed of a base to support the lower edges of a series of negatives, and a series of uprights secured to said base, and adjustable collars on said uprights or on a part thereof, as set forth.

5. A tank having water-supply pipes at its lower portion arranged to throw currents of water obliquely against or toward the sides of the tank, and a plurality of escape-openings in its upper portion arranged to conduct the water from the tank in opposite directions without neutralizing said currents, as set forth.

6. A tank having the pipes *u u* on its bottom, said pipes having nozzles or perforations arranged at such angles as to throw the water against or toward the sides of the tank, combined with the negative-support composed of the base adapted to rest on said pipes and the upright rods secured to said base, as set forth.

411,254. POP SAFETY-VALVE. HUBBOCK HOBBS, Boston, Mass., assignor of one-half to Thomas Haley, same place. Filed Feb. 18, 1888. Serial No. 300,264. (No model.)



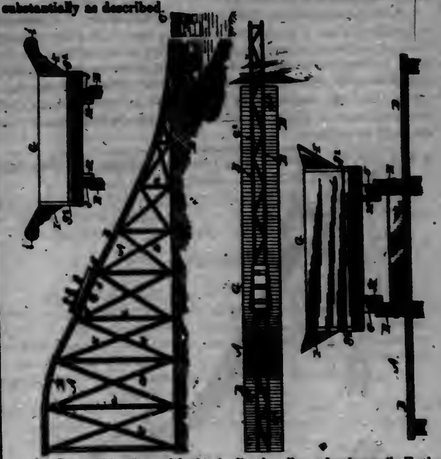
Claim.—1. In a pop safety-valve, the combination, with the valve-seat *d*, valve *c*, and spring-depressed spindle *b*, of the spiral wings 2 3 4, attached to the valve, whereby the force of the escaping steam is caused to rotate the valve, and the collars *f' f*, attached, respectively, to the valve and spindle and provided upon their adjacent sides with teeth or inclines, whereby the rotation of the valve is checked or limited, as set forth.

2. In a pop safety-valve, the combination, with the valve-seat *d* of the valve *c*, having openings *i*, and the plate *g*, adjustably secured to the valve and provided in its under side with grooves, as 6 7 8 9, and openings *j*, extending from said grooves through the top of the plate, as set forth.

411,255. COASTER. JOHN P. HEWBURN, Rock Island, Ill. Filed Oct. 26, 1888. Serial No. 288,978. (No model.)

Claim.—1. In an inclined pleasure-railway, in combination with an inclined way and track which is located or erected near a body of water, a boat-shaped car or toboggan adapted, when it reaches the foot of the incline, to enter and float forwardly on the water, substantially as described.

2. In combination with an inclined railway which is located with its foot near a body of water, a boat-shaped car or toboggan adapted to move downwardly over said inclined railway and entering the water at its foot to float thereon and be propelled forwardly thereon by the momentum derived from its descent over the inclined railway, substantially as described.



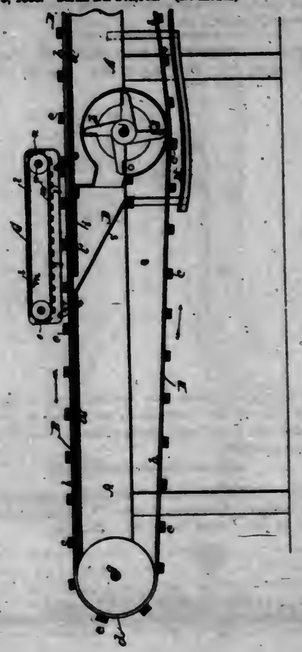
3. In combination with the inclined railway having rails E, the boat-shaped car or toboggan having runners and guide-plates extending below said runners on its bottom, substantially as described.

4. In combination with the boat-shaped car or toboggan, the spray-deflectors fixed to its sides, substantially as described.

5. In combination with the boat-shaped car or toboggan, the spray-deflectors and the convoluted plates fixed thereto, substantially as described.

6. In combination with an inclined railway which may be located near a body of water, a boat-shaped car or toboggan having runners J, guard-plates K, and spray-deflectors I, substantially as described.

411,256. GRAIN-SEPARATOR. JAMES PATER, St. Paul, Minn. Filed May 5, 1888. Serial No. 273,062. (No model.)



Claim.—1. In combination with a straw-carrier, a chaffer consisting, essentially, of a series of longitudinal wires, a grain-chute under the same, a fan adapted to force an air-blast upward through the grain-chute and between the wires, and a straw-separator consisting of an endless chain of slats located over the chaffer and the straw-carrier, substantially as set forth.

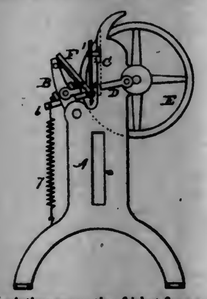
2. A straw-carrier, a chaffer consisting, essentially, of a series of longitudinal wires, a grain-chute under the same, and a fan adapted to force an air-blast upward through the grain-chute and between the wires, in combination with a vertically-adjustable straw-separator located over the chaffer and straw-carrier, said straw-separator consisting of a frame connected by pivoted links to the main frame, and an endless chain of slats mounted in said straw-separator frame, substantially as set forth.

411,257. SHOVEL. JOHN PFEIFER, Philadelphia, Pa. Filed Aug. 30, 1888. Serial No. 284,172. (No model.)



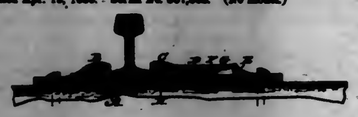
Claim.—As a new article of manufacture, a shovel consisting of a tubular handle, a pad, and a blade, all formed of a single piece of sheet or wrought metal, a filling in said handle, and a grip with neck entering said handle and secured thereto, said parts being combined substantially as described.

411,258. PRINTING-PRESS HAND-PROTECTOR. CHARLES REINEMEYER, Dayton, Ohio. Filed May 10, 1889. Serial No. 310,269. (No model.)

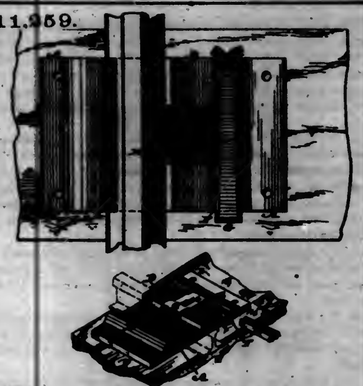


Claim.—In a printing-press, the frisket-fingers having pivoted thereto plates 2 2, with their respective arms 3 and 4 in combination with the platen and bed of said printing-press, substantially as and for the purpose specified.

411,259. RAILROAD-CHAIR. GEORGE W. RITTENHAUS, Philadelphia, Pa., assignor of two-thirds to Robert B. Rittenhaus, same place. Filed Apr. 19, 1889. Serial No. 307,822. (No model.)



411,259.

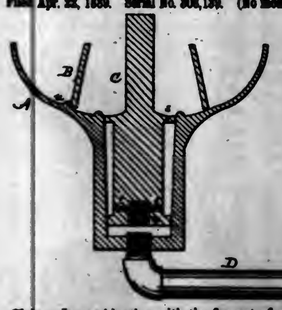


Claim.—1. A railroad-chair having a movable cheek-piece, and a key which engages with said piece, said key being connected with said cheek-piece and a shoulder on the base by a dovetailed joint, and said cheek-piece being also connected with its guide by a dovetailed joint, the parts being combined substantially as described.

2. A railroad-chair having a base with a stationary cheek-piece, a guiding-piece and a shoulder rising therefrom, a movable cheek-piece with tongue adapted to engage in a recess in the rail, and a key adapted to bear against the movable cheek-piece, said parts being combined substantially as described.

3. A railroad-chair consisting of a base part having a stationary cheek-piece, a guiding-piece and a shoulder, the said guiding-piece having a transverse groove with inclined walls, a movable cheek-piece working in said groove and having a lip on one end, a tapering key in the channel between the shoulder and guiding-piece, said parts being combined substantially as described.

411,260. HYDROCARBON-BURNER. TERRY ROUT, Dayton, Ohio. Filed Apr. 22, 1889. Serial No. 308,139. (No model.)

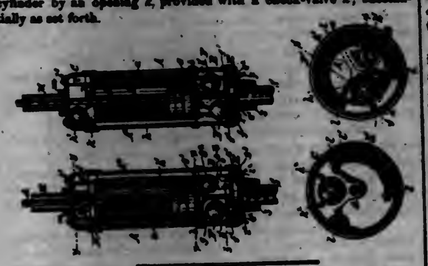


Claim.—In combination with the fire-pot of a stove, the burner comprising a bowl-shaped case having a depending part, to which is connected a supply-pipe, and in which is snugly fitted the plug having an annular recess turned therein, and having a series of orifices in the lower end to admit oil into said recessed part and a series of orifices in the top of the same to admit the escape of vapor from said recess to the space within said bowl, substantially as shown and described.

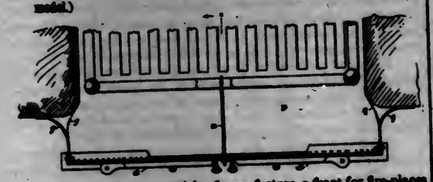
411,261. DOUBLE-ACTING FORCE-PUMP. JOHN SCHLAICHER, Lancaster, N. Y., assignor, by direct and mesne assignments, to Louisa Schlaikal, same place. Filed Jan. 11, 1888. Serial No. 260,168. (No model.)

Claim.—In a double-acting force-pump, the combination, with the inner cylinder A', provided with a piston, of a cylinder A², surrounding the cylinder A', passages *h h'*, formed between said cylinders, a divided valve-chamber B, applied to the lower ends of both cylinders and composed of a suction-valve chamber *b'*, connecting with the lower end of the inner cylinder and containing a suction-valve F, a suction-valve chamber *b²*, connecting with the passage *h* and containing a suction-valve F', and a check-valve chamber *b³*, interposed between the lower end of the inner cylinder and the passage *h'* and containing a check-valve *g³*, a head E, applied to the lower end of the chamber B and connecting with both chambers *b b'*, and a check-valve chamber

C, resting on the upper ends of both cylinders, communicating directly with the passage *h'* and communicating with the upper end of the cylinder by an opening *k*, provided with a check-valve *k'*, substantially as set forth.



411,262. FRONT FOR GRATES OR FIRE-PLACES. JAMES H. SETHUM, Cleveland, Ohio, assignor to the Seymour Stove Attachment Company, same place. Filed May 21, 1889. Serial No. 311,502. (No model.)



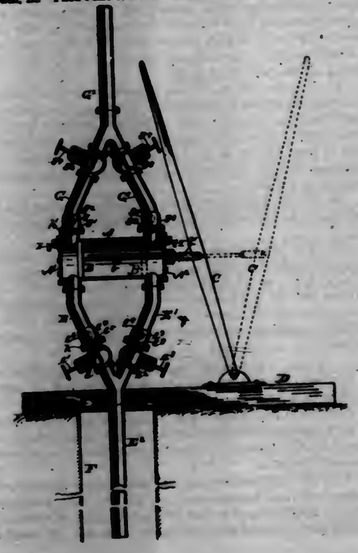
Claim.—1. As a new article of manufacture, a front for fire-places and grates, provided at each end with a wing of flexible material constructed to be bent into different positions in relation to the front, according to the different widths and forms of fire-places with which it is used, substantially as set forth.

2. A front for a fire-place or grate, made of rigid material, and flexible wings on said front to bear against the jamb, in combination with a grate and a catch to hold the front in position, substantially as set forth.

3. A front for a fire-place or grate, in combination with flexible wings attached to the ends of said front, substantially as set forth.

4. A front for fire-places or grates, consisting of a metal plate having wings at its ends and a detachable plate on said front along its top, substantially as set forth.

411,263. DOUBLE-ACTING PUMP. RALPH L. SHERMAN, Monmouth, Ill. Filed June 6, 1889. Serial No. 313,294. (No model.)

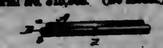


Claim.—1. In combination with the cylinder A, piston B, and its operating mechanism, the converging pipes G G', with valves *g g'* and stop-valves *g³ g⁴*, and the converging pipes E E', having valves *e²* and *e³* and stop-valves *e* and *e⁴*, substantially as and for the purpose specified.

2. In combination with the cylinder A and piston B, the converging pipes G G', united to form pipe G², and provided with valves *g g'*, and stop-valves *g³ g⁴*, and the converging pipes E E', having valves *e²* and *e³*, and stop-valves *e* and *e⁴*, and the faucets I, substantially as and for the purpose specified.

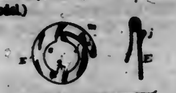
3. In combination with the cylinder A and piston B, the converging pipes G G', united to form pipe G², and provided with valves *g g'* and stop-valves *g³ g⁴*, and the converging pipes E E', having valves *e²* and *e³*, and stop-valves *e* and *e⁴*, and each of said pipes E E' G G' having a joint at the place where the ball-valve is located therein, substantially as and for the purpose specified.

411,264. PAD FOR INDELIBLE MARKING. JAMES R. SMITH, Waterbury, Conn., assignor to S. S. Stafford, New York, N. Y. Filed June 24, 1889. Serial No. 315,262. (No model.)



Claim.—A metal disk of substantially circular shape having a downwardly-projecting rim *a* around its edge, the said rim terminating in an outwardly-projecting flange *b*, forming a shoulder around the disk, combined with an elastic divided metal ring B, adapted to be set around the disk and yield to varying thicknesses of fabric which may be placed upon the disk, substantially as described.

411,265. NUT-LOCK. ARTHUR SPEAR, Chicago, Ill., assignor of one-half to Thomas Kelly, same place. Filed June 28, 1888. Serial No. 278,100. (No model.)



Claim.—The combination, with bolt C, longitudinally grooved at its screw-threaded end, of washer-plate E, provided with nose *g* to engage the groove of the bolt, and being spirally slit from its outer edge to the bolt-hole or eye *e* to provide two helical tongues *j* and *i*, bent in opposite directions, the one *j* to provide an elastic shoulder between the fish-plate and the under side of nut D, and the other one *i* to form a spring-pawl engaging either corner of nut D, all substantially as set forth.

411,266. PIPE-WRENCH. CHARLES C. STANLEY, Boston, assignor to Charles F. Brown, Reading, Mass. Filed Apr. 11, 1889. Serial No. 306,808. (No model.)



Claim.—In a pipe-wrench, the combination of the shank *a*, the jaw *b*, having an inclined serrated face formed on the end of said shank and projecting from one side thereof, the yoke or loop *c*, formed on the opposite side of the shank from the jaw *b*, the ratchet-teeth *m*, formed on the shank between the sides from which the jaw *b* and

yoke *e* project, the slide *f*, adapted to move on the shank, the swinging jaw *c*, having a serrated face which is inclined oppositely to the face of the jaw *b* and formed on an arm *d*, the inner end of which is pivoted at *g* to said slide, the spring *p* between the shank *a* and arm *d*, and the dogs *j*, pivoted to said slide and extended beyond the same, and having the teeth *m'*, adapted to engage the teeth *m* on the shank, all arranged and operating substantially as set forth.

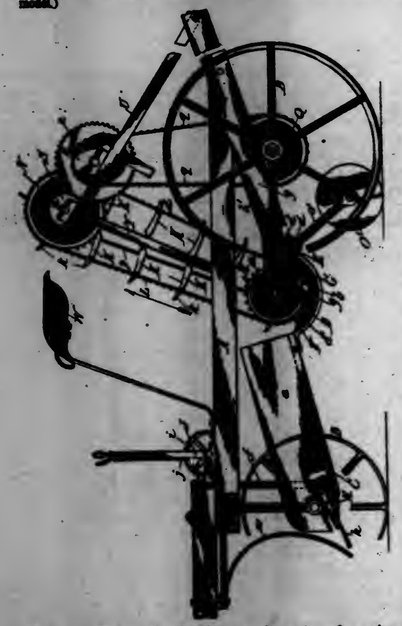
411,267. GONG-BELL. WILBUR F. SEARS, East Hampton, Conn., assignor to the Starr Bros. Bell Company, same place. Filed May 3, 1889. Serial No. 309,478. (No model.)



Claim.—1. In a gong-bell, the combination of the base A and the actuating-lever D, hung thereon and constructed with a toothed segment H, the hammer having its hub constructed with teeth *a b*, adapted to engage and escape from the teeth of the segment, the pivot upon which the hammer is hung constructed as a part of the arm, secured to the base distant from the pivot-point of the hammer, substantially as described.

2. In a gong-bell, the combination of the actuating-lever D, the hammer having its hub I constructed with teeth *a b*, the hammer hung upon a pivot on the base, and the ductile wire stop *f*, fixed to the base distant from the said hub, but extending into the path of the hub, substantially as and for the purpose described.

411,268. CORN-HARVESTER. SIDNEY M. STEVENS and GEORGE A. HARVEY, De Kalb, Ill. Filed Oct. 26, 1886. Serial No. 217,212. (No model.)



Claim.—1. The combination, in a corn-harvester, of a series of guiding-arms adapted to present the stalks to the picking mechanism, a series of combing picker-heads striking the ears from below and stripping the stalks by an upward raking motion, and a series of stalk-detainers located in the channels between the guiding-arms and so that the teeth of the picker-heads pass astride thereof, substantially as specified.

2. The combination, in a corn-harvester, of the traveling toothed picker-head striking the ears from below and stripping the stalks by an upward raking motion, with a stationary knife or detaining device for engaging the stalk below the ear, and located, essentially as shown, so the teeth of the heads pass astride thereof, substantially as specified.

3. The combination, in a corn-harvester, of a series of picker-heads striking the ears from below and stripping the stalks by an upward raking motion, and a series of stationary knives or stalk-detainers, located, essentially as shown, so the teeth of the heads pass astride and below the level thereof, substantially as specified.

4. The traveling picker-heads adapted to engage the ears from below and to strip the stalks by an upward raking motion, in combination with stationary knives or stalk-detainers inclined backwardly and downwardly, substantially as specified.

5. In a corn-harvester, the combination, with the picking mechanism, of a series of stalk-guiding arms C, the points whereof are provided with inclined flat-iron-like caps, the flanges of such caps extending to a plane above that of the arms C, whereby ears entering the spaces between the caps are guided to the top of the arms and above the channels *c* between them, substantially as specified.

6. In a corn-harvester, the elevator-chains and their carrying-wheels, in combination with picker-heads borne by said chains, said heads projecting inward from the plane of the chains, so that their interior edges meet as the chains pass around the lower elevator-wheels, substantially as and for the purpose set forth.

7. In a corn-harvester, a series of stalk-guiding arms, in combination with traveling picker-heads the teeth whereof are located at either side of the channels between said arms, the arms controlling the corn until it has entered within the line of motion of the heads, and the heads passing below the level of the arms, substantially as set forth.

8. In a corn-harvester, the cleaning-irons F, the knives, and the strap-irons extending from the latter to the former, in combination with the elevator and its picker-heads, substantially as specified.

9. The combination of the arms C, curved connections D, iron bolts *d*, side castings E, and shaft F, substantially as specified.

10. The combination of the arms C, curved connections D, iron bolts *d*, side castings E, shaft F, and journal-castings G, substantially as specified.

11. In a corn-harvester, an elevator carrying a series of moving picker-heads and adjustable to and from the ground, in combination with guide-arms C and their curved connections, also adjustable, and the knives in fixed position relative to the elevator-path, substantially as set forth.

12. In a corn-harvester, an ear-picking elevator consisting of side chains carrying picker-heads extending from chain to chain and passing around lower wheels supported upon stub-axles, and having driving-wheels at the top, said elevator being placed transversely of the harvester, so as to receive the growth directly in its front, in combination with actuating mechanism located at the side of the machine and gathering-arms conducting the corn to the front of the elevator, whereby contact between the growth and rotating parts of the machine is avoided, substantially as specified.

13. In a corn-harvester having supporting-wheels B B, a series of moving picker-heads striking the ears from below and stripping the stalks by an upward raking motion and receiving motion from the supporting-wheels, and a series of downwardly-acting stalk-detainers, the combination, with such pickers and stalk-detainers, of the roller O, loosely jointed to the harvester and located in the rear of the detainers, substantially as set forth.

14. In a corn-harvester having supporting-wheels B B and a series of moving picker-heads striking the ears from below and stripping the stalks by an upward motion, said heads receiving motion from said supporting-wheels, the combination, with such picker-heads, of a roller O, loosely joined to the harvester, so it may ride over the unevenesses of the surface and engage the stalks near the ground, substantially as specified.

15. The combination, with the picker-heads having the slotted teeth, of the curved pieces D, having the ribs *d'*, substantially as specified.

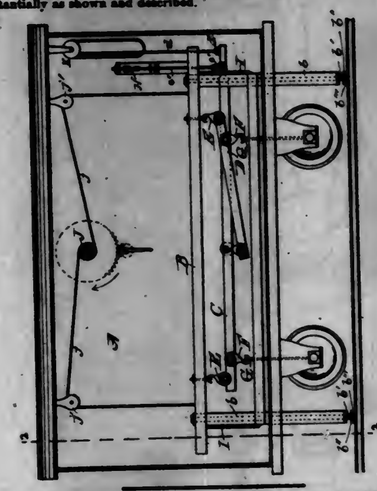
16. In a corn-harvester, an ear-picking elevator consisting of picker-heads and the chains to which such heads are immovably attached at each end, the heads having teeth *h* and channels *h'* between the same, and the attachment thereof to the chains being located in a plane about midway between the inner and outer ends of said channels and as nearly as may be in the line of the strain, substantially as specified.

411,269. WEIGHING-CAR FOR TESTING RAILWAY-TRACK SCALES. THOMAS M. TAYLOR, Atlanta, Ga. Filed Apr. 22, 1889. Serial No. 308,126. (No model.)

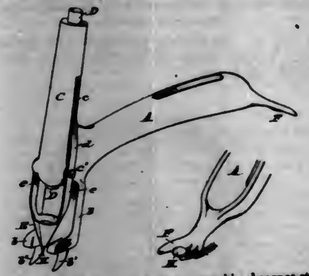
Claim.—1. As an improvement in cars for testing railway-scales, the car A, provided with hoisting devices such as described, and the frame B, having attached to it the weighing device, substantially as shown and described.

2. As an improvement in cars for testing railway-scales, the frame B, supports for said frame, consisting of the uprights *b*, provided with screws *b'*, fitting in steps *b''*, the removable rods I, for bracing said frame B, and the uprights *b*, substantially as shown and described.

3. As an improvement in cars for testing railway-scales, the frame B, levers C and D, suspended on said frame and attached to the axles of the car, as specified, the said lever C having on its outer end the sleeve *c*, carrying pivots for the loop *d'*, the loop *d'*, and the rod *d''*, connecting with the beam H, all combined, arranged, and operating substantially as shown and described.



411,270. COMBINED CARPET-STRETCHER AND TACK-DRIVER. SAMUEL L. TROUP, Philadelphia, Pa. Filed May 6, 1889. Serial No. 309,749. (No model.)

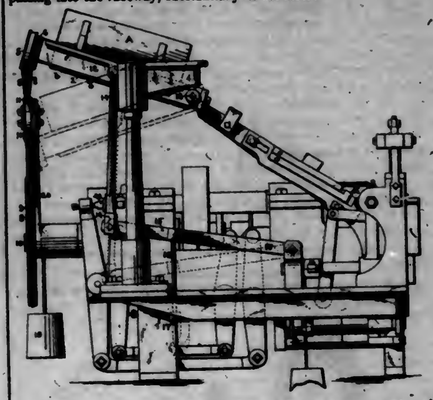


Claim.—As an article of manufacture, a combined carpet-stretcher and tack-driver, consisting, essentially, of a shank or body terminating in stretching-prongs, a lever or handle angularly projecting rearward from said body, a plunger-casing extending in advance of and above said shank or body, whereby a recess is constituted in the front face of the device, a plunger within said casing, a spring for maintaining the plunger elevated within the casing, conically-formed tack-holding jaws, and spring-arms the upper ends of which are attached to the casing and the lower ends to said jaws, whereby the latter are permanently held in proximity to the stretching-prongs, with the result that they are, by virtue of the above-mentioned recess, accessible from the exterior of the device, so that a tack may be placed directly therein, substantially as set forth.

411,271. MACHINE FOR DRESSING BOLTS OR BOLT-BLANKS. WILLIAM H. WARD, Port Chester, N. Y. Filed June 27, 1888. Serial No. 315,716. (No model.)

Claim.—1. The combination, with the raceway for conveying a series of headed blanks, of a hopper located at the top of said raceway for holding the blanks in mass and mechanism, substantially as described, located at the bottom of the hopper for engaging the lowermost blanks of the mass and causing them to arrange themselves in alignment with the raceway, and sustaining such arranged blanks by their heads preparatory to their passing into the raceway, substantially as set forth.

2. The combination, with the raceway for conveying a series of headed blanks, of a hopper located at the top of said raceway for holding the blanks in mass and a pair of rollers located at the bottom of the hopper for engaging the lowermost blanks of the mass and causing them to arrange themselves in alignment with the raceway, and sustaining such arranged blanks by their heads preparatory to their passing into the raceway, substantially as set forth.



3. The combination, with the raceway for conveying a series of headed blanks, of a hopper located at the top of the raceway for holding the blanks in mass and a pair of rollers or agitators at the bottom of the hopper, which are furnished with grooves or ribs for engaging the lowermost blanks of the mass and causing them to arrange themselves in alignment with the raceway, and sustaining such arranged blanks by their heads preparatory to their passing into the raceway, substantially as set forth.

4. The combination, with the raceway, of a hopper for holding the headed blanks in mass and a pair of rollers located at the bottom of the hopper and having grooves or ribs spirally arranged thereon, the said rollers being separated by a space sufficient to allow the shanks of the blanks to pass between them, substantially as and for the purposes specified.

5. The combination, with the raceway, of a hopper for holding the headed blanks in mass and a pair of rollers located at the bottom of the hopper and having grooves or ribs spirally arranged thereon, which grooves or ribs terminate short of the delivery ends of said rollers, so as to leave a smooth surface at said ends, the said rollers being separated by a space sufficient to allow the shanks of the blanks to pass between them, substantially as and for the purposes specified.

6. The combination, with the raceway for conveying a series of headed blanks, of a hopper located at the top of said raceway for holding the blanks in mass, mechanism, substantially as described, located at the bottom of the hopper for engaging the lowermost blanks of the mass and causing them to arrange themselves in alignment with the raceway and sustaining them by their heads preparatory to their passing into the raceway, and means for vibrating said hopper and blank-sustaining mechanism in a vertical plane, substantially as and for the purposes specified.

7. The combination, with the raceway, of a hopper for holding the blanks in mass, a frame to which the hopper is secured, a pair of rollers or agitators located at the bottom of the hopper and mounted to revolve in said frame and geared to each other, so as to rotate at different speeds, mechanism for vibrating the hopper and frame in a vertical plane, a belt for driving said rollers or agitators, and a take-up for the belt to keep it taut during the vibrating movements of the hopper, substantially as set forth.

8. A pair of gripping-jaws for holding the blanks to be operated upon, both of which jaws are pivoted, so as to be movable toward and from each other, combined with mechanism, substantially as described, for opening both jaws at the same time in directions opposite to each other, means for feeding blanks one by one to said jaws, and a tool for operating upon the blanks, substantially as set forth.

9. A pair of gripping-jaws for holding the blanks to be operated upon, both of which jaws are pivoted, so as to be movable toward and from each other, combined with mechanism, substantially as described, for opening and closing both jaws at the same time, means for feeding blanks one by one to said jaws, and a tool for operating upon the blanks, substantially as set forth.

10. The combination, with a pair of gripping-jaws for holding the blanks to be operated upon, both of which jaws are pivoted, so as to be movable toward and from each other, of mechanism, substantially

as described, for opening and closing both of said jaws, a safety-pin securing parts of said mechanism to each other, means for feeding blanks one by one to said jaws, and a tool for operating upon the blanks, substantially as set forth.

11. The combination, with a pair of gripping-jaws for holding the blanks to be operated upon, of a tool block and holder arranged, as described, to be moved toward and away from said jaws and an adjustable gage located on the forward end of the tool-holder to engage the top surface of the head of the blank in said jaws and push the blank toward the jaws, and thereby regulate the position of said head relative to the jaws, substantially as set forth.

12. The combination, with the tool-block holder, of the tool-block pivoted at a point between its ends to the holder and the sliding rod arranged, as described, to operate upon the tail end of the tool-block to bring the tool up to its work, whereby greater steadiness of the tool-holder and tool is secured, substantially as set forth.

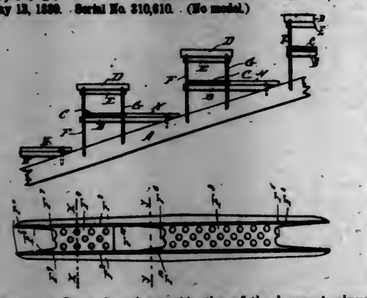
13. The combination, with a pair of jaws for gripping the blanks and holding them to be operated upon, both of which jaws are movable to and from each other, of a pair of stationary stripping-plates, one for each jaw, for clearing a blank from either jaw in case the blank sticks therein when the jaws are opened, substantially as set forth.

411,272. FASTENING ARTIFICIAL TEETH. GEORGE M. WHEELER, Philadelphia, Pa., assignor to Henry D. Justi, same place. Filed Apr. 29, 1889. Serial No. 308,970. (No model.)



Claim.—A fastening for a tooth, consisting of a piece of wire or other suitable material having its ends adapted to engage in a slot or recess in the back of the tooth, and a base-plate having some of its material in said slot closing on and embedding the fastening therein and some of the material closing on and embedding the portion of the fastening outside of said slot, the parts named being combined substantially as described.

411,273. STAGING. GEORGE W. ENGLISH, Philadelphia, Pa. Filed May 13, 1889. Serial No. 310,610. (No model.)



Claim.—1. In staging, the combination of the beams A, clamps F and G, strips B, blocks E, rests D, and steps C, constructed and arranged as set forth.

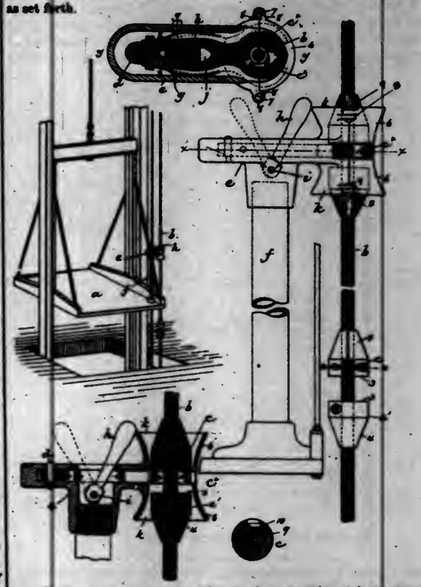
2. The clamps F and G, of unequal length, provided with converging ribs in the inner edges adapted to indent and hold upon timber, substantially as set forth.

3. The clamps F and G, provided with internal converging ridges and spurs or points F^8 and G^8, F^9 G^9, and F^7 G^7, F^{11} and G^{11}, constructed substantially as described, and for the purpose set forth.

411,274. ELEVATOR-LOCK. EDWIN R. ANGELL, Boston, Mass. Filed Jan. 14, 1889. Serial No. 296,948. (No model.)

Claim.—1. An elevator-lock composed of a holder or casing, a pair of spring-closed separable jaws pivoted thereto, and a movable key or lever interposed between said jaws, the latter being recessed at their inner sides to receive the key or lever when the same is moved to one position and provided with cheeks or surfaces 2 2, arranged to be displaced by the key or lever when it is moved to another position, as set forth.

2. The combination of the holder or casing provided with means for attachment to an elevator and provided with a rope guide or guides, the spring-closed jaws pivoted to said holder and having their free ends arranged to engage a collar on the shipping-rope, and the pivoted lever interposed between the jaws, the latter having cheeks or surfaces 2 2, arranged to be displaced by a movement of the lever, as set forth.



3. The jaw holder or casing having the rope-guides *k k*, composed of two sections, one of which is formed on the casing and the other detachably connected and adapted to be displaced, as set forth.

411,275. DEVICE FOR ADJUSTING AND SECURING CAMS. HARRY S. HAFTA, Kansas City, Mo. Filed Feb. 9, 1889. Serial No. 299,233. (No model.)



Claim.—1. The combination of an adjustable cam fitted on a shaft, a rotary disk, and a lever connected to said cam and adjustably secured to the disk, substantially as and for the purpose described.

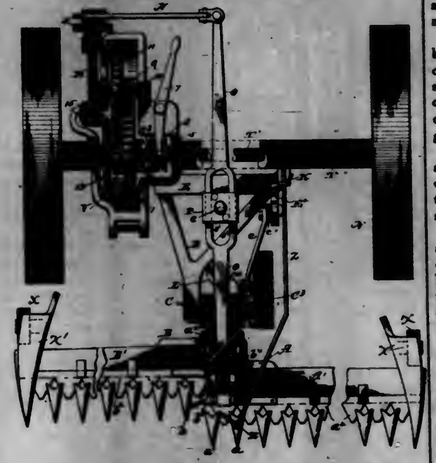
2. The combination of a shaft, an adjustable cam fitted loosely thereon, a rotary disk fixed on the shaft to rotate therewith, and a lever fulcrumed on the disk and pivotally connected to the cam, substantially as and for the purpose described.

3. The combination, with a shaft and an adjustable cam fitted thereon, of a rotary disk fixed to the shaft and having a segmental slot, and a lever arranged laterally of and fulcrumed on said disk and having a connecting-pin which passes through the slot of the disk, substantially as described.

4. The combination, with a shaft and a cam fitted loosely thereon, of a rotary disk fixed to the shaft to rotate therewith, a lever fulcrumed on the disk and connected to the cam, and mechanism for detachably holding said lever on the disk against movement thereon, substantially as and for the purpose described.

5. The combination, with a shaft and a cam fitted loosely thereon, of a rotary disk fixed on the shaft and having a series of apertures, and a lever fulcrumed on the disk and connected to the cam, said lever having a locking-pin adapted to be forced into one of the series of apertures in the disk to confine the lever against movement on its fulcrum, substantially as described.

411,276. MOWING-MACHINE. CHARLES M. BROWN, Chicago, Ill. Filed Feb. 20, 1889. Serial No. 300,565. (No model.)



Claim.—1. In a mowing-machine, the combination, with a push-bar, of a coupling-piece loosely connected thereto, two finger-bars pivoted to the coupling-piece in the same horizontal plane and slightly overlapping at their inner ends, knife-bars, and mechanism for reciprocating the latter, whereby one continuous swath can be cut by the two finger-bars and their knife-bars, substantially as set forth.

2. In a mowing-machine, the combination, with a push-bar, of a coupling-piece pivotally connected thereto, a pair of finger-bars pivoted to said coupling-piece in line with the center of the axle, the pivotal connection of both finger-bars being in the same horizontal plane, knife-bars, and mechanism for reciprocating the latter, substantially as set forth.

3. In a mowing-machine, the combination, with a pivoted push-bar and a coupling-piece pivotally connected therewith and adapted to move in a vertical plane, of finger-bars carried by the coupling-piece, knife-bars, a longitudinally-adjustable lever pivotally connected to the knife-bars, and mechanism for vibrating the lever.

4. In a mowing-machine, the combination, with a pair of finger-bars pivoted on the same axis and a device for locking said bars in a depressed condition, of knife-bars, a pivoted lever connected with said bars, and mechanism for vibrating the lever, substantially as set forth.

5. In a mowing-machine, the combination, with a pair of finger-bars, of knife-bars, a longitudinally-adjustable lever pivotally connected with said knife-bars, mechanism for vibrating the lever, and means for raising and tilting the finger-bars, substantially as set forth.

6. In a mowing-machine, the combination, with a main frame, a push-bar pivoted thereto, and a lever for raising and lowering the push-bar, a coupling-piece pivotally supported on the forward end of the push-bar, a supporting-wheel adjustably connected with said coupling-piece, and a lever connected with the coupling-piece for tilting the latter, substantially as set forth.

7. In a mowing-machine, the combination, with a main frame and a push-bar pivoted thereto, of a coupling-piece pivotally supported on the push-bar, a lever also pivoted on the push-bar within a slot on the coupling-piece, said lever having one end beneath the coupling-piece and the other end projecting backward, a pivoted hand-lever, and a flexible connection uniting the hand-lever with the first-mentioned lever, substantially as set forth.

8. In a mowing-machine, the combination, with a main frame, a push-bar pivoted thereto, and a coupling-piece pivotally supported on the push-bar, said coupling-piece having a projection thereon, of a pair of finger-bars pivoted on this projection, and a catch pivotally supported in the projection for locking the finger-bars, substantially as set forth.

9. In a mowing-machine, the combination, with a main frame, a push-bar pivoted thereto, and a coupling-piece pivotally supported on the push-bar, said coupling-piece having a projection thereon, of finger-bars supported on said projection, knife-bar, a vibrating lever for operating the latter, and a pronged catch pivoted in the projection adapted to lock the finger-bars when down and to straddle the vibrating lever when raised, substantially as set forth.

10. In a mowing-machine, the combination, with a main frame and a push-bar pivoted thereto, of a coupling-piece having a projection thereon, a pair of finger-bars pivoted on said projection, one in advance of the other in the same horizontal plane, knife-bars, and mechanism for operating said knife-bars, substantially as set forth.

11. In a mowing-machine, the combination, with a pair of shoes having projecting fingers thereon, one of said shoes located behind the other and having a projection back of one of the fingers on the front shoe, finger-bars secured to the shoes, track-clearers on the outer ends of the finger-bars, and rollers adjustably mounted upon said track-clearers, of knife-bars and gearing for operating said knife-bars together, substantially as set forth.

12. In a mowing-machine, the combination, with the main frame, a push-bar pivoted thereto, and finger-bars connected with the latter, of knife-bars and a vibrating lever having a swivel-connection with the knife-bars and a sliding pivotal connection with the push-bar, substantially as set forth.

13. In a mowing-machine, the combination, with the main frame, a push-bar pivoted thereto, and finger-bars connected with the latter, of knife-bars, a vibrating lever having a swivel-connection with the knife-bars and a sliding pivotal connection with the push-bar, a pitman connected with the opposite end of the lever, a driving-shaft for operating the pitman, and gearing for driving the shaft, substantially as set forth.

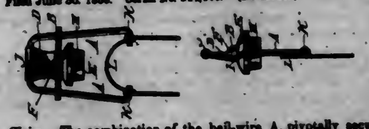
14. In a mowing-machine, the combination, with a pivoted push-bar and a coupling-piece pivotally connected therewith and adapted to move in a vertical plane, of finger-bars carried by said coupling-piece, knife-bars, a lever connected at one end with the knife-bars and having a sliding pivotal connection between its ends, with the push-bar, gearing for transmitting motion from the axle to the lever, and a clutch for throwing the machine into and out of gear, substantially as set forth.

15. In a mowing-machine, the combination, with a pair of finger-bars and a pair of knife-bars, of a lever for operating both knife-bars, said lever having ball-joints projecting from its end, one for each knife-bar, and sectional boxes on said ball-joints to connect the knife-bars to said lever, one of said boxes having flanges and set-screws for securing it to the knife-bars, substantially as set forth.

16. In a mowing-machine, the combination, with a pole, frame, and push-bar pivoted to the latter, of finger-bars connected with the push-bar, a rod extending loosely from one of the finger-bars through the pole, and guard-arms loosely mounted on the rod and having connection with the push-bar, substantially as set forth.

17. In a mowing-machine, the combination, with the finger-bars, knife-bars, driving mechanism, and a lever connected at one end to the knife-bars, of a pitman connecting said lever with the driving mechanism and having a wedge-shaped slot at one end carrying a journal-box for the wrist-pin of the driving mechanism, and means for yieldingly forcing the sections of the box into the smaller end of the slot, substantially as set forth.

411,277. BOTTLE-STOPPER. THOMAS J. CAIN, Cleveland, Ohio. Filed June 30, 1888. Serial No. 314,176. (No model.)



Claim.—The combination of the bail-wire A, pivotally secured to the neck of the bottle, the pressure-link D, pivotally secured to the bail-wire, the stop-rod B, secured to the pressure-link and extended to engage the arms of the bail-wire, the latter being offset with respect to the stop-rod, and the stopper for closing the mouth of the bottle, secured to the pressure-link, substantially as and for the purpose set forth.

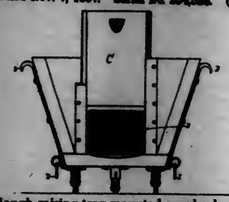
411,278. RAIL-BLANK PLATE. NELSON CRANE, Haverhill, Mass. Filed Jan. 11, 1889. Serial No. 296,054. (No model.)



Claim.—1. A nail-blank plate having an undulating surface on each side to form the body of the nail and upset on each of its edges to form the heads and points of the nails, substantially as set forth.

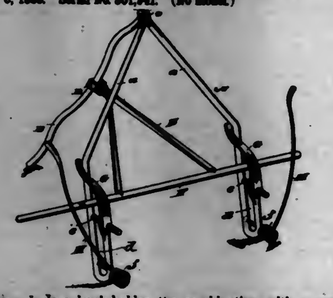
2. A nail-blank plate having an upset edge on each side to form the head and point of a round nail, the space between said edges being of undulating form, so that when each section is separated therefrom it will form a complete round nail, substantially as set forth.

411,279. DOUGH-RAISING TRAY. ISABELLE E. DANFORTH, Cleveland, Ohio. Filed Nov. 7, 1887. Serial No. 254,669. (No model.)



Claim.—A dough-raising tray mounted on wheels, having a doorway or opening of large size, suitable for discharging the sponge from the tray, a slide or gate for closing such opening, suitable apparatus, preferably hooks and rings, as shown, for attaching hoisting mechanism, the parts being arranged substantially as set forth.

411,280. MUSIC-HOLDER. OREN S. DOUSELL, Franklin, Me. Filed Mar. 5, 1889. Serial No. 301,941. (No model.)



Claim.—1. In a book-holder, the combination, with a supporting-frame, of laterally hinged or pivoted yielding arms adapted to engage the covers of a book, and hinged or pivoted yielding arms adapted to engage the leaves of a book, substantially as specified.

2. In a book-holder, the combination, with a supporting-frame, of the yielding cover-holders secured thereto and movable laterally thereon, the bearings for the lower edges of the cover serving the additional function of pivot-bolts for the cover-holders, and the pivoted spring-arms adapted to press upon the leaves and hold the same against the cover, substantially as specified.

3. The combination, in a book-holder, of a supporting-frame, the curved brace-bar pivoted thereto, and a pivoted or hinged arm carrying at its outer end a hinged slide-loop, which receives the said curved bar and connects the same with the frame, substantially as specified.

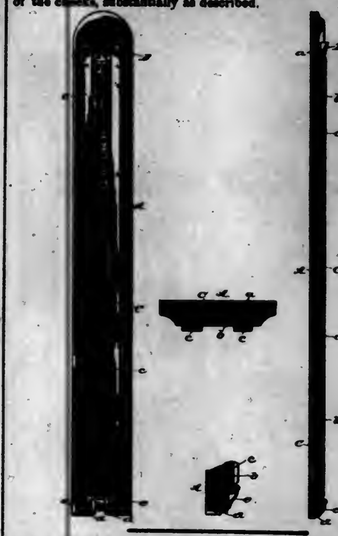
4. The combination, with a supporting-frame, of the hinged brace-bar, the arm carrying a slide-loop and receiving the said brace-bar and having its opposite end connected with the cross-bar of the main frame, and the cross-bar having hinged extensions, substantially as specified.

5. The combination, with the main frame having its branches bent into looped legs, of the bearing *a* at the upper end of the loops, the spring-arms G, and the spring-wire leaf-holders H, also connected with the legs and adapted to have a play thereon, substantially as specified.

411,281. INDICATOR FOR BARBERS' SHOPS. BEVERLEY R. DUDLEY and ARCHIBALD R. CURRY, Richmond, Va. Filed June 12, 1889. Serial No. 314,002. (No model.)

Claim.—1. An indicator for barbers' shops, consisting of a straight piece of material having a longitudinal channel with a glass front plate and retaining side strips, grooves, or seats for the same, in combination with a series of numbered checks, a hopper-shaped mouth-plate at the top, and retaining devices for the checks at the bottom, substantially as shown and described.

2. In an indicator, the combination, with the channeled case and transparent front plate, of a series of numbered checks, stops at the lower end of the channel for sustaining the column of checks, and a spring or springs for permitting the lateral deflection and withdrawal of the checks, substantially as described.



411,282. CORN-PLANTER. GEORGE H. EVANS, Jr., Independence, Kans. Filed May 21, 1889. Serial No. 311,587. (No model.)

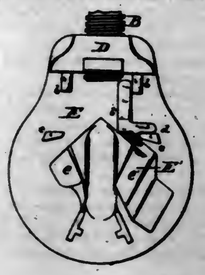


Claim.—1. The combination of the frame and hoppers, the seed-slide provided with seed-apertures and adapted to work under said hoppers, a slotted plate O, secured upon the seed-slide, a sliding flanged block N, secured to the seed-slide by means of the said plate O, this block N being shorter than the slot in which it works, a rod connected to this block N, and means for operating this rod, substantially as described.

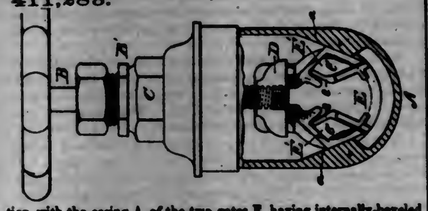
2. The combination of a frame and seed-hoppers, a seed-slide, a hopper F, yoke G, working under this hopper and secured to seed-slide and apertured, as described, the projections *f* upon this yoke, a pivoted plate *e*, the upper end of which works between the projections *f*, and a tube H, inclosing the said pivoted plate, as and for the purposes described.

411,283. VALVE. JAMES GALVIN, Detroit, Mich. Filed Mar. 6, 1889. Serial No. 302,106. (No model.)

Claim.—1. In a valve of the character described, the combina-



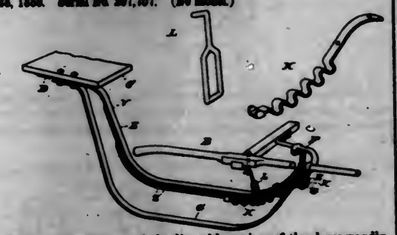
411,283.



tion, with the casing A, of the two gates E, having internally-beveled surfaces provided with inclined lugs *c c*, lugs *c c* and *b b*, arranged as specified, and the wedges F F, having inclined surfaces *d' d'*, lugs *b'* and *d*, the inclined planes *a a* on the case A, the threaded nut D, engaging with said gates, and the operating-screw B, all as specified.

2. The combination, with the valve-casing constructed with inclined bearings *a a*, and provided with a cap, a screw-stem, and annular valve-seats, of two vertically and laterally movable gates E E, having inclined lugs *c c*, horizontal lugs *c c* above the latter, and lugs *b b* in a plane above the lugs *c c*, the wedges F F, having inclined surfaces, the supporting-lip *d'*, and lug *b*, and the nut D, engaging with the upper part of the said gates, all as specified.

411,284. ROAD-CART. JOSHUA G. GAY, Ottawa, Ill. Filed Jan. 23, 1889. Serial No. 297,767. (No model.)



Claim.—1. The suspended adjustable spring of the downwardly-curved form described, having the rear horizontal portions serving as a seat bearing or support, and the foot-rest or bottom connected to said spring, the forward ends of said springs being curved upward and rearward for connection to the shackle-braces, substantially as specified.

2. The suspended adjustable spring of the downwardly-curved form described, having the rear horizontal extension serving as the seat-bearing, and the dropped leaf connected to said spring and bearing the foot-support, the forward ends of said springs being curved upward and rearward for connection to the shackle-braces, substantially as specified.

3. The adjustable suspended spring of downwardly-curved form, having a ratchet underlying its forward portion and attached to the same by means of an eyebolt, in combination with a swinging link embracing said spring and attached to a pivotal connection with the cross-bar or shaft, substantially as specified.

4. The combination of the bent seat-supporting spring composed of one or more leaves with a foot-rest or bottom attached to said spring, and having a ratchet attached to the forward end by an eye-bolt, and the pivoted link embracing said spring and engaging the ratchet, substantially as specified.

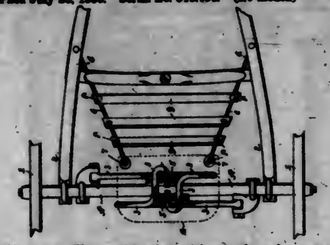
5. The combination, with the bent seat-supporting spring, its dropped leaf, and the foot-rest connected thereto, of the ratchet connected to an eyebolt, and an adjustable swinging link connected to the cross-bar or shafts and engaging said ratchet, substantially as specified.

411,285. POST-HOLE DIGGER. WILLIAM D. A. GRAY and JOHN D. KLEPPER, Limestone, Tenn. Filed June 14, 1889. Serial No. 314,288. (No model.)



Claim.—The herein-described improved post-hole digger, consisting of the receptacle of inverted-cup shape having a lower bevel edge, the hollow tube having upper and lower openings *b b'*, the follower moving in said receptacle, the spring located in said upper opening *b* and engaging said rod, and the foot-rest projecting from said rod through said lower opening, as set forth.

411,286. VEHICLE-SPRING. BOWIN JARMAN, Harper, Kans. Filed July 20, 1889. Serial No. 318,130. (No model.)



Claim.—1. The combination, with an axle and a seat or body, of a spring connecting the seat or body with the axle, said spring being bent into oval or elliptical form underneath the seat or body and having its ends bent in opposite direction and made to straddle the axle, one end being secured to the rear of the axle and the other to the front, substantially as set forth.

2. The combination, with an axle and a seat or body, of a spring consisting of two similar sections having enlarged bearings for the seat or body, the said sections, when together, bent into oval or elliptical form and their outer ends extended outward in opposite directions and connected with the opposite sides of the axle, substantially as set forth.

3. The combination, with an axle and seat or body, of a spring having a substantially S-shaped formation in its center, to which the seat or body is adjustably secured, and bent into oval or elliptical form at right angles to the S-shaped portion immediately below the latter, and having its ends extended outward in opposite directions and connected with the axle, substantially as set forth.

4. The combination, with an axle and seat or body, of a spring bent into oval or elliptical form beneath the seat or body and extending downwardly below the axle, front supports secured to the seat or body, and bottom slats secured to said plates, substantially as set forth.

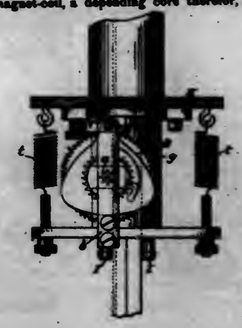
5. The combination, with an axle and a seat or body, of a spring to which the seat or body is secured, said spring being bent into oval or elliptical form beneath the seat or body, with its ends extending outwardly in opposite directions and connected to the axle, and front springs connected to the seat and to the shafts or pole, substantially as set forth.

6. The combination, with an axle and seat or body, of a main axle-spring and a pair of front springs having eyes formed therein by bends in the springs, and slats secured to said springs, substantially as set forth.

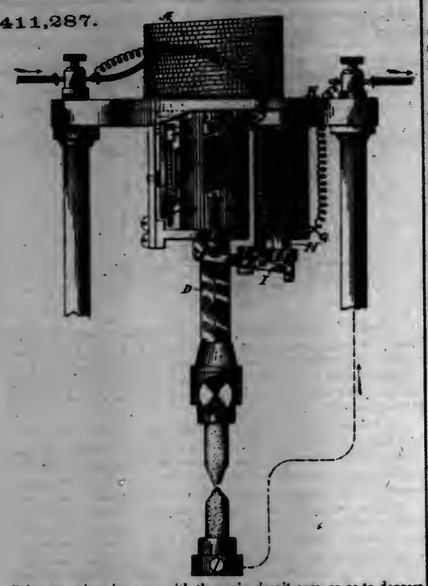
7. The combination, with an axle and seat, of a main axle-spring straddling the axle and connected thereto at its ends and a pair of front springs connecting the forward end of the seat, said front springs having eyes bent therein, and slats held to the springs by bolts extending through them into the eyes, substantially as set forth.

411,287. ELECTRIC-ARC LAMP. FRANK B. KEESHAN, New York, N. Y. Filed July 20, 1889. Serial No. 318,122. (No model.)

Claim.—The combination, substantially as described, of a main-circuit coil, a depending movable core therefor, a carbon-holder passing axially through such core, a carbon-lifting and feed-controlling mechanism sustained by the core and engaging with the carbon-carrier, a derived-circuit magnet-coil, a depending core therefor, and a pivoted

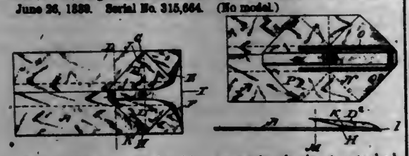


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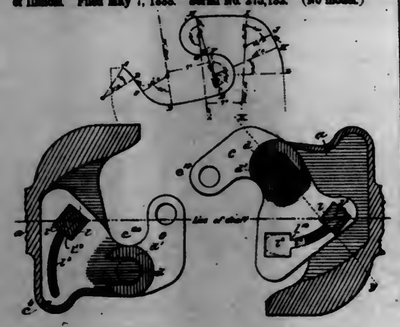
lick connecting the same with the main-circuit core, so as to depress the same for the purpose of releasing the feed mechanism when the derived-circuit magnet-core is raised by its coil.

411,288. MAKING PAPER BAGS. WILLIAM A. LORENZ, Hartford, Conn., assignor of one-half to Edward R. Claasson, same place. Filed June 26, 1888. Serial No. 315,664. (No model.)



Claim.—That process of making a paper bag having two tucked-in sides and a flat rectangular bottom, which consists in first folding one end of the upper ply of the tucked-paper tube backward on the lateral line B C, and thus producing the folds D, D', and D², and in then carrying those folds, together with the adjacent part of the upper ply of the tucked-paper tube, backward around the lateral line L M as a center, and thus producing the diamond form of Figs. 8 and 9, and then in folding the truncated ends of that diamond form toward each other and down upon the center of the thus completed rectangular bottom of the bag, all substantially as described.

411,289. CAR-COUPLING. MADISON J. LORRAINE, St. Louis, Mo., assignor, by mesne assignments, to the Keystone Car Coupler Company, of Illinois. Filed May 7, 1888. Serial No. 273,122. (No model.)



Claim.—1. A car-coupling member of the type described, the contour of whose outer end consists of the composed curves I H G and D E F, united by the tangent G F, substantially as and for the purposes described.

2. A car-coupling member of the type described, the nose c^{29} of which and the recess c^{30}, into which the nose of the opposing car-coupling member fits when coupled, are formed with the curves G H and E F, united by the tangent G F, slightly inclined toward the outer face H I, substantially as shown and described.

3. The combination, in a car-coupling, of a draw-head having bearings d d, the coupling-head having integrally-cast collars d' d' and curved slot f^3, and a shouldered locking-pin with a reduced stem engaging said slot and resting on inner arm of the coupling-head when open and dropping to lock it when closed.

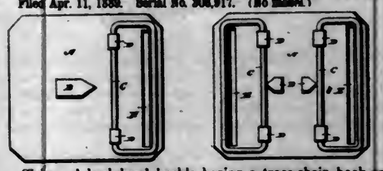
4. The combination, in a car-coupling, of a draw-head, a pivoted coupling-head having a curved slot f^3, and a shouldered locking-pin with a reduced stem engaging with said slot and resting on the inner arm of the coupling-head when open and dropping to lock it when closed, substantially as set forth.

411,290. RACEWAY FOR ROTARY SEWING-MACHINE SHUTTLES. DANIEL R. MARSH, Bridgeport, Conn. Filed July 26, 1888. Serial No. 281,270. (No model.)



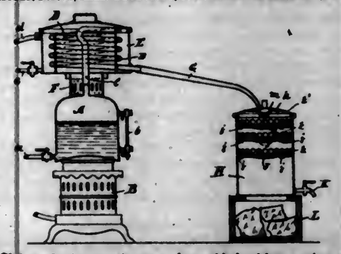
Claim.—A raceway for rotary shuttles, consisting of an independent and separable ring secured to the shuttle-race casing by dowel-connections, and a superimposed cap, the parts being combined as set forth.

411,291. BACK-BAND BUCKLE. WILLIAM A. MARSH, Foster, La. Filed Apr. 11, 1889. Serial No. 306,917. (No model.)



Claim.—A back-band buckle having a trace-chain hook on its outer side and a transverse slot, in combination with a loop locking-lever hinged to the said buckle at one side of the slot and adapted to turn over the slot without entering it, substantially as specified.

411,292. APPARATUS FOR PURIFYING WATER. FREDERIC H. MOORE, Boston, Mass. Filed Jan. 2, 1889. Serial No. 295,941. (No model.)



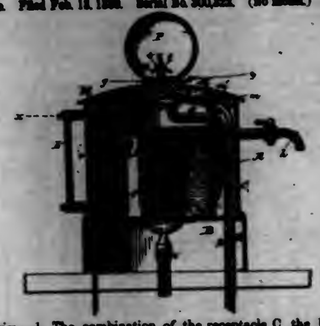
Claim.—1. An aerating-vessel provided with a series of dish-shaped perforated shelves at its upper end, and a series of holes through the wall of the vessel just above the level of each of the shelves for the admission of atmospheric air jointly with a water-distilling apparatus, and a pipe connecting the distilling apparatus and the upper end of the aerating-vessel, substantially as and for the purposes set forth.

2. In a water-distilling apparatus, a boiler, a worm or coil communicating therewith and inclosed within a condensing-vessel supplied with cold water jointly with an aerating-vessel provided with a series of perforated dish-shaped shelves and holes for the admission of atmospheric air, and a strainer on the under side of the cover, and a pipe

connecting the cover with the worm for conducting the condensed water thereto, substantially as shown and described.

3. In a water-distilling apparatus, a boiler, a worm or coil communicating therewith and inclosed within a condensing-vessel supplied with cold water jointly with an aerating-vessel having a series of dish-shaped perforated shelves at its upper end and a series of holes through the wall of the vessel just above the level of each of the shelves for the admission of atmospheric air, an ice-box, and a pipe connecting the coil with said aerating-vessel, substantially as and for the purposes set forth.

411,293. HOT-SODA APPARATUS. CARLOS C. HOSMAN, Olean, N.Y., assignor of one-half to James V. D. Coon and Melville C. Pollett, same place. Filed Feb. 13, 1889. Serial No. 300,222. (No model.)



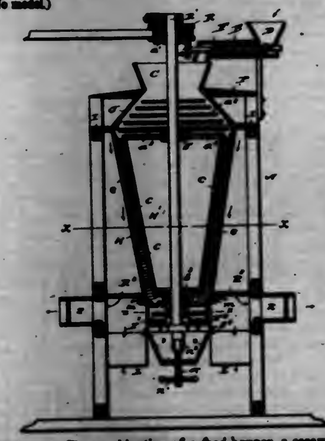
Claim.—1. The combination of the receptacle C, the boiler D within and the compartments I between them, and the tank E and coil G with the pipe H within the boiler, the pipe H leading out of the boiler and receptacle, and with the pipe F, leading into tank, as set forth.

2. The combination of the receptacle and its inclosed boiler, the cover, and the globe supported thereby and communicating with the steam-space of the boiler with the water-pipe leading into the globe and a waste-pipe terminating below a hole in the bottom of said globe, as set forth.

3. The combination of the receptacle C, the boiler D, the cover M, having the neck N, opening n, and hole n^2, and the globe P, communicating with the steam-space of the boiler, with the pipes R and S, the former passing through the opening n into the globe and the latter terminating below the hole n^2, as set forth.

4. The pipe R, having the jet-nozzle r, and the plate T, having the holes t, in combination with the globe and the cover, the latter having an opening below said holes, the boiler, and coil within it, as set forth.

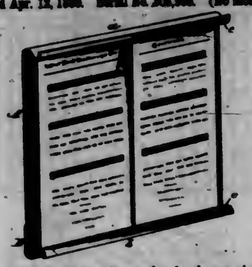
411,294. MACHINE FOR DELINTING COTTON-SEED. JOHN H. MCCORMICK, New Orleans, La. Filed Apr. 5, 1889. Serial No. 306,130. (No model.)



Claim.—1. The combination of a feed-hopper, a screw-feeder in a delivering-trough, a receiving-hopper, a spreading-cone having radial rotative arms inside of it, the perforated internally-serrated cone, and a rotative brush-cone, substantially as specified.

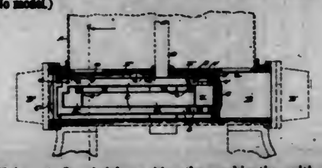
2. The combination, in a cotton-seed-delinting machine, of a feeding device, a receiving-cone, centrifugal distributing-arms arranged in a spreading-cone, a perforated and interiorly-serrated delinting-cone, an interior rotative brush-cone, a fan fixed to the shaft of the latter, a separating-screen surrounding the fan, and an adjustable stop for said shaft, all constructed and adapted to operate substantially in the manner and for the purposes described.

411,295. MUSIC-BOOK HOLDER. WILLIAM D. NEWMAN, Paxton, Ill. Filed Apr. 13, 1889. Serial No. 308,006. (No model.)



Claim.—A holder for music or other books, consisting of two sections A B, having backs for support of the backs of the book and adjustably connected together, and having curved flanges a b, respectively, said sections forming supports for the entire book when in use, substantially as and for the purpose set forth.

411,296. BRICK-MACHINE. JAMES W. PENFIELD and RAYMOND C. PENFIELD, Willoughby, Ohio. Filed Nov. 17, 1888. Serial No. 291,170. (No model.)



Claim.—1. In a brick-machine, the combination, with a horizontally-reciprocating plunger having end plate and top plate, the latter having vertical adjustment, of tongue-and-groove connection between such plates, whereby the adjustment of the top plate does not break the tongue-and-groove connection between the two plates, substantially as set forth.

2. The combination, with a pug-mill having a discharge-opening therein, of plate E and cut-off plate F, the latter being set in flush with the top surface of the former, plate E having undercut edges and plate F having correspondingly-beveled edges for mutual engagement, forming substantially a sliding dovetail, substantially as set forth.

411,297. COTTON-SCRAPER. JOSEPH L. PEYTE and JOHN Y. JAMES, Holly Grove, Ark. Filed June 22, 1889. Serial No. 315,192. (No model.)



Claim.—1. The combination, with the tongue, the bars B, and the handles pivoted thereon, of the scraper-arms pivotally connected with the tongue, and the arms connecting said scraper-arms with the handles, substantially as and for the purpose specified.

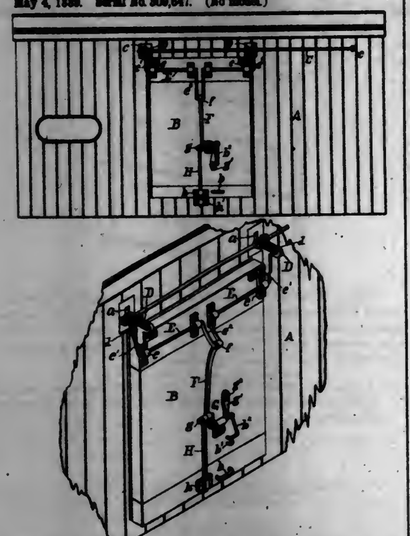
2. The combination, with the tongue, the shafts c thereon, the scraper-arms pivotally connected at one end to said shafts, and the pivoted handles, of the arms connecting the handles with the scraper-arms, substantially as shown and described.

3. The combination, with the tongue, the bars B, the plates H, the shafts c, journaled in said plates, the scraper-arms pivotally connected with said shafts, the clips K, and the handles pivoted on the bars B, of the arms M, connecting the handles with the arms carrying the scrapers, substantially as described.

4. The combination, with the tongue, the bars B, the handles

pivoted thereon, the plates H on the tongue, the shafts *o*, journaled in the extended ends of said plates, the clips K, the boxes L, and the bars I, carrying the scrapers and loosely sleeved on the shafts *o* at one end and attached to the clips and boxes between their ends, of the arms M, attached at one end between the boxes and arms I and at the other connected with the handles, substantially as and for the purpose specified.

411,298. CAR-DOOR. EDWARD L. PHIPPS, Milford, Mich., assignor of two-thirds to Solon H. Wilhelm and Alonzo D. Webb, same place. Filed May 4, 1889. Serial No. 309,647. (No model.)

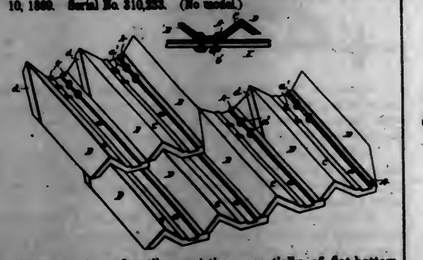


Claim.—1. The combination, with the car-frame and car-door, of a supporting-rod extending along the frame above the door, hangers attached to the upper edge of the door having elongated slots through which the rod is passed, whereby the upper edge of the door may be thrown toward or from the car-frame, and suitable mechanism for throwing the upper edge of the door either toward or from the car-frame, substantially as described.

2. The combination, with the car-frame having a supporting-rod located above the door and the car-door provided with hangers having elongated slots which embrace the supporting-rod, of the lever E, shaped substantially as shown and pivoted to the door, whereby when the portion e^4 of the lever E is thrown upward the door is thrown out from the frame, and vice versa, substantially as described.

3. The combination, with a car-frame and a car-door, of a supporting-rod C, slotted hangers D, lever E, connected with the rod, a rod F, extending from the lever, the rotating lever G, having a handle *g'*, and a crank *g*, connected to the rod extending from the lever, a rod H, connected to said crank, and a clip *k'*, substantially as described.

411,299. ROOFING-TILE. JOSEPH RAPP, Akron, Ohio. Filed May 10, 1889. Serial No. 310,233. (No model.)



Claim.—1. A roofing-tile consisting, essentially, of flat-bottom trough with sloping sides and inverted trough, the troughs having a side in common, the inverted trough being adapted to fit over the opposing side of the next adjacent tile, the diagonally-opposite corners of the tile being beveled, substantially as and for the purpose set forth.

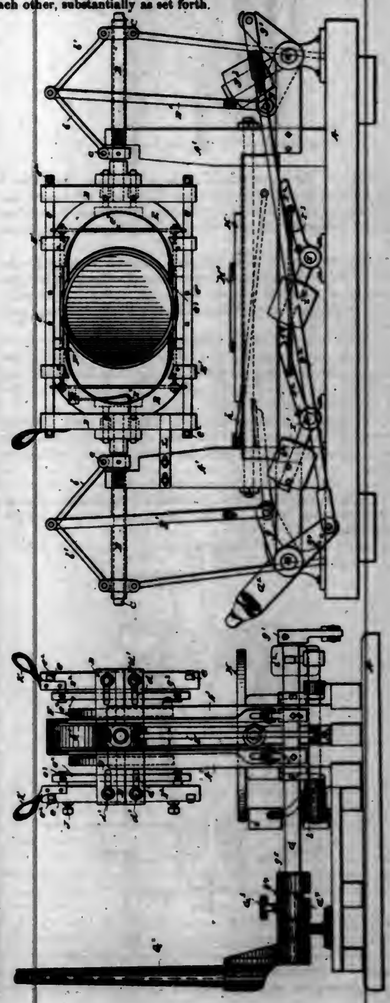
2. A roofing-tile consisting, essentially, of a flat-bottom trough and inverted-V-shaped trough having a side in common, substantially as indicated, the flat-bottom trough having recess *a* and holes through the bottom wall of such recess for the purpose of securing the tile, substantially as set forth.

3. The combination of a roofing-tile, shaped substantially as indicated, having recess *a* and holes *a'*, and securing-wires for fastening the tiles, substantially as and for the purpose set forth.

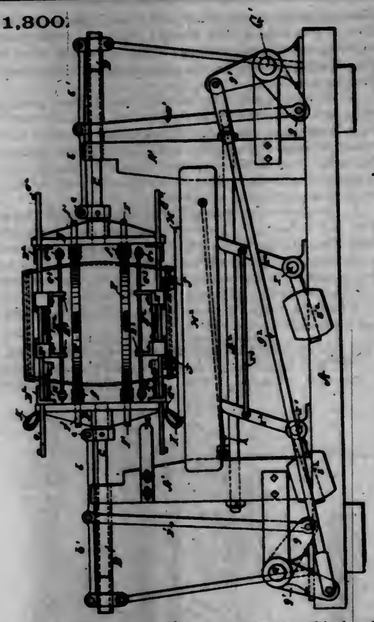
411,300. BARREL-MAKING MACHINE. LEMUEL M. RAMP, Cleveland, Ohio. Filed Apr. 26, 1889. Serial No. 308,648. (No model.)

Claim.—1. In a barrel-making machine, the combination, with clamping-frames adapted to revolve on their axes, of toggle-joints for operating the clamping-jaws of such frames, and a hand-lever for operating the toggles, the different members being operatively connected, substantially as and for the purpose set forth.

2. In a barrel-making machine, the combination, with reciprocating clamping-jaws, of a former consisting of opposing springs yieldingly connected with the jaws, and mechanism connected with said jaws for reciprocating them simultaneously toward and away from each other, substantially as set forth.



411,300.



3. In a barrel-making machine, the combination, with clamping-jaws, substantially as indicated, of a former consisting of opposing springs adapted to expand in shaping the barrel, such springs being yieldingly connected with the clamping mechanism, substantially as set forth.

4. In a barrel-making machine, the combination, with clamping-jaws and elastic former, substantially as indicated, of rigid frames loosely supported from the clamping mechanism, such frames having cross-bars adapted to engage such supports, whereby the frames in opening the clamp are brought in central position with the cross-bars inside the line of the clamping-jaws and former, substantially as set forth.

411,301. SYSTEM OF ELECTRIC GENERATION AND DISTRIBUTION FOR RAILWAY-CARS. ELIAS R. REES, Baltimore, Md., assignor to Rees & Henderson, same place. Filed Apr. 11, 1888. Serial No. 270,947. (No model.)

Claim.—1. The combination, with a dynamo-electric generator mounted upon a traveling vehicle and having its armature mechanically connected with an axle of said vehicle, of a double set of commutator-brushes for said dynamo, a system of levers controlling the movement of both sets of brushes and operated by the direction of travel of the vehicle, pivoted contacts controlled by said system of levers, a vertically-pivoted circuit-controlling weighted lever arranged to engage one of said contacts and controlled by gravity, and the field-magnet circuit of said dynamo, including said gravity-lever and its contact.

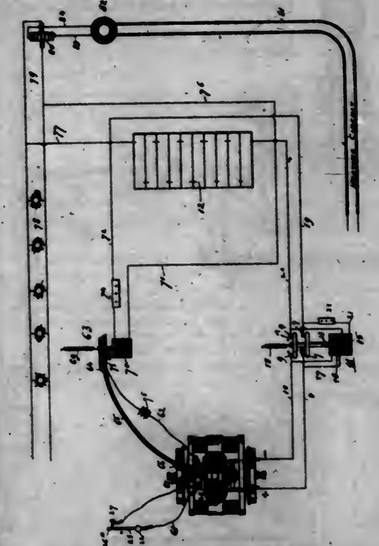
2. The combination, with a dynamo-electric generator having its armature mounted upon the axle of a traveling vehicle, of a speed-governor mounted upon and controlled by said axle, and the field-magnet circuit of said dynamo controlled by said speed-governor.

3. The combination, with a dynamo-electric generator having independent field-coils and operated by the momentum of the train, of a secondary battery in circuit with said dynamo, and an electro-magnetic device for cutting in or out the field-coils of said dynamo controlled by a shunt or branch circuit from the secondary battery.

4. The combination, with a dynamo-electric generator, of a secondary battery in circuit with said generator, and an electro-magnetic device controlling the field-magnet circuit of said generator and included in a shunt-circuit from the secondary battery.

5. The combination, with a dynamo-electric generator having independent field-coils, of an electro-magnetic device for connecting said field-coils in multiple arc, a secondary battery controlling said electro-magnetic device and supplied with current from the said dynamo, and translating devices fed by said secondary battery.

6. The combination, with a dynamo-electric generator, of a secondary battery in circuit with said generator, a potential switch placed intermediately of the circuit leading from the dynamo to the battery and comprising a solenoid having two coils of equal resistance, and a movable core carrying contacts severally controlled by both coils of the solenoid and by a retractile spring, and a branch from the main circuit for each coil of the solenoid, one of said branches being of higher resistance than the other.



411,302. WIRE MATTRESS BED-BOTTOM. JAMES B. RYAN, New York, N. Y. Filed Aug. 13, 1888. Serial No. 282,604. (No model.)



Claim.—In woven-wire bed-bottoms, the combination of the rectangular central metal plate J, the metal straps C, attached to the bed-frame at their outer ends and connected with the plate J by coil-springs, and the wire mattress lying on top of the plate and straps, as and for the purpose specified.

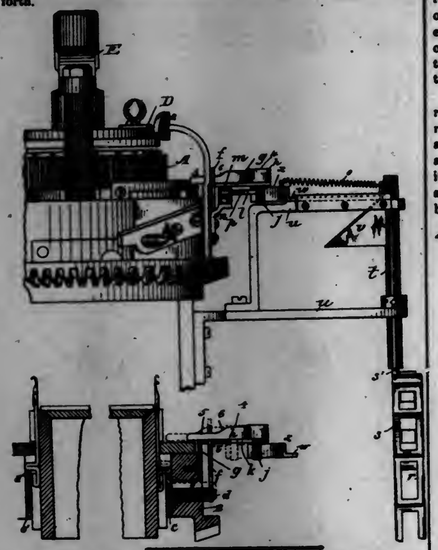
411,303. KNITTING-MACHINE. ALBERT R. SANDERS and OSCAR L. HERSEY, Laconia, N. H., assignors of one-half to Dennis O'Hara and John O'Hara, Jr., same place. Filed Aug. 20, 1888. Serial No. 282,813. (No model.)

Claim.—1. A needle-cylinder equipped with two sets or series of needles, one set having long latches and the other set having short latches, combined with a revolving cam-cylinder provided with a vertically-adjustable knitting-cam *c*, a vertical link attached to and extending upward from said cam, a cam-piece for moving said link vertically, and a yarn-feed, all as set forth.

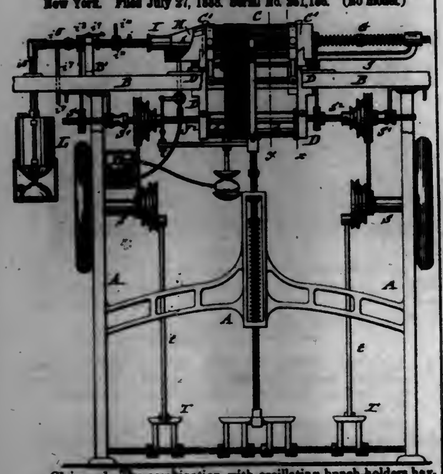
2. A needle-cylinder equipped with two sets or series of needles, one set having long latches and the other set having short latches, combined with a revolving cam-cylinder having two knitting-cams or sets of cams, one of said cams *c* having a vertical link attached to and extending upward therefrom, a cam-piece for moving said link vertically, and a yarn-feed, all as set forth.

3. A needle-cylinder and its needles, combined with a revolving cam-cylinder provided with a slot, a cam *c* in said cylinder, a pin ex-

tended through said slot and connected with said cam, a link connected with said pin and provided with a slot, a bracket connected with said cam-cylinder, and a slide provided with surfaces 4 5 in different planes and an inclined surface 6, said slide being supported on said bracket and extended through the slot in said link, whereby by moving the slide the link and cam may be raised or lowered, as set forth.



411,804. CIGAR-BUNCH-WRAPPING MACHINE. JOHN R. SCHMALZ, New York, N. Y., assignor to the Schmalz Cigar Machine Company, of New York. Filed July 27, 1888. Serial No. 281,186. (No model.)



Claim.—1. The combination, with oscillating bunch-holders having guide-rollers and laterally-adjustable tension-rollers, of two independent endless aprons passing over said rollers, driving-rollers for said aprons, and spring tension-rollers applied to the same, substantially as set forth.

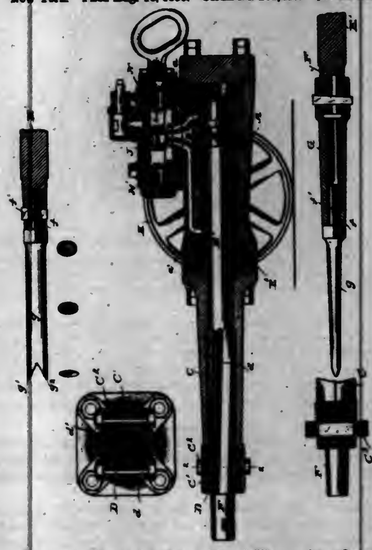
2. The combination, with oscillating bunch-holders having guide-rollers and adjustable tension-rollers, of two independent endless aprons passing over said rollers, driving-rollers for the said aprons, spring tension-rollers pressing on said aprons, and intermediate stretching-rollers between said aprons, substantially as set forth.

3. The combination, with oscillating bunch-holders having guide-rollers and endless aprons guided on the same, and suitable driving-rollers, of a tip-forming block having a cavity open at the outer end, and a longitudinally-reciprocating and spring-actuated rotary tip-finishing thimble extending into the cavity of the tip-forming block, substantially as set forth.

4. The combination, with oscillating bunch-holders having guide-rollers, endless aprons guided on the same, and suitable driving-rollers, of a rotary spring-actuated mandrel arranged at one end of said holders, a tip-forming block having a longitudinally-open cavity at the other end of the holders, and a rotary tip-finishing thimble located in the open end of the tip-forming block and in line with the same and the mandrel, substantially as set forth.

5. The combination, with oscillating bunch-holders having guide-rollers and endless aprons guided on the same, and suitable driving-rollers, of a rotary spring-actuated mandrel at one end of said holders, a tip-forming block at the other end of the holders, said block having a cavity open at the outer end, a rotary and spring-actuated tip-finishing thimble adapted to operate in said cavity, and means for locking said thimble in position so as to clear the cavity of the tip-forming block, substantially as set forth.

411,805. COAL-MINING MACHINE. HENRY C. SERGEANT, New York, N. Y., assignor to the Ingersoll-Sergeant Rock Drill Company, of New York. Filed Aug. 10, 1888. Serial No. 282,419. (No model.)



Claim.—1. The combination, with a drilling-engine, of carrying-wheels independently supported against the sides of the cylinder thereof, and separate longitudinal adjustable supports therefor for adjusting the positions of the carrying-wheels against the cylinder, substantially as described.

2. The combination, with a drilling-engine, of extensions formed on the sides of the cylinder thereof and having longitudinal slots or recesses therein, headed bolts separately secured in and longitudinally adjustable in said slots, independent trunnions secured upon the bolts, and carrying-wheels rotatably mounted upon the trunnions, substantially as described.

3. A drilling-engine having lateral extensions or enlargements upon the cylinder thereof, said extensions formed with longitudinal recesses A^3, said recesses provided with downward openings A^4, headed bolts I, longitudinally adjustable in the recesses, and wheel-supporting trunnions A, securely held in the desired position against the sides of the engine-cylinder by the bolts I, substantially as described.

4. A drilling-engine having lateral extensions or enlargements formed with longitudinal recesses A^3, said recesses provided with downward openings A^4, headed bolts I, longitudinally adjustable in the recesses, and wheel-supporting trunnions A, securely held in the desired position against the sides of the engine by the bolts I, and supporting projections A' on the inner face of the trunnion, to prevent the bolt dropping down when moved past the vertical slot, substantially as described.

5. In a drilling-engine, a tool-carrying piston-rod having a limited twisting axial movement during both its forward and backward movement, substantially as described.

6. A drilling-engine provided with a non-rotating tool-carrying piston-rod and means for imparting thereto a limited twisting movement during its forward and backward movement, the twist being in one direction on the outward stroke and in the reverse upon the return.

7. A drilling-engine provided with a forwardly-extending sleeve, a ribbed bushing adjustably secured in said sleeve and held stationary therein, and a piston-rod formed with grooves registering with the ribs of the bushing and guided therein, whereby a limited twisting movement is imparted to the piston during its forward and backward movement, the twist being in one direction on the outward stroke and in the reverse upon the return.

8. A drilling-engine the cylinder of which is provided with a forwardly-extending sleeve divided at its outer end and provided with an adjustable clamp for contracting said outer end, a piston-rod, and a bushing, as D, exterior to the piston-rod and arranged to be inserted in the divided extremity of the sleeve and to be firmly secured therein by the clamp, substantially as described.

9. The tapering oval pick *g*, made tapering toward its front end and formed with a transverse V-shaped notch at its outer extremity, substantially as described.

10. The tapering oval pick *g*, made tapering toward its front end and formed with round sharp edges at its cutting extremity, substantially as described.

411,806. NUT-LOCK. DAVID SCHEIER, Adamsburg, Pa. Filed Mar 21, 1889. Serial No. 304,112. (No model.)



Claim.—The combination, with a pair of nuts and a locking-slide placed between the nuts and held from lateral displacement thereby, of a locking-bolt passed beneath the said nuts and engaging with the locking-slide, substantially as and for the purpose described.

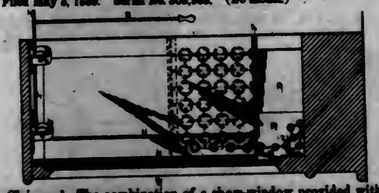
411,807. WIRE HOOK OR HANGER. ISAAC J. TURNER, Princeton, N. J. Filed Apr. 15, 1889. Serial No. 307,308. (No model.)



Claim.—1. The herein-described hanger, having a horizontal portion *a*, a return downwardly-extending brace portion *b*, a bearing portion formed with and extending from the lower end of the brace portion, an eye in the end of the bearing portion, and an independent separately removable lower hook which extends through said eye, substantially as set forth.

2. The herein-described hanger, formed in two parts, the upper part having a horizontal portion *a*, a return portion *b*, a vertical bearing portion *b'*, an eye on the end thereof, and a lower hook *c*, extending through said eye and having the shoulder c^2, for the purpose specified.

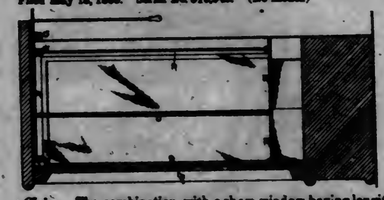
411,808. WINDOW-GUARD. REIL C. G. VON PEIN, New York, N. Y. Filed May 6, 1889. Serial No. 309,963. (No model.)



Claim.—1. The combination of a show-window provided with a support for the goods which are placed therein, a metallic plate which conforms to the shape of the window, the flexible metallic fabric secured to the under side of the plate, guiding-rods upon which the plate moves, elevating cords, wires, or chains, and guiding-pulleys over which the cords pass back into the store, substantially as shown.

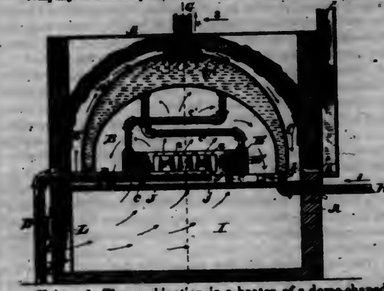
2. The combination of a show-window, the frame E, formed in its bottom, the support F, placed in the window, a flexible metallic fabric secured at its lower end inside of the chamber or receptacle, elevating-cords attached to the metallic fabric, guiding-pulleys over which the cord passes back into the store, and suitable guides upon which the fabric is raised, substantially as described.

411,809. WINDOW-GUARD. REIL C. G. VON PEIN, New York, N. Y. Filed May 13, 1889. Serial No. 310,549. (No model.)



Claim.—The combination, with a show-window having longitudinal guiding-rods and pulleys secured to the upper portion thereof, of a movable bottom or tray sliding on said rods and elevating cords or chains secured to the bottom or tray and passing over the pulleys, all combined to operate in the manner described.

411,810. HEATING APPARATUS. RICHARD R. WARE, Worcester, Mass., assignor to the Ware Automatic Heat Generator and Regulator Company. Filed May 10, 1889. Serial No. 310,502. (No model.)



Claim.—1. The combination, in a heater, of a dome-shaped combustion-chamber having a substantially continuous inner surface, a fluid-fuel supply-pipe, an inlet for the admission of air to the combustion-chamber, and an outlet for the waste products of combustion, said outlet being located below the plane of ignition of fuel, whereby the waste products of combustion are compelled to pass out below the plane of ignition of fuel, substantially as set forth.

2. The combination, in a heater, of a combustion-chamber, a boiler surrounding the combustion-chamber, a heating-chamber outside of the boiler, a fluid-fuel supply-pipe, an air-inlet, and an outlet for the waste products of combustion, said outlet being located below the plane of ignition of fuel, substantially as set forth.

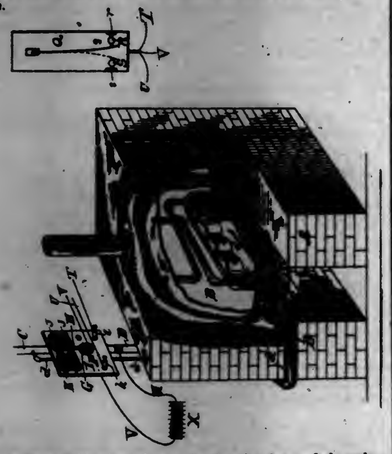
3. The combination, in a heater, of a boiler provided with an inner heating-chamber, a heating-chamber outside of the boiler, a passage for the products of combustion from the lower part of the inner chamber to the outer chamber, a fluid-fuel supply-pipe opening into the inner chamber, an inlet for the admission of air to the inner chamber, and a final outlet for the waste products of combustion, said final outlet being located on a level or thereabout with the point at which ignition of the fuel occurs, substantially as set forth.

4. In a heater, the combination, with the boiler-support and the fluid-fuel supply, the dome-shaped boiler provided with an internal combustion-chamber having a substantially continuous inner surface and arranged with its lower edge above the boiler-support, of the inclosing-casing, whereby there are formed two chambers with a passage below the boiler for the products of combustion from the combustion-chamber to the outer heating-chamber, substantially as set forth.

411,811. THERMOSTATIC FUEL-CONTROLLER. RICHARD R. WARE, Worcester, Mass., assignor to the Ware Automatic Heat Generator and Regulator Company. Filed Aug. 12, 1888. Serial No. 282,666. (No model.)

Claim.—1. The combination of a combustion-chamber a fuel-supply, a feed-regulator, the reversely-operating electro-magnets, the thermostat, and the electric circuits connecting the thermostat with

the reversely-operating electro-magnets for actuating the fuel-regulator to alternately increase and diminish the heat, substantially as set forth.



2. The combination of a combustion-chamber, a fuel-supply, a fuel-regulator for increasing and diminishing alternately the amount of fuel, a supplemental continuous supply of fuel, the electro-magnets, the thermostat, and the electric circuits connecting the electro-magnets for operating the fuel-regulator, substantially as set forth.

3. The combination of the furnace, the fuel-supply pipe, the valve in the fuel-supply pipe, electro-magnets connected with the valve, and the thermostat, substantially as set forth.

4. The combination of the combustion-chamber, the fuel-supply, the pilot-pipe, the fuel-regulator, the electro-magnets, the thermostat, and the electric circuits connecting the thermostat with the electro-magnets, substantially as set forth.

5. The combination of the feed-pipe, the electro-magnets, the valve in the feed-pipe, the contact-plates, a switch mounted on the plug of the valve, and the electric circuit whereby the plug of the valve serves to move the switch and is utilized as part of the circuits, substantially as set forth.

6. The combination, with the valve in the fuel-supply pipe, of a pivoted two-ended switch, and the contact-plates, with each of which the switch is made to engage alternately, whereby the contact-plates, the switch, and the valve constitute parts of the electrical circuits, substantially as set forth.

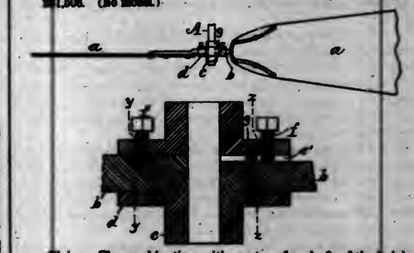
7. In a device for controlling the supply of fluids, the combination of an electro-magnet, an armature pivoted near the same, a valve controlled by such armature, a yoke attached to said valve, an insulated contact-plate upon which one end of said yoke rests, the yoke and plate so related that when the electro-current is sent through such plate and yoke and electro-magnet the latter will be energized, the armature drawn to open or close the valve, as the case may be, and the end of the yoke be moved off of the plate, so as to immediately break the circuit and thus prevent the latter from wasting.

8. In a device for controlling the supply of fluid to a furnace, the combination of an electro-magnet with a circuit embracing said magnet, a thermostat, a battery, a contact-plate, and a movable yoke adapted to engage said contact-plate in one position, a valve to the plug which such yoke is secured, and an armature pivoted in front of the electro-magnet and connected with and controlling the plug, the parts arranged so that when the thermostat closes the circuit a current is instantly sent through to energize the magnet and draw the armature, and by so doing immediately turns the plug to open or close the valve, and breaks the circuit by moving the yoke from the contact-plate.

9. In a device for controlling supply of fluid to a furnace, the combination of two oppositely-placed electro-magnets with an armature pivoted between them, a valve controlled by said armature, a yoke on the plug of said valve, two contact-plates, one of which is always in contact with one end of the yoke, a thermostat having contact-points on opposite sides, and two electric circuits, each of which includes the yoke, battery, and thermostat, while one includes also one contact-point, one electro-magnet, and one contact-plate, so that when the thermostat is inclined to either side sufficiently to reach the contact-point a circuit is established through one of the electro-magnets, the armature is immediately drawn to open or close the valve, and simultaneously the circuit is broken by the movement of the yoke which carried its point off the contact-plate.

411,812. ATTACHMENT FOR BLADES OF ROTARY FANS.

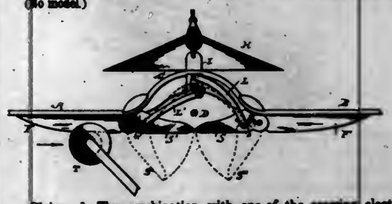
DANIEL WHITLOCK, Newark, N. J. Filed July 31, 1888. Serial No. 281,502. (No model.)



Claim.—The combination, with a rotary fan-shaft, of the hub having the socket *c*, provided with the groove *c'*, extending to the outer end of the socket, the sector-shaped recess connected with the groove in the rear part of the same, the set-screw *f*, inserted through the hub into the groove before the recess, and the fan-blade *a*, having the shank *b*, provided with the stud *g*, fitted to such groove and recess, as and for the purpose set forth.

411,818. OVERHEAD FROG FOR ELECTRIC RAILWAYS.

MERLE J. WHITTEMAR, Lynn, Mass. Filed June 22, 1889. Serial No. 315,147. (No model.)



Claim.—1. The combination, with one of the crossing electric conductors or power-lines for an electric railway, of a self-opening conducting bridge-piece, as and for the purpose described.

2. The combination, with crossing electric conductors for an electric railway, of one or more conducting bridge-pieces suitably hung or supported to swing in a vertical plane and adapted to bridge the gap left in the path of the trolley or contact for one of said conductors at the point where the trolley or contact of the crossing conductor passes.

3. The combination, with the crossing electric conductors for an electric railway, of a conducting bridge-piece supported at one side of the gap, and a lever at the other side connected with said bridge-piece, as and for the purpose described.

4. In an electric railway, a vertically-swinging contact-bridge S, operated by the trolley and normally standing in position to permit the contact or trolley of a crossing conductor to pass without obstruction.

5. The combination of a conductor D, adapted to be engaged by a traveling contact, a second conductor A B, crossing over the first, and a swinging contact-bridge pivoted to swing in a vertical plane in the space below the conductor D and electrically connected with the line or conductor A B.

6. The combination, with electric conductor D, parts of which, at opposite sides of conductor D, are electrically united, of the conducting bridge-piece adapted to bridge the space beneath the conductor D, as and for the purpose described.

411,814. OVERHEAD FROG FOR ELECTRIC RAILWAYS.

MERLE J. WHITTEMAR, Lynn, Mass. Filed June 22, 1889. Serial No. 315,148. (No model.)



Claim.—1. The combination, with an electric conductor engaged by a traveling contact device, of a second conductor continued over the first so as to be electrically continuous, of a movable bridge-piece for the latter adapted to swing or move beneath and in the direction

of the other conductor when engaged by a device carried by the car or vehicle operated by energy derived from the latter.

2. The combination, with crossing electric conductors, of a contact bridge-piece for one of them faced with insulating material on the surfaces engaged by the contact arm or device of the other.

3. The combination, with crossing electric conductors upon which contact devices travel, of a movable contact bridge piece or pieces normally standing in position to maintain the electrical connection for the traveling contact of one wire, means for actuating the same on the passage of the contact devices carried by the vehicle deriving energy from the other wire or conductor, and suitable electrical insulation for preventing electrical connection of the crossing conductors when the bridge-piece is engaged so as to be moved aside.

411,815. INDEX-CIRCULAR.

RICHARD R. WILLIAMS, Brooklyn, N. Y. Filed Oct. 4, 1888. Serial No. 287,227. (No model.)



Claim.—1. A pamphlet having a series of leaves of uniform length and width laid upon one another, with their opposite ends overlapped and united transversely intermediate to such overlapped ends, substantially as herein set forth.

2. A pamphlet having a series of leaves of uniform length and width laid upon one another, with their opposite ends overlapped and united transversely intermediate to such overlapped ends and folded upon their line of union, substantially as herein set forth.

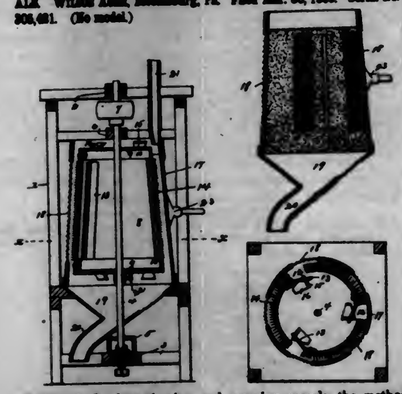
3. A pamphlet having a series of leaves of uniform length and width laid upon one another, with their opposite ends overlapped and united transversely intermediate to such overlapped ends upon a line adapted to form the opposite ends of the leaves into a single series with uniform interspaces when folded upon such line, as and for the purpose set forth.

4. A pamphlet having several series of leaves of uniform length and width, the leaves of each series having their edges coincident, and the several series being laid upon one another with their ends overlapped and united upon a line intermediate to such overlapped ends, and the outer leaves of each series being separately notched to expose the inner leaves of each series, as and for the purpose set forth.

5. A pamphlet consisting in a single series of leaves joined together at one end and successively shortened at their opposite ends for the application of a series of titles, substantially as herein set forth.

411,816. PROCESS OF SCOURING AND DECORTICATING CEREALS.

WILLIS ADAMS, Bloomsburg, Pa. Filed Mar. 30, 1889. Serial No. 305,621. (No model.)

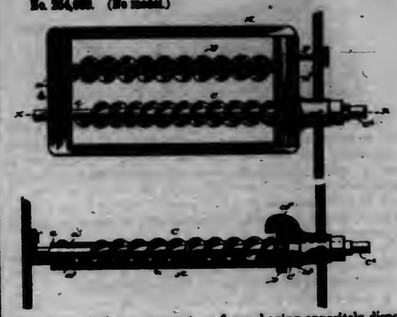


Claim.—1. In decorticating and scouring cereals, the method herein described for preventing heat and promoting the operation of the mill, said method consisting in introducing air through the outer drum and between the same and the vertically-rotating cylinder, substantially as described.

2. In the process of decorticating cereals, the method herein set forth for preventing heat under a heavy load and high speed, the same consisting in inducing a current of air within the inner revolving cylinder and introducing one or more currents of air through the wall of the outer drum in a direction opposite to the direction of rotation of the inner cylinder, substantially as described.

411,817. STOVE-GRATE.

WILLARD J. ARMSTRONG, St. Louis, Mo., assignor to John Uri Mantzk, same place. Filed Nov. 9, 1887. Serial No. 254,669. (No model.)

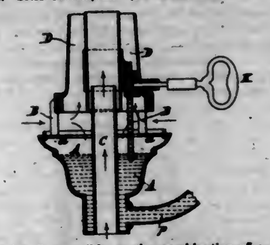


Claim.—1. In a stove-grate, a frame having oppositely-disposed holes near its opposite ends and formed with a hollow journal near one of its sides, in combination with grate-bars within said frame and geared together, the trunnions of one of which bars project through said hollow journal and beyond the outer surface of the main frame, respectively, and the trunnions of the other of which bars end substantially flush with the outer surfaces of said frame, substantially as shown and described, whereby said frame will be pivoted to a stove on one side of its median line, and a catch for retaining the grate in a practically horizontal position.

2. In a stove-grate, a main frame having a hollow journal near one of its sides, for the purpose set forth, the said journal being formed with a square end, in combination with grate-bars pivoted in said main frame and geared together, one of the trunnions of one of which bars extends through and beyond said hollow journal, and also is formed with a squared extremity, and the opposite trunnion of which bar extends beyond the outer surface of said main frame, substantially as shown, and for the purposes set forth.

411,818. LAMP.

CHARLES D. ABEL, London, England. Filed Feb. 7, 1889. Serial No. 299,063. (No model.)



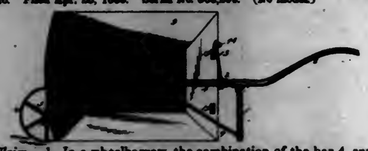
Claim.—1. In an oil-lamp, the combination of a secondary oil-reservoir having an internal vertical air-tube extending above its top wall and opening at its lower end through the wall of the reservoir, a skeleton frame rising from the top of the said reservoir, and a wick-case supported by the skeleton frame wholly above and at a distance from the top wall of the reservoir, substantially as and for the purpose described.

2. In an oil-lamp, the combination of a secondary oil-reservoir having an internal vertical air-tube opening at its upper end through the top wall of the reservoir and at its lower end through the bottom wall of the latter, a skeleton frame rising from the top of the said reservoir, and a wick-case detachably connected at its lower end to the upper end of the skeleton frame and supported thereby wholly above and at a distance from the top wall of the reservoir, substantially as and for the purposes described.

3. The combination, in an oil-lamp, of a secondary reservoir having an internal vertical air-tube rising at its upper end above the top

wall of the reservoir and opening at its lower end through the lower wall portion of the latter, a skeleton frame rising from the top of the secondary reservoir, a wick-case detachably connected to the skeleton frame and supported thereby wholly above and at a distance from the top wall of the reservoir, a main oil-reservoir rising above the secondary reservoir, and a pipe-connection between the two reservoirs, substantially as described.

411,819. WHEELBARROW. BENJAMIN H. BARR, Kansas City, Mo. Filed Apr. 23, 1889. Serial No. 308,299. (No model.)



Claim.—1. In a wheelbarrow, the combination of the bar 4, supported by the wheels 6 and legs 1, and body 9, and suitable means for connecting said body with said bar, whereby the body may be tipped to either side while the wheel and legs remain in an upright position, substantially as described, and for the purpose set forth.

2. In a wheelbarrow, the combination of the bar 4, legs 1, wheel 6, yoke 5, body 9, and hooks 10, substantially as described, and for the purpose set forth.

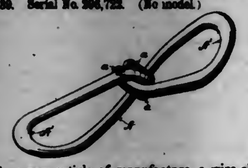
3. In a wheelbarrow, the combination of the frame 4, having suitable supports, body 9, hooks 10, and collar 11, having a set-screw 12, substantially as described, and for the purpose set forth.

4. In a wheelbarrow, the combination of the legs 1, bar 2, rod 3, bar 4, yoke 5, wheel 6, brace 7, handles 8, body 9, hooks 10, collar 11, spring-catches 13, and legs 15, substantially as described, and for the purpose set forth.

411,820. INCRUSTATION-PREVENTIVE. DAVID R. BOOSHER, St. Louis, Mo. Filed June 21, 1889. Serial No. 315,104. (No specimens.)

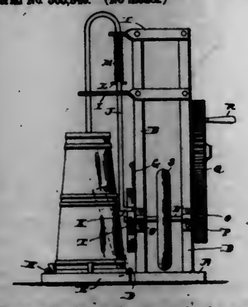
Claim.—A boiler compound consisting of oak extract, gambia, sumac, wormwood, and caustic soda, mixed together in about the proportions named.

411,821. CHAIN-LINK. IRVING BROWN, Cleveland, Ohio. Filed Jan. 18, 1889. Serial No. 296,722. (No model.)



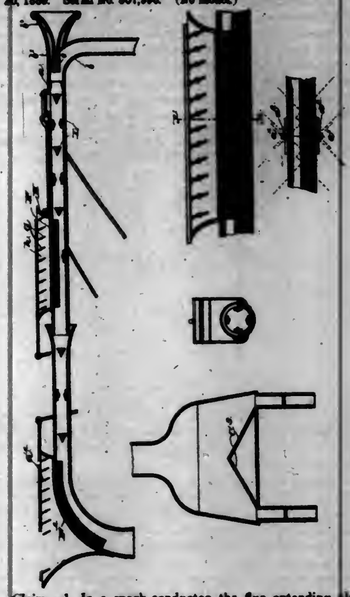
Claim.—As a new article of manufacture, a wire chain-link, the end portions of the wire passing each other and twisted around the central portion of the wire, substantially as set forth.

411,822. CHURN. CHARLES T. CARNES, Marietta, Ga. Filed Apr. 3, 1889. Serial No. 305,949. (No model.)



Claim.—The combination of the standards, the arms I I, secured to the same and projecting forward therefrom, the U-shaped bar mounted in said arms and having the dasher secured to the lower end of its outer arm, the inner arm being provided with a transverse pin and having an offset K at its lower end, the spring coiled around the inner arm of said bar between the transverse pin and the upper arm I, the driving-shaft mounted on the standards, the cam on the front end of said shaft bearing against the under side of the offset K, and gearing on the rear standard to rotate the driving-shaft, as specified.

411,828. SPARK-CONDUCTOR. KENT H. CARPER, Salem, Va., assignor to the Carper Spark Conductor Company, same place. Filed Apr. 20, 1889. Serial No. 307,996. (No model.)



Claim.—1. In a spark-conductor, the flue extending along the top of the locomotive and each car, and the smoke-stack having its upper end curved rearwardly and connecting directly with and forming a part of the flue, so as to provide a direct passage for the sparks and products of combustion, said smoke-stack having a flaring mouth mounted on its outside and provided with an opening in its front side, combined with the conical lining mounted in the flaring mouth of the smoke-stack and having its inner end extending through the opening in the front side of the smoke-stack, for the purpose set forth.

2. A spark-conductor provided with a foraminous top portion and a series of movable deflectors arranged above the same, substantially as described.

3. A spark-conductor having a flue provided with a foraminous top portion, a frame extending above the foraminous portion, a series of deflectors pivoted in said frame, and suitable means for operating the deflectors, substantially as described.

4. A spark-conductor having a flue provided with a foraminous top portion, a series of deflectors arranged above the foraminous portion, and a slide adapted to close the foraminous portion, substantially as described.

5. A spark-conductor having a flue provided with a foraminous top portion, a frame extending above the foraminous portion and having curved ends to direct the smoke upward, and a series of deflectors pivoted in said frame, substantially as specified.

6. In a spark-conductor, a flue composed of pipes secured together by hinges having removable pintles, whereby the pipes may be swung to either side of an engine, substantially as described.

411,824. BOILER-FLUE SCRAPER. WILLIAM T. COCKERILL, Melrose, Mass. Filed Mar. 16, 1888. Renewed Feb. 23, 1889. Serial No. 300,904. (No model.)



Claim.—1. The combination, with the head formed with longitudinal recesses and flat bearings, with scraper-arms pivoted to said head and formed with similar flat bearings, of springs bent to form a short and a long curve, the shorter curve of which is secured between the bearings of the head and the bearings of the scraper-arms, while the longer curve bears against the under side of the said scraper-arms.

2. The combination, with the head formed with the longitudinal recesses, which form walls, and with the flat bearings between said walls, of the scraper-arms pivoted between said walls and formed on their sides near their pivoted ends with similar bearings, and along their under sides with longitudinal grooves and stops, and the tapering springs formed with a long and a short curve and secured with their short curved ends between the walls and the flat bearings of the head and the flat bearings of the scraper-arms and extending with its longer curved ends in the longitudinal grooves of the scraper-arms, substantially as and for the purpose herein set forth.

411,825. COMBINED NEEDLE-THREADER AND THREAD-CUTTER. JAMES COOK, Darlington, S. C. Filed Mar. 8, 1889. Serial No. 302,414. (Model.)



Claim.—The combination of the presser-foot rod and the clamp D, placed thereon, with the screw G, the pivoted needle-threader I, placed upon the screw G and held between the ends of the clamp, the washers placed upon the screw, and the thread-cutter which is clamped between the washers and held in any desired position, substantially as shown.

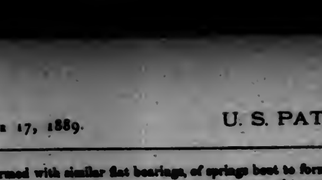
411,826. PACKING FOR JOURNALS. HARRIETT R. DEVLAN, Jersey City, N. J. Filed May 13, 1889. Serial No. 310,633. (Specimens.)

Claim.—1. A packing for journal-boxes, comprising bamboo fiber and pieces of sponge, substantially as described.

2. A packing for journal-boxes, comprising bamboo fiber, pieces of sponge, and a mineral substance—such as asbestus, steatite, or graphite—substantially as described.

3. A packing for journal-boxes, consisting of bamboo fiber, pieces of sponge, hair, or like fiber, and a mineral substance—such as asbestus, steatite, or graphite—mixed together in about the proportions stated, substantially as described.

411,827. SPARK-ARRESTER. JOHN Q. DONALD, Hartwell, Ga. Filed June 14, 1888. Serial No. 314,184. (No model.)

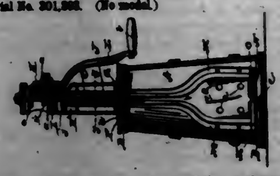


Claim.—1. The combination, with the casing, of the deflecting-plate P, the plate O, supported by said plate P, and the spring-arms U, rising from the said plate P and adapted to engage the upper end of the casing, as set forth.

2. The combination of the casing having the studs S, the plate N, having notches R in its edge adapted to clear said studs, and the plate M, supported by the said plate N, as set forth.

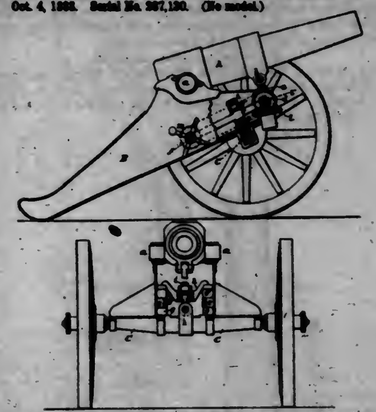
3. The combination of the casing having a discharge-spout near its lower end, the weighted door in said discharge-spout, the arm rising from said door, the elastic buffer on the end of the said arm, and the cord secured to and extending downward from the door, as set forth.

411,828. CHURN. MATTHEW J. DOW, Alba, Mich. Filed Mar. 5, 1889. Serial No. 301,993. (No model.)



Claim.—The combination, in a churn, of the stationary churn-body, the removable cover provided with a gas-vent and having a central circular aperture, the skeleton pillar H, terminating at its upper end in the hollow cylinder H' and provided with the integral horizontal diaphragm I, the central staff C, the concentric tubular staff J, said staffs or shafts C and J being concentric with the skeleton frame or bearing H and its cylindrical extension, and the described mechanism for operating the dashers, substantially as and for the purpose herein shown and set forth.

411,829. TRANSPORTABLE OR FIELD GUN. MAX DEGEN, Magdeburg, Prussia, Germany, assignor to the Grusonwerk, same place. Filed Oct. 4, 1888. Serial No. 287,130. (No model.)



Claim.—1. In a transportable or field gun, the combination, with the gun-carriage, of a gun having trunnions located at or near the first re-enforce and having bearings on the carriage to the rear of the axle, and suitable elevating mechanism, whereby the force of explosion is not exerted on the axle and the rapidity of loading and firing is increased, substantially as herein shown and described.

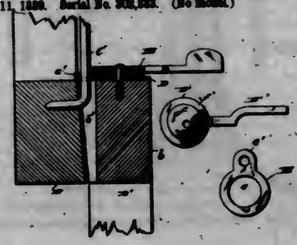
2. In a transportable or field gun, the combination of the gun-carriage, a gun having trunnions located at or near the breech, bearings for said trunnions located on the carriage to the rear of the carriage-axle, and suitable elevating mechanism consisting of the lever or frame *e*, having bearing at one end in the carriage, upper and lower buffers *g g'* at or near its middle, and the elevating-screw at the other end connecting with the gun, all substantially as and for the purposes set forth.

3. In a transportable or field gun, the combination, with the carriage of the gun having its trunnions seated in rear of the carriage-axle, and the elevating mechanism consisting of the screw located between the gun and the carriage, the nut into which the screw works, a hand-wheel, and chain-and-sprocket gearing between the hand-wheel and nut, substantially as and for the purposes set forth.

4. The combination, with the gun-carriage, of the gun mounted thereon, the frame *e*, having cushioned bearing on the carriage, the nut carried by the frame, the screw connected to the gun and bearing in said nut, the hand-wheel, and sprocket-and-chain gearing between the wheel and nut for turning the latter with the former, as explained.

5. In a transportable or field gun, the combination, with the gun-carriage, the gun, and elevating mechanism, of the forked lever *e*, having cross-bar *h*, buffers *g* under the extremities of said cross-bar and supported by the gun-carriage, and a pivoted bolt *i*, passing centrally through the cross-bar for holding it to the carriage, said forked lever carrying the elevating mechanism and wheel and shaft for operating the same, substantially in the manner and for the purpose set forth.

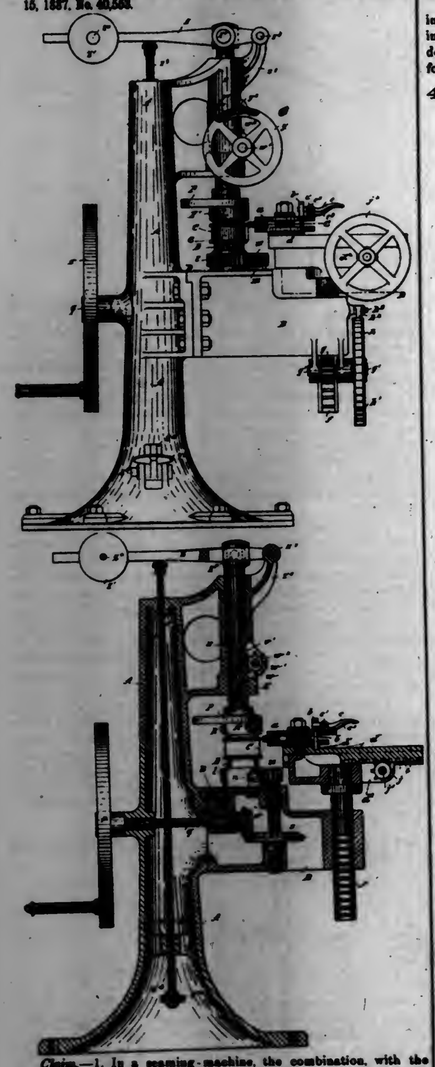
411,830. SASH-HOLDER. DANIEL RAMON, Grafton, Nebr. Filed Mar. 11, 1889. Serial No. 302,823. (No model.)



Claim.—1. A sash-fastener consisting of a disk journaled eccentrically on the upper rail of a lower sash, a loose ring encircling said disk and provided on one side with a small opening, and a vertical rod loosely seated in the opening of the ring and secured to the upper sash, substantially as described.

2. In a sash-fastener, the combination, substantially as described, of the upper and lower sash, a vertical rod secured at its ends to the upper sash, a metal plate secured to and projecting slightly beyond the upper rail of the lower sash at a point opposite said rod, a flanged disk journaled eccentrically on said upper rail, and a ring encircling said disk below the flange and provided with a small opening within which the rod of the upper sash is loosely seated.

411,881. MACHINE FOR SEAMING TIN BOXES. HARTWIG P. F. EWERS, Lübeck, Germany. Filed Sept. 15, 1888. Serial No. 285,536. (No model.) Patented in Germany Oct. 25, 1886, No. 37,411, and Jan. 15, 1887, No. 40,563.



Claim.—1. In a seaming-machine, the combination, with the seaming tool or tools, of two hollow chucks having plain inner walls and similar in shape on the outside to the object to be seamed, which is clamped between them, guide-rollers bearing on the plain inner sides of said chucks, and means for operating the chucks, substantially as set forth.

2. In a seaming-machine, the combination, with the seaming tool or tools, of two hollow chucks between which the object to be seamed is clamped, guide-rollers bearing on the inner sides of said chucks, a guide-rail against which the lower edge of the lower chuck bears, and means for operating the chucks, substantially as set forth.

3. In a seaming-machine, the combination, with the seaming tool or tools, of upper and lower hollow chucks between which the object to be seamed is clamped, guide-rollers bearing on the inner sides of said chucks, a guide-rail against which the lower edge of the lower chuck bears, which latter is provided with cog-teeth, a pinion meshing with said teeth, and suitable mechanism for revolving said pinion, substantially as set forth.

4. In a seaming-machine, the combination, with the work-holding chucks, of an adjustable support, a sliding table received by ways in said support, a rotatable tool-carrier mounted on the table, and a detent for holding the tool-carrier in position, substantially as set forth.

411,882. SAWDUST-ELEVATOR. WILLIAM FRET, New Cumberland, Ohio. Filed Mar. 16, 1889. Serial No. 303,573. (No model.)

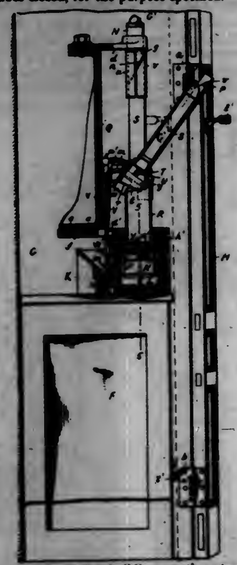


Claim.—1. The combination of the carriage-body, longitudinal suspending-rod having an offset near its rear end, the fixed front sheave, and the movable rear sheave adapted to slide along the suspending-rod, substantially as and for the purpose set forth.

2. The combination of the carriage-body, the hinged bottom sections, the lever fulcrumed in the head-board, links or rods connecting said lever to the inner ends of the bottom sections, the trigger-arm adapted to interlock with the outer end of the lever, and a spring bearing against the free end of the trigger-arm with sufficient force to close the carriage-bottom automatically when pressure against the free end of the trigger-arm is relaxed, substantially as and for the purpose set forth.

411,888. PNEUMATIC MAIL-DISPATCH APPARATUS. JOHN L. GIVEN, Melrose, and GEORGE B. KELLY, Boston, Mass. Filed Mar. 6, 1889. Serial No. 302,046. (No model.)

Claim.—1. The combination, with a building or other structure having a series of stories or rooms, of a series of pneumatic tubes, each leading from a room or story, as desired, to and all terminating at the lower floor or room, or in some desired room or story in such building or other structure, and there having communication with a suitable air-pressure apparatus, each of said tubes having an opening to receive a carrier to be transmitted and an oscillating sectional tube suitably arranged to open and close said opening, and also a valve to open and close communication between the air-operating device and its respective pneumatic or main tube, and all inclosed in a suitable inclosure having a door or cover arranged to be opened and closed, and when closed to engage with and hold said receiving-opening sectional oscillating tubes closed, for the purpose specified.



2. The combination, with a building or other structure having a series of stories or rooms, of a series of pneumatic tubes, each leading from a room or story, as desired, to and all terminating at the lower floor or room, or in some desired room or story in such building or other structure, and there having communication with a suitable air-pressure apparatus, each of said tubes having an opening to receive a carrier to be transmitted and an oscillating sectional tube suitably arranged to open and close said opening, and also a valve to open and close communication between the air-operating device and its respective pneumatic or main tube, and all inclosed in a suitable inclosure having a door or cover arranged to be opened and closed, and when closed to engage with and hold said receiving-opening sectional oscillating tubes closed and, through their connection with the valves, such valves open, for the purpose specified.

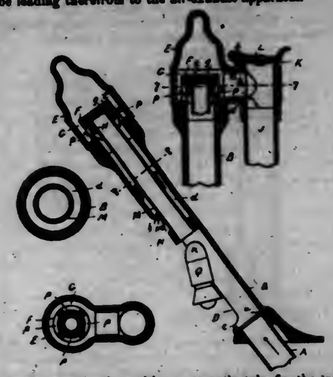
3. The combination, with a pneumatic tube for the transmission therethrough of a carrier having communication with a suitable air-pressure apparatus, of a sectional oscillating tube pivoted to a suitable support and adapted to swing into line with the main or pneumatic tube and to receive such carrier, and connected to a valve between it and the air-motor, substantially as and for the purpose specified.

4. The combination, with a pneumatic tube for the transmission therethrough of a carrier having communication with a suitable air-pressure apparatus and an opening having its ends beveled or angular, provided with semicircular flanges or covers at such ends, of a sectional oscillating tube pivoted to a suitable support and adapted to swing into line with the main or pneumatic tube at such opening, and having its ends beveled or angular the reverse of the beveled or angular ends of the main tube, and provided with semicircular flanges or covers on its ends on the side opposite to those on the main tube, substantially as and for the purpose specified.

411,884. PNEUMATIC CASE-CARRIER APPARATUS. JOHN L. GIVEN, Bridgeport, Conn. Filed May 2, 1889. Serial No. 310,118. (No model.)

Claim.—1. The combination, with a pneumatic tube for the transmission of a carrier therethrough, provided with an opening for the delivery thereat of the carrier, having its end closed and provided with side openings, leaving a space or chamber in said tube between the closed end and side openings, of a chamber surrounding the end of said pneumatic tube, having communication therewith through the side openings, and with a tube leading therefrom to the air-exhaust apparatus, for the purpose specified.

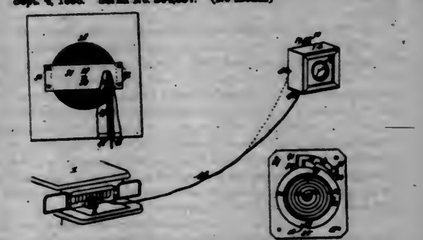
2. The combination, with a pneumatic tube for the transmission of a carrier therethrough, provided with an opening for the delivery thereat of the carrier, and a sliding tube arranged to move back and forth within said tube to open and close said opening, and open from end to end and adapted to receive the carrier to close the opening through said tube, of a chamber surrounding the end of said pneumatic tube and having communication with the pneumatic tube and a tube leading therefrom to the air-exhaust apparatus.



3. The combination, with a pneumatic tube for the transmission of a carrier therethrough, provided with an opening for the delivery thereat of the carrier, and a sliding tube arranged to move back and forth in said tube to open and close said opening, open from end to end and adapted to receive the carrier to close the opening through said sliding tube, said pneumatic tube having a thimble or sleeve secured to its end, having a closed end and side openings F, of a cap E, secured over said sleeve to said tube, forming a chamber having communication with the tube A through said sleeve, and a tube J, leading therefrom to the air-exhaust apparatus, for the purpose specified.

4. The combination, with a pneumatic tube for the transmission of a carrier therethrough, provided with an opening for the delivery thereat of the carrier and an opening or openings at its upper end communicating with a chamber communicating with the air-exhaust apparatus, of a sliding tube within the pneumatic tube of less diameter than the pneumatic tube and having its ends enlarged to fit the pneumatic tube and arranged to slide back and forth therein to open and close said delivery-opening, for the purpose specified.

411,885. FIRE-LIGHTER. WILLIAM HARLEE, St. Louis, Mo. Filed Sept. 4, 1888. Serial No. 284,567. (No model.)



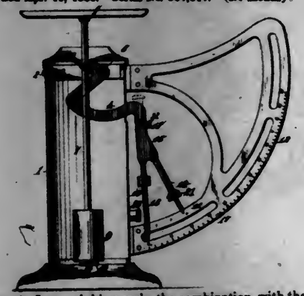
Claim.—1. In a fire-lighter, the combination of the cord for attachment to a match-striker, the spring-drum upon which said cord is adapted to be wound, having ratchet-teeth, the coiled spring within and attached to said drum, the ratchet-pawl 34, adapted to engage said ratchet-teeth, the pendent trigger integral with said pawl, having the trip-lug, and the alarm-clock having a winged winding-key arranged to engage said trip-lug and raise said pawl, substantially as set forth.

2. The combination, with the alarm-clock having the winged winding-key, of a spring-actuated drum having ratchet-teeth, the plate 25, arranged between said clock and drum, a pawl adapted to engage said ratchet-teeth and having a trigger projecting through the slot 41 within reach of said winged key, and the cord 46, attached to said drum and adapted to be wound thereon, substantially as set forth.

3. In a fire-lighter, the combination of the cord 46, for attachment to a match-striker, the spring-actuated drum on which said cord winds, having ratchet-teeth, the alarm-clock 13, arranged with its back to said drum and having a winged winding-key, the case 14, in

which said clock and drum are hung, having in its back the channel or groove 49, through which said cord passes, and the pawl 34, adapted to engage said ratchet-teeth and having a trip-trigger provided with a spur-lug arranged to be struck by the wings of said key to disengage said pawl, substantially as set forth.

411,886. WEIGHING-SCALE. THOMAS H. HERNDON, Birmingham, Ala. Filed Apr. 19, 1889. Serial No. 307,817. (No model.)



Claim.—1. In a weighing-scale, the combination, with the hollow casing, the spindle having a weight at its lower and a scale-pan at its upper end, and the curved graduated plate, of the index-hand-carrying lever pivoted intermediate its ends at a point inside of the wall of the casing and having the upper end portion, which extends beyond the lever-pivot, connected to the spindle, also within the casing, substantially as described.

2. In a weighing-scale, the combination, with the hollow casing, the spindle having a weight at its lower and a scale-pan at its upper end, and the curved graduated plate, of the bell-crank lever pivoted inside the hollow casing and connected at one end with the spindle, and a head formed with two index-hands and adjustably secured to the other arm of the lever to simultaneously adjust both index-hands in the arc of a circle, substantially as described.

3. The combination, in a weighing-scale, of a casing or frame, a weighted spindle carrying a scale-pan, a curved graduated plate, a lever pivoted between its ends and connected at one extremity with the spindle, and a head having two index-hands and adjustably pivoted to the other extremity of the lever, substantially as described.

4. The combination, in a weighing-scale, of the casing or frame, the weighted spindle having a scale-pan, the curved graduated plate, the bifurcated lever pivoted inside the casing or frame and having its bifurcated end embracing and connected to the spindle, and two index-hands carried by the other end of the lever, substantially as described.

5. The combination, in a weighing-machine, of the casing or frame, the weighted spindle having a scale-pan, the curved graduated plate, the bifurcated lever pivoted inside the casing and having its bifurcated end embracing and connected to the spindle, and a head having two index-hands and adjustably pivoted to the other end of the lever to simultaneously adjust the two hands, substantially as described.

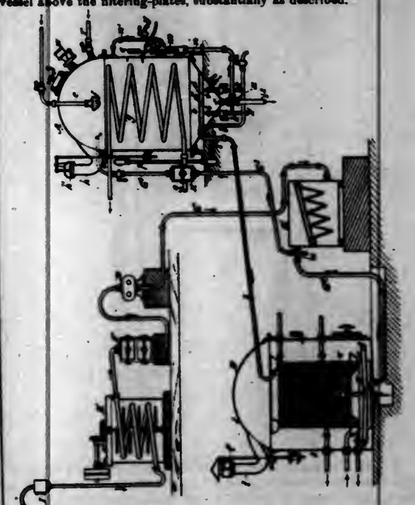
6. The combination, with the casing or frame, a weighted spindle carrying a scale-pan, a curved graduated plate, and a lever pivoted between its ends and connected at its upper end to the spindle, of a head having two index-hands and a set-screw-pivotally and adjustably securing the head to the lever to simultaneously adjust both hands in the arc of a circle, substantially as described.

7. The combination in a weighing-scale, of the hollow casing, a yoke-frame secured in the upper end of the casing, the weighted spindle carrying a scale-pan, the curved graduated plate, and the lever pivotally carried by the yoke-frame inside the casing and connected at one end to the spindle, and two index-hands on the other end of the lever, substantially as described.

411,887. MEANS FOR BOILING, COOLING, &c., BEER. CONSTANTIN HOFFMANN, Rixdorf, Sexto-Mehringen, and LORENZ REINET, Schalke, Schwarzburg-Rudolstadt, Germany. Filed Mar. 6, 1888. Serial No. 266,326. (No model.) Patented in Germany Oct. 17, 1887, No. 41,960.

Claim.—1. The combination of the air-tight wort-boiling vessel *a*, the filtering-plates *d d'*, supported above the extreme bottom thereof, the collecting-pipe *k'*, having a branch pipe *k*, communicating at its upper end with the vessel between the extreme lower end of the latter and the filtering-plates for carrying off the clarified wort, and a pump *m*, communicating with the interior of the air-tight vessel at a point above the filtering-plates and at a point below the upper end of the branch pipe of the collecting-pipe for withdrawing the turbid liquid from below the filtering-plates and the upper end of the branch pipe and forcing it into the air-tight vessel above the filtering-plates, substantially as described.

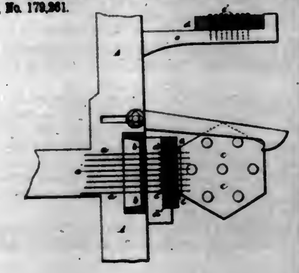
2. An apparatus for boiling and sterilizing beer-wort, consisting of an air-tight vessel *a*, filtering-plates *d d'*, supported above the extreme bottom thereof, a sterilized-air-forcing apparatus for introducing sterilized air into the air-tight vessel, the collecting-pipe *k'*, having a branch pipe *k*, communicating at its upper end with the vessel between the extreme lower end of the latter and the filtering-plates for carrying off the clarified wort, and a pump *m*, communicating with the air-tight vessel for removing the turbid wort from a point below the filtering-plates and the upper end of the branch pipe while the supply of sterilized air to the vessel is shut off, and forcing such turbid liquid into the air-tight vessel above the filtering-plates, substantially as described.



3. An apparatus for boiling and sterilizing beer-wort, consisting of an air-tight vessel *a*, filtering-plates *d d'*, supported above the extreme bottom thereof, a sterilized-air-forcing apparatus for introducing sterilized air into the air-tight vessel, the collecting-pipe *k'*, having a branch pipe *k*, communicating at its upper end with the vessel between the extreme lower end of the latter and the filtering-plates for carrying off the clarified wort, a pump *m*, communicating with the air-tight vessel at a point above the filtering-plates and at a point below the upper end of the branch pipe of the collecting-pipe for withdrawing the turbid liquid from below the filtering-plates and the upper end of the branch pipe while the supply of sterilized air to the vessel is shut off, and forcing such turbid liquid into the air-tight vessel above the filtering-plates therein, the hermetically-closed casing B, and a pipe connected with the collecting-pipe for conducting the hot clarified beer-wort into said closed casing for cooling the beer-wort, substantially as described.

4. The combination, with the wort-boiling vessel *a*, having the filtering-plates *d d'* located therein, of the external pump *m*, having pipes *n n'*, connected, respectively, with the vessel below and above the filtering-plates for withdrawing the turbid liquid from below the filtering-plates and forcing it into the vessel above said plates, substantially as described.

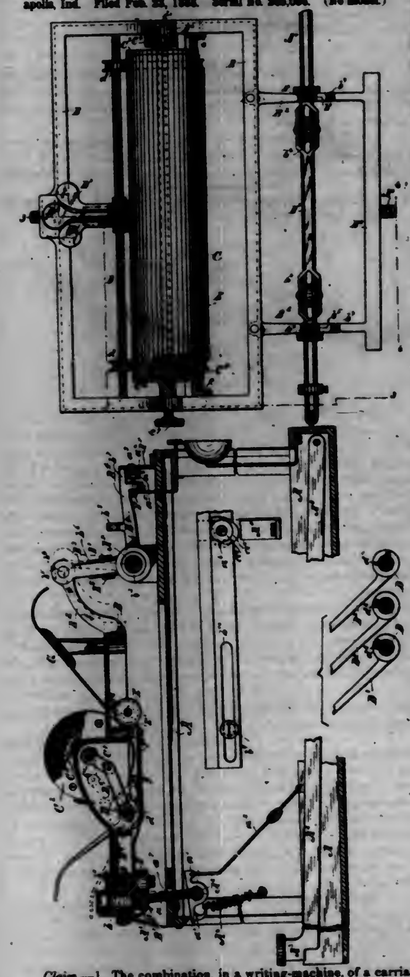
411,888. JACQUARD APPARATUS. SAMUEL HOLDSWORTH, Durham, England. Filed Aug. 10, 1889. Serial No. 321,279. (No model.) Patented in England July 26, 1888, No. 10,811, and in France Aug. 9, 1888, No. 179,961.



Claim.—1. In combination with the trap-board, the ordinary needles *a*, the harness-cords controlled thereby, and with the cylinder *c*, the removable extra needles *e* interposed between the cylinder and needles *a*, and having the ends thereof opposite the ends of needles *a*, the combination being and operating substantially as and for the purpose set forth.

2. The combination, in Jacquard apparatus for weaving carpets and other woven fabrics, with the trap-board, the ordinary needles *a*, the harness-cords controlled thereby, and with the cylinder *c*, of the removable extra needles *e* interposed between said needles *a* and the cylinder and having the ends thereof opposite the ends of needles *a*, extra frame plate or support *d* and brackets *f*, and means for securing the plate or support *d* to the brackets, substantially as and for the purpose set forth.

411,889. TYPE-WRITING MACHINE. WILLIAM F. JUDY, Indianapolis, Ind. Filed Feb. 23, 1889. Serial No. 300,999. (No model.)



Claim.—1. The combination, in a writing-machine, of a carriage pivoted on said machine at its rear side, the frame of said carriage being formed with a joint of limited motion between the pivot and its main portion, said carriage being arranged to slide on said machine, and mechanism, substantially as described, connected with the front of said carriage for operating it back and forth, substantially as set forth.

2. In a writing-machine, the combination of the frame thereof, the carriage-rod, the carriage arranged to slide on said frame, arms B^3, extending out from the rear side of the main portion of said carriage, the arms B^3, pivoted to the outer end of said arms B^3, the joint between said two parts being formed with a stop to limit their movement and said arms B^3 being mounted on said carriage-rod, which is pivoted to the frame of the machine, and means, substantially as described, for operating said carriage back and forth, substantially as set forth.

3. In the carriage of a writing-machine, the combination of the platen, the shaft on which it is mounted, a rock-shaft journaled in front of said platen, said rock-shaft and said platen-shaft being connected at one end, and a series of levers mounted on said rock-shaft and arranged to rotate it different distances, substantially as set forth.

4. In a writing-machine, the combination of the platen C, provided with the head C^2 and mounted loosely on the shaft C, the ratchet-wheel C^1, also mounted on said shaft, said head being provided with a pawl which engages with said ratchet-wheel, the arm C^7, secured on said shaft C, the rock-shaft D, the arm D^4, secured to one end thereof and connected to said arm C^7, and a series of levers D', D^2, and D^3, secured on said rock-shaft to operate it different distances, substantially as set forth.

5. In the carriage of a writing-machine, the combination, with a pivoted rack on its rear side formed with an extended flange, of a standard mounted on the top of the frame of the machine and provided with a pivot-bolt and a roller, and a cam mounted on said pivot-bolt and arranged beneath said flange, substantially as described, and for the purposes specified.

6. In a writing-machine, the combination of the carriage with the rack B^4 pivoted thereto and having a flange b^2 formed thereon, a portion of the under surface of which is notched, the standard A^2, carrying a pivot-bolt, and the roller *c'* and cam c^2, mounted on said pivot-bolt beneath said flange, said roller *c'* being adapted to support said rack as it travels forward, and said cam being formed with a point arranged to engage with the notches on the under side of said flange when the carriage travels back, whereby said cam is turned up and operates to lift said rack out of engagement with the dog and support it in this position during said backward travel, substantially as set forth.

7. The combination, in a writing-machine, of the machine-frame, the carriage mounted to slide thereon, the various mechanisms mounted on said carriage, the rock-shaft, a shifting-rod connected to the rock-shaft, and means, substantially as described, for operating said rock-shaft, said carriage being provided with bearing parts on the front of its frame which are arranged to rest on and engage with said shifting-rod, whereby said carriage may be shifted and a support and slide is provided for its front portion, substantially as set forth.

8. The combination, in a writing-machine, with the carriage thereof, of a platen mounted on a suitable shaft, a rock-shaft mounted in front of said platen, the mechanism connecting said rock-shaft and platen-shaft, a series of levers secured on said rock-shaft to engage with and operate it at different periods of their downward strokes, and a spring arranged to bear against said levers, whereby they are returned to an operative position after having been operated, substantially as set forth.

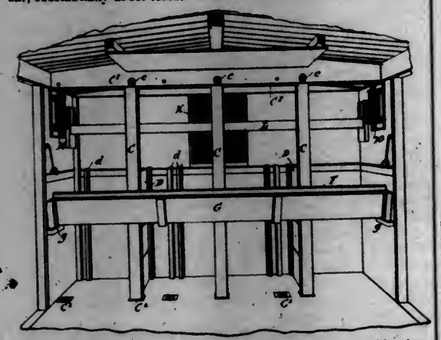
9. In a writing-machine, the combination of the machine-frame, the carriage-rod A^4, on which the carriage slides and tilts, journaled in bearings on said frame, the carriage provided with the arms B^3 and B^4, hinged together, said hinge being located between said carriage-rod and the main part of the carriage, said arms B^3 being formed with bearings on their lower ends and mounted on said carriage-rod, and the bar B^5, connecting said arms B^3 and provided with the tracks b^3, arranged to run on said carriage-rod, all arranged and operating substantially as described, and for the purpose specified.

411,840. RAILWAY STOCK-CAR. JOHN H. KINBALL, Montreal, Quebec, Canada. Filed July 20, 1888. Serial No. 280,560. (No model.)

Claim.—1. In the herein-described convertible stock-car, the combination, with the main body thereof, of the stall-posts having their inner faces channeled so as to receive the ends of the stall division-boards, the central partition (adapted to have stalls formed on either side) provided with uprights forming channels, in which the rear ends of the stall-divisions are secured, cross-beams secured to the top and side of the car, within which the ends of the stall-posts pass, the car-floor provided with a series of sockets, into which the lower ends of the stall-posts fit, and of the bolts or pins for securing the stall-posts between the cross-beams, substantially as herein shown and described.

2. In the herein-described railway stock-car, the combination, with the movable stall-posts, said posts fitting at their lower end within the sockets formed in the car-floor, of the transverse beams running the entire width of the car and secured to the top and sides thereof, said transverse beams having an opening or channel formed therebetween into which the upper ends of the stall-posts fit, securing pin

or bolt passing through holes in the side of the transverse beams and into the stall-posts at the top thereof for securing said posts in an adjusted position, stall-divisions having their forward ends secured in grooves or channels formed in the rear face of the stall-posts, and the rear ends thereof within the channel formed by the uprights *d d*, and of the breast-board running the entire width of the car, in front of the stalls, and being secured in the pockets *g g* at either side of the car, substantially as set forth.



3. In the herein-described convertible stock-car, the combination, with the movable horse-stalls, said stalls consisting of the stall-posts adapted to be secured at their lower ends within the sockets formed in the car-floor, and at their upper ends within or between the transverse cross-beams, secured at the car top and sides, and of the stall-divisions secured at their front to the stall-posts and at their rear within the channel or groove between the uprights *d d*, of the breast-board and feed-trough passing in front of the stalls and running the entire width of the car, pockets secured to the car-sides and into which the ends of the breast-board and feed-trough are secured, and of the transverse kicking-bar passing above the stalls near the rear thereof, and having its ends adjustably secured in the pockets located at the side of the car, substantially as herein shown and described.

4. In the herein-described convertible stock railway-car, the combination, with the main body thereof, of the central transverse partition dividing the car into two compartments, movable horse-stalls located on either side of the central partition and at the ends of the car, cross-beams C^2, vertical stall-posts C, the upper ends of which fit between the transverse beams C^2 and the lower ends within the socket *c'*, formed in the car-floor, locking-bolt *c*, passing through the sides of the transverse beams and ends of the stall-posts, so as to secure the latter in position, stall-divisions D, constructed of boards secured at their forward ends within the channel or groove *d'*, formed in the stall-posts, and at their rear ends between the uprights *d d*, breast-board and feed-trough passing in front of the horse-stalls, pockets *g g* at the side of the car into which the ends of the breast-board and feed-trough are secured, transverse adjustable kicking-bar secured above the stalls near the rear thereof, locking-pockets at either side of the car into which the ends of said bar are secured, water-tank secured centrally within the car above the transverse central partition and running the entire width of the car, opening B' in the car-top through which water passes into the water-tank, swinging doors secured to the top of the car for closing said opening, and of the water-distributing pipes *b*, leading from said tank to any desired portion of the car, substantially as set forth.

411,841. CAR-STARTER. HUGH A. KINGSLAND, Belleville, N. J. Filed June 15, 1889. Serial No. 314,203. (No model.)

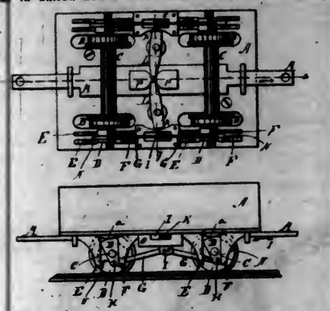
Claim.—1. The combination, with the car-body, of oscillatory wheels for said body, and a draft-bar connected to said wheels for oscillating the same, substantially as described.

2. The combination, with the car-body, the wheels, and oscillatory boxes for said wheels, of actuating-levers K L for said boxes, and a movable draft-bar connected to said levers, substantially as described.

3. The combination, with the car-body, the wheels, and oscillatory boxes for said wheels, of actuating-levers K L for said boxes, a movable draft-bar M, and slides I, connected to said levers, and links or connections G, extending from the slides to the boxes, substantially as described.

4. The combination, with the car-body and the wheels, of oscillatory boxes for said wheels, slotted hangers for said boxes, and guides or arms N, extending from the boxes to the slots in the hangers, substantially as described.

5. The combination, with a car-body, of oscillatory wheels for said body, said wheels being made to oscillate along the line of travel of the car in unison and in the same direction, substantially as described.



6. The combination, with a car-body, of oscillatory wheels for said body, said wheels made to oscillate along the line of travel of the car, and a brake for restoring the wheels to their starting-point, substantially as described.

7. The combination, with the car-body, the wheels, and oscillatory boxes for said wheels, of curved or angular blocks or plates as interposed between the boxes and the car-body, substantially as described.

411,842. PLOW. JAMES W. LEAR, Augusta, Tex. Filed Jan. 31, 1889. Serial No. 298,365. (No model.)



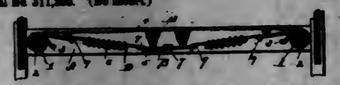
Claim.—1. The combination of the central plow-beam 1, a vertically-swinging plow-carrier 13 at each side of the beam pivoted at its front to the front end of said beam, and having at its rear end a depending arm 18, to which the plowshare is secured, a bracket 5, the locking-bolts 22, sliding horizontally through the parts of the bracket to engage the depending arms of the plow-carriers and hold them elevated, a pair of levers pivoted at each side of the plow-beam and one of each pair connected with one of the locking-bolts, the pulleys having chains connected with the lower ends of the other levers of the pairs and with the depending arms of the plow-carriers, and a detent-plate for the levers that connect with the chains, substantially as described.

2. The combination, with a central plow-beam 1, of a plow-carrier 13 at each side thereof having its front end pivoted to the front end of the beam, the pulleys 31, having pulleys 33, of larger diameter, the chains 30, passing around the small pulleys and connected with the rear ends of the plow-carriers, the pivoted swinging levers 27 at opposite sides of the beam, and the chains 34, passing around the large pulleys and connected with the lower ends of the levers, substantially as described.

3. The combination, with a central plow-beam, of plow-carriers having broadened forward ends, each provided with a series of openings to receive a pivot-bolt connecting the plow-carrier to the plow-beam, a lever pivoted to the rear of the plow-beam and having a chain actuating a pulley or drum, a pulley on the same shaft by which the plow-carrier is raised, a lever pivoted to the middle portion of the lever raising the plow, a lock-bolt connected to the lower end of the former lever, and a spring having its ends connected to the said levers, respectively, above the point of pivotal attachment, substantially as described.

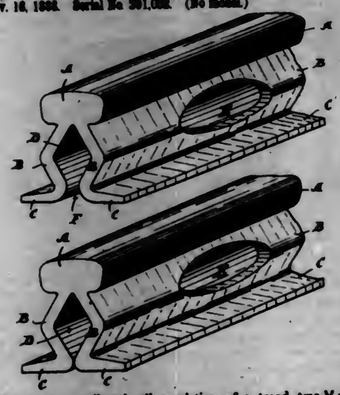
4. The combination, with a central plow-beam having a sod-cutting wheel in front and a ground-wheel in the rear of the plows, of plow-carriers pivotally connected at their forward ends to the forward end of the plow-beam on opposite sides thereof, a shaft mounted in bearings transversely to the plow-beam and having independent pulleys, levers pivoted on opposite sides of the plow-beam in rear of said shaft and having chains operating said pulleys, each of the latter having a drum with a chain connected to the plow-carrier, levers pivoted to the middle portions of the plow-raising levers and having their lower ends connected to locking-bolts which engage and hold the plow-carriers, and springs connected at its ends to each lever, substantially as described.

411,843. SPRING-BED. BENJAMIN R. LEBURN, Glassford, Ohio, assignor of one-half to Alfred Cattanach, same place. Filed May 18, 1889. Serial No. 311,255. (No model.)



Claim.—In a spring-bed, the combination, with the frame, of rollers mounted therein carrying ratchet-wheels, pawls pivoted to the said frame and adapted to engage the ratchet-wheels, longitudinally-extending metallic strips provided with perforations, the terminal strips having one of their ends secured to the rollers, connecting U-shaped slides having their loops arranged adjacent to each other and also having one of their ends extended and bent downwardly, said downwardly-bent ends engaging the perforations of the metallic strips, coiled springs placed around the slides, having their ends bent at right angles to engage the opposite ends of the loops of the adjacent slides, cone-shaped springs having their apices secured to the metallic strips, and a mattress secured to the rollers above the supporting-frame and also bearing upon the base of the conical springs, substantially as set forth.

411,844. RAILROAD-RAIL. HOSEA W. LIBBEY, Boston, Mass. Filed Nov. 16, 1888. Serial No. 291,032. (No model.)

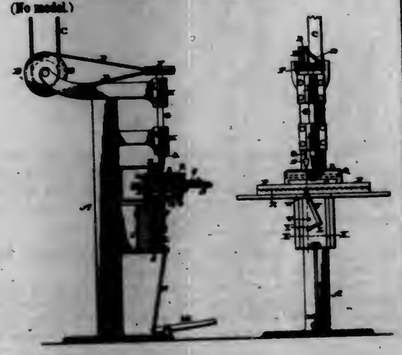


Claim.—1. A railroad-rail consisting of a tread, two V-shaped webs set at an angle opposite to each other and separated at their lower ends, and flanges to rest upon the sleepers, substantially as shown and described.

2. A railroad-rail consisting of a tread with two dependent arms, each forming a V-shaped web, and a flange to rest upon the sleepers, the V-shaped webs being set at an angle opposite to each other, whereby a certain amount of elasticity is given to the rail, substantially as set forth.

3. A railroad-rail consisting of the tread A, V-shaped webs B, provided with hand-holes E, and flanges C, substantially as shown and described.

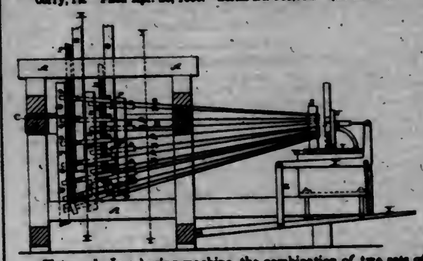
411,845. MACHINE FOR MAKING WOODEN CURRY-COMBS. CLARENCE A. MABLE, Corry, Pa. Filed Apr. 26, 1889. Serial No. 308,649. (No model.)



Claim.—1. The combination of the revolving bit, the laterally-adjustable block-holder placed upon the top of the carriage, the end-wise-movable carriage placed upon the vertically-moving support, the vertically-moving support upon which the carriage is placed, a vertically-moving slide provided with a spring-actuated lever for moving the carriage endwise, and a treadle which first operates the slide for moving the carriage endwise and then raises the support, so as to feed the block being bored to the bit, substantially as shown.

2. The combination of the stationary rotating bit, a stationary punch, and a cup placed above the block-holder with a laterally-adjustable block-holder, an endwise-moving carriage, a vertically-moving support upon which the carriage is placed, a vertically-moving slide, a pivoted spring-actuated lever attached to the slide, and a treadle, substantially as described.

411,846. BRUSH-BLOCK-BORING MACHINE. CLARENCE A. MABLE, Corry, Pa. Filed Apr. 29, 1889. Serial No. 308,994. (No model.)



Claim.—1. In a boring-machine, the combination of two sets of spindles provided with operating-pinions and journaled in the journal-plates, the boring-rods connected to the spindles and supported at one end by the form-board, the operating-wheels of unequal size placed upon the shaft, the journal-plates of unequal size, the shaft upon which the journal-plates are placed, a form-board through which the points of the boring-rods pass, and the operating mechanism for presenting the block to the bits, substantially as shown.

2. In a boring-machine, the combination of two sets of spindles, each set arranged in a curved line and one set arranged within the other, operating mechanism for driving the spindles, the boring-rods connected to the two sets of spindles, and the form-board which supports the outer ends of the rods, the two sets of boring-rods being arranged at different angles, substantially as described.

3. The combination of the stationary shaft, the three journal-plates D I F, placed thereon, the two operating-wheels F L, provided with pulleys, the two conical rows of spindles journaled in the journal-plates and provided with pinions to engage with the operating-wheels, the boring-rods, the form-board, and a mechanism for presenting the brush-block to the bits, substantially as set forth.

411,847. PLANT-PROTECTOR. LEBI R. MOORE and MATTHEW S. LOVE, Morley, Mo. Filed June 15, 1889. Serial No. 314,205. (No model.)



Claim.—In a plant-protector, the combination of the base portion, the flanges formed at the top thereof, the wire-gauze resting upon the flanges, and a moisture-collector fitting in the said base portion and above the gauze screen, substantially as described.

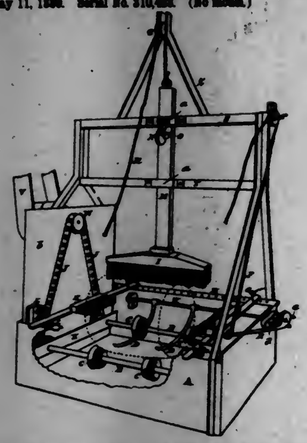
411,848. HEAD-PROTECTOR. BENJAMIN S. MORROW, Bradford, Pa. Filed July 16, 1889. Serial No. 317,695. (No model.)

Claim.—The combination of the spring provided with a pointed end and a series of perforations, with the sliding guides for holding the ends of the spring in contact, and the supporting-clamps for holding a sponge or other heat-non-conducting substance above or in contact with the head, substantially as shown.

411,848.



411,849. WASHING-MACHINE. HENRY HADCOTT, Louisville, Ky. Filed May 11, 1889. Serial No. 310,429. (No model.)



Claim.—1. The combination, with the tank having one of its walls provided with perforations in its upper edge, and the opposite parallel wall provided with the brackets L, of the brushes K, secured by a pin to the perforated wall of the tank, and the opposite ends of said brushes adapted to be adjusted in the brackets L, substantially as specified.

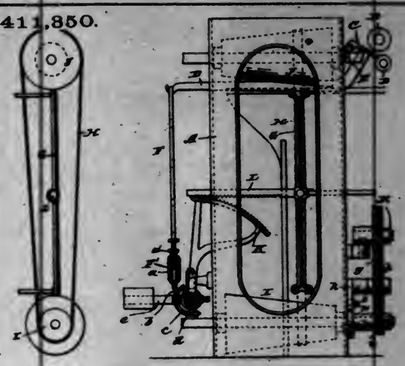
2. The improved barrel-washing machine described, consisting of a tank, shafts journaled longitudinally therein and carrying barrel-supporting rollers, chain-wheels on one end of the shafts, and a shield for said wheels, brushes arranged transversely on the tank and longitudinally and vertically adjustable, a vertical frame having guideways, a vertically-movable brush arranged in said ways, a stop on the brush-bar, a catch on the frame to engage the stop, a guide-pulley in the frame, a hand-rope passing over the pulley and secured to the brush-bar, a rock-shaft journaled in the tank and having curved arms, a lever secured to the outer end of the rock-shaft, and an operating-rope secured to the lever and passing over a pulley in the frame, all substantially as specified.

411,850. EVENING MECHANISM FOR COTTON-OPENERS, &c. JAMES C. PORTER, Pawtucket, R. I. Filed Jan. 28, 1889. Serial No. 297,861. (No model.)

Claim.—1. The combination, with the cone-drums and cone-drum belt, of the belt-shipper, the oscillatory toothed quadrant, and the sliding rack-bar attached to the belt-shipper and at its toothed end resting upon, supported by, and engaging the toothed quadrant, substantially as and for the purposes hereinbefore set forth.

2. The combination, with the cone-drums and cone-drum belt, the belt-shipper, and evening mechanism for operating the same, of the actuating-shaft M, its spur-wheel *g*, the change-gear *i* on the hub or axle of one of the cone-drums, and the intermediate gear A and its supporting-bracket, adjustable in the arc of a circle struck from the axis of spur-wheel *g* as a center, substantially as and for the purposes hereinbefore set forth.

411,850.

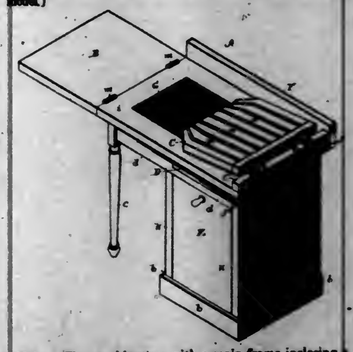


411,851. PILLOW-SHAM ADJUSTER. JAMES R. POST, Redwood, Minn. Filed Oct. 15, 1888. Serial No. 288,408. (No model.)



Claim.—The combination of the brackets B, the divided tubular bar A revolubly mounted therein, the rod F, lying partly in each portion of said bar, the bracket B', supporting said rod between said portions, the tags G, attached to the bar, the U-shaped spring-wire I, having its ends fixed, respectively, to the parts of the bar, and the springs H, having their outer ends secured to the brackets B, respectively, and their inner ends engaging slots in the bar, substantially as and for the purpose set forth.

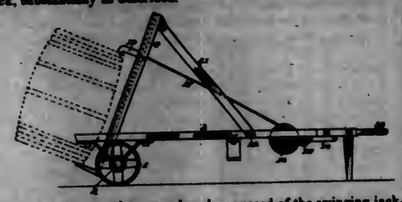
411,852. COMBINED SINK AND KITCHEN-CABINET. JOHN H. RICE, Kansas City, Mo. Filed May 11, 1889. Serial No. 310,394. (No model.)



Claim.—The combination, with a main frame inclosing a sink, of a movable strip hinged at one edge to the said frame, and the drain-board hinged at one edge to the free edge of the said strip, whereby when the drain-board is in its operative position it is inclined downward toward the sink, substantially as specified.

411,853. HAND-TRUCK. BENJAH RIDDELL, Rugby, Tenn. Filed June 20, 1888. Serial No. 314,956. (No model.)

Claim.—1. The combination, with a wheeled truck-frame having a windlass, of a hinged swinging jack, a head-block sliding along and swinging with the hinged jack and provided with a foot-piece, a hook for respectively engaging opposite ends of a barrel or other object, and a cord or cable connection between the windlass and head-block, substantially as described.



2. A jack secured to a truck and composed of the swinging jack-frame 4, the head-block 9, hook 10, foot 11, the windlass, and the rope engaged with said head-block, substantially as herein specified.

3. In combination with a truck-frame, the jack 4, secured by the detachable hinge-joint at the lower end and a hinge-brace at the upper end, with windlass-and-cord attachment, whereby said jack may be attached or detached from the truck-frame, substantially as specified.

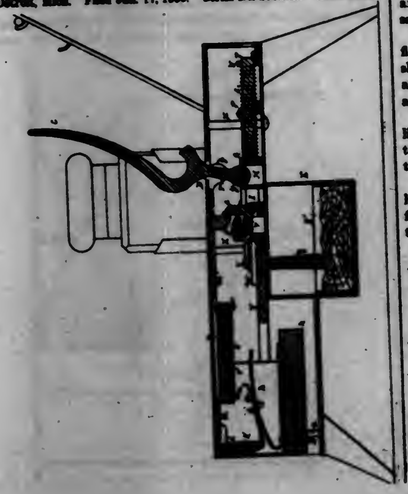
411,854. CAR-WHEEL. JAMES RENDY, Minneapolis, Minn. Filed Jan. 23, 1889. Serial No. 297,241. (No model.)



Claim.—1. In combination with a car-wheel body, a tire formed with annular ledges upon its inner periphery and near its outer and inner faces for receiving the body, and having a continuous or uncut annular flange projecting from its inner face and adapted to be hammered down over the body for holding it in place, as described.

2. In a car-wheel, the tire formed with annular steps or ledges on its inner periphery and having grooves cut in such ledges, and with a continuous or uncut annular flange projecting from its face, in combination with the body having a smooth-faced flange *k* and provided with annular projecting beads *e f*, adapted to fit in the grooves of the tire and interlock, said flange of the tire being adapted to be hammered down all around over the body to hold it in place, substantially as described.

411,855. ENVELOPE-DAMPING MACHINE. HENRY J. H. SCHMIDT, Detroit, Mich. Filed Jan. 17, 1889. Serial No. 296,645. (No model.)



Claim.—1. In a machine for damping envelopes, the combination, with an actuating-lever, of a spring pressure-block adapted to hold the flap in position, and two brushes playing in tracks each substantially the shape of one-half the gummed edge of the envelope-flap, substantially as shown and described.

2. In a machine for damping envelopes, the combination, with an actuating-lever, of a spring pressure-block adapted to clamp the flap in position to be damped, substantially as shown and described.

3. In a machine for damping envelopes, the combination, with a stop for determining the position of the flap when inserted, of a sheet-metal piece having therein two tracks above the gummed portion of the flap, a movable brush in each of said tracks, and an actuating-lever connected with said brushes, substantially as shown and described.

4. In a machine for damping envelopes, a sheet-metal piece having therein tracks extending in line with the gummed portions of the flap when inserted and hinged at one end, a brush lying in each of said tracks, a water-reservoir beneath the inner end of said tracks, and an actuating-lever connected both with the free end of said sheet-metal piece and with said brushes, whereby the brushes are first raised and then caused to traverse said tracks, substantially as shown and described.

5. In an envelope-damping machine, the combination of the water-reservoir E, the hinged metal piece T, having therein the tracks *f* and the projection *w*, the bell-crank lever *d v*, and the actuating-lever C, connected both with said brushes and with said bell-crank lever *d v*, substantially as and for the purposes set forth.

6. In a machine for damping envelopes, the combination, with an actuating-lever, of two brushes playing in tracks each substantially the shape of one-half the gummed edge of the envelope-flap, substantially as shown and described.

7. In a machine for damping envelopes, the combination of a sheet-metal piece having therein two tracks above the gummed portion of the flap, a movable brush in each of said tracks, and an actuating-lever connected with said brushes, substantially as shown and described.

411,856. INK OR MUCILAGE VESSEL. WILLIAM T. SHAW, London, England. Filed Nov. 28, 1888. Serial No. 292,194. (No model.) Patented in England Dec. 15, 1887, No. 17,268.



Claim.—1. The combination of a liquid-containing vessel and a float of half the specific gravity of the liquid and of the shape obtained by halving a solid of revolution by a plane passing through its axis, said float being pivoted in the vessel and free to turn about the said axis.

2. The combination of a vessel containing ink or mucilage and a float of half the specific gravity of ink or of mucilage and of the shape of the solid generated by a half-revolution of a plane figure about an axis in its plane, the said float being pivoted in the vessel, so as to be free to turn about the said axis.

3. The combination, substantially as hereinbefore set forth, of a liquid-containing vessel, the dip-well communicating therewith, and the float pivoted in the liquid-containing vessel and adapted to force the liquid into the dip-well.

4. The combination, substantially as hereinbefore set forth, of a liquid-containing vessel, the dip-well communicating therewith, the float pivoted in the liquid-containing vessel, and the stops for limiting the movement of the pivoted float.

411,857. HARNESS-LOOP. SYLVESTER W. SHIRK, Sylvania, Ohio. Filed Apr. 24, 1888. Serial No. 308,574. (No model.)



Claim.—As an improved article of manufacture, a metallic loop for harness, comprising the metal plate provided with end perforations and intermediate perforation, and also provided near one end with a depression or concavity, and formed or provided above said concavity

with a metal loop, said loop having the upper transverse portion thereof correspondingly convexed, substantially as set forth.

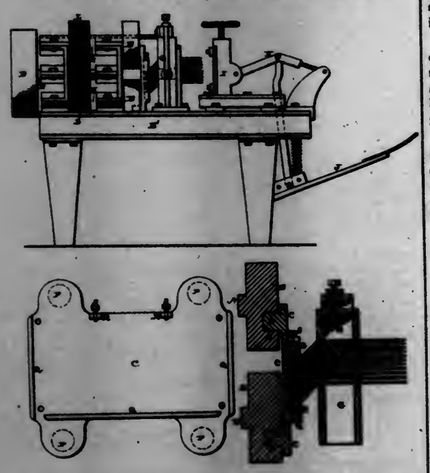
411,858. COMBINED COVER AND PUMP FOR OIL-BARRELS. LEE J. STADELER, York, Pa. Filed June 7, 1889. Serial No. 312,483. (No model.)



Claim.—1. The combination of the barrel-cover B, having annular flange C, beveled re-enforcing plate D and central collar F *f*, bridge H, having the shield or bulge A, provided with ducts leading into the central collar, fixed top plate I, having lip *i*, and hinged hood J, having flange *k*, whereby a shallow pan L is formed, substantially as and for the purpose herein shown and set forth.

2. The combination of the barrel-cover B, constructed as described and having the central sleeve F *f*, the hinged hood J, having rim or flange *k*, adapting it to form a shallow pan L, and the removable pump, substantially as and for the purpose herein shown and set forth.

411,859. MULTIPLE BORING-MACHINE. CHARLES A. STARK, Corry, Pa. Filed May 6, 1889. Serial No. 309,818. (No model.)

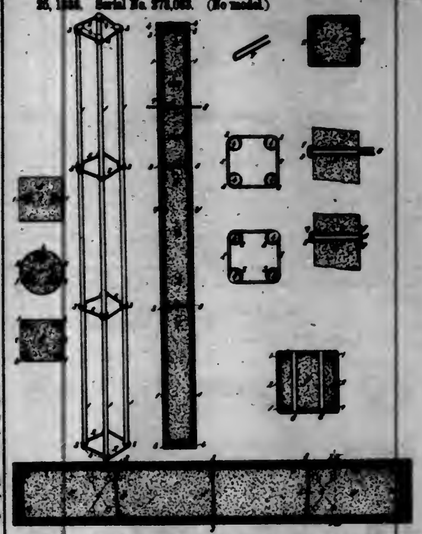


Claim.—1. The combination of the driving-shaft with a driving-wheel, the four shafts provided with wheels which mesh with the driving-wheel, the eccentrically-recessed disks secured to the ends of the shafts, and the bit-driver provided with journals which fit in the recesses in the disks, substantially as shown.

2. A bit-driver provided with a journal at each of its corners and with the flanges Q, lugs, and set-screws S, in combination with the bits provided with cranks at their inner ends, substantially as described.

3. The combination of the shafts N, provided with operating-wheels L, and the driving-shaft provided with a driving-wheel for operating the wheels L, the disks B, provided with eccentric recesses O, and the bit-driver provided with a journal at each of its corners, the crank-carrier, the boring-rods, the journal-plates, and a mechanism for presenting the brush-block to the bits, substantially as set forth.

411,860. POST, RAIL-TIE, BEAM, &c. OMAR A. STEMPEL, St. Louis, Mo., assignor of one-half to Ferdinand Meyrose, same place. Filed June 25, 1888. Serial No. 278,063. (No model.)

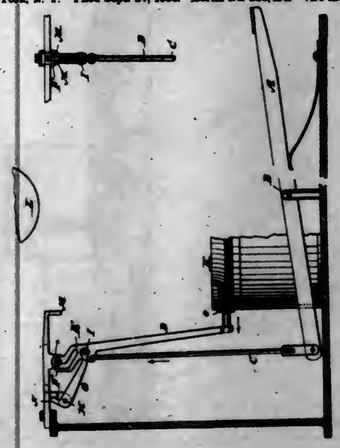


Claim.—1. The combination of the metal frame, the filling and inclosure of imperishable material 5, that protects said frame from the inroads of moisture and rust, and said frame arranged to protect said structure from breakage, the said structure provided with holes for seating staples, and the staples that hold the wires to said posts, seated in said holes, substantially as and for the purpose set forth.

2. The combination of longitudinal metal rods and girding-wires connecting said rods and a filling and inclosure of indestructible material 5, arranged to protect said frame from the inroads of moisture and rust, and said frame arranged to bind and hold said material from breakage, and hooks on the ends of said rods for preventing said wires from slipping off, substantially as set forth.

3. The combination of longitudinal metal rods and girding-wires having tie-coils embracing said rods, a filling and inclosure of indestructible material 5, arranged to protect said frame from the inroads of rust, and said frame arranged to bind and hold said material from breakage, and hooks on both ends of said rods projecting inwardly for preventing said wires from slipping off, substantially as set forth.

411,861. TYPE-WRITING MACHINE. FRANK X. WAGNER, New York, N. Y. Filed Sept. 27, 1888. Serial No. 286,491. (No model.)

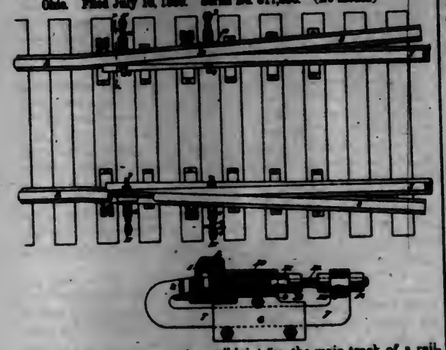


Claim.—1. The combination, with the key A, of a type-bar having a cam-slot E near its butt-end, a pivot F, engaging said cam-slot, a link G, jointed to a fixed part of the machine and to the type-bar, a connection-rod C between the key and type-bar, and an inking device K, substantially as described.

2. The combination, with the key A, of a type-bar having a cam-slot E near its butt-end, a pivot F, engaging said cam-slot, a link G, jointed to a fixed part of the machine and to the type-bar, a connection-rod C between the key and type-bar, a guide M for the type-bar, and an inking device K, substantially as described.

3. The combination, with the key A, of a type-bar having a cam-slot E near its butt-end, a pivot F, engaging said cam-slot, a link G, jointed to a fixed part of the machine and to the type-bar and having a stop N, a connection-rod C between the key and type-bar, and an inking device K, substantially as described.

411,862. EXPANSION RAIL-JOINT. FREDERICK G. WEIR, Cincinnati, Ohio. Filed July 10, 1889. Serial No. 317,020. (No model.)



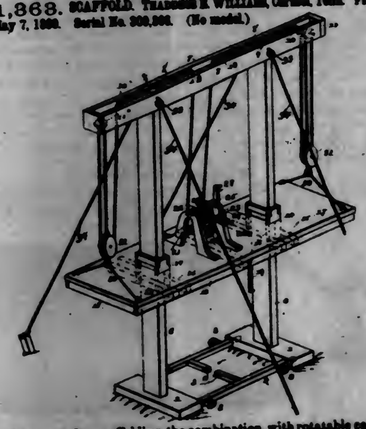
Claim.—1. An expansion rail-joint for the main track of a railway, composed of the split rails 1, abutting the main rails 2, and secured thereto by a spring-clamp, substantially as herein specified.

2. An expansion rail-joint composed of the split main rails 1, abutting the inside of the main rails 2, the former being held laterally against the latter by a yielding brace abutting the inside of said rails 1, substantially as specified.

3. A rail-clamp composed, substantially, of the arm 7, embracing the split rail 1 and fixed rail 2, and carrying a yielding support, so as to allow rail 1 to move longitudinally with said support, substantially as specified.

4. In combination with the rails 1 and 2, the clamps 7, carrying the brace, and compensating spring supported in the guide-box 6, which holds the clamp laterally and allows it to move longitudinally, substantially as specified.

411,863. SCAFFOLD. THADDEUS R. WILLIAMS, Carmel, Tenn. Filed May 7, 1889. Serial No. 309,991. (No model.)



Claim.—1. In a scaffolding, the combination, with rotatable center-bars, of a platform adapted for connection with the bars and means for raising the platform to rotate the bars, substantially as specified.

2. In a scaffolding, the combination, with rotatable center-bars provided with laterally-disposed bars having perforations, of the platform provided with hooks for connection with the bars and means for raising the platform, substantially as specified.

3. The combination, with opposite sills having uprights and connected at their ends by pivotal center-bars having laterally-disposed arms perforated near their ends, of a platform mounted on the standards and provided with opposite depending hooks designed to engage with the perforated arms, and means, substantially as described, for raising the platform.

4. The combination, with the uprights 6 and the sills 1, and the oppositely-located bars 7, spaced, as at 8, and carrying the pulleys 10, 12, 11, and 13, of the boring 14, having the bars 15 and the side bars 16, the opposite connecting-links 30, and the blocks 31, the standards 20, and the shaft 21, carrying the gear 22 and ratchet and pawl 23, the shaft 24, mounted above the same and carrying a small gear 25, meshing with the gear 23, the brake-pulley 26 and its lever 27, and the cables connected to the drum-shaft and over the pulleys, as described, and each terminating at and connected to the blocks 31.

411,864. WHEEL. HENRY M. WRIGHT, Green City, Mo. Filed July 2, 1889. Serial No. 316,304. (No model.)

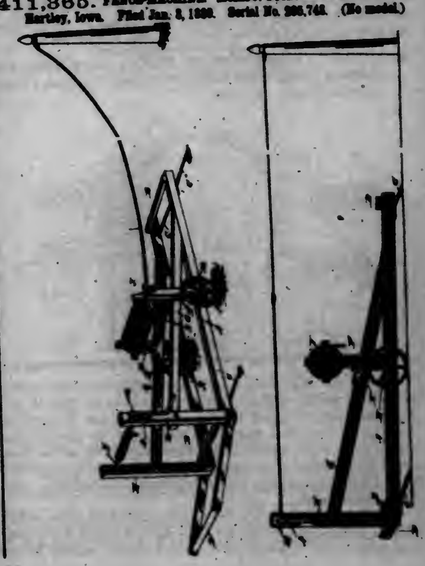


Claim.—1. The combination, with a wheel constructed of wood or other permeable material, of the reservoir or passage formed in the felly and surrounded by the wood on all sides and adapted to receive a supply of oil through an opening extending from the periphery of the felly to the same for transmission to the said wheel, and the tire applied over the felly, substantially in the manner explained.

2. The combination, with a wheel, of a reservoir formed in the wooden rim, a strip flush with and encircling the periphery closing said reservoir, and having an opening fitted with a screw-plug for the introduction of oil, substantially as and for the purposes explained.

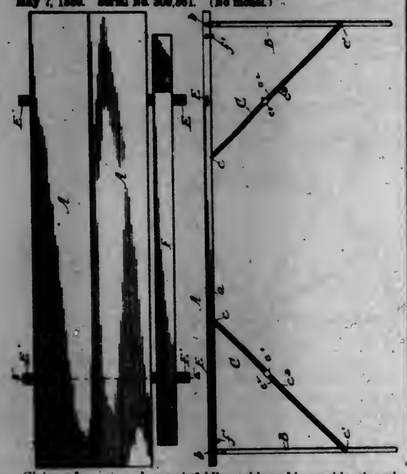
3. In a wheel, a reservoir formed in the rim, a strip encircling the periphery and closing said reservoir and having an opening, a removable closure for said opening, and the tire applied over the rim and its strip, substantially as set forth.

411,865. FENCE-MACHINE. MOSES J. YOUNG and LOUIS A. WAITE, Hartley, Iowa. Filed Jan. 8, 1889. Serial No. 296,743. (No model.)



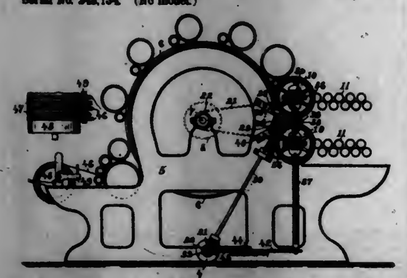
Claim.—The herein-described fence-machine, comprising the side bars A A, the rearwardly-projecting spikes depending from the under sides of said bars, the tongue secured to the front ends of said bars, the standards E F, rising from the said bars, the arched axle secured to the standards F, the carrying-wheels mounted on said axle, the reel mounted between the upper ends of the said standards, the shaft K, mounted between the upper ends of the standards E and carrying a windlass, the ratchet-wheel on said shaft, and the pawl secured to one of said standards and engaging said ratchet-wheel, as set forth.

411,866. PAPER-HANGER'S FOLDING TABLE. HARRY W. ALLEN, Chicago, Ill., assignor of one-half to Robert S. Hobbs, same place. Filed May 7, 1888. Serial No. 309,861. (No model.)



Claim.—In a paper-hanger's folding table and in combination, the longitudinally-folding sections A A, provided with downwardly-projecting strips *a* at their edges and having mortises E, the folding legs B, hinged to the folding sections at each end, so as to fold between the strips *a*, the braces C, each having a joint c^3, formed, as shown and described, with a sliding sleeve c^4, such braces being pivoted at one end to the strips *a* on the inside and at the other end to the folding legs, the cross-pieces D, of strap metal, constructed as shown and secured to the legs in the manner described, and the slats E', adapted to be run through the mortises E, so as to project at either side of the table and form a rest for the straight-edge, as specified.

411,867. CARDING-MACHINE. GEORGE A. ALLISON, Pascoag, R. I., assignor of one-half to Fred. L. Sayles, same place. Filed Aug. 29, 1887. Serial No. 248,134. (No model.)



Claim.—1. In a carding-machine, the combination, with the carding-cylinder and the doffers having the gears 14, of the shaft 16, carrying the pinion 15, located between and meshing with the gears 14, the elliptical gear-wheel mounted on the shaft 16, the elliptical gear 18, the shaft 19, and the band-wheel 20 on the shaft 19, and the band-wheel 22 on the shaft of the carding-cylinder, connected to band-wheel 20 by a belt, all constructed to impart uniformly-variable speed to the doffers, as described.

2. The combination, with the card-cylinder and the geared doffers, of a pinion engaging with the doffer-gears, the shaft 19, the elliptical gears 17 and 18, the shaft 30, provided with the gears 29 31, the rocker-arm by which the doffers are reciprocated, and intermediate connections constructed to impart reciprocating motion to the doffers, as described.

3. The combination, with the card-cylinder and the doffers having gears, of a shaft having a pinion engaging said gears, means for driving said shaft at a uniformly-variable speed, the beveled gear 28, the rocker-arm by which the doffers are reciprocated, the shaft 30, provided with the gears 29 and 31, the beveled gear 32, the cam-shaft 33, and connections between the cam-shaft and rocker-arm, whereby the latter is reciprocated, as described.

4. The combination, with the card-cylinder, the doffers, and means for revolving the doffers at a uniformly-variable speed, of the rocker-arm by which the doffers are reciprocated, the beveled gear 28, the shaft 30, provided with the gears 29 and 31, driven by the doffer-rotating mechanism, the shaft 33 and gear-wheel 32, the cam 34, and the cam-rocker connecting the cam with the rocker-arm, as described.

5. The combination, with the card-cylinder and the doffers, of means for rotating said doffers at a uniformly-variable rate of speed, and mechanism for simultaneously reciprocating the doffers, whereby a roving of different colored or kinds of material, and having uniformly-variable diameters throughout its length, is produced, substantially as described.

6. The combination, with the card-cylinder and the doffers, of the vertical rocker-arm by which the doffers are reciprocated, mechanism for imparting variable speed to the doffers, the beveled gear 28, the inclined shaft 30, provided with the gears 29 and 31, the beveled gear 32, the shaft 33, the cam 34, the cam-rocker 42, provided with the slot 43, and the adjustable fulcrum-pin 44, constructed to impart reciprocating motion to the doffers, as described.

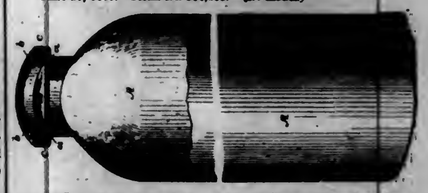
7. The combination, with the card-cylinder having the doffers, and mechanism for imparting uniformly-variable speed to them, of the pinions 28 and 29, the shaft 30, pinions 31 and 32, the cam 34, the cam-rocker 42, and the rocker-arm 37, constructed to impart reciprocating motion to the doffers, as described.

8. The combination, as hereinbefore set forth, with the main cylinder and the reciprocating doffers supported near thereto and provided with driving means, of a pivoted rocker-bar having the ends of the doffers journaled thereon, and a cam-rocker engaging and rocking the bar, a cam-shaft having a cam engaging the cam-rocker and provided with the pinion-wheel, and a shaft receiving its motion from the said driving means of the doffers and provided with a gear driving the pinion-wheel of the cam-shaft, substantially as and for the purpose herein set forth.

9. The combination, as hereinbefore set forth, with the main cylinder and the reciprocating doffers 10, provided with means for driving the same, and provided with the journals 35, of the pivoted rocker-bar 37, having the journals 35 mounted thereon, the cam-rocker 42, provided with a fulcrum having means of adjustment, the cam-shaft 33, provided with the cam 34 for actuating the cam-rocker, and provided with the bevel-gear 32, the shaft 30, provided with the bevel-gear 31, meshing with the gear 32, and said shaft receiving its motion from the driving means of the doffers, substantially as and for the purpose herein described.

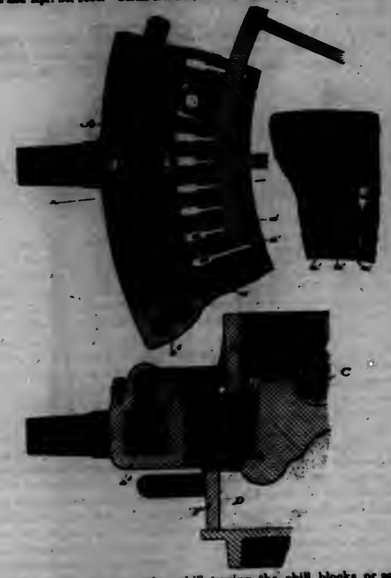
10. The combination, as hereinbefore set forth, with the main cylinder 6, of the reciprocating doffers 10, provided with the journals 35, and having the gears 14, means for driving the doffer-gears, the rocker-bar 37, pivoted at 38, and the bracket 40, provided with the spindle 39 for the rocker-bar, the pivot-bearings 36 for swiveling the journals 35 to the rocker-bar, the cam-rocker 42, provided with eye 41 and slot 43, and the adjustable fulcrum pin or bolt 44, the cam-shaft 33, provided with the gear 32 and the cam 34 for oscillating the cam-rocker, the inclined shaft 30, provided with the bevel-gear 31, meshing with gear 32, and having the bevel-gear 29 mounted upon the upper end thereof, and the bevel-gear 28, driving the gear 29, substantially as and for the purpose herein described.

411,868. MEANS FOR CAPPING AND SEALING MILK-BOTTLES. HARVEY P. BARNHART and SAMUEL L. BARNHART, Potsdam, N. Y. Filed June 29, 1889. Serial No. 316,103. (No model.)



Claim.—The combination, with the jar or bottle hereinbefore described, the circular neck or outlet portion of which comprises upon its interior wall an offset, the upper face of which lies in a plane passing through the neck at a right angle to the longitudinal axis thereof, that part of the wall immediately above said offset being truly cylindric, while the remaining portion of said wall is of slightly-flaring outline, as set forth, of the wafer-like ligneous disk described, saturated with paraffine, seated upon the said offset within the cylindric portion of the neck, whereby without other fastenings the mouth of the bottle is effectually closed, as set forth.

411,869. CONTRACTING CHILL. JACOB H. BARR, Milwaukee, Wis. Filed Apr. 26, 1888. Serial No. 271,953. (No model.)

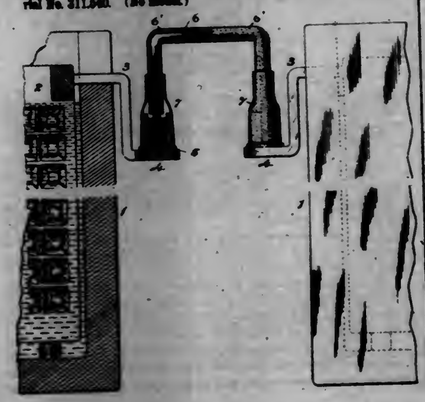


Claim.—1. A contracting chill having the chill blocks or segments separated by slits or spaces, in combination with a hardened filling of sand and flour in said slits.

2. The contracting chill consisting of the outer ring and the separated chill-blocks extending inward therefrom, in combination with a hard compressible filling, substantially such as described, seated between the chill-blocks and flush with their inner faces.

3. The contractible chill having the separated chill-blocks and the groove at the shoulder, in combination with the compressible filling between the blocks and the sand in the groove.

411,870. CONNECTOR FOR SECONDARY BATTERIES. SIDNEY H. BARRETT, Springfield, Mass., assignor to the Railway Electric Car Lighting and Signal Company, of New York. Filed May 31, 1889. Serial No. 311,940. (No model.)



Claim.—1. In a connector for secondary batteries, the combination of mercury-cups on rigid projections from the electrodes, and the immersed U-formed coupler.

2. A flexible and protected connector for secondary batteries, consisting of the combination of rigid integral projections from the electrodes to points outside of and below the cell-tops, the mercury-cups rigidly attached to the respective projections, the U-formed coupling-wire, and the protecting and flexible sleeves.

3. The connector consisting of electrode projections 3, terminating in mercury-cups 4, which receive the ends of the U-formed coupling-wire 5, and the protecting rubber sleeves 7.

4. In a connector for secondary batteries, the combination of electrode projections 3, mercury-cups 4, U-formed coupling-wire 5, having the insulating-coverings 6, and the protecting rubber sleeves 7, for the purposes set forth.

5. A connector for secondary batteries, consisting of the combination of the mercury-cup supported on a battery-electrode, a conductor inserted therein, and a guard or sleeve which surrounds both cup and conductor, as and for the purposes explained.

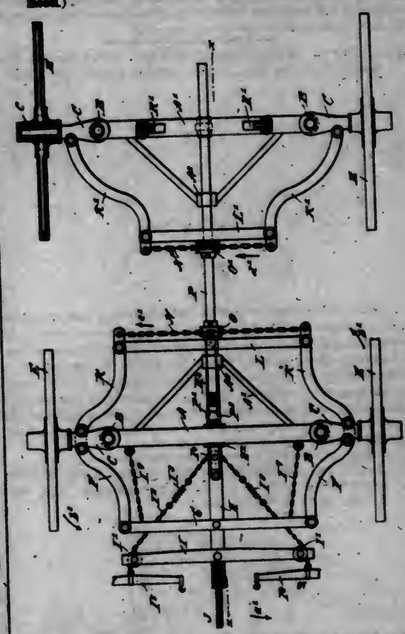
411,871. BOTTLE-WRAPPER. CHARLES G. BIEDERMAN, Cincinnati, Ohio. Filed Sept. 6, 1888. Serial No. 284,793. (No model.)



Claim.—1. A bottle-wrapper consisting of the husk of an ear of corn having its spathes substantially undisturbed, as and for the purpose set forth.

2. A bottle-wrapper consisting of the husk of an ear of corn having its spathes substantially undisturbed, and provided with devices for retaining them in place, as and for the purpose set forth.

411,872. RUNNING-GEAR FOR VEHICLES. CHARLES A. BUSH and PEARCE H. ARMSTRONG, Celina, Ind.; said Armstrong assignor to David Lamm, same place. Filed Nov. 9, 1888. Serial No. 290,260. (No model.)



Claim.—1. In a running-gear for vehicles, the combination, with a front axle-bar, of axle-heads pivoted on the ends of the said axle-bar, wheels mounted to turn on the said axle-heads, links pivotally connected with the said axle-heads, a lever fulcrumed in its middle and pivotally connected at its outer end with the said links, a pole-carry-

ing arm supporting the said lever and pivoted in the middle of the axle-bar, a doubletree held on the said pivoted arm and supporting rollers, a yielding chain passing over the said rollers and over a roller on the said pivoted arm, and singletrees held on the outer ends of the said yielding chain, substantially as shown and described.

2. In a running-gear for vehicles, the combination, with the front axle-bar and axle-heads pivoted on the same and carried by the wheels, of the rear axle-bar, a shaft mounted to rotate in bearing on the said axle-bars and turned by the swinging motion of the said front axle-heads, and rear axle-heads pivoted on the said rear axle-bar and operated from the said shaft, substantially as described.

3. In a running-gear for vehicles, the combination, with a front axle-bar provided with pivoted axle-heads, of links pivotally connected with the said heads and extending rearwardly, a bar pivotally connecting the said links, a chain secured to the said links, and a shaft mounted to turn and carry a pulley over which passes the said chain, substantially as described.

4. In a running-gear for vehicles, the combination, with a rear axle-bar and axle-heads pivoted on the same, of links pivotally connected with the said axle-heads, an arm pivotally connected with the said links, a chain fastened on the said links, a pulley passing over the said chain, and a shaft held to turn in a bearing on the said axle-bar and carrying the said pulley, substantially as described.

5. In a running-gear for vehicles, the combination, with a front axle-bar and axle-heads pivoted on the said front axle-bar, of a shaft connected at one end by a ball and socket with the said axle-bar and deriving its rotary motion from the swinging of the said axle-heads, substantially as described.

6. In a running-gear for vehicles, the combination, with a front axle-bar and axle-heads pivoted on the said front axle-bar, of a shaft connected at one end by a ball and socket with the said axle-bar and deriving its rotary motion from the swinging of the said axle-heads, a rear axle-bar supporting in suitable bearings the said shaft, and axle-heads pivoted on the said axle-bar and deriving their swinging motion from the said shaft, substantially as described.

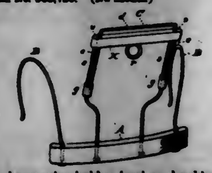
7. In a running-gear, the combination, with the pole, the forward axle, a doubletree pivoted on the pole, and rollers held on the inner end of the pole and the ends of the doubletree, of a chain passing over said rollers, singletrees attached to the ends of the chain, springs interposed in said chain, and limit-chains connecting said first chain with the axle, substantially as shown and described.

411,873. **HORSE-COLLAR FASTENING.** PETER T. BRADLEY, Kansas City, Mo. Filed May 16, 1889. Serial No. 311,215. (No model.)



Claim.—The herein-described collar-fastening, comprising the concaved plates C, to fit in the crease of the collar and receive the hames, and provided at their outer ends with rearwardly-curved lugs or flagers to extend over and engage the hames, the caps or sockets on the adjacent ends of the plates provided with flat abutting faces, the arm projecting beyond the face of one cap or socket and provided with an aperture *D'* and a loop *a*, and the drop-latch mounted on the opposite cap or socket and adapted to pass through said loop and engage the aperture *D'*, substantially as specified.

411,874. **HARMONICA-HOLDER.** ALVIN B. CLARK, Richmond, Ind., assignor of one-half to Oliver T. Knode, same place. Filed Mar. 18, 1889. Serial No. 303,730. (No model.)



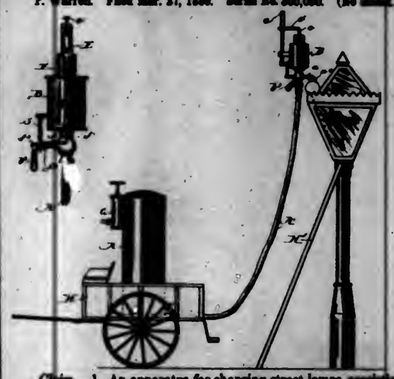
Claim.—1. A harmonica-holder having shoulder-hooks in connection with a transverse breast-bar, and holding-jaws above and connected to said breast-bar, substantially as specified.

2. A harmonica-holder having shoulder-hooks in connection with a transverse breast-bar, and spring-actuated holding-jaws above and connected to said breast-bar, substantially as specified.

3. A harmonica-holder consisting of the transverse breast-bar having the shoulder-hooks connected to its ends, the loop-jaw secured to said breast-bar, and having the spring and the movable lower jaw engaging said loop-jaw, substantially as specified.

4. The harmonica-holder consisting of the breast-bar and its pivoted folding shoulder-hooks, the loop-jaw and its springs, and the movable jaw engaging the arms of said loop-jaw, substantially as specified.

411,875. **MEASURING APPARATUS FOR FILLING STREET-LAMPS.** BERNET W. COOKE, Chicago, Ill., assignor of one-third to Charles P. Warren. Filed Mar. 27, 1889. Serial No. 305,089. (No model.)



Claim.—1. An apparatus for charging street-lamps, consisting of a portable oil-supply reservoir and a charge-measuring attachment having an expanding and contracting chamber, in combination with a flexible hose provided with a nozzle adapted to connect the apparatus with the opening of lamps to be filled, and a three-way valve at its junction with said chamber for admitting oil from said reservoir thereto through said hose and discharging the same therefrom through said nozzle, whereby the measuring attachment of such apparatus through the flexibility of said hose is adapted to fill lamps in various positions relative to said apparatus within the reach of said hose, as specified.

2. In a lamp-charging apparatus, the combination, with an expanding charge-measuring chamber, of a spring-pressed two-port valve, one port for opening and closing a way through a pipe into said chamber and the other for opening and closing a way out of said chamber through the opposite end of said pipe, trip mechanism, substantially as described, for holding open said port into said chamber, and a tripping-rod for connecting such trip mechanism with the moving part of such expanding chamber for automatically tripping the same, substantially as specified.

411,876. **DISK HARROW.** MICHAEL DALBY, De Kalb, Ill., assignor to the Daisy Manufacturing Company, same place. Filed Dec. 21, 1888. Serial No. 294,333. (No model.)



Claim.—1. In a disk pulverizer, the combination, with the disks, their hub-sleeves, and offset rings, of the coupling-sleeves and the sectional dirt-guards having end flanges engaging the offsets of said rings, substantially as specified.

2. A disk pulverizer having two angularly-adjustable gangs of separately-revolving pairs of disks and automatically-disengaging gangs of cleaners, substantially as specified.

3. In a disk pulverizer, the combination, with the gang of disks, of the main coupling-sleeve E, its connections, and the inner coupling-sleeve F, of the adjusting-lever and its crooked connections with the latter coupling-sleeve, substantially as specified.

4. A disk pulverizer having gangs of disks connected to the draft-frame nearer their outer than their inner ends, adjustable levers have attached to said frame above said gangs, and coupling-sleeves nearer

their inner than their outer ends, carrying upright bearings G and attached by crossing connections to the adjusting-levers, substantially as specified.

5. In a disk harrow or pulverizer, the gangs of disks, in combination with the gangs of cleaners attached to a swinging bracket pivoted at or near the axle, and the lever whereby a majority of the cleaners are brought into contact with the disks by a motion in the direction the disks revolve, substantially as specified.

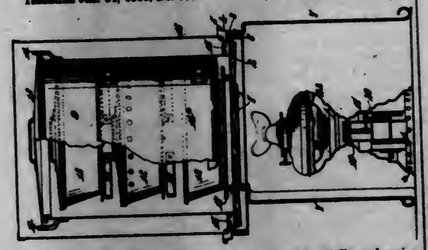
411,877. **ARTIFICIAL LIMB.** FRANK H. FAIRCHILD, Atchison, Kans. Filed Mar. 13, 1889. Serial No. 303,067. (Model.)



Claim.—1. In an artificial leg, the combination of the lower leg-section having the block L at its lower end and rear side, and the foot articulated to the lower leg-section and having the elastic cushion I bearing against the front side of block L, and the elastic cushion H, bearing under the lower end of said block, substantially as described.

2. The artificial limb having the lower leg-section provided with the block L, the foot articulated to the said lower leg-section and having the sections F F', with their opposing sides, at the joint inclined upward from each other, the hinge K on the lower side of the foot-sections and connecting the same together, the wedge-shaped elastic cushion G in the foot-joint, the plates *d* on the foot-sections and bearing on the said cushion, and the elastic cushions I H, recessed in the heel portion of foot-section F, the said cushion I bearing against the front side of block L, and the said cushion H bearing against the lower end of said block, substantially as described.

411,878. **PROCESS, METHOD, OR ART OF COOKING EDIBLES.** HENRY FERRIER, London, England, assignor to Frank L. Weaver, Hamilton, Canada. Filed July 26, 1889. Serial No. 318,488. (No model.) Patented in England Nov. 16, 1887, No. 15,734; in France Dec. 30, 1887, No. 187,734; in Belgium Dec. 31, 1887, No. 80,013; in Cape of Good Hope Apr. 4, 1888; in Natal Apr. 5, 1888, No. 13; in Spain Sept. 10, 1888, No. 8,672; in Canada Jan. 18, 1889, No. 26,976; in India Jan. 23, 1889, No. 18; in South Australia Jan. 25, 1889, No. 1,239; in Victoria Jan. 28, 1889, No. 6,494; in New South Wales Jan. 30, 1889, No. 1,909, and in Tasmania Jan. 31, 1889, No. 605.



Claim.—1. The process, method, or art, substantially as hereinbefore set forth, of cooking meats, vegetables, and other articles of food, which consists in subjecting them to a gradually-increasing temperature in an insulated closed chamber, and to an atmosphere of steam constantly and uniformly produced and condensed therein, generated by an outer heat-creating agent, whereby the articles of food are subjected to a gentle, persistent, and slowly-increasing bath heat, which penetrates and permeates each of said articles, substantially as described.

2. The process, method, or art herein set forth of cooking meat, vegetables, and other articles of food, which consists in subjecting them to a gradually-increasing temperature in a closed chamber or vessel, and to an atmosphere of steam constantly produced and condensed therein, generated by a gentle, regulated heat applied to one part of said chamber, whereby a gentle, persistent, slowly-increasing bath heat is produced and housed within said chamber, and caused to penetrate and permeate the articles of food, substantially as described.

411,879. **GRATE-BAR.** RUSSELL J. GORDON, Greenville, Mich., assignor of one-half to Chas. S. Hosier, same place. Filed Apr. 3, 1889. Serial No. 305,713. (No model.)



Claim.—1. A hollow grate-bar having the valved openings on its upper side and adapted to be connected with a pipe or duct, whereby a blast of air may be forced through the said hollow grate-bar, substantially as described.

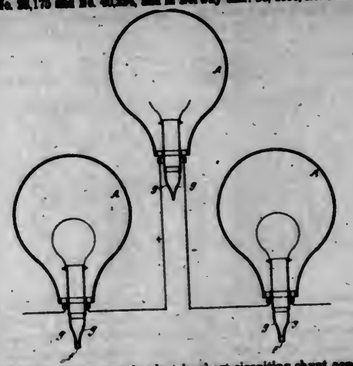
2. A grate-bar having the bore and provided with the valve-seat in its upper side communicating with the bore, and the gravity-valve in the said valve-seat adapted to be opened by the pressure of a blast of air within the bore, substantially as described.

3. The hollow grate-bar having the valve-seats, in combination with the valves arranged in the said valve-seats, the stems or rods depending from said valves and extending through the lower side of the grate-bar, and the adjusting-nuts screwed on the lower end of said stems or rods, for the purposes set forth, substantially as described.

4. The hollow grate-bar having the valved openings and provided at one end with the valve having the operating-lever, whereby said valves may be opened, and means, substantially as set forth, to force a blast of air through the hollow grate-bar, substantially as described.

5. The hollow grate-bar having the valves provided with the depending stem S, the bell-crank lever T, connected to the said stem, and the operating-rod connected to the said bell-crank lever, substantially as described.

411,880. **CUT-OUT.** FRIEDRICH G. A. HELLER, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Feb. 2, 1889. Serial No. 298,122. (No model.) Patented in Germany Feb. 26, 1888, No. 45,982; in France Mar. 9, 1888, No. 189,230; in Belgium Mar. 9, 1888, No. 80,948; in Sweden Mar. 9, 1888, No. 1,685; in Italy Mar. 9, 1888, XXII, 20,131, XLV, 446, XXII, 24,808, XLVIII, 60; in Austria-Hungary Mar. 9, 1888, No. 26,175 and No. 40,394, and in Norway Mar. 20, 1888, No. 606.



Claim.—An automatic electric short-circuiting shunt consisting of opposed springs *g g*, connected to the line-wires upon opposite sides of a lamp and depending from the bottom of it, and the non-metallic body *f*, interposed between the lower ends of the said springs and composed of wax and pulverized graphite, substantially as and for the purpose set forth.

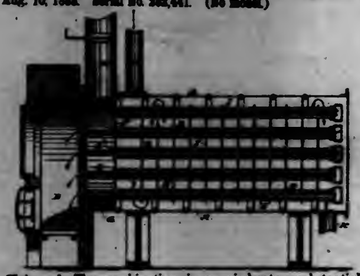
411,881. **OYSTER-OPENER.** JOHN P. HOFFMANN, Baltimore, Md., assignor of one-half to Elias August Volk, same place. Filed Feb. 1, 1889. Serial No. 298,309. (No model.)



Claim.—The oyster-opening implement consisting of the handle A, having attached a straight opening-blade D, which projects forward in a direction longitudinal with respect to the handle, and said handle

also having a hammer B, whose shank *c* curves laterally from the handle and then projects forward in the same direction as the opening-blade.

411,382. AIR-HEATER. LEVI HUSSEY, New York, N. Y. Filed Aug. 10, 1888. Serial No. 282,641. (No model.)

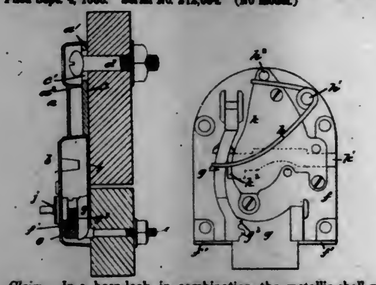


Claim.—1. The combination, in an air-heater, substantially as herein described, of the cylinder A, having the air-inlet J and air-outlet K, the flues D, fixed to the head of the cylinder at the air-inlet end thereof, the furnace B, and the furnace-flues C, movably arranged within the cylinder-flues.

2. The combination of the cylinder A, the flues D, fixed to the head F, the diaphragms I, arranged to conduct the air back and forth laterally across the cylinder, the furnace B, and the furnace-flues C, removably arranged within the flues D.

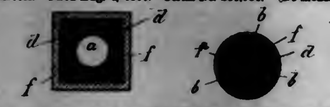
3. The combination of the cylinder A, having air inlet and outlet J and K, the flues D, secured to the cylinder at its air-inlet end only, the diaphragms I, for directing the air back and forth across the cylinder, the furnace B, and the furnace-flues C, arranged within the flues D.

411,383. HASP-LOCK. EDGAR KNIGHT, Saybrook, Conn., assignor to the Stoddard Lock and Manufacturing Company, New York, N. Y. Filed Sept. 4, 1888. Serial No. 282,634. (No model.)



Claim.—In a hasp-lock, in combination, the metallic shell with narrow shank and broader lock-receiving portion that is free from recessed projections, the slotted filling-piece secured to the under side of the shank and extending from wall to wall, the pivot-bolt, the staple, and the spring-projecting latch-bolt borne in the shell, all substantially as described.

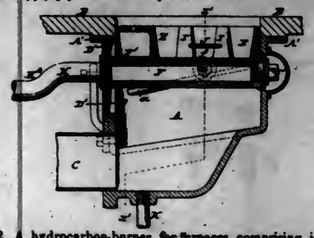
411,384. PACKING FOR STEAM-PIPES. CHARLES T. LEE, Boston, Mass., assignor of one-half to the Gould & Watson Company, of Massachusetts. Filed Aug. 4, 1888. Serial No. 281,981. (No model.)



Claim.—A non-conductor for heat or electricity, consisting of comminuted mica in a loose state and unincorporated with other material, and retained in position around the pipe or conductor by a suitable box or casing, substantially as shown and described.

411,385. HYDROCARBON-BURNER FOR FURNACES. ARTHUR LEETE, Chicago, Ill., assignor to the Leete Iron Smelting Company, same place. Filed July 21, 1888. Serial No. 280,681. (No model.)

Claim.—1. A hydrocarbon-burner for furnaces, comprising, in combination, an open-topped cast-metal air trunk or casing formed with closed sides, bottom, and a marginal top flange, by which it is adapted to form the bottom of the combustion-chamber, an entrance-door in one of its sides, a liquid-fuel tray arranged within the same and formed with a series of blast-nipples extending from the bottom to or near the top of the tray, and an underlying supply-passage F and the supply-pipe H, essentially as set forth.



2. A hydrocarbon-burner for furnaces, comprising, in combination, an open-topped cast-metal air trunk or casing formed with closed sides and bottom, inclined ledges upon the interior surface of its sides, and an entrance-door in one of its sides, a liquid-fuel tray supported within the casing by means of said inclined ledges, and formed with a series of blast-nipples extending from the bottom to or near the top of the tray, and an underlying supply-passage F and the supply-pipe H, essentially as set forth.

3. A hydrocarbon-burner for furnaces, comprising, in combination, an open-topped cast-metal air trunk or casing formed with closed sides and bottom, an entrance-door in one of its sides, and an attaching marginal flange at its top, a liquid-fuel-containing tray arranged within said casing and provided with a series of air-conducting nozzles for discharging volumes of air at the surface of the liquid fuel, the fuel-supply H and passage F, for conducting oil to the tray or burner, and the drain-pipe K, connected to the bottom of the air trunk or casing, essentially as set forth.

411,386. COMBINED METAL-SHEARS AND TIRE-UPSETTER. MORGAN C. MALONE, Palmyra, Ill., assignor of one-half to Paul B. Spooner, same place. Filed Feb. 26, 1889. Serial No. 301,223. (No model.)



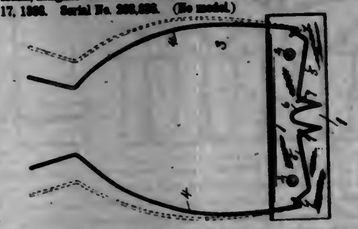
Claim.—1. The combination of the stationary jaw having the standard C erected at one end and provided with the transverse teeth D, the swinging jaw pivoted to the stationary jaw and having a bifurcation at its free end passing around the standard, and the operating-lever pivoted in said bifurcation and provided at its end with the segmental rack-bar engaging the teeth on the standard, as set forth.

2. The combination of the stationary jaw having the downward extension B, the upper jaw pivoted to the stationary jaws and having an offset N, the ribs M O, secured to the extension B and the offset N, respectively, and the cam-levers pivoted on said ribs, as set forth.

3. The combination of the stationary jaw having the recess K, and the downward extension B, provided with the recess L, forming a continuation of the recess K, the upper jaw pivoted to the stationary jaw and having an offset N, the ribs M O, and the cam-levers pivoted to said ribs and having teeth in their edges, as set forth.

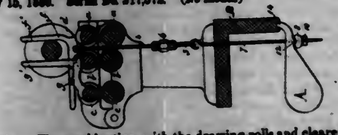
4. The combined shears and tire-upsetter comprising the stationary jaw, the standard C, erected at one end of the same and having the transverse teeth E, the extension B, depending from the stationary jaw, the moving jaw pivoted to the stationary jaw and having a bifurcation at its free end passing around the standard C, the lever pivoted in said bifurcation and having a segmental rack-bar engaging the teeth of the standard C, the offset N on the swinging jaw, the ribs M O on the extension B and the offset N, respectively, the plates P, secured in the ends of said extension and offset, and the cam-levers pivoted to the ribs above said plates, as set forth.

411,387. HAT AND COAT HOLDER. THOMAS J. MANNING, Grafton, Mass., assignor of one-half to Charles L. Leonard, same place. Filed Dec. 17, 1888. Serial No. 293,023. (No model.)



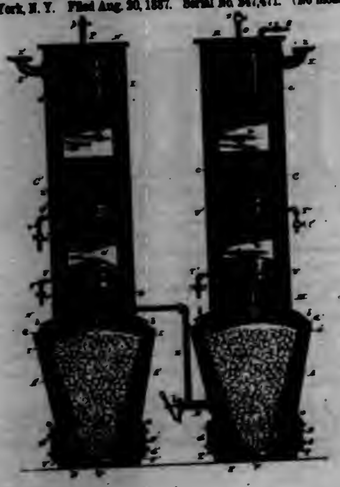
Claim.—As an improved article of manufacture, the herein-described hat and coat holder, made out of one piece of wire and consisting of the two single outwardly and upwardly extending curved arms 4, with their upper free ends bent as shown and their lower ends secured by staples 7, from which point the arms 4 are flexible, and the base part 5, extending substantially at right angles to the arms 4 and integral with said arms, said base 5 secured by staples 7 near its central part, which is bent to form a hook 6, which acts as a stop or support for the lower edge of the brim of the hat, all constructed substantially as shown and described.

411,388. GUIDE FOR TOP-ROLL CLEARERS. JOHN T. MEARS, Taunton, Mass., assignor to the Mason Machine Works, same place. Filed July 15, 1889. Serial No. 317,572. (No model.)



Claim.—The combination, with the drawing-rolls and clearer-roll, of a front and back saddle, each provided with a horn to receive between them the neck of clearer-roll, substantially as described.

411,389. PROCESS OF AND APPARATUS FOR MANUFACTURING GAS. MARCELLUS A. MOSES, Chicago, Ill., and THEODORE G. STARBUCK, New York, N. Y. Filed Aug. 20, 1887. Serial No. 247,471. (No model.)

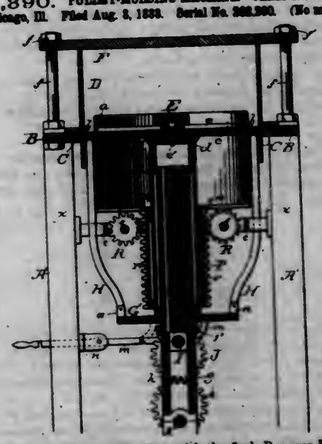


Claim.—1. The process of manufacturing gas, which consists in highly heating a body of high-grade hard coal or coke by rapid combustion and burning the resulting gaseous products with air and storing the heat in a body of refractory material, and at the same time burning a body of slack or low-grade cheap fuel with a slow combustion, and by means of the resulting gaseous products heating a second body of refractory material, then suspending the combustion, then superheating steam by passing it through the body of refractory material heated by the waste gaseous products of the hard coal or coke, then decomposing such steam by passing it through the body of incandescent hard coal or coke, and then passing the resulting gases, together with a hydrocarbon, through the body of refractory material previously heated by the gaseous products arising from the low-grade fuel for producing a fixed illuminating-gas.

2. The process of manufacturing gas, which consists in raising a body of hard coal or coke to a state of incandescence by rapid combustion with air, burning the resulting gaseous products with air and storing the heat in a body of refractory material, and at the same time heating a second body of refractory material by the combustion of gaseous products arising from a separate body of cheap low-grade fuel, then suspending the process of combustion and passing a hydrocarbon, with steam in excess, through the body of refractory material heated by the waste products of combustion of the hard coal or coke, decomposing the steam into carbonic-acid and hydrogen gas, then passing such gases through the incandescent hard coal or coke to convert the carbonic-acid gas into carbonic oxide and the hydrogen into light carbureted hydrogen; and then passing the carbonic oxide and carbureted hydrogen, together with sufficient hydrocarbon to make an illuminating-gas, through the second body of refractory material previously heated by the gaseous products from the low-grade fuel, whereby the hydrocarbon is converted into fixed illuminating-gas.

3. A cupola gas-generator having a fuel-chamber and a fixing-chamber, both in one structure, as described, the walls of the fuel-chamber being constructed to flare from below upward and outward and project at the top circumferentially outward beyond the base of the fixing-chamber, and said projecting portion having one or more openings passing downward through its top and in line with the flaring walls, through which openings the fuel-chamber may be evenly charged with fuel and the clinker readily cleaned from the walls, and said openings being provided with tight-fitting lids, as described.

411,390. PULLEY-MOLDING MACHINE. JAMES C. MCDERMOTT, Chicago, Ill. Filed Aug. 3, 1888. Serial No. 282,260. (No model.)



Claim.—1. The combination, with the flask D, cover F, and rim-pattern *a*, of the vertically-movable plate *c*, sleeve G, post *g*, having a slot *h* therein, vertically-moving shaft *j*, eccentric-gears J on the ends thereof, shaft K, and eccentric-gears *k* thereon engaging with said eccentrics J, as set forth.

2. The combination, with the flask D and cover F, of the plate *c*, sleeve G, having a basal flange G', post *g*, having a slot *h* therein, vertically-moving shaft I, eccentric-gears J on the ends thereof, shaft K, eccentric-gears *k* thereon, which engage gears J, and lever *m*, suitably fulcrumed about midway its length and having its inner end bifurcated so as to support said sleeve on either side of said post *g*, as set forth.

3. The combination, with the flask and cover F, of the vertically-movable rim-pattern *a*, arm-pattern *e*, and boss-pattern E, plate *c*,

annulus *b*, sleeve G, arms H, connected to and projecting from the lower end of sleeve G, and supporting the annulus *b* on their upper ends, and post *g*, as set forth.

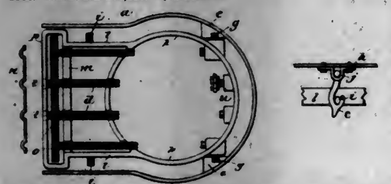
4. The combination, with the circular frame B, the ring C, flask D, and cover F, of the annulus *b*, vertically-movable rim-pattern *a*, plate *c*, sleeve G, arms H, and post *g*, as set forth.

5. The combination, with the flask D and cover F, of plate *c*, sleeve G, post *g*, having a vertical slot *h* therein, vertically-movable transverse shaft I, eccentric-gears J on the ends thereof, shaft K, eccentric-gears *k* thereon, which engage with gears J, gear K' on the forward end of shaft K, idle-gears L L', drive-shaft M, loose pinion N, and clutch on said drive-shaft, which engages the counterpart made integral with the boss of pinion N, as set forth.

6. The combination, with flask D, cover F, and the plate *c*, and sleeve G and post *g* supporting the same, of the vertically-movable rim-pattern *a*, sleeve P, supporting the rim-pattern by means of arms projecting therefrom, racks *r*, secured longitudinally to sleeve P diametrically opposite each other, pinions R, engaging said racks, and shafts *s*, as set forth.

7. The combination, with flask D, cover F, plate *c*, annulus *b*, sleeve G, and post *g*, of the vertically-movable rim-pattern *a*, sleeve P, supporting said rim-pattern, racks *r*, secured longitudinally to the sleeve P, pinions R, shafts *s*, combined cog and friction gears S on the forward ends of shafts *s*, the frictional portions of which are arranged to engage with friction-pinion V, drive-shaft M, eccentric journal *v* therefor, and handle *y*, for operating the same so as to throw said friction-pinion alternately into engagement with first the friction-surface of one gear S and then the other.

411,891. GRATE. WILLIAM J. OWENS, Utica, N. Y. Filed May 8, 1888. Serial No. 273,259. (No model.)



Claim.—1. In combination with a furnace-base, a grate suitably supported at its rear end and having a lug *i* on each side of its front portion, and a rocking bar *j*, having hangers *c c* to receive and support the lugs *i*, substantially as described.

2. In combination with a furnace-base having saddles *c c* at its rear, a grate having trunnions *g* to fit said saddles and lugs *i* on each side of its front portion, and a rocking bar *j*, having hangers *c c* to receive and support the lugs *i*, substantially as described.

411,892. ADVERTISING DEVICE OR COIN-PROTECTOR. EDWIN W. PARKER, Waltham, Mass., assignor of one-half to the Hosantum Worsted Company, of Massachusetts. Filed Mar. 27, 1889. Serial No. 304,949. (No model.)

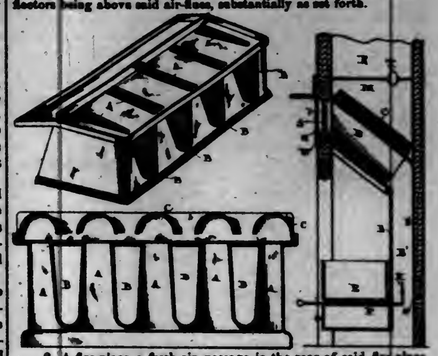


Claim.—1. An advertising device consisting of a coin *a*, a shield *b*, bearing on its face letters indicating the goods advertised, formed with a central perforation b^2, and an annular lip b', seated on the coin, and a sample of goods interposed between the coin and the perforated part of the shield, substantially as described.

2. An advertising device consisting of a coin *a*, a shield *b*, bearing on its face letters indicating the goods advertised, formed with a central perforation b^2 and an annular lip b', seated on the coin, a transparent diaphragm *d*, covering the perforation in the shield, and the sample *c* of goods interposed between the coin and the transparent diaphragm and visible therethrough, substantially as described.

411,893. VENTILATING FIRE-PLACE AND OPEN GRATE. HOMER P. K. PEET, Rye, assignor to William H. Jackson & Co., New York, N. Y. Filed Oct. 22, 1888. Serial No. 288,515. (No model.)

Claim.—1. A fire-place and a fresh-air passage in the rear of said fire-place and in operative contact therewith, in combination with a series of alternated smoke and fresh-air flues, said fresh-air flues establishing communication between said fresh-air passage and the apartment and said smoke-flues establishing communication between said fire-place and the chimney, and a series of deflecting-hoods above and parallel with said smoke-flues, the spaces between said deflectors being above said air-flues, substantially as set forth.

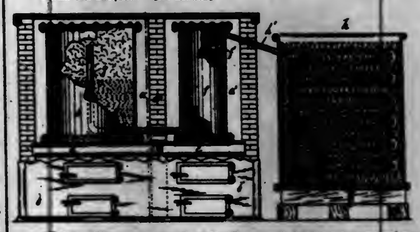


2. A fire-place, a fresh-air passage in the rear of said fire-place and in operative contact therewith, and a series of alternated smoke and fresh-air flues, said fresh-air flues establishing communication between said fresh-air passage and the apartment and said smoke-flues establishing communication between said fire-place and the chimney, in combination with a series of vertically-adjustable deflecting-hoods above and parallel with said smoke-flues, the spaces between said deflectors being above said air-flues, substantially as set forth.

3. A fire-place, a fresh-air passage in the rear thereof and in operative contact therewith, a hot-air chamber above said fire-place and in direct communication with the apartment, flues connecting said fresh-air passage and said hot-air chamber, and an open liquid-holding reservoir within said hot-air chamber, in combination with a screen or diaphragm extending across said hot-air chamber and in operative contact with the liquid in said liquid-reservoir, substantially as set forth, whereby the air heated by said fire-place must pass through said screen before entering the apartment.

4. A fire-place provided with projecting lips or ledges, a fresh-air passage in the rear of said fire-place and in operative contact therewith, and a series of alternated smoke and fresh-air flues, said fresh-air flues establishing communication between said fresh-air passage and the apartment and said smoke-flues establishing communication between said fire-place and the chimney, in combination with a series of vertically-adjustable inverted trough-shaped deflecting-hoods above and parallel with said smoke-flues, the spaces between said deflectors being above said air-flues, vertical plates to which said hoods are secured, and adjusting rods or pendants supporting said vertical plates, said rods or pendants having notches co-acting with said lips or ledges on the fire-place, substantially as set forth.

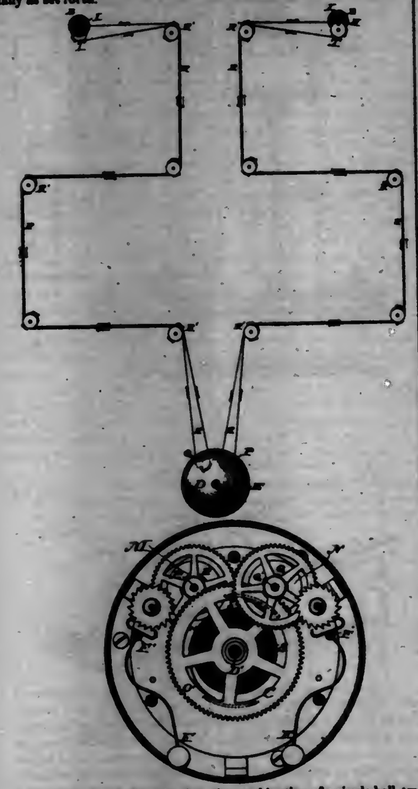
411,894. APPARATUS FOR DISTILLING CRUDE PETROLEUM. WILLIAM H. PITT, Buffalo, N. Y., assignor, by direct and mesne assignments, to the Apex Refining Company, same place. Filed Jan. 27, 1888. Serial No. 262,120. (No model.)



Claim.—The apparatus for distilling and deodorizing petroleum having sulphurous or other offensive odors, said apparatus consisting of a furnace with two fire-places, a retort over one fire-place and a deodorizing receptacle over the other fire-place, and a pipe opening into the upper part of the retort and passing down through the retort and out near the bottom of the latter to the said receptacle, which has a discharge-outlet for the deodorized vapors, all substantially as described.

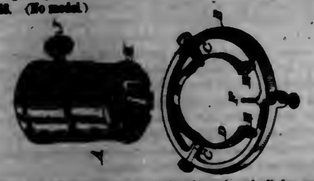
411,895. DOOR-BELL MECHANISM. ALBERT F. ROCKWELL, Bristol, Conn., assignor, by mesne assignments, to the New Departure Bell Company, same place. Filed Feb. 7, 1889. Serial No. 299,020. (No model.)

Claim.—1. In a door-bell mechanism, the combination of a push-button, a push-rod to which the button is attached, a brake connected with the inner end of the push-rod and adapted to be operated by it, a brake-pulley upon which the brake acts, an alarm mechanism provided with a pulley, and an endless band working on the said pulley and on the brake-pulley, whereby a push upon the push-button will cause the ringing of a bell as long as it is continued and no longer, substantially as set forth.



2. In a door-bell mechanism, the combination of a single bell, two alarm mechanisms adapted to independently ring the bell, and a main-spring having one end connected to and adapted to operate one alarm mechanism, and the other end connected to and adapted to operate the other alarm mechanism, whereby the same bell may be rung by different movements operated by the same power, substantially as set forth.

411,896. HOLDER FOR ELECTRIC-LIGHT SHADES. HARRY H. SAWYER, Ridley Park, assignor of one-half to the Tuckers Manufacturing Company, Philadelphia, Pa. Filed June 27, 1888. Serial No. 316,749. (No model.)



Claim.—1. A holder for the shade of an electric light, consisting of a shade-holding ring, arms connected therewith, a clamping-band having eyes and attached to said arms, and an ear on the ring with which the eyes of said band are removably connected, substantially as described.

2. A holder for the shade of an electric light, consisting of a shade-ring, arms, and an ear projecting inwardly therefrom, a distensible band connected with said arms and provided with ears, and a screw which is passed through said ear and eyes, substantially as described.

411,897. DRYING OR EVAPORATING APPARATUS. JOSEPH B. SHANAN, South Lynne, Ill. Filed Nov. 30, 1888. Serial No. 292,169. (No model.)



Claim.—1. The combination of a close annular casing, an annular evaporating-pan placed within the same and provided with a depending flange, and a second annular pan containing liquid in which said flange and the inner casing are immersed, whereby said liquid acts both as condenser and a water seal.

2. In an evaporating apparatus, the combination, with a horizontal rock-shaft having one of its ends projected outside the casing and bearing on said end a crank-arm whereby to rock it, of a set of stirrers comprising arms bearing shovels at one end and sleeves at the other, through which sleeves the rock-shaft passes, and a rod supported on arms rigidly attached to and depending from said rock-shaft and parallel thereto, and against which the stirrer-arms have a bearing, and by means of which their position is fixed, substantially as described.

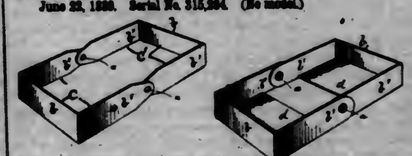
3. The combination of an annular evaporating-pan provided on its inner periphery with a depending flange 39, with a casing about said pan, a cylinder 28, and a second pan containing liquid in which said flange and the lower edge of said cylinder are immersed, whereby a water seal is provided, and gearing, substantially as described, for rotating said evaporating-pan.

4. The combination of the flue 1, a furnace 3, and passage-way 2, said passage-way being horizontally elongated where it connects with the furnace and vertically elongated where it connects with the flue, substantially as set forth.

5. The combination, with the flue 1, of the set of radially-arranged furnaces 3 and passages 2, said passages being of the same capacity throughout, but horizontally elongated where they connect with the furnaces and vertically elongated where they connect with the flue, substantially as and for the purpose set forth.

6. In combination with a furnace and central flue, an annular revolving evaporating-pan incased, an inner annular liquid-bearing condensing-chamber, and the partially-submerged flange and cylinder, substantially as described and shown.

411,898. PAPER BOX. PHILO C. BURNS, New York, N. Y. Filed June 22, 1889. Serial No. 315,294. (No model.)



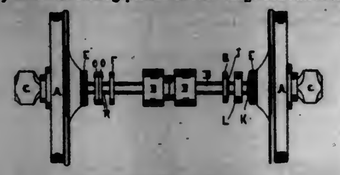
Claim.—1. In a box, the combination of an inclosing-case open at one or both ends and a sliding frame or rim composed of two or more sections having their ends pivoted together, the rim or frame being bottomless in the line of the pivots.

2. The combination of the outer case A, open at one or both ends, and the sliding frame or rim C, composed of two or more sections, each of which is provided with a separate bottom shorter than itself.

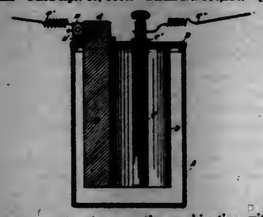
411,899. THRUST-RECEIVING PLATE FOR CAR-WHEELS. SAMUEL W. TANNER, Chicago, Ill., assignor to the Tanner Anti-Friction Wheel Company, same place. Filed Jan. 5, 1889. Serial No. 295,595. (No model.)

Claim.—The combination of a car-axle with fixed flanges thereon, being outwardly convex, with wheels on the ends of such axles, having each an inwardly-convex portion, and two anti-friction devices on the axle, one between each of such wheels and flanges, said anti-friction devices being concave on both sides and loose on the axle, and provided with radially-journaled friction-rollers in the shape of trun-

cated cones projecting from the sides of such anti-friction devices, and dust-caps adapted to reciprocate on such axle, and when in position to entirely cover the bearing portion of such flange and anti-friction devices.



411,400. GALVANIC BATTERY. WILLIAM C. THOMPSON, Minneapolis, Minn. Filed Apr. 15, 1889. Serial No. 307,267. (No model.)



Claim.—1. In a carbon battery, the combination, with a removable glass cover having a perforation, of a body of carbon provided with a pole-piece extending outward through said perforation, an elastic packing fitting over said pole-piece and resting on the cover, and an annular metallic contact-clamp over said pole-piece above said packing, substantially as described.

2. In a carbon battery, the combination, with the removable glass cover B, provided with a perforation, of the body of carbon D, provided with the pole-piece *d*, extending outward through the perforation of the cover, the elastic packing D', the metal band E, clamping-screw *d'*, and thumb-nut *e*, substantially as described.

3. In a carbon cell, the combination, with a removable cover, of a body of carbon crescent-shaped in cross-section and provided with a pole-piece or projection extending through a perforation in the cover, a metallic contact-clamp attached to said pole-piece, and an elastic packing between said contact-clamp and cover, substantially as described.

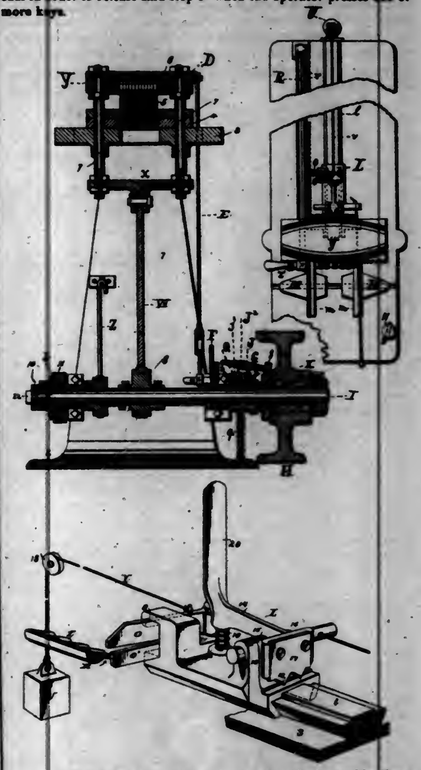
411,401. CARD-STAMPING MACHINE FOR JACQUARD MACHINES. WILLIAM P. UHLINGER, Philadelphia, Pa. Filed Feb. 1, 1887. Serial No. 226,152. (No model.)

Claim.—1. In a machine for stamping Jacquard cards, the combination, substantially as hereinbefore set forth, of a stamping-head, keys in said head, punches controlled by said keys, an intermittingly-operated shaft connected to said head to reciprocate the same, a driving-wheel running normally idle on said shaft, a clutch interposed between the wheel and the shaft, and connecting mechanism between said clutch and the keys, whereby the operation of any one of the keys causes the wheel to engage with and revolve the shaft.

2. In a machine for stamping Jacquard cards, in combination, keys, a projection upon each of said keys, a shaft, a plate attached to said shaft, segmental gearing at the end of said shaft, a driving-wheel, a shaft upon which said driving-wheel normally runs idle, a clutch upon said shaft, and intermediate mechanism, substantially as described, between said clutch and segmental gearing, whereby, when the operator presses one or more keys, the clutch is caused to engage the driving-wheel and revolve with it, substantially as and for the purpose described.

3. In a machine for stamping Jacquard cards, in combination, keys A, shaft C, a plate upon said shaft, segmental gearing D and D', rod E, flexible step F, driving-wheel H, normally running idle on shaft I, cam K upon said wheel, rocking trip G, having roller *g*, clutch-holder Q, having cam J, a plunger *p* upon said shaft I, a stop J^3 upon said plunger, and a connecting-rod connecting said shaft with the stamping-head, whereby, when the operator presses one or more keys, the clutch-holder is released from the stop J^3 and the plunger brought into engagement with the idle-wheel H and the stamping-head automatically caused to reciprocate.

4. In a machine for stamping Jacquard cards, in combination, keys, a flexible step, intermediate mechanism, substantially as described, connecting said keys and said flexible step, a clutch-holder, a driving-wheel, a shaft upon which said driving-wheel revolves, a cam upon said wheel, plunger *p*, a stop J^3, and a rocking trip, the path of movement of one end of which is in the path of the flexible step when a key is pressed, the other end having a wheel which revolves on the cam, whereby said rocking trip is on the highest throw of the cam in order to release said stop J^3 when the operator presses one or more keys.



5. In a machine for stamping Jacquard cards, in combination, a shaft, a driving-wheel which normally runs idle upon said shaft, a stamping-head provided with keys and connected to the shaft, a clutch upon said shaft, means, substantially as described, operated from the keys to cause said clutch to engage said driving-wheel, and a brake, substantially as described, at the other end of said shaft, whereby, when the clutch is disengaged from said driving-wheel, the inertia gained by said shaft is overcome by said friction device.

6. In a machine for stamping Jacquard cards, in combination, the stamping-head and its operating devices, substantially as described, a rocking shaft, teeth upon said shaft, escapement-fingers, one of which rests between the teeth of said rocking shaft, a card-head and means to cause said head to move when the said escapement-finger is released from between the teeth of the rocking shaft, substantially as set forth, and mechanism to rock said shaft, whereby, when said shaft is rocked, said escapement-finger is released, substantially as and for the purpose described.

7. In a machine for stamping Jacquard cards, in combination, the stamping-head and its operating devices, substantially as described, a rocking shaft, teeth upon said shaft, a card-head, escapement-fingers, one of which is rigid, the other flexible and having a movement in a slot in the card-head, means, substantially as described, to rock said shaft, whereby the rigid escapement-finger is released from between the teeth of the rocking shaft and the flexible finger is engaged between the teeth of the shaft, and means, substantially as described, to move said head, whereby, when the shaft is rocked, the card-head travels, but said travel is limited to the extent of travel of the flexible escapement-finger in the slot of the card-head.

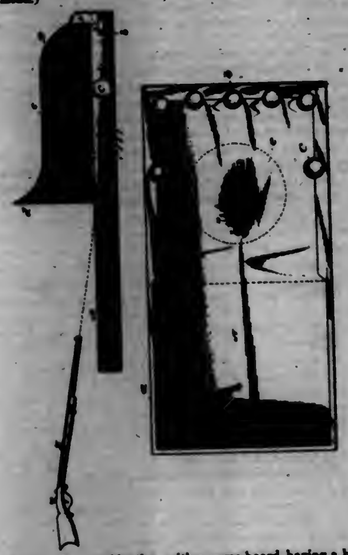
8. In a machine for stamping Jacquard cards, in combination, keys, a driving-wheel, a shaft upon which said driving-wheel normally runs idle, a clutch on said shaft, intermediate mechanism, substantially as described, to cause said clutch to operate and the shaft to revolve when a key is pressed, a connecting-rod upon said shaft, a rocking shaft connected with said connecting-rod, teeth upon said rocking shaft, a card-head, and escapement-fingers, one of which rests between the teeth of said rocking shaft, whereby, when the operator presses a key, one of the escapement-fingers is released from and the other engaged with said teeth of said rocking shaft.

9. In a machine for stamping Jacquard cards, in combination, a stamping-head, keys, punches corresponding to each of said keys, a driving-wheel, a shaft upon which said driving-wheel normally runs idle, a clutch upon said shaft, intermediate mechanism, substantially as described, to operate said clutch and cause the shaft to rotate, a connecting-rod connecting said shaft and the stamping-head, a rocking shaft, an eccentric on said driving-shaft, and a connecting-rod between said rocking shaft and the eccentric on said driving-shaft, teeth upon said rocking shaft, escapement-fingers, one rigid and the other flexible, the rigid finger normally resting between the teeth of said rocking shaft and a card-head, and means, substantially as described, to cause said card-head to move, whereby, when the operator presses keys, the stamping-head is automatically reciprocated and the desired hole or holes cut and the card-head caused to travel a fixed distance.

10. In a machine for stamping Jacquard cards, in combination, two or more keys, all but one of said keys having plungers corresponding to said keys, a driving-wheel, a shaft upon which said driving-wheel normally runs idle, a clutch upon said shaft, intermediate mechanism, substantially as described, to operate said clutch and cause the shaft to rotate, a connecting-rod connecting said shaft and the stamping-head, a rocking shaft, a corresponding rod between said shaft and the driving-shaft, teeth upon said rocking shaft, a card-head, escapement-fingers O and O', and means, substantially as described, to cause said card-head to move, whereby, when the operator presses the key having no corresponding plunger, the card is moved and the stamping-head reciprocated without punching any hole on the card.

11. In a machine for stamping Jacquard cards, in combination, the slides *m*, a spring connecting said slides, wings M M, a stop N, working in the slot *n'*, and intermediate mechanism, substantially as described, connecting said stop and the wings M, whereby a movement of the stop causes a varying distance between the slides *m*.

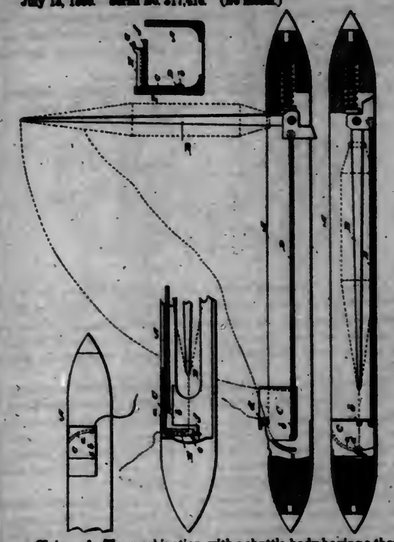
411,402. GAME APPARATUS. MAXIME VIBOUDE, Woonsocket, R. I., assignor of three-fourths to Louis Lemonde, Jeinangie Boutin, and Ferdinand Crepeau, same place. Filed May 28, 1889. Serial No. 312,406. (No model.)



Claim.—1. The combination, with a game-board having a bank and side pockets, of a guard composed of wire-work arranged over the board and above the pockets therein, and also having a central opening in its roof, substantially as and for the purpose specified.

2. The combination, with a game-board having a vertical marginal guard-wall, and a guard arranged across the table and above the pockets and recesses therein, the said guard having an opening in its roof to permit of the introduction of the arm to the board, substantially as specified.

411,403. SELF-THREADING SHUTTLE FOR LOOMS. MAXIME VIBOUDE, Woonsocket, R. I., assignor of three-fourths to Elmer C. Gaggan, Ferdinand Crepeau, and Raoul T. L'Esperance, same place. Filed July 13, 1889. Serial No. 317,616. (No model.)



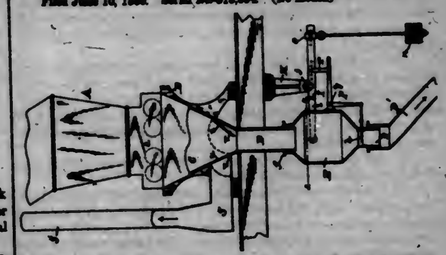
Claim.—1. The combination, with a shuttle-body having a thread-receiving slot in one of its forward side walls, of a threading-plate having a threading-loop and pivoted in the shuttle, the spindle, and a rod connecting the threading-plate with the spindle, whereby the movements of the spindle will turn the plate on its pivot, substantially as specified.

2. The combination, with a shuttle-body having a curvilinear slot in one of its forward side walls, of the spindle and a plate provided with a threading-loop and pivoted in the shuttle so as to conduct the thread in the slot of the shuttle, said plate being connected with the spindle, whereby the movements of the latter will operate the threading-plate, substantially as specified.

3. The combination, with a shuttle-body having a thread-receiving slot in one of its side walls, of a threading-plate having an inwardly-directed branch provided with a thread-passage and also provided with means for guiding the thread, a pivoted spindle, and a rod connecting the plate with the spindle, substantially as specified.

4. The combination, with a shuttle-body having a thread-receiving slot in one of its side walls, of a pivoted plate having a thread-receiving eye arranged with respect to the pivotal point so that when the latter has been turned forwardly it will conduct the thread into the slot of the shuttle-body, substantially as specified.

411,404. SAFETY DEVICE FOR GRAIN-MILLS. LOUIS WAGNER, Baltimore, Md., assignor of one-half to John Herr, same place. Filed June 10, 1889. Serial No. 313,694. (No model.)



Claim.—1. The combination, with the grain-mill, of a funnel, a ground-grain conduit D, and also a vent-flue B, leading from the fun-

nel, and two valves in the funnel, each mounted on a rock-shaft, one closing connection with the conduit and the other closing connection with the vent-flue, and a connection between said two valves whereby one is opened when the other closes.

2. The combination, with a grain-mill, of a funnel, a ground-grain conduit D, and also a vent-flue S, leading from the funnel, a valve closing connection with the conduit, a valve closing connection with the vent-flue, and said valves mounted on separate rock-shafts provided with arms, and a rod connecting the arms, whereby when one valve opens the other valve will close.

411,405. HORSESHOE-ANVIL. LEVI R. WESCOTT, Cumberland Mills, Me. Filed Apr. 13, 1889. Serial No. 307,126. (No model.)

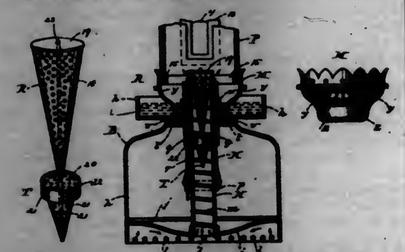


Claim.—1. The combination, with a suitable support and a removable swage seated in the top of the support, of a vibrating lever pivoted to the support, the upper end of the lever being in position to abut against the removable swage, and a foot-lever pivoted to the support and connected with the said vibrating lever, substantially as set forth.

2. In combination, a suitable support, a lever pivoted in said support and provided with a horizontal arm and with an upwardly-extending arm, a swage removably seated in the top of the support, the upper end of the swage being horizontally opposite the upper end of the upwardly-turned arm of the lever, a foot-lever pivoted to the support, and a connection between the foot-lever and the horizontal end of the first-named lever, substantially as set forth.

3. In combination, a suitable support, a swage removably seated in its head, a lever pivoted to the support and provided with an upwardly-extending gripping-arm, a foot-lever pivoted to the support, an intermediate lever pivoted to the support, connections between the intermediate lever and the gripping and foot levers, and a spring for holding the gripping-lever in released adjustment, substantially as set forth.

411,406. OIL-STOVE. AUGUSTUS C. WEST, Cambridge, assignor to the Smith & Anthony Stove Company, Boston, Mass. Filed Mar. 26, 1889. Serial No. 304,662. (No model.)



Claim.—1. In a lamp for oil-stoves, provided with a water-cup, a hollow chimney-holder fitted to slide on the wick-sleeve and rest in the water-cup, said holder being perforated at or near its bottom and also above the water-line of said cup, substantially as and for the purpose set forth.

2. In a lamp for oil-stoves of the character described, the combination of a water-cup attached to the wick-sleeve, with a hollow chimney-holder provided with a groove for supporting the chimney, said holder being fitted to slide on said sleeve and perforated at or near its bottom to admit water from said cup, substantially as and for the purpose set forth.

3. The chimney-holder M, provided with the groove 15 and perforations y z, substantially as described.

4. In an oil-stove of the character described, a hollow cone having perforated walls and a solid base, and adapted to be detachably disposed in the wick-tube of the lamp in such manner that its base will project above the mouth of said tube and distend the flame, substantially as described.

5. In an oil-stove of the character described, a lamp-body provided with a wick-tube open at both ends, in combination with two hollow perforated cones joined together and inserted in an inverted position in said tube in such manner that the base of the larger cone projects above the top of said tube, substantially and for the purpose specified.

6. The hollow cone R, having the perforations 18 and solid base 19, in combination with the hollow perforated cone T, secured to the apex of the cone R, and provided with the guide-ring 22, substantially as and for the purpose set forth.

7. In an oil-stove, the combination of a lamp-body having air-openings below its bottom, a spirally-threaded wick-tube secured in said bottom and open at both ends, a nut fitted to travel on said tube, a wick-sleeve, a rod secured to said sleeve and sliding in said nut, a water-cup fitted to revolve in the mouth of said body and secured to said sleeve, and a hollow chimney-holder fitted to slide on said sleeve, said holder being perforated above the water-line of the cup and at or near its bottom, substantially as and for the purpose set forth.

8. In a lamp for oil-stoves, provided with an open spiral wick-tube, the combination of a wick-nut on said tube, a wick-sleeve rotating the wick-nut, a water-cup secured to said sleeve, two connected hollow perforated cones disposed in said wick-tube, the base of the larger cone being above the mouth of said tube, and a hollow chimney-holder fitted to slide on said sleeve, said holder being perforated above and below the water-line of said cup, substantially as and for the purpose set forth.

9. In an oil-stove, the combination of a frame provided with a lamp-stand, a top supported on said frame and provided with stove-openings, a hot-air chamber secured to said top and provided with openings for the lamp-chimneys, and flat rings for closing said openings around said chimneys, substantially as described.

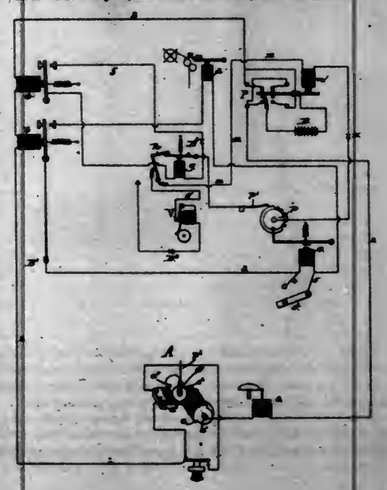
10. In an oil-stove, a lamp comprising a body having air-holes below its bottom, a spiral wick-tube opening through said bottom, a wick-nut on said tube, a wick-sleeve provided with a rod working vertically in said nut, a water-cup secured to said sleeve, inverted perforated cones or air-distributers inserted in said tube, the base of the larger cone being solid and extending above the mouth thereof, a chimney-holder fitted to slide on said tube and perforated above and below the water-line of said cup, and a chimney provided with a door, all being arranged to operate substantially as described.

11. The hollow cones R T, connected by the stiffening-rod 23, and respectively provided with the perforations 18 and 21, base-plate 19, and guide-ring 22, substantially as described.

12. In an oil-stove, the frame A, provided with the stand *d* and top *f*, having the stove-openings *g*, in combination with the chamber E, secured to said top and provided with chimney-openings 25, the lamps B C D, provided with chimneys 16, and the disks 26, for closing said openings around said chimneys, substantially as described.

13. In an oil-stove, the combination of a frame provided with a hot-air chamber having chimney-openings, lamps provided with chimneys projecting through said openings, and caps, as 27, for closing the chimneys of lamps not in use, whereby cold air is prevented from entering said chamber, substantially as described.

411,407. MUNICIPAL SIGNAL APPARATUS. JOHN C. WILSON, Boston, Mass., assignor to the Municipal Signal Company, Portsmouth, N. H. Filed July 13, 1888. Serial No. 207,894. (No model.)



Claim.—1. In an electric circuit, a signal-transmitting apparatus constructed and arranged to produce a series of changes in the circuit of long and short duration, and two relays connected in said circuit the armature of one of which is acted upon by a retarding force, thereby rendering it responsive only to the changes of long duration, and the armature of the other of which is unrestrained and thereby responsive to all changes in the circuit, substantially as described.

2. In an electric circuit, a signal-transmitting apparatus constructed and arranged to produce a series of changes in the circuit of long and short duration, and two relays connected in circuit, the armature of one of which is acted upon by a retarding force, thereby rendering it responsive only to changes of long duration, and the armature of the other of which is unrestrained and thereby responsive to all changes in the circuit, a receiving-instrument controlled by that relay having the unrestrained armature and which is responsive to all changes in the condition of the current, and an audible alarm controlled by that relay having the restrained armature, which is responsive only to changes of long duration, substantially as described.

3. In an electric circuit, a transmitting apparatus located at a sub-station and constructed and arranged to change the condition of the current for intervals of long and short duration, a relay located at a main station connected in said circuit and responsive only to changes of long duration in the condition of the current, an electro-magnet and drop controlled by it, a local circuit controlled by said drop, and return-signal-transmitting devices included in said local circuit, and another local circuit also controlled by said drop and containing an audible alarm, substantially as described.

4. In an electric circuit, a transmitting apparatus located at a sub-station and constructed and arranged to change the condition of the current for intervals of long and short duration, two relays located at a main station and connected with said circuit, one of said relays being responsive to all changes in the condition of the current and the other responsive to changes of long duration only, a releasing-magnet under the control of the relay which is responsive to all changes in the condition of the current, and a return-signal transmitter controlled by it, and an electro-magnet and drop under the control of the relay responsive only to the changes of long duration, the said drop being included in circuit with the return-signal transmitter, an electro-magnet included in circuit with and responsive to the return-signal transmitter, and a pole-changer operated by said electro-magnet to thereby effect the transmission of the return-signal to the sub-station, substantially as described.

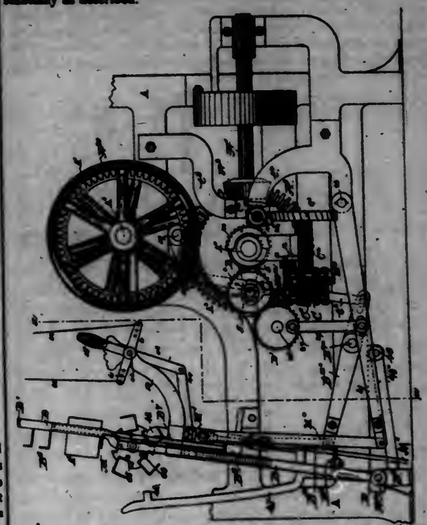
5. In an electric circuit, a signal-transmitting apparatus located at a sub-station and constructed and arranged to change the condition of the current for intervals of long and short duration, two relays located at the main station and connected with said circuit, one of said relays having its armature acted upon by a retarding force to thereby respond to the changes of long duration only, the other relay having its armature unrestrained to thereby respond to all changes in the circuit, a releasing-magnet under the control of the relay having the unrestrained armature, and a circuit-changing device for sending the return-signal released by the releasing-magnet, substantially as described.

6. In an electric circuit, the combination, substantially as described, of a signal-transmitting device at one station constructed and arranged to produce changes in the circuit of long and short duration, with two relays, the armature of one of which has a retarding or restraining force acting upon it, a register, and a return-signal transmitter controlled by the relay whose armature is not retarded or restrained, and an audible alarm and circuit-breaker controlled by the relay whose armature is retarded or restrained, said circuit-breaker, when operated, rendering the circuit containing the return-signal transmitter inoperative.

7. In a police-signal system, an electric circuit connecting a main and a sub station, a signal-transmitting apparatus at the sub-station constructed and arranged to produce changes in the condition of the current for intervals of long and short duration, a register located at the main station responsive to all such changes in the condition of the current, and a relay also located at the main station and connected in said circuit, the armature of which is acted upon by a retarding or restraining force, rendering it responsive only to changes of long duration in the condition of the current, and an audible alarm or indicating signal also located at the said main station controlled by said retarded or restrained armature, substantially as described.

411,408. SHUTTLE-BOX MECHANISM FOR LOOMS. HORACE WYMAN, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed Feb. 14, 1889. Serial No. 299,570. (No model.)

Claim.—1. A loom containing the following instrumentalities, viz: a series of drop shuttle-boxes, means to move them, a series of rotatable shuttle-boxes, an independent frame on which the rotatable shuttle-boxes are mounted, a guide for the said frame and the drop shuttle-boxes in their movement, and means to move the frame of the rotatable shuttle-boxes independently of the drop shuttle-boxes, substantially as described.



2. The two series of rotary shuttle-boxes, frames carrying them, two levers, connections between them and the said frames, two cranks, means to connect them with the said levers, and means to rotate the said cranks, combined with two series of drop shuttle-boxes, means to actuate them, and guides for the said frame and drop shuttle-boxes, substantially as described.

3. The two series of rotary shuttle-boxes, frames carrying them, two levers, connections between them and the said frames, a cross-shaft, cranks at each end thereof, connections between said cranks and levers, guides for the said frames, and means to rotate the said rotary boxes, combined with a gear on the said shaft, a pattern-surface, a clutch-gear, means to rotate it, and means between the clutch-gear and the said pattern-surface to move the clutch-gear laterally and cause the said cross-shaft to be rotated intermittingly, substantially as described.

4. The series of rotary boxes, means to rotate them, and the series of drop shuttle-boxes, the guides for the drop-boxes, and the drop-box levers, and means to operate them and the box-rods, combined with links between the said levers and box-rods, the said links being constructed to enable their effective length to be varied, substantially as described.

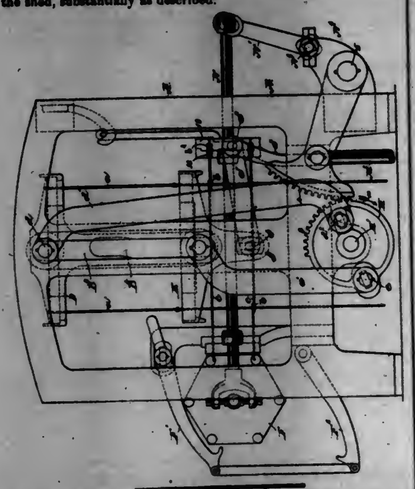
5. A series of drop shuttle-boxes, a series of rotating shuttle-boxes, a vertically-movable frame in which the rotating shuttle-boxes are mounted to rotate, guides for the said drop shuttle-boxes and the said frame, levers, and connections between them and the said drop shuttle-boxes and the said frame, and means to actuate the said levers to raise and lower the said shuttle-boxes, combined with independent pattern-surfaces to control the order of movement of the means employed to actuate the said levers, whereby the drop-boxes and the rotary boxes may be moved vertically independently of each other, or the drop-boxes be moved vertically while the rotary boxes are out of operative position, substantially as described.

6. Two series of rotary shuttle-boxes, frames carrying them, guides for the said frames, two levers, and connections between them and the said guide-frames, combined with a cross-shaft, means to actuate it, connections between it and the said levers, and pattern mechanism, and means between it and the said cross-shaft to control the actuation of the latter, substantially as described.

411,409. JACQUARD MECHANISM FOR LOOMS. HORACE WYMAN, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed Mar. 9, 1889. Serial No. 302,995. (No model.)

Claim.—1. The combination, with the top board and trap-board and rocking plates having crank-pins, of connecting-rods extended from the said crank-pins to the said boards, and with means to actuate the rocking plates, whereby a substantial dwell may be given to the said boards when the shed is fully opened for the passage of the shuttle, substantially as described.

2. The combination, with the top board and trap-board and rocking plates having crank-pins, of connecting-rods extended from the said crank-pins to the said boards, and with means to actuate the rocking plates, whereby a substantial dwell may be given to the said boards when the shed is fully opened for the passage of the shuttle, and with means for rocking the said top board and trap-board to give a < shape to the shed, substantially as described.



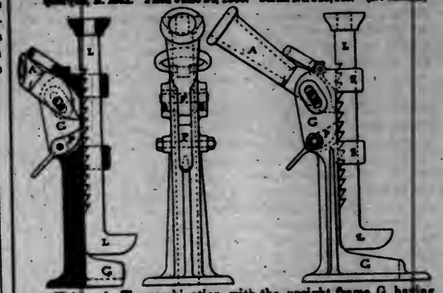
411,410. LOOM FOR WEAVING TUFTED FABRICS. HORACE WYMAN and JONATHAN G. GALE, Worcester, Mass., assignors to the Crompton Loom Works, same place. Filed Apr. 19, 1889. Serial No. 307,531. (No model.)

Claim.—1. The combination, with the supporting-bars and the carriages guided by the said bars and provided with a series of pockets, of the tuft-yarn carriers in the said pockets, substantially as described.

2. The combination, with the supporting-bars, and the carriages mounted thereon and provided with the pockets *a'*, of tuft-yarn carriers inserted in the said pockets.

3. The combination, with the pivoted frame and supporting-bars, of the carriages having convexed under sides, and provided with the pockets, substantially as and for the purpose described.

411,411. RATCHET TRACK-JACK. THOMAS R. GAMBL, Albuquerque, N. Mex. Filed June 24, 1889. Serial No. 315,462. (No model.)

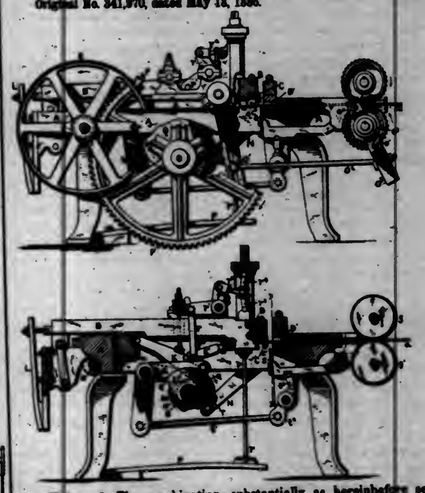


Claim.—1. The combination, with the upright frame G, having the loops or guides S projecting laterally therefrom, of the lifting-bar L, substantially as set forth.

2. The combination, with the upright frame having the slotted bearings for the lever, of the said lever engaging therewith and with the lifting-bar, and the pawl P, substantially as described.

REISSUES.

11,080. MACHINE FOR FORMING BOLT-BLANKS. WILLIAM R. WARD, Port Chester, N. Y. Filed July 11, 1889. Serial No. 317,941. Original No. 341,970, dated May 18, 1886.



Claim.—1. The combination, substantially as hereinbefore set forth, of mechanisms, substantially as described, for feeding forward at successive times the rod from which blanks are to be made, for gripping at successive times the rod after it has been fed, and for upsetting at successive times the end of the rod to form the head, such mechanisms being arranged as described, so that the said operations of feeding, gripping, and upsetting, respectively, shall follow each other in series, whereby a complete head can be progressively formed on the end of the rod, and cutting mechanism operating in front of the anvil-faces of the grippers to sever the blank from the rod after the rod with a full-formed bolt-head thereon has been fed forward.

2. The method, substantially as hereinbefore set forth, of forming bolt-blanks from cold rods of metal, which consists in a plurality of feedings, grippings, and upsettings upon the rod before severing, whereby the head of the blank is progressively formed, then advancing the rod a distance sufficient to expose enough of its length for a complete blank, and then severing the blank from the rod by cutting devices operating in front of the anvil-faces of the gripping-jaws.

H. PETERS, Photo-Lithographer, Washington, D. C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—District of Connecticut.

GUARANTEE TRUST & SAFE DEPOSIT COMPANY *et al. v.* NEW HAVEN GAS-LIGHT COMPANY.

Decided July 8, 1889.

LOWE—PROCESS AND APPARATUS FOR THE MANUFACTURE OF ILLUMINATING OR HEATING GAS.

Letters Patent No. 167,847, issued September 21, 1875, to Thaddeus S. C. Lowe, for an improved process and apparatus for the manufacture of illuminating or heating gas, contain a process for the manufacture of water-gas containing but little nitrogen. The presence of nitrogen in illuminating-gas is deleterious, and when it amounts to 9 per cent. or more it amounts to a serious fault. The feature of the process consists in producing the gas in a close chamber—that is, one from which the air is excluded—or by an alternating, as distinguished from a continuous, process. All of the essential apparatus was old, except the fixing-chamber, which is so arranged as to be heated internally by the products of combustion that escape from the generator and envelop the refractory material. *Held* that as the invention introduced a very desirable advantage into the process of making illuminating-gas by which the expense is greatly lessened, the facts that the older inventions which are now claimed to be susceptible of being modified by mere mechanical skill into the one in question remained without modification until the patentee made it, and that his improvement at once commended itself to those skilled in the art, are sufficient to show patentable invention.

BILL FOR infringement of Letters Patent.

Mr. B. F. Thurston and *Mr. E. N. Dickerson, Jr.*, for the complainants.

Mr. John R. Bennett for the defendant.

WALLACE, *J.*:

This suit is founded upon the patent granted to Thaddeus S. C. Lowe, No. 167,847, dated September 21, 1875, for improvement in processes and apparatus for the manufacture of illuminating or heating gas. The complainants allege infringement by the defendant of the first claim of the patent. That claim is as follows:

1. For the manufacture of illuminating and heating gas, the process which consists of dropping or otherwise admitting in limited quantities, continuously or intermittently, hydrocarbon oils or other carbonaceous substances, liquid or solid, onto the top of a thick mass of coal or other carbonaceous substance, in a state of incandescence, in a close chamber previously heated by direct internal combustion, with or without the introduction of steam, and then, for the purpose of superheating and fixing the gases of said chamber, passing them from said chamber into and through a second chamber, which also has been previously heated by direct internal combustion, substantially as set forth.

This claim includes two inventions, each of which is a process in the sense that it involves the treatment of materials by successive steps conducted by means of a combination of devices. Each process involves the use of apparatus which consists, essentially, of a cupola or generator, a superheater or fixing-chamber having specified characteristics, and certain pipe-connections for introducing air or air and steam into the generator and carrying the gases generated there to the superheater. The superheater is filled with refractory material—such as loosely-laid fire-brick—and is heated by the hot gases which are produced in the generator. One process of the claim, and the process which, it is alleged, is employed by the defendant, is for the manufacture of water-gas. This is an intermittent process. In this process anthracite or bituminous coal or other solid carbonaceous substances are introduced into the generator and brought to a high state of incandescence by the passage through it of a current of air. The products of combustion which are there generated pass down through a pipe underneath the fixing-chamber and then proceed upward through the fixing-chamber, enveloping the refractory material therein by the aid of an air-supply introduced at its base. When the carbonaceous matter in the generator has reached a high state of incandescence, the currents of air are discontinued both at the generator and the fixing-chamber, and steam is introduced at the base of the generator. The steam, acting upon the incandescent carbon, is decomposed, and a gas composed of hydrogen and carbonic oxide is evolved. At the upper part of the generator, or anywhere on the passage of this gas to the fixing-chamber, a liquid hydrocarbon is introduced into it, and, becoming volatilized, passes with the other gaseous vapors through the pipe into the fixing-chamber, where they are converted into permanent gas. After a time the action of the steam upon the incandescent carbon in the cupola will have so lowered the temperature that the manufacture of gas cannot be successfully continued, and it becomes necessary to discontinue the current of steam and to renew the supply of air in order to again bring the carbon in the cupola to a high state of incandescence and heat up the contents of the fixing-chamber. The gas made by this process consists of hydrogen, carbonic oxide, and a variety of hydrocarbon gases, and contains but little nitrogen. The presence of nitrogen in illuminating-gas is deleterious, and when it reaches the extent of 9 per cent. becomes so objectionable as to be a serious fault. The feature of the process, therefore, which consists in producing the gas in a close chamber—that is, one from which the air is excluded—or by an alternating, as distinguished from a continuous, process, is of controlling importance. The second process of the claim is one for producing an oil-gas. This process differs from the other in that no steam is introduced into the generator. This process is included in the claim because the claim contains the words "with or without the

introduction of steam." This language has no sensible meaning unless it is intended to embody a process in the claim which is referred to in the specification, as follows:

> In cases where gas extremely rich in carbon is desired, the same will be best produced by omitting the steam and generating the gas from oils alone, using the generator *a* either alone or in conjunction with the superheater.

It is not alleged that this process is employed by the defendant, and the question of the novelty of the process has not been referred to in the testimony of the expert witnesses. If it were void for want of novelty, it would be necessary for the complainants to file a disclaimer, and by doing so their right to recover for infringement of the other invention of the claim would not be affected, except as respects costs. (*Tuck* v. *Bramhill*, 6 Blatchf., 95; *Taylor* v. *Archer*, 8 Blatchf., 315.) As the point has not been made, and as it is not charged that the defendant uses this process, this process does not require further consideration. It is plain upon the proofs that the defendant does employ the first process of the claim. The issue is upon its patentability.

The gist of the invention in controversy consists in the use of a new apparatus for the treatment of the materials from which the gas is made. The same materials had previously been treated by the same series of steps, in the same order of succession, to produce a similar product. It was old to make illuminating water-gas by first producing a non-illuminous gas by the action of steam upon incandescent fuel, then adding to this gas hydrocarbons and converting them into vapor or gas, and then passing this mixture through a fixing-chamber, and apparatus of various kinds for performing these operations was old. All the essential apparatus of the patent was old, and had previously been used for carrying out these several steps, except the fixing-chamber, and that differs only from previously-used fixing-chambers in that it is so constructed and arranged in relation to the generator that it is heated internally by the products of combustion that escape from the generator and envelop the refractory material, instead of being heated by an external fire. Under these circumstances the novelty of the invention consists in the novelty of combining the fixing-chamber of the patent with the other devices with which it is to be employed. It is plain upon the proofs that the patentee was the first to employ a fixing-chamber in combination with the other parts, which enabled the products of combustion that escape from the generator during the operation of "blowing up" to fix or render permanently gaseous the mixture of hydrocarbonic oxide and hydrocarbon vapors produced in a close chamber.

A number of prior patents are relied upon by the defendant to defeat the novelty of such a combination. The case would have been much simplified and the court relieved of much unnecessary labor if all but two of these patents had been omitted from the record.

The patent to Harkness of 1874 describes a process which is in all essentials the process and apparatus in controversy, except that the fixing-chamber is a retort fired by external heat.

The English patent to Siemens of 1864 describes apparatus for converting carbonaceous matter into combustible gases and for their application to the heating or fusing of metals and other substances. The apparatus contains a superheater which is a chamber in which fire-bricks are loosely piled, to which the gas produced in the generator escapes, communicating heat which will be communicated to the next portion of gas which passes through the superheater. The gas made by this process contains 61 per cent. of nitrogen, and the superheater of the apparatus is not intended or used as a fixing-chamber in the sense of that term as used in the complainants' patent. It is used to superheat a gas produced by combustion on its way to a furnace where it is to be used in heating or fusing metals, &c. The other patents relied upon by the defendant are more remote from the invention than the Harkness patent.

The patent to Arbos of 1863 describes apparatus in which the fixing-chamber is heated externally, and the gas is made by a continuous process in which air is constantly blown into a bed of coals.

The British patent of 1868 to Benson and Valentine describes apparatus in which there are employed two distinct and separate fires. The first of these is a fire in which air is admitted at the bottom of the combustion-chamber. The products of combustion are passed through a second fire, maintained by a separate current of air. The product of the first fire is a mixture of nitrogen, carbonic-acid, carbonic-oxide, and hydrocarbon gases and tarry matters. The object of the second fire is to destroy the tarry matters which are present. The process is a continuous one, and the gas made by it is not a practical gas for illuminating purposes on account of the quantity of nitrogen which it inevitably contains, derived from the two fires supplied with air, and the products of the first fire are not passed through a second chamber which has been previously heated by direct internal combustion.

The patent to Lowe of 1872 involves the use of a generator in which bituminous substances are maintained in a state of slow combustion by the action of currents of air. A distillation of the bituminous matter takes place above the fire, and the combustible gases result. These gases, mixed with the products of combustion, pass to a superheater which is heated externally. The process of this patent is an air process in which the fixing-chamber is heated externally, and the product is a gas which is very rich in nitrogen.

It suffices to say of the other patents which have been relied on in the argument for the defendant that the Blair patent describes an air process and an externally-heated fixing-chamber, and in the apparatus of the Kirkham patent and of the Saunders patent there is no fixing-chamber.

None of the patents, except the Harkness patent, describe inventions for making the product of the complainants' process. They were all directed to the production of gas differing essentially in the quantity of the nitrogen present, and involve the air process or the continuous as distinguished from the intermittent process. But the process of the Harkness patent was directed to the production of the gas of the complainants' patent, made in a close chamber after the air has been excluded, and, as has been said, involves every essential step and detail of the process of the complainants' patent, except the use of a different fixing-chamber. The Patent Office rejected the claim now in controversy as void for want of novelty until it was so amended as to limit it to a process in which the fixing-chamber used was one "previously heated by direct internal combustion." Very plainly, the prior state of the art required this limitation to be made in order to confine the claim to the real invention of the patentee. The novelty of the claim accordingly turns upon the question whether novelty is present or absent in the substitution of the fixing-chamber described. If it did not involve invention to introduce such a fixing-chamber in the apparatus of Harkness, there is no novelty in the invention claimed.

It cannot be safely affirmed that those skilled in the art, having the Siemens patent before them, would derive any material assistance from it in devising the fixing-chamber of the complainants' patent. The Siemens apparatus is designed and used in a process of gas-making in which the gas has no hydrocarbon vapors to be broken up and fixed. Hydrocarbon gases and vapors are destroyed if exposed to a too high temperature, and the Siemens patent does not seem to offer a suggestion to assist an expert to ascertain that the superheater could be practically employed in treating hydrocarbon gases as they are required to be treated in the fixing-chamber of the Harkness process or the process of the complainants' patent.

One of the experts for the complainants testifies in substance that the Siemens superheater was not designed to perform the functions of a fixing-chamber; that "fixing" in gas-making is a term which is unquestionably limited to cracking up condensible hydrocarbon vapors into permanent hydrocarbon gases to effect a chemical decomposition, destroying one set of substances not suitable for illuminating-gas and creating another set of substances extremely valuable in illuminating-gas, and that no such materials or products occur in the Siemens operation and no such chemical changes result in the regenerating-chamber of the Siemens apparatus.

The patent is no more an anticipation of the present invention than the Harkness patent is. Any prior apparatus which would not produce the same results as the apparatus of the present invention cannot be substantially the same apparatus. The patent shows that a secondary chamber through which gas from a generator passes can be heated by placing refractory material within it to be enveloped by the gas. To this extent it is of some value as showing the use of appliances, in principle like those of the complainants' patent, for a cognate purpose, and beyond this it is not valuable. The Harkness patent exhibits the present invention more nearly than does the Siemens patent: but the Harkness patent is not an anticipation of it, because the parts of the apparatus in combination do not operate in the same way to produce the same results. Invention was not necessarily absent in making the substitution of the fixing-chamber of the patent for the fixing-chamber of Harkness because Siemens had previously used his device to superheat a different gas. It would have been absent if the Siemens device had been obviously adapted to supply the place of the externally-heated fixing-chamber in the Harkness apparatus. But the inquiry is whether the adaptability of the Siemens superheater to fix the gas of the Harkness patent was self-evident to the intelligence of those skilled in the art. If it had been, why was not the substitution made? It introduced very desirable advantages into the process of making illuminating water-gas. The experts on both sides concede that the fixing-chamber of the patent can be heated more economically and more quickly than the fixing-chambers which were previously used, as in the Harkness apparatus or in similar apparatus. If the making of this change had been an obvious thing, falling within the range of ordinary mechanical adaptation, it is probable that those skilled in the art would have sought to avail themselves of its advantages, yet, as appears by the prior patents in the record, the more expensive method of fixing the gas in retorts heated by external fires was everywhere followed. The various manufacturers in this country who were making gas according to the Tessie du Motay process and using the externally-fired retort did not discover what it is now asserted was an obvious thing. The fact that the older organizations which it is now claimed were susceptible of being modified by mere mechanical skill into the apparatus of the patent remained without any such modification until the patentee made it, and his improvement when made was so useful and valuable as to commend itself at once to those skilled in the art to which it relates, is sufficient to resolve any doubt whether the improvement embodies invention in favor of the patent.

A decree is ordered for the complainants.

U. S. Circuit Court—Southern District of New York.

DOBSON *et al. v.* CUBLEY.

Decided June 19, 1889.

INFRINGEMENT.

Banjos made under Letters Patent issued April 3, 1883, to E. J. Cubley, for improvement in banjos, in which the parchment rests directly on a rim consisting of a metal shell, in form like the old wooden rim, but differing from any rim previously made, and producing by such rim distinctive musical properties, do not infringe Letters Patent issued May 17, 1878, to C. E. Dobson, for an improvement consisting of a ring, either of metal or wood, to ease the wear of the parchment against the rim, and improve the tone of the instrument; nor do they infringe Letters Patent issued November 18, 1881, to Henry C. Dobson, whose improvement consists of a metal ring between the parchment and a rim of wood and metal, and which eases the parchment, as does the ring in the first patent, and produces a metallic musical sound.

BILL TO restrain infringement of patent.

Mr. Arthur S. Brown and *Mr. Albert Comstock* for the complainants.

Mr. Edward P. Wilder and *Mr. Howard Henderson* for the defendant.

WALLACE, *J.*:

The question in this case is whether banjos made conformably to the patent to Edwin J. Cubley, dated April 3, 1883, are an infringement of the patents granted one to Charles E. Dobson, dated May 14, 1878, and one to Henry C. Dobson, granted November 18, 1881, for improvements in banjos.

The banjo of the first Dobson patent contains a dome-shaped ring interposed between the parchment and a wooden rim. The ring may be of metal or of wood, and serves to ease the wear which the parchment is subjected to when the rim has an angular edge, and to improve the tone or resonance of the instrument. When the ring is made of metal, it im-

parts a metallic tone to the instrument. If made of wood, as it may be by the patent, it is doubtful whether the musical properties of the instrument would be improved. Whether the ring is made of metal or wood, the amount of material used will affect these properties. In easing the wear upon the parchment what is done by the ring was as well accomplished practically by the wooden rims, which were previously used, having the edge rounded where it came in contact with the parchment. The banjo of the second Dobson patent has a metal ring formed with two downwardly-projecting flanges interposed between the parchment and a rim composed of wood and metal. The ring is curved at the part which comes in contact with the parchment, and therefore serves to ease the wear upon the parchment similarly with the ring of the first patent. So much of the ring is out of contact with the parchment that it has a vibratory movement, and the ring thereby imparts a bell-like tone to the instrument; and the further this free portion extends beyond the point of contact with the parchment the more emphatic will be the metallic ringing or bell-like quality of the sound. Not only is the ring an element of each of the claims in controversy in both of the Dobson patents, but its peculiar form is essential in each invention in producing peculiar musical properties of the instrument. These are varied in each by the dimensions and form of the ring, and in the banjo of the second patent the combination of wood and metal in the rim is a factor.

The banjo of the defendant does not infringe either of these patents, because it has no ring. In this banjo the parchment rests directly on the rim. The rim consists of a metal shell made by turning over the edges of a piece of sheet metal. If a piece of sheet metal were turned over the old round-edged wooden rim so as to completely inclose it, the rim of the defendant's banjo would be produced. As respects form, it is the old round-edged wooden rim. As, however, it is made of metal and is hollow, it differs from any rim which had been devised previously. It cannot be doubted that these differences impart distinctive musical properties to the instrument. Of necessity, such an instrument differs as essentially in the character and quality of its musical tones from either of the Dobson banjos as the Dobson banjos differ from one another. There is no identity of parts or of result in the several instruments. The invention of Cubley has as much originality as either one of Dobson. The hollow rim of his banjo is not an equivalent for the solid rim and the ring of Dobson, because it was not a known mechanical substitute for them and does not effect the same result.

The bill is dismissed, with costs.

U. S. Circuit Court—Southern District of New York.

PHILADELPHIA NOVELTY MANUFACTURING COMPANY *v.* ROUSS.

Decided July 8, 1889.

1. REISSUE—EXPANSION OF INVENTION—VOID.

Complainant's original patent embraced hair-crimpers of two kinds—one in which the fabric is stitched to the soft-metal core, the other in which the fabric is fastened to the core by a metal fold made by turning over the thin edges of the core, or of a strip of sheet-lead inside the fabric over the core. The original contained the clause: "I also modify my invention in various other equivalent ways, such as would suggest themselves to any intelligent mechanic," &c. The reissued patent contained claims for fastening the fabric to the core by cementing them together. *Held* that the reissue was invalid, being an expansion of the original and embracing a new invention.

2. SAME—SAME—LACHES.

If it be conceded that the inventions claimed in the reissue were described in the original, then, such claims being expansions and more than 3 years having elapsed after the original was granted before the reissue was applied for, the doctrine of laches applies and the delay must be held unreasonable in the absence of explanatory averments in the bill.

ON DEMURRER to bill for infringement of patent.

Mr. Joshua Pusey (*Mr. H. F. Fenton* of counsel) for the complainant.

Mr. John J. Jennings for the defendant.

WALLACE, *J.*:

All of the claims of the reissued patent in suit are for inventions not shown or suggested in the original patent, with the exception of claims 5 and 6. The invention of the original patent embraced hair-crimpers of two kinds—one in which the fabric is applied to the soft-metal core by stitching, and another in which the fabric is fastened to the core by a metal fold made by turning over the thin edges of the core, or of a strip of sheet-lead inside the fabric over the core. Two of the claims (the third and sixth) were for the core separately, with modifications, and all the others were for the core with the fabric attached to it in one of these specified ways. The specification of both the original and the reissued patent closes with this clause:

I also modify my invention in various other equivalent ways, such as would suggest themselves to any intelligent mechanic to meet special requirements.

It is insisted now for the complainant that fastening the fabric to the core by cementing them together is an equivalent mode of fastening them to stitching or turning in the lateral edges of the core or its supporting-strip. Claims 1, 2, 3, 4, and 7 are expansions of claims of the original, apparently intended to embrace the cemented fastening in the claims as well as the fastening by stitching or turning over the edges of the metal. If it is true, as argued, that this is only the introduction of an equivalent into the claims, it was wholly unnecessary, and it may reasonably be assumed that the Patent Office did not so consider it. It must be held that these claims were designed to expand the claims of the original and take in inventions which are not found in the original, and are therefore invalid. If it should be conceded that the inventions now claimed were described in the original patent, then, as the claims of the reissue are expansions and more than 3 years elapsed after the original was granted before the reissue was applied for, the doctrine of laches applies, and the delay must be held unreasonable in the absence of any explanatory averments in the bill accounting for it. (*Wollensak* v. *Reiher*, 31 O. G., 1301; 115 U. S., 96; 5 Sup. Ct. Rep., 1137.)

The special demurrers to the bill are sustained. As the principal controversy has been upon the matters raised by these demurrers, costs are allowed to the defendant. The general demurrers are not sustained because, unless the patent is invalid for want of novelty, the fifth and sixth claims are good and entitle the complainant to a decree for infringement, and the court cannot decide as matter of law upon the face of the patent without the aid of extrinsic evidence that those claims are destitute of inventive novelty.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 48—No. 13. TUESDAY, SEPTEMBER 24, 1889. PRICE—$5 per year.

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Changes in Classification.

(ORDER No. 578.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 2, 1889.

The following changes are directed in Division IV:

New Class 189, Iron Structures, and sub-classes thereunder are established, as follows:

1. Jails.
2. Buildings.
3. Grilles.
4. Metallic ceilings.

The following sub-classes are established:

In Class 14, Bridges:
11. Flooring.
12. Truss, Bow-string.

In Class 108, Roofing:
8. Flashing.

In Class 159, Fire Escapes and Ladders:
20. Fluid-check.
21. Fly-check.
22. Escapement-check.
23. Governor-check.

ROBERT J. FISHER,
Acting Commissioner.

Additional Sub-Classes.

(ORDER No. 579.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 3, 1889.

The following additional sub-classes are hereby established in Division XXVI:

In Class 171, Electricity, Generation:
121. Inductoriums—
122. Induction-coils.
123. Transformers, Rotary.
124. Transformers, Stationary.
125. Pyro-magneto-electric devices.

In Class 173, Electricity, Motive-Power:
126. Motors, Reciprocating.

ROBERT J. FISHER,
Acting Commissioner.

Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., September 18, 1889.

SIR: The Secretary of the Interior has ordered that J. M. D. Miller, of Iuka, Miss., be not recognised after this date as attorney or agent in the prosecution of any claim or other matter before this Department or any bureau thereof.

Very respectfully,
E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

48 O G—13—I

Issue of September 24, 1889.

Patents	360	No. 411,412 to No. 411,771, inclusive
Designs	3	No. 19,319 to No. 19,321, inclusive.
Trade-Marks	24	No. 17,047 to No. 17,070, inclusive.
Labels	4	No. 6,081 to No. 6,084, inclusive.
Reissues	1	No. 11,081.
Total issue	392	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1		Nebraska	4	
Arizona Territory			Nevada		
Arkansas	3	1	New Hampshire	1	2
California	11	3	New Jersey	15	
Colorado	1		New Mexico Terry.		
Connecticut	13		New York	54	4
Dakota Territory	2		North Carolina	2	
Delaware	1		Ohio	35	2
District of Columbia	9		Oregon		
Florida	2		Pennsylvania	28	1
Georgia	1		Rhode Island	5	
Idaho Territory			South Carolina	2	
Illinois	26		Tennessee		
Indiana	9	1	Texas	7	
Iowa	13		Utah Territory		
Kansas	4		Vermont		
Kentucky	4	1	Virginia	1	
Louisiana	1	3	Washington Terr'y	1	
Maine	5		West Virginia	3	1
Maryland	1		Wisconsin	11	
Massachusetts	31	3	Wyoming Terr'y		
Michigan	9		U. S. Army		
Minnesota	3		U. S. Navy		
Mississippi	2				
Missouri	13	1	Total to citizens of the United States	305	26
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Australia			Germany	3	
Austria-Hungary	1		Italy	1	
Belgium			Netherlands		
Bermuda			New South Wales		
Brazil			Queensland		
Canada	5		Russia		
Canary Islands			Scotland	2	
Columbia, U. S. of			Spain	1	2
Cuba			Switzerland	2	
Denmark	1		Victoria		
Ecuador					
England	9	1	Total to citizens of foreign countries	26	3
France	2	2			

DESIGNS.

19,319.—BADGE.—*Thomas H. Bacheler*, Chicago, Ill. Application filed June 26, 1889. Serial No. 315,640¼. Term of patent 3½ years.

19,320.—HARROW.—*Charles La Dow*, Albany, N. Y. Application filed August 13, 1889. Serial No. 320,658. Term of patent 14 years.

19,321.—HARROW.—*Charles La Dow*, Albany, N. Y. Application filed June 7, 1889. Serial No. 313,509. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

17,047.—SEWER-PIPE.—*Akron Sewer Pipe Company*, Akron, Ohio. Application filed August 17, 1889. Used since January 1, 1875.

"The words 'STANDARD AKRON SEWER PIPE' and the representation of a scale-beam bearing pans holding, respectively, a globe representing the world and a number of sewer-pipes, the latter overbalancing the former."

17,048.—VEHICLES.—*Bradley & Company*, Syracuse, N. Y. Application filed December 26, 1885. Used since June 1, 1885.

"The word 'HANDY.'"

17,049.—LIQUID TONIC PREPARATION FOR THE CURE OF RHEUMATISM, GOUT, NEURALGIA, &c.—*John W. Carroll & Son*, St. Louis, Mo. Application filed August 16, 1889. Used since July 1, 1884.

"The compound word 'DHAAMA-RHEUMA.'"

17,050.—HORSE-BLANKETS.—*L. C. Chase & Co.*, Boston, Mass. Application filed June 13, 1889. Used since January, 1885.

"The representation of three horses' heads constituting a copy of J. F. Herring's, Sr., picture of Pharaoh's horses."

17,051.—WHITE PAINT GROUND IN LINSEED-OIL.—*Marshall P. Drury*, Cincinnati, Ohio. Application filed July 26, 1889. Used since April, 1887.

"The words 'WHITE OCHRE.'"

17,052.—THRASHING-MACHINES.—*Eagle Machine Works Company*, Indianapolis, Ind. Application filed August 17, 1889. Used since June 1, 1888.

"The word 'HUSTLER.'"

17,053.—REMEDIES FOR ASTHMA.—*François Gouaux*, Houma, La. Application filed August 15, 1889. Used since January 1, 1886.

"The capital letter 'F' inclosed within or surrounded by the capital 'G.'"

17,054.—MACHINERY PACKING.—*Greene, Tweed & Co.*, New York, N. Y. Application filed August 13, 1889. Used since 1874.

"The word 'MANHATTAN.'"

17,055.—SHERRY WINE.—*Diez Hermanos*, Jerez de la Frontera, Spain. Application filed August 16, 1889. Used since January 1, 1882.

"The words 'YBASI SHERRY' and the letters 'V L' in monogram."

17,056.—SHERRY WINE.—*Diez Hermanos*, Jerez de la Frontera, Spain. Application filed August 16, 1889. Used since January 1, 1837.

"The word 'YBASI' and the letters 'V L' in monogram."

17,057.—KNITTING AND DARNING YARNS.—*Morse & Kaley Manufacturing Company*, Milford, N. H. Application filed August 15, 1889. Used since January 1, 1884.

"The words 'BLACK CARD' on a black background."

17,058.—TEA.—*McClure & Ridpath*, New Orleans, La. Application filed August 13, 1889. Used since January, 1889.

"The word 'TOKAY.'"

17,059.—VERMOUTH.—*Noilly Prat & Cie.*, Marseilles, France. Application filed December 30, 1885. Used since 1855.

"The letters 'N. P. & CIE.' and an inscription in four languages, the whole printed in blue on white paper."

17,060.—VERMOUTH.—*Noilly Prat & Cie.*, Marseilles, France. Application filed December 30, 1885. Used since 1855.

"The words 'NOILLY PRAT & CIE.'"

17,061.—HERMETICALLY-SEALED SALMON.—*Peninsular Trading and Fishing Company*, San Francisco, Cal. Application filed August 19, 1889. Used since May 15, 1889.

"The word 'COMPASS' and a pictorial representation of a mariner's compass."

17,062.—HERMETICALLY-SEALED SALMON.—*Peninsular Trading and Fishing Company*, San Francisco, Cal. Application filed August 19, 1889. Used since May 15, 1889.

"The words 'STAR OF ALASKA' and a representation of Mount St. Elias."

17,063.—POLISH FOR JEWELRY, METALS, MIRRORS, AND THE LIKE.—*Waldo Reed* and *Edward S. Barton*, Taunton, Mass. Application filed August 9, 1889. Used since January, 1888.

"The word 'ARGENTALA.'"

17,064.—CANNED SALMON.—*Russian American Packing Company*, San Francisco, Cal. Application filed June 19, 1889. Used since February 21, 1889.

"The words 'RUSSIAN AMERICAN' and the flags of Russia and the United States having their standards crossed, a circle or disk with rays around its periphery, and a rectangular black background."

17,065.—CARRIAGE OR DRIVING WHIPS.—*Sanford Whip Company*, Westfield, Mass. Application filed August 17, 1889. Used since July 1, 1889.

"The words 'NEW PROCESS.'"

17,066.—TOOTH-PASTE, COLD CREAM, LIP-SALVE, SHAVING-PASTE, AND SHAVING-SOAP.—*Henry Bedford Sleeman*, Addiscombe, county of Surrey, England. Application filed August 15, 1889. Used since December 19, 1888.

"The representation of a flower of honeysuckle."

17,067.—HAND-MADE SOUR-MASH WHISKY.—*E. H. Taylor, Jr., & Sons*, Frankfort, Ky. Application filed August 13, 1889. Used since January 1, 1887.

"A script fac-simile signature 'E. H. TAYLOR, JR., & SONS.'"

17,068.—LATHE-CHUCKS.—*Westcott Chuck Company*, Oneida, N. Y. Application filed August 16, 1889. Used since March 1, 1873.

"The word 'WESTCOTT.'"

17,069.—MEDICINAL PREPARATIONS FOR TREATING AND BEAUTIFYING THE FINGER-NAILS.—*Lizzie M. Weston*, Amherst, N. H. Application filed August 19, 1889. Used since March 1, 1889.

"The words 'LA ROSIÈRE.'"

17,070.—DRESSED POULTRY.—*William C. Williams*, Ocean, N. Y. Application filed April 19, 1889. Used since July 1, 1888.

"The words 'FRENCH FATTENED' and the representation of a dressed fowl."

LABELS.

6,021.—Title: "GOUAUX'S ANTI-ASTHMATIC POWDER."—*François Gouaux*, Houma, La. Application filed August 15, 1889. (Trade-Mark Registered.)

6,022.—Title: "ARNICA PREMIUM SALVE."—*John A. Jungkind*, Little Rock, Ark. Application filed January 25, 1888.

6,023.—Title: "IRONDALE SPRING WATER." (For natural mineral water.)—*Felix Nemegyei*, Irondale, W. Va. Application filed August 27, 1889.

6,024.—Title: "SMITH'S IRON WOOD AND VEGETABLE SPECIFIC BITTERS."—*George Smith*, Little Cooley, Pa. Application filed August 29, 1889.

PATENTS

GRANTED SEPTEMBER 24, 1889.

411,412. EXCELSIOR-MACHINE. FRANK ABEL, Kansas City, Mo. Filed Sept. 27, 1888. Serial No. 286,494. (No model.)



Claim.—1. In an excelsior-machine, the combination, with a rotary cutter-wheel and means for holding the bolts in engagement with the cutters, of a radially-sliding scorer carried by the wheel, and a centrally-located cam connected with the radially-sliding scorer, whereby the said scorer is slid radially by said centrally-located cam and caused to travel forward in a right line at intervals during its revolution with the cutter-wheel, substantially as set forth.

2. In an excelsior-machine, the combination, with a rotary wheel provided with a series of stationary cutters and means for feeding the bolts to the cutters, of a set of radially-sliding scorers alternating with the cutters, and a centrally-located endless cam connected with the radially-sliding scorers, portions of the cam being curved inwardly to correspond with and offset the outward curve of the periphery of the wheel between any two predetermined points, whereby the said scorer is slid radially by said centrally-located cam and caused to travel forward in a right line at intervals during its revolution with the cutter-wheel, substantially as set forth.

3. The combination, with the upright rotary cutter-wheel and radially-sliding scorers carried by the wheel and actuated by a stationary cam at the central portion of the wheel, of feed-rollers journaled in pairs in front of the wheel, bevel-gear on the cutter-wheel, a vertical shaft driven by said bevel-gear, and oblique shafts driven by said vertical shaft and in engagement with the feed-roller shafts to actuate the same, substantially as set forth.

4. The combination, with the upright rotary cutter-wheel and scorers, carried by the cutter-wheel, of the herein-described feed mechanism, consisting of the parallel supporting-bars, the lime-roller journaled in stationary bearings, the top roller journaled in movable bearings provided with rack-teeth, the shaft for operating the movable bearings held under yielding tension, the shaft provided with right and left hand worms to operate the rollers, and the actuating-shaft, substantially as set forth.

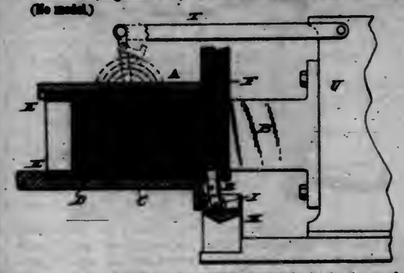
5. The combination, with the cutter-wheel mounted upon the main shaft and bearings for said shaft, the upper half of said bearings being provided with a socket-bearing, of an upright drive-shaft seated in said socket-bearing and geared with the main shaft, and the feed mechanism geared with said upright drive-shaft, substantially as set forth.

6. The combination, with the cutter-wheel provided in its face with radially-disposed elongated slots, of frames secured around the edges of said slots, and radially-sliding scorer-holders secured in said frames, substantially as set forth.

7. The herein-described frame for the scorers, consisting of a bar having an elongated opening in its outer end and guides along its edges, the said bar being provided with depending lugs recessed to receive the ends of the scorer-box frame, and adjusting devices to hold the scorer-box in position, substantially as set forth.

8. The herein-described frame for the scorers, consisting of a bar having an elongated opening in its outer end and guides along its edges, the said bar being provided with depending lugs recessed to receive the scorer-box and with a braced stud to engage the operating-cam, substantially as set forth.

411,413. MACHINE FOR MAKING BUILDING-BLOCKS. JAMES C. ANDERSON, Highland Park, Ill. Filed Dec. 4, 1888. Serial No. 292,982. (No model.)



Claim.—1. A machine for making clay blocks having a face representing the natural fracture of stone, consisting of an elongated open-ended molding-chamber, in which the clay bodies are formed by a series or successive layers of clay, said mold-box being in two parts and adapted to break the clay body into blocks or slabs, as set forth.

2. In a machine for making clay blocks with a face representing the natural fracture of the stone, a mold-box divided into two parts, one part being adapted to be moved away from the other to break or tear the clay body into two parts.

3. In a machine of the character described, the movable mold-section D, connected to the section C by means of the link L and bell-crank lever M, in combination with the ratchet-wheel P, having the groove *b*, as set forth.

4. In a machine of the character described, the pitman T, lever S, pawl R, pinion-wheel P, having the groove *b*, in combination with the bell-crank lever M, link L, and mold-sections C and D, as set forth.

411,414. ELECTRO-MAGNETIC SEPARATOR. WILLIAM A. ANTHONY, Manchester, Conn., assignor to the Mather Electric Company, same place. Filed June 26, 1889. Serial No. 315,994. (No model.)

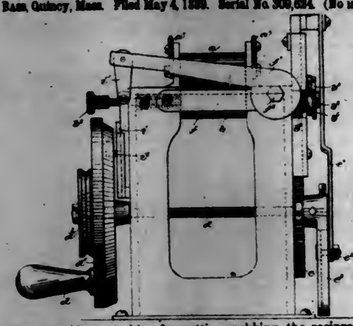
Claim.—1. The combination of a revolving electro-magnet and an endless non-magnetic apron carried thereby and adapted to carry mixed magnetic and non-magnetic substances and to drop the non-magnetic bodies in these substances at one place, with a roller revolving parallel to the electro-magnet and under the endless apron and adapted to hold the magnetic bodies in these substances between it and that apron, and thus to carry them far enough out of the magnetic field to enable them to drop at another place when released from between the roller and the apron, all substantially as described.

2. The combination of the spool 1, wound with the coil 2 and electrically connected, substantially as described, with endless non-magnetic apron 12, passing around and in contact with a part of the periphery of the spool 1 and adapted to carry mixed magnetic and non-magnetic substances upon its outer surface and to drop the non-magnetic bodies in those substances at one place, with a roller revolving parallel to the spool 1 and under the apron 12, and adapted to hold the magnetic bodies in those substances between it and that apron, and thus to carry them far enough out of the magnetic field to enable them to drop at another place when released from between the roller and the apron, all substantially as described.



3. In an electro-magnetic separator, the combination of the spool 1, wound with the coil 2 and electrically connected, substantially as described, and means, substantially as set forth, for removing magnetic substances from the magnetic field of that spool and coil, all substantially as described.

411,415. MACHINE FOR CUTTING WEBBING. EDWARD W. H. BAM, Quincy, Mass. Filed May 4, 1889. Serial No. 309,634. (No model.)



Claim.—1. In a machine for cutting webbing, the reciprocating cutting-blade, and cam-grooved wheel and connecting mechanism for reciprocating it, combined with the feed-roll b, toothed wheel b^4, pawl-carrier and pawl, ratchet-wheel b^3, rack c, connecting-rod c', crank-arm c^3, substantially as described.

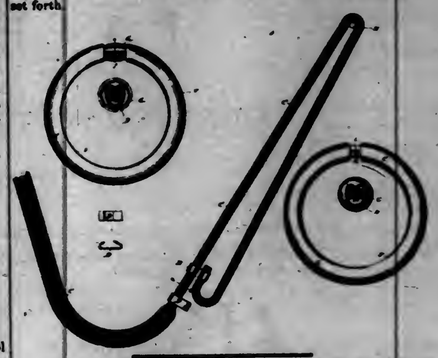
2. In a machine for cutting off webbing, the movable cutting-blade and means for moving it intermittingly, the feeding devices, and means for moving them intermittingly and alternately with relation to the movements of the cutting-blade, combined with the cap b^3, for rotating the driving-roll of the feeding devices independently of the of the cutting-blade, substantially as described.

3. In a machine for cutting off webbing, the intermittingly-movable cutting-blade and means for moving it, and intermittingly-movable driving-roll for the feeding devices, combined with the toothed wheel b^4, pawl-carrier and pawl, the ratchet-wheel b^3, rack c, connecting-rod c', and crank c^3, and drive-shaft b, substantially as and for the purposes set forth.

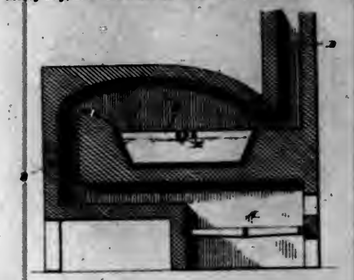
411,416. METHOD OF MAKING ARMLETS, &c. GILBERT H. BLAKESLEY, Bristol, Conn., assignor to the Blakesley Novelty Company, same place. Filed Mar. 25, 1889. Serial No. 304,613. (No model.)

Claim.—1. A method of working up elastic stock composed of rubber strands and a fibrous envelope therefor into short sections bound at each end, consisting in binding the free ends of the rubber and fiber together, then stretching the stock, then binding the stretched rubber and fiber together again at two closely adjacent points, and then cutting the stock between such points, substantially as set forth.

2. A method of working up elastic stock composed of rubber strands and a fibrous envelope therefor into circlets, consisting in binding the free ends of the rubber and fiber together, then stretching the stock, then attaching the said bound ends to the stretched stock and binding the rubber and fiber thereof together at the said point of attachment, then binding the stretched rubber and fiber together again at a point close to the said point of attachment, and then cutting the stock between the two bound points last mentioned, substantially as set forth.



411,417. PROCESS OF REFINING IRON. JOHN W. BOOKWALTER, Springfield, Ohio, assignor to the Bookwalter Steel and Iron Company, Jersey City, N. J. Filed Oct. 22, 1888. Serial No. 288,765. (No model.)



Claim.—1. The mode described of treating iron, the same consisting in subjecting a bath of the molten metal to the action of a converting agent and producing a local violent atomic action at the surface of the bath upon successive portions of the metal by means independent of the converting agent, substantially as set forth.

2. The within-described improvement in treating iron, consisting in subjecting a body of the molten metal to the action of an oxidizing converting agent, and also in projecting upon a portion of the surface of the bath a non-oxidizing blast to produce a local agitation, and also to impart to the body of the metal a gyrating motion to bring all portions thereof in succession in position to be acted on directly by the blast, substantially as set forth.

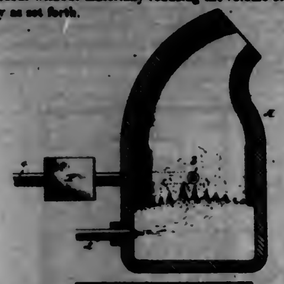
3. The mode described of treating iron, the same consisting in subjecting a bath of the molten metal to the action of a converting agent and producing a local violent atomic action at the surface of the bath upon successive portions of the metal by a non-oxidizing blast, substantially as set forth.

4. The within-described improvement in treating iron, consisting in subjecting a body of the molten metal to the action of an oxidizing converting agent, and also in acting upon a portion of the surface of the bath by means independent of the converting agent to produce a local agitation, and also to impart to the body of the metal a gyrating motion to bring all portions thereof in succession in position to be acted on directly by the blast, substantially as set forth.

411,418. PROCESS OF CONVERTING CRUDE IRON INTO MALLEABLE IRON OR STEEL. JOHN W. BOOKWALTER, Springfield, Ohio, assignor to the Bookwalter Steel and Iron Company, Jersey City, N. J. Filed Nov. 6, 1888. Serial No. 290,121. (No model.)

Claim.—1. In the process of converting crude iron, maintaining the molten metal under the action of a blast containing an oxidizing agent, and reducing the proportion of oxidizing agent during the process of conversion while maintaining substantially the volume of the blast, substantially as set forth.

2. The improvement in converting crude iron, consisting in subjecting the molten metal to the action of a blast both of oxidizing and non-oxidizing gas, and in reducing the volume of oxidizing gas as the process proceeds without materially reducing the volume of the blast, substantially as set forth.

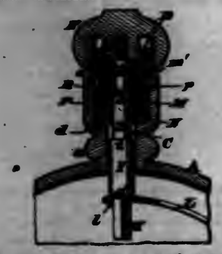


411,419. PROCESS OF CONVERTING CRUDE IRON INTO MALLEABLE IRON OR STEEL. JOHN W. BOOKWALTER, Springfield, Ohio, assignor to the Bookwalter Steel and Iron Company, Jersey City, N. J. Filed Nov. 26, 1888. Serial No. 292,126. (No model.)



Claim.—The within-described improvement in the process of converting crude iron into malleable iron or steele by a blast acting upon part of a body of metal to impart a gyration thereto and strip therefrom limited portions in succession, the said improvement consisting in diminishing the proportion of oxygen in the blast and in also varying the quantity and pressure of the blast during the process of conversion, substantially as and for the purpose set forth.

411,420. WATCH-CASE PENDANT. WILLIAM W. BRADLEY, Newport, Ky., assignor to John C. Dueber, same place. Filed May 6, 1889. Serial No. 309,671. (No model.)



Claim.—1. A chambered watch-case pendant provided with a longitudinally-shiftable stem that operates the case-spring, said stem having a spindle of reduced diameter and a shank of less diameter than said spindle, in combination with a clutch fitted within said chamber, which clutch is normally inoperative, but grasps said spindle and revolves in unison therewith when the stem is advanced and engaged with the hand-setting mechanism, a keeper that prevents longitudinal sliding of said clutch, and a stop that limits the outward pull of said stem, substantially as herein described.

2. A watch-case pendant, as B, having a screw-threaded chamber D and bearing d, in combination with the longitudinally-shiftable stem G H A I i F K, clutch N O o P p R, and a tubular nut M m, that screws into said chamber and holds said clutch against said bearing d, as herein described.

3. In a watch-case pendant, the slotted spring-clutch N' O o P p R, having its collar N' fitted loosely within the annular groove S of the tubular nut M m, and secured therein by upsetting said nut at s, for the purpose described.

4. The combination of an interiorly-threaded watch-case pendant, a nut engaged with said thread and having an upwardly-flaring bore, a spring-clutch held in place by said nut, so as to be free to revolve, but incapable of longitudinal shifting, and a shouldered stem that slides within said spring-clutch, for the purpose herein described.

411,421. TYPE-WRITING MACHINE. ALEXANDER T. BROWN, Syracuse, N. Y. Filed Oct. 31, 1887. Serial No. 253,893. (No model.)



Claim.—1. The combination, with the printing characters of a type-writing machine, of a type-cleaner in proximity to a plurality of said printing characters, and a brush-shifter by which the cleaner may be moved in contact with and clean a number of the characters simultaneously, substantially as described.

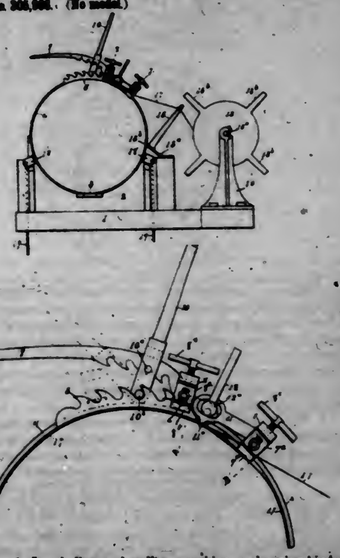
2. The combination, with the printing characters of a type-writing machine arranged in a circle, of a circular brush of about the same radius supported on the machine in proximity to said characters, so that the brush can come in contact with a plurality of type at one time, substantially as described.

3. The combination, with the printing characters of a type-writing machine, of a brush supported on the machine, a shifter for moving said brush laterally, and mechanism (as a screw and nut) for shifting the brush vertically with reference to the printing characters, substantially as described.

4. The combination, with the printing characters of a type-writing machine arranged in a circle, of a circular cleaner and a screw-threaded shaft attached to said cleaner and operating in a socket in alignment with the center of the circle round which the printing characters are arranged.

5. The combination, with the printing characters of a type-writing machine arranged in a circle, of a rotating brush supported in a socket beneath the center of said circle, and a detachable handle by which said brush may be operated, substantially as described.

411,422. BALING OR BUNDLING MACHINE. DENNIS D. BROWN, Utica, N. Y., assignor to Mary E. Brown, same place. Filed Apr. 4, 1889. Serial No. 305,995. (No model.)



Claim.—1. In a baling or bundling machine, a clamping-binder having a toothed rack secured to one of the free ends of the binder and a pin upon the other free end, two levers adapted to engage each other, and one of the levers engaging the pin secured to the binder and the other adapted to engage the rack.

2. In a baling or bundling machine, a clamping-binder having a toothed rack and the vise secured to one of the free ends thereof, and the pin adapted to be engaged in the rack and the vise secured to the other end thereof, in combination with the two levers engaging each other, and one of the levers engaging the pin and the other adapted to engage the rack, substantially as set forth.

3. In a baling or bundling machine, the combination, with a clamping-binder having the rack, pin, and vise mounted thereon, of the clamping-edge adapted to clamp the wire to the bundle, substantially as set forth.

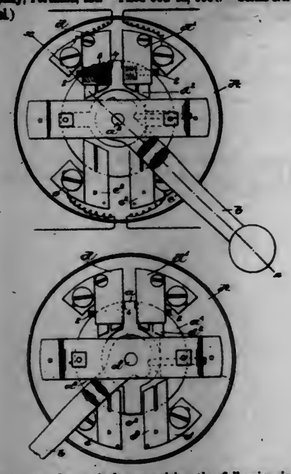
4. In a baling or bundling machine, the combination, with a clamping-binder having the rack, pin, and vise mounted thereon, of the two levers engaging each other, and one of the levers engaging the pin and the other adapted to engage the rack, and the clamping-edge adapted to clamp the wire to the bundle, substantially as set forth.

5. In a baling or bundling machine, the combination of the clamping-binder having the rack, pin, and vise mounted thereon, substantially as set forth, and the levers, one of which engages the pin and the other adapted to engage the rack and engaging each other, and the reels adapted to supply wire to the machine.

6. The combination, in a baling or bundling machine, of two encircling clamping-binders concentric and parallelly hinged to a base to open apart, substantially as shown and described.

7. The combination, in a baling or bundling machine, of two encircling clamping-binders concentric and parallel and hinged to a base, so as to open apart, and a stop at the side of and parallel with one of the binders, substantially as shown and described.

411,423. SAFETY-SWITCH FOR INCANDESCENT LIGHTS AND OTHER ELECTRICALLY-CONTROLLED DEVICES. OSMAN S. BOARDMAN, Somerville, Mass., assignor to the Bernstein Electric Light Manufacturing Company, Portland, Me. Filed Oct. 12, 1887. Serial No. 252,121. (No model.)



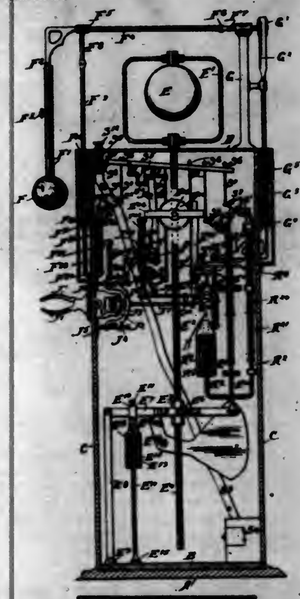
Claim.—1. A safety-switch comprising the following instrumentalities in combination: a disk having thereon two contact plates or surfaces constituting the movable member, contact-pens d^2 d^3, constituting the stationary members, and blocks to which they are attached, a hand-lever for moving the movable member of the switch, and one or more spring-controlled plugs in electrical connection with one or more blocks, and the fusible retaining device for the plugs, substantially as described.

2. The combination, with an electric switch comprising as a co-operative part of it two blocks d d', of one or more spring-controlled plugs in electrical connection with one or both blocks, and a fusible retaining device for the plugs, substantially as described.

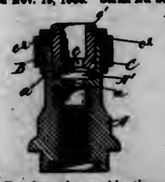
411,424. COIN-CONTROLLED TESTING-MACHINE. EDWARD J. OBST, Chicago, Ill. Filed Aug. 3, 1888. Serial No. 282,260. (No model.)

Claim.—1. In a testing-machine, the combination of a series of testing apparatuses terminating each within the case in a rod, a series of spring-supported sleeves, one on each of said rods, a series of pivoted dogs whose points normally lie in the paths of such sleeves, and a coin-controlled releasing-lever which moves all of such dogs and clears the paths for such sleeves.

2. In a coin-controlled testing-machine, the combination of two pivoted hand-pieces with a slide and links from the inner terminal of each piece to the slide, a reciprocating rack-rod and connections from each slide to each rod, so that the movement of the former imparts movement to the latter, and an indicating-hand, shaft, and pinion, which latter may mesh with the rack-rod, substantially as and for the purpose described.



411,425. STUFFING-BOX FOR VALVES. RICHARD T. CRANE, Chicago, Ill. Filed Nov. 19, 1888. Serial No. 291,344. (No model.)

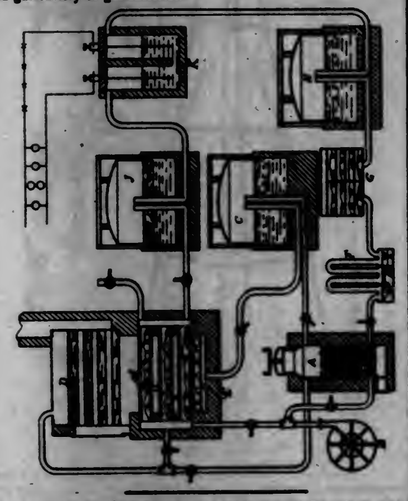


Claim.—In a stuffing-box, the combination, with the body A, having recess A' and threaded externally at a', of the cap B, internally threaded to screw thereon and centrally apertured at the top, and the gland C, having a shoulder to rest against the under side of the cap, and having a portion extended through the aperture in the cap and upon the top thereof to form a swiveled connection between the gland and cap, substantially as and for the purpose specified.

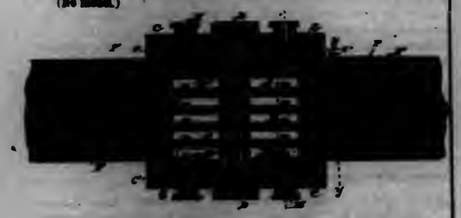
411,426. PROCESS OF GENERATING ELECTRICITY BY GAS-BATTERIES. OLOF DAHL, Brooklyn, N. Y. Filed June 17, 1889. Serial No. 314,698. (No model.)

Claim.—1. The process of generating electricity herein described, consisting in, first, raising the temperature of a body of fuel to incandescence by the aid of atmospheric air and utilizing the gases evolved in this operation for fuel and other purposes; second, shutting off the air and admitting steam to the incandescent fuel when it has reached such a temperature that the admitted steam will be decomposed into hydrogen and carbonic acid; third, separating the carbonic acid from the hydrogen by causing hydrate of lime to absorb the carbonic acid, and conducting the hydrogen to one side of a gas-battery or gas-batteries, and, fourth, producing oxygen or equivalent gas and conducting it to the other side of the above-mentioned gas-battery or gas-batteries.

2. The process of generating electricity herein described, consisting in, first, raising the temperature of a body of fuel to incandescence by the aid of atmospheric air, and in utilizing the gases evolved in this operation for fuel or other purposes; second, shutting off the air and admitting steam to the incandescent fuel when it has reached such a temperature that the admitted steam will be decomposed into hydrogen and carbonic acid; third, passing the gases through condensers and purifiers to condense the steam that might have escaped undecomposed and take up possible impurities; fourth, separating the carbonic acid from the hydrogen by causing hydrate of lime to absorb the carbonic acid, and conducting the hydrogen to one side of a gas-battery or gas-batteries, and, fifth, producing oxygen or equivalent gas and conducting it to the other side of the above-mention gas-battery or gas-batteries.



411,427. CONDUIT FOR ELECTRICAL WIRES. CHARLES C. DANIELL, Washington, D. C. Filed Nov. 17, 1888. Serial No. 291,132. (No model.)



Claim.—1. In an electrical conduit, the pipes P, having laterally-projecting lugs p, in combination with the coupling C, having slots c, adapted to register with said lugs, said couplings having an exterior screw-thread upon their free ends, and the ring D having an interior screw-thread adapted to connect said couplings, substantially as and for the purpose described.

2. In an electrical conduit, the pipe P and the coupling C, removably connected to the end of said pipe, said coupling having laterally-projecting openings E, as and for the purpose set forth.

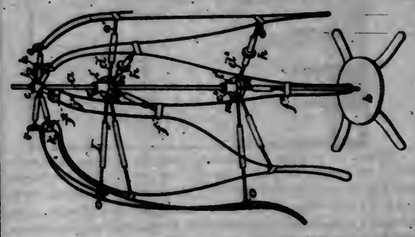
3. In an electrical conduit, the pipes P P', having the longitudinal holes F, with enlarged ends f, in combination with the tubes A, having lateral branches B, and with the coupling C, having lateral openings E, registering with said lateral branches B in the tubes A, substantially as described.

4. In an electrical conduit, the pipes P P', having the longitudinal holes F, with enlarged ends f, in combination with a coupling for connecting the ends of said pipes and holding them at a distance from each other, and with independent tubes removably connecting said holes F and spanning the space within said coupling, substantially as described.

5. In an electrical conduit, the pipes P P', having the longitudinal holes F, with enlarged ends f, in combination with a coupling for connecting the ends of said pipes and holding them at a distance from each other; and with independent tubes removably connecting said holes F and spanning the space within said coupling, said tubes comprising a lower portion A, adapted to rest in and be supported upon said enlarged ends f, and an upper portion A' shorter than said lower portion, said portions being provided with tongue-and-groove connections, whereby they will be held together when in their normal positions, substantially as described.

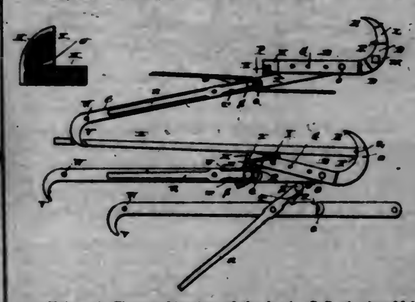
6. In an electrical conduit, the independent tube B herein described, the same comprising a lower half A and an upper half A', both provided with tongue-and-groove devices, whereby they will be held together when in their normal positions, and each carrying half of a lateral projection B, for the purpose set forth, the lower half being longer than the upper half, the whole operating as and for the purposes hereinbefore specified.

411,428. DRESS-FORM. RANDOLPH L. DUNCH, Portland, Me. Filed Nov. 30, 1888. Serial No. 291,613. (No model.)



Claim.—The combination, with collars c c' c^2, sliding on a suitable supporting-standard, said collar c having fixed right threaded arms b, and said collars c' c^2 having pivoted right threaded arms d' d^3, respectively, and flexible ribs united by clips and having fixed left threaded arms e and pivoted left threaded arms e' e^2, of turn-buckles having a right thread in one end and a left thread in the other uniting arms e and d, e' and d', and e^2 and d^3, substantially as and for the purposes set forth.

411,429. FENCE-MAKING IMPLEMENT. CONRAD H. FISHER, Waco, Tex. Filed May 21, 1889. Serial No. 311,507. (No model.)



Claim.—1. The combination of the hooks D D, the bar M between the same, the lever pivoted between the said hooks and limited in its movement by the bar M, and provided on its upper side with the offset Q, and the supplemental lever pivoted on the said lever and adapted to clamp a wire against the offset Q, as set forth.

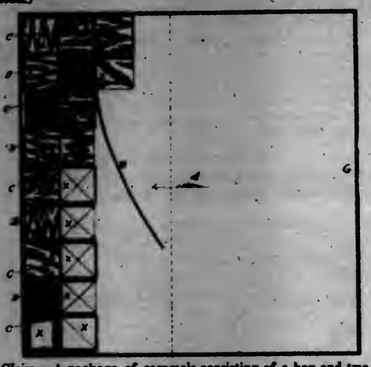
2. The combination of the hooks D D, the bars L M between the same, the plate H, connecting the ends of the hooks and provided with the claw I, the lever pivoted between the hooks and having the offset Q and carrying a supplemental lever, and a lever having one end adapted to be inserted between the hooks D D, and provided on one edge with a stud Y, as set forth.

3. The combination of the body provided at one end with the claw I, having the recess J and groove K, the lever pivoted to the body and having the offset Q, and the supplemental lever adapted to clamp the wire against the said offset, as set forth.

4. The body consisting of the hooks D D, secured together and having their cheeks adapted to lie against one side of the fence-post, and their points adapted to pass around the adjacent side of the post, the said points having the spurs or teeth F at the center of their convexities adapted to take into the body of the post, as set forth.

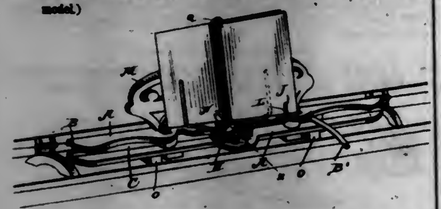
5. The combination of the body having the claw I, the lever pivoted thereto and having an offset Q, the supplemental lever coacting with said offset, and the lever adapted to engage the body, as and for the purposes set forth.

411,480. CARAMEL-PACKAGE. GEORGE V. PETE and CARL H. KLEINBERG, Chicago, Ill. Filed Jan. 14, 1889. Serial No. 296,947. (No model.)



Claim.—A package of caramels consisting of a box and two or more rows of square caramels therein, and the caramels in one row separated laterally by a suitable strip of non-adhesive material which covers the outer edge of every alternate caramel on both sides of the row, and a second row of caramels with another like strip interwoven in the same manner and placed so that the exposed caramels of one side of the first row are covered by the strip of the second row, as specified.

411,481. MUSIC-LEAF TURNER. LOUIS H. FEYHER and FULLER S. DEER, Watsontown, Pa. Filed Feb. 16, 1889. Serial No. 300,118. (No model.)



Claim.—1. The combination of the horizontal parallel base-bars having longitudinal grooves near their rear edges, the swinging levers pivoted between said base-bars and having rack-teeth on their inner ends, and the sliding bar fitted in the grooves in the base-bars, and provided with longitudinal grooves and rack-teeth, the grooves slipping over the teeth on the levers and the teeth acting on the same to operate the levers, as set forth.

2. The combination of the base-bars, the levers pivoted between the same and provided with rack-teeth on their inner ends, and having their outer ends bent upward and provided with vertical longitudinal slots, and the single sliding bar fitted between the base-bars and provided with grooves and rack-teeth to operate the levers, as set forth.

3. The combination of the series of levers having rack-teeth on their inner ends, some of the rack-teeth being thicker than the others, and the sliding bar provided with a series of longitudinal grooves and rack-teeth adapted to engage the teeth of the levers, the grooves being adapted to slip over the thinner teeth of the levers, as set forth.

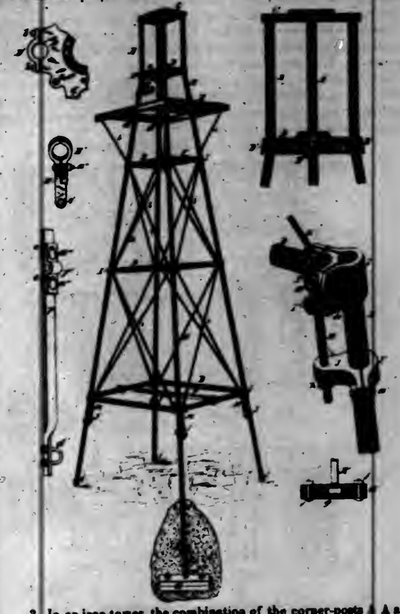
4. The music-leaf turner provided on its under side with the brackets O, as set forth.

5. In a music-leaf turner, the ring Q, adapted to secure the sheets of music together, as set forth.

411,482. IRON TOWER. ISAAC GATES, Marion, Iowa. Filed July 24, 1888. Serial No. 280,869. (No model.)

Claim.—1. In an iron tower, the combination of tubular corner-posts, two-part corner-irons adapted to be clamped tightly upon said corner-posts and having bolts therefor, and projecting studs to receive the ends of tubular struts, struts engaging with said corner-irons, brace-rods connecting with opposite corner-irons diagonally, and a tension device, substantially as described, adapted to draw the whole frame tightly together, the corner-irons at the opposite end of the tower being tight and the intermediate ones loose, as specified.

2. The combination, with the corner-post of an iron tower, of the pipe or rod A', having a coupling *j*, and the anchor G, having the inclosed nut *g* engaging with the end of the corner-post, substantially as and for the purpose set forth.



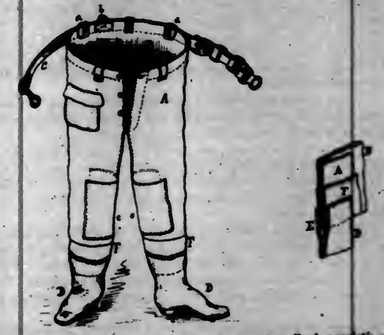
3. In an iron tower, the combination of the corner-posts A A and the step-plate D, having the corner clamp-irons D' D', the socket D'', and the hole D''', substantially as and for the purpose set forth.

4. In an iron tower, the combination of the corner-posts A A, the top plate C, having a central hole therein adapted to form the bearing for the pivot of a windmill, and the step-plate D, secured to said corner-irons by clamp-irons D' D', and having a central socket for the bottom of the pivot, and a hole for the connecting-rod of a windmill, substantially as and for the purpose set forth.

5. In an iron tower, the combination of the corner-irons A and the clamp-irons H H', having a hole *c'* for the shifting-rod of a windmill, substantially as set forth.

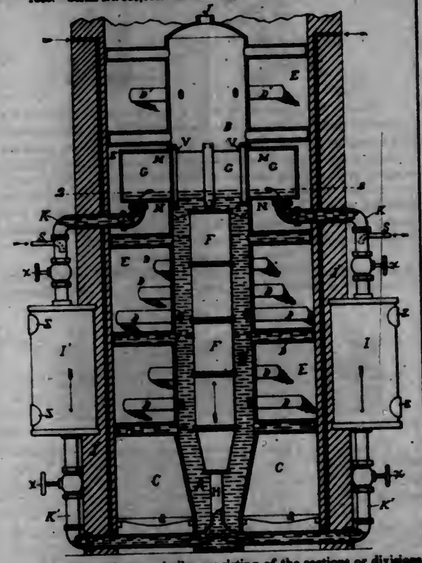
6. In an iron tower of the class specified, the combination, with the struts B B, of the transverse bar F, secured to said struts by clips *d' d'*, and provided with the adjustable stirrup-iron F', substantially as and for the purpose set forth.

411,483. COMBINED TROUSERS AND BOOTS. JESSE A. GLADDING, Bristol, R. I. Filed Nov. 19, 1888. Serial No. 291,941. (No model.)



Claim.—The improved garment herein described, consisting of trousers made of two fabrics, the outer material being oiled cloth and the inner material being woolen cloth and united by seams, the bottom of each trousers-leg having secured thereto a layer of macintosh cloth, in combination with lined rubber boots the lining and outer material of which are separated at the tops thereof, the trousers being united to the boots by inserting and connecting them between their outer material and lining, as set forth.

411,484. STEAM-BOILER. ALEXANDER GRANT, Los Angeles, Cal., assignor of one-half to Michael H. Miller, same place. Filed May 6, 1889. Serial No. 309,807. (No model.)



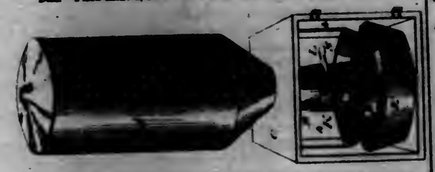
Claim.—1. A steam-boiler consisting of the sections or divisions B B' and enlarged division G, in combination with conduits or pipes K, communicating with the bottom of division G, cylinders I', and pipes K', extending laterally under the grate-bars *a* of the furnace to the bottom section B' of the boiler, as specified.

2. In a steam-boiler, the central enlarged division G and sections B B' of the boiler communicating with each other, in combination with pipes or conduits K K' and H, feed-water pipes S S, and water-purifying cylinders I' and F, as and for the purpose specified.

3. In a steam-boiler, the continuous water-conduits outside of the boiler, into which feed-water pipes S S discharge, in combination with the cylinder F, which receives the mixed hot and cold water from said conduits for circulating and purifying the same.

4. In a steam-boiler, exterior water-circulating conduits, connecting the central part of the boiler with the lower part of the same, in combination with the downwardly-discharging feed-water pipes S S, which communicate with said exterior conduits, as specified.

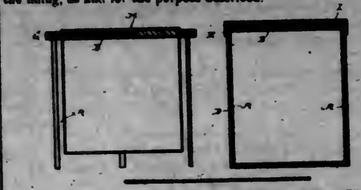
411,485. FLOUR OR MEAL SAFE. LEVI A. HARNEY, Tyndall, Dak. Filed Mar. 2, 1889. Serial No. 301,897. (No model.)



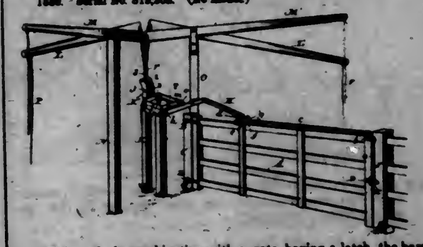
Claim.—In a flour and meal safe, the combination of bin A, tube B, having cone *a* and outlets O O, collar K, having corresponding outlets O' O', stirrers J J on its lower ends, and handle L, agitator H J J, means for attaching to collar K, sieve D, and pan E, whereby the contents of the bin are agitated, discharged, and sifted, successively, substantially as described.

411,486. PROCESS OF CANNING FOOD. JOHN H. J. HAINES, Flushing, N. Y. Filed Nov. 10, 1888. Serial No. 290,481. (Model.)

Claim.—The herein-described method of canning alimentary substances in paper or pasteboard cans having metal-foil linings, consisting in forming the lining and the paper or pasteboard body separately, inclosing the material in the metal foil, sealing the same by fusion of the metal-foil edges together, subjecting the lining and contents to the proper heat, and, finally, applying the body of the can to the lining, as and for the purpose described.



411,487. GATE. CARSTEN HARMS, Morgan, Iowa. Filed July 30, 1888. Serial No. 319,302. (No model.)



Claim.—1. In combination with a gate having a latch, the bars H I, serving to operate the latch, the lazy-tongs connected with the bars H I, and a pair of levers L M, connected with and serving to operate the lazy-tongs.

2. In combination with a gate having a latch, bars H I, serving to actuate the latch, lazy-tongs connected with the bars H I, levers L L' M M', arranged in pairs, and chains or cords *t* and *s*, connecting the lazy-tongs with the levers.

3. In combination with a gate having a latch, post or standard J, bars H I, serving to operate the latch and connected with a swivel-collar A, secured to the post or standard, lazy-tongs connected with bar I by means of a swivel-block *o*, levers L M, and connections between the levers and lazy-tongs.

4. In combination with a gate having a latch, post or standard J, bars H I, mounted upon the post and connected with and serving to actuate the latch, bracket K', bars *k l*, pivotally connected with the bracket, bars *m n*, pivotally connected with bar I and with the bars *k l*, levers L M, and chains or cords connecting the levers with the arms *l m*.

5. In combination with gate A, having latch D, post or standard J, bars H I, mounted upon the standard and connected with the latch through intermediate mechanism, bracket K', bars *k l m n*, arranged substantially as shown, arms *p q*, secured to bars *l m*, levers L M, and chains *r s*, all arranged substantially as shown.

6. In combination with gate A and latch D, block or arm *d*, mounted upon the gate and connected with the latch, arms H I, connected, respectively, with the arm *d* and a post or standard J, bracket K', bars *k l m n*, connected in pairs with each other and with the bracket and arm I, levers L M, and chains or cords *r* and *s*.

411,488. ELEVATOR ATTACHMENT FOR GRAIN-SEPARATORS. STACY B. HARE, Peoria, Ill., assignor to the Hart Weigher Company, same place. Filed Aug. 24, 1888. Serial No. 283,689. (No model.)

Claim.—1. A clamping device consisting, essentially, of the doubly-slotted angle-irons C C', the longitudinally-movable bar E, supported by said angle-irons, a yoke for clamping ends of the bar to the angle-irons, and a yoke for clamping the elevator-tube to the bar, substantially as described, whereby said tube may be adjusted vertically, laterally, and longitudinally with respect to the supporting-structure, as herein set forth.

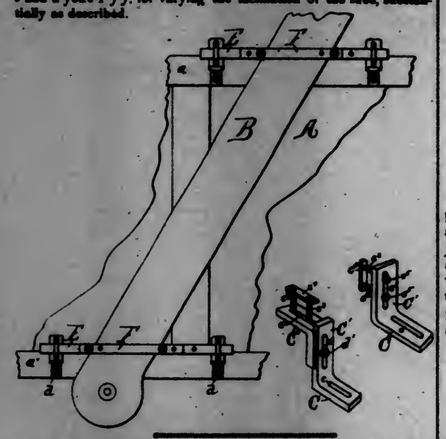
2. The combination of the brackets C C', provided with a clamping device c^3 c^4, and the bar E, as and for the purpose stated.

3. The combination of the brackets C C', provided with a clamping device c^3 c^4, and the bar E and yoke F *f f*, as and for the purpose stated.

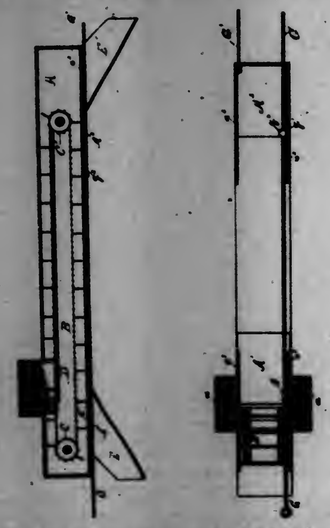
4. The combination of brackets made up of the parts C, C', and C², and provided with a clamping device c^3 c^4, and the bar E and yoke F *f f*, as and for the purpose stated.

5. The combination of an elevator-tube with a clamping-bar E, arranged at or near its end, adjustably secured to the frame of a grain-separator, so as to be capable of a lateral adjustment with relation to

the frame of said grain-separator, and provided with a series of holes *e* and a yoke *F f f*, for varying the inclination of the tube, substantially as described.



411,439. GRAIN-CONVEYER. STACY R. HAHN, Peoria, Ill., assignor to the Hart Weigher Company, same place. Filed Dec. 21, 1888. Serial No. 294,346. (No model.)



Claim.—1. The conveyer-tube A, provided with the pulleys C C', carrying an endless conveyer-chain B continuously in the direction which will move the grain upon the bottom of the tube from the pulley C to the pulley C', said tube having the outlets a' a^3 practically at its opposite ends, but between the pulley C and the end opposite, and provided with means for closing them at will, in combination with a spout adapted to deliver grain upon the bottom of the tube between the pulley C and the opposite edge of the adjacent outlet a', as and for the purpose stated.

2. A conveyer-tube having the pulleys C C', chain B, outlets a' a^3, valves A' A^3, the partition D, stopping short of the pulley C sufficient to allow the grain to drop between it and said pulley, and a spout adapted to deliver grain upon said partition, substantially as and for the purpose set forth.

3. The combination of the conveyer-tube and the valves A' A^3, with the rod G, rigidly attached to valve A' and bearing a lug g' engaging with a stop g^3 upon valve A^3, to open the same when valve A' is closed, but disengaging from said stop when the rod G is moved in the opposite direction, as and for the purpose stated.

411,440. HEEL-SWEEP ATTACHMENT. JONAIAH B. HEARN, Dryden, S. C. Filed Oct. 26, 1888. Serial No. 289,116. (No model.)



Claim.—The combination, with a slotted plow-standard, of the perforated plate *c*, fitting against the rear face of the said standard, and having the tongue *f*, fitting in the slot of said standard, and then *f'*, turning over the front edge of said standard, perforated plate *b*, adapted to fit against the rear face of the said plate *c*, and having the threaded opening *h*, threaded and headed pin *i*, working in the threaded opening *h*, its headed end turning in the perforation *g* of plate *c*, and sweep *a*, bolted to the rear of said plate *b*, substantially as shown and described, and for the purposes set forth.

411,441. APPARATUS FOR MOLDING SASH-WEIGHTS, &c. ALONZO S. HANSON, Chelsea, Mass. Filed Feb. 19, 1885. Renewed Mar. 2, 1889. Serial No. 301,515. (No model.)



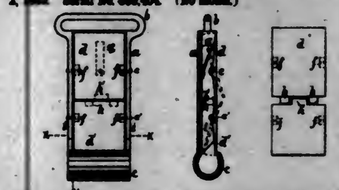
Claim.—1. In a mold for casting sash-weights, the weight-patterns *c c c*, with the cutting-off patterns *i i* and thimbles *n n'*, in combination with the gate-pattern *d*, with the shutting-off pattern *h* and sprue-pattern *g*, all arranged as described, for the purpose set forth.

2. In a mold for casting sash-weights, the weight-patterns *c c c*, in combination with the cutting-off patterns *i i* and thimbles *n n*, having chambers *n' n'*, for holding the eye of the weight while it is being cast, as and for the purpose set forth.

3. In a mold for casting sash-weights, the gate-pattern *d*, in combination with the sprue-pattern *g* and shutting-off pattern *h*, as and for the purpose set forth.

4. In a mold for casting sash-weights, gate-pattern *d*, with the sprue-pattern *g* and shutting-off pattern *h*, in combination with the weight-patterns *c c c* and thimbles *n n*, provided with the chambers *n' n'*, for the purpose set forth and described.

411,442. SNAP-HOOK. HANS HELVIE, Chicago, Ill. Filed May 2, 1888. Serial No. 272,404. (No model.)



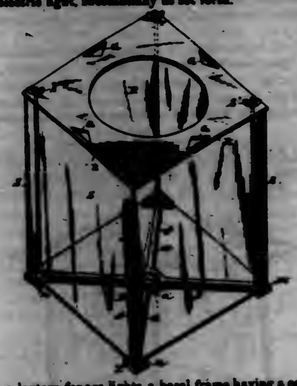
Claim.—1. In a snap-hook, the body *a*, provided with hook *c*, in combination with the spring *g* and levers *d d'*, fulcrumed at *e f'*, the abutting ends of said levers being united by a joint which permits longitudinal separation of said ends, substantially as specified.

2. In a snap-hook, the body *a*, provided with sides *i* and hook *c*, in combination with the spring *g*, levers *d d'*, fulcrumed at *e f'* on said walls and provided with spurs *h h'* at their abutting ends, substantially as specified.

3. In a snap-hook, the body *a*, provided with hook *c*, in combination with the abutting levers *d d*, fulcrumed at *e f'*, and provided with lugs *f f'*, and spurs *h h'* at the abutting ends of said levers, whereby their abutting ends must move together and may separate longitudinally when in operation, substantially as specified.

411,448. GLOBE-FRAME. DAVID HYMAN, Harrisburg, Pa., assignor of one-half to Joshua W. Jones, same place. Filed July 26, 1888. Serial No. 281,157. (No model.)

Claim.—1. A lantern for arc electric lights, consisting of a bonal frame or spider having central hub provided with an eye for attaching the lantern to the shank of the lower-carbon holder by a screw, said hub having radial arms provided with grooves adapted to sustain therein the bottom edges of panes of glass, as the lantern sides, a top plate having devices for securing the upper edges of the panes, and wire rods inserted through the top plate and through the spider's arms, the wire rods having hooks beneath and screw-nuts at upper end for connecting the plates squarely, all combined and arranged about the electric light, substantially as set forth.



2. In a lantern for arc lights, a bonal frame having a central hub, a central eye K, and radial arms provided with flanges *a'*, palms *n'*, and recess n^3, in combination with the removable bottom sections Z, each adapted to rest on the flanges *a'* and in recess n^3, substantially as described.

3. The skeleton globe-frame having the bonal frame A *a'* H as its support at corners thereof only, the sides S, retained at their bonal edges in the groove *n* independent of the bottom, the top plate Q, having the exterior flanges *h*, and the interior struck-up tongs G, for resting on and embracing the lantern-sides, and the screw-bolts N, arranged in the corners inside of the glass sides, all combined and adapted substantially as and for the purposes shown and described.

4. The globe-frame consisting of the central hub having an eye and set-screw or set-screws L, and the radial arms A, provided with flanges *a'*, abutting toward the center, and the grooved palms *n'* on their ends, the removable bottom sections Z, constructed to rest upon the flanges *a'* and extending beyond the lantern-sides and below the bottom of the grooves in the palms, the sides S, retained in the grooves *n* and covering the sections Z, the top plate Q, provided with parts for holding the sides in position, and the bolts N, for securing said top plate to said radial arms, substantially as described.

5. A globe-frame for electric-arc light, composed of rectangular panes of glass for the sides of the said frame, a spider or bottom frame having a central hub adapted for attaching it to the metal carbon-holder, having radial arms extending from said hub to the sides, each formed at its extremity with a palm having its upper side provided with grooves adapted for retaining therein the bases of said sides, said arms having also lateral flanges to hold thereon glass segments which form a transparent bottom, and a top frame constructed to hold erect said sides, it having parts for bearing interiorly against the sides, and other parts for bearing against the sides exteriorly, and screw-bolts connecting said palms with said top frame, arranged inside near the intersection of the sides, substantially as shown and described.

6. The combination of an electric-light frame, a spider or bottom frame, the glass sides resting upon said spider or bottom frame, and a top frame for securing the tops or upper ends of the glass sides and having an opening in the center for the electric-light frame which supports the spider or bottom frame, substantially as described.

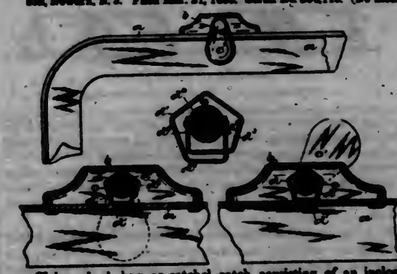
411,444. MICROMETER-CALIPERS. JOHN H. HOBBS, Atlantic, Iowa. Filed Apr. 30, 1889. Serial No. 308,941. (No model.)



Claim.—1. The frame, the threaded rod which passes through a threaded aperture in its support adapted to receive it, the circular jaw having a longitudinal and revolving motion, which is secured to the inner end of the threaded rod, the stationary-jaw stem or shank which enters an aperture in its support adapted to receive it, and the circular stationary jaw which is secured to the inner end of its stem or shank and which extends upward above its support, the movable circular jaw being constructed of larger diameter than the threaded rod to which it is secured and by which it is actuated, and the stationary jaw being constructed of larger diameter than its stem or shank, thereby providing means for taking the gage of internal diameters and spaces as well as external diameters, all combined substantially as described and shown.

2. Calipers provided with a movable circular jaw having a longitudinal and revolving motion and being of greater diameter than the rod to which it is secured and by which it is actuated, substantially as described.

411,445. CATCH FOR BAGS, SATCHELS, &c. RICHARD C. JENKINS, Newark, N. J. Filed Mar. 21, 1888. Serial No. 268,119. (No model.)



Claim.—1. A bag or satchel catch consisting of an inclosing-casing, a shaft or locking-bar pivoted in said casing, having ears on the opposite ends thereof which embrace the frame-sections of the bag, and a spring secured to said shaft and encircling the same and engaging with the top of the frame-section of the bag to hold the ears on said locking-bar or shaft in their locked or unlocked positions, for the purposes set forth.

2. A bag or satchel catch consisting of an inclosing-casing, a shaft or locking-bar pivoted in said casing, having ears on the opposite ends thereof which embrace the frame-sections of the bag, and an angular or polygonal spring encircling said shaft or bar, one of the sides of said spring engaging with the top of the bag-frame to hold the ears on said locking-bar in their locked or unlocked positions, for the purposes set forth.

3. A bag or satchel catch consisting of an inclosing-casing, a shaft or locking-bar extending therethrough, having ears on the opposite ends thereof which engage with the frame-sections of the bag, a spring encircling said shaft and engaging with the top of the frame-section of the bag to hold the ears on the ends of the locking-bar in their locked or unlocked positions, said spring being formed from a plate *d*, having a perforation d^2 therein and an arm d^3, said arm projecting through the perforation d^2 when in position around the shaft, and means for securing the spring to the shaft, for the purposes set forth.

4. A bag or satchel catch consisting of an inclosing-casing, a polygonal spring within the casing, and a shaft *c*, secured to said spring and pivotally supported by said spring, and ears *c'* on the opposite ends of said shaft, said ears being held in their locked or unlocked positions by means of said spring, said spring engaging with the top of the frame-sections, for the purposes set forth.

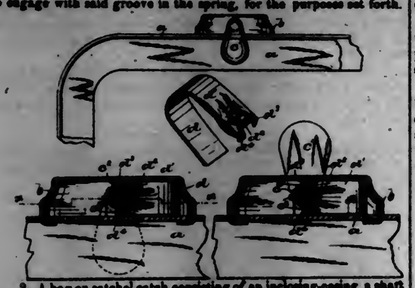
5. The combination, with the frame-section of a bag, of a fastening device consisting of an inclosing-casing, a shaft pivoted within said casing, having ears on the opposite ends thereof which engage with the frame-sections of the bag, a polygonal or cylindrical spring within said casing, said spring encircling the shaft, any one side of said spring engaging with the top of the frame-section of the bag to hold said ears on the locking-bar in their locked or unlocked positions, and means for securing the casing to the bag-frame, for the purposes set forth.

6. The combination, with the frame-section of a bag, of a fastening-catch consisting of a casing *b*, a shaft *c*, pivoted in said casing, having ears on the opposite ends thereof which engage with the frame-sections of the bag, a polygonal or cylindrical spring within said casing encircling the shaft, any one side of said spring engaging with the top of the frame-section of the bag to hold said ears on the locking-bar in their locked or unlocked positions, and means for securing said spring to the shaft or turning-bar, for the purposes set forth.

411,446. SPRING-CATCH FOR BAGS, SATCHELS, &c. RICHARD C. JENKINS, Newark, N. J. Filed Mar. 22, 1888. Serial No. 268,267. (No model.)

Claim.—1. A bag or satchel catch consisting of an inclosing-

casing, a spring arranged within the casing and provided with a groove or furrow, as set forth, and a shaft pivoted in said casing, having ears on the opposite ends thereof which embrace the frame-sections of the bag, and pins or stops arranged around said shaft and adapted to engage with said groove in the spring, for the purposes set forth.



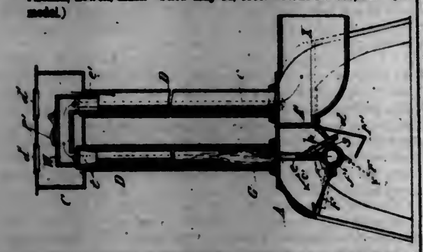
2. A bag or satchel catch consisting of an inclosing-casing, a shaft or locking-bar extending therethrough, having ears on the opposite ends thereof, which engage with the frame-sections of the bag, pins c^2 thereon, substantially as shown, and a U-shaped spring arranged within the casing on one side of said bar or shaft, said spring being provided with a groove d^3 and chamfered corners d^4 and d^5, for the purposes set forth.

3. A bag or satchel catch consisting of an inclosing-casing, a shaft or locking-bar extending therethrough, having ears on the opposite ends thereof which engage with the frame-sections of the bag, pins c^2 thereon, substantially as shown, and a U-shaped spring arranged within the casing on one side of said bar or shaft, said spring being provided with a groove d^3 and chamfered corners d^4 and d^5, one of said pins c^2 normally engaging with the groove, and the other pin being adapted to engage with the chamfered corners on the spring when the locking-bar is caused to rotate on its axis, thereby causing the disengagement of the pin from the groove in the spring, substantially as and for the purposes set forth.

4. A bag or satchel catch consisting of an inclosing-casing, a shaft or locking-bar extending therethrough and having ears on the opposite ends thereof which engage with the frame-sections of the bag, and a U-shaped spring arranged on one side of the bar or shaft, one arm of said spring being provided with means adapted to engage with pins or stops arranged on and around the locking-bar to retain said bar in its fastened or unfastened position on the bag-frame, for the purposes set forth.

5. The combination, with the frame-section of a bag, of a fastening device consisting of an inclosing-casing, as set forth, and a shaft or bar pivoted in said casing, having ears on the opposite ends thereof which engage with the frame-sections of the bag, pins c^2 on said shaft, which engage with chamfered corners d^4 and d^5 and a groove d^3 in a spring d, thereby causing the fastened or unfastened engagement of the ears c' on the locking-bar with the frame-sections of the bag, and means for securing said casing to the bag-frame, as set forth.

411,447. GAS-HEATER. JONATHAN JOHNSON and RICHARD H. PARKER, Lowell, Mass. Filed May 10, 1889. Serial No. 310,292. (No model.)



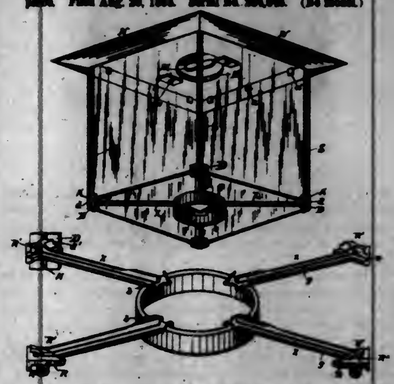
Claim.—1. As an improvement in gas-heaters, the combination of the radiating-pipes, the two-chambered base to which they are connected, the rotating burners provided with an arm to rotate the same, the stops attached to the base to limit the movement of the arm, the stationary finder secured to the base, and the finder secured to the rotating pipe turning with the same, substantially as and for the purpose set forth.

2. The combination of the burner-chamber in the base, the chamber in the top, the front radiating-pipes connecting said chambers, the bottom chamber leading to the flue, the rear radiating-pipes connecting said chamber leading to the flue and the top chamber, the elbows connecting the tops of the front and rear radiating-pipes, one end of said elbows completely filling the upper end of the front pipe, to which it is attached, and having an annular space surrounding the end that enters a rear pipe, substantially as and for the purpose set forth.

3. As an improvement in heaters, the elbows provided with a relief-valve upon their upper sides, in combination with the radiating-pipes connected by said elbows, substantially as and for the purpose specified.

4. As an improvement in gas-heaters, the combination of the radiating-pipes, the chamber which receives their upper ends, said chamber provided with perforations opposite the ends of the pipes, and the covers for said perforations adapted to be thrown off and relieve the chamber in case of explosion therein, substantially as set forth.

411,448. GLOBE-FRAME FOR ELECTRIC-ARC LIGHTS. JOSHUA W. JONES, Harrisburg, Pa., assignor of one-half to David Hyman, same place. Filed Aug. 20, 1888. Serial No. 284,048. (No model.)

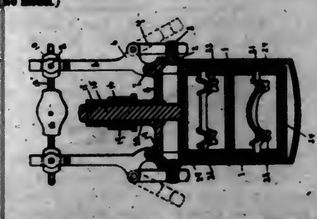


Claim.—1. In an electric-light globe-frame, the combination of the basal frame W, provided with arms X, formed with lateral flanges g, and having end abutments R, and having also the shoulders R' offset near their ends, with the plates D, attached to said abutments by screws d in slots K in said plates, and the sides Z, retained on said abutments by said plates and between the parts Q Q' on the outer side of the globe-frame top by the aid of the bolts S, joining said basal frame to the top plates, substantially as and for the purposes set forth.

2. In an electric-light globe-frame, in combination with a reflector A, made with the projections A^2 and the cut-away space A' between said projections and retained in position between the top and bottom parts of the globe-frame in lieu of a transparent side of globe, substantially as and for the purposes set forth.

3. In an electric-light globe-frame, the combination of the basal part W, adapted for supporting thereon the bottoms of the glass sides of the globe in connection with the slotted plates D, secured in position by screws d, the diaphragm top plate V, provided with parts adapted for embracing the tops of said glass sides, the lids L, having parts set away at M M' and fitted to fold together free of the carbons, screw-rods connecting said basal part with said top plate, and means connecting detachably said basal part W with the carbon-holder, so that the globe-frame may be readily removed when said lids are opened, substantially as shown and described.

411,449. DENTAL VULCANIZER. JOHAN G. KELLER and DAVID B. WEIMER, Fort Wayne, Ind. Filed May 3, 1889. Serial No. 309,542. (No model.)



Claim.—1. In a dental vulcanizer, the combination, with the steam-pot 1, provided with lugs 2, and a lid 3, provided with lugs 7 and 18, of the locking-link 4 and the actuating-levers 8, hinged to the lid 5, as and for the purposes set forth.

2. In a dental vulcanizer, the combination, with the steam-pot 1, provided with lugs 3, lid 5, provided with lugs 7 and 18, and locking-link 4, of the actuating-levers 8, hinged to the lid 5 and provided with lugs 6 and slots 9, as and for the purposes set forth.

3. In a dental vulcanizer, the combination, with the steam-pot 1, provided with lugs 2, lid 5, locking-links 4, and levers 8, provided with lugs 6 and slots 9, of the locking-nuts 10, pivoted in slots 9 by set-screws 11, as and for the purposes set forth.

4. In a dental vulcanizer, the combination of a steam-pot 1, provided with lugs 3, lid 5, provided with lugs 7 and 18, actuating-levers 8, provided with lugs 6 and locking-nuts 10, locking-rod 12, provided with insulated handle 13, and locking-link 4, all formed substantially as described, as and for the purposes set forth.

5. In a dental vulcanizer, the combination, with a steam-pot 1, provided with lugs 3, and a cover 5, provided with upwardly-projecting lugs 7 and downwardly-projecting lugs 18, and a sleeve 20, provided with a collar-nut 16 and rubber-packing space 19, of the stirrup 24, provided with a piston 15, said piston passing through the lid 5, sleeve 23, rubber packing 19, and collar-nut 16, and secured thereto by a closing-nut 17, as and for the purposes set forth.

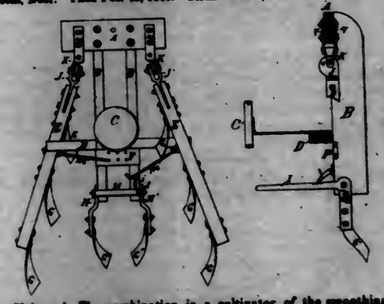
6. In a dental vulcanizer, the combination of the pot 1, the lid 5, provided with lugs 7 and 18, and sleeve 23, levers 8, locking-rod 12, locking-links 4, and stirrup 24, provided with a piston-rod 15, secured in position by nuts 16 and 17, as and for the purposes set forth.

411,450. PENCIL-CLASP. GEORGE H. KNIT, Cambridge, Mass. Filed Apr. 29, 1889. Serial No. 308,616. (No model.)



Claim.—A pen and pencil holder consisting of a ring having thereon arms extending outward and upward, of flexible material, so that when pressure is brought to bear thereon they will turn backward, substantially as and for the purpose above described.

411,451. LISTING-CULTIVATOR. WILLIAM A. KNEDLER, Lincoln, Nebr. Filed Feb. 15, 1889. Serial No. 299,909. (No model.)



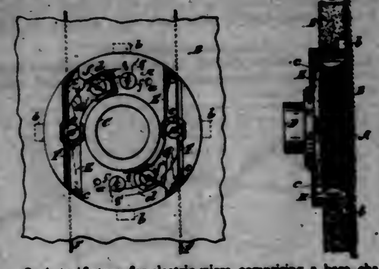
Claim.—1. The combination, in a cultivator, of the smoothing-plank A, runners B B, arms E E, attached to the plank A by means of the double coupling composed of parts K and J, knives G, cross-piece D, adjusting-plate F, and cast C, all substantially as described.

2. The combination, in a cultivator, of the smoothing-plank A, runners B B, arms E E, attached to the smoothing-plank by means of the double coupling composed of the parts K and J, shovels G, cross-piece D, adjusting-plate F, adjusting-rods m, cast C, shovels G' G', attached to the runners B B by means of the arch H and shoulder H' H', and raised or lowered by means of the lever I, all substantially as described.

411,452. INCANDESCENT ELECTRIC-LIGHT FIXTURE. PHILIP H. KLEIN, Jr., New York, N. Y., assignor to the Bergmann & Company, same place. Filed May 20, 1889. Serial No. 312,098. (No model.)

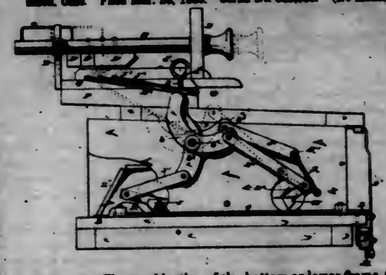
Claim.—1. In combination with the main wires, a tap-fixture comprising a base having channels and binding-plates and screws seated in said channels, lugs on the base to engage the plaster of a wall, and a central opening to engage over a pipe-connection, substantially as specified.

2. A tap-fixture for electric wires, comprising a base, channels in said base, channels at approximately right angles from the first-named channels, binding-plates in the channels, binding-screws for the main wires, and binding-screws for the branch wires, the said base having a central opening to engage over a gas-pipe connection, substantially as specified.



3. A tap-fixture for electric wires, comprising a base, channels extending across said base, channels at approximately right angles to the first-named channels, binding-plates in the channels, binding-screws for the wires, and a safety-catch, the said base having an opening to engage over a gas-pipe connection, substantially as specified.

411,453. STOP-MOTION FOR REED-ORGANS. JOHN LANE, Massillon, Ohio. Filed Mar. 30, 1889. Serial No. 305,399. (No model.)

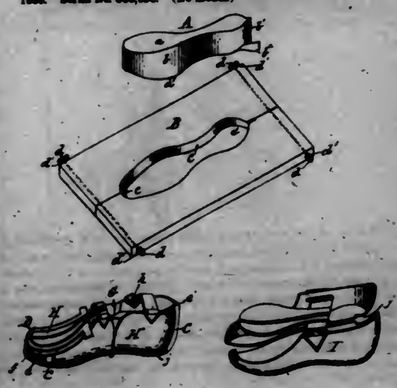


Claim.—1. The combination of the bottom or lower frame A, the top or upper frame consisting of the stop-board B, the lever-board C, and the guide-board D, the stops E, provided with the staples a and the operating-blocks F, the levers F^0, I^0, and J^0, and the segmental bars b' b^2, and b^3, located side by side and upon the pin or bar b, substantially as and for the purpose specified.

2. The combination of the bottom or lower frame provided with the thumb-screws d', the lever-board provided with the slots d, and the stop-blocks d^3, substantially as and for the purpose specified.

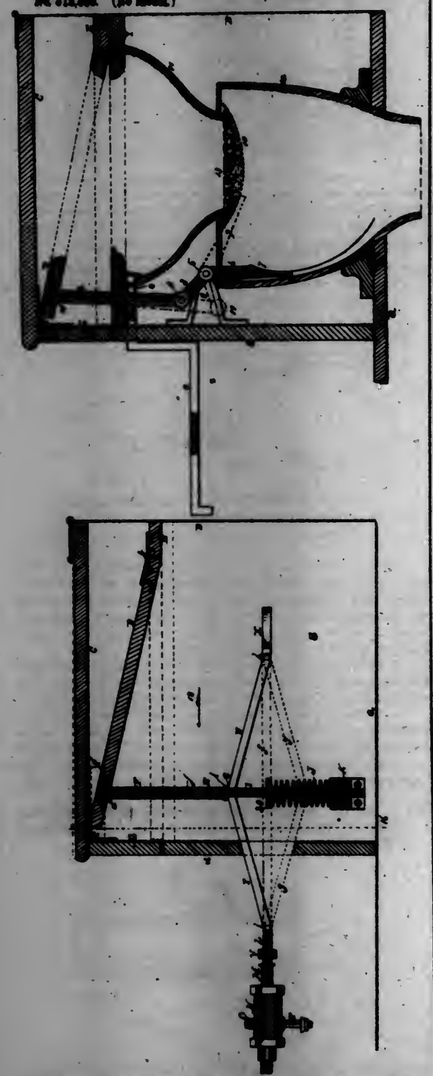
3. The combination of the bottom or lower frame having independently attached thereto the knee-swell lever L, adapted to elevate the front and rear swell-boards L', the section-bar N, having attached thereto the lever-bars O and adapted to elevate the mute-bars H and I independent of stops, substantially as and for the purpose set forth.

411,454. MANUFACTURE OF WIGWAM SHOES OR SLIPPERS. ERNEST L. LABRADOR and DAVID PUTNAM, Peabody, Mass. Filed Apr. 26, 1889. Serial No. 308,694. (No model.)



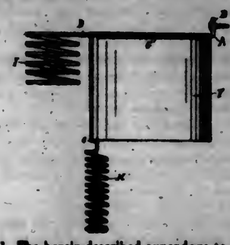
Claim.—The improved method of manufacturing wigwam or other similar shoes or slippers, consisting in molding the leather in a wet and pliable condition, then lasting the same and inclosing the lasted shoe in a close-fitting mold or former, and finally stitching the shoe while so held.

411,455. WATER-CLOSET. LOUIS LAVIAN and HERMAN TRIPP, Chicago, and JOHN FAHLSTEN, Austin, Ill. Filed June 1, 1889. Serial No. 312,803. (No model.)



Claim.—An improvement in water-closets for cars, consisting of two struts T and U, jointed together at the inner elevated ends, the strut U, jointed to a fixed support, and the outer end of strut T, jointed to a plunger which operates through a guide, in combination with a water-closet valve whose piston is operated by said plunger, and an oscillating cent provided with a jointed rod-connection which extends through the struts and is provided with a collar operating against them and a collar operating against a spring, a coil, a pan below it, and a water-pipe O, communicating with the valve and the bowl, as specified.

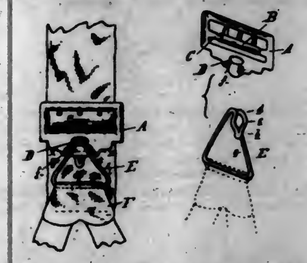
411,456. ATTACHMENT FOR WRITING-DESKS. EDWARD LANGHAM, Toledo, Ohio. Filed Dec. 20, 1888. Serial No. 294,191. (No model.)



Claim.—1. The herein-described appendage to a desk, consisting of two depending coils and a sponge-receptacle having a telescoping portion provided with a foraminous covering, as and for the purpose set forth.

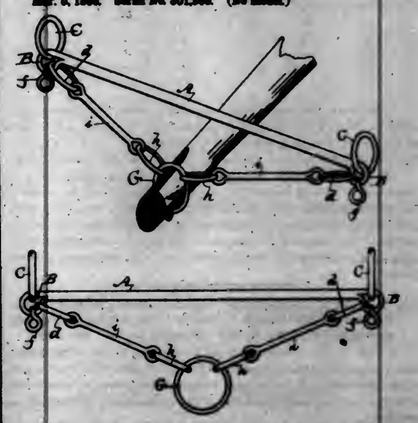
2. In an appendage to a desk, in combination with a hanger, a sponge-receptacle provided with a telescoping top portion having a foraminous covering, as and for the purpose set forth.

411,457. BUCKLE. ASHER H. LARSEN, Preston, Mich., assignor of one-half to Walter W. Hilliard, same place. Filed May 20, 1889. Serial No. 312,094. (No model.)



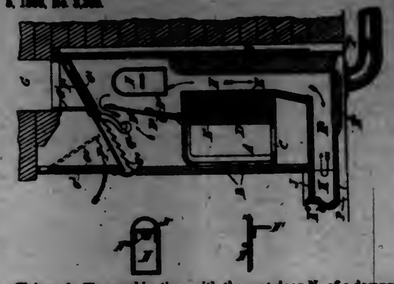
Claim.—In suspenders, the combination, with the buckle having the oval-shaped aperture, of the loop having the lower triangular portion bent inwardly at the upper end, then outwardly and terminating in a recessed end, the upper end being bent to form a hook and the outward-bent portion serving to retain the loop in the buckle, substantially as described.

411,458. NECK-YOKE. WILLIAM LEES, Grenola, Iowa. Filed Mar. 5, 1889. Serial No. 301,969. (No model.)



Claim.—An improved neck-yoke composed of a bar A, having integral loops B, in which are inclosed rings C, *d*, and *f*, and the ring G, connected with the ends of the bar by means of rings *d* and A, links *i*, and the loops B, substantially as shown and described, for the purposes stated.

411,459. STOVE. HIRAM LOVE, Cambridge, England. Filed Jan. 21, 1889. Serial No. 297,313. (No model.) Patented in England Mar. 8, 1888, No. 3,923.



Claim.—1. The combination, with the seat-door N, of a damper or baffle plate N', substantially as herein described, and illustrated in the accompanying drawings.

2. A fire-place stove having the fire-place, the back plate of which is provided with slots B and D', the latter being regulated by a damper, the combustion-chamber in rear of the back plate, the divided flue K below the fire-place, and the flues L, connecting with the chimney, substantially as set forth.

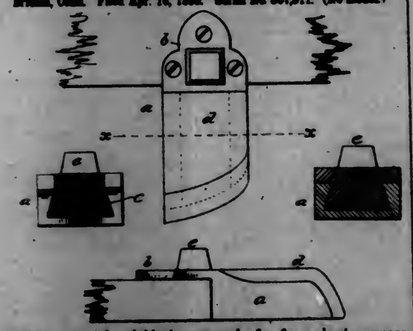
411,460. CAR-COUPLING. PATRICK T. HARRIGAN, Troy, N. Y. Filed May 1, 1889. Serial No. 309,194. (No model.)



Claim.—1. The combination, with the draw-head D, made with the slot T in its upper surface, the opening O in its bottom, and having the downwardly and rearwardly sloating bearings b^3, of the connecting-pin P, made with the downcast end p', its shank or body part p^2, tail-piece p^3, and having the trunnion-form journals J at each side thereof, and the chain C, connecting the shank of said pin with the crank K^2, arranged on the shaft S^2, having on its outer end the crank K', constructed and arranged to operate substantially in the manner as and for the purpose set forth.

2. The combination, with the draw-head D, made with the top slot T, the opening O, made in its bottom, and having the slotted and rearwardly-sloating bearings b^3 in its sides, of the connecting-pin P, made with the downcast outer end p', the shank or body part p^2, the tail-piece p^3, and having the trunnion-form journals J at each side thereof, the chain C, connecting with the shank of said pin, the shaft S^2, having thereon the cranks K' and K^2, with the latter connecting with the outer end of said chain, and the link L, constructed and arranged to operate substantially in the manner as and for the purpose set forth.

411,461. DRIVER'S BENCH-BLOCK. BROWN B. HARRIS, New Britain, Conn. Filed Apr. 16, 1888. Serial No. 307,011. (No model.)

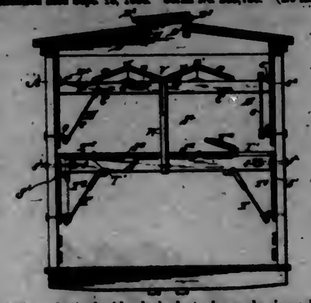


Claim.—1. A bench-block composed of a frame having means for connection to a bench and provided with removable working-surface of non-metallic material, all substantially as described.

2. A bench-block composed of a frame of metal and having a socket in the projecting part of the frame, in combination with the removable working-surface formed of rubber or like soft material, all substantially as described.

3. In combination, in a bench-block, the frame having the anvil and the projecting part with a socket and the removable working-surface formed of soft material with the outer end cut at an angle, all substantially as described.

411,462. STOCK-CAR. ALONZO C. HAYNES, Chicago, Ill. Original application filed Jan. 12, 1889, Serial No. 291,102. Divided and this application filed Sept. 16, 1889. Serial No. 323,726. (No model.)



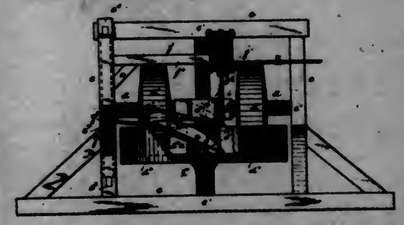
Claim.—1. A double-decked stock-car having a bottom floor, sides, and a roof, and provided about midway between the bottom floor and roof with removable cross-beams S, detachably secured to the sides of the car, and a removable flooring on the cross-beams, a storage-chamber D, located in the top part of the car, and feed-racks located along the interior and on opposite sides of the car above and below the said removable flooring and cross-beams, substantially as shown and described.

2. A double-decked stock-car having a bottom floor, sides, and a roof, and provided about midway between the bottom floor and roof with removable cross-beams S, detachably secured to the car-sides, a removable flooring on the cross-beams, storage-chamber D in the top part of the car, a grain-trough or bin V, and feed-chutes W, leading from the trough or bin to the center of the lower deck of the car, substantially as shown and described.

3. A double-decked stock-car having a bottom floor, sides, and a roof, and provided about midway between the bottom floor and roof with removable and replaceable cross-beams detachably secured to the car-sides, a removable flooring on the cross-beams, and feed-racks along the interior on opposite sides of the car above and below the said cross-beams and flooring, substantially as shown and described.

4. A double-decked stock-car having a bottom floor, sides, and roof, and provided about midway between the bottom floor and roof with removable cross-beams S, detachably secured to the car-sides, a removable flooring S^3 on the cross-beams, a storage-chamber D in the top part of the car, a grain trough or bin V, a feed-chute W, leading from the trough or bin to the center of the lower deck, feed-racks E above the removable flooring, and feed-racks T below the latter, substantially as described.

411,463. SCOOP FOR CLAY OR ORE MILLS. EDWARD J. HILLMAN, Black Lick, Pa. Filed Jan. 30, 1889. Serial No. 298,009. (No model.)



Claim.—1. In combination with a clay or ore mill having a rotating pan, a scoop supported on a movable frame in position to be carried over and withdrawn from the frame and to permit the scoop to be lowered into the pan, and a power-operated piston or other lifting device for lowering the scoop into the pan and raising it therefrom, substantially as and for the purposes set forth.

2. In combination with a clay or ore mill having a rotating pan,

a crane swinging over the pan and carrying a scoop and a power-operating piston or other lifting device supported on the crane for lowering the scoop into and raising it from the pan, substantially as and for the purposes set forth.

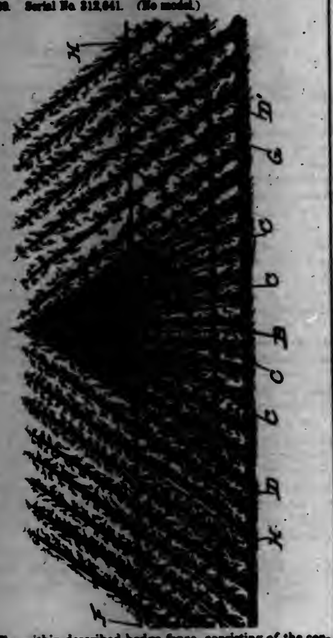
3. In combination with a clay or ore mill having a rotating pan, a scoop supported on a movable frame in position to be carried over and withdrawn from the pan, said scoop being journaled on the frame so as to be swung thereon for unloading, substantially as and for the purposes set forth.

4. In combination with the clay or ore mill having a rotating pan, the crane or movable frame *f*, carrying the cylinder or lift at its end, the rod *g*, pivoted to the crane, the scoop *e*, and the bent arm *h*, connected to the lifting device, substantially as and for the purposes set forth.

5. In combination with the clay or ore mill having a rotating pan, the crane or movable frame *f*, carrying the cylinder or lift at its end, the rod *g*, the scoop *e*, journaled thereon, and the bent arm *h*, connected to the lifting device and having the lower arm *h'* supporting the scoop, substantially as and for the purposes set forth.

6. The combination, with the clay or ore mill, of the scoop, the power-operated piston or other lifting device, and the hook *k* and pin *l*, for supporting the scoop when not in use, substantially as and for the purposes set forth.

411,464. HEDGE. PEARIS M. MEMLER, Hagerstown, Md. Filed May 20, 1889. Serial No. 312,041. (No model.)



Claim.—The within-described hedge fence, consisting of the central triangular section formed of inclined stalks, in combination with the stalks D D', inclined toward said central section, the two horizontal wires, and the diagonal tie-wires looped to said horizontal wires, all as shown and described.

411,465. TRANSOM-LIFTER. CHARLES C. MITCHELL, Ann Arbor, Mich. Filed May 11, 1889. Serial No. 310,494. (No model.)



Claim.—1. The combination, in a car-coupling, with the draw-head, of a transverse bearing-bar located therein, a coupling-hook pivotally mounted upon said bar and projecting from the draw-head, and a hook-lifting lever pivotally mounted upon the said coupling-hook bearing-bar at one side the coupling-hook of the draw-head and projecting downwardly and forwardly, and mechanism bearing upon the ends or portions of said hook and lever projecting in rear of their common bearing-bar for elevating the forward ends of the coupling-hook and lifting-lever, substantially as and for the purpose set forth.

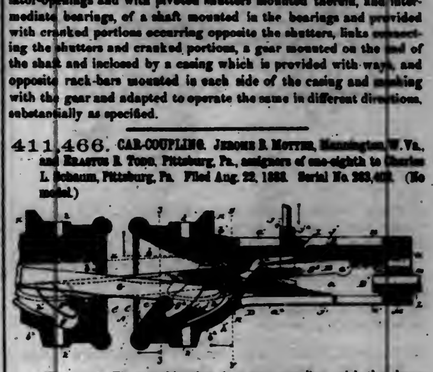
2. The combination, in a car-coupling, of the draw-head having a chamber, as at B, at its front end, provided with an inclined wall at the lower portion of the mouth of said chamber, a transverse bearing-bar located within the draw-head, the coupling-hook pivotally mounted upon said bar and having its forwardly-projecting and normally resting upon said wall, said hook projecting in rear of its fulcrum, a hook-lifting lever mounted upon said coupling-hook bearing-bar at one side the coupling-hook and projecting downwardly and forwardly and in rear of its fulcrum, and an independent vertically-moving shoe or plate located within the draw-head and bearing upon the ends of the coupling-hook and hook-lifting lever which project in rear of their common fulcrum, substantially as and for the purpose set forth.

3. The combination, in a car-coupling, with the draw-head comprising the chamber at its front, as at B, having an inclined front wall at the lower end of the mouth of said chamber, having longitudinally-disposed slots in its sides and the longitudinally-disposed top slot, of a transverse bar mounted in said side slots and adjustable therein, a coupling-hook fulcrumed upon said adjustable bar and normally resting upon the inclined wall, a hook-lifting lever fulcrumed upon the bar at one side the coupling-hook and projecting downwardly and forwardly in rear of the inclined wall, a vertically-moving shoe or plate located within the draw-head and bearing upon the rear ends of the coupling-hook and hook-lifting lever, and an operating-rod secured to said plate and projecting through the top slot, substantially as and for the purpose set forth.

4. An improved car-coupling comprising the draw-head provided with a chamber, as at B, at its front end, having an inclined wall at the lower portion of the mouth of said chamber, provided with longitudinally-disposed slots in its sides having recesses or depressions at their termini, a transverse bar mounted in said slots and received by the recesses at the termini of the same, a coupling-hook fulcrumed upon the bar and normally resting upon the inclined wall, a hook-lifting lever fulcrumed upon the bar at one side the coupling-hook and projecting downwardly and forwardly in rear of the inclined wall, a vertically-moving shoe or plate bearing upon the rear ends of the coupling-hook and hook-lifting lever, and mechanism for operating this plate, substantially as and for the purpose set forth.

5. An improved car-coupling comprising the draw-head having the chamber at its front end, the rearwardly-inclined front wall at the lower portion of the mouth of said chamber, terminating in a cylindrical top edge, as at *c*, the vertical perforations adapted to receive an ordinary coupling-pin, the longitudinally-disposed slots in its sides having recesses or depressions at their termini, and a longitudinally-disposed top slot, a transverse bar mounted in the side slots and received by the recesses at the termini of the same, a coupling-hook fulcrumed upon the bar and normally resting upon the inclined wall, a hook-lifting lever fulcrumed upon the bar at one side the coupling-hook and projecting downwardly and forwardly in rear of the inclined wall, a vertically-moving shoe or plate bearing upon the rear ends of the coupling-hook and hook-lifting lever, an operating-rod secured to said plate and projecting through the top slot, and mechanism for operating said rod, substantially as and for the purpose set forth.

411,466. CAR-COUPLING. JEROME B. MOTTER, Harrington, W. Va., and ERASTUS B. TODD, Pittsburg, Pa., assignors of one-eighth to Charles L. Schanz, Pittsburg, Pa. Filed Aug. 22, 1888. Serial No. 283,422. (No model.)



Claim.—1. The combination, in a car-coupling, with the draw-head, of a transverse bearing-bar located therein, a coupling-hook pivotally mounted upon said bar and projecting from the draw-head, and a hook-lifting lever pivotally mounted upon the said coupling-hook bearing-bar at one side the coupling-hook of the draw-head and projecting downwardly and forwardly, and mechanism bearing upon the ends or portions of said hook and lever projecting in rear of their common bearing-bar for elevating the forward ends of the coupling-hook and lifting-lever, substantially as and for the purpose set forth.

2. The combination, in a car-coupling, of the draw-head having a chamber, as at B, at its front end, provided with an inclined wall at the lower portion of the mouth of said chamber, a transverse bearing-bar located within the draw-head, the coupling-hook pivotally mounted upon said bar and having its forwardly-projecting and normally resting upon said wall, said hook projecting in rear of its fulcrum, a hook-lifting lever mounted upon said coupling-hook bearing-bar at one side the coupling-hook and projecting downwardly and forwardly and in rear of its fulcrum, and an independent vertically-moving shoe or plate located within the draw-head and bearing upon the ends of the coupling-hook and hook-lifting lever which project in rear of their common fulcrum, substantially as and for the purpose set forth.

3. The combination, in a car-coupling, with the draw-head comprising the chamber at its front, as at B, having an inclined front wall at the lower end of the mouth of said chamber, having longitudinally-disposed slots in its sides and the longitudinally-disposed top slot, of a transverse bar mounted in said side slots and adjustable therein, a coupling-hook fulcrumed upon said adjustable bar and normally resting upon the inclined wall, a hook-lifting lever fulcrumed upon the bar at one side the coupling-hook and projecting downwardly and forwardly in rear of the inclined wall, a vertically-moving shoe or plate located within the draw-head and bearing upon the rear ends of the coupling-hook and hook-lifting lever, and an operating-rod secured to said plate and projecting through the top slot, substantially as and for the purpose set forth.

4. An improved car-coupling comprising the draw-head provided with a chamber, as at B, at its front end, having an inclined wall at the lower portion of the mouth of said chamber, provided with longitudinally-disposed slots in its sides having recesses or depressions at their termini, a transverse bar mounted in said slots and received by the recesses at the termini of the same, a coupling-hook fulcrumed upon the bar and normally resting upon the inclined wall, a hook-lifting lever fulcrumed upon the bar at one side the coupling-hook and projecting downwardly and forwardly in rear of the inclined wall, a vertically-moving shoe or plate bearing upon the rear ends of the coupling-hook and hook-lifting lever, and mechanism for operating this plate, substantially as and for the purpose set forth.

5. An improved car-coupling comprising the draw-head having the chamber at its front end, the rearwardly-inclined front wall at the lower portion of the mouth of said chamber, terminating in a cylindrical top edge, as at *c*, the vertical perforations adapted to receive an ordinary coupling-pin, the longitudinally-disposed slots in its sides having recesses or depressions at their termini, and a longitudinally-disposed top slot, a transverse bar mounted in the side slots and received by the recesses at the termini of the same, a coupling-hook fulcrumed upon the bar and normally resting upon the inclined wall, a hook-lifting lever fulcrumed upon the bar at one side the coupling-hook and projecting downwardly and forwardly in rear of the inclined wall, a vertically-moving shoe or plate bearing upon the rear ends of the coupling-hook and hook-lifting lever, an operating-rod secured to said plate and projecting through the top slot, and mechanism for operating said rod, substantially as and for the purpose set forth.

tained by said recesses, said bar being longitudinally adjustable, for the purpose set forth, a coupling-hook fulcrumed upon said bar and normally resting upon the inclined wall, a hook-lifting lever fulcrumed upon the bar at one side the coupling-hook and projecting downwardly and forwardly in rear of the inclined wall, a vertically-moving shoe or plate located within the draw-head above the rear ends of the coupling-hook and hook-lifting lever and adapted to bear upon the same, and an operating-rod secured to said plate and projecting upwardly through the top slot, substantially as and for the purpose set forth.

6. In a car-coupling, the combination, with the draw-head, of a longitudinally-adjustable hook-lifting lever fulcrumed within the same and projecting downwardly and forwardly, and independent mechanism disconnected therefrom and adapted for elevating the front portion of said lever, whereby it will lift and disengage the head of the coupling-hook of an adjoining draw-head, substantially as set forth.

7. In a car-coupling, the combination, with the draw-head provided with a chamber at its front portion and having an inclined front wall at the lower portion of the mouth of said chamber, said wall being adapted to be engaged by the coupling-hook of an adjoining draw head and form the draft-bar of the coupling, of a hook-lifting lever fulcrumed at the rear of said chamber and projecting downwardly and forwardly in rear of and approximately under the inclined wall, and independent mechanism for elevating the front portion of the hook to cause the same to disengage the head of the coupling-hook of an adjoining draw-head from the top edge of the wall, substantially as shown and specified.

8. The combination, in a car-coupling, with the draw-head provided at its front end with a chamber and having a rearwardly-inclined front wall extending transversely across the lower portion of the mouth of said chamber, of a hook-lifting lever fulcrumed within the draw-head and projecting downwardly and forwardly in rear of and approximately under said wall, the operating portion or foot of the lever being broadened, substantially as set forth, with relation to the width of the wall, whereby it will operate to disengage the head of the coupling-hook of the adjoining draw-head in whatever relation said hook may be with relation to the transverse length of said wall, substantially as set forth.

9. In a car-coupling, the herein-described hook-lifting lever, comprising the cylindrical bearing portion, the rearwardly-projecting power end, and the downwardly and forwardly projecting operating portion formed with a broadened approximately flat foot, substantially as shown, and for the purpose set forth.

10. In a car-coupling of the class described, the combination, with the draw-head having an inclined front wall adapted to be engaged by the coupling-hook of an adjoining draw-head, of a hook-lifting lever fulcrumed in rear of said wall and having a front operating portion projecting downwardly and forwardly with relation thereto and formed with an approximately-flat broadened foot and with an arm projecting rearwardly and upwardly from its fulcrum, and a vertically-moving independent shoe or plate located above and adapted to bear upon said arm, substantially as and for the purpose set forth.

11. An improved draw-head comprising integrally an inclined front wall forming the front of the chamber and integral with the side walls thereof, and the herein-described steel bar projecting transversely through the draw-head and secured to the said sides and top edge of the front wall, said steel bar being thus a component part of the sides and wall of the integral draw-head and projecting above in rear of and below the limit of the wall proper and forming a steel wearing edge for the same, substantially as set forth.

12. In a car-coupling of cast-iron or other metal, a steel bar or bolt secured in position with relation to the draw-head during the process of casting the same, and thus forming an integral component part thereof, said bolt being adapted to form the bearing-edge over which automatic coupling devices engage, substantially as and for the purpose set forth.

13. In a car-coupling, a pivoted coupling-hook located at one side, and a hook-lifting lever located at the side of the coupling-hook within the same draw-head and adapted to disengage the coupling-hook of an adjoining draw-head, substantially as set forth.

14. In a car-coupling, the combination of a coupling-hook and a hook-lifting lever mounted side by side upon the same transverse bar, and independent mechanism located over or above and acting directly upon the rear projecting portion of both, acting upon the coupling-hook and hook-lifting lever for simultaneously elevating the front ends of the same, substantially as and for the purpose set forth.

15. In a car-coupling comprising the draw-head having a chamber at its forward end provided with a transverse inclined front wall at the lower portion of its mouth, the combination of a coupling-hook fulcrumed within the draw-head and having its front portion normally resting upon said inclined wall, a hook-lifting lever fulcrumed at one side the coupling-hook and upon the same bearing bar or shaft and having a downwardly and forwardly projecting front portion, and a rear arm projecting above and at the side of the corresponding rear end of the coupling-hook, and a vertically-moving shoe or plate located above the rear ends of the hook-lifting lever and coupling-hook and adapted to first bear upon the former to elevate its front end with relation to the inclined wall, and then in its further movement simultaneously act directly upon and depress the rear ends of both the coupling-hook and hook-lifting lever, substantially as and for the purpose set forth.

16. In a car-coupling of the class described, the combination, with the transverse fulcrum-bar, of a coupling-hook pivotally mounted upon the same at one side the draw-head, and a hook-lifting lever fulcrumed upon the same fulcrum-bar and at one side the coupling-hook, and having the enlarged or elongated bearing portion occupying the entire space between the coupling-hook and the opposite side of the draw-head, whereby the coupling-hook is retained in position at one side, substantially as set forth.

17. In a car-coupling of the class described, having the draw-head provided with a chamber at its front end and with a transverse inclined front wall at the lower portion of the mouth of said chamber, said wall being adapted to be engaged by the coupling-hook of an adjoining draw-head, the combination of the transverse fulcrum-bar, a coupling-hook pivotally mounted upon the same at one side the draw-head and normally resting upon the inclined wall, and a hook-lifting lever fulcrumed upon the same fulcrum-bar and having a laterally-enlarged bearing portion extending from the side of the coupling-hook to the opposite side of the draw-head, whereby the coupling-hook is retained in position at one side of the chamber, said lever being provided with a front operating portion or foot projecting downwardly and forwardly, and broadened so as to operate with relation to all that portion of the edge of the inclined wall not occupied by the coupling-hook, and also occupy the space within the chamber between the coupling-hook and the opposite side of the draw-head, substantially as and for the purpose set forth.

18. The combination, with the draw-head having the longitudinally-disposed slots in its sides provided with recesses or depressions at their termini, of the transverse fulcrum-bar carrying the coupling mechanism, which normally projects from the mouth of the draw-head, and comprises, essentially, a coupling-hook and hook-lifting lever having projecting rear arms or ends, both fulcrumed upon said bar and longitudinally adjustable therewith, and vertically-moving independently-operating mechanism adapted to bear upon said ends, but stationary with relation to the longitudinal adjustment of the hook and lever, the ends of the bar being received by the recesses at either end of the slots and retained in position thereby against accidental displacement, substantially as and for the purpose set forth.

19. In a car-coupling, the combination, with the draw-head having a chamber, as at B, at its front end, an inclined front wall at the lower portion of the mouth of said chamber, the vertical perforations adapted to receive an ordinary coupling-pin, and the longitudinally-disposed slots in its sides having the recesses or depressions at their termini, of the transverse fulcrum-bar carrying automatic coupling mechanism longitudinally adjustable with the fulcrum-bar, and comprising a coupling-hook having a rear arm or end and normally projecting from the mouth of the draw-head and resting upon the inclined wall, and vertically-moving independently-operating mechanism adapted to bear upon the rear arm of the coupling-hook and stationary with relation to the longitudinal adjustment thereof, the fulcrum-bar being normally seated in the recesses at the front ends of the slots and retained therein against dislodgment by rearward pressure, the bar being adapted to be lifted from said recesses by depression of the outer end of the coupling-hook and forced rearwardly to the rear recesses, substantially as and for the purpose set forth.

20. A car-coupling in which the draw-head is provided with a chamber at its front portion, in which the automatic coupling mechanism, comprising a coupling-hook and hook-lifting lever at the side of the same, is normally contained, this coupling mechanism being all mounted upon a longitudinally-adjustable transverse fulcrum bar adapted by its rearward adjustment to carry all the automatic coupling mechanism out of the chamber, so that only the front end of the coupling-hook remains at one side the same, whereby the employment of an ordinary pin-and-link coupling is permitted, the coupling-hook being entirely contained within the chamber by this adjustment, substantially as set forth.

21. A car-coupling in which the draw-head is provided with a chamber at its front portion, in which automatic coupling mechanism, comprising a coupling-hook and hook-lifting lever mounted side by side, is normally contained, in combination with an independent vertically-moving plate or shoe adapted to bear directly upon the rear ends of both the hook and lever, and stationary with relation to the longitudinal adjustment of said hook and lever, and a transverse fulcrum-bar carrying the hook and lever, and longitudinally adjustable in the draw-head, said fulcrum-bar being adapted by its rearward adjustment to carry all the automatic coupling mechanism out of the

the side of the car, and a vertically-moving latch-bolt adapted to en-

chamber, under the operating-shoe, to the rear portion of the draw-head, and thus permit the employment of an ordinary pin-and-link coupling, substantially as set forth.

22. In a car-coupling, the combination, with the vertically-moving shoe or plate having the screw-threaded eye or recess, of the detachable operating-rod projecting through the top of the draw-head, and having the corresponding screw-threaded end, substantially as set forth.

23. In a car-coupling of the class described, embodying fulcrumed coupling hooks or lovers, the combination of a vertically-moving plate or shoe adapted to bear upon the ends of the same, an operating-rod connected with said plate and projecting through the draw-head, a rod or handle located at the platform of the car or other suitable point, and a connecting-lever pivotally secured at its ends to said rods, substantially as and for the purpose set forth.

24. In a car-coupling, the combination of uncoupling mechanism, the car-platform provided with a recess or depression, and a vertically-adjustable operating-bar connected with the coupling mechanism and having its head normally contained within said recess, substantially as and for the purpose set forth.

25. The combination, with the draw-head carrying the automatic coupling mechanism carried by a longitudinally-adjustable fulcrum-bar and having the longitudinally-disposed slots in its under side, and with the plate or shoe adapted by its vertical movement to operate the coupling mechanism, of a rod or bar projecting upwardly through said slot at the rear end of the draw-head, extended forwardly above the plane of the fulcrum-bar and secured to the shoe or plate, and lever mechanism connected with the outer end of said rod and adapted to vertically operate the same, substantially as set forth.

26. The combination of a draw-head having longitudinally-disposed slots in its sides, a transverse fulcrum-bar mounted in said slots and longitudinally adjustable therein, a coupling-hook fulcrumed upon said bar at one side the draw-head and having an arm or end projecting in rear of its fulcrum, a hook-lifting lever fulcrumed upon the same bar beside the coupling-hook and having an arm or end projecting in rear of its fulcrum, and independent mechanism located above the rear ends of the hook and lever and acting directly and simultaneously upon the same, substantially as and for the purpose set forth.

27. The combination of a draw-head having longitudinally-disposed slots in its sides, a transverse fulcrum-bar mounted in said slots and longitudinally adjustable therein, a coupling-hook fulcrumed upon said bar at one side the draw-head and having an arm or end projecting in rear of its fulcrum, a hook-lifting lever mounted upon the same bar beside the coupling-hook and having an arm or end projecting in rear of its fulcrum, a vertically-moving independent shoe or plate located above the rear ends of the hook and lever and adapted to operate directly and simultaneously upon both said ends, and an operating-rod carrying said plate and stationary with relation to the longitudinal adjustment of the fulcrum-bar and automatic coupling mechanism, substantially as and for the purpose set forth.

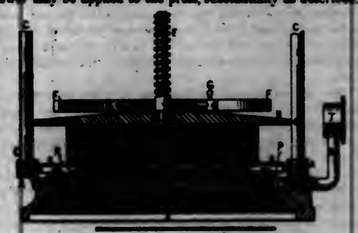
28. The combination of a draw-head having a chamber at its front end provided with an inclined transverse wall adapted to be engaged by the coupling-hook of an adjoining draw-head and provided with a vertical perforation extending through said chamber and adapted to receive an ordinary coupling-pin, and with longitudinally-disposed slots in its sides in rear of said chamber, a transverse fulcrum-bar mounted in said slots and longitudinally adjustable therein, a coupling-hook fulcrumed upon said bar and having an arm or end projecting in rear of its fulcrum, a hook-lifting lever fulcrumed upon the same bar beside the coupling-hook and having a front end acting with relation to the inclined wall and an arm or end projecting in rear of its fulcrum, both the hook and lever being longitudinally adjustable in the draw-head by movement of their joint fulcrum-bar, an independent vertically-moving shoe or plate located above the rear ends of the hook and lever and adapted to directly and simultaneously act upon both said ends when the automatic coupling mechanism is in normal position, and an operating-bar carrying said plate and stationary with relation to the longitudinal adjustment of the automatic coupling mechanism, substantially as and for the purpose set forth.

411,467. COPYING-PRESS. JOHN P. MCPHERSON, Boston, Mass. Filed June 11, 1888. Serial No. 313,866. (No model.)

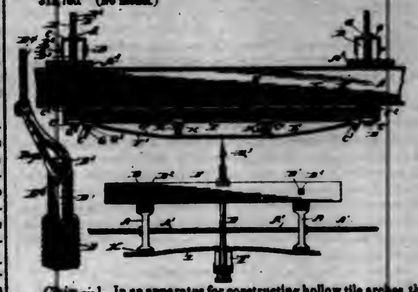
Claim.—1. A copying-press consisting of a base having a chamber provided with liquid connected with a pressure-gage, a flexible diaphragm, a yielding plate resting thereon, a movable plate operated by means of a screw having a fixed gear-wheel, and a pinion geared therewith provided with means by which it may be rotated with a ratchet-wrench or lever applied thereto, substantially as described, as and for the purposes set forth.

2. In a copying-press, the combination of a liquid-chamber, a pressure-gage connected therewith, a flexible diaphragm, a yielding plate resting thereon, a movable pressure-plate, and means for actuating the same, substantially as and for the purposes set forth.

3. A copying-press consisting of a base, a movable plate operated by means of a central screw having a fixed gear-wheel, and a small pinion geared therewith, provided with means by which it may be rotated with a ratchet-wrench or lever, by means of which an increase of power may be applied to the press, substantially as described.



411,468. APPARATUS FOR LAYING TILE ARCHES FOR FLOORING. JOSEPH PAPAN, Chicago, Ill. Filed May 31, 1889. Serial No. 312,760. (No model.)



Claim.—1. In an apparatus for constructing hollow tile arches, the combination of stringers extending from one to the other of the beams between which the arch is to be laid, a rod passing through such stringers, having a nut on the upper end thereof and a hole through such rod, and having the upper end of the rod cut away on the sides thereof, whereby a cord may be secured to said rod, and the nut on the threads cut on said rod may be unscrewed therefrom and slid upon said rope, and a bearer supported at each end by one of said rods and having boards laid thereon upon which the arch may be laid, all substantially as described.

2. In an apparatus for constructing hollow tile arches, the combination of stringers B B, rod D, having the upper end thereof cut away on the sides, hole D^3, nut *d*, beam F, suspension-rod F', and adjustable supports extending from suspension-rod F' to beam F, all substantially as described.

411,469. BUTTON FOR BILLIARD-COUNTERS. OTTO PAPE, Washington, D. C. Filed Jan. 16, 1889. Serial No. 296,731. (No model.)



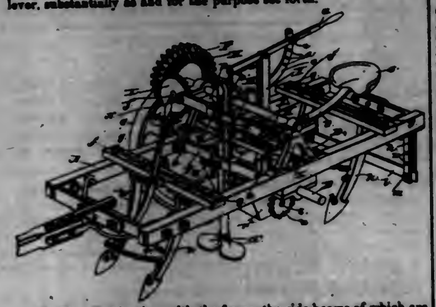
Claim.—1. A game-counter button perforated near its middle and parted through the perforation, and also perforated edgewise, in combination with a wire fitted to the said edgewise perforation, and adapted to be bent at the edges of the button, substantially as shown and described.

2. The combination of a game-counter button perforated near its middle and parted from the said perforation to the circumference, and also perforated edgewise across the said parting, and a wire adapted to fit the said edgewise perforation, substantially as shown and described.

3. As a new article of manufacture and trade, a game-counter button having a central perforation adapting it to be strung upon a wire and parted through the said perforation, and a wire adapted to cross the said parting and to secure the two parts rigidly together, yet leaving the button when so secured together around a wire free to slide thereon, substantially as shown and described.

411,470. COTTON CHOPPING, PLANTING, AND CULTIVATING MACHINE. DAVID W. PILAND, Weather, Tex. Filed Apr. 16, 1888. Serial No. 307,409. (No model.)

Claim.—1. The combination of the rectangular frame, the vertical guides or flanges upon the inner sides of the side beams thereof, a transverse beam sliding vertically in said guides and carrying an oscillating chopping-lever, an upright mounted upon the frame, an adjusting-lever pivoted to said upright, and a link connecting said adjusting-lever with the vertically-sliding beam carrying the chopping-lever, substantially as and for the purpose set forth.



2. The combination, with the frame, the side beams of which are provided on their inner sides with vertical guides or flanges, of the transverse cross-bar sliding between said flanges, the chopping-lever mounted pivotally in said cross-bar, a pitman connected pivotally at one end to a sliding cross-head and having its other end connected with a wrist-pin upon the face of a wheel, to which rotary motion is imparted from the axle of the machine, a pin connecting said pitman with a vertical slot in the upper end of the chopping-lever, and an adjusting-lever, one end of which is connected by a link with an arm extending upwardly from the vertically-adjustable cross-bar carrying the chopping-lever, and the other end of which is provided with a spring-catch adapted to engage any one of a series of perforations in a segmental bracket, substantially as and for the purpose set forth.

411,471. LABEL-HOLDER FOR FREIGHT-CARS. DAVID R. PRICE, Chicago, Ill., assignor of one-half to Frank P. Smith, same place. Filed Feb. 26, 1889. Serial No. 301,478. (No model.)

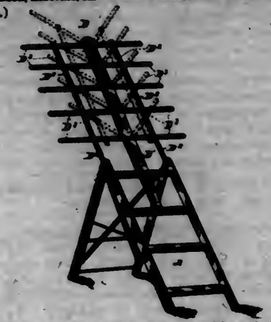


Claim.—1. In a label-holder for cars, a frame made up of bar A, the ends thereof being secured to each other, cross-bars extending from the corners of said rectangular frame, and bars extending from the side pieces to near the centers of the upper and lower cross-pieces of the frame, hinges for securing the frame to the car-body, one of said hinges being secured snugly between the ends of the diagonal bars, and a latch having a gravity-bolt which passes over the upper cross-piece between the upper ends of the diagonal bars, substantially as shown, and for the purpose set forth.

2. The combination, in a label-holder for cars, of a frame made up of a rim or bar A, the ends of which are jointed together, diagonal cross-bars secured to said rim, the upper cross-piece of said rim being curved outwardly, castings D, for pivotally connecting the frame to the side of the car, and a vertically-moving latch-bolt adapted to engage the center of the upper cross-piece of the frame, so as to hold the same against the car-body, substantially as shown, and for the purpose set forth.

3. The combination, in a label-holder for cars, of a bar A, bent to form a rectangular frame, the upper and lower cross-pieces thereof being curved or bent outwardly, diagonal cross-bars extending from corner to corner of the frame, short cross-bars attached to the center of the vertical side pieces of the frame, said cross-bars lying above the longer diagonal bars, their upper and lower ends being secured to the horizontal pieces of the frame A on each side of the centers, hinges D D, for attaching the frame to the car-body, the center hinge lying between the eyes *e e*, and a gravity-latch secured to the car-body above the frame, said latch being adapted to engage with the upper cross-piece between the eyes *e'*, substantially as shown, and for the purpose set forth.

411,472. COMBINED STEP-LADDER AND CLOTHES-RACK. GEO. E. RICHARDSON, Bartville, Ill. Filed Dec. 14, 1888. Serial No. 293,023. (No model.)



Claim.—The combination, with the step-ladder, of the clothes-rack formed of a central bar and side bars fitted to said ladder, and of cross-bars pivoted at their inner ends to the central bar and intermediately of their ends to the side bars, substantially as set forth.

411,473. RUNNING-GEAR FOR ROAD-WAGONS. CYRUS W. SALADEE, Cleveland, Ohio. Filed Apr. 6, 1889. Serial No. 306,195. (No model.)



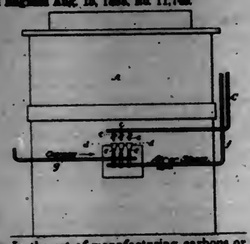
Claim.—1. In a road-wagon, longitudinally-arranged side springs adapted to carry the body, the terminal eyes of said springs being pivotally connected to the hind axle and front bolster upon immovable bearings, in combination with a spring-reach extended to connect the axles, the rear end of said reach being bent downward, then upward, with its terminal eye pivotally connected to the center portion of the hind axle without a link, and axle-stays having their front ends pivotally connected to the spring-reach at or near its center portion, and their rear ends shackled to the axle at widely-separated points, the whole being constructed, combined, and arranged to operate substantially as shown and described.

2. The bracket F, rigidly secured to the spring-reach B at or near its central portion, having its terminal eye engage the front ends of the axle-stays C C by the passing bolt 1, in combination with the intermediate distance sleeve or spool H, and passing bolt 2, substantially as and for the purpose set forth.

3. The combination of the cross-brace E', bracket F, axle-stays C C, the rear ends of the latter being shackled to the axle, preferably at or near the shoulders thereof, and the front ends passed over the top side of the cross-brace and pivotally connected to the bracket F, substantially as specified.

4. In combination with the longitudinally-arranged side springs A A, the central spring-reach B, suspended in a plane below the side springs and extended to connect the axles, having its rear end pivotally connected to the middle portion of the hind axle and its front end to the shackle-plate N', carried by the bolster D^2, the inner end of said plate terminating in the upturned ears N, between which the terminal eye of the spring B is held by the passing bolt T, substantially as set forth.

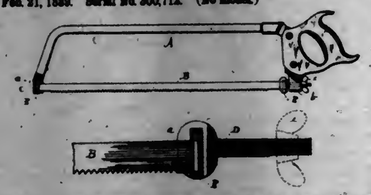
411,474. MANUFACTURE OF CARBONS FOR INCANDESCENT ELECTRIC LAMPS. JOHN S. SELLON, Hatton Gardens, County of Middlesex, England. Filed Jan. 28, 1889. Serial No. 297,230. (No model.) Patented in England Aug. 15, 1888, No. 11,749.



Claim.—1. In the art of manufacturing carbons or filaments for incandescent electric lamps, the improvement consisting in subjecting such filaments, by consumption of fluid fuel such as specified, to a high degree of heat, as set forth, over and beyond that obtainable by the use of coke or coal surrounding the crucible, substantially as described.

2. In the art of manufacturing carbons or filaments for incandescent electric lamps, the improvement consisting in heating the same to a high temperature, as indicated, by burning fluid fuel such as specified in a suitable furnace, and at the conclusion of the operation raising the temperature to a still higher degree for a short period by the introduction of a blast of oxygen, substantially as described.

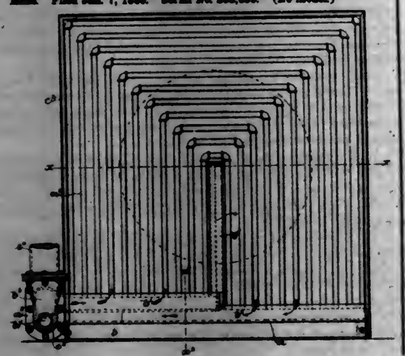
411,475. SAW. GUSTAF F. SELLSTROM, Jamestown, N. Y. Filed Feb. 21, 1889. Serial No. 300,712. (No model.)



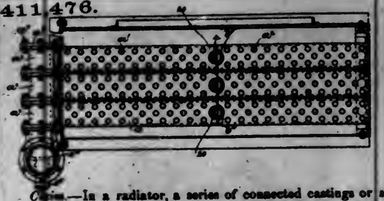
Claim.—1. In meat or similar saws, the blade having raised projections across the width at each end, and a frame having a hole at one end of sufficient depth to receive said projections on the blade, in combination with an adjustable yoke having suitable means for securing same in frame and provided with similar hole to receive the projection on the other end of saw, said holes in frame and yoke being provided with suitable washers or caps to form a back support to saw-blades of different widths, substantially as shown, and for the purpose set forth.

2. In meat or similar saws, the blade having raised projections across the width at each end, and a frame having a hole at one end of sufficient depth to receive said projections on the blade, in combination with an adjustable yoke having suitable means for securing the same in frame, and provided with similar hole to receive the projection on the other end of saw-blade, said frame and yoke being provided with suitable means to form a back support for saws of different widths, substantially as shown, and for the purpose set forth.

411,476. RADIATOR. BENJAMIN F. STURTEVANT, Jamaica Plain, Mass. Filed Jan. 7, 1889. Serial No. 296,099. (No model.)

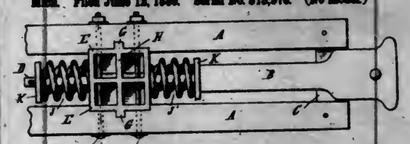


411,476.



Claim.—In a radiator, a series of connected castings or shells, each provided with a dividing-wall to form inlet and outlet chambers, combined with a series of pipes connecting the said inlet and outlet chambers, whereby the steam admitted into each inlet-chamber at one end of each casting is delivered from each outlet-chamber at the same end of each casting, substantially as described.

411,477. DRAW-BAR ATTACHMENT. JOHN TURNER, Detroit, Mich. Filed June 12, 1889. Serial No. 313,976. (No model.)



Claim.—1. The herein-described draw-bar bearing, consisting of a rectangular casting having a central tube therein to receive the reduced end of the draw-bar, and vertical and horizontal webs formed integral with the tube and the interior of the casting, substantially as described.

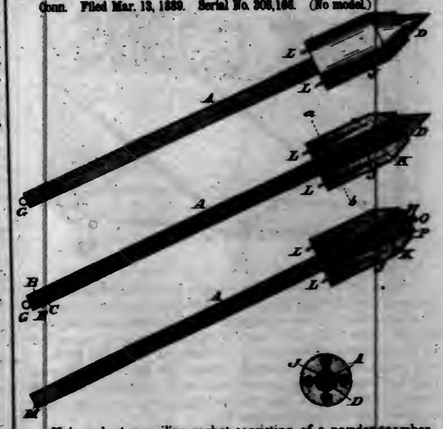
2. The herein-described draw-bar bearing, consisting of a rectangular casting having a central tube in which the reduced end of the draw-bar bears, vertical and horizontal webs formed integral with the tube and interior of the casting, and vertical ribs in the exterior of the casting, all substantially as and for the purpose described.

3. In combination with the draw-bar timbers and draw-bar, a rectangular casting having exterior ribs fitting in the timbers, a central tube forming a bearing for the reduced end of the draw-bar, and vertical and horizontal webs formed integral with the tube and the exterior of the casting for sustaining the said tube, substantially as described.

411,478. SOLVENT FOR GAS-PIPE DEPOSITS. MARTIN R. WALDSTEIN, New York, N. Y. Filed Nov. 23, 1888. Serial No. 291,071. (No specimens.)

Claim.—A mixture composed of fusel-oil of commerce and benzine or specified equivalent, substantially as described.

411,479. SEA-OILING ROCKET. ALBERT H. WALKER, Hartford, Conn. Filed Mar. 13, 1889. Serial No. 303,166. (No model.)



Claim.—1. A sea-oiling rocket consisting of a powder-chamber at its head, and of a filled oil-chamber extending rearward from that powder-chamber and constituting the rocket-stick, and having specific gravity less than that of water, while one of its ends has specific

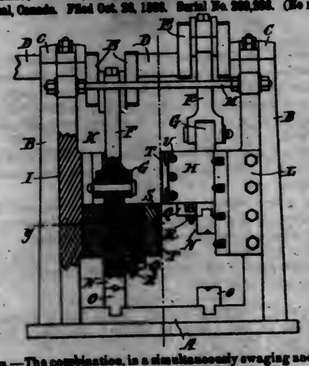
gravity greater than that of water, and the other end is provided with a passage for the upward egress of the oil when the oil-chamber is immersed in the sea, all substantially as described.

2. A sea-oiling rocket consisting of an annular powder-chamber at its head, and of a filled oil-chamber placed axially therein and extending rearward therefrom and constituting the rocket-stick, and having specific gravity less than that of water, while one of its ends has specific gravity greater than that of water, and the other end is provided with a passage for the upward egress of the oil when the oil-chamber is immersed in the sea, all substantially as described.

3. A sea-oiling rocket consisting of an annular powder-chamber at its head, and of a filled oil-chamber separable therefrom and loosely placed axially therein and extending rearward therefrom and constituting the rocket-stick, and having specific gravity less than that of water, while one of its ends has specific gravity greater than that of water, and the other end is provided with a passage for the upward egress of the oil when the oil-chamber is immersed in the sea, all substantially as described.

4. A sea-oiling projectile consisting of the combination of the shell A, the base-block B, provided with an opening therethrough, the valve C, closing that opening, the weight D, adapted to keep that opening upward in the water, and the ping E, holding the valve C on its seat in the base-block B and adapted to release that hold by being pulled out from the base-block, all substantially as described.

411,480. APPARATUS FOR SWAGING AND ROLLING. HENRY H. WARREN, Hanover, N. Y., assignor of one-half to Andrew Laundry, Montreal, Canada. Filed Oct. 20, 1888. Serial No. 288,293. (No model.)



Claim.—The combination, in a simultaneously swaging and rolling apparatus, of the cranks E and connecting-rods F, and slide-blocks H, arranged to reciprocate and move in opposite directions by said cranks and connecting-rods, each slide-block H having a rolling-die T and the half of a pair of swaging-dies N, with bed A, having the other half O of the swaging-dies, the whole constructed, arranged, and operating substantially as described.

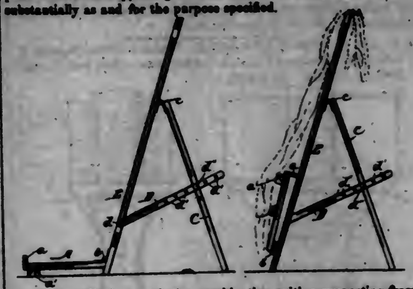
411,481. ROPE-TRACE COCKEYE. WILLIAM H. WILLIAMS and STEWART GROVER, Byron, Wis. Filed Apr. 15, 1889. Serial No. 307,206. (No model.)



Claim.—As an improved article of manufacture, a rope-trace cockeye comprising two sections formed with internal grooves extending from end to end thereof, for the purpose set forth, one of said sections being formed with an enlarged perforated end and with an eye extending from said end, and the other of said sections having an inwardly-extending flange having a projection for engagement with the said perforation, whereby said sections are hinged or pivoted together at this point, and means for securing the sections together when the rope has been inserted, all substantially as shown, and for the purpose set forth.

411,482. DISPLAY-STAND. WILLIAM R. WESTON, Chicago, Ill. Filed Nov. 19, 1888. Serial No. 291,202. (No model.)

Claim.—1. In a display-stand, the combination, with a supporting-frame provided with a suitable folding standard, of a folding shelf hinged directly to said frame near its bottom and provided at its free edge with a vertical flange, and also provided with depending rests of the same length as the portion of the supporting-frame which is below the shelf, whereby the latter is held in a horizontal position, or parallel with the supporting-surface on which the display-stand rests, substantially as and for the purpose specified.



2. In a display-stand, the combination, with a supporting-frame having a folding shelf hinged thereto and provided with a central vertical bar parallel with its side bars, of the standard or leg hinged to the rear side of the supporting-frame, and the locking-piece D, pivoted to the side of the central bar of the supporting-frame, whereby when folded it bears against the side thereof and is in alignment therewith, substantially as specified.

3. The herein-described show stand or rack for the display of fabrics, &c., comprising the supporting-frame B, having parallel side bars and a center bar, the folding shelf hinged to the side bars of the supporting-frame near their lower ends and provided with rests *d' d'*, equal in height to the portions of the side bars which are below the shelf, and also provided with a stop or guard *a* at its outer edge, the adjustable standard C, hinged to the center bar of the supporting-frame near its upper end and provided with a pin d^3, and the locking-piece D, pivoted at one end to the side of the center bar of the supporting-frame and provided with perforations *d' d'*, to be engaged by the pin d^3, all constructed and arranged substantially as and for the purpose specified.

411,488. TEA OR COFFEE POT. LUTHER S. WEBBER, Groton, N. Y. Filed June 15, 1889. Serial No. 314,082. (No model.)



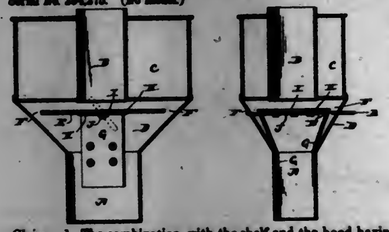
Claim.—The combination, with the pot A and handle D, provided with the slot *a*, of the lid B, provided with the slot *b*, and the lever E, rigidly secured to the under side of the lid and passing through the aforesaid slots *a* and *b*, and curved to correspond to the under side of the handle and lie in proximity thereto when the lid is closed, all constructed and arranged substantially in the manner and for the purpose described.

411,484. REIN-GUARD. WILLIAM P. YOUNG, Bear Wallow, Ky. Filed June 13, 1889. Serial No. 314,062. (No model.)



Claim.—As an improved article of manufacture, the herein-described device for securing in place the bridle or checkrein of harnesses, the same consisting of the metallic plate A, formed of a single piece of metal and provided on its upper side at substantially its longitudinal center with an opening for the passage of an overcheck-rein and upon either side of said opening with hooks C, for use in securing in place the reins used in connection with hame-harnesses, and having at its lower edge means for securing the same to the harness, substantially as and for the purpose specified.

411,485. STOVE-PIPE SHELF. WILLIS J. YOUNG, SHAFFER H. YOUNG, and ZACHARIAH U. KNOOR, Hebron, Nebr. Filed Dec. 21, 1888. Serial No. 294,275. (No model.)



Claim.—1. The combination, with the shelf and the hood having aligned openings, of the horizontal partition within the hood, having its ends arranged a slight distance from the ends of the hood, and provided with a central opening in alignment with the openings in the hood and shelf, the supporting-tongues formed integral with and depending from the sides of the partition, and the damper adapted to close the central opening in the partition and having its operating-rod journaled in the sides of the hood, as specified.

2. The combination, with the stove-shelf and the hood depending therefrom, of the horizontal partition within the hood, having a central opening and arranged out of contact with the hood, the supporting-tongues depending from the sides of the partition, and a damper adapted to close the central opening in the partition, as set forth.

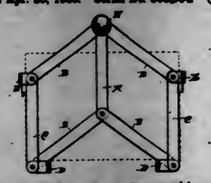
411,486. SASH-CORD FASTENER. EDWIN W. ALDE, New Britain, Conn. Filed June 22, 1888. Serial No. 316,171. (No model.)



Claim.—1. The herein-described sash-cord iron, consisting of the shell A in the form of a cylinder or partial cylinder and provided with the bridge 6, bent inward from the periphery of said shell, so as to form an opening that extends longitudinally through the sash-cord iron, substantially as described, and for the purpose specified.

2. The herein-described sash-cord iron, consisting of a shell of a cylindrical or partly cylindrical form, provided with the depressed bridge 6, and having also the open recess 7 on the upper side at its outer end, substantially as described, and for the purpose specified.

411,487. PLATE-WASHING FRAME. BRAYTON B. BARKER, Newark, N. J. Filed Apr. 25, 1888. Serial No. 272,504. (No model.)



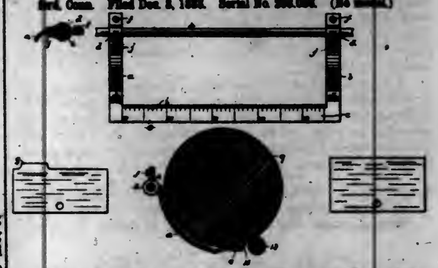
Claim.—1. The combination, in a plate-washing device, of collapsible end frames comprising, essentially, four bars pivoted at their inner ends to a central bar and at their outer ends to the side frames, substantially as set forth.

2. The combination, in a plate-washing device, of collapsible end frames comprising, essentially, four bars pivoted at their inner ends to a central bar and at their outer ends to the side frames, and set-screws whereby the apparatus may be held in its position as adjusted, substantially as set forth.

3. The combination, in a plate-washing device, of collapsible end frames comprising, essentially, four bars pivoted at their inner ends to a central bar and at their outer ends to the side frames, and supports for the plates against vertical and lateral movement, located on the side frames, substantially as set forth.

4. The combination, in a plate-washing device, of collapsible end frames comprising, essentially, four bars pivoted at their inner ends to a central bar and at their outer ends to the side frames, and supports for the plates against vertical and lateral movement, located on the side frames, and set-screws whereby the end frames may be held in their adjusted position, substantially as set forth.

411,488. TYPE-WRITING MACHINE. JAMES W. BAKER, Newark, N. J., assignor to the American Writing Machine Company, Hartford, Conn. Filed Dec. 3, 1888. Serial No. 292,696. (No model.)



Claim.—1. In a type-writing machine, the combination, with the usual carriage-plate 15, of a bar, as *c*, provided at each end with spring-arms *a* and *b*, substantially as and for the purpose set forth.

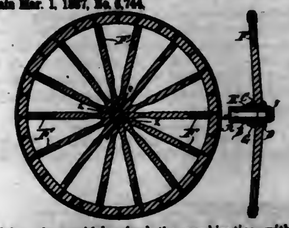
2. In a type-writing machine, the combination, with the usual carriage-plate 15, of an adjustable overlapping spring-pressed bar, as *c*, as set forth.

3. In a type-writing machine, the combination, with the usual carriage-plate 15, of a detachable overlapping spring-pressed bar, as *c*, as set forth.

4. In a type-writing machine, the combination, with the usual carriage-plate 15, of the overlapping bar, as *c*, having arms *a b*, connected by clamps to the paper-carriage rail, as set forth.

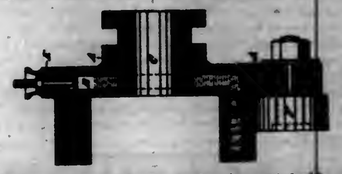
5. In a type-writing machine, the combination, with the usual carriage-scale plate, of the overlapping bar, as *c*, provided with a supplementary scale, as set forth.

411,489. VEHICLE-WHEEL. EMILIO BAYLE, Barcelona, Spain. Filed Apr. 19, 1888. Serial No. 271,189. (No model.) Patented in Spain Mar. 1, 1887, No. 6,744.



Claim.—In a vehicle-wheel, the combination, with the tenoneless spokes and the felly having the sockets therein, of the substantially straight keys, arranged on only one of the sides of the spokes and bolted thereto, having the extended ends entering the sockets in the felly, substantially as described.

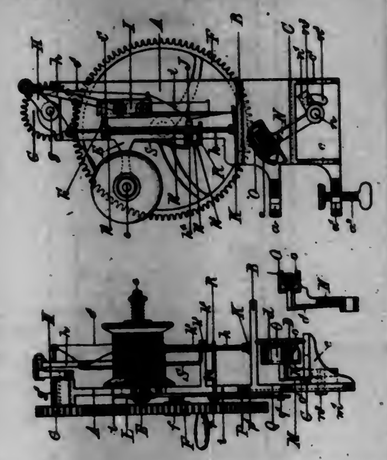
411,490. MEANS FOR LUBRICATING PICKING-TAPPETS OF WEAVING-LOOMS. BENJAMIN BERRY and DANIEL B. BERRY, Bradford, England. Filed May 23, 1888. Serial No. 311,607. (No model.)



Claim.—1. A tappet for weaving-looms, provided with a lubricating-chamber having a duct leading to the anti-friction roller carried by said tappet adapted to supply said roller with lubricant, substantially as herein shown and described.

2. The combination, with a tappet provided with a lubricating-chamber and an educt, of an air-valve arranged for the passage of air, substantially as herein shown and described, and for the purpose specified.

411,491. PRESSING MECHANISM FOR SEWING-MACHINES. FREDERICK H. CORDEN, Wolverhampton, England. Filed Oct. 11, 1888. Serial No. 287,888. (No model.) Patented in England Aug. 11, 1888, No. 10,997.



Claim.—1. The combination of a cross-head or needle-bar, a link rigidly attached to the said needle-bar, a bar carrying the cloth-feeding presser-foot, a stud projecting from the said needle-bar and adapted to engage with a corresponding projection on the top of the stem of the said cloth-feeding presser-foot at each upstroke of the said needle-bar, a spiral spring upon the said stem adapted to return it after each engagement by the said stud, a plate adapted to be moved in a direction at right angles with that of the said link, and a stud upon the said link adapted to engage in a twice-bent slot in the said plate with a lever adapted to move in a plane at right angles with the direction of the said needle-bar and having its fulcrum upon the lower guide of the presser-foot stem, said lever being connected with said plate and with said presser-foot bar, as set forth.

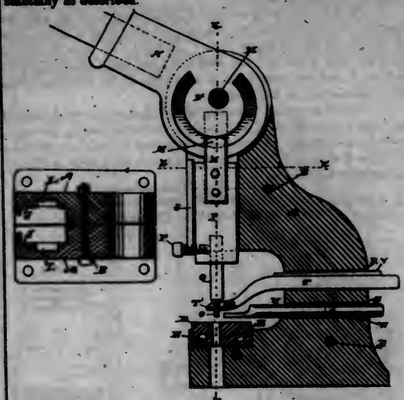
2. The combination of a stud projecting from the cross-head or needle-bar, and adapted to engage with a corresponding projection on the top of the stem of the cloth-feeding presser-foot at each upstroke of the said needle-bar, a spiral spring upon the said stem adapted to return it after each engagement by the said stud, a groove in an enlargement upon the presser-foot stem, and a spring-detent fixed to the standard of the machine and adapted to engage in the said groove each time the said stem is raised, as set forth.

411,492. PUNCH. JAMES DRAPER, Stockton, Cal. Filed Feb. 1, 1889. Serial No. 298,261. (No model.)

Claim.—1. The two-part standard or frame having the vertical guiding channels or depressions J and the deeper channels or depressions L formed in the front upper portion and the chamber in which the head of the operating-eccentric is fulcrumed, in combination with the vertically-sliding cross-head fitted in the channels J and carrying the punch in its lower end, and the side bars K, fitted in the channels L and connected with the eccentric, substantially as described.

2. The circular head having the eccentric channels G made upon opposite sides and the fulcrum bolt-hole H, made eccentric to the channels and the periphery of the head, in combination with the cross-head I, fitted in channels in the main frame, the arms K, engaging other channels in said frame, and the inwardly-projecting oval studs M at the upper ends of said arms, which fit into the channels in the head, whereby the cross-head is caused to reciprocate by the movement of the head, substantially as described.

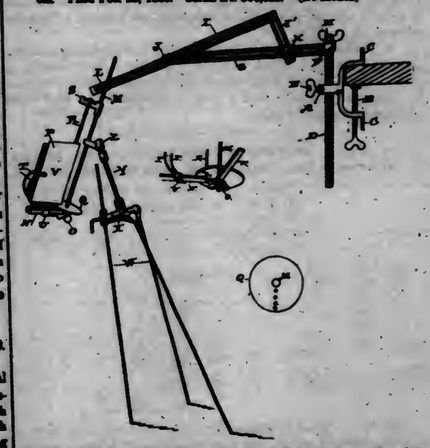
3. The two-part frame A, with the punch-carrying cross-head and operating-eccentric, as described, in combination with the stripper or pull-off, the front end of which clasps the punch, and the shank of which is fitted to pass through the slot or channel in the frame, and the wedge or keys whereby the stripper is adjusted up or down, substantially as described.



4. The two-part frame, the vertically-moving punch-carrying cross-head, the eccentric head whereby it is actuated, and the vertical adjustable stripper or pull-off fitted in channels in the meeting faces of the two-part frame, in combination with the gage-shank U, sliding horizontally in the corresponding horizontal central hole made in the adjoining faces of the two-part frame and the locking-nut W, substantially as described.

5. The gage U, having the flattened portion U', the cylindrical shank extending through a corresponding hole in the frame, and a locking-nut whereby the front of the gage may be set horizontally or vertically and its distance from the punch regulated, substantially as herein described.

411,493. BOOK-REST AND EASEL. JOHN DUNKIN, Santa Rosa, Cal. Filed Feb. 23, 1889. Serial No. 300,932. (No model.)



Claim.—1. A book-holder consisting of the slotted arm G and the L-shaped slotted arm I, with the uniting-pins and locking-nuts, in combination with the book-support upon the outer end of said arms and adjustable thereon, substantially as described.

2. The slotted arm G and the L-shaped slotted arm I, adjustable with relation to the arm G, and the adjustable support M, attached to the outer end of the arm I, in combination with a vertically-adjustable rod D, and a socket through which said rod moves, and by which it may be attached to the wall or other support, substantially as described.

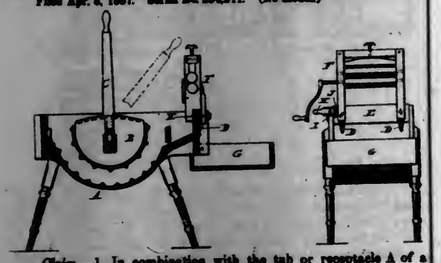
3. The adjustable slotted arms G I, the book-support consisting of the rod M, adjustable with relation to the outer arm, the jointed rods N on the lower end of the rod M, with the locking or holding nut, the rod E, by which the center of the book is held, and the cir-

tie arms T, adjustably fitted on the rod N, for holding the sides of the book, substantially as described.

4. The book-holder consisting of the adjustable rod M, with the support Q at the lower end, the hinged adjustable arms N on the lower end of said rod M, the elastic arms T, carried by the arms N, and by which the sides of the book are held, said arms being adjustable upon the arms N, and the central rod R, adjustable to the thickness of the book, substantially as described.

5. The book-support consisting of the slotted adjustable arms G and I, the adjustable standard D, rod M, and book-holding device, in combination with the adjustable legs adapted to rest upon the floor and the socket-frame X, connected to the rod M, so as to act as a brace, substantially as described.

411,494. WASHING-MACHINE. EDGAR A. BEMISH, Albion, N.Y. Filed Apr. 6, 1887. Serial No. 234,211. (No model.)



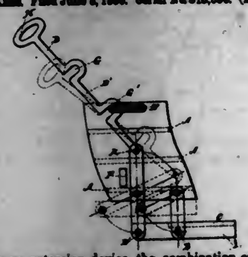
Claim.—1. In combination with the tub or receptacle A of a washing-machine, a cross-bar E, hinged thereto, a wringer F, secured to said cross-bar, and a locking device holding the wringer in operative position, substantially as shown.

2. In combination with the tub or receptacle A of a washing-machine, a cross-bar E, hinged thereto, a wringer F, secured to said cross-bar, and a receptacle G, also secured to the tub or receptacle and adapted to receive and support the wringer when thrown out of operative position.

3. In combination with tub or receptacle A of a washing-machine, cross-bar E, hinged thereto, wringer F, secured to said cross-bar, and a lever H, pivoted to the tub or receptacle and adapted to lock the cross-bar in position.

4. In combination with tub or receptacle A of a washing-machine, cross-bar E, hinged thereto, wringer F, secured to said cross-bar, a plate J, applied to the outer face of the cross-bar, a plate I, secured to the tub or receptacle, and a lever H, pivoted to the plate I and adapted to engage the plate J.

411,495. EXTENSION-STEP FOR RAILWAY-CARS. THOMAS A. FITZ, Parsons, Kans. Filed June 8, 1889. Serial No. 313,696. (No model.)

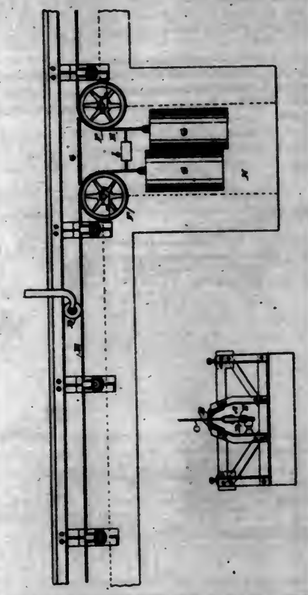


Claim.—1. In an extension device, the combination of lever D, loops or notches G and G', and supporting-lever E', movable supporting-arms B B B, carrying or extension arms I I, and staple E, or other guide and fastening, substantially as and for the purpose specified.

2. In an extension-step for railway-cars and other vehicles, the combination of lever D, loops or notches G and G', supporting-lever E', movable supporting-arms B B B, and extension-arms I I, with step C, for the purpose and substantially as specified.

411,496. ELECTRIC RAILWAY. GEORGE B. FRALEY, San Francisco, Cal. Filed June 21, 1888. Serial No. 315,697. (No model.)

Claim.—1. In an electrical railway, the slotted underground conduit, a conductor extending longitudinally within said conduit, insulated supports extending over the sides of the conduit, pulleys journaled at intervals between the supports over which the ends of adjacent conducting-wires are passed, and weights suspended beneath said pulleys from the ends of these wires, substantially as herein described.



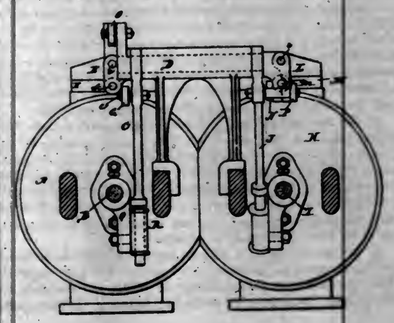
2. In an underground electrical conduit, the conductor made in sections supported upon insulated bearing-arms at intervals throughout the conduit, the end of each section passing over the periphery of the pulley journaled beneath it, and weights attached to the depending ends of the said sections, so as to produce an automatically-adjustable tension at all times upon the conducting-wires, substantially as described.

3. The underground electrical conduit, the conductor extending through said conduit, and the insulating-supports consisting of the cylindrically-grooved insulators I, the clamps N, fitting said grooves and secured thereto, and the elastic grooved block S, within which the conducting-wire is supported, substantially as described.

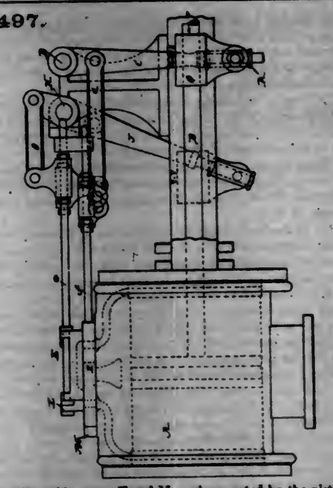
4. The underground electrical conduit, the conducting-wire extending longitudinally therein, the grooved or channeled insulators secured to the side of the conduit, having the elastic arms U projecting therefrom, and the grooved supports W, journaled diagonally, so as to support the conductor around curves, substantially as described.

411,497. DUPLEX ENGINE. HARVEY F. GASKILL, Lockport, N.Y.; Mary R. Gaskill executrix of said Harvey F. Gaskill, deceased. Filed July 13, 1888. Serial No. 279,941. (No model.)

Claim.—The combination, substantially as set forth, in a duplex engine, of the two cylinders A and H, the valves E and L, each operated by the piston-rod of the cylinder to which it does not pertain,

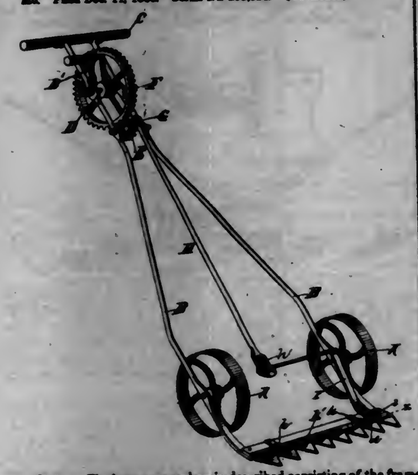


411,497.



and the sliding valve-seats F and M, each operated by the piston-rod of the cylinder to which it does pertain.

411,498. LAWN-MOWER. ALEXANDER GRAHAM, Hottinsville, Ma. Filed Dec. 11, 1888. Serial No. 292,321. (No model.)

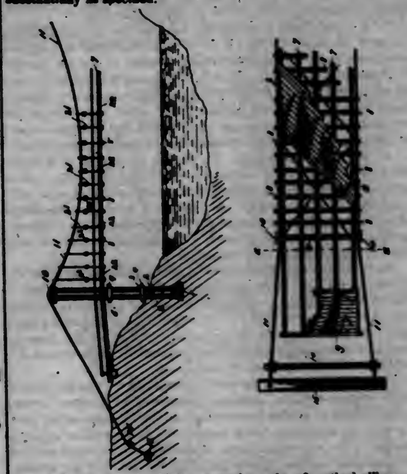


Claim.—The lawn-mower herein described consisting of the frame B, having wheels mounted thereon and the bars of its upper ends arranged parallel to each other, a gear-wheel F between the parallel portions of the frame-bars, a crank for rotating the same, a pinion mounted on a crank-shaft between the bars, with which the gear meshes, a pitman secured to the crank of the crank-shaft having a socket at its lower end, a ball crank pivoted to the frame having a ball on one end placed in the socket, and a box on its opposite end, the cutter-bar having a pin on its upper face, and a block, as *d*, formed with oppositely-projecting arms, and a central opening for connecting the ball-crank and cutter-bar, substantially as described.

411,499. SUSPENSION-BRIDGE. WILLIAM H. C. GREEN, Sherman, Tex. Filed Apr. 23, 1888. Serial No. 308,331. (No model.)

Claim.—1. In a suspension-bridge, opposite pillars arranged in pairs and provided with adjustable tie-plates, in combination with transverse girders mounted on the tie-plates, longitudinal beams mounted on the girders, cables suspended over cap-pieces mounted at the upper end of the pillars, adjustable suspension-bars depending from these cables and connected to transverse tie-bars arranged under the longitudinal beams, substantially as specified.

2. In a suspension-bridge, a cable composed of parallel strands suitably bound together and provided with opposite sleeves, from which the strands diverge, in combination with an anchor comprising two perforated plates for the reception of the cables against the under surface of which they are bent, and a binding-plate provided with binding-bolts for binding the same against the bent ends of the cable, substantially as specified.

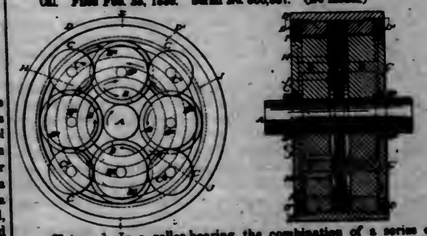


3. In a suspension-bridge, opposite pairs of vertical pillars, each pair connected at its upper end by a longitudinally-grooved cap and provided with adjustable tie-plates, in combination with transverse girders mounted on the tie-plates, longitudinal beams mounted on the girders, depending sectional adjusting-rods provided with tie-bars extending underneath the longitudinal beams and connected with the cables, the latter arranged in the grooves of the caps, and an anchor for securing the terminals of the cables, substantially as specified.

4. The mill C, having the oppositely-arranged pairs of pillars 2, braced, as at 5, and provided with the adjustable tie-plates 3, having binding-screws 4, grooved caps 10, and arched brace 24, in combination with the girders 6, arranged on the tie-plates, the beams 7, arranged on the girders, and the floor 9, arranged on the beams, and of the suspension-cables 11, arranged in the grooved caps, the anchors 15, and the chains 14, arranged at the terminals of the cable, substantially as specified.

5. The combination of the cable 11 and its support with the depending rods 21, the tie-bars 8 and their rods 22, and the connecting turn-buckles 23, substantially as specified.

411,500. ROLLER-BEARING. REUBEN W. HUNT, San Francisco, Cal. Filed Feb. 28, 1889. Serial No. 300,967. (No model.)



Claim.—1. In a roller-bearing, the combination of a series of bearing-rollers having journals of smaller diameter than said rollers, and a series of separating-rollers adapted to bear only on said journals with a ring bearing at its periphery on journals of the separating-rollers, and at its inner side on journals of the bearing-rollers, all substantially as and for the purposes set forth.

2. In a roller-bearing, a series of rollers B, having journals B^2, and the journals B^2, of smaller diameter than the rollers B, and a series of rollers C, bearing only on the journals B^2 and having journals C^2, in combination with a ring H, bearing at its periphery on the journals C^2 and at its inner side on the journals B^2, all substantially as shown and described, and for the purposes set forth.

3. In a roller-bearing, the combination, with the central journal and the bearing-casing, of a series of bearing-rollers bearing thereon, having journals of smaller diameter than said rollers and bearing only on a series of separating-rollers keeping the bearing-rollers separate from each other, the said series of separating-rollers bearing only on said journals, and a ring bearing at its periphery on journals of the separating-rollers, and at its inner side on journals of the bearing-rollers, all substantially as and for the purposes set forth.

4. A roller-bearing comprising the shaft A, the casing D, the sleeves D', the series of rollers B, of the same length and between the same planes as the sleeves D' and having journals B^2, and the journals B^3, of smaller diameter than the rollers B, the series of rollers C, bearing only on the journals B^2 and having journals C^2, and a ring H, bearing at its periphery on the journals C^2 and at its inner side on the journals B^2, all constructed, arranged, combined, and adapted to operate substantially as shown and described, and for the purposes set forth.

5. In a roller-bearing, the combination of a series of bearing-rollers having journals of smaller diameter than said rollers, and a series of separating-rollers adapted to bear only on said journals, with a ring bearing at its periphery on journals of the separating-rollers and at its inner side on journals of the bearing-rollers, and a ring bearing at its inner side on said journals of the separating-rollers, all substantially as and for the purposes set forth.

6. In a roller-bearing, a series of rollers B, having journals B^2, and the journals B^3, of smaller diameter than the rollers B, and a series of rollers C, bearing only on the journals B^2 and having journals C^2, in combination with a ring H, bearing at its periphery on the journals C^2 and at its inner side on the journals B^2, and a ring I, bearing at its inner side on the journals C^2, all substantially as shown and described, and for the purposes set forth.

7. In a roller-bearing, the combination, with the central journal and the bearing-casing, of a series of bearing-rollers bearing thereon, having journals of smaller diameter than said rollers and bearing only on a series of separating-rollers, keeping the bearing-rollers separate from each other, the said series of separating-rollers bearing only on said journals, a ring bearing at its periphery on journals of the separating-rollers and at its inner side on journals of the bearing-rollers, and a ring bearing at its inner side on said journals of the separating-rollers, all substantially as and for the purposes set forth.

8. A roller-bearing comprising the shaft A, the casing D, the sleeves D', the series of rollers B, of the same length and between the same planes as the sleeves D' and having journals B^2, and the journals B^3, of smaller diameter than the rollers B, the series of rollers C, bearing only on the journals B^2 and having journals C^2, a ring H, bearing at its periphery on the journals C^2 and at its inner side on the journals B^2, and a ring I, bearing at its inner side on the journals C^2, all constructed, arranged, combined, and adapted to operate substantially as shown and described, and for the purposes set forth.

9. In a roller-bearing, the combination of a series of bearing-rollers having journals of smaller diameter than said rollers, and a series of separating-rollers adapted to bear only on said journals, with a ring bearing at its periphery on journals of the separating-rollers and at its inner side on journals of the bearing-rollers, and a ring bearing at its periphery on the latter journals, all substantially as and for the purposes set forth.

10. In a roller-bearing, a series of rollers B, having journals B^2, and the journals B^3, of smaller diameter than the rollers B, and a series of rollers C, bearing only on the journals B^2 and having journals C^2, in combination with a ring H, bearing at its periphery on the journals C^2 and at its inner side on the journals B^2, and a ring J, bearing at its periphery on the journals B^2, all substantially as shown and described, and for the purposes set forth.

11. In a roller-bearing, the combination, with the central journal and the bearing-casing, of a series of bearing-rollers bearing thereon, having journals of smaller diameter than said rollers and bearing only on a series of separating-rollers, keeping the bearing-rollers separate from each other, the said series of separating-rollers bearing only on said journals, a ring bearing at its periphery on journals of the separating-rollers and at its inner side on journals of the bearing-rollers, and a ring bearing at its periphery on the latter journals, all substantially as and for the purposes set forth.

12. A roller-bearing comprising the shaft A, the sleeves D', the series of rollers B, of the same length and between the same planes as the sleeves D' and having journals B^2, and the journals B^3, of smaller diameter than the rollers B, the series of rollers C, bearing only on the journals B^2 and having journals C^2, a ring H, bearing at its periphery on the journals C^2, and at its inner side on the journals B^2, and a ring J, bearing at its periphery on the journals B^2, all constructed, arranged, combined, and adapted to operate substantially as shown and described, and for the purposes set forth.

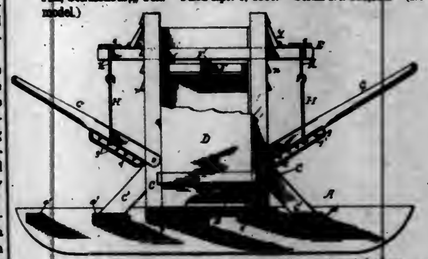
13. In a roller-bearing, the combination of a series of bearing-rollers having journals of smaller diameter than said rollers, and a series of separating-rollers adapted to bear only on said journals, with a ring bearing at its periphery on journals of the separating-rollers and at its inner side on journals of the bearing-rollers, a ring bearing at its inner side on said journals of the separating-rollers, and a ring bearing at its periphery on the last-named journals of the bearing-rollers, all substantially as and for the purposes set forth.

14. In a roller-bearing, a series of rollers B, having journals B^2, and the journals B^3, of smaller diameter than the rollers B, and a series of rollers C, bearing only on the journals B^2 and having journals C^2, in combination with a ring H, bearing at its periphery on the journals C^2 and at its inner side on the journals B^2, a ring I, bearing at its inner side on the journals C^2, and a ring J, bearing at its periphery on the journals B^2, all substantially as shown and described, and for the purposes set forth.

15. In a roller-bearing, the combination, with the central journal and the bearing-casing, of a series of rollers bearing thereon having journals of smaller diameter than said rollers and bearing only on a series of separating-rollers, keeping the bearing-rollers separate from each other, the said series of separating-rollers bearing only on said journals, a ring bearing at its periphery on journals of the separating-rollers and at its inner side on journals of the bearing-rollers, a ring bearing at its inner side on said journals of the separating-rollers, and a ring bearing at its periphery on the last-named journals of the bearing-rollers, all substantially as and for the purposes set forth.

16. A roller-bearing comprising the shaft A, the sleeves D', the series of rollers B, of the same length and between the same planes as the sleeves D' and having journals B^2, and the journals B^3, of smaller diameter than the rollers B, the series of rollers C, bearing only on the journals B^2 and having journals C^2, a ring H, bearing at its periphery on the journals C^2 and at its inner side on the journals B^2, a ring I, bearing at its inner side on the journals C^2, and a ring J, bearing at its periphery on the journals B^2, all constructed, arranged, combined, and adapted to operate substantially as shown and described, and for the purposes set forth.

411,501. BALING-PRESS. William Hillman and Joseph F. Ritter, Schulenburg, Tex. Filed Apr. 8, 1889. Serial No. 306,343. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the base-plate, the casing made in two trough-shaped sections D and D', one of which is hinged to the base-plate, the bifurcated uprights, the operating-levers on each side hinged to the uprights, the compressing-beam extending across the baling-chamber and through the uprights, and connections between the compressing-beam and the levers.

2. The combination, substantially as hereinbefore set forth, of the base-plate, the casing made in two trough-shaped sections D and D', one of which is hinged to the base-plate, the bifurcated uprights C, the operating-levers on each side hinged to the uprights, the sled, the braces C', secured to the sled and to the uprights, the compressing-beam extending across the baling-chamber and through the uprights, the hooks on the outer ends of the compressing-beam and the chains connecting the operating-levers with the hooks, whereby the connections between the levers and the compressing-beam may be adjusted.

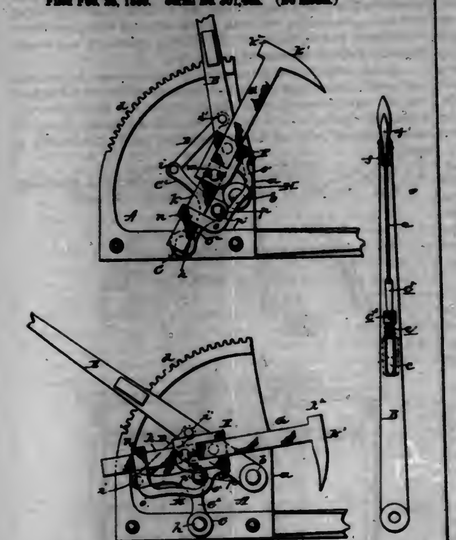
3. The combination, substantially as hereinbefore set forth, of the base-plate, the casing made in two trough-shaped sections D and D', one of which is hinged to the base-plate, the bifurcated uprights C, the operating-levers G on each side hinged to the uprights, the compressing-beam extending through the uprights, the loops h', attached to the outer ends of the compressing-beam, the straps e surrounding the loops, the links H', having hooked ends engaging with the loops h', the teeth g on the operating-levers with which the lower ends of the links H' engage, and the straps g', inclosing the teeth.

411,502. PIPE-WRENCH. John D. Hoose, Kearney, N. J. Filed May 10, 1889. Serial No. 310,266. (No model.)

Claim.—In pipe-tongs, the combination, with the hook-handle A and lever-handle B, of the parallel arms b' b^2 at an obtuse angle to handle B, the screw D, passing down through said arms obliquely, the nut C, arranged on the screw between said arms, and the sliding jaw F, connected by a pivoted link E with the screw D and retained on the shank by shaft F', substantially as shown and described.



411,503. SAW-MILL DOG. Benwell J. Kelley, Laurel, Miss. Filed Feb. 26, 1889. Serial No. 301,662. (No model.)



Claim.—1. The combination, with a head-block, of a segmental toothed standard, a lever adapted to vibrate and interlock with the teeth of the curved face of the standard, a dog pivoted to the lever at a point behind the pivotal connection of the dog and lever, and devices to connect the dog limb and lever, substantially as set forth.

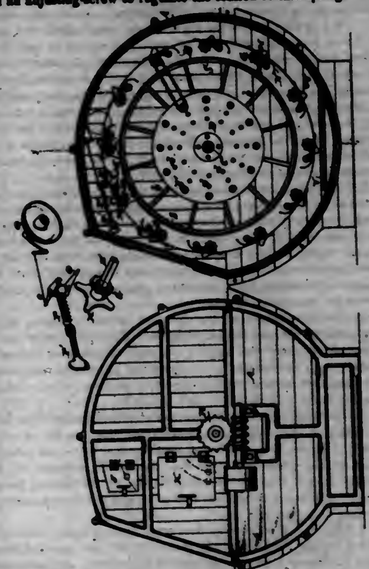
2. The combination, with a standard, the edge of which is a curved segmental rack, a lever pivoted to have its movable locking-toe engage the teeth of this segmental rack, and a device to trip the locking-toe of the lever, of an elongated box pivoted by one end to the lever, a log-holding dog, the limb of which is made to slide in this box and be secured at any desired point, and a pivoted connecting-arm and link, which are adapted to rock the log-dog when the lever is vibrated, substantially as set forth.

3. The combination, with a segmental toothed standard having a vertical face and a pivotal lever adapted to interlock with the teeth of the standard, of an elongated box pivotally attached to the lever, a log-holding dog adjustably secured in the box, a bent arm pivoted to the standard, a link connecting the arm and lever, and an anti-friction roller mounted on the bent arm and engaging an extension of the elongated box, substantially as set forth.

411,504. DYEING OR SCOURING MACHINE. Charles L. Klauss, Philadelphia, Pa. Filed Sept. 17, 1888. Serial No. 285,867. (No model.)

Claim.—1. In a dyeing or scouring machine, the combination of a dye or liquor tank, a frame partly supported therein, inner and outer sets of crum-bars carried by the frame upon which the skeins of yarn to be treated are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, projections moved with said rotatable crum-bars, a pivoted stop in the path of said projections, and a spring to normally hold said stop in position, whereby as the frame carries the crum-bars past the stop the projections thereof strike the stop and impart to the bar a portion of a revolution, but when the bar is not free to rotate the pivoted stop is pushed aside by said projection and returns again to its normal position after the projection has passed it, and an indicator operated by said pivoted stop when moved.

2. In a dyeing or scouring machine, the combination of a dye or liquor tank, a frame partly supported therein, inner and outer sets of crum-bars carried by the frame upon which the skeins of yarn to be treated are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, projections moved with said rotatable crum-bars, a pivoted stop in the path of said projections, a spring to normally hold said stop in position, whereby as the frame carries the crum-bars past the stop the projections thereof strike the stop and impart to the bar a portion of a revolution, but when the bar is not free to rotate the pivoted stop is pushed aside by said projection and returns again to its normal position after the projection has passed it, and an adjusting-screw to regulate the tension of said spring.



3. In a dyeing or scouring machine, the combination of a dye or liquor tank, a frame partly supported therein, inner and outer sets of crum-bars carried by the frame upon which the skeins of yarn to be treated are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, projections moved with said rotatable crum-bars, a pivoted stop in the path of said projections, a spring to normally hold said stop in position, whereby as the frame carries the crum-bars past the stop the projections thereof strike the stop and impart to the bar a portion of a revolution, but when the bar is not free to rotate the pivoted stop is pushed aside by said projection and returns again to its normal position after the projection has passed it, and an indicator operated by said pivoted stop when moved.

4. In a dyeing or scouring machine, the combination of a dye or liquor tank, a frame partly supported therein, inner and outer sets of crum-bars carried by the frame upon which the skeins of yarn to be treated are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, projections moved with said rotatable crum-bars, a pivoted stop in the path of said projections, a spring to normally hold said stop in position, whereby as the frame carries the crum-bars past the stop the projections thereof strike the stop and impart to the bar a portion of a revolution, but when the bar is not free to rotate the pivoted stop is pushed aside by said projection and returns again to its normal position after the projection has passed it, an alarm or indicator consisting of a gong and hammer, and a connection between said pivoted stop and hammer.

5. In a dyeing or scouring machine, the combination of a dye or liquor tank, a frame partly supported therein, inner and outer sets of crum-bars carried by the frame upon which the skeins of yarn to be treated are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, star-wheels loosely journaled in said frame acting as bearings for said rotatable crum-bars, a stop in the path of the projections of said star-wheels, whereby, as the frame carries the crum-bars past the stop the projections of the star-wheels strike the crum-bars and impart to the bar a portion of a revolution, ratchets connected with said star-wheels and rotating with them, and pawls upon the frame to engage in said ratchet to prevent backward rotation of the crum-bars.

6. The combination of a dye or liquor tank, a frame partly sup-

ported therein, inner and outer sets of cross-bars carried by the frame upon which the skeins of yarn to be treated are hung, and circular guides on the inner faces of said supporting-frame to keep the skeins away from said faces of the frame.

7. The combination of a dye or liquor tank, a frame partly supported therein, inner and outer sets of cross-bars carried by the frame upon which the skeins of yarn to be treated are hung, one of said sets of bars being adapted to rotate to gradually turn the yarn, suitable means to rotate the frame and move the cross-bars through the liquor, and an indicator operated by said rotatable cross-bars to indicate when through any accident one of said bars has not been rotated.

8. In a dyeing or scouring machine, the combination of a rotatable frame, inner and outer sets of cross-bars carried by said frame and removable therefrom and having their ends projecting through one end of said frame, upon which bars the yarn to be dyed or scoured is hung, a closed case for said rotating frame, the lower portion of which is adapted to contain the dye or other liquor, said case being provided with guiding-surfaces adjacent to the ends of said bars, and doors located in the said guide-surfaces and in the paths of the ends of said cross-bars, through which doors said bars may be inserted in or removed from said frame or adjusted in it.

9. In a dyeing or scouring machine, the combination of a rotating frame, supporting-bars for the yarn adapted to rotate and carried by said frame, a dye-vat for the liquor through which said supporting-bars are carried, and a spring-stop arranged in the path of said rotatable supporting-bars adapted to strike against them and impart to them a portion of a revolution, but, if any of said bars is not free to rotate, to be pushed aside and return again to its normal position after the bar has passed it.

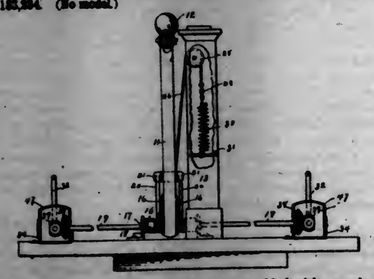
10. The combination of the dye tank or vat, a rotating frame having journals therein, longitudinally-movable cross-bars for carrying the yarn, whereby they may be removed or inserted in the rotating frame, and a circular guide to prevent the longitudinal movement of the cross-bars to lock them in operative position on the rotating frame.

11. The combination of the dye tank or vat, a rotating frame having journals therein, longitudinally-movable cross-bars for carrying the yarn, whereby they may be removed or inserted in the rotating frame, a circular guide to prevent the longitudinal movement of the cross-bars to lock them in operative position on the rotating frame, and removable doors or sections formed in said guides to permit the removal of the cross-bars.

12. The combination of the dye-vat, a rotating frame, cross-bars journaled therein for holding the skeins of yarn and carrying them through the liquor in the vat, mechanism for rotating said cross-bars, and a gong or indicator to indicate when either of said cross-bars becomes fast against rotation, and a connection between the gong or indicator and cross-bars adapted to be operated by the cross-bars.

13. The combination of the dye-vat, a rotating frame, cross-bars journaled therein for holding the skeins of yarn and carrying them through the liquor in the vat, mechanism for rotating said cross-bar, ratchet-wheels connected to and rotating with said cross-bars, and pawls to prevent backward movement to said ratchet-wheels.

411,505. **VERTICALLY-SWINGING GATE.** LEWIS GARDNER KNOWLES, New York, N. Y.; Hugh A. Knowles administrator of said Lewis Gardner Knowles, deceased. Filed Nov. 18, 1885. Serial No. 183,294. (No model.)



Claim.—1. A vertically-swinging gate provided with an axle 15, in combination with shaft 19, arms 20, secured to said shaft, stops with which said arms co-operate, and wheel-irons geared to shaft 19, substantially as set forth.

2. In combination with the pivoted gate, wheel-irons, shaft and gearing, a hollow post, as 13, pulley 26, spring 30, and cord 28, connected to said spring and secured to the gate, substantially as and for the purpose set forth.

3. The gate 10 and hollow axle 15, cut away, as shown, and supported in bearings 18, combined with shaft 19, wheel-irons and gearing, and arms 20, mounted upon shaft 19 and provided with stops at their lower end, as 40, and stops 21 and 25, substantially as set forth.

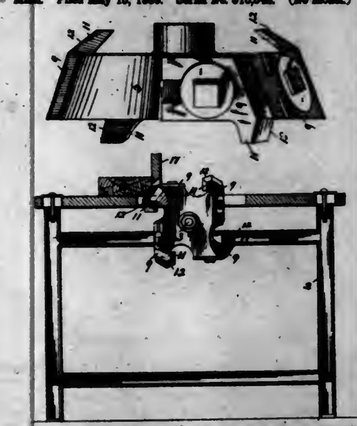
4. In combination with the gate, the rod and spring 23 and 42, bolt 23, stops 21, arms 20, shaft 19, and wheel-irons and gearing, substantially as set forth.

5. The gate provided with a latch-bolt connected to rod 23, in combination with handle 45, rod 44, shaft 19, and arms 20, connected with said rod 23, substantially as set forth.

6. A vertically-swinging gate pivoted upon a hollow axle suitably supported in bearings and provided with means for securing it closed, in combination with a weighted end rail, as 11 12, shaft 19, provided with arms co-operating with said hollow axle and with stops affixed to the gate, wheel-irons, as 32, and gearing connecting said wheel-irons and shaft 19, substantially as set forth.

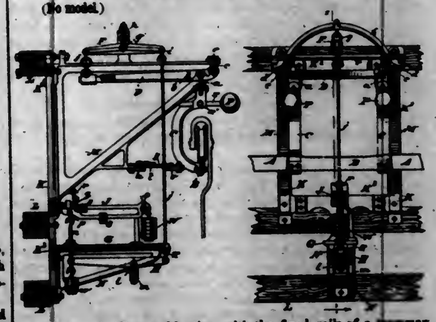
7. In a vertically-swinging gate, a hollow axle mounted in bearings and serving as the pivot for the gate, in combination with a weighted end rail, wheel-irons and actuating gearing, and a hollow post provided with a pulley near its top, a spring, and a cord connecting the spring with the gate and coacting with the pulley, substantially as set forth.

411,506. **CHAMFER-CUTTER.** CHESTER MATTSON, Minneapolis, Minn. Filed May 13, 1889. Serial No. 310,562. (No model.)



Claim.—The combination, with the cutter-head provided with the oppositely-inclined and alternately-arranged plane surfaces upon its periphery, of the right and left hand knives provided with the inclined cutting-edges, and with the inclined wings projecting beyond the body of the knives, and provided also with an inclined cutting-edge, substantially as described.

411,507. **WEIGHING-SCALES FOR SUSPENSION TRAMWAYS.** WILLIAM J. MILLER, Mamaroneck, N. Y., assignor to E. & T. Fairbanks & Company, St. Johnsbury, Vt. Filed July 1, 1889. Serial No. 316,294. (No model.)



Claim.—1. The combination, with the fixed rails of a tramway and a system of compound levers, of a movable rail and a supporting-frame therefor suspended beneath the terminal lever of the compound-lever system in such manner as to be free to move or sway laterally and said frame counterbalanced to cause the movable rail to gravitate to a position directly beneath its point of suspension.

2. The combination, with the fixed rails of a tramway and a system of compound weighing-levers, of a movable rail, two supporting-frames for the opposite ends thereof bent to one side of the vertical plane of the rail and suspended directly thereover from the terminal lever of the compound-lever system, and a counter-weight for said frame projecting to the opposite side of the vertical plane of the rail and connected to the frames through the medium of an adjustable connection, whereby its position may be shifted to bring the center of gravity of the suspended rail and its frames into the vertical plane of the rail and thereby cause the movable rail to gravitate to a position directly beneath its points of suspension.

3. The combination, with the fixed rails A A of a tramway and a terminal lever D and scale-beam J of a compound-lever weighing system, of a movable rail B, its suspension-frames C C, links *a a*, suspending them from the lever D, and counter-weights P P, adjustably connected to said frames through the medium of bars *x x*.

4. The combination, with the fixed rails of a tramway and a system of compound weighing-levers, of a movable rail and its supporting-frames suspended beneath the terminal lever of said compound-lever system and counterbalanced to bring the center of gravity of the suspended structure in the vertical plane of the movable rail, and stay-bars connecting the movable rail to a fixed part in order to limit its swaying movement and retain it in line with the fixed rails.

5. The combination, with the fixed rails of a tramway, of a movable rail B, its suspension-frames C C, terminating over it and counterbalanced to bring their center of gravity into the vertical plane of the movable rail, and the terminal lever D of the system of compound weighing-levers formed with two arms spread apart at their fulcrumed ends and suspended on a fulcrum-axis extending parallel with the vertical plane of the movable rail, and the suspension-frames of said rail connected to said arms of the lever adjacent to their fulcra and the arms of the lever united at its opposite or free end and there connected to the next lever of the compound-lever system.

411,508. **POSTAL PACKET.** MICHAEL NEWKLEW, Vienna, Austria-Hungary. Filed June 18, 1889. Serial No. 314,143. (No model.) Patented in France Dec. 5, 1888, No. 194,551; in England Dec. 5, 1888, No. 17,771; in Austria-Hungary Feb. 2, 1889, No. 47,419 and No. 497, and in Belgium May 29, 1889, No. 86,253.



Claim.—1. The combination, with a box provided at or near its upper edge with interior locking flanges or ledges, of a cover provided on its under side with similar flanges or ledges arranged relatively to the box flanges or ledges, so as to permit a slight endwise motion of said cover, and a locking pin or pins arranged relatively to the cover and box, so as to engage the locking-flanges thereof and lock the same together, or vice versa, when an endwise movement in the proper direction is imparted to the cover, as described.

2. The combination, with a box provided at or near its upper edge with interior locking flanges or ledges, of a cover provided on its under side with similar flanges or ledges, so as to permit a slight endwise motion of said cover, the flanges at one end being constructed to interlock, a locking pin or pins arranged relatively to the cover and box-flanges at the opposite end, so as to engage said flanges and penetrate into or through a hole or holes in the end of the box, according to the position of the cover thereon, and a sealing flap or flaps connected with the cover or the box and adapted to fold over the locking-pin hole or holes, substantially as and for the purposes specified.

3. The combination, with a box provided interiorly and near its upper edge with a locking-frame *a*, having a hole or holes in the same plane and in its opposite end bars and a hole or holes in one end of the box registering with that or those in the corresponding frame end bar, of a cover provided with a similar frame shorter in one direction than the box-frame to permit a limited endwise motion of the cover on the box, the end bars of the cover-frame being provided with a locking pin or pins adapted to fit into the corresponding holes in the end bars of the box-frame, substantially as and for the purposes specified.

4. The combination, with a box provided interiorly and near its upper edge with a locking-frame *a*, having a hole or holes in the same plane and in its opposite end bars and a hole or holes in one end of the box registering with that or those in the corresponding frame end bar, of a cover provided with a similar frame shorter in one direction than the box-frame to permit a limited endwise motion of the cover on the box, the end bars of the cover-frame being provided with a locking pin or pins adapted to fit into the corresponding holes in the end bars of the box-frame, and a sealing flap or flaps for sealing the pin opening or openings in one end of the box, substantially as and for the purposes specified.

411,509. **HAT-RIMS.** CHARLES P. PIKE, Boston, Mass. Filed Mar. 5, 1889. Serial No. 302,413. (No model.)

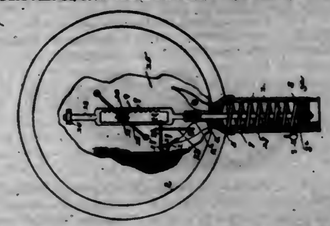


Claim.—1. The combination, substantially as set forth, of the ear-loop, the hinged arm, the trumpet-mouth with the lip of which the end of the ear-loop first engages or past which it snaps to form a catch, and the second catch within the trumpet-mouth with which the end of the ear-loop finally engages, as described.

2. The combination of the setting, the elastic or spring ear-loop, the hinged spring-arm, the trumpet-mouth on the hinged arm, against the inner face or wall of which the end of the ear-loop abuts when the two are brought together, and a catch within the interior of the trumpet-mouth to which the end of the ear-loop is directed by the walls of the trumpet-mouth when the loop and spring-arm are further pressed together, and with which the end of the spring ear-loop engages, substantially as set forth.

3. The combination, with the setting and ear-loop, of the hinged arm having the trumpet-mouth thereon, the interior of the trumpet being formed with a curved or horizontal portion *c'*, against which the end of the ear-loop abuts when the two are brought together, and a shoulder *c''*, to which the end of the ear-loop is directed as the loop and arm are further pressed together and with which the end of the ear-loop engages by snapping past it, substantially as set forth.

411,510. **STEAM-GAGE.** CHARLES H. RILEY, Southport, Conn. Filed June 14, 1888. Serial No. 314,204. (No model.)



Claim.—1. In a combined steam and vacuum gage, the combination of a pipe or cylinder, the casing at the upper end of the same having a graduated dial, the vertically-movable piston having the upwardly-extending piston-rod provided with a frame having a rack-bar on one side, the shaft journaled in the dial and having a hand or pointer at its front end and at its rear end a pinion engaging the said rack-bar, a coiled spring arranged in the cylinder and bearing against the upper side of the piston, and a spring connected to the rear side of the dial and arranged to bear in an upward direction against the frame attached to the piston-rod, substantially as and for the purpose set forth.

2. In a combined steam and vacuum gage, the combination of a pipe or cylinder having a laterally-extending cock near its lower end and perforations at its upper end, the casing at the upper end of said cylinder containing a graduated dial, a shaft journaled centrally in said dial and in a keeper upon the rear side of the latter and having a hand or pointer at its front end and a pinion at its rear end, a piston arranged in the cylinder and having an upwardly extending stem or rod, a frame connected adjustably to said stem or rod and having a rack-bar meshing with the pinion and an upward extension confined in a suitable guide or keeper, a coiled spring arranged in the cylinder and adapted to bear downwardly against the piston, a spring mounted upon a stud extending rearwardly from the dial and having laterally-extending arms bearing, respectively, against a fixed point and against the under side of a pin extending rearwardly from the frame attached to the piston-rod, and a keeper to limit the upward movement of the said spring-arm, all combined and operating substantially as and for the purpose set forth.

3. The combination of a pipe or cylinder, the piston having the upwardly-extending stem, the springs, the vertically-movable frame having a rack-bar, a shaft carrying the hand or pointer and a pinion meshing with said rack-bar, and a right and left hand threaded nut or coupling-sleeve connecting the vertically-movable frame with the piston-rod, substantially as and for the purpose set forth.

4. The combination of the cylinder, the vertically-movable piston having annular oil-groove and a perforation in its upper side communicating with said groove, the spring, the upwardly-extending piston-rod, the rack-bar connected with the latter, and the transverse shaft carrying the pointer and a pinion engaging the rack-bar, substantially as set forth.

411,511. WORK-BENCH. SAMUEL A. SEAT, MORGAN W. PERKINS, and JOHN T. TOOLSON, Hematite, Mo. Filed June 14, 1888. Serial No. 314,214. (No model.)



Claim.—1. A work-bench consisting of a base-plate, a rotary plate supported thereby, and a supporting-arm projecting from the rotary plate, as set forth.

2. The combination of the base-plate, the rotary plate supported thereby and having a supporting-arm extending from its outer side, and the set-screw mounted in the base-plate and adapted to bind on the rotary plate, as set forth.

3. The combination of the base-plate, the rotary plate supported thereby, the supporting-arm projecting from the rotary plate, and the spindle at the free end of the supporting-arm, as set forth.

4. The combination of the base-plate having an annular groove B, the rotary plate fitting in said groove and having an annular shoulder I, and the retaining-plate fitting over said annular shoulder and secured to the base-plate, as set forth.

411,512. ICE-CREEPER. CYRUS H. SHAMBOW, St. Cloud, Minn. Filed June 21, 1888. Serial No. 315,092. (No model.)



Claim.—1. An ice-creeper consisting of a flexible metal band having its middle portion bent to fit around the edge of the toe end of a sole and the edges of said sole, a series of separate lugs A^3, flanged therefrom and adapted to extend under the sole and provided with spurs and lips a^3, inwardly projecting from the upper edge of said band, and means to connect the ends of said band, substantially as described.

2. An ice-creeper consisting of a flexible metal band having its ends adjustably united together and bent to rest flatwise against the edge of a boot-sole, and having a series of separate lugs A^3, adapted to extend under said sole, and spurs on said lugs, in combination with means, as set forth, whereby it is adapted to be secured to a boot, substantially as described.

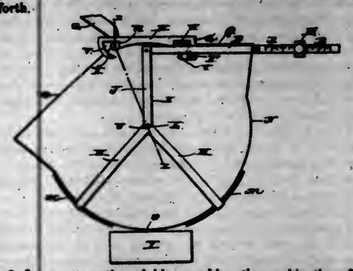
411,513. DEVICE FOR PREVENTING HORSES FROM KICKING. HARRY W. BROOK, Monmouth, Ill. Filed Apr. 29, 1889. Serial No. 308,047. (No model.)



Claim.—The combination, with the rings C on the shafts and the rings D on the saddle of the usual harness, of the strap B, adapted to be passed through the mouth of the horse and over his head, and thence through said rings and over his rump, whereby the horse is prevented from kicking, substantially as described.

411,514. GRAIN-WEIGHING MACHINE. DANIEL WEBB, Washington, Iowa. Filed Apr. 3, 1889. Serial No. 305,816. (No model.)

Claim.—1. In an automatic weighing-machine, the combination of the supporting-blocks, a bifurcated scale-beam, the two arms at one end of which are mounted pivotally upon said supporting-blocks, a frame mounted pivotally between the outer ends of said arms, a box or hopper pivoted in said frame, and pins or detents upon said box or hopper to engage recesses in the supporting-blocks, substantially as set forth.



2. In an automatic weighing-machine, the combination of a pair of supporting-blocks having recesses near each end, a bifurcated scale-beam mounted upon said supporting-blocks, a frame pivoted between the outer ends of the arms at one end of said bifurcated scale-beam, segmental plates connecting the lower ends of downwardly-diverging arms of the sides of said frame, a box or hopper mounted pivotally in the said frame, said hopper having a central transverse partition, a segmental bottom, and transverse slots in the bottoms of its compartments adjacent to said partitions, and pins or detents extending laterally from the pivoted hopper to engage the recesses at the ends of the supporting-blocks, and thus retain the hopper when it is tilted to a position in which the slot in the bottom of either of its compartments registers with the space between the segmental plates of the hinged frame, substantially as herein described, and for the purpose set forth.

3. The combination of the scale-beam, the frame pivoted at one end of the latter, the box or hopper mounted pivotally in the said frame, centrally-arranged pins or rollers extending laterally from the upper edges of said box or hopper, and the block or blocks supporting the scale-beam and provided at their ends with inwardly-facing curved hooks, and near the inner ends of said hooks with shoulders or recesses to engage the said pins or rollers, substantially as and for the purpose herein set forth.

4. The combination of the blocks having the inwardly-facing curved hooks and the shoulders or recesses near the inner ends of the said hooks, the bearing-plates extending laterally from the said blocks, the scale-beam provided at one end with two parallel arms having laterally-extending pivots mounted upon said bearing-plates, the adjustable weight upon the outer arm of the scale-beam, the frame pivoted to the opposite ends of the parallel arms of the same, the box or hopper mounted pivotally in the said frame, said hopper having a segmental bottom, a central transverse partition, and transverse slots in the bottoms of its compartments adjacent to said partitions, the segmental plates at the lower end of the pivoted frame, and the laterally-extending pins or rollers at the upper edge of the box or hopper, substantially as and for the purpose herein set forth.

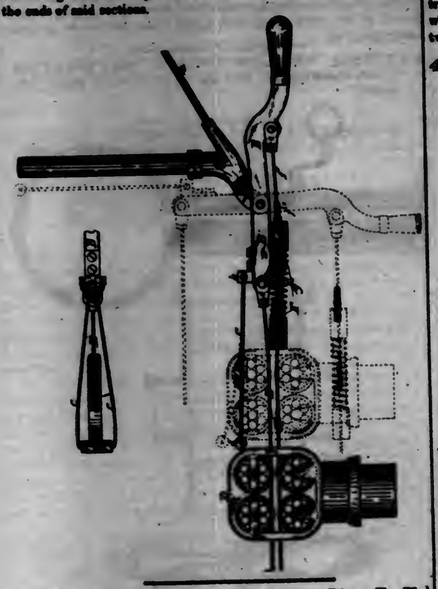
5. The combination of the supporting-blocks, the scale-beam mounted upon said blocks and having an adjustable weight at one end, the pivoted frame at one end of the scale-beam, the box or hopper mounted pivotally in the said frame, the pins or rollers at the upper edge of the hopper adapted to engage the hooks and shoulders or recesses at the ends of the supporting-blocks, segmental plates at the lower end of the pivoted supporting-frame adapted to close, alternately, the slots in the bottoms of the compartments of the oscillating box or hopper, and the trough or chute arranged below the latter between the said segmental plates, substantially as and for the purpose herein set forth.

411,515. CASH-CARRIER. WILLIAM H. ALBAUGH, Mansfield, Ohio, assignor to the Barr Cash and Package Carrier Company. Filed May 14, 1889. Serial No. 310,731. (No model.)

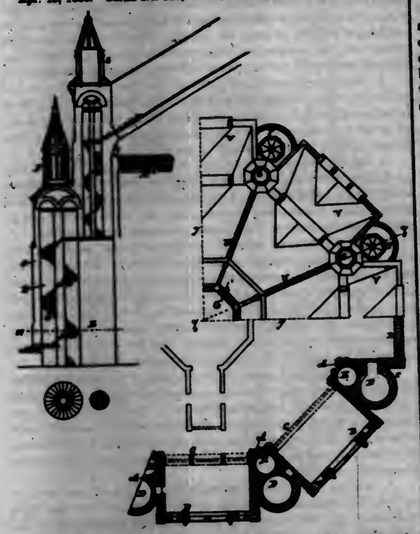
Claim.—1. The combination, substantially as hereinbefore set forth, with the lower or longer wire in a cash-carrier apparatus of the nature described, and with the operating-lever, of a buffer composed of a tube of rubber slipped over said wire.

2. The combination, substantially as hereinbefore set forth, of the operating-lever, the wire loop attached to the shank thereof, the lower track-wire secured to said loop, and the tubular buffer seated against the loop.

3. The buffer herein described, composed of two sections of rubber tubing connected by an intermediate coiled spring which clasps the ends of said sections.



411,516. BUILDING. PETER W. ARMBRUST, Chicago, Ill. Filed Apr. 15, 1889. Serial No. 307,287. (No model.)

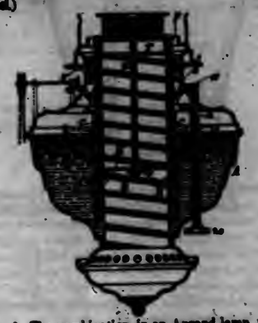


Claim.—1. A building constructed with exterior apartments, the walls of which extend in from the exterior walls and form V-shaped spaces or recesses between the exterior walls, in combination with a truss-support for the roof, having its footings on the inner ends of such V-shaped walls, and a dome G', uniting the upper ends of such truss-support, as and for the purpose specified.

2. A building constructed with V-shaped recesses in its interior walls, and apartments formed between such V-shaped walls, and a truss-dome and spire supported upon the inner ends of the V-shaped walls, as and for the purpose specified.

3. A building constructed with V-shaped recesses in its interior walls, and compartments formed between such V-shaped walls, and a truss-dome and spire supported on the inner ends of the V-shaped walls, and the said recessed walls supported by masonry-work, having two circular openings, as and for the purpose specified.

411,517. ARGAND LAMP. LEWIS J. ATWOOD and FREDERICK W. TUSEY, Waterbury, Conn., assignors to the Plume & Atwood Manufacturing Company, same place. Filed Mar. 6, 1888. Serial No. 266,542. (No model.)



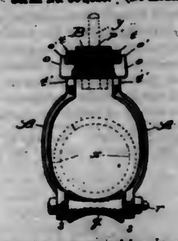
Claim.—1. The combination, in an Argand lamp, with the reservoir and thimble or nut and wick-raising screw, of a tube around the wick, a gear-wheel around the wick-tube, and a collar attached to the wick-tube and resting upon the top of the reservoir, and a pinion for acting upon said gear-wheel to revolve the wick-tube and wick-raising thimble or nut, substantially as set forth.

2. The combination, in an Argand lamp, with the reservoir, central air-tube having a screw-thread upon the same, and the wick-raising thimble or nut, of a wick-tube around the wick, a collar around the wick-tube, and a projection 10, passing to below the top edge of the reservoir for holding the wick-tube and collar down against the lifting action of the wick-raiser and wick, substantially as set forth.

3. The combination, in an Argand lamp, with the reservoir, the air-tube having a screw-thread thereon, and the wick-raising thimble or nut, of a wick-tube surrounding the wick, a collar at the upper end of the reservoir and connected to the wick-tube, a projection for holding down the collar against the lifting action of the wick-raiser, the gear-wheel around the wick-tube, and a pinion for rotating the same, and the wick-tube and wick-raiser, substantially as set forth.

4. The combination, with the Argand burner having a central air-tube and a foraminous skirt and flame-spreader, of a flat horizontal air-distributer having a cylindrical upturned rim made in one therewith and adapted to fit removably within the central air-tube and to receive carbonaceous material, and a rod passing through and attached to the flat air-distributer, the parts being removable from the air-tube, and a stationary stop for the lower end of the rod, substantially as set forth.

411,518. PIPE-HANGER. JOHN GILLIS, Des Moines, Iowa. Filed Mar. 27, 1889. Serial No. 304,923. (No model.)

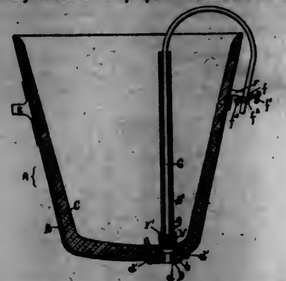


Claim.—A pipe-hanger comprising, in combination, a stirrup formed with side pieces A, secured together toward their lower ends by a bolt r, a roller q on the bolt between the side pieces, openings f in the side pieces toward their upper ends, a yoke B, having lateral projections e to enter the said openings, sockets e^2 in the projections e, to receive the upper sides of the said openings, and means for suspending the yoke to a support, substantially as described.

411,519. TAP-BUSHER. JAMES K. GRIFFITH, Philadelphia, Pa. Filed Mar. 1, 1889. Serial No. 301,895. (No model.)

Claim.—1. In a tap-nozzle, a tubular vent-bushing having at its breech or inner end a recessed enlargement of its cavity surrounded

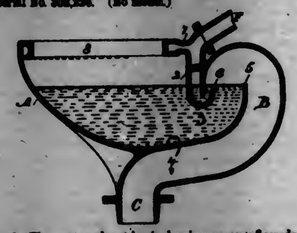
by dome-shaped walls and crowned by an orifice provided with a valve-seat, substantially as and for the purposes hereinbefore described.



2. In a tapping-nozzle, the combination of an inwardly and centrally tapering ping-valve and a tubular vent-bushing having at its breech or inner end a recessed enlargement of its cavity surrounded by dome-shaped walls and crowned by an orifice provided with a flaring seat for said valve, said valve and orifice being so proportioned that when the valve is only partially lifted out of the orifice they may afford a gate having an area of escape at least as great in capacity as the delivering capacity of said bushing's nozzle, substantially as and for the purposes hereinbefore described.

3. In a tapping-nozzle, the combination of a tubular vent-bushing having at its breech or inner part two valve-seats separated by a dome-wall surrounding an enlarged cavity, the whole formed integral, and a spile-ping valve having a surface adapted to normally register and fit in the former of said seats, but on the dissolution of the wall of said dome to register and seat in the second thereof, substantially as and for the purposes hereinbefore described.

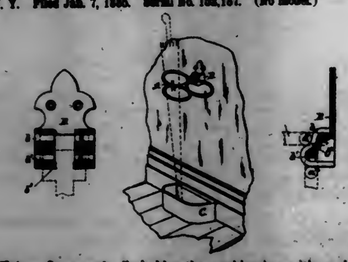
411,520. WATER-CLOSET. EDWARD HANMANN, Brooklyn, assignor to the J. L. Mott Iron Works, New York, N. Y. Filed Mar. 7, 1889. Serial No. 302,256. (No model.)



Claim.—1. The water-closet basin having an overflow-dam 5 and discharge-pipe B, and a water-supply pipe in the back wall of the basin, between the basin and the overflow-pipe B, and the ejector at the lower end of the water-pipe and opening upwardly toward the dam 5, substantially as set forth.

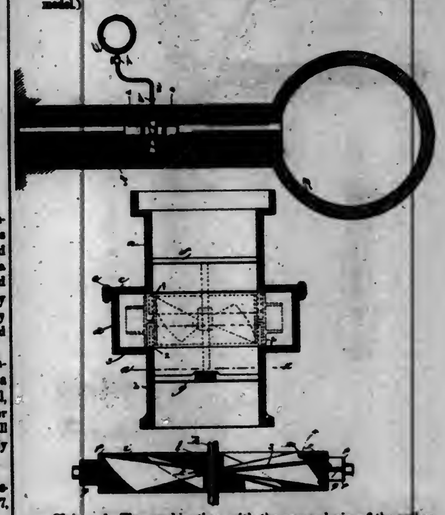
2. The combination, in a water-closet basin having a flushing-rim, of an overflow-dam 5, extending up from the bottom of the basin, a discharge-pipe B, a water-supply pipe E in the back wall of the basin, between the overflow-pipe and the basin, a branch pipe leading to the flushing-rim, and an ejector at the bottom of the water-supply pipe, the mouth of which is elongated and is directed upwardly toward the discharge-dam, substantially as and for the purposes set forth.

411,521. UMBRELLA-HOLDER. SAMFORD B. HASKELL, Albany, N. Y. Filed Jan. 7, 1889. Serial No. 256,167. (No model.)



Claim.—In an umbrella-holder, the combination, with a swinging bracket A, provided with the lateral pintles c^3 and c^4, as herein described, of the hinge-piece B, provided with inwardly-projecting flanges formed of the reversed curves b, b', and b^2, as and for the purposes herein specified.

411,522. VENTILATING APPARATUS. LUKE J. HOPE and JOHN T. HOPE, Kansas City, Mo. Filed Aug. 9, 1887. Serial No. 246,426. (No model.)



Claim.—1. The combination, with the sewer-drain, of the soil or ventilating pipe communicating therewith, the dual separable tubular sections constituting a continuous part of said pipe and having external box-flanges thereon to form an inclosing-case, an air-fan journaled within said pipe, and a motor-wheel located within the external flange-case and sustained from the axle of said fan, substantially as described.

2. In drain or ventilating pipes, the combination, with the dual tubular separable sections having external box-flanges thereon to form an inclosing-case, of an air-fan journaled within the tube, and a motor-wheel located within the external flange-case and sustained from the axle of said fan, substantially as described.

3. In drain or ventilating pipes, the combination, with the dual tubular separable sections having external box-flanges thereon to form an inclosing-case, of an air-fan pivotally sustained within and from said sections, and a motor-wheel secured about the rim of said fan and located within the external flange-case, substantially as described.

4. The combination, with the ventilating-pipe, of an air-fan having a motor-wheel arranged about the rim thereof and an inclosing-case for the same, said case consisting of dual separable sections united at their opposite tubular terminals to the ventilating-pipe and secured apart at their contiguous ends by external box-flanges projecting from said sections and forming a hollow chamber, said fan being pivotally sustained within and from said sections, and the motor-wheel being located within said hollow chamber, substantially as described.

5. The combination, with the sewer-drain, of the soil and ventilating pipe communicating therewith and having branch or waste pipes discharging into said ventilating-pipe, an air-fan located in said ventilating-pipe above or beyond the discharge-outlets from said waste-pipes, and suitable mechanism to positively actuate said fan, whereby the vitiated air may be withdrawn from said waste-pipes and soil-pipe, substantially as described.

6. The combination, with the sewer-drain, of the soil and ventilating pipe communicating therewith and having branch or waste pipes discharging into said ventilating-pipe, an air-fan located in said ventilating-pipe above or beyond the discharge-outlets from said waste-pipes, a motor-wheel arranged about the rim of said air-fan, an inclosing-case for said wheel, and suitable inlet and outlet ports in said case for the admission and discharge of the motive agent operating said wheel, substantially as described.

7. The combination, with the sewer-drain, of the soil and ventilating pipe communicating therewith and having branch or waste pipes discharging into said ventilating-pipe, the dual tubular sections constituting a continuous part of said pipe and having external box-flanges thereon forming an inclosing-case, said sections being united with said ventilating-pipe above or beyond the discharge-outlets from the waste-pipes, an air-fan pivotally sustained within and from said sections, and a motor-wheel secured about the rim of said fan and located within the flange-case, substantially as described.

8. In ventilating apparatus, the combination, with the casing, of an air-fan sustained thereby and having inclined vanes, a peripheral drum secured to said vanes, and a motor-wheel inclosed within said casing and having a projecting ring-flange attached to said drum, substantially as described.

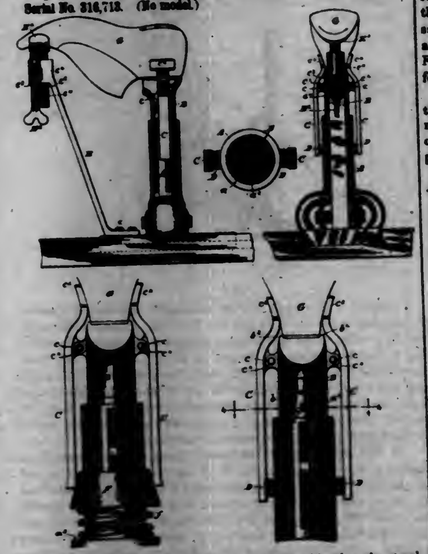
411,523. POLISHING AND WAXING STAND FOR SAD-IRONS. HUBERT H. HULL, Jersey City, N. J. Filed Aug. 21, 1888. Serial No. 283,379. (No model.)



Claim.—1. In a combined polishing and waxing stand for sad-irons, a sheet-metal body having substantially flat top and supporting-flanges the edges of which are bent upon themselves to re-enforce said flanges and form longitudinal recesses, in combination with a layer of wire-gauze and a layer of cloth, each covering a portion of said top of the body and both having their edges inserted in said recesses of the flanges and secured therein, substantially as and for the purpose described.

2. In a combined polishing and waxing stand for sad-irons, a sheet-metal body having a substantially flat top and supporting-flanges the edges of which are bent upon themselves to re-enforce said flanges and form longitudinal recesses, in combination with a layer of wire-gauze and a layer of cloth, each covering a portion of said top of the body and both having their edges inserted in said recesses of the flanges, and a series of barbs or indentations formed in said bent portions of the flanges for securing said edges of the two layers, substantially as and for the purpose described.

411,524. HEELING-MACHINE. GEORGE W. JOHNSON, Chicago, Ill., assignor of one-half to William B. Jones, same place. Filed July 6, 1889. Serial No. 316,713. (No model.)

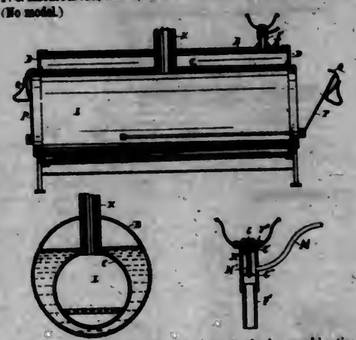


Claim.—1. In a heeling-machine, and in combination, the standard A, provided at its upper end with a reduced portion a, a pin a^3, projecting from the upper portion of said standard, and a sleeve B, fitting over said projection a, and having a hole in its lower face fitting over the pin a^3, whereby it is prevented from displacement, said sleeve being provided with a flat top surface to receive the shoe-last G, substantially as described.

2. The combination, with the toe-supporting standard E, provided with an apertured lateral enlargement or head d', of the toe-rest E', provided with a shank e^4, fitted to a hole in the head, and an adjusting-screw e^5, also fitted to the head and arranged to adjust the toe-rest vertically, substantially as described.

3. In combination, in a heeling-machine, a suitable standard having a reduced portion at its upper end, a sleeve B, fitting over said reduced portion and provided with a flat top surface for the reception of the shoe-last, a pin a^5 on the standard A, fitting a corresponding recess in the sleeve-rest, whereby the same is prevented from turning, gripping-arms C C, pivoted to the sleeve-rest, their upper ends extending above said sleeve bearing against the sides of the last, springs bearing upon the lower ends of said arms for holding them normally pressed against the last, and a vertically-adjustable rest, as E', adapted to support the toe of the last, substantially as described.

411,525. DEVICE FOR STEAMING FOOD FOR STOCK. GEORGE F. C. KLOEPFINGER, Toledo, Ohio. Filed Mar. 12, 1888. Serial No. 267,070. (No model.)



Claim.—1. In a device for steaming food, the combination, with the boiler A, of the filling-pipe F, connected therewith, a spring safety-valve connected to the filling-pipe, said safety-valve consisting of the screw-plug F', formed with the cross-bar H, valve-disk G, stem G', threaded at its lower end to receive the nut G'', and a coil-spring H', surrounding the stem and bearing upon the under side of the bar H and upper side of nut G'', and the steam-pipe M, connected to the pipe F at a point intermediate the length of the same, substantially as and for the purpose set forth.

2. In a device for steaming food, a furnace, doors to the openings thereof having a spring-catch and lug formed of a single piece of metal, formed with a horizontal portion to support the door when open, and a vertical portion to hold the same closed, as and for the purpose set forth.

411,526. PENCIL-SHARPENER. WARREN H. LARSON, Bridgeport, Conn. Filed Feb. 23, 1888. Serial No. 264,919. (No model.)



Claim.—1. The combination, with the sheet-metal frame having at its end an opening for the insertion of the pencil to be sharpened, of a number of cutting-blades on the sides of the frame and between the edges of the said sides and projecting radially inward toward the line of insertion of the pencil and arranged in pairs to act upon the pencil when rotated both back and forth, substantially as described.

2. A pencil-sharpener comprising a sheet-metal frame having an end opening for the insertion of the pencil, and its side slit longitudinally, and the edges along the slit turned in radially with relation to an inserted pencil and arranged to act in pairs upon a pencil when rotated axially in either direction, substantially as shown and described.

3. A pencil-sharpener consisting of a bent sheet-metal blank having a plurality of inwardly-turned blades arranged thereon, a hole for the insertion of the pencil to be sharpened, an eyelet flanged over the edges of said hole, and a suitable handle, all arranged as described, and for the purpose set forth.

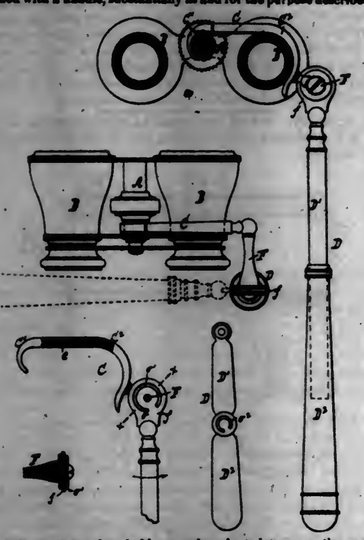
4. The combination, with the open blade-carrying frame, of the eyelet secured within the opening at the top of the frame, whereby the body of the pencil is protected as against abrasion, substantially as set forth.

411,527. OPERA-GLASS HOLDER. EMIL P. METTOWITH, Ridgefield, N. J., assignor to Levy, Dreyfus & Co., New York, N. Y. Filed Dec. 14, 1888. Serial No. 293,961. (No model.)

Claim.—1. In an opera-glass holder, a yoke adapted to grasp the center screw and either barrel of the opera-glass, combined with a handle, substantially as and for the purpose described.

2. In an opera-glass holder, a yoke made in sections, one adapted

to grasp the center screw and the other either barrel of the opera-glass, and an adjusting device connecting said sections of the yoke, combined with a handle, substantially as and for the purpose described.



3. In an opera-glass holder, a yoke adapted to grasp the center screw and either barrel of an opera-glass, combined with a handle, and a pivot uniting said yoke and handle, substantially as and for the purpose described.

4. In an opera-glass holder, a yoke adapted to grasp the center screw and either barrel of the opera-glass, combined with a handle which is attached at or near one end of said yoke for supporting the opera-glass from a lateral direction, substantially as shown and described.

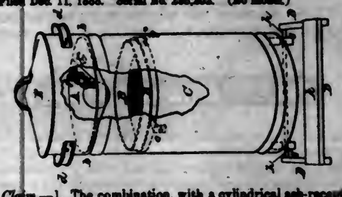
411,528. GRAIN-DRILL. WINFIELD W. MULLEN and FRANCIS M. MULLEN, Bunker Hill, Ind. Filed Mar. 14, 1888. Serial No. 306,381. (No model.)



Claim.—1. In a grain-drill, the combination of the frame, the hopper, the seed-cups, the feed-rolls, the driving mechanism, the cut-off, and feed-regulator F, formed with a rack on its rear edge, the segmental pinion F', pivoted to the plate F⁵ on the lower edge of the hopper and formed with the handle f', and the set-screw f^3, extending through a curved slot in the plate F⁵ into a screw-threaded perforation in said handle, substantially as described, and for the purpose specified.

2. The combination, in a grain-drill, with the feed mechanism, substantially as described, of the cut-off and feed-regulator F, having a rack on its rear edge, the pivoted segmental pinion F', engaging therewith, and provided with the indicator f^3, formed on the top side thereof, and a part in front of said indicator having an indicator-gage thereon, substantially as set forth.

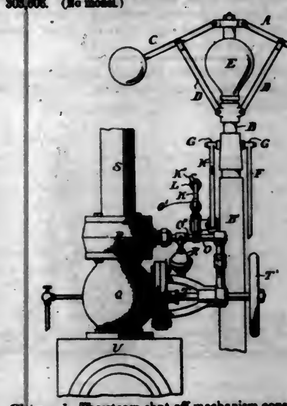
411,529. ASH-SIFTER. CHARLES L. FOSTER, Philadelphia, Pa. Filed Dec. 11, 1888. Serial No. 293,262. (No model.)



Claim.—1. The combination, with a cylindrical ash-receptacle C, of the hopper A and screen B, the bottom cleats formed with notches g g, and the supporting-frame D D D, as described, and for the purpose set forth.

2. The combination of the hopper A, as described, with the ball e and chain f, with the cylindrical ash-receptacle C and screen B, as and for the purpose set forth.

411,530. AUTOMATIC STOP MECHANISM FOR STEAM-ENGINES. WILLIAM H. PFOTZ, Philadelphia, Pa. Filed Mar. 16, 1888. Serial No. 303,005. (No model.)

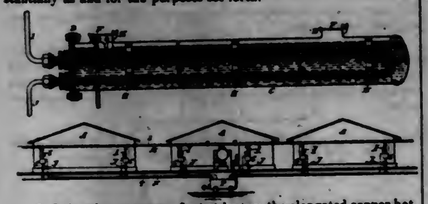


Claim.—1. The steam shut-off mechanism consisting of cross-bar G, attached to vertically-moving bar B of the governor mechanism, rod H, pivoted at one end thereto, bell-crank I I', pivoted to stud J, rod K, loosely secured at one end in block L, so as to turn freely therein, the latter being hinged by arm L' to part I' of the bell-crank, and said rod K being provided with key M, sleeve N, adapted to receive one end of rod K and provided with a slot M' to receive key M, lever O, with its rod O', adapted to open and close a valve in shell P of the engine mechanism, substantially as described.

2. The steam shut-off mechanism consisting of cross-bar G, attached to vertically-moving bar B, of the governor mechanism, rod H, pivoted at one end thereto, bell-crank I I', pivoted to stud J, rod K, loosely secured at one end in block L, so as to turn freely therein, the latter being hinged by arm L' to part I' of the bell-crank, and said rod K being provided with key M, sleeve N, adapted to receive one end of rod K and provided with a slot M' to receive key M, lever O, with its rod O', adapted to open and close a valve in shell P of the engine mechanism, and weight R, attached to rod O' to restrain and steady the action of my mechanism and to bring the parts back to place when the pressure from the governor is removed, substantially as described.

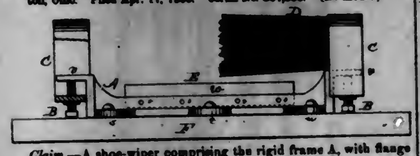
411,531. APPARATUS FOR HEATING HOT-HOUSES. JAS RENLEY, Brooklyn, N. Y. Filed Dec. 6, 1887. Serial No. 257,060. (No model.)

Claim.—1. In apparatus for heating hot-houses, the hot-water receptacles C C and the steam-pipes G therein, combined with the furnace and boiler, the main steam-pipe M, leading from said boiler and extending along the house, the return-pipe N for condensed steam, pipes I, connecting the pipes G with pipe M, pipes J, connecting the outlet end of pipes G with pipes N, the tank P, connected with pipes N, the main water-pipe S, connected with the pump, and the water-pipes V W, leading, respectively, to and from said receptacles C C, substantially as and for the purpose set forth.



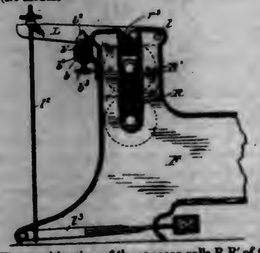
2. In heating apparatus for hot-houses, the elongated copper hot-water receptacle C, having covered sections E on its upper side and a cast-metal end D, provided with stuffing-boxes, combined with the steam-pipe G therein, pipes I J, connected with ends of pipe G, main supply and return pipes in communication with pipes I J, supply and escape pipes V W for water, the float-valve e within said receptacle to close pipe V, and mechanism, substantially as described, for supplying the steam and water, substantially as set forth.

411,532. SHOE-WIPER. JOHN RESSER and FRANK RESSER, Dayton, Ohio. Filed Apr. 17, 1888. Serial No. 307,333. (No model.)



Claim.—A shoe-wiper comprising the rigid frame A, with flange and lateral projections, the clips C embracing said projections, and binding-screws in said clips to engage the same, and brush material held within said parts, substantially as shown and described.

411,533. WOOL-WASHING MACHINE. FREDERICK G. SARGENT and ALLAN C. SARGENT, Graniteville, Mass. Filed Jan. 17, 1887. Serial No. 224,643. (No model.)

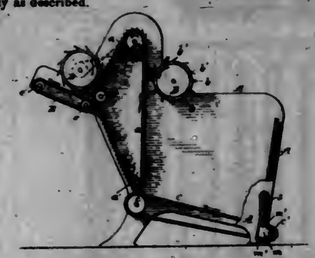


Claim.—1. The combination of the squeeze-rolls R R' of the wool-washing machine, one of which is provided with an elastic absorbent jacket of felt, yarn, or similar material, the weighted levers L L, adapted to compress the said rolls together, and the elastic stop-blocks b' b', adapted to gradually counteract the pressure of the weighted levers L L as the squeeze-rolls approach each other, substantially as described.

2. The combination of the squeeze-rolls R R' of the wool-washing machine, one of which is provided with an elastic absorbent jacket of felt, yarn, or similar material, the weighted levers L L, adapted to compress the said rolls together, the elastic stop-blocks b' b', adapted to gradually counteract the pressure of the weighted levers L L as the squeeze-rolls approach each other, and the hand-wheel and the adjusting screw and plate b^3 b^4, adapted to vary the position of said stop-blocks, substantially as described.

411,534. FEEDING MECHANISM FOR WOOL-WASHING MACHINES. FREDERICK G. SARGENT and ALLAN C. SARGENT, Graniteville, Mass. Filed Jan. 17, 1887. Serial No. 224,645. (No model.)

Claim.—1. The combination of the receiving-box, the feeding-apron a, provided with teeth or spurs and arranged to move vertically upward over roller a^3, and thence downward over roller a^4, and the apron C, forming the bottom of the receiving-box and arranged with one end adjacent to the vertical face of apron a and with its upper surface inclining upward from the opposite end toward the former from a horizontal plane, whereby the surplus wool dropping thereon from apron a will tend to roll away from the foot of the latter by the action of gravity toward the farther side of the receiving-box, substantially as described.

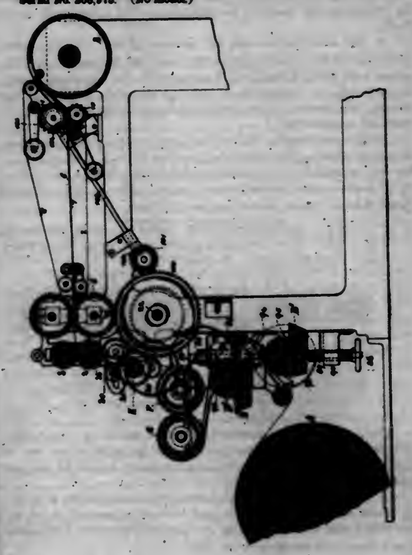


2. The combination of the receiving-box, the apron C, forming the bottom thereof and having its roller c' adjustable up and down therein and adapted to incline the upper surface of the apron downward toward the same with relation to a horizontal plane, and the apron a, provided with teeth or spurs and arranged to move vertically upward over roller a^2 and downward over roller a^3, substantially as described.

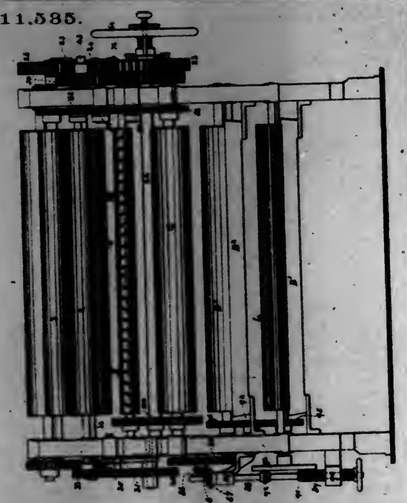
3. The combination of the receiving-box, the apron C, forming the bottom thereof, the apron a, provided with teeth or spurs and arranged to move vertically upward over roller a^3, and thence downward over roller a' and over the intermediate roller a^2, which latter is arranged to bring the faces of the apron on each side of it at an angle with each other in passing over it and to open its teeth apart, and the apron E, revolving contiguous to and taking the fiber directly from said opened teeth of apron a and opposite to said intermediate roller, substantially as described.

4. The combination of the receiving-box, the apron C, forming the bottom thereof, the apron a, provided with teeth or spurs and arranged to move vertically upward over roller a^3, and thence downward over roller a' and over the intermediate roller a^2, which latter is arranged to bring the faces of the apron on each side of it at an angle with each other in passing over it and to open its teeth apart, the doffer D, arranged to act upon the fiber carried by apron a above said roller a^3, and the apron E, revolving below said doffer and contiguous to and taking the fiber directly from said teeth of apron a, where so opened apart and opposite to said intermediate roller a^2, substantially as described.

411,535. DAMPENING AND FEEDING MECHANISM FOR PRINTING-MACHINES. WALTER SCOTT, Plainfield, N. J. Filed Mar. 30, 1888. Serial No. 268,973. (No model.)



411,535.



Claim.—1. The combination, with the feeding-rolls and the changeable gearing for varying the speed of such rolls, of a dampening-roll and connecting-gearing between the feeding-rolls and the dampening-roll for supplying to the paper the proper quantity of moisture regardless of the speed with which the paper is passed into the press, substantially as set forth.

2. The combination, with the feeding-rolls and a dampening-roll and heating-roll, of gearing connecting the dampening and the heating roll with the feeding-rolls, whereby the heating and feeding rolls are caused to move at the same surface speed, and changeable gearing between the feeding-rolls and the press for varying the length of sheet fed into the press at each revolution of the same, substantially as set forth.

3. The combination, with the dampening-rolls and and the gearing connecting the same, of a face-wheel upon the shaft of one of the dampening-rolls, a revolving shaft crossing such face-wheel, a friction-pinion upon said shaft, and an adjusting-screw for moving the shaft and friction-pinion nearer to or farther from the axis of the face-wheel for regulating the speed of the dampening-roll, substantially as set forth.

4. The combination, with the dampening-roll L and face-wheel 93, of the shaft 88 and gearing for revolving the same, a friction-pinion upon the said shaft and in contact with the face-wheel, a tubular screw 89, and connection for moving the shaft 88 endwise and varying the position of the friction-pinion upon the face-wheel, substantially as set forth.

5. The combination, with the dampening-roll and the face-wheel, of a shaft crossing the face-wheel, supports for such shaft, and a pinion upon said shaft, and adjusting mechanism for varying the position of the pinion on the face-wheel and regulating the quantity of water supplied to the paper, substantially as specified.

411,536. MICROMETER-GAGE. LABOT S. STARRETT and CHARLES P. FAY, Athol, Mass.; said Fay assignor to said Starrett. Filed May 4, 1889. Serial No. 309,561. (No model.)



Claim.—1. In a micrometer-gage, the combination of an internally-threaded barrel and the rotary spindle provided with a pair of hinged and externally-threaded jaws, substantially as and for the purpose set forth.

2. In a micrometer-gage, an internally-threaded barrel, a revolving sleeve, and a rotary spindle provided with a recess, in combination with a split screw formed of two pivoted adjustable jaws located in said recess, for the purpose set forth.

3. In a micrometer-gage, a solid internally-threaded barrel graduated externally, and a revolving sleeve beveled and peripherally graduated at its inner end, in combination with a rotary spindle carrying two adjustable screw-threaded jaws working within said barrel, and a plunger adapted to connect and disconnect such threaded parts, substantially as set forth.

4. In a micrometer-gage, the stationary anvil and threaded graduated barrel with the revolving spindle and sleeve, in combination with the screw-threaded spring-actuated jaws pivoted on said spindle, and the axially moving plunger with its terminal knob, for the purpose set forth.

411,537. CALIPERS OR DIVIDERS. LABOT S. STARRETT, Athol, Mass. Filed May 4, 1889. Serial No. 309,560. (No model.)



Claim.—1. In dividers or calipers, the pivoted arms, provided with a connecting wing or brace and an external adjusting-nut, in combination with a spring adapted to be compressed by said nut, and with a locking-nut between the arms for holding the parts firmly when adjusted, substantially as set forth.

2. In dividers or calipers, the pivoted arms A B and the brace or wing F, passing through both arms and secured to one by a suitable clamp, in combination with the nuts G H, screwing upon the threaded end of said wing, and with the coil-spring J, surrounding said wing and compressible between said nuts into a recess in the leg A, substantially as set forth.

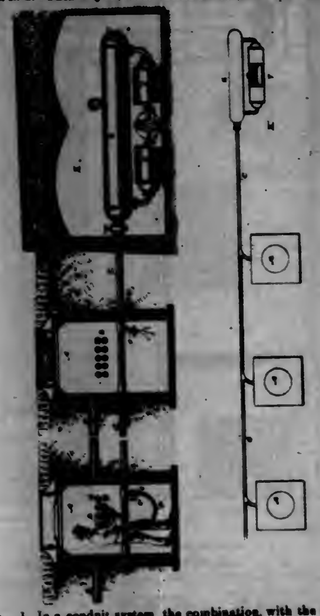
3. In dividers or calipers, the pivoted arms, the arc-shaped wing circular in cross-section, passing transversely through them, and an adjusting-nut, in combination with a stud set in a recess in the arm B and perforated for passage of the wing through it, and provided with a threaded stem and a thumb-nut thereon for clamping the arm in position, substantially as set forth.

411,538. DENTAL PLATE. JOHN J. STEDMAN, La Porte, Ind. Filed May 20, 1889. Serial No. 311,404. (No model.)



Claim.—The method of preparing partial dentures having a vulcanite base and retaining-clasps thereon, which method consists in fitting the clasps to the teeth in the mouth, taking an impression with the clasps *in situ*, removing the impression and clasps together, forming a counter-model and transferring the clasps thereto in parting the mold and applying the soft rubber, setting the teeth, and vulcanizing as usual, substantially as described.

411,539. UNDERGROUND CONDUIT FOR ELECTRIC WIRES. GEO. A. WHEELER, New York, assignor of one-fourth to Sylvester P. Denison, Brooklyn, N. Y. Filed July 30, 1888. Serial No. 281,909. (No model.)



Claim.—1. In a conduit system, the combination, with the man-holes and ducts, of a compressed-air main having outlets at various points along the conduit that discharge a limited portion of the air, for the purposes described.

2. In a conduit system, the combination, with the man-holes, of a compressed-air main extending through or along the line of man-holes and having regulated air-outlets in the man-holes for discharging a limited volume of the compressed air.

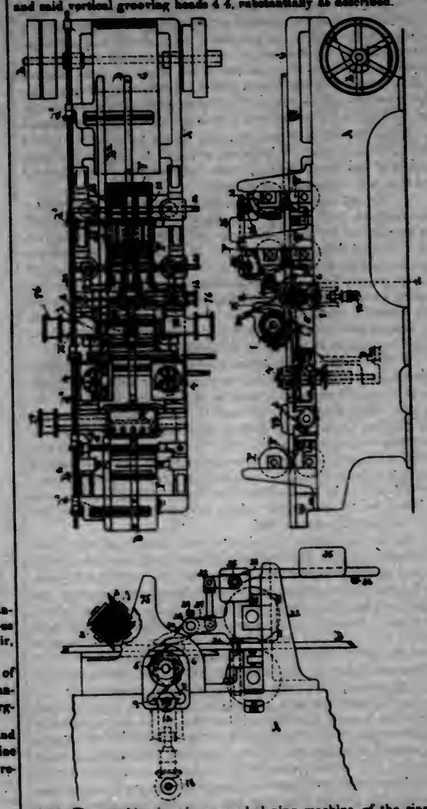
3. In a conduit system, the combination, with the man-holes and ducts, of a compressed-air main extending through or along the line of man-holes and having in the man-holes air-outlets adapted to receive a hose, as set forth.

411,540. PLANING-MACHINE. SOLOMON A. WOODS and JOHN B. THOMAS, Boston, Mass., assignors to the G. A. Woods Machine Company, of Massachusetts. Filed Dec. 8, 1888. Serial No. 292,616. (No model.)

Claim.—1. The combination, in a wood-planing machine, of a single long planing-cylinder 1, provided with knives arranged for surfacing the lumber and cutters 2, arranged to form the upper portion of tongues upon the inner edges of two strips of board at the same time, a solid bed C beneath said cylinder 1, and the horizontal shaft 6, extending from one side of said bed transversely across below the path of the lumber and provided at its inner end with a set of cutters 2, adapted to operate in conjunction with the corresponding cutters of said cylinder 1, substantially as described.

2. The combination, in a wood-planing machine, of a single long planing-cylinder 1, provided with knives for surfacing the lumber and cutters 2, arranged to form the upper portion of tongues upon the inner edges of two strips of board at once, a solid bed C beneath said cylinder 1, a feed-roll F above said bed, and the horizontal shaft 6, extending transversely across below the path of the lumber between said feed-roll and cylinder, and provided with a set of cutters 2, adapted to operate in conjunction with the corresponding cutters of said cylinder 1, substantially as described.

3. The combination, in a wood-planing machine, of the feed-roller F above the bed, the vertical grooving cutter-heads 4 4, arranged to groove the outer edges of two strips of lumber at once, the single long planing-cylinder 1, provided with knives for surfacing the lumber and cutters 2, arranged to form the upper portion of tongues upon the inner edges of two strips of board at once, a solid bed C beneath the same, and the horizontal revolving shaft 6, extending transversely across below the path of the lumber and provided with a set of cutters 5, adapted to operate in conjunction with the corresponding cutters of said cylinder 1, said planing-cylinder 1 and shaft 6 being located and mounted adjacent to each other between said feed-roll F and said vertical grooving heads 4 4, substantially as described.



4. The combination, in a wood-planing machine, of the single long planing-cylinder 1, provided with knives for surfacing the lumber and cutters 2, arranged to form the upper portion of tongues upon the inner edges of two strips of board at once, a solid bed C beneath said cylinder 1, a presser-bar 20 on the feed-in side of the same, and the horizontal shaft 6, extending from one side of said bed transversely across below the path of the lumber, provided with a set of cutters 5 near its inner end, adapted to operate in conjunction with the corresponding cutters of cylinder 1, and with said shaft mounted upon plate 8, arranged to be adjusted independently of the upper cylinder 1 and its cutters 2 transversely of and entirely beneath the bed to bring the cutters 5 of the shaft 6 and of planing-cylinder 1 into adjustment with each other, substantially as described.

5. The combination, in a wood-planing machine, of the single long planing-cylinder 1, provided with knives for surfacing the lumber and cutters 2, arranged to form the upper portion of tongues upon the inner edges of two strips of board at once, a solid bed C beneath said cylinder 1, the horizontal shaft 6, extending from one side of said bed across below the path of the lumber and provided with a set of cutters 5 near its inner end, adapted to operate in conjunction with the corresponding cutters of cylinder 1, and the plate 8, located beneath the path of the lumber, mounted on a guideway transversely of the frame and carrying said shaft 6, and arranged to be drawn out of said frame through one side thereof, substantially as described.

6. The combination, in a wood-planing machine, of the shaft 6, extending horizontally and transversely from one side of the machine-bed across beneath the path of the lumber through the machine and provided with cutters 2, for working the lumber, the plate 8, mounted on girt 9 and arranged to be adjusted lengthwise thereon, the girt 9, arranged in vertical guideways in the machine-frame and provided

with adjusting-screws 16 16, bevel-gears 17 17 19 19, and horizontal adjusting-shaft 18, projecting at one end beyond the machine-frame and mounted therein, substantially as described.

7. The combination, in a wood-planing machine, of the single long planing-cylinder 1, provided with surfacing knives and cutters 2, arranged to form the upper portions of tongues upon the inner edges of two strips of board at once, a solid bed C beneath the same, the yielding pressure-bar 20 on the feed-in side of the same, the feed-roll F above said bed the horizontal shaft 6, extending transversely across the frame beneath the path of the lumber, between said pressure-bar and feed-roll, and provided with a set of cutters 5, adapted to operate in conjunction with the corresponding cutters of cylinder 1, and a yielding pressure plate or finger 30, arranged to bear on the upper surface of the board opposite thereto and between said pressure-bar and feed-roll, substantially as described.

8. The combination, in a wood-planing machine, of the long planing-cylinder 1, provided with surfacing knives and cutters 2, its yielding pressure-bar 20, feed-roll F, arranged to bear on top of the lumber, a yielding pressure plate or finger 30, arranged to bear thereon between said pressure-bar and feed-roll and pivoted upon shaft 28, link 32, pivoted lever 33, connected thereby to said finger 30 and extending horizontally above said feed-roll, and the shaft 6, provided with cutters 5, arranged to operate on the under surface of the lumber beneath said pressure-finger 30 and in conjunction with the corresponding cutters on cylinder 1, substantially as described.

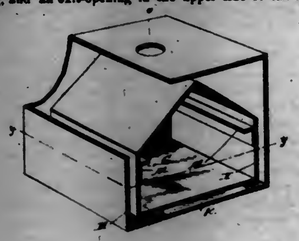
9. The combination, in a wood-planing machine, of the long planing-cylinder 1, provided with knives arranged for surfacing the lumber and cutters 2, arranged to form the upper portion of tongues upon the inner edges of two strips of board at once, a solid bed C beneath said cylinder, the horizontal shaft 6, extending from one side of said bed transversely across below the path of the lumber and provided with cutters 2, adapted to operate in conjunction with the corresponding cutters of cylinder 1, and the under surfacing cylinder located toward the feed-out end of the machine from shaft 6 and arranged to dress the lower face of the lumber after it has passed the cutters of said shaft, substantially as described.

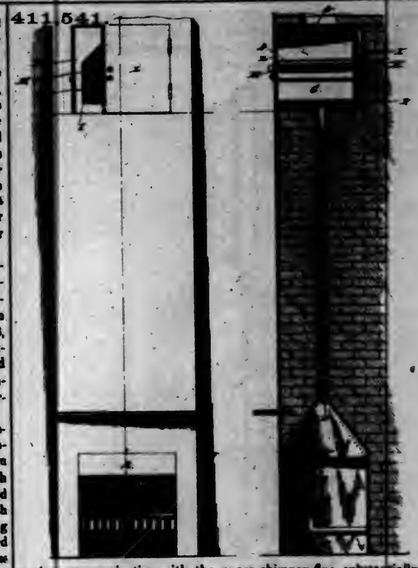
10. The combination, in a wood-planing machine, of cutter heads or cylinders 1 and 5, attached on horizontal shafts above and below the path of the board through the machine, and provided with cutters 2 5, adapted to tongue and divide a board into two strips at a single operation, the vertical cutter-heads 4 4, placed on the feed-out side of said horizontal cutter-heads and adapted to groove the outer edges of said strips, and the supporting-bar 42, arranged to enter between said strips opposite to said vertical heads and sustain said strips in the same relation to each other throughout their length while being so grooved on their outer edges, substantially as described.

11. The combination, in a wood-planing machine, of cutter heads or cylinders 1 and 5, attached on horizontal shafts above and below the path of the board through the machine and provided with cutters 2 2, adapted to tongue and divide a board into two strips at a single operation, the vertical cutter-heads 4 4, placed on the feed-out side of said horizontal cutter-heads and adapted to groove the outer edges of said strips, and the supporting-bar 42, arranged to enter between said strips opposite to said vertical heads and also bear upon the upper surfaces of the same and sustain said strips in the same relation to each other throughout their length while being so grooved on their outer edges, substantially as described.

411,541. HEATING APPARATUS. LEWIS ACHON and THOMAS HAMILTON, Martinsville, Ohio; said Hamilton assignor to Charles H. Irwin, Wilmington, Ohio. Filed Mar. 6, 1889. Serial No. 302,492. (No model.)

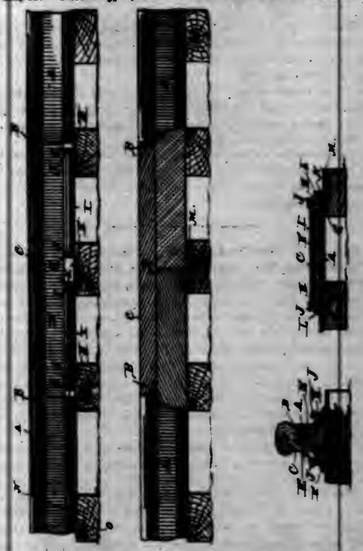
Claim.—A domestic heating apparatus or oven comprising a rectangular drum or casing embedded in a chimney in an upper apartment of a building or dwelling-house, an oven inclosed by the said drum, except at the front, where it is provided with a door, said oven having sloping upper sides that meet so as to form a longitudinal ridge at the top thereof, a flue connecting an opening in the lower side of the drum or casing with a fire-place in a lower apartment of the building, and an exit-opening in the upper side of the drum or





casing communicating with the upper chimney-flue, substantially as set forth.

411,542. RAIL-JOINT. REUBEN M. AGEE and EDWARD LAWE, Canton, Mo. Filed May 31, 1889. Serial No. 312,605. (No model.)

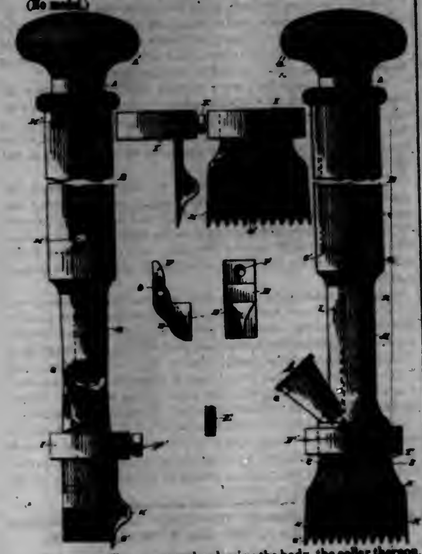


Claim.—1. The combination of the rails and the cap fitting over the ends thereof, with the bolts passed through the flanges of the rails and the cap, the securing-nuts on the said bolts, the washer-plates slipped over the ends of the bolts, and the jam-nuts on the ends of the bolts adapted to be turned up against the washer-plates, as set forth.

2. The combination of the rails having elongated horizontal notches in their tops at their ends, the cap engaging the said notches and fitting over the ends of the rails and provided with elongated openings in its flanges, the bolts rigidly fitted in the flanges of the rails

and projecting up through the openings in the flanges of the cap, the securing-nuts on the bolts, the washer-plates mounted on the bolts above the securing-nuts, and the jam-nuts mounted on the bolts above the washer-plates, as set forth.

411,543. CARPET TACKING AND STRETCHING MACHINE. JACOB ALBER, Seymour, Ind. Filed Dec. 24, 1888. Serial No. 294,722. (No model.)



Claim.—1. The carpet-tacker having the body, the collar thereon, the serrated stretching-blade having its upper end fitted in one side of the collar, and the clamping-screw to secure said blade and collar together and to the body, substantially as described.

2. The carpet-tacker comprising the tubular body having its lower end swelled to form the foot N, the latter being recessed and open on its opposite sides and at its lower end, the jaws D, pivoted in the side recesses, having the die D' formed in the opposing faces of their lower meeting ends, and having the vertical arms O at their upper ends, the springs E, having their inner ends arranged in recesses S in the shoulders T of the foot, and their outer ends arranged in the recesses P of the arms O, and the hammer A in the bore of the tubular body and having the reduced lower portion B', adapted to enter the die D' and force the jaws apart, the said tubular body being further provided near its lower end with the tack guide or receiver G, communicating with its bore, the collar I, vertically movable on the foot, the serrated stretching-blade having its upper end fitted in one side of the collar, and the clamping-screw to secure said blade and collar to the foot, substantially as described.

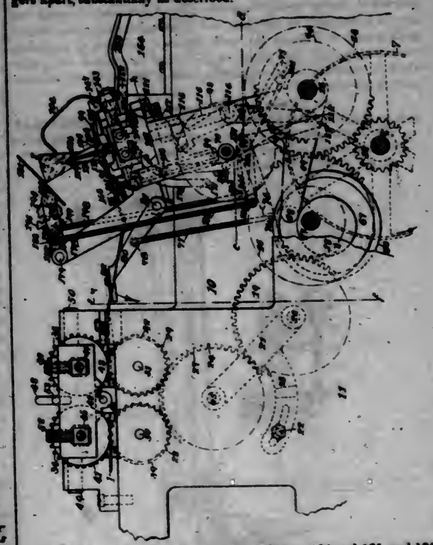
411,544. PAPER-BAG MACHINE. EDWARD R. CLARKSON, Hartford, and GEORGE MORRISON, Bridgeport, Conn. Filed Feb. 18, 1889. Serial No. 300,233. (No model.)

Claim.—1. The combination of the presser-plate 85, fastened to the upper ends of the vertical arms 86 and 87, and the cams 92 and 93, attached to the lower ends of those arms and alternately raising and lowering those arms and that presser-plate, all substantially as described.

2. The combination of a folding bed, as the upper surface of the carriage 70, provided with the diagonal ledges 96 and 99, the presser-plate 85, provided with the diagonal ledges 96 and 97, and two oppositely disposed pairs of fingers 124 and 125 and 126 and 127, so constructed and worked as to press and crease a tucked-paper tube on diagonal lines coincident with the outer edges of the four ledges, and thus to draw part of that tube down and out into a box-like form, all substantially as described.

3. The combination of the rocking carriage 70, the slides 108 and 109 reciprocating thereon and carrying the two pairs of fingers 124 and 125 and 126 and 127 therewith, and the cam 110, and intermediate mechanism, substantially as described, working those slides, all substantially as described.

4. The combination of two pairs of fingers 124 and 125 and 126 and 127, a shaft provided with an arm rocked by a cam, and intermediate mechanism, substantially as described, between that shaft and those fingers, all combined and operating to spread each pair of fingers apart, substantially as described.

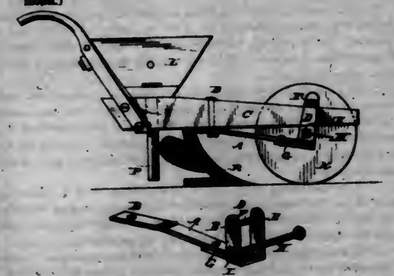


5. The combination of two pairs of fingers 124 and 125 and 126 and 127, the swivels 144 and 145, having those pairs of fingers pivoted thereto, respectively, a shaft provided with an arm rocked by a cam, and intermediate mechanism, substantially as described, between that shaft and those swivels, all combined and operating to swing those fingers at right angles to the direction of their spreading, all substantially as described.

6. The combination of the cam 100, the arm 102, worked by that cam and rocking on the shaft 103, and the long hook-like arm 104, worked by the arm 102 and operating, substantially as described, to raise the forward part of a tucked-paper tube into the upright position shown in Fig. 4, and afterward to draw the forward wall of the box-like form of Figs. 5 and 6 down into the form of the forward end of the diamond form of Figs. 9 and 10, all substantially as described.

7. The combination of the drop-plate 181 and two cams, and mechanism, substantially as described, between each of those cams and that drop-plate, whereby the drop-plate receives a compound sweeping and pressing motion, all substantially as described and shown.

411,545. GUANO-DISTRIBUTER. ANDREW CHARLES, Jr., Bahia, Ga., assignor of two-thirds to Andrew V. McVicker and James H. McVicker, both of same place. Filed June 22, 1888. Serial No. 315,161. (No model.)

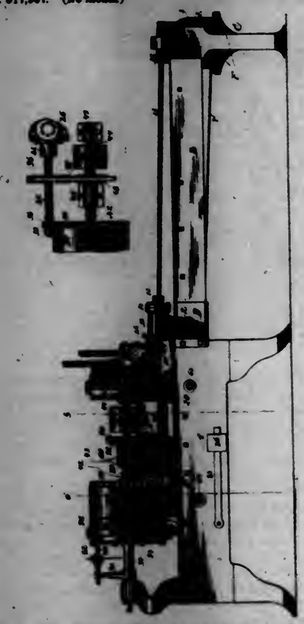


Claim.—1. The combination, with the beam or stock C, of the flat or leaf spring A, having its rear end fixed thereto, yoke D, secured upon the free forward end of the spring and having guiding-arms E E, adapted to loosely engage opposite sides of said beam or stock and prevent lateral play of the spring, and the guide-wheel K, mounted on said yoke, so as to travel in advance of the fixed end of the spring, substantially as specified.

2. The combination, with the beam or stock C, of the flat or leaf spring A, having its rear end fixed thereto, yoke D, secured upon the free forward end of said spring and having parallel guiding-arms E E, adapted to loosely engage opposite sides of the beam or stock and prevent lateral play of the parts, bolt F, connecting the upper ends of guiding-arms E E above the beam or stock, axle-bolt H, extending laterally from said yoke below said beam or stock, and the guide-wheel K, mounted on the extending end of this axle-bolt, substantially as specified.

411,546. MACHINE FOR CUTTING BRICK OR OTHER CLAY PRODUCTS.

WILLIAM R. CUNNINGHAM, Frankfort, Ind., assignor to the Wallace Manufacturing Company, same place. Filed July 13, 1889. Serial No. 317,967. (No model.)



Claim.—1. In a machine for cutting brick or other clay products, a belt or apron driven by a bar or stream of clay, a rotating cutter to cut the bar of clay at intervals, and a motor to drive the cutter, in combination with a nut and screw to govern the valve of the motor, one of which is driven by the movement of the bar of clay, the other by the movement of the cutter, substantially as and for the purposes specified.

2. In a machine for cutting brick or other clay products, the combination of a rotating blade on an arbor, a pinion on such arbor, a gear-wheel which engages with such pinion, a shaft 44, which carries said gear-wheel, a hollow shaft 42, and a pulley 46, substantially as and for the purposes specified.

3. In a machine for cutting brick or other clay products, the combination of an arbor 49, carrying a rotating blade, a revolving casing 37, a fixed casing 34, provided with a cam-groove 56, guide-block 53, mounted on the arbor, and roller 55, for the purpose of giving the arbor and blade a reciprocating movement, substantially as and for the purpose specified.

4. A reciprocating table 71, in combination with a revolving casing 37, a spiral cam on the outside of such casing, and an intermediate device between the table and cam, through which the cam moves the table horizontally, substantially as specified.

5. In a machine for cutting brick or other clay products, a table 71, mounted on vertical guides which move in guideways, in combination with weighted levers 86, substantially as and for the purpose specified.

6. In a machine for cutting brick or other clay products, the combination of a table 71, mounted on horizontal and vertical guides which move in guideways, weighted levers 86, cross-heads 74, supported at its lower end on a track, revolving casing 37, and cam 72, substantially as and for the purposes specified.

7. In a machine for cutting brick or other clay products, a table 71, in combination with one or more horizontal strips 101, supported by the table, and a delivery-belt 103, substantially as and for the purpose specified.

8. In a machine for cutting brick or other clay products, one or more strips 99, in combination with one or more belts 66, and table 71, substantially as and for the purpose specified.

9. In a machine for cutting brick or other clay products, a circular blade 52, secured to and rotating with an arbor, in combination with a rotating casing 37, which carries the arbor, whereby the blade rotates around the axis of the casing and at the same time rotates on its own axis, substantially as and for the purposes specified.

10. In a machine for cutting brick or other clay products, a circular blade mounted on a rotating arbor, which is supported in a revolving casing 37, in combination with devices, substantially such as described, for giving to the blade a movement in the direction of the movement of the stream or bar of clay to be cut, substantially as and for the purpose specified.

11. In a machine for cutting brick or other clay products, the combination of a nut and screw which engage with each other, one operated by the movement of a bar of clay and the other by devices for rotating a cutter and moving it in the direction of the moving clay for the purpose of causing the cutter and clay to move in the same direction at the same speed, substantially as and for the purpose specified.

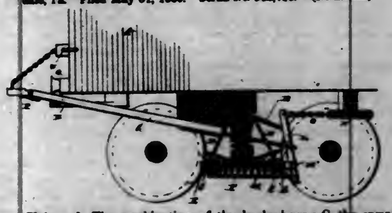
12. In a machine for cutting brick or other clay products, a motor which drives clay-working devices, in combination with a screw and nut operated by a stream of moving clay, and arranged to operate the valve of the motor, substantially as and for the purpose specified.

13. In a machine for cutting brick or other clay products, a belt 7, driven by a moving bar of clay, and a second belt 66, in combination with a rotating casing 37, miter-wheels 59 and 60, shaft 61, pinion 62, and gear-wheel 63, substantially as and for the purpose specified.

14. In a machine for cutting brick or other clay products, the combination of a revolving casing 37, provided with a head 38, shaft 39, shaft 44, hollow shaft 42, and arbor 49, carrying a cutter, said arbor being supported by the revolving casing 37 and by an arm 51 on the shaft 39, substantially as specified.

411,547. AUTOMATIC CAR-BRAKE.

JAMES P. DUBLIN, Scottdale, Pa. Filed May 31, 1889. Serial No. 312,711. (No model.)



Claim.—1. The combination of the brake-beams C, the springs F, connecting the same, the lever pivoted on one of the beams C, the link connecting the lower end of the lever with the other beam C, and the sliding push-bar having its inner end pivoted to the upper end of the lever and projecting forward beyond the end of the car, as set forth.

2. The combination of the brake-beams, the lever pivoted thereto, the push-bar pivoted to the lever, the bumper-head pivoted to the end of the push-bar, and the rock-shaft adapted to act on said bumper-head, as set forth.

411,548. SHUTTER-WORKER.

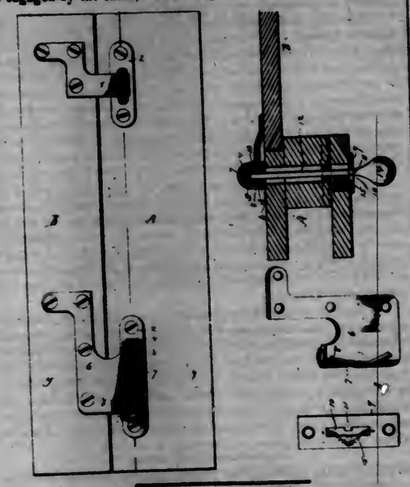
GEORGE S. ELLIOTT, Mobile, Ala. Filed June 12, 1889. Serial No. 314,764. (No model.)

Claim.—1. The combination, with a shutter and casing, of hinges by which the shutter is connected with the casing, one of said hinges having a spiral guide thereon, and a latch having connection with the guide whereby the shutter is swung by raising or lowering the latch, substantially as set forth.

2. The combination, with a shutter and casing, of hinges by which the shutter is connected with the casing, one of said hinges having a spiral guide thereon, and a latch pivoted transversely within the casing and having engagement at one end with the guide, a catch for retaining the latch in position, and springs for throwing it behind the catch, substantially as set forth.

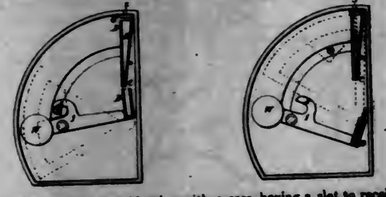
3. The combination, with a slotted plate having a grooved pintle thereon, and a hinge-leaf having a sleeve with a spiral slot mounted on the pintle, and a pivoted latch one end of which extends through the spiral slot and into the groove in the pintle, whereby the leaf of the hinge is swung by the movements of the latch, substantially as set forth.

4. The combination, with a casing having slotted plates on each side thereof, one of said plates having a latch thereon and the other having a grooved pintle, of a shutter having a hinge-leaf secured thereto, said leaf having a sleeve with a spiral slot therein mounted on the pintle, and a latch pivoted in the casing with one end projecting through the groove and spiral slot and the opposite end in position to be engaged by the catch, substantially as set forth.



411,549. MACHINE FOR DISCLOSING ARTICLES IN EXCHANGE FOR A COIN.

PERSEVAL EVERITT, New York, N. Y. Filed Feb. 4, 1889. Serial No. 298,679. (No model.)



Claim.—1. In combination with a case having a slot to receive a coin, a lever-shutter, and a weighted coin-operated lever provided with a notch or hook, serving to engage a pin on such shutter to close the same until released by the action of a coin deposited in the machine.

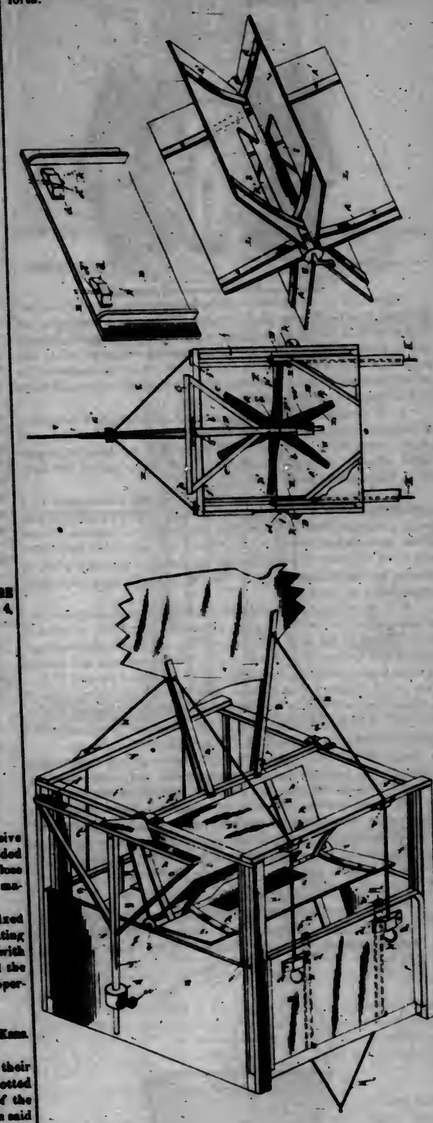
2. In combination, the case having a coin-receiving slot, a fixed bracket D, constituting one wall of the coin-chute, and a gravitating lever E, constituting the other wall of the chute, and provided with a ledge *e'* at its top adapted to grip and detain between itself and the bracket improper foreign substances inserted and to prevent the operation of the disclosing mechanism.

411,550. WINDMILL.

EDWARD P. HAMBLEN, McPherson, Kans. Filed Apr. 24, 1889. Serial No. 308,371. (No model.)

Claim.—1. In a windmill, the doors D, having the cleats near their upper edges, said cleats being provided with eyes *d'*, and the slotted frame F, in which said doors slide vertically, one at each side of the machine, in combination with an upright vane V, journaled upon said frame and adapted to be depressed by the force of the wind in either of two directions, cords K, leading from said vane over pulleys *p*, mounted upon said frame and passing through said eyes, and weights W upon the lower ends of said cords below said cleats, the whole adapted to be operated substantially as and for the purpose set forth.

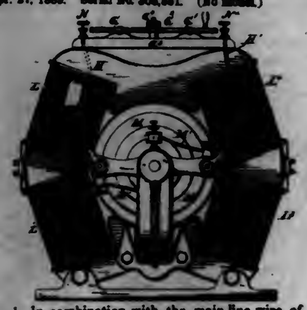
2. In a windmill, the combination, with the frame, the doors D, and the wheel journaled in said frame, of the shaft S', journaled transversely across the top of said frame, the upright vane V, mounted upon said shaft, cords connecting said vane and doors, the pendulum-rod P, keyed to and depending from one end of said shaft, the cross-piece C, also carried by the end of the shaft, braces *c*, connecting the ends of said cross-piece with the body of said pendulum, and the weight W, adjustably mounted on said pendulum, as and for the purpose set forth.



3. In a windmill, an overshot wheel mounted upon a horizontal axis, in combination with a closed box B, in the upper edge of which said axis is journaled, a frame-work mounted upon said box, all sides of which are open, and doors D, adapted to be raised vertically in said frame above said box on either side of said wheel and close the sides, as and for the purpose set forth.

4. In a windmill, the box B, having closed sides and provided with an opening O in its bottom, the inner corners of said box being beveled for the purpose set forth, in combination with an overshot wheel journaled on a horizontal axis in bearings in the upper edge of said box, as set forth.

411,551. REGULATOR FOR SHUNT-WOUND DYNAMOS OR OTHER ELECTRICAL APPARATUS. LEMUEL S. HARRIS, Detroit, Mich. Filed Apr. 27, 1889. Serial No. 308,981. (No model.)



Claim.—1. In combination with the main-line wire of a shunt-machine, a series of wires K K', &c., of different sizes leading to the field-magnet, a switch G, to direct a portion of the current through one or more of said wires to the field-magnet, a resistance-coil D, and a series of wires E C', &c., and a switch G', to direct the residue of the current passing with more or less resistance through any of said wires to the armature, substantially as set forth.

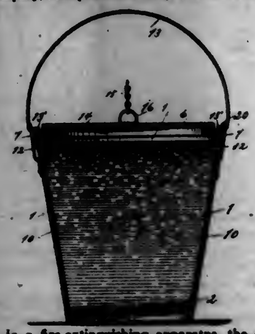
2. In combination with the line-wire A and a series of field-wires of different sizes, a switch-plate G', and successive series of insulated plates arranged in groups of different numbers but equal aggregate width, whereby the switch is connected with all or part of the field-wires, substantially as set forth.

3. In combination with the line-wire A and switch-plate G, a series of field-wires of different sizes, groups of plates I I', &c., the first group connected directly to the field-wires, the next series of one less plates connected by branch wires with all but one of the field-wires, and so on successively with diminishing numbers, but each group in turn occupying a space equal to the full width of the switch-plate, substantially as set forth.

4. In combination with the field-magnet, armature, and line-wire, switch-plates G G', carried on an adjustable switch-bar, a series of wires leading to the field, and plates I I', &c., arranged in groups connecting one or more of said field-wires with the line-wire, and a series of wires leading from the resistance-coil to a series of plates F F', &c., from which a part of the current leads through the switch-plate G' to the armature, whereby the force of the current to the field will be increased or diminished and that of the current to the armature be inversely diminished or increased, substantially as set forth.

5. In combination with the field-magnet and armature of a shunt-machine, a group of wires leading to field and a corresponding group of wires having variable resistance leading to the armature, and switch mechanism connected to said wires, substantially as set forth, so that when there is a maximum of current through the field-magnets there shall be automatically provided a minimum current to the armature, and vice versa, the current to one decreasing as the current to the other increases by a single movement of the switch mechanism, substantially as set forth.

411,552. CHEMICAL FIRE-EXTINGUISHING APPARATUS. CLARENCE B. MACOMBER, Worcester, Mass., assignor to the Worcester Fire Appliance Company, same place. Filed May 6, 1889. Serial No. 309,779. (No model.)



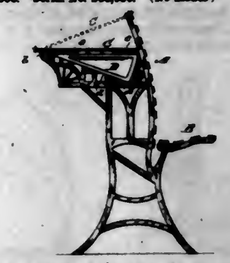
Claim.—1. In a fire-extinguishing apparatus, the combination, with a receptacle for holding fire-extinguishing liquid, provided with a screw-thread upon its upper exterior surface, an inwardly-projecting flange or shoulder, and an upward projection, and a tin-foil or easily-perforated cover adapted to extend over the top of said receptacle, and a screw-ring to screw onto the top of the same to secure the easily-perforated cover on the receptacle and hermetically seal the contents thereof, of a metal case for inclosing said receptacle and detachable therefrom and provided with ears, and a wire handle with bent ends to move out and in in said ears, for the purpose stated, substantially as set forth.

2. In a fire-extinguishing apparatus, the combination, with a receptacle for holding a fire-extinguishing liquid, having a screw-thread upon its upper exterior surface, and an inwardly-projecting flange or shoulder, and a tin-foil or easily-perforated cover, and a screw-ring for securing said cover to the receptacle to hermetically seal the contents thereof, of a metal case for inclosing said receptacle and detachable therefrom and provided with a handle and means for holding the receptacle in said case, and a slip-cover adapted to extend over the easily-perforated cover, and means for automatically removing said slip-cover preparatory to using the apparatus, substantially as set forth.

3. In a fire-extinguishing apparatus, the combination, with a receptacle, and a fire-extinguishing liquid hermetically sealed within said receptacle by a tin-foil or easily-perforated cover, and a screw-ring for securing said cover on the top of the receptacle, and a metallic slip-cover to fit over and protect the easily-perforated cover, of a metallic protecting-case for inclosing said receptacle and provided with a handle, and means for securing said receptacle within said protecting-case, substantially as set forth.

4. In a fire-extinguishing apparatus, the combination, with a receptacle, and a fire-extinguishing liquid hermetically sealed within said receptacle by a tin-foil or easily-perforated cover, and a screw-ring for securing said cover on the top of said receptacle, and a metallic slip-cover provided with a chain or cord for engagement with a hook or its equivalent to automatically remove said cover, of a metallic protecting-case for inclosing said receptacle and detachable therefrom and provided with a handle, and means for securing said receptacle within said protecting-case, substantially as set forth.

411,553. SCHOOL-DESK. THOMAS S. MANNING, Vandalia, Mo. Filed Oct. 23, 1888. Serial No. 288,969. (No model.)



Claim.—In a school or other desk, the combination of fixed end supporting-frames having horizontal upper edges, a desk-top exceeding the entire length of said frames and hinged to the outer edge of said frames, and triangularly-shaped brackets hinged on horizontal pivots to the horizontal edges of said frames upon the outside thereof, as shown, whereby the brackets may be raised to hold the desk-top in an inclined position or turned from under the desk-top and the desk-top be held in a horizontal position on the edge of the end supporting-frames when said brackets are thus turned down, substantially as described.

411,554. DULCITINA. GEORGE C. MARSTERS, Brooklyn, N. Y. Filed Feb. 16, 1889. Serial No. 300,122. (No model.)

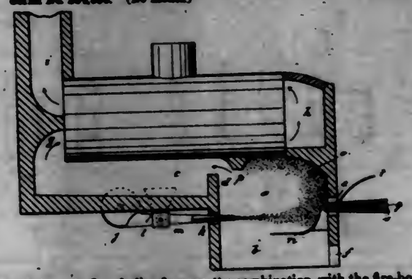


Claim.—1. In a stringed musical instrument, a top or sounding-board, which is composed of wood, which has a sound-opening, and which has also an opening which is closed by a parchment-like bridge-support, substantially as and for the purposes specified.

2. A stringed musical instrument in which the body is circular, in which the sounding-board is composed of wood, and in which the bridge rests upon a support which is composed of parchment.

3. The combination, with the neck N, of the body A', embracing the imperforate circular wall or hoop *a*, flat imperforate bottom *a'*, and sounding-board *a''*, the hoop, the bottom, and the sounding-board being composed of wood, and the sounding-board being provided with a sound-opening and with a parchment-supported bridge.

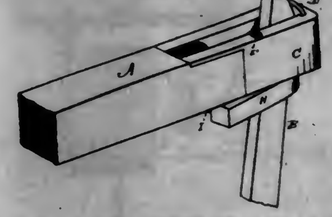
411,555. APPARATUS FOR BURNING COAL AND HYDROCARBON FUEL IN COMBINATION. ALLAN MACNS, Brooklyn, assignor to Herbert H. Sanborne, trustee, New York, N. Y. Filed Sept. 5, 1888. Serial No. 284,668. (No model.)



Claim.—1. In a boiler-furnace, the combination, with the fire-box provided with an upwardly-curved deflecting-plate located about midway of the fire-box, a pulverized-fuel injector communicating with the rear portion of the fire-box opposite the deflecting-plate, and an oil, steam, and air injector communicating with the front of the fire-box on a different plane from that of the pulverized-fuel injector, substantially as described.

2. In a boiler-furnace, the combination, with the fire-box having an arched roof terminating in a depending deflecting-plate located in front of the rear of the fire-box, and an upwardly-curved deflecting-plate located about midway of the fire-box, a pulverized-fuel injector communicating with the rear portion of the fire-box opposite the deflecting-plate, and an oil, steam, and air injector communicating with the front of the fire-box on a different plane from that of the pulverized-fuel injector, substantially as described.

411,556. PICKER-CHECK FOR LOOMS. THOMAS HORTON, Fall River, Mass. Filed June 6, 1888. Serial No. 313,618. (No model.)



Claim.—In a loom, the combination of the lay or batten A, provided with the metallic strap C and buffer D, the check-lever H, pivotally secured to the under side of said lay, spring 1, one end of which bears against said check-lever, and the picker-staff B, substantially as and for the purpose described.

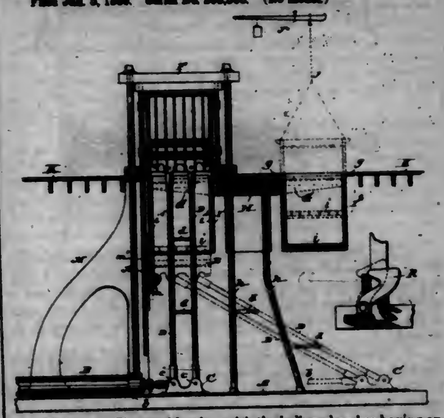
411,557. DOOR-CHECK. WILLIAM D. SCARBOROUGH, Pennington, Tex. Filed June 26, 1889. Serial No. 315,607. (No model.)

Claim.—The combination, in a door-check, of the swiveling tube formed with the circumferential recess *b* and the shoulders *c c* of the sectional confining-box *a*, the pivoted notched rod A, the spring-pin *d*, and the actuating-chain, all constructed as shown and described.





411,558. BALING-PRESS. ANDREW D. THOMAS, Little Rock, Ark. Filed Jan. 5, 1889. Serial No. 295,902. (No model.)



Claim.—1. The combination, with the baling-chamber having appliances for retaining the compressed material therein, the platen, and means for operating the platen, of a turn-table having a series of carrying-boxes said series being movable continuously in one direction past the baling-chamber, substantially as described.

2. The combination of the baling-chamber having appliances for retaining the compressed material therein, the press-platen, and a frame having a series of carrying-boxes, said frame being adjustable to bring any one of its boxes into line with the baling-chamber and platen, and said platen being movable through the carrying-box and into and out of the baling-chamber, substantially as described.

3. The combination of the baling-chamber permanently fixed in position, the platen, and means for operating said platen with the carrying-boxes and their supporting-frame, said boxes being detachable from said frame to enable them and their contents to be weighed, substantially as described.

4. The combination of the baling-chamber permanently fixed in position, the platen, the carrying-boxes, and their movable supporting-frame, said boxes being detachable from said frame to enable them and their contents to be weighed, and said frame being movable to enable the carrying-boxes to be brought into line with said baling-chamber and platen, substantially as described.

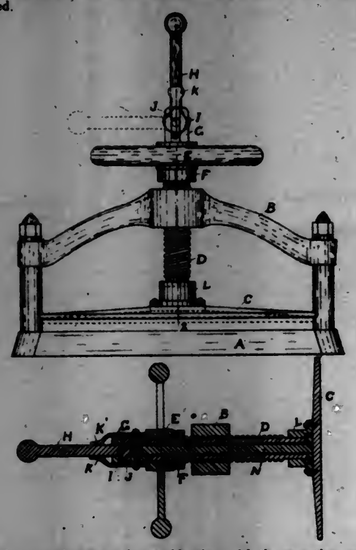
5. The combination of the baling-chamber permanently fixed in position, the platen, and means for operating said platen with the carrying-boxes and their supporting-frame, said boxes being removable laterally from said frame to enable them to be filled at a point without said frame, substantially as described.

6. The combination of the baling-chamber, the platen, the carrying-boxes and their movable supporting-frame, and the outlying platform, said frame and said platform having ways, and said boxes being movable on said ways and removable from said frame to said platform and back again, substantially as described.

411,559. COPYING-PRESS. WALTER B. TREFAIN, New Haven, Conn. Filed Aug. 12, 1889. Serial No. 320,155. (No model.)

Claim.—1. In a copying-press, the combination, with a base-plate

platen and yoke, of a screw passing through the yoke, having a press-shaft passing through its axis and resting upon the platen and operated by a cam pivoted to the upper end of said screw, whereby the pressure is applied and removed, substantially as and for the purpose described.



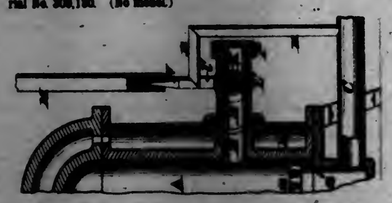
2. In a copying-press, the combination, with the operating-screw having a press-shaft passing through its axis and operated by a cam, of a sleeve forming the upper end of said screw to which said cam is pivoted, said sleeve being threaded to said screw, whereby the wear of the parts may be taken up, substantially as and for the purpose described.

3. In a copying-press, the combination, with an operating-screw having a press-shaft passing through its axis, actuated by a cam pivoted to the upper end of said screw and operated by a lever, and springs fastened to said screw, which clamp and hold said lever in an upright position, substantially as and for the purpose described.

411,560. PROCESS OF ETCHING OR ENGRAVING ON GLASS, &c. FREDERICK WESTERMAYR, London, County of Middlesex, England. Filed Jan. 12, 1888. Renewed May 2, 1889. Serial No. 309,412. (No specimens.) Patented in England May 3, 1888, No. 5,978.

Claim.—The process of etching, consisting of coating the article with an acid-resisting substance, then transferring off a printed design or picture onto the coated surface from transfer-paper, and then dusting over or covering this transferred design with metal leaf or with bronze-powder or other finely-ground powder which will obstruct the passage of light, and subsequently exposing the surface to light and dissolving out such parts of the coating as are not thereby rendered insoluble, then etching out the exposed portions of the surface by means of acids, substantially as described.

411,561. BARREL-BRANDER. MAX WOLF, Cincinnati, Ohio, assignor of one-half to Joseph Huber, same place. Filed May 1, 1889. Serial No. 309,180. (No model.)

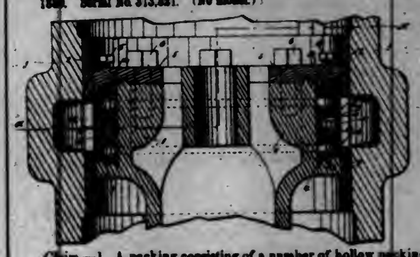


Claim.—1. A hot-blast apparatus of the class specified having a brand heated by the furnace, said brand being surrounded by a bonnet having a smoke-pipe, and a branch pipe leading from the latter to the main air-pipe of the apparatus, whereby a forced draft is produced through said bonnet and smoke-pipe, as herein described.

2. The combination, in a hot-blast apparatus of the class specified, of the pipe E, branches K K', brands *k k'*, bonnets L L', pipes *l l'*, leading from said bonnets to a common exit M, and a nozzle N, inserted within said exit, which nozzle is applied to a pipe *n*, that communicates with the common air-pipe C, all as herein described.

3. A hot-blast apparatus of the class specified having a brand heated by the furnace, said brand being surrounded by a bonnet having a smoke-pipe, which pipe has a forced draft, for the purpose herein described.

411,562. PACKING. JOHN ALLAN, Hoboken, N. J. Filed June 11, 1889. Serial No. 313,821. (No model.)



Claim.—1. A packing consisting of a number of hollow packing-rings formed with a slit extending throughout their periphery, and having separated edges movable toward each other, said rings being arranged one above the other, and their peripheral slits opening alternately in opposite directions, substantially as shown and described.

2. A hollow packing-ring 7, having curved sides 12, and one side of its periphery formed with the cylindrical portion 8, the other side of its periphery formed with the cylindrical portion 9, having a circumferential slit 11, with adjacent separated edges 10, movable toward each other, substantially as shown and described.

3. A packing consisting of a number of hollow packing-rings formed with curved sides, and having one side of their periphery formed with a cylindrical circumferential portion, and the other side of the periphery formed with a cylindrical circumferential portion having a circumferential slit with separated edges movable toward each other, substantially as shown and described.

411,563. APPARATUS FOR DISSOLVING AND SUPPLYING LUPULINE TO BEER. RUDOLF ALLERT, Brooklyn, N. Y. Filed Feb. 6, 1889. Serial No. 299,003. (No model.)



Claim.—1. The combination of a steam-jacketed vessel for containing lupuline, having an outlet at its top provided with a filter, an induction-pipe for hot beer having its discharge-opening near the bottom of said vessel, and a goose-neck eduction-pipe connected with said outlet, substantially as set forth.

2. The combination of a steam-jacketed vessel for containing lupuline, provided with an outlet at its top, a filter in said outlet, a goose-neck eduction-pipe connected with said outlet, and an elevated supply-pipe for hot beer extending into said vessel and discharging near the bottom thereof.

411,564. FIFTH-WHEEL FOR VEHICLES. PETER ANDERSON, Fort Wayne, Ind., assignor to Henry G. Olds, same place. Filed July 2, 1889. Serial No. 316,410. (No model.)



Claim.—1. A fifth-wheel for vehicles, consisting of a disk or circular plate revolving within a shouldered ring bolted to the head-block, said disk being securely bolted to a ring or plate revolving within a ring attached to the axle, substantially as and for the purpose described.

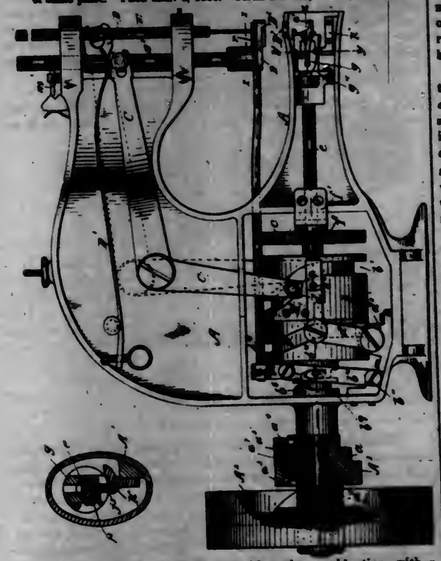
2. A fifth-wheel for vehicles, consisting of a plate revolving within a circular chamber on the head-block, said chamber being open at the bottom to permit the free passage of bolts by which said plate is bolted to a similar plate rotating in a chamber on the under side of the axle, substantially as and for the purpose described.

3. A fifth-wheel consisting of a plate rotating within a shouldered ring on the head-block, said plate being bolted to a similar plate on the lower side of the axle, in combination with a bearing plate or ring on top of the axle or bolster, substantially as and for the purpose described.

4. A fifth-wheel for vehicles, consisting of the disk H, rotating within a ring or chamber on the head-block and bolted to the ring O, rotating within a chamber on the lower side of the axle, in combination with the bearing-plate J, having the circular flange extending upward within the circular opening in the plate F, substantially as and in the manner described.

5. In a fifth-wheel, the reach-bracket P, pivotally attached to the axle by the rotating plate O, in combination with the reach-bracket T, rigidly attached to the head-block, substantially as and in the manner described.

411,565. SHOE-TYING MACHINE. ALBERT E. ATER, Boston, Mass., assignor to Francis H. Rotherwas and Isaac P. T. Edmunds, both of same place. Filed Mar. 1, 1889. Serial No. 301,627. (No model.)



Claim.—1. In a shoe-tying machine, the combination, with a horn or work-support, a presser-foot co-operating therewith, cutting mechanism carried by said presser-foot, and a thread-carrying needle, of a knot-tying mechanism composed of a rotating and longitudinally-reciprocating shaft within said horn, a head rotatively engaged with said shaft, a stop whereby said head is prevented from moving endwise with the shaft, a loop-engaging hook pivoted to said shaft and having a connection with the head, whereby it is moved inwardly when the shaft is moved endwise in one direction, and a second loop-engaging hook pivoted to the head and adapted to retain the end of the loop and draw the same through the body of the loop during the endwise movement of the shaft in the opposite direction, as set forth.

2. In a shoe-tying machine, the improved knot-tying mechanism composed of the rotating and longitudinally-reciprocating shaft having an end hook, the head *g*, rotatively engaged with said shaft and prevented from reciprocating therewith, the piece i, pivoted to the shaft and provided with a hook P and with a slot P', engaged with a fulcrum attached to the head, and the spring-controlled hook *j*, pivoted to the head, as set forth.

3. In a shoe-tying machine, the combination of the rotating and reciprocating shaft *c*, the head *g*, rotatively engaged therewith, a stop, as *g'*, whereby said head is prevented from moving endwise with the shaft, the loop-engaging hooks P and *j*, pivoted, respectively, to the shaft and head, one of said hooks being engaged, as described, with a fulcrum in the head, while the other is pressed inwardly by a spring, and a fixed cam whereby the spring-pressed hook is displaced at a given point in the rotation of the head, as set forth.

4. In a shoe-tying machine, the combination, with the shaft *c*, head *g*, and hooks P and *j*, of the link *d*, jointed to said shaft, the lever *d'*, pivoted at one end to a fixed support and at the other end to the link *d*, and a driving-shaft geared to the shaft *c* and having a cam engaged with the lever *d*, whereby the latter is oscillated and the shaft *c* reciprocated, as set forth.

5. In a shoe-tying machine, the combination, with a reciprocating needle, a work-supporting horn, and knot-tying mechanism within said horn, of the presser-foot having an opening, one side of which constitutes the shear-blade b^{15}, the shear-blade Q, pivoted to the presser-foot and co-operating with the blade b^{15}, and mechanism for oscillating said blade Q, as set forth.

6. In a shoe-tying machine, the combination, with a reciprocating needle and knot-tying mechanism, of the presser-foot having the fixed shear-blade b^{15} and the spring-pressed cord-holding plate *r*, the shear-blade Q, pivoted to said foot and pressed downwardly thereon by the plate *r*, and mechanism for reciprocating the pivoted blade, the said plate *r* holding the cord against the upper surface of the blade Q, as set forth.

7. In a shoe-tying machine, the combination, with a reciprocating needle and knot-tying mechanism, of the presser-foot having the shear-blade b^{15}, the shear-blade Q, pivoted to the foot, the sleeve or enlargement on the driving-shaft having the cam-grooves connected by an opening b^2, the pivoted lever b^{20}, having a pivoted shoe adapted to run in said grooves, and the rod b^{19}, connecting said lever with the blade Q, as set forth.

8. In a shoe-tying machine, the combination of the driving-shaft, the knot-tying mechanism composed of the shaft *c*, having the hook *d'*, the head *g*, and hooks P *j*, the gears *e f*, connecting the driving-shaft with the shaft *c*, said gear *f* arranged to permit the reciprocating movement of the shaft *c*, means for reciprocating said shaft, the driving-pulley normally loose on the driving-shaft and provided with a projection, as a^2, a collar affixed to said driving-shaft and provided with a spring-impelled key or latch adapted to engage said projection, and a wedge-shaped lever which normally stands in position to retract the key or latch, as set forth.

9. In a shoe-tying machine, the combination of the horizontally-arranged horn or work-support, the horizontally-arranged driving-shaft, the non-reciprocating head *g* in said horn, the horizontal shaft *c*, adapted to move lengthwise through the head and in the horn, and knot-tying devices co-operating with said shaft and head within said horn, said shaft, head, and knot-tying devices being arranged so that the horn is enabled to be contracted in size, so as to be capable of entering the smallest shoes, connections between the shaft *c* and the driving-shaft, whereby the shaft *c* is horizontally reciprocated, the vertically-arranged needle and presser bars provided, respectively, with a needle and a presser-foot, and devices communicating motion from the driving-shaft to the needle and presser bars, as set forth.

10. In a shoe-tying machine, the combination of the horn or work-support, the knot-tying mechanism, the vertically-movable presser-foot D, the presser-bar D^4, having a rib D^4, the gripping-piece *m*, slotted to receive said rib and normally held by a spring in position to permit said rib to move freely, the needle-bar-actuating lever B, and intermediate devices whereby when said lever is depressed the gripping-piece is displaced and caused to lock the presser-bar, and when the lever B is raised the gripping-piece is released and allowed to resume its normal position, as set forth.

11. In a shoe-tying machine, the combination of the horn or work-support, knotting devices below the same, and the presser-foot having an orifice b^{17}, a portion of which constitutes a guide and lateral support for the needle, while another portion constitutes a guide between which and the needle the tying-cord passes, and a downwardly-projecting flange D^6 at one side of said orifice, whereby space is left for the cord under the cord-guiding portion of the orifice and between the presser-foot and the work-support, as set forth.

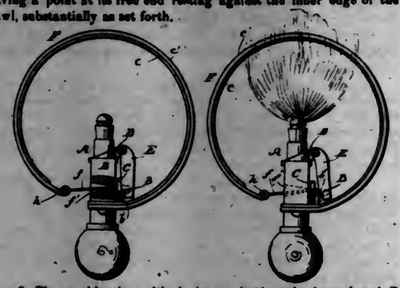
12. In a shoe-tying machine, the combination, with the knot-tying mechanism, of the oscillating blade Q, the presser-foot having the orifice b^{17} one side of which constitutes a blade b^{15}, and the recess or depression d^3, for the passage of the cord under the oscillating blade, as set forth.

13. In a shoe-tying machine, the combination of the presser-foot having a shear-blade formed on it, the oscillating shear-blade pivoted to said foot, the clamping-plate vertically movable in guides in the foot and bearing on the oscillating blade, and a spring whereby said plate is pressed against said blade, as set forth.

411,566. AUTOMATIC COCK OR CUT-OFF FOR GAS-BURNERS. CHARLES H. BARNEY, New York, N. Y. Filed Nov. 16, 1888. Serial No. 291,008. (No model.)

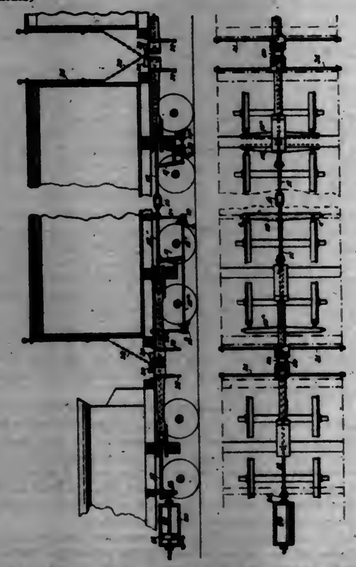
Claim.—1. The combination, with the burner having a horizontal

cock provided with a spring holding it closed and a vertically-extending finger-plate *b*, adapted to be turned to a horizontal position, of a vertically-extending pawl swinging inwardly over the finger-plate when the latter is turned down against the action of the spring, and the vertical circular compound plate secured at one end to the burner and having a point at its free end resting against the inner edge of the pawl, substantially as set forth.



2. The combination, with the burner having a horizontal cock B, provided with a closing-spring and a vertically-extending finger-plate *b*, of a support D, secured to the burner, and provided with a depending vertically-swinging pawl E, the lower part of which swings inwardly over the finger-plate when the latter is turned down into a horizontal position, a guide *f'* in line with the pawl and in rear thereof, and the vertical circular compound plate F, secured at one end under the guide and at its opposite end provided with a horizontally-extending separate point *f*, passing through the guide against the rear side of the pawl, substantially as set forth.

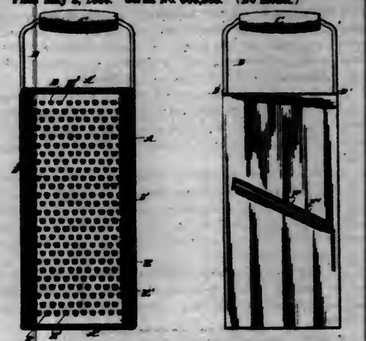
411,567. COMBINED CAR COUPLING AND BRAKE. JULIAN S. RAGSAW, Chipley, Fla. Filed May 9, 1889. Serial No. 310,168. (No model.)



Claim.—1. The combination, with draw-heads formed with recesses *a*, of rods provided with heads which normally rest within said recesses, connections between the rods of the two draw-heads, levers 17 and 17ᵇ, brake-heads to which said levers are connected, and brake-shoes carried by the brake-heads, substantially as described.

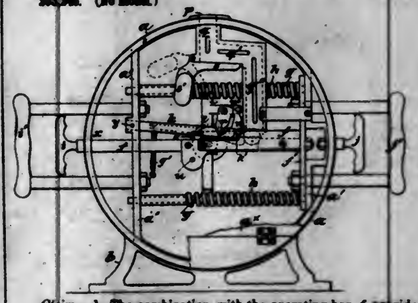
2. The combination, with draw-heads formed with recesses *a*, of rods provided with heads which normally rest within said recesses, connections between the rods of the two draw-heads, levers 17 and 17ᵇ, brake-heads to which said levers are connected, brake-shoes carried by the brake-heads, a steam-cylinder, a piston arranged therein, and connections, substantially as described, between the piston and the draw-head rods.

411,568. GRATER AND SLICER. ALBERT C. BUSKIRK, Manitowoc, Wis., assignor to the Lake Shore Manufacturing Company, same place. Filed May 2, 1889. Serial No. 309,202. (No model.)



Claim.—As a new article of manufacture, the combined grater and slicer, consisting of the curved front A, formed with the small rectangular slots E and the W-shaped projections E', the flat metal back D, formed with the inclined slot F and cutting-edge F', and the wire handle B, having the extended side pieces B', around which the side edges of the front A and back D are bent, substantially as set forth.

411,569. COIN-CONTROLLED GRIP-TESTER OR SIMILAR DEVICE. PETER BEHR, Brooklyn, N. Y. Filed Dec. 11, 1888. Serial No. 293,246. (No model.)



Claim.—1. The combination, with the operating-bar *f*, provided with a slot *e* and beveled shoulder f^x, of the longitudinally-sliding rack *e*, mounted on said bar and provided with a notch l^x in the upper edge of its plate, the pivoted latch *k*, arranged over the bar *f* and provided with a beveled end *k'*, and a stud *l*, which engages the notch in the rack, and the suspended detainer *n*, provided with an angular slot n^x, which is engaged by a stud *m* on said latch, all arranged and adapted to operate as set forth.

2. The combination, with the casing and dial, of the operating-bar *f*, the rack *e*, mounted thereon, the arbor e^x, the pinion *d* thereon gearing with said rack *e*, the pointer *t* on said arbor provided with a pin or stud *d'*, the tubular shaft *V* on said arbor, the brake-wheel *d'* and pointer *t'*, fixed on said tubular shaft, the volute spring *h'* about said shaft, the brake-lever *d'* and its spring, and the pendent forked lifter *v*, the fork in which is engaged by a stud *v* on the operating-bar *f*, all arranged and adapted to operate substantially as set forth.

3. The combination, with the casing *a*, provided with a coin-slit *p*, and the operating-bar *f*, provided with a slot *o* to receive the coin inserted at said slit, of the coin-chute consisting of the vertical or upright receiving branch *q*, communicating with the coin-slit, the upright delivery branch *q'*, arranged to stand normally over slot *o* in the bar *f*, the substantially horizontal branch *q'*, and the counter-weighted hinged bottom *o* of the branches *q* and *q'* of the chute, all arranged and adapted to operate as set forth.

411,570. TESTING DEVICE. HENRY F. RESELING, Philadelphia, Pa. Filed May 15, 1889. Serial No. 310,816. (No model.)

Claim.—1. A rotatable shaft, in combination with a transparent tube, and with a tube-carrier hinged or pivoted to the same and formed with a foot and a strap, said tube being removably sustained by said plate, foot, and strap, substantially as described.

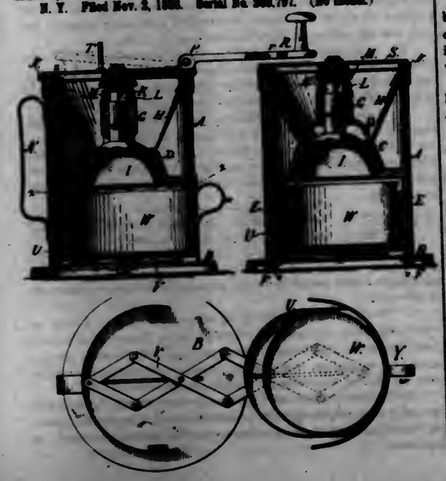
2. A testing device for milk, &c., consisting of a frame or stand, a shaft mounted in said frame, means for rotating the shaft, a tube-carrier hinged or pivoted to said shaft, and a transparent tube removably fitted to said carrier, said parts being combined and operating substantially as described.



3. A testing device for milk, &c., consisting of a frame, a vertical shaft journaled therein, mechanism, substantially as described, mounted in said frame for rotating said shaft, a head at the upper end of said shaft having ears or lugs at or near its outer edge, carriers having ears at their upper ends pivotally connected to said head, and transparent tubes secured to said carriers, said parts being combined substantially as described.

4. In a testing device for milk, a rotary head with ears at or near its periphery, in combination with a carrier having a foot at its lower end and ears at its upper end, a transparent tube resting on said foot and secured to said carrier by the straps Q, the said ears of the head and carrier having a pivotal connection, substantially as described.

411,571. GRINDING-MILL. CHARLES A. BRISTOLE, New York, N. Y. Filed Nov. 2, 1888. Serial No. 289,797. (No model.)



Claim.—The combination, with the cylinder A, mounted upon a base-piece B and containing the grinding mechanism, of the receptacle-support secured to the base by hasp-hinge, substantially as shown and described.

411,572. OBSTETRICAL INSTRUMENT. CHARLES D. BOSS, Nevada City, Cal. Filed Jan. 3, 1889. Serial No. 295,726. (No model.)



Claim.—As a new article of manufacture, an obstetrical instrument consisting of the curved socket-piece A for the reception of the index-finger, having a jaw C at its closed end, and provided with a ring or loop B at its open end for the reception of the second finger, as set forth.

411,573. COMBINED CASH-INDICATOR AND COIN-COUNTER. GEORGE BOSENBAUM, Brooklyn, N. Y. Filed Dec. 17, 1888. Serial No. 293,943. (No model.)

Claim.—1. In an apparatus for checking the receipt of money, the combination with a series of check-holders and a series of pulls 2 for removing the checks from same, of locking mechanism actuated by the operation of each pull, whereby when any pull is operated it locks all the other pulls of the series.

2. In an apparatus for checking the receipt of money, the combination, with a series of check-holders, a series of check-removing pulls 2, and a locking mechanism actuated by the operation of each pull, whereby when any pull is operated it locks all the other pulls of the series, of a gong or bell 3, its striking mechanism, and intermediate mechanism, substantially as described, whereby the operation of any pull in the series sounds the gong.

3. In an apparatus for checking the receipt of money, the combination, with a series of pulls 2 and a locking mechanism actuated by the operation of the several pulls, whereby the operation of each pull locks all the others, of a series of counters or registers, one for each pull, and an intermediate counter-actuating mechanism, whereby the operation of the pull actuates the counter.

4. In an apparatus for checking the receipt of money, the combination, with a series of check-holders and a series of pulls 2, one for each check-holder, of a series of numeral-bearing plates 9, one for each pull, and intermediate shifting mechanism, substantially as described, whereby the operation of a pull turns the side of the plate bearing the numeral into view and the operation of the next succeeding pull turns said numeral out of sight.

5. In an apparatus for checking the receipt of money, the combination, with a series of check-holders and a series of pulls 2, one to each check-holder, for removing the checks singly from their respective holders, of a cash-drawer and a locking device for said drawer, which is unlocked by the movement of any one of said pulls.

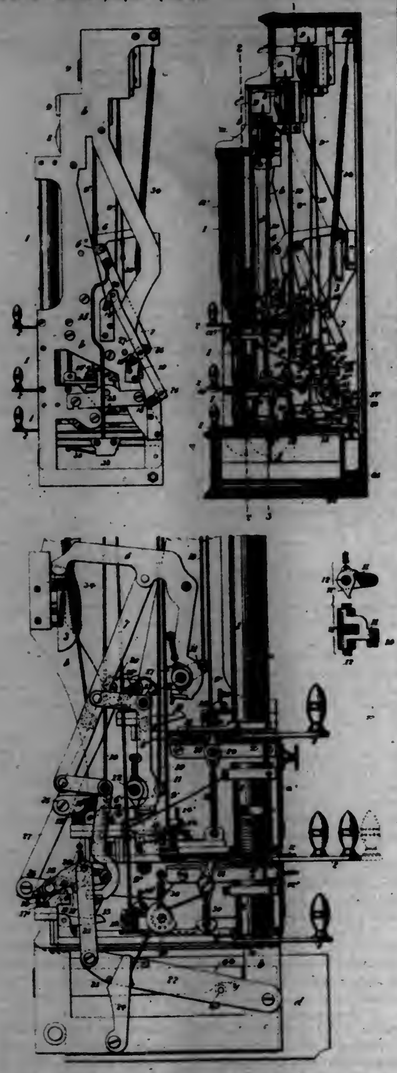
6. In an apparatus for checking the receipt of money, the combination, with a series of check-holders, of a series of pulls 2, one to each holder, for removing the checks singly from their respective holders, each of said pulls being provided with an automatic stop, which prevents the pull from being pushed back when only partly drawn out.

7. In an apparatus for checking the receipt of money, the combination, with a series of pulls 2, each provided with studs 18 and 19, of a rock-shaft 16, extending laterally over said pulls, said rock-shaft being provided with front pins 17 17, to engage studs 18 on the respective pulls, and with stop-pins 17' 17', to engage studs 19 on the respective pulls, substantially as and for the purposes set forth.

8. In an apparatus for checking the receipt of money, the combination, with a series of pulls 2, each provided with studs 18 and 19, of a rock-shaft 16, extending laterally over said pulls and provided with pins 17 and 17', arranged as described, the side lever 22, provided with a stud 23 and coupled to an arm on rock-shaft 16, and the spring-latch 24, provided with incline on its face, over which stud 23 plays, substantially as set forth.

9. In an apparatus for checking the receipt of money, the combination, with two tiers of pulls arranged one above the other, each pull being provided with studs 18 and 19, as described, of the rock-shafts 16 and 16^x, which extend over the upper and lower tiers of pulls, respectively, and are each provided with pins 17 and 17', arranged

as shown, the arms 23 on said rock-shafts, and the link 27, coupling said arms, whereby the rocking motion of one shaft is communicated to the other, for the purpose specified.



10. In an apparatus for checking the receipt of money, the combination, with a series of check-holders and a series of check-removing pulls 2, each provided with a shoulder 4, of the elbow-levers 6 6×, pivotally mounted on the frame, the swinging bar 5, secured at its ends to the pendent arms of said levers and extending over the pulls in the paths of the shoulders 4 thereon, the gong 3, and its hammer actuated by the arm of one of said elbow-levers, whereby the operation of either pull in the series sounds the gong.

11. In an apparatus for checking the receipt of money, the combination, with two tiers of pulls 2, arranged one above the other, each pull being provided with a shoulder 4, of the main elbow-levers 6 6×, the swinging bar 5, uniting same and extending over the upper tier of pulls, the elbow-levers 6' 6', the swinging bar 5', uniting same and extending over the other tier of pulls, the link 7, coupling together the said elbow-levers 6 and 6', the gong 3, and its hammer actuated by the arm of one of said elbow-levers, substantially as set forth.

12. In an apparatus for checking the receipt of money, the combination, with a series of pulls 2, each provided with a shoulder 13, of a series of counters or registers 8, their actuating-rods 10, a rod 12, extending across and over the pulls, the rocking arms 11 on said rod 12, one over each pull and coupled to one of said rods 10, and the spring-rockers 11×, also mounted on said rod 12 and actuated by the respective pulls, substantially as set forth.

13. In an apparatus for checking the receipt of money, the combination, with a series of pulls 2, each provided with a spring-hook pawl 15, of the numeral-bearing plates 9, their respective shafts 9×, one for each pull, and the arms 14, one on each shaft 9×, said arms extending out over the pull in the path of the hook-pawl thereon, substantially as set forth.

14. In an apparatus for checking the receipt of money, the combination, with a series of pulls 2, each provided with a hook-pawl 15 and a shoulder 4, of the numeral-bearing plates 9, their respective shafts 9×, one for each pull, the arms 14 on the respective shafts 9×, each arm standing over its pull and provided with a pin 14×, and the swinging bar 5 and its supports, said bar extending over the series of pulls and adapted to engage the pins 14× on arms 14, substantially as set forth.

15. In an apparatus for checking the receipt of money, the combination of a series of pulls 2, each provided with a shoulder, the swinging bar extending across over said pulls in the paths of said shoulders, elbow-levers in the arms of which said swinging bar is secured, a lever 32, pivoted to the main frame and coupled to one of said elbow-levers, whereby vibration of said swinging bar imparts vibration to said lever 32, the pawl 35 on said lever 32 and its spring, the pin 39 in said lever 32 and the cash-drawer provided with a rib 38, a shoulder 37, and a shoulder 40, all arranged to operate substantially as set forth.

16. In an apparatus for checking the receipt of money, the combination, with a series of pulls 2, each provided with studs 18 and 19, of the rock-shaft 16, provided with the pins 17 and 17', arranged as described with reference to the studs on the pulls, the arm 20 on the said rock-shaft, the side lever 22, provided with a stud 43, the link 21, connecting lever 22 with arm 20, and the cash-drawer *d*, provided at its end adjacent to lever 22 with a plate 44, under which stud 43 stands, said plate having a recess *y* in its lower edge, all substantially as and for the purpose set forth.

17. In an apparatus for checking the receipt of money, the combination, with the check-holders and the check-removing pull 2, provided with a series of projecting teeth 31, of a rocking spring-pawl 28, held normally with its axis at right angles to the plane in which the pull plays, said pawl being adapted to engage said teeth, as set forth.

18. In an apparatus for checking the receipt of money, the combination, with a series of pulls 2, of a cash-drawer, locking devices for said drawer, and intermediate mechanism between said locking devices and pulls, whereby the drawing out of a pull sets said devices and the pushing in of said pull unlocks the drawer, as set forth.

19. In an apparatus for checking the receipt of money, the combination, with a series of pulls 2, of the intermediate mechanism whereby the drawing out of one pull locks all the others, the gong, the intermediate mechanism whereby the pulls sound the gong, the counters or registers, and the intermediate mechanism whereby the pulls actuate said registers, substantially as set forth.

20. In an apparatus for checking the receipt of money, the combination, with a series of check-holders and a series of check-removing pulls 2, of the cash-drawer and the locking mechanism for said drawer, said locking mechanism being actuated by said pulls.

21. In an apparatus for checking the receipt of money, the combination, with a series of check-holders and a series of check-removing pulls 2, of the counters or registers, the intermediate mechanism whereby said pulls actuate said registers, the number-bearing plates, and the intermediate mechanism whereby the pulls actuate said plates, as set forth.

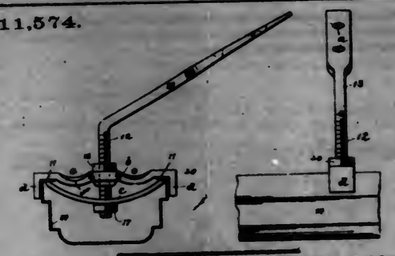
411,574. EAVES-TROUGH. CHARLES M. REED, Providence, R. I. Filed May 23, 1889. Serial No. 311,687. (No model.)

Claim.—1. The combination, with a gutter or eaves-trough having inwardly-extending flanges, of a sectional clamp adapted to receive the flanges of the gutter or trough between its sections, substantially as described.

2. The combination, with a gutter or eaves-trough having inwardly-extending flanges, of a sectional clamp formed of the apertured sections *b c*, the section *b* being provided with the downwardly-extending projections *d*, the shank 13, provided with the threaded stem 12, and the nuts 16 and 17, substantially as described.

3. The combination, with a gutter or eaves-trough formed with inwardly-extending flanges, of a sectional clamp, a means for adjusting the clamp-sections, and a clamp-supporting shank, substantially as described.

411,574.



411,575. CHAIN. WILLIAM H. REED, Brooklyn, N. Y. Filed Sept. 18, 1888. Serial No. 285,601. (No model.)

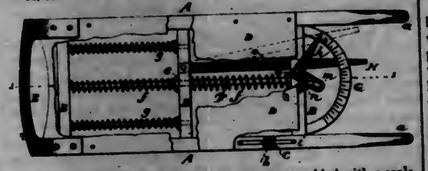


Claim.—1. A chain formed of flat links riveted together and having lateral studs projecting from the outer faces thereof intermediate the riveted ends, substantially as described.

2. As a new article of manufacture, a chain formed of flat links riveted together, the outer links being provided with laterally-projecting studs between their riveted ends, substantially as described.

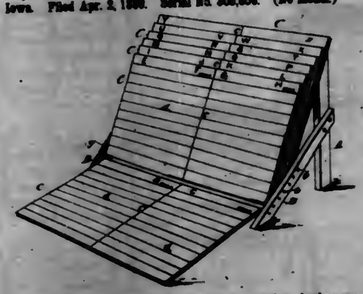
3. As a new article of manufacture, a flat chain-link apertured at each end for receiving rivets, and having a rigid stud projecting from one of its flat faces intermediate said apertures, the opposite flat face being plain, substantially as described.

411,576. WEEDING HAND-TRUCK. JOSEPH H. BROWN, Farwell, Mich., assignor of one-half to Frank E. Presley, same place. Filed May 11, 1889. Serial No. 310,444. (No model.)



Claim.—The combination, with the frame provided with a scale-bar and indicator, a rod F, springs *f g*, and a series of rollers *c*, of a movable platform provided with tracks *d*, lugs *e*, and catch *p*, and a lever H in position to connect with catch *p*, substantially as set forth and described.

411,577. LEDGER-INDEX DEVICE. KENT ROLAND, Linn Grove, Iowa. Filed Apr. 2, 1889. Serial No. 305,656. (No model.)



Claim.—1. The within-described ledger-index device, consisting of a series of double-faced tablets pivoted one below the other upon the sloping front of an upright frame and alphabetically marked in the corners of their opposite spaced surfaces, said tablets being also provided with ledger-page spaces to correspond with said alphabetical marks, substantially as specified.

2. The combination, with the back portion A of the frame and inclined front portion B thereof, of the double-faced tablets C, pivoted at their lower ends, one below the other, to the inclined portion B of the frame, said tablets being intermediately divided on their opposite faces or surfaces transversely of the axial lines of their pivots into separate entry-spaces, and said spaces being differently alphabetically lettered in the upper corners of the opposite sides of the tablets, respectively, substantially as shown and described.

411,578. END-GATE. THOMAS J. REES, Marion, Iowa. Filed July 6, 1889. Serial No. 316,502. (No model.)



Claim.—1. In an end-gate, the combination, with a vehicle-body having a hook secured to each side thereof at the lower rear corner and extending downwardly and forwardly therefrom, of an end-gate provided with plates attached to the opposite lower corners, having a slot produced therein, and a cylindrical leg or rib crossing the said slot transversely, adapted for contact with the said hook, substantially as and for the purpose specified.

2. In an end-gate, the combination, with a vehicle-body and a hook secured to each side at the lower rear corner, projecting downwardly and rearwardly therefrom, of an end-gate provided with a plate secured to the outer face thereof at each lower corner and provided with a slot or opening near the lower end, a cylindrical rib or leg extending transversely across the said opening, adapted for contact with the hook, and a guide-arm integral with the outer face of the plate parallel with one vertical wall of the opening therein and projecting downward below the said plate, all combined for operation substantially as shown and described.

3. In an end-gate, the combination, with a casting or forging comprising the arms 15 and 16 and the hook-section 19, of a plate adapted for attachment to the end-gate, provided with an opening, a cylindrical leg or rib extending transversely across the said opening and adapted for contact with the hook, and a guide-arm secured to the said plate adjacent to the said opening, substantially as and for the purpose specified.

4. In an end-gate, the combination, with a forging or casting comprising the arms 15 and 16 and hook-section 19, of a plate adapted for attachment to the end-gate, provided with a vertical slot or opening in the lower edge, a lug or rib formed upon one face of the plate, extending transversely across the lower portion of the said opening and adapted to contact with the hook, and a vertical guide-arm secured to the plate adjacent to and parallel with the outer wall of the opening, substantially as and for the purpose specified.

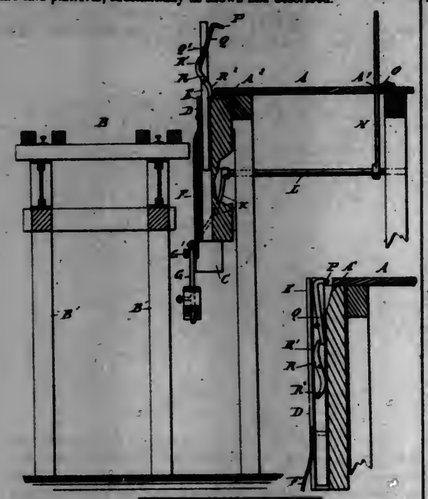
411,579. RAILROAD-GATE. JOHN B. CAREY, Brooklyn, N. Y. Filed Nov. 21, 1888. Serial No. 291,462. (No model.)

Claim.—1. In a railroad-gate, the combination, with self-closing railroad-gates mounted to slide in guides arranged below the station-platform, of a lever extending above the platform and serving to open the gates flush with the platform, and a frame mounted to swing automatically on the front of each gate and serving as a danger-signal, substantially as shown and described.

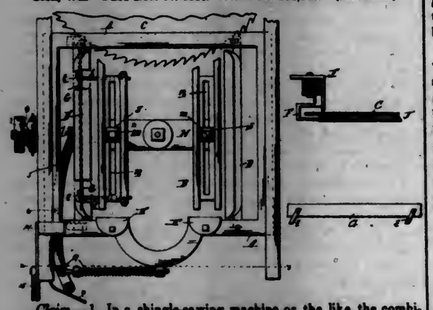
2. In a railroad-gate, the combination, with a platform and guides held below the said platform, of a gate held to slide in the said guides, a weighted lever connected at one end with the said gates, a rod connecting the several levers with each other, a hand-lever extending above the platform and connected with the said rod to open the gates, and a frame mounted to swing automatically at the upper end of each gate and in front of the same and serving as a danger-signal, substantially as shown and described.

3. In a railroad-gate, the combination, with a platform and guides held below the said platform, of a self-closing gate held to slide in the said guides, a lever extending above the platform and serving to open said gate, a frame held in the front of said gate, a lever pivoted at

each end of the said gate and carrying said frame; and S-shaped levers controlling the said frame-levers and operated by an incline on the said platform, substantially as shown and described.



411,580. SHINGLE-SAWING MACHINE. JOHN CHALLONER, Oshkosh, Wis. Filed Nov. 17, 1888. Serial No. 291,178. (No model.)



Claim.—1. In a shingle-sawing machine or the like, the combination of a guard attached on the side toward which the saw runs, with the tilting table capable of being adjusted to the saw, and push-bars attached to the carriage so as to extend around and under the saw when the carriage is forward, substantially as and for the purpose set forth.

2. In a shingle-sawing machine or the like, the combination of an adjustable tilting table supporting a guard on the side toward which the saw runs, with push-bars attached to the carriage so as to pass around and under the saw when the machine is in motion, substantially as and for the purpose described.

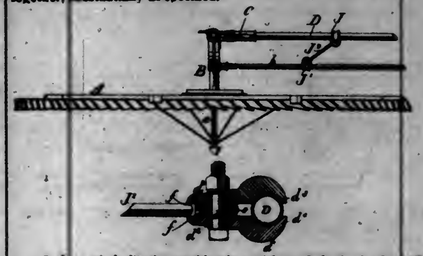
3. In a shingle-sawing machine or the like, push-bars attached to the carriage and sliding in grooves or recesses in the table, and being bent forward so as to reach around and under the saw when the carriage is forward, substantially as shown and described.

4. In a shingle-sawing machine or the like, the table provided with sides adjustable to and from the saw, said sides being attached to the cross-bar H by means of the set-screws *n n*, sliding in the grooves or recesses *o o* and bearing against washers *r r*, to engage the sides, and a guard G, secured to one of the adjustable sides, substantially as and for the purpose set forth.

5. In a shingle-sawing machine, a guard attached beneath the dog on the side of the machine toward which the saw runs, said guard being vertically adjustable, so that its upper edge may be always kept above the upper side of the saw.

411,581. WINDMILL. ANDREW J. CHRISMAN, Jersey City, N. J. Filed Nov. 15, 1888. Serial No. 290,877. (No model.)

Claim.—1. In a windmill, the combination, with the wind-wheel, of a tail-vane bar so supported as to be movable into a position approximately parallel with the wind-wheel, a side-vane bar, and a rigid detachable lock for securing the tail-vane bar and the side-vane bar together, substantially as specified.



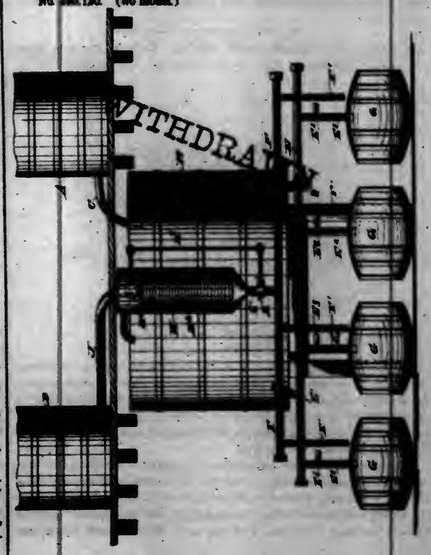
2. In a windmill, the combination, with a wind-wheel, of a tail-vane bar so supported as to be movable into a position approximately parallel with the wind-wheel, a side-vane bar also approximately parallel with the wind-wheel, and a lock for securing said bars together, consisting of two clamps and a connecting bar or rod between the clamps, substantially as specified.

3. A lock for securing together the tail-vane bar and the side-vane bar of a windmill, consisting of two clamps adapted to grip said bars, a connecting-rod extending between said clamps, and bolts by which not only are the clamps caused to grip the bars, but also by which the clamps are caused to grip the connecting-rod, substantially as specified.

4. A lock for securing together a tail-vane bar and a side-vane bar of a windmill, consisting of jaws adapted to grip said bars, and provided with shank portions, bosses, or hubs upon the inner sides of said shanks, a connecting-rod provided with loops near its ends through which said bosses or hubs extend when the shanks are brought together, and bolts extending through said bosses or hubs and adapted to secure the connecting-rod and to cause the clamps to grip the said bars, substantially as specified.

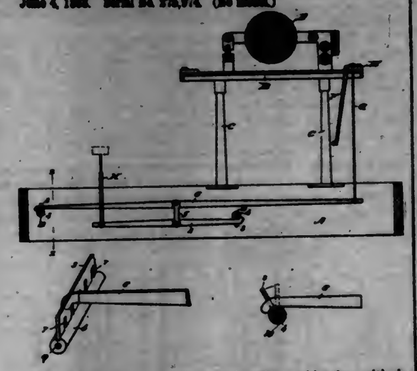
5. In a lock for securing together the tail-vane bar and the side-vane bar of a windmill, the combination of gripper-jaws provided with shanks, hubs, or bosses upon the inner sides of said shanks, a connecting-rod provided with loops near its ends receiving said hubs or bosses when the shanks are brought together, said hubs or bosses being provided with apertures eccentric to their axes and in the portions thereof nearer said jaws, and bolts passing through said apertures for securing the jaws about said bars and causing the shanks to grip the loops of the connecting-rod, substantially as specified.

411,582. APPARATUS FOR SUPPLYING ALE-CASKS WITH ULLAGE. IRA COX, New York, N. Y. Filed Jan. 2, 1889. Serial No. 295,130. (No model.)



Claim.—The combination, with the tank A, the vat B, the horizontal pipe E, and connections between the said vat and the tank A and pipe E, of the tank D, the horizontal pipe F, the gage H, and valved connections between the gage and the tank D and pipe F, substantially as shown and described.

411,583. TYPE-WRITING MACHINE. HENRY R. CURTIS, Springfield, Mass., assignor to the Yost Writing Machine Company. Filed June 4, 1888. Serial No. 276,074. (No model.)



Claim.—1. In a type-writing machine, the combination, with the key-levers, of a plate adapted to be turned to two positions, one to permit the assembling or disassembling of the key-levers and the other to lock or confine said levers in position against accidental displacement during transportation or use of the machine, substantially as set forth.

2. In a type-writing machine, the combination, with the key-levers, of a plate provided with openings for the reception of the ends of the key-levers and adapted to be turned into a position to effect the locking or securement of said levers against endwise displacement.

3. In a type-writing machine, the combination, with the key-levers, of a transverse fulcrum rod or support and a slotted or perforated vibratory locking-plate, substantially as set forth.

4. In a type-writing machine, the combination, with the key-levers, of a transverse fulcrum rod or support adapted to turn and a slotted or perforated vibratory locking-plate, substantially as set forth.

411,584. AERIAL TRAMWAY. ALFRED H. DE CAMP, Boonton, N. J. Filed Sept. 6, 1888. Serial No. 284,667. (No model.)

Claim.—1. In a suspended railway, the herein-described suspended track formed of continuous rails less in vertical section than in their other dimensions, the said rails being supported at intervals throughout the track, whereby they are allowed to flex between said supports, substantially as set forth.

2. The combination, in an elevated tramway, with the grooved supporting-rollers, of the track formed of continuous parallel oblong bars resting at intervals between their terminals flatwise in the grooves of the said rollers to slide therein, substantially as set forth.

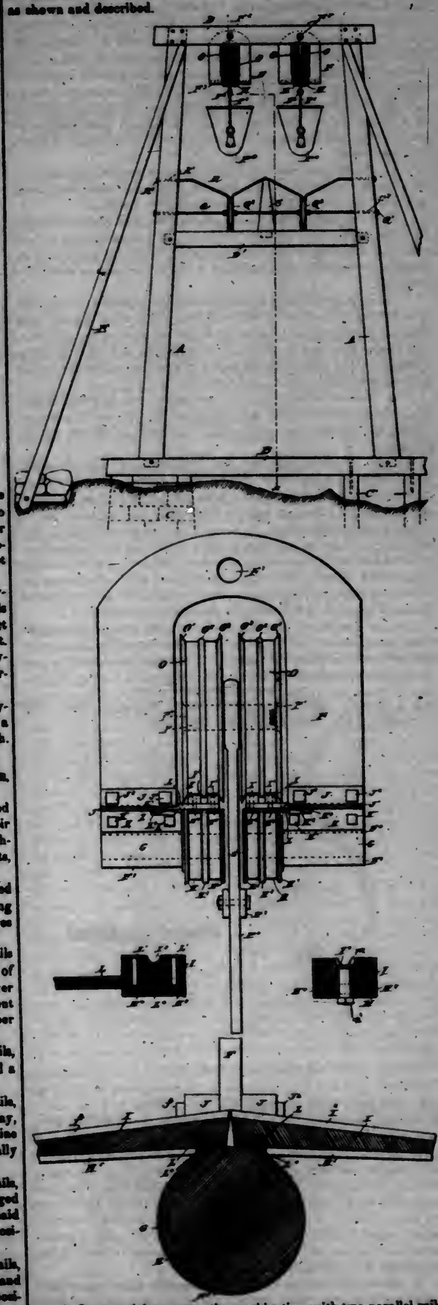
3. In an aerial tramway, the combination, with two parallel rails supported loosely at intervals throughout the length of the track, of parallel cross-bars extending across the upper side of the track over the supports and oppositely-placed inclines supported at their adjacent larger ends on said cross-bars and extending freely along the upper sides of the tracks, substantially as set forth.

4. In an aerial tramway, the combination, with two parallel rails, of a cross-bar keeper for said rails, a keeper for said cross-bar, and a spring to elevate said cross-bar.

5. In an aerial tramway, the combination, with two parallel rails, of a flanged way for said rails, means of supporting the flanged way, substantially as described, a keeper-bar for said rails, and an incline attached to said keeper-bar and mounted above the rails, substantially as shown and described.

6. In an aerial tramway, the combination, with two parallel rails, of a flanged way for said rails, a means of support for said flanged way, a keeper-bar for said rails, and a grooved incline secured to said keeper-bar, said keeper-bar being supported and maintained in position, substantially as shown and described.

7. In an aerial tramway, the combination, with two parallel rails, of a flanged way for said rails, a means of support for said way, and a keeper-bar for said rails, means of securing said keeper-bar in position, as described, and a grooved incline attached to said keeper-bar, as described, and mounted above the rails and extending downward between the rails to hold said incline in a given relation to the rails, as shown and described.



8. In an aerial tramway, the combination, with two parallel rails, of a flanged way for said rails, means of support for said flanged way,

a keeper-bar for said rails, a grooved incline mounted above the rails and attached to said keeper-bar, and the plate M under the rails connected to the incline above the rails, as and for the purpose described.

9. In an aerial tramway, the combination, with two parallel rails, of an incline mounted above the rails and the bolts *m*, passing down between the rails connecting the incline and the plate M, and nearly filling the space between the rails, as and for the purpose described.

10. In an aerial tramway, the combination, with two parallel rails, of a keeper-bar for said rails, a yoke, and attachments thereto for maintaining said keeper-bar in proper relation to said rails, as shown and described.

11. In an aerial tramway, the combination, with two parallel rails, of a keeper-bar for said rails, a yoke on which said keeper is mounted, and a spring to elevate said bar, as shown and described.

12. In an aerial tramway, the combination, with two parallel rails, of a keeper-bar for said rails, a yoke, said keeper secured to said yoke and elevated, as described, and a lug upon said keeper-bar extending downwardly and interposed between the rails, as shown and described.

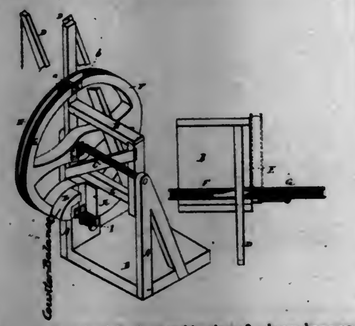
13. In an aerial tramway, the combination, with two parallel rails, of a flanged way on which said rails rest, a keeper-bar for said rails, secured substantially as described, a double grooved incline secured to two keeper-bars and mounted above the rails, a flanged traveling wheel provided with a hanger-arm, and a carrier suspended by said arm, substantially as shown and described.

14. In an aerial tramway, the combination, with two parallel rails, of a grooved double incline mounted above the rails and two flanged wheels, and two hanger-arms rigidly connected, as shown and described.

15. In an aerial tramway, the combination of two compound rails formed each of two or more parallel rails supported and kept by each arm of a yoke, each arm having attached to it, as described, an axle having a flanged way for each compound rail, and having proper keepers and springs for keeper-bars, two keeper-bars for each arm, a grooved incline attached to each keeper-bar, all members constructed substantially as shown and described, and a wheel on each side of each hanger-arm, flanged as required and turning upon the connecting-shaft, the hanger-arms also boxed to shaft, permitting shaft to turn, if required, substantially as shown and described.

16. In an aerial tramway, a carrier and means for supporting the same, in combination with a cable for moving the carrier and a pulley and guide-rod R for supporting and maintaining said cable in a particular line, substantially as shown and described.

411,585. DERRICK. Levi S. Dennis, Middletown, Conn. Filed July 15, 1889. Serial No. 317,909. (No model.)



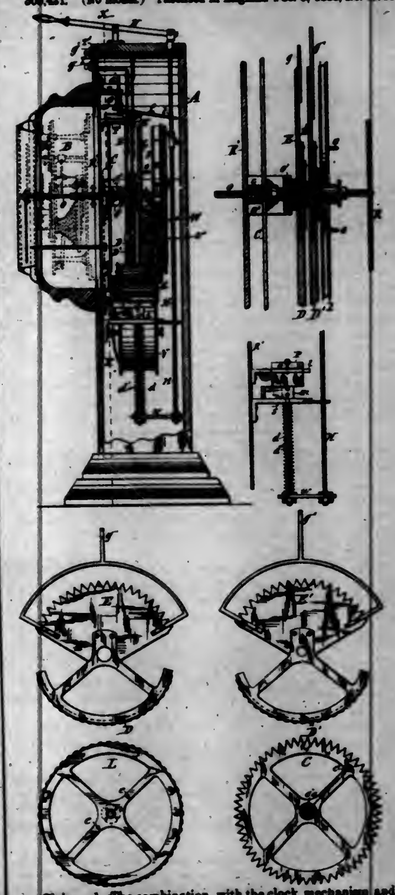
Claim.—1. In a derrick, the combination of a beam hung upon a horizontal axis and so as to swing in a vertical plane in raising the load, a grooved wheel arranged in a plane parallel with the path of the swinging movement of the beam, the axis of the said wheel being substantially the axis of the beam, and the wheel in connection with the beam, so that rotation of the wheel will impart corresponding vertical swinging movement to the beam, a revolving drum, the axis of which is substantially parallel with the axis upon which the said grooved wheel rotates, with a cord upon said wheel and coiled upon said drum, whereby the rotation of the said drum imparts rotation to the said wheel in either direction, accordingly as the drum is turned, and the said rotation of the wheel imparts the vertical swinging movement to the lever, substantially as described.

2. The combination of a beam hung upon an axis, a wheel upon said axis and so as to rotate with the beam, the load end of the beam projecting from the wheel at one side, a counterbalancing-weight applied to the wheel upon the side opposite the load, and a cord upon said wheel by which rotation may be imparted to said wheel in either direction, substantially as described.

3. The combination of a beam hung upon an axis, a diametrically-divided wheel arranged to rotate upon the same axis as the beam, one part of the wheel made fast to the beam and the other part of the wheel hinged to the said fast part of the wheel, and so that said hinged part of the wheel may fold into a plane substantially parallel with the axis on which the beam swings, and a cord around said wheel and by which rotation may be imparted thereto, substantially as described.

4. The combination of a beam hung upon an axis, the beam oblique to the axis, a wheel attached to the beam, and so as to rotate upon the same axis, the power end of the beam projecting beyond the plane of the wheel, and so that the load carried by the beam may swing across the plane of the axis upon which the beam turns, and a cord around said wheel by which rotation may be imparted to it and the swinging movement to the beam, substantially as described.

411,586. WORKMAN'S TIME-RECORDER. Alexander Dey, Glasgow, County of Lanark, Scotland. Filed May 3, 1889. Serial No. 309,421. (No model.) Patented in England Feb. 3, 1888, No. 1,614.



Claim.—1. The combination, with the clock mechanism and minute-hand spindle, of a time-printing type-wheel arranged rotary with said spindle, recording type-wheels arranged concentric with the time-printing type-wheel and rotary independently thereof, indicators on the recording type-wheels, a plunger movable at will of the operator, a platen connected to the plunger and facing the respective type-wheels, and an impression-receiving band passing between the type-wheels and platen, as set forth.

2. The combination, with the clock mechanism and minute-hand spindle, of a time-printing type-wheel arranged rotary with said spindle, recording type-wheels arranged concentric with the time-printing type-wheel and rotary independently thereof, indicators on the recording type-wheels, a detent actuated by the plunger and adapted to engage the recording type-wheel, a platen carried on the plunger and facing the respective type-wheels, and an impression-receiving band passing between the type-wheels and platen, substantially as set forth.

3. The combination, with the clock mechanism and minute-hand spindle, of a time-printing type-wheel arranged rotary with said spindle, recording type-wheels arranged concentrically with the time-printing type-wheel and rotary independently thereof, indicators on the recording type-wheels, segmental racks having V-shaped notches and rigidly attached to and concentric with the latter type-wheels, a plunger movable at will of the operator, a V-shaped detent actuated by the plunger and adapted to engage the notches of the aforesaid racks, a platen carried on the plunger and facing the respective type-wheels, and an impression-receiving band passing between the type-wheels and platen, substantially as set forth and shown.

4. In combination with the clock mechanism and minute-hand spindle, a wheel mounted loosely on said spindle and provided with V-shaped notches in its periphery, a spring connecting said wheel to the spindle, a type-wheel fixed to the hub of the aforesaid wheel, a V-shaped detent adapted to engage the notched wheel, a plunger movable at will of the operator and actuating the detent, a platen carried on the plunger and facing the type-wheel, and an impression-receiving band passing between the type-wheel and platen, substantially as described and shown.

5. In combination with the clock mechanism and minute-hand spindle, a driving-wheel independent of the clock mechanism, an hour-wheel receiving motion from said driving-wheel, and an escapement mechanism receiving motion from the minute-hand spindle and controlling the movement of the said hour-wheel, as set forth.

6. In combination with the clock mechanism and minute-hand spindle, a driving-wheel independent of the clock mechanism, an hour-wheel receiving motion from said driving-wheel, an escapement mechanism receiving motion from the minute hand spindle and controlling the movement of the hour-wheel, a type-wheel fastened to the side of the hour-wheel, a platen movable toward and from the said type-wheel, and an impression-receiving band passing between said platen and type-wheel, substantially as described and shown.

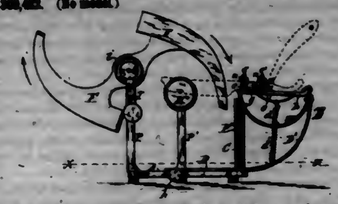
7. In combination with the clock mechanism and minute-hand spindle, a wheel mounted on and rotating with the said spindle, a driving-wheel independent of the clock mechanism, an hour-wheel receiving motion from said driving-wheel and provided with an annular row of teeth, detents normally in the path of said teeth, and projections on the aforesaid wheel of the minute-hand spindle disposed in such positions that each of said projections encounters one of the aforesaid detents and throws the same out of the path of the teeth of the hour-wheel, a type-wheel attached to the side of the hour-wheel, a platen movable toward and from the said type-wheel, and an impression-receiving band passing between the platen and type-wheel, substantially as described and shown.

8. In combination with the case A, clock mechanism, and minute-hand spindle, the wheel C, provided with V-shaped notches in its periphery and provided also with the sleeve C', mounted loosely on said spindle, the spring *c*, secured at opposite ends, respectively, to the spindle and to the wheel C, the tabular hub O', secured to the frame, the type-wheels D D', mounted loosely on the said hub, the segmental racks E E', rigidly attached to said type-wheels and having V-shaped notches, the detent F, arranged movably toward and from the aforesaid V-shaped notches, the spring *a*, forcing the detent toward said notches, the type-wheel L, secured to and rotating with the sleeve C', the driving-wheel W, independent of the clock mechanism, the hour-wheel G, receiving motion from said driving-wheel and provided with teeth *d' d'*, the detents I I', normally in the path of said teeth, cams *b b*, affixed to the latter detents, projections *e e* on the type-wheel L, and each traversing one of the aforesaid cams, the type-wheel *i*, attached to the side of the hour-wheel G, the platen P, facing the respective type-wheels, the plunger H, connected with the platen, the spring *d*, forcing the platen from the type-wheels, the lever *f*, pivoted intermediate of its length and connected at opposite ends, respectively, with the detent F and plunger H, the lever N, pivoted on the case and connected with the aforesaid plunger, the index-plates T T', secured to the exterior of the case, and indicators *g g'*, attached, respectively, to the type-wheels D D', all combined to operate substantially as set forth.

9. In combination with the type-wheels D, D', and L, platen P, and plunger H, connected with said platen, the bridge R, lever S, pivoted to said bridge, inking-roller U, pivoted to said lever, and the arm A, attached to the plunger and coupled to the lever S, substantially as described and shown.

10. In combination with the type-wheels D, D', and L, and platen P, arranged movably toward and from said type-wheels, the spool V, feed-rolls K K', ratchet J, attached to one of said rolls, the lever *j*, connected at one end with the platen, the pawl *k*, connected to the opposite end of the lever, the dog *k'*, engaging the ratchet, and the band O, passing from the spool between feed-rolls, substantially as described and shown.

411,587. RAZOR-SHARPENING MACHINE. Alexander Dey, Glasgow, County of Lanark, Scotland. Filed May 3, 1889. Serial No. 309,422. (No model.)



Claim.—1. In combination with the main frame and rotary strop-carriers, a razor-holder-supporting bracket pivoted to the main frame axially parallel with the plane of the strop-carriers, and a stay holding said bracket and connected to the main frame adjustable laterally in relation to the razor-holder, as set forth.

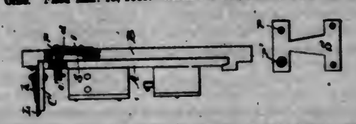
2. In combination with the main frame and strop-carriers pivoted to said frame rotatably in a vertical plane, a post rising from the said frame, a bracket pivoted to said post and oscillatory in a horizontal plane, a screw working in the frame horizontally and at right angles to the plane of oscillation of the bracket and holding the said bracket in its position, and a razor-holder mounted on said bracket, as set forth.

3. In combination with the main frame and strop-carriers pivoted to said frame rotatably in a vertical plane and a razor-holder arranged on the frame in a line parallel with the plane of the strop-carrier, a crank attached to the strop-carriers at one side thereof, a post rising from the frame at the opposite side of the strop-carriers, and a handle attached to said post, substantially as described and shown.

4. In combination with the main frame and rotatable strop-carriers, a bracket on said frame provided with two posts standing in line with the plane of the strop-carriers, a yoke pivoted to said posts, a razor-supporting bar pivoted to the yoke axially parallel therewith, springs sustaining said yoke and bar in their normal position, abutments on one side of said bar formed with screw-posts, clamping-nuts on the latter posts bearing on top of the razor-shank, a post rising from the opposite side of said bar, and a set-screw passing horizontally through the post and binding the razor-shank between the said screw and aforesaid abutments, substantially as described and shown.

5. The improved razor-sharpening machine, consisting of the frame A, formed with the lateral base-extension A' and posts P, P', and P'', the strop-carriers F F, pivoted to the side of the post P and provided with the crank I, the handle H, attached to the post P', the bracket B, formed with the vertical sleeve C, pivoted to the post P', the bracket B, formed with the vertical sleeve pivoted to the post P'' and with the horizontal base-extension D and upwardly-curved post or arm D', the yoke *a*, pivoted to the post D' and sleeve C, the bar *b*, pivoted at opposite ends to the ends of said yoke and provided with the downwardly-projecting brace *c*, the spring *d*, connecting the lower portion of the yoke to the base of the bracket B, the spring *d'*, connecting the brace *c* with the said portion of the yoke, abutments *e e* on one side of the bar *b*, formed with screw-threaded posts *f f'*, nuts *n n* on said posts, the post *f* on the opposite side of the bar, the set-screw *g*, passing horizontally through said post, and the set-screw *h*, working horizontally in the frame A and at right angles to the base-extension D of the bracket and provided with a circumferential groove in its head and engaging thereby the extremity of the aforesaid base-extension, substantially as described and shown, for the purpose set forth.

411,588. TELEPHONE-HOLDER. Charles T. Dickens, Cincinnati Ohio. Filed Mar. 15, 1889. Serial No. 303,427. (No model.)



Claim.—1. In a telephone-holder composed of two separable parts, the combination of a stationary frame B, to which the circuit-wires are attached, a removable frame A, carrying the telephone-instruments, and a switch connecting the ends of the circuit-wires and

normally completing the circuit on the stationary frame, arranged to be displaced, so that connection may be broken through the switch and made through the telephone by the action of a co-operating part on the removable frame when the two parts of the holder are joined, substantially in the manner and for the purpose described.

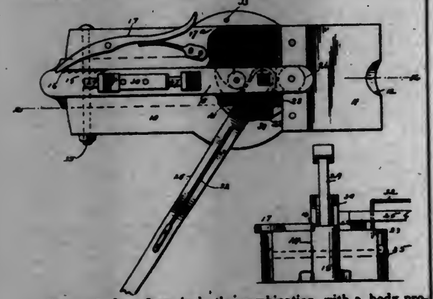
2. In a telephone-holder of two parts, the combination of the stationary frame B, holding the line-wires, a removable frame A, carrying the telephone-instruments, and a spring-switch on said stationary frame normally pressing against and connecting the ends of the circuit-wires, arranged to be pressed aside and automatically to break the circuit by contact with a co-operating member of said switch on the removable frame when the two parts of the frame are connected and automatically to close the circuit when the parts are separated, substantially as and for the purpose described.

3. In a telephone-holder of two parts, the stationary frame provided with a series of connection-pins, to which the line-wires are attached, said pins having enlarged heads, in combination with metallic spring-switches pressing against the under surface of the pin-heads and arranged to be displaced by the portable frame on the joining of the two parts, substantially as shown and described.

4. In a telephone-holder of two parts, the stationary frame B, in combination with the pins *p p'*, having enlarged heads, the double-armed spring S, portable frame A, and pin *k*, arranged in the manner and for the purpose described.

5. In a telephone-holder of two parts, the combination of the pins *p p'* with the heads *r r'*, spring S, screws *d d'*, and pin *k*, arranged substantially as and for the purpose described.

411,589. FLOOR-JACK. JOSEPH DIX, Abbotsford, Wis. Filed Aug. 9, 1888. Serial No. 282,249. (No model.)

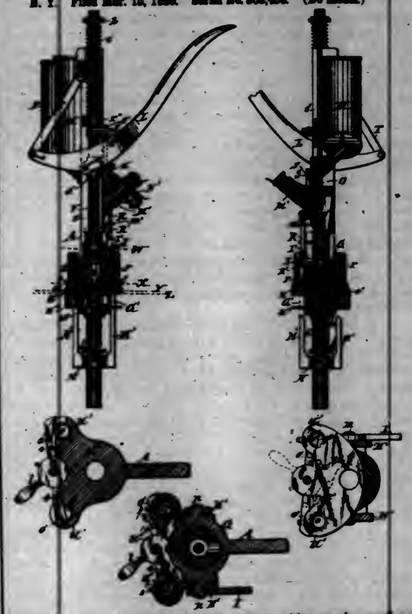


Claim.—1. In a floor-jack, the combination, with a body provided with a nose at its forward end having a transverse groove, a central longitudinal essentially T-shaped slot, and a cam-rabbet produced in its upper face contiguous to the nose and intersecting the said slot, of an essentially T-shaped jack-bar having notches in one side and provided with a recess at its forward end, an essentially hook-shaped dog pivoted in the jack-bar engaging the walls of the cam-rabbet, a transversely-slotted shoe secured to the said dog, and a handle also pivoted to the jack-bar vibrating in the recess of the shoe, detachable spikes passing through the said jack-bar, and a spring-actuated pawl engaging the notches of the bar, substantially as shown and described.

2. In a floor-jack, the combination, with a body having a nose integral with its forward end grooved transversely and provided with a recess in its upper face contiguous to the groove, a cam-recess formed in the upper face of the said body contiguous to the nose, an essentially T-shaped jack-bar reciprocating longitudinally in said body, provided with notches in one face near its rear end and a recess in its forward end, and a spring-actuated pawl engaging the notches of the jack-bar, of an essentially hook-shaped dog pivoted in the forward end of the jack-bar engaging the forward walls of the cam-rabbet, a transversely-recessed shoe secured to the said dog, a handle vibrating in the recess of the said shoe, a friction-roller engaging the hub of the dog and shoe, and a second friction-roller engaging the outer cylindrical surface of the said dog, spikes loosely projected through the jack-bar, and a spring engaging the contiguous surfaces of the spikes, substantially as shown and described.

3. In a floor-jack, the combination, with a body provided with a cam-rabbet in its upper face and a nose contiguous to the said cam-rabbet, provided with a transverse groove and an inclined central recess in its upper face contiguous to the groove, of an essentially T-shaped jack-bar sliding longitudinally in the body, having a recess in its forward end, an essentially hook-shaped dog pivoted to the jack-bar engaging the forward walls of the said rabbet, a shoe having a transverse recess fixed to the upper face of the dog, a handle also pivoted to the jack-bar vibrating in the recess of the shoe, friction-rollers engaging the front and rear of the said dog, spikes passing through the jack-bar at an inclination toward the rear, a spring engaging the contiguous faces of the spikes, and a pawl pivoted to the upper face of the body engaging one face of the jack-bar at or near its rear end, all combined to operate substantially in the manner and for the purpose specified.

411,590. CARTRIDGE-LOADER. EDWARD G. DOSCHEMITZ, Geneva, N. Y. Filed Mar. 15, 1889. Serial No. 303,426. (No model.)



Claim.—1. In combination with the cartridge-receiver and powder-channel over the same, ball-reservoirs at opposite sides of said channel and a ball-transferrer arranged movably laterally between the cartridge-receiver and the aforesaid channel and reservoirs and provided with passages adapted to communicate alternately with the said parts, as set forth.

2. In combination with the cartridge-receiver, a powder-channel above and in range with said receiver, ball-reservoirs disposed at opposite sides of and equidistant from the powder-channel, and a ball-transferrer arranged movably laterally between said receiver and reservoirs and provided with vertical passages arranged apart at a distance equal to that between the axis of the cartridge-receiver and one of the aforesaid reservoirs, substantially as set forth and shown.

3. In combination with the cartridge-receiver, a powder-channel above and in range with said receiver, ball-reservoirs disposed at opposite sides of and equidistant from the powder-channel, a ball-transferrer arranged movably laterally between said receiver and reservoirs and provided with vertical passages arranged apart a distance equal to that between the axis of the cartridge-receiver and one of the ball-reservoirs, and a gate arranged movably across the bases of the ball-reservoirs, as set forth and shown.

4. In combination with the cartridge-receiver, ball-reservoirs above said receiver and disposed at opposite sides of and equidistant from the axial line thereof, a ball-transferrer arranged movably laterally between said receiver and reservoirs, a gate arranged movably across the bases of the reservoirs, and lugs on the transferrer engaging the gate to move the same automatically, as set forth.

5. In combination with the cartridge-receiver, ball-reservoirs above said receiver and disposed at opposite sides of and equidistant from the axial line of the receiver, a ball-transferrer arranged movably laterally between said receiver and reservoirs, a gate arranged movably across the bases of the reservoirs, gages arranged movably across the said reservoirs above the gate, and arms on the gate actuating the gages.

6. In combination with the cartridge-receiver, ball-reservoirs above said receiver and disposed at opposite sides of and equidistant from the axial line of the receiver, a ball-transferrer arranged movably laterally between said receiver and reservoirs, a gate arranged movably across the bases of the reservoirs, gages arranged movably across the said reservoirs above the gate, arms on the gate actuating the gages, a spring engaging the gate, and lugs on the ball-transferrer engaging the gate, substantially as described and shown.

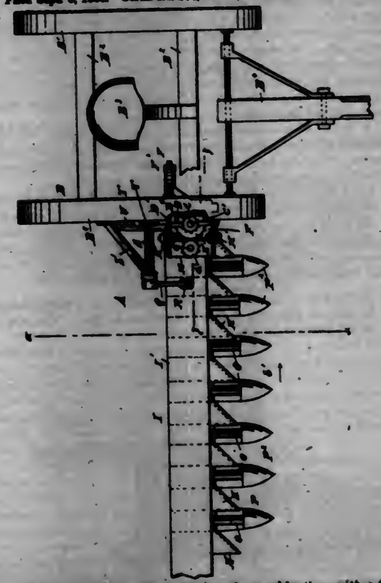
7. The combination of the ball-reservoir provided with a longitudinal slot, a gate across the base of said reservoir, a spring attached to the exterior of the reservoir adjustably longitudinally thereon, a gage attached to said spring and projecting through the aforesaid slot, and an arm attached to the gate and engaging the spring, substantially as described and shown.

8. In combination with the cartridge-receiver, a powder-and-ball transferrer pivoted to the front of the top of the said receiver and provided with two vertical passages equidistant from its pivot, two ball-reservoirs arranged over the transferrer at opposite sides of the axial line of the cartridge-receiver and equidistant from the pivot of the transferrer, a powder-duct between the ball-reservoirs and in range with the line of travel of the transferrer, a gate arranged movably across the bases of the ball-reservoirs, gages arranged movably across the said reservoirs above the gate, lugs on the transferrer engaging the gate, and arms on the gate operating the gages, substantially as described and shown.

9. The combination of the frame A, provided with the cartridge-receiver C and formed with the duct F', and vertical web A', having transversely through it the ports *f* and *g*, the powder-gage M', pivoted to one side of the said web, and the powder-reservoir M, adapted to communicate alternately with the aforesaid ports, substantially as described and shown.

10. The frame formed with a vertical sleeve provided with a lateral ammunition-duct, a tube secured in said sleeve and provided with a lateral coinciding ammunition-duct and formed below the sleeve with a horizontal opening toward the front and with horizontal projections above and below said opening, vertical perforations in the upper projection, tubular reservoirs inserted into the upper ends of said perforations, a horizontal gate pivoted to the said projection between the perforations thereof and movable into and out of the perforations, a ball-transferrer in the horizontal opening of the aforesaid tube and pivoted to the upper projection thereof and provided with vertical channels, lugs on said transferrer engaging the gate, and the cartridge-receiver attached to the lower end of the tube, substantially as described and shown.

411,591. MOWING-MACHINE. LE ROY O. DREW, Carthage, Dak. Filed Sept. 6, 1888. Serial No. 284,710. (No model.)



Claim.—1. In a mowing-machine, the combination, with a traction-wheel, as described, of an endless chain receiving a traveling motion from the forward motion of the said traction-wheel, a finger-bar carrying the said traveling chain, knife-blades held on the said endless chain, clamping-blades held parallel with the said knife-blades and slightly in front of the same, and guards secured on the said cutter-bar and each carrying a roller, above and below which travel the said clamping-blades and the said knife-blades, respectively, substantially as shown and described.

2. In a mowing-machine, the combination, with a traction-wheel provided with an endless traveling chain, of a finger-bar held to tilt and to swing on the said traction-wheel, an endless sprocket-chain held on the said finger-bar and deriving its motion from the endless chain of the said traction-wheel, guards held on the said cutter-bar and each provided with a roller, and clamping and knife blades held on the said endless sprocket-chain and passing over and under the said rollers, respectively, substantially as shown and described.

3. In a mowing-machine, the combination, with a finger-bar, of an endless sprocket-chain mounted to travel on the said finger-bar, guards projecting from the said finger-bar and each provided with a roller, and clamping and knife blades held on the said sprocket-chain and passing, respectively, over and under the said rollers, substantially as shown and described.

4. In a mowing-machine, the combination, with guards held on the finger-bar and each provided with a roller, of a clamping-blade adapted to pass over the top of the said roller to clamp the grass in position for cutting, substantially as shown and described.

5. In a mowing-machine, the combination, with guards held on the finger-bar and each provided with a roller, of a clamping-blade adapted to pass over the top of each roller to clamp the grass, and a knife-blade adapted to pass over the said guard and under the said roller to cut the grass clamped between the said roller and clamping-blade, substantially as shown and described.

6. In a mowing-machine, the combination, with the track B^5, a plate F, pivoted to the latter, the pivots being arranged transversely of the said track, and thereby adapting the plate to swing vertically in line with it, and a shaft mounted to turn in the said plate and carrying a gear-wheel, of a finger-bar pivotally connected with the said plate, a shaft mounted to turn in the said finger-bar and carrying a pinion meshing into the said gear-wheel, the said shaft imparting motion to an endless chain carrying the knife-blades, and a lever mounted on the track and connected with the said finger-bar for successively tilting and raising the said finger-bar, substantially as shown and described.

7. In a mowing-machine, the combination, with the track B^5, and a plate F, pivoted to the latter, the pivots being arranged transversely of the said track, and thereby adapting the plate to swing vertically in line with it, provided with a stop-lug, of a cutter-bar pivotally connected with the said pivoted plate, a fixed bracket to limit the swinging movement of the said pivoted plate, and a lever mounted on the track and connected with the said finger-bar to tilt and raise the latter successively, substantially as shown and described.

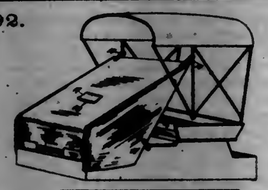
8. In a mowing-machine, the combination, with the track B^5, and a plate F, pivoted to the latter, the pivots being arranged transversely of the said track, and thereby adapting the plate to swing vertically in line with it, having a lug to limit its swinging motion, of a finger-bar pivotally connected at one end to the said pivoted plate, gear-wheels held on the said plate and finger-bar and in mesh with each other at the pivotal line, a chain connected with the said finger-bar, a segmental pulley to which the said chain is fastened, a shaft carrying the said pulley, and a lever mounted on the track and secured on the said shaft for tilting and raising the said cutter-bar, substantially as shown and described.

9. In a mowing-machine, the combination, with the track B^5, and a plate F, pivoted to the latter, the pivots being arranged transversely of the said track, and thereby adapting the plate to swing vertically in line with it, having a lug to limit its swinging motion, of a cutter-bar pivotally connected at one end to the said pivoted plate, gear-wheels held on the said plate and cutter and in mesh with each other at the pivotal line, a chain connected with the said cutter-bar, a segmental pulley to which the said chain is fastened, a shaft carrying the said pulley, a lever mounted on the track and secured on the said shaft for tilting and raising the said cutter-bar, and a notched bracket for locking the said lever in any desired position, substantially as shown and described.

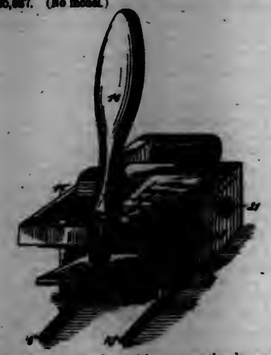
411,592. STORM-APRON FOR VEHICLES. PETER J. GERBER and DAVID B. SHELLY, Pittston, Pa. Filed June 26, 1889. Serial No. 315,982. (No model.)

Claim.—As an improved article of manufacture, a storm-apron consisting of the body portion 10, provided at one end with the flaps 12 and 13 formed from the material forming the apron, and the spring 14, connecting the said flaps, as specified.

411,592.



411,598. APPARATUS FOR STAMPING ENVELOPES. HARRISON HELLAND and FRANCIS MATSON, Houston, TEX. Filed Feb. 23, 1888. Serial No. 265,667. (No model.)



Claim.—1. The combination, with an operating-lever carrying an affixing plate or pad, a stamp-carrying roller, and a fixed knife, of guide-rollers, a moistening-sponge, a pivoted frame to which the sponge is connected, a movable knife, and gearing, substantially as described, for operating said guide-rollers, sponge-frame, and movable knife in regular sequence, substantially as and for the purpose specified.

2. In a stamp-affixing machine, the combination, with a receptacle provided with an upper compartment and a lower water-compartment, a stamp-carrying roller, and engaging guide-rollers journaled in the upper compartment, the upper guide-roller provided with a pinion and a balance-rod, of a rack engaging the pinion, a notched block attached to the rack engaging the balance-rod, an angular sponge-carrying frame pivoted in the lower compartment, a connection between said sponge-frame and balance-arm, and an angular arm pivoted to the receptacle provided with an affixing-plate and reciprocating the rack, substantially as and for the purpose herein set forth.

3. In a stamp-affixing machine, the combination, with a receptacle provided with an upper compartment and a lower water-compartment, a stamp-carrying roller, and engaging guide-rollers journaled in the upper compartment, the upper guide-rollers provided with a pinion and a loosely-mounted balance-rod, of an angular arm pivoted to the receptacle provided with an affixing-plate, a rack reciprocated from said arm, a notched block attached to said rack engaging the balance-rod, a sponge-carrying frame pivoted in the water-compartment and connected with said balance-bar, and the knives or cutters in front of the guide-rollers, all arranged to operate in regular sequence, as set forth.

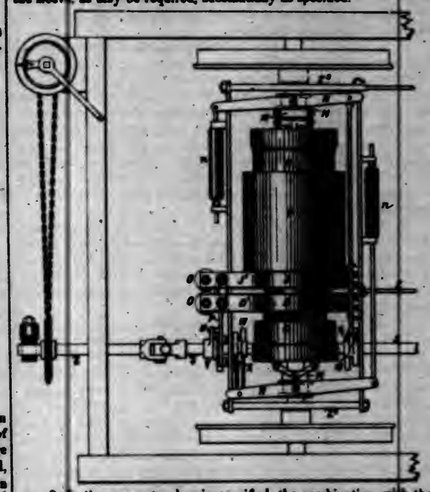
4. In a stamp-affixing machine, the combination, with a roller having strips of stamps wound thereon, of guide-rollers located in front of said stamp-rollers, a frame pivoted below the guide-rollers, and a sponge clamped and carried by said frame, adapted to moisten the stamps when delivered from the guide-rollers, substantially as shown and described.

5. In a stamp-affixing machine, the combination, with a sponge provided with a neck and vertical projection from said neck, of a movable frame adapted to embrace said vertical projection, substantially as shown and described.

6. In a stamp-affixing machine, the combination, with a sponge provided with a neck and a vertical projection from said neck, of a perforated pivoted frame adapted to embrace said neck projection, substantially as and for the purpose specified.

411,594. CAR STARTER AND BRAKE. JOHN J. HOSKIN, Tideswell, Stockport, County of Derby, England. Filed July 13, 1888. Serial No. 317,488. (No model.) Patented in France Apr. 7, 1888, No. 189,889; in Belgium Apr. 14, 1888, No. 81,381; in Italy June 30, 1888, XXII, 23,297, XLVI, 76; in Germany Dec. 9, 1888, No. 47,908, and in Austria-Hungary Mar. 5, 1889, No. 44,289 and No. 5,134.

Claim.—1. In a power-storing brake for facilitating the starting of tram-cars, the combination, with a drum, springs, and sleeve connected and arranged as described, and mounted loose on the wheel-axle or on a shaft geared therewith, of brakes independently controlling the rotation of the barrel and of the sleeve, respectively, and of friction-clutches adapted to connect the wheel axle or shaft with the barrel or with the sleeve, respectively, and of oppositely-acting sets of pawl-and-ratchet gear, respectively connecting the barrel and the sleeve with the corresponding brakes and clutches, the whole arranged for storing or giving out power indifferently by the drum or the sleeve, as may be required, substantially as specified.



2. In the apparatus herein specified, the combination, with the independently-acting spring-pressed brake-straps respectively controlling the rotation of the barrel and sleeve, of the lever and crank-gear, substantially as described, by which the brake-straps are separately operated, as specified.

3. In the apparatus herein specified, the combination, with the spring-pressed brake-straps, and with gear by which they are independently released, of the cam-gear, substantially as herein described, whereby the clutches are respectively operated, the connection between the clutch and brake operating gears being such that the one or other of the former must necessarily be caused to gear the barrel or sleeve with the wheel-axle or shaft before the corresponding brake can be relieved, as specified.

4. In the apparatus herein specified, the combination, with the clutches and clutch-levers and clutch operating and locking cam-gear, of spring or yielding fulcra for the clutch-levers, whereby the pressure of the clutches is limited and overstraining is prevented.

5. In the apparatus herein specified, the combination, with the one longitudinal shaft, of the two sets of clutch operating and locking cam-gear, the brake-operating crank-disk and lever-connections, and the carrier and abutments on the crank-disk, whereby independent motion of the said shaft and the clutch-operating gear is permitted within certain limits, as and for the purposes described.

411,595. UNDERGROUND CONDUIT. DAVID M. HYLAND, Chicago, Ill., assignor of one-half to John P. Barrett, same place. Filed Mar. 1, 1889. Serial No. 301,611. (No model.)



Claim.—1. The combination, with the cables of an underground-conduit extending to a building, of a chamber closed to the building, into which chamber the conduit opens, said chamber being provided with an inlet to the outside air and an outlet leading to a flue, substantially as and for the purpose specified.

2. The combination, with the conduit *a*, containing electric conductors, of the chamber *c*, with which said conduit is connected, said chamber being provided with an opening *d* to the outside air, and an outlet *e*, connected with a heated flue, substantially as and for the purpose specified.

411,596. PERCOLATOR. HANS KIENTH, Milwaukee, Wis. Filed June 24, 1889. Serial No. 315,021. (No model.)



Claim.—1. In a percolator, the combination, with a vessel having interior supporting-lugs near its bottom, of a perforated disk resting on said lugs, a tube extending within said glass and passing through said perforated disk, and a siphon extending into said tube, substantially as set forth.

2. In a percolator, the combination, with a vessel having interior supporting-lugs near its bottom, of a perforated disk resting on said lugs and having a central larger perforation fitted with a perforated cork, a top or cover with similar central perforation and perforated cork, a tube passed through said perforated corks and having a perforated cork at its upper end and openings or notches at its lower end, and a siphon, one end of which is passed through the last-named perforated cork and extended down within said tube, substantially as set forth.

3. In a percolator, the combination, with a vessel having interior supporting-lugs near its bottom, of a perforated disk resting on said lugs and having a central perforation fitted with a perforated cork, a tube having a perforated cork at its upper end and openings at its lower end, passed through said first-named perforated cork, a siphon fitted in said tube, and a cup of felt or cloth having a central perforation fitting around said tube and resting on said perforated disk and against the inner walls of the said vessel, substantially as set forth.

411,597. CART-SEAT. JOHN M. LEE, Douglas, Ark. Filed July 1, 1889. Serial No. 316,351. (No model.)



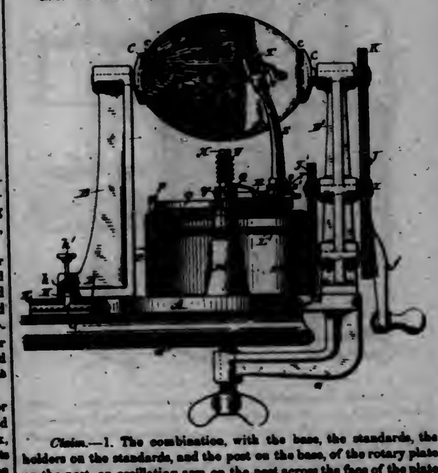
Claim.—1. The combination, with a seat-supporting frame provided with a central vertical aperture, of the seat B, provided with a depending bolt held in said aperture, provided with a flanged head secured to the under side of the seat, said head provided with a convexed under surface, and a washer disposed upon the bolt between the seat and seat-frame, and provided with a convexed upper surface engaging the flanged head of the bolt, substantially as and for the purpose described.

2. The combination, with the seat-frame provided with a central vertical aperture, of the seat B, provided with a depending pivot-bolt operating in said aperture E, said bolt formed with lateral wings or flanges *c c*, adapted to be bolted to the under side of seat B, the central portion of said flanges formed convexed on their under side, and a nut or washer disposed on said bolt between the seat and supporting-frame, provided with an upper convex surface, substantially as and for the purpose described.

3. The hereinbefore-described improvement in cart-seats, consisting of a supporting-frame A, provided with a central aperture E and a spring-catch I at one side, the seat B, provided with a depending pivot-bolt operating in said aperture E, said bolt provided with a flanged head having a convex bearing-surface on its lower face, depending lugs or stops secured to said seat, adapted to engage the spring-catch I, and a washer disposed between the seat and seat-frame, provided with an upper convexed bearing-surface adapted to engage the flanged bolt-head, all arranged substantially as and for the purpose described.

4. The combination, with the supporting-frame A, provided with a central aperture E, a circular metallic track G, secured thereto, as shown, and a spring-catch I, secured to one side of said frame, of the revolving seat provided with a depending pivot-bolt operating in the aperture E, and provided with a flanged head having a convexed bearing-surface, metallic bearing-plates secured to the under side of said seat, adapted to ride upon the track G, depending stops secured to the seat, adapted to engage the spring-catch I, and a washer disposed on the bolt between the seat and supporting-frame, having a convexed bearing-surface engaging the flanged head of the bolt, all arranged substantially as and for the purpose set forth.

411,598. COCOANUT-PARER. ABRAM W. LEWIS, Asbury Park, N. J. Filed Nov. 23, 1888. Serial No. 291,681. (No model.)



Claim.—1. The combination, with the base, the standards, the holders on the standards, and the post on the base, of the rotary plate on the post, an oscillating arm on the post across the face of the plate and carried in one direction by said plate, a trip for releasing the arm, a spring for returning the arm to its starting-point, an upright knife-post, and a knife-holder carried by the said post, substantially as set forth.

2. The combination, with the base, the standards, the holders, and the post on the base, of the rotary plate on the post between the standards, the horizontally-oscillating and vertically-swinging arm on the post above the plate and having a depending projection engaged by the plate to carry it in one direction, a projection or cam for raising the arm to release its projection from the plate, a spring for returning the arm to its starting-point, and an upright knife-post on said arm and provided with a knife-holder, substantially as set forth.

3. The combination, with a plate having opposite marginal apertures and revolving on a central post projecting from the base, of the horizontal arm having a depending lug to pass into the apertures in the plate, the upright post provided with a paring-knife holder and carried by the horizontal arm, and means for revolving the plate, substantially as shown and described.

4. The combination, with the circular plate revolved by gearing on a central post and having opposite marginal apertures, of a horizontal arm having a depending lug to set in the apertures and fitted loosely to the central post, a spring coiled around the central post and set in the horizontal arm, an upright post carrying a paring-knife and secured to the horizontal arm, and a releasing-cam placed to release the horizontal arm from the revolving plate, substantially as shown and described.

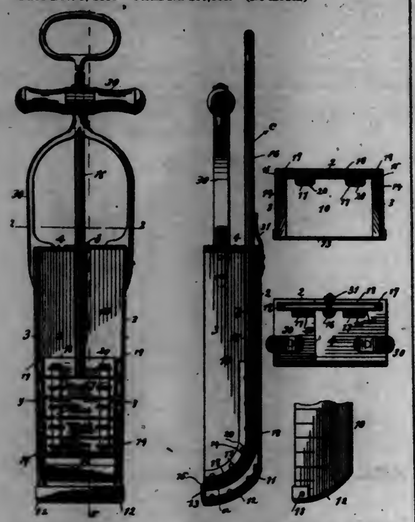
5. A knife-holder containing a paring-knife and having a concave face, swiveled on an upright post, to carry the knife over the surface of the cocoanut in paring the same, substantially as shown and described.

6. The combination, with a revolving plate carried on the hub of a gear and revolving on a central post, of the horizontal arm secured

to a collar fitted loosely on the central post, an upright post carrying a paring-knife and secured to the horizontal arm by a hinge-joint, a coiled spring placed to stiffen said joint, and a spring coiled around the central post and attached to the arm and post, substantially as shown and described.

7. The combination, with a fixed and an adjustable standard, and holders revolubie in said standards, of a fixed post, a revoluble plate, a knife-post, an arm carrying the knife-post loosely mounted on the fixed post, and provided with a lug engaging the revoluble plate, a spring on the fixed post engaging said loose arm, and a cam in the path of said arm, substantially as shown and described.

411,599. BUTTER-CUTTER. JOSEPH H. LOCKER, Vall's Gate, N. Y. Filed Nov. 5, 1888. Serial No. 290,008. (No model.)



Claim.—1. The combination, with a supporting-frame or body provided with curved ways, of a blade mounted to slide in said ways, a handle, and a flexible connection between the blade and handle, substantially as described.

2. The combination, with a supporting-frame or body having an open side and end and provided with curved ways, of a blade mounted within said ways, a blade-handle, and a flexible connection between said blade and handle.

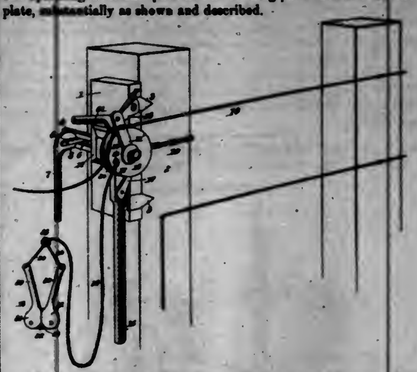
3. The combination, with a supporting-frame or body provided with tapering side walls and with curved ways, of a blade mounted to slide in said ways, a blade-handle, and a flexible connection between said blade and handle.

4. The combination, with a supporting-frame or body provided with curved ways, of a knife or blade 15, provided with lugs which ride in said ways, cross-strips 18, also provided with lugs which ride in the ways, spring-strips connected to the knife and to the cross-pieces, and a handle connected to the upper cross-piece, substantially as described.

411,600. WIRE-STRETCHER. DAVID H. LOSH, Paradise, Cal. Filed May 7, 1888. Serial No. 273,202. (No model.)

Claim.—1. A wire-stretcher consisting of a plate having a lateral slotted arm, a slotted bar projecting through the slotted arm, movable therein and having a retaining projection at one end, and a lever with a cam-shaped head pivoted to the other end, a securing-chain attached at one end to the plate and adapted to engage with the slotted bar by means of the retaining-catch on the said slotted bar, a drum mounted on the plate, with a ratchet, an operating-lever, and retaining and operating pawls, a wire-clamp for holding the end of a fence-wire, and a rope or chain connecting the wire-clamp with the drum and adapted to wind on the latter, substantially as shown and described.

2. In a wire-stretcher, a plate to rest against a fence-post, having a lateral slotted arm, a slotted bar projecting through the lateral slotted arm, movable therein and having a retaining-catch on one end and a lever with a cam-shaped head pivoted to the other end, a chain for securing the plate to a fence-post, attached at one end to the plate and adapted to engage with the slotted bar by means of the retaining-catch on the end of said slotted bar, and a winding-drum with a ratchet and operating lever and pawl and a retaining pawl mounted on the plate, substantially as shown and described.



3. In a wire-stretcher, the plate 1, with projections 3 on one edge, the lateral arm 4 on the other edge, with slot 5, movable bar 6, with slot 11, projecting through a slotted arm 4, and having a projection 9 on one end and a lever 7, with cam-shaped head 8, pivoted to the other end, the chain 10, having one end connected to plate 1 and adapted to extend through slotted bar 6 and engage projection 9, the drum 13, with cut-away portion 29 in its flange 30, and clamping-lever 31, with cam-shaped head 32, wedging against drum 13, the ratchet 14, operating-lever 16, operating-pawl 17, and retaining-pawl 15, engaging ratchet 14, substantially as shown and described.

411,601. APPARATUS FOR MOISTENING AND SEALING ENVELOPES. NAPOLEON MATTE and CHARLES MONTMINY, Quebec, Quebec, Canada. Filed Feb. 20, 1889. Serial No. 300,597. (No model.)



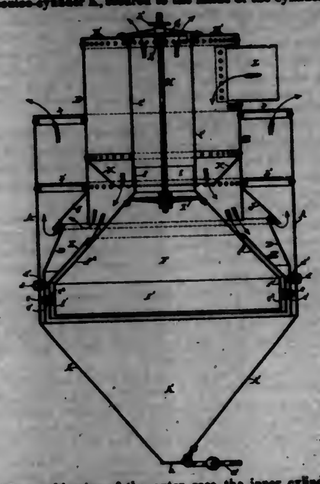
Claim.—1. In an apparatus for moistening and sealing the gummed flaps of envelopes and other wrappers, the combination, with a bed-plate for supporting the gummed edge, of the pivoted cylindrical water-reservoir 6, the flat hollow open-ended projection 7, forming a lateral tubular extension of said reservoir, and a pad 8, held in the said projection, from which it may extend into the reservoir, as shown and described.

2. An apparatus for moistening and sealing the gummed flaps of envelopes, wrappers, and labels, consisting of the frame 1, formed of the flat boxing 2, with the rear vertical projections 4, the plate 20, with supporting spring ends 21, located in the forward part of boxing 2, the cylindrical reservoir 6, pivoted in the projections 4 and having the moistening-pad holder 7, projecting over the boxing 2, with the cut-away portion 12 and the moistening-pad 8, held in projection 7 and extending into reservoir 6, and the weighted plate 10, pivoted at its rear end to the lower part of projections 4, and having its front end resting on the outer edge of boxing 2, with the angular projection 11 on its upper surface conforming to the cut-away portion 12 in the pad-holder 7, substantially as shown and described.

411,602. DUST-COLLECTOR. BENJAMIN F. HIMMELSBERGER and CHARLES S. MCCOY, Chattanooga, Ohio. Filed June 20, 1888. Serial No. 314,973. (No model.)

Claim.—1. In a dust-collector, the combination of the outer shell A A', the cylinder B, and stay-bars connecting them and leaving a free air passage at top between the two, the inner cylinder C, open at the top, the cap B', to close the opening between cylinders B and C, the inlet L, to the top of the chamber between the cylinders B C, and the inverted funnel F, connected to the lower end of cylinder C and having its enlarged flaring lower end extending outwardly, so as to form a contracted annular passage between it and the shell A, substantially as and for the purpose set forth.

2. The combination, substantially as hereinbefore set forth, of the cylinders A B C, connected together, as shown, the inverted funnel F, connected at its upper end with the inner cylinder C, the cap B', closing the top of cylinder B, surrounding the central opening, and the inverted conical cylinder K, secured to the inside of the cylinder B.



3. The combination of the outer case, the inner cylinders B C, and inverted funnel F, connected together, as shown, with the shell K, secured to the cylinder B, the shell D, secured in the lower part of the outer case, and the bolts, nuts, and collars for securing the said shell D to the other shell and leaving an air-space between them, substantially as shown and described.

4. The combination of the outer case, the inner cylinders B C, the cap B', closing the top of the cylinder B, the shell F, connected to the cylinder B, the shell D, within the lower part A of the outer case and separated therefrom, and the shell J, secured at its smaller end around the cylinder B and having its lower flaring edge overhanging the upper edge of the cylinder D, substantially as shown and described.

5. The combination, substantially as specified, of the outer shell A A', the cylinder B, and stays *b b'*, connecting the two, the inverted-funnel-shaped shell consisting of the parts F *f f'*, and cylinder C, centrally located within said shells A B, the shell D within the lower part A of the outer case, the shell J, overhanging the upper end of shell D, and the shell K, secured inside of cylinder B to deflect the air toward the shell of said central funnel.

6. The combination of the outer shell A A', the cylinder B, cylinder C, and shell F *f f'*, the shell J, outside of cylinder B, and shell K, within it, and the shells D and E, arranged in the lower part A of the outer case and separated from each other, substantially as shown, and for the purpose specified.

7. The combination, substantially as set forth, of the outer case A A', the cylinders B C, the stays to connect the case to cylinder B, the cap inclosing the space between the two cylinders at the top, the shells D E, arranged in the lower part of the case, with the shell F, having the neck *f* to slide within the lower end of cylinder C, and the part *f'*, parallel with the inclined portion of the shell E, and means, such as shown, to vertically adjust the shell F with relation to the shell E to regulate the passage between the two, for the purpose set forth.

8. In a dust-collector such as described, consisting of cylindrical shells, one within the other, and separated, as shown, the said outer and inner cylinders being open at the top, and the intermediate cylinder closed at the top and having an induction-port near its upper end, the combination of the shell F, having neck telescoped in the lower end of the central cylinder, the spider secured to said shell, the bar G, crossing the upper end of the said central cylinder, the rod H, passing through said bar and having its lower end secured to the spider, the hand-wheel and nuts to vertically adjust the shell F, and the outer shell E, of similar shape surrounding said shell, for the purpose set forth.

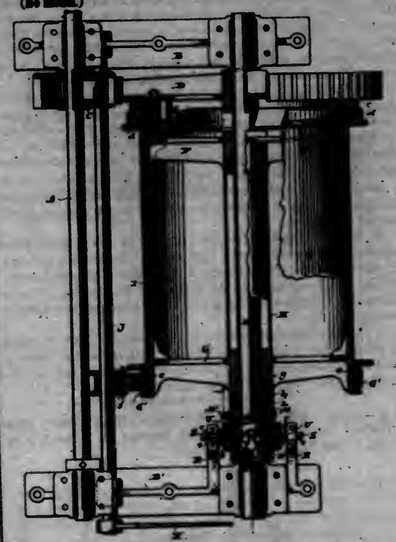
411,603. STOVE OR FURNACE DAMPER. ALBERT M. HOUGHAM, Port Townsend, Wash. Filed May 5, 1889. Serial No. 310,049. (No model.)



Claim.—1. In combination, a stove-pipe having a slot therein, a plate affixed to the pipe and having a corresponding slot, the said plate carrying a bearing for the damper-axle, a revolving damper having its axle resting on said bearing, and a cover for the said slotted plate.

2. A damper attachment for stove or furnace pipes, consisting of a plate having a slot therein, and a bearing for the damper-axle, said slotted plate being provided with a cover, substantially as and for the purpose set forth.

411,604. HOISTING-MACHINE. EDWARD Y. HOUSE and HENRY B. TEVIS, Milwaukee, Wis. Filed Mar. 20, 1889. Serial No. 303,942. (No model.)



Claim.—1. In a hoisting-machine, the combination of a longitudinally-adjustable winding-drum and a friction-ring adjustable to or from the winding-drum simultaneously with the longitudinal movement of the latter, substantially as set forth.

2. In a hoisting-machine, the combination of a longitudinally-adjustable shaft, a friction-ring carried by the shaft, and a winding-drum longitudinally adjustable on the shaft simultaneously therewith and to or from the friction-ring, substantially as set forth.

3. In a hoisting-machine, the combination of a shaft, a friction-ring carried by the shaft, a winding-drum loose on said shaft in opposition to the friction-ring, opposing disks also loose on the shaft, spreaders interposed between the disks, a collar on the shaft in opposition to one of the disks, a sleeve interposed between the other disk and adjacent head of the drum, and a lever mechanism connected to the spreaders, substantially as set forth.

4. In a hoisting-machine, the combination of a shaft, a friction-ring carried by the shaft, a winding-drum arranged on said shaft in opposition to the friction-ring, opposing disks also loose on the shaft, spreaders interposed between the disks, a collar on the shaft in opposition to one of the disks, a sleeve interposed between the other disk and adjacent drum-head, an adjusting-nut screw-threaded to the sleeve, and a lever mechanism connected to the spreader, substantially as set forth.

5. In a hoisting-machine, the combination of a shaft, a friction-ring carried by the shaft, a winding-drum loose on said shaft in opposition to the friction-ring, opposing disks also loose on the shaft, spreaders interposed between the disks, a collar on the shaft in opposition to one of the disks, a sleeve arranged to impinge against the other disk, an anti-friction washer interposed between the sleeve and adjacent drum-head, and a lever mechanism connected to the spreaders, substantially as set forth.

6. In a hoisting-machine, the combination of a shaft, a friction-ring carried by the shaft, a winding-drum loose on said shaft, opposing disks also loose on the shaft, spreaders interposed between the disks and provided with squared shanks, a collar on the shaft in opposition to one of the disks, a sleeve interposed between the other disk and adjacent drum-head, collared trunnions screw-threaded to the spreaders, bearings for the trunnions, a ball having its ends fitted to the

shanks of said elliptical nuts, washers arranged on the trunnions between the collars thereon and bail, and a lever connected to said bail, substantially as set forth.

7. In a hoisting-machine, the combination of a shaft, a friction-ring carried by the shaft, a winding-drum loose on said shaft, opposing disks also loose on the shaft and provided with interlocking fingers, spreaders interposed between the disks, a collar on the shaft in opposition to one of the disks, a sleeve interposed between the other disk and adjacent drum-head, and a lever mechanism connected to the spreaders, substantially as set forth.

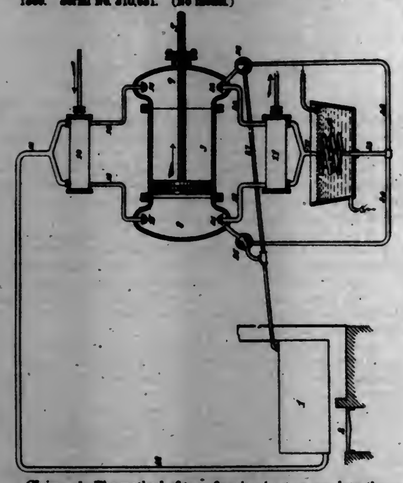
8. In a hoisting-machine, the combination of a shaft, a friction-ring carried by the shaft, a winding-drum loose on said shaft, opposing disks also loose on the shaft and provided with lugs, a slotted bracket arranged to engage said lugs, spreaders interposed between the disks, a collar on the shaft in opposition to one of the disks, a sleeve interposed between the other disk and adjacent drum-head, and a lever mechanism connected to the spreaders, substantially as set forth.

9. In a hoisting-machine, the combination of a shaft, a friction-ring carried by the shaft, a winding-drum loose on said shaft in opposition to the friction-ring, opposing disks also loose on the shaft and provided with horizontal interlocking fingers and vertical lugs, a slotted bracket arranged to engage said vertical lugs, spreaders interposed between the disks, a collar on the shaft in opposition to one of the disks, a sleeve interposed between the other disk and adjacent drum-head, and a lever mechanism connected to the spreaders, substantially as set forth.

10. In a hoisting-machine, the combination of a longitudinally-adjustable shaft provided with a rigid collar, a friction-ring having a rigid connection with the shaft, and a longitudinally-adjustable winding-drum interposed between the collar and friction-ring to move simultaneously with said shaft to or from the friction-ring, substantially as set forth.

11. In a hoisting-machine, the combination of a shaft provided with a rigid collar, a friction-ring having a rigid connection with the shaft, and a winding-drum loosely arranged on said shaft between the collar and friction-ring, substantially as set forth.

411,606. METHOD OF TRANSFORMING HEAT ENERGY INTO MOTIVE POWER. JAMES J. MCTIGUE, Pittsburg, Pa. Filed May 13, 1889. Serial No. 310,691. (No model.)



Claim.—1. The method of transforming heat energy into the energy of tension of a vapor, consisting in heating a liquid and pumping it in a divided state into a body of air or other gas or vapor of lower temperature.

2. The method of transforming heat energy into the energy of tension of vapor, consisting in heating a liquid under pressure and pumping it in a subdivided state into a body of air or gas or vapor also under pressure, but of lower temperature.

3. The method of transforming heat energy into the energy of tension of a vapor, consisting in heating a liquid under pressure sufficient to prevent ebullition and pumping such liquid in an atomized form into a body of air, gas, or vapor.

4. The method of transforming heat energy into the energy of tension of a vapor, consisting in heating a liquid under pressure independent of that due to its own vapor and sufficient to prevent ebullition, and injecting such liquid into a body of air, gas, or vapor having a pressure above that of such boiling-point of said liquid.

5. The method of transforming heat energy into motive power in a piston-engine, consisting in maintaining a working-body of air, gas, or vapor behind the piston in said engine and injecting at once into the whole body of such air, gas, or vapor a liquid heated to a higher temperature, and thereby increasing the tension of such atmosphere and moving the piston.

6. The method of transforming heat energy into motive power in a piston-engine, consisting in maintaining a working-body of air, gas, or vapor behind the piston in said engine and injecting at once into the whole body of such air, gas, or vapor a liquid heated to a higher temperature and in a subdivided state.

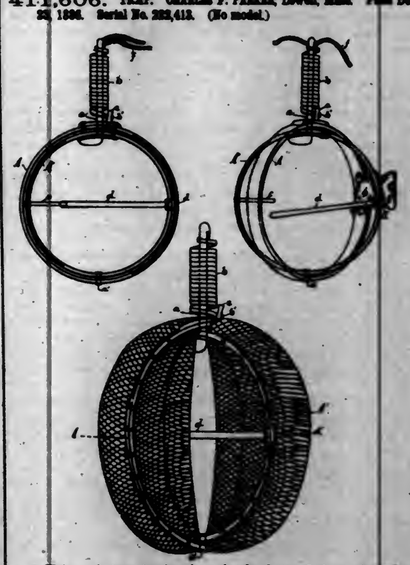
7. The method of transforming heat energy into motive power in a piston-engine, consisting in maintaining a working-body of air, gas, or vapor behind the piston in said engine and injecting at once into the whole body of such air, gas, or vapor a spray of liquid heated to a higher temperature.

8. The method of transforming heat energy into motive power in a piston-engine, consisting in maintaining a working-body of air, gas, or vapor under pressure behind the piston in said engine and injecting at once into the whole body of air, gas, or vapor a spray of liquid heated to a higher temperature.

9. The method of transforming heat energy into motive power in a piston-engine, consisting in maintaining two separate working-bodies of air, gas, or vapor—one ahead of the piston, the other behind it—and injecting into the body of air, gas, or vapor behind the piston a spray or stream of heated liquid and into the body of air, gas, or vapor ahead of the piston a spray or stream of cooler liquid.

10. The method of transforming heat energy into motive power in a piston-engine, consisting in maintaining two separate working-bodies of air, gas, or vapor—one ahead of the piston, the other behind it—and injecting into the body of air, gas, or vapor behind the piston a spray or stream of heated liquid and into the body of air, gas, or vapor ahead of the piston a spray or stream of cooler liquid, and then reversing the hot and cold sprays relatively to the two bodies of air, gas, or vapor on the respective sides of the piston.

411,606. TRAP. CHARLES F. PARKER, Lowell, Mass. Filed Dec. 23, 1886. Serial No. 222,412. (No model.)



Claim.—A trap having jaws in the form of rings, pivoted one within the other at diametrically-opposite points, one of said pivots being a spindle secured to said inner ring and projecting through said outer ring, a spiral spring surrounding said spindle outside of said rings and secured at one end to said spindle and at the other end to said outer ring, a catch projecting inward from said inner ring, and a trigger or bar hinged to said inner ring opposite said catch and extending outward to engage said outer ring and inward to engage said catch, as and for the purpose specified.

411,607. HORSE HAY-RAKE. SAMUEL PETTIT and WILLIAM LOTTRIDGE, Grinnell, Iowa, assignors to Cleaver, Shuttz & Austin, same place. Filed July 5, 1888. Serial No. 316,927. (No model.)

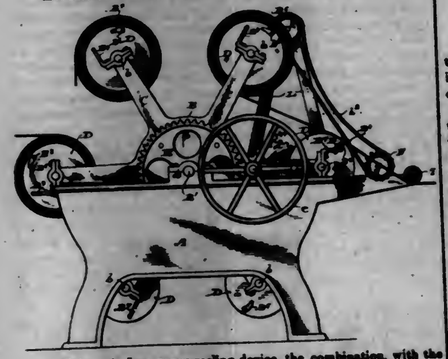


Claim.—1. In a horse hay-rake, in combination with the frame or draft-bars, oscillating tooth-carrying head and toggle-levers, one of which is pivoted to the frame or draft-bars and the other to the oscillating tooth-carrying head, and one of which is perforated with a series of holes *d*, a pivot-bolt for pivotally connecting the two members of the toggle-lever, which pivot-bolt is carried upon a thumb-lever, by means of which it may be released from and engaged with said toggle-lever bars, substantially as described.

2. In a horse hay-rake, in combination, a frame or draft-bars, oscillating tooth-carrying head and toggle, one member of which is perforated with a series of holes *d* and provided with a perforated plate K, having a guide-groove *k*, and the other member of which carries a spring-actuated thumb-lever with an attached pivot-bolt G, and a bracket *i*, with a guide-lug *i'*, substantially as described.

3. In a horse hay-rake, in combination with the rake-teeth, swinging toggle-levers, the pivot-bolt G, fixed to a spring-actuated thumb-lever H, substantially as described, and for the purpose specified.

411,608. PAPER-REEL. EDWARD J. POPE and CHARLES H. POPE, Eau Claire, Wis. Filed Sept. 3, 1888. Serial No. 284,413. (No model.)



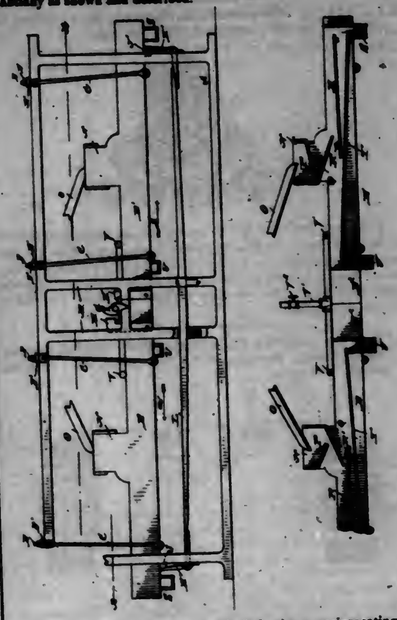
Claim.—1. In a paper-reeling device, the combination, with the frame and reels and their pinions and a fixed power-driven pinion for successively revolving said reels, of a suitably-driven chain arranged to overhang the path of each newly-filled reel while it is rising to give place to an empty reel and to engage the pinion of said filled reel and revolve it until the paper is taken by the next lower reel, substantially as described.

2. The combination, with a paper-reel frame and reels carried thereby, of pinions fixed on the shafts of said reels, a suitably-driven stationary pinion for revolving each reel in succession when the reel-frame is at rest, and other driving-connections adapted to engage the pinion of each newly-filled reel as it is lifted by the turning of the reel-frame to give place to an empty reel, substantially as described.

3. The combination, with a paper-reel frame, of a reel, a rock-shaft, and clamping and cutting teeth carried thereby, a dog secured to one end of the rock-shaft, and a tripping-arm carried by the reel-frame arm and adapted by engagement with said dog to revolve the rock-shaft and cause the teeth to clamp and cut the paper as the reel revolves under it, substantially as described.

411,609. ORE-CONCENTRATOR. SAMUEL PORTER, Denver, Colo. Filed June 6, 1889. Serial No. 276,904. (No model.)

Claim.—1. In an ore-concentrator, two beds having a reciprocating motion in opposite directions and one abutting against the other at the inward stroke, and means for operating the beds, substantially as shown and described.



2. In an ore-concentrator, two beds having a reciprocating motion in opposite directions and one abutting against the other at the inward stroke, said beds being provided with inclined tables and an operating mechanism, substantially as shown and described.

3. The combination, with the reciprocating bed having transverse troughs S U at its ends, and a table T, inclined upwardly from the front to the rear trough, of the upper table R, rigidly secured in the bed and inclined downwardly and rearwardly from a point above the front trough S, into which it discharges to a point just above the middle portion of the lower table, and the hopper fixedly secured to the bed and having oppositely-inclined bottoms P Q, the bottom Q being inclined forwardly and terminating just above the inner edge of the table R, substantially as set forth.

4. The reciprocating bed having troughs S U at its front and rear ends, the table T, inclined upwardly and rearwardly from the front to the rear trough, the hopper N, fixedly secured to the bed about midway of its length and having oppositely-inclined bottoms P Q, the bottom Q being inclined toward the front end of the bed, the upper table R, inclined rearwardly and downwardly from a point above the trough S to a point between the bottom Q and the lower table, the rib R' on the upper side of the rear end of the table R, just in rear of the delivery end of the bottom Q, in combination with the perforated water-pipe extending across the bed between the hopper and the rear trough, substantially as set forth.

5. The combination, with two beds reciprocating toward and from each other and abutting at their inner ends, troughs at opposite ends of the beds, a table T, inclined upwardly and rearwardly from the front to the rear trough, the shorter upper table inclined downwardly and rearwardly from a point above the front trough, the hopper fixedly secured to the bed and having oppositely-inclined bottoms, the lower one of which is inclined downwardly and forwardly to a point just above the lower inner end of the upper table, and the transverse water-pipe between the rear trough and the hopper, of a rotary cam acting upon both beds simultaneously to force them apart, and springs throwing the beds suddenly into contact at their inner ends when released by the cams, substantially as set forth.

6. An ore-concentrator consisting in the frame, the oppositely-reciprocating beds, their troughs, tables, and hoppers, a rotary cam acting simultaneously upon both beds to force them apart, bell-crank levers mounted on the frame with their vertical members engaging the forward ends of the beds and their horizontal members extending toward each other, and the longitudinally-extending spring L, secured

to the frame between its ends and engaging at its ends the inner ends of the horizontal members of said bell-crank levers, substantially as set forth.

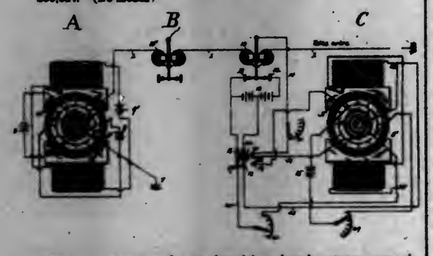
411,610. JUICE-EXTRACTOR. CHARLES H. READ, Pittsburg, Pa.

Filed May 22, 1889. Serial No. 311,711. (No model.)



Claim.—A device for extracting the juice and pulp from lemons and similar fruits, a conoidal-shaped body having longitudinal grooves extending from its base to its apex, and intermediate flutings having inverted-V-shaped grooves, forming a series of upwardly-projecting cutting-edges to strip the pulp from the inner portion of the rind of the fruit, as specified.

411,611. SYSTEM FOR SYNCHRONIZING ELECTRIC MOTORS. ROBERT H. READ, Washington, D. C. Filed Feb. 12, 1889. Serial No. 299,657. (No model.)



Claim.—1. A system for synchronizing electric motors, comprising a controlling-circuit, a series of electric motors controlled thereby, a current-changer for producing periodic current changes in the controlling-circuit, and a commutator actuated by the moving part of each motor for redirecting the current changes at times corresponding to said changes, whereby the attractive effort on the moving part is removed when the current-changers do not coincide and synchronism fails.

2. A system for synchronizing electric motors, comprising a series of motors adapted to operate under a continuous polarity of their field-magnets and armature, a controlling-circuit for said motors, a current-changer for producing periodic current changes in said circuit, and a commutator actuated by the moving part of each driven motor for redirecting the current changes at times corresponding to said changes, whereby the attractive effort on the moving part is removed when the current-changers do not coincide and synchronism fails.

3. A system for synchronizing electric motors, comprising a controlling-circuit, a current-changer for producing periodic current changes therein, one or more electric motors of the ring or drum armature type controlled by the current changes, a pole-changer for each motor operated by the current changes, and an auxiliary pole-changer driven by the motor for reversing the current from the first pole-changer in the exciting-coils of one magnetic element of the station-motor at times corresponding with the reversals of the first pole-changer, whereby a retarding effect will be exerted on the moving part of the station-motor when the two pole-changers fail to coincide or when synchronism varies.

4. A system for synchronizing rotating parts at two or more distant stations, comprising a controlling-motor of any kind, one or more controlled electric motors of the ring or drum armature type, pole-changers actuated by the controlling and the controlled motors, respectively, an electric circuit including a source of energy through both pole-changers and the exciting-circuit of one of the magnetic elements of the controlled motor, and a source of constant energy in the exciting-circuit of the other magnetic element of the controlled motor.

5. A system for synchronizing electric motors, comprising a line-circuit, means for producing periodic reversals of current in said circuit, relays at two or more distant stations operated by the line-current, a pole-changer for a local battery operated by each relay, a series of motors of the ring or drum armature type at the stations, a rotating pole-changer carried by the moving part of each motor, and electric connections between the two pole-changers and the exciting-coils of one magnetic element of the station-motor, whereby its polarity will be reversed when the reversing times of the two pole-changers do not coincide.

6. A system for synchronizing electric motors, comprising a controlling-motor at one station, a pole-changer operated by said motor, a line-circuit, a controlled motor of the ring or drum armature type at a distant station, and a pole-changer carried by its rotating part in circuit with the exciting-coils of one of its magnetic elements, said pole-changer redirecting the reversals caused by the controlling-motor, whereby when synchronism fails a retarding effect will be exerted upon the controlled motor until synchronism is re-established.

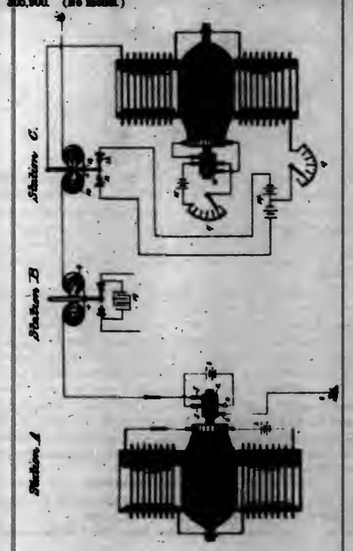
7. A system for synchronizing electric motors, comprising a line-circuit in which periodic current changes are produced, a pole-changer at each controlled station operated by the changes on line, a motor of the ring or drum armature type at each controlled station, said motor having independent field and armature circuits and sources of energy for said circuits, an auxiliary pole-changer carried by the moving part of the motor, and electric connections between the two pole-changers and one of the independent circuits, whereby its current will be of constant direction only so long as the movements of the two pole-changers coincide, and whereby synchronism will be preserved.

8. A system for synchronizing electric motors, comprising a line-circuit, a current-changer for producing periodic current changes in said line-circuit, an electric motor at a controlled station, through which retarding-current impulses are caused to pass by the line-current changes, and local sources of energy for driving said motor at a faster rate than the changes of line-current, whereby synchronism may be preserved by retarding impulses.

9. A system for synchronizing electric motors, comprising two or more motors at distant stations, a line-circuit connecting the stations, means controlled by line impulses for correcting slight variations from synchronism of the motors, a switch at each controlled station, and a source of energy controlled by said switch having an electro-motive force sufficient to drive the motor at a pace where the line-correction may be asserted, whereby a driven motor may be brought into synchronism with another without slowing down the latter.

10. A system for synchronizing electric motors, comprising a controlling-circuit, a current-changer for producing periodic current changes in said circuit, an electric motor at each controlled station having its rate of movement dependent upon said current changes, a source of energy exciting the controlled motors having an electro-motive force sufficient to keep them in advance of the current changes at determinate stages of their movement, and a variable resistance for adjusting the strength of current in the motor circuit or circuits for regulating the amount of such lead.

411,612. SYSTEM FOR SYNCHRONIZING ELECTRIC MOTORS. ROBERT H. READ, Washington, D. C. Filed Apr. 3, 1889. Serial No. 305,900. (No model.)



Claim.—1. A system for synchronizing electric motors, comprising a controlling-circuit, a current-changer for producing periodic current changes in said circuit, two or more motors at distant stations, having field-magnet and armature circuits, in one of which circuits current varies in accordance with the changes in the controlling-circuit, and a local-current changer actuated by the moving part of each driven motor for producing corresponding changes in the other motor-circuit, whereby a continuous driving effort will be maintained on the driven motor as long as the changes in the two motor-circuits are simultaneous.

2. A system for synchronizing electric motors, comprising a controlling line-circuit, a current-changer for producing periodic current changes in said circuit, one or more driven motors having independent field-magnet and armature circuits, one of which varies in accordance with the line changes, the other containing a local-current changer actuated by the moving part of the driven motor, whereby a continuous driving effort will be maintained on the driven motor as long as the changes in the two independent circuits are simultaneous.

3. A system for synchronizing electric motors, comprising a controlling line-circuit in which periodic current changes are produced, one or more driven motors of the ring or drum armature type governed by said circuit, the driven motor having field-magnet and armature circuits, in one of which current is reversed in accordance with the line-current changes, and a pole-changer actuated by the moving part of the driven motor for producing reversals in the other motor-circuit at times corresponding to the line changes, whereby simultaneous reversals and continuous driving effort are produced so long as the moving part is synchronous with the line changes.

4. A system for synchronizing electric motors, comprising a controlling line-circuit in which periodic current changes are produced, one or more driven motors of the ring or drum armature type governed by said circuit, a pole-changer for reversing the magnetism of one element of a driven motor in accordance with the changes of the line-current, a pole-changer actuated by the moving part of the driven motor for reversing the magnetism of the other element of the motor at times corresponding to the line changes, and a variable resistance in one or both motor-circuits for varying the strength of its exciting-current, for the purpose described.

5. A system for synchronizing electric motors, comprising a controlling line-circuit in which periodic current changes are produced, an electro-magnet having a neutral core in said line-circuit, a vibrating armature actuated by said magnet in accordance with the line changes, a driven motor having one of its circuits reversed by the vibrating armature in accordance with the line changes and a pole-changer actuated by the moving part of the driven motor for reversing current in the other motor-circuit at times corresponding to the line changes, whereby simultaneous reversals and therefore continuous driving effort are produced so long as the moving part is synchronous with the line changes.

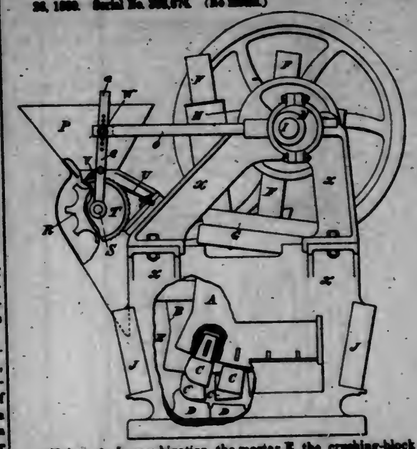
6. A system for synchronizing electric motors, comprising a controlling line-circuit in which periodic current changes are produced, an electro-magnet having a neutral core in said line-circuit, a vibrating armature actuated by said magnet in accordance with the line changes, a driven electric motor, and a local source of energy connected to the driven motor and the vibrator, whereby the speed of the motor conforms to the current changes on line and high speeds of the vibrators and driven motors may be maintained.

411,613. TROLLEY FOR ELECTRIC-RAILWAY SYSTEMS. ANDREW L. REES, New York, N. Y. Filed Apr. 22, 1889. Serial No. 308,147. (No model.)



Claim.—The combination of the support pivoted so as to turn on a vertical axis, the swinging arm pivoted to said support and capable of turning on its pivot, so as to incline either forward or backward, and a spiral spring connected with said arm and support and tending to resist the bending of said arm in either direction, substantially as described.

411,614. CRUSHING-MILL. ALPHEUS B. ROE, San Francisco, Cal., assignor to Henry L. Tatum and J. J. Brown, same place. Filed Apr. 26, 1889. Serial No. 308,676. (No model.)



Claim.—1. In combination, the mortar E, the crushing-block A therein, the feed mechanism for supplying material to the mill, the shaft I, and driving-connections between said shaft and the block and between said shaft and the feed mechanism, substantially as described.

2. In combination, the mortar E, the block A therein, the feed mechanism consisting of the hopper P, the roller R, and ratchet T, driving-connections between the shaft I and the crusher A, and driving-connections to the ratchet, consisting of the eccentric N on the shaft I, the rod O, lever Q, adjustably connected thereto, and the pawl, substantially as described.

3. In a crushing-mill, the combination of a mortar with a crushing-block having an upwardly-extending stem, a sliding sleeve loosely embracing said stem, a driving-shaft, and a connection between said sleeve and driving-shaft for imparting power to the crushing-block, substantially as described.

4. In combination, the mortar, the crushing-block having a stem F, a shaft I, positioned to one side of the stem, and a connection between the stem and shaft, consisting of the disk K and crank-pin *g g'*, fixed in its face, sleeve H on the stem, having the extension *a*, of T shape, and blocks *b b'*, embracing the crank-pin and said extension.

5. In a crushing-mill, the mortar and a crushing-block, said block having an upwardly-extending stem and having its upper part formed into an oil-receptacle G, substantially as described.

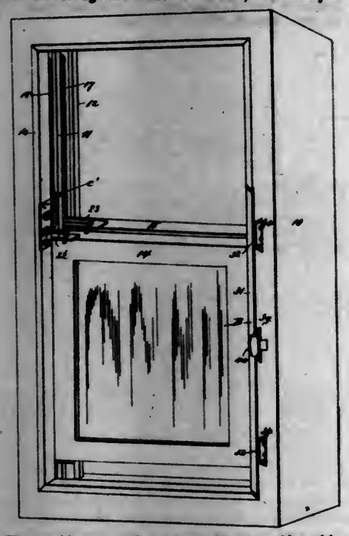
411,615. WINDOW. JONAS R. ROSSER, Philadelphia, Pa. Filed Oct. 31, 1888. Serial No. 289,698. (No model.)

Claim.—1. The combination, with a window-frame having opposite sashways, one of which is provided with vertically-folding arms having pintles and the other with a movable bead or strip, of a vertically-sliding sash having sockets in its top and bottom at one side, the said folding arms being spaced apart a distance equal to the height of the sash, whereby the sash may be supported on the two pintles while held in its ways, substantially as set forth.

2. The combination, with the window-frame having opposite sashways, one of which has an outwardly-movable strip or bead, and upper and lower vertically-swinging arms in the sashway provided with pintles, of a sash movable vertically in said ways and provided on its top and bottom at one side with elongated sockets, the swinging arms being spaced apart a distance equal to the height of the sash, substantially as set forth.

3. The combination, with a window-frame having opposite sashways for the upper and lower sashes, each provided at one side with upper and lower vertically-swinging arms having pintles, and the opposite sashways having the parting bead or strip, and the inner strip connected and mounted to slide inwardly on the sash-frame, of vertically-movable sashes having sockets in their tops and bottoms at one side to engage said pintles, the swinging arms in both sashways being spaced apart a distance equal to the height of the sash they are to support, substantially as set forth.

4. The combination, with a window-frame, of folding plates arranged in the sash-runways at one side of the case, folding arms arranged above the plates, pintles carried by the plates and arms, a bolt arranged in connection with the folding arms, window-sash provided with sockets adapted to receive the pintles, a detachable frame B, and a means for connecting said frame to the case, substantially as described.



5. The combination, with a window-frame provided with a recessed parting-strip, as 11, and a recessed guiding-strip 13, of a shaft mounted in a recess formed in the window-frame, arms 22 and 23, carried by said shaft, pintles carried by the arms, said arms being arranged to enter the recesses in the guiding-strip and parting-strip, folding plates or arms 19 and 20, arranged beneath the arms 22 and 23, pintles carried by said plates, a window-sash provided with recesses adapted to receive the pintles, and a detachable frame arranged at the opposite side of the sash, substantially as described.

6. The combination, with a sash arranged for pivotal connection with the case, of a frame B, provided with flanged plates 32, that are adapted to enter undercut recesses formed in the window-case, substantially as described.

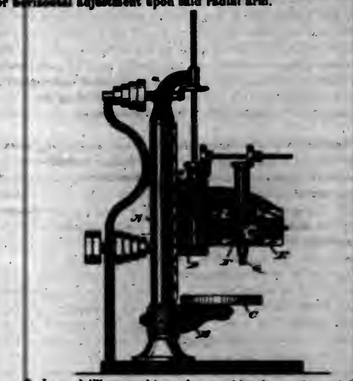
7. The combination, with a sash arranged for pivotal connection with the case, of a frame B, provided with flanged plates 32, that are adapted to enter undercut recesses formed in the window-case, and a spring-tongue connected to the frame and arranged to engage a flanged plate, substantially as described.

8. In a window, the combination, with a frame provided with a recessed parting-strip 11 and a recessed guiding-strip 13, of a shaft mounted in a recess formed in the window-frame, arms 22 and 23, carried by said shaft, pintles carried by the arms, said arms being arranged to enter the recesses in the guiding and parting strips, respectively, folding supports carrying pintles arranged below shaft and arms, and a window-sash having recesses upon its upper and lower sides adapted to receive the pintles of the upper and lower supporting-arms, substantially as shown and described.

9. In a window, the combination, with a frame, of the pintles 19^a and 20^a, mounted within the runways, of the lower and upper sashes, respectively, the arms 19 and 20, hinged to the plates 19^a and 20^a and carrying the pintles 8 and 9, the spring 7, supporting-arms having pintles arranged above the arms 19 and 20, and a window-sash having recesses upon its upper and lower sides adapted to receive the pintles of the upper and lower supporting-arms, substantially as and for the purpose described.

411,616. DRILLING-MACHINE. WINFIELD S. ROGERS, Cincinnati, Ohio, assignor to the Universal Radial Drill Company, same place. Filed Mar. 22, 1889. Serial No. 304,230. (No model.)

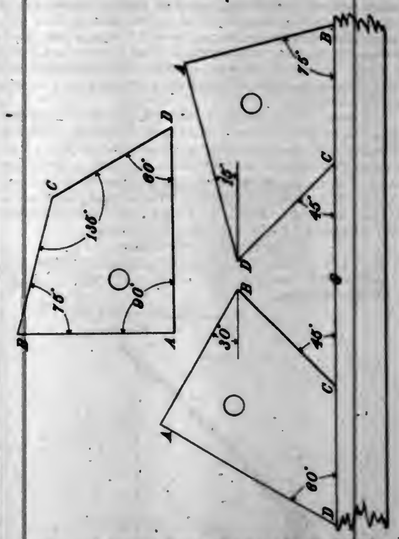
Claim.—1. In a drilling-machine, the combination, substantially as set forth, of a vertical column, a table-arm pivoted thereto near the base and capable of a swinging motion with reference to the column, a table carried by the outer end of said table-arm, an arm-saddle fitted for vertical adjustment upon said column, a radial arm carried by said saddle upon a vertical pivot, and a spindle-bearing fitted for horizontal adjustment upon said radial arm.



2. In a drilling-machine, the combination, substantially as set forth, of a column, a table-arm carrying a table and fitted for swinging motion near the base of the column, an arm-saddle fitted for vertical adjustment upon said column, a radial arm pivoted to said saddle and carrying a horizontally-adjustable spindle-bearing, clamps for fixing the saddle in adjusted position with reference to the column, and a clamp for fixing the radial arm in adjusted angular position with reference to the arm-saddle.

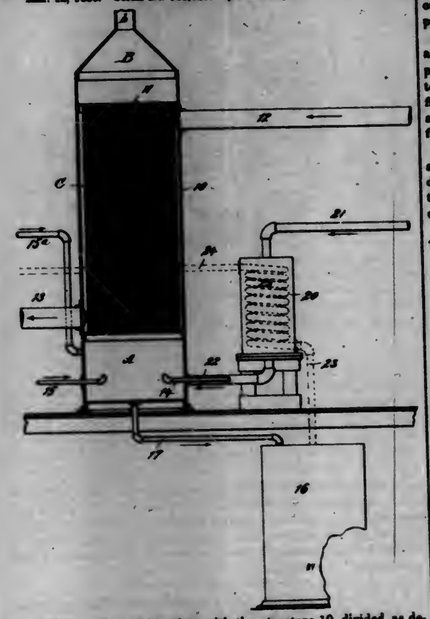
3. In a drilling-machine, the combination, substantially as set forth, of a drill-spindle G, having a central longitudinal bore and having a taper socket M in its lower end communicating with said bore, vertical shaft N, engaging the central bore of the spindle, and stud O on the lower end of said shaft, adapted to engage the shank of the drill which may be disposed in said drill-socket.

411,617. DRAWING-INSTRUMENT. LUIGI F. RONDINELLA, Philadelphia, Pa. Filed Apr. 16, 1889. Serial No. 307,492. (No model.)



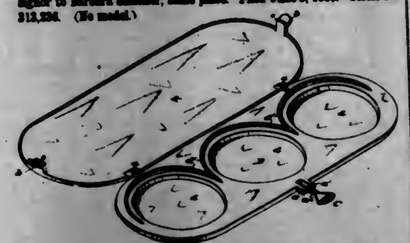
Claim.—An improved drawing-instrument for plotting and measuring angles, which consists of a plane quadrilateral piece of wood or other suitable material, the sides of which form the angles of seventy-five degrees, ninety degrees, sixty degrees, and one hundred and thirty-five degrees, respectively, the angles of seventy-five degrees and sixty degrees being adjacent to the right angle, while the angle of one hundred and thirty-five degrees is opposite to the right angle.

411,618. BLAST-HEATER. JOHN SEABLOM, Ironton, Mich. Filed Mar. 12, 1889. Serial No. 303,023. (No model.)



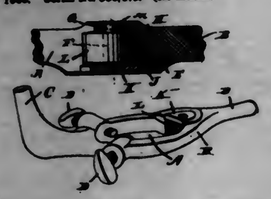
Claim.—The combination, with the structure 10, divided as described, of tubes 11, arranged within said structure, pipes 12, 13, 14, and 15, leading to the structure, a tank 16, connections between the tank and the structure, a drum 20, a coil-pipe arranged within the drum, connections between said coil-pipe and the tank, a pipe connected with the coil-pipe and arranged for connection with a pump, an exhaust-steam pipe connected to the drum, and a pipe connecting the drum and the structure, substantially as described.

411,619. CAKE-GRIDDLE. MILTON SHAWVER, Canton, Ohio, assignor to Barbara Shaeffer, same place. Filed June 5, 1889. Serial No. 312,936. (No model.)



Claim.—The combination of the hinged sections A and B, the section A provided with the handles *b* and the studs *c*, the section B provided with the cake-cups *d* and the guide-flanges *d'*, substantially as and for the purpose specified.

411,620. LATHE-DOG. CHARLES W. SHARTLE, Middletown, Ohio. Filed Apr. 8, 1889. Serial No. 306,475. (No model.)

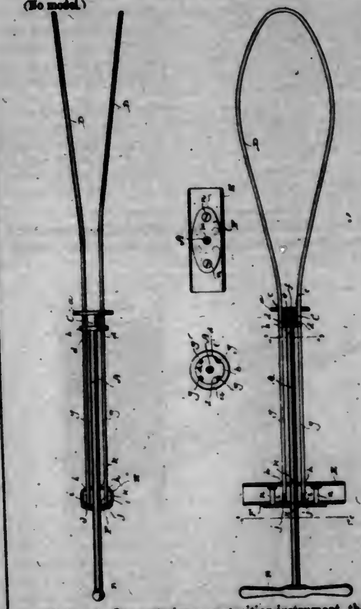


Claim.—1. In a lathe-dog, the combination, substantially as set forth, of a stock having one or more driving-tails and an eye, a pair of convergent set-screws, and a jaw pivoted in the wall of the eye and presenting a serrated face into said eye opposite to the set-screws.

2. In a lathe-dog, the combination, substantially as set forth, of a stock provided with one or more driving-tails and with an eye, a pair of convergent set-screws, a recess in the wall of the eye opening toward one face of the dog, a cover-recess at the open face of said first-mentioned recess, a removable cover-plate fitting said recess, and a jaw pivoted in said first-mentioned recess and presenting a serrated face in the eye of the dog opposite to said set-screws.

3. In a lathe-dog, the combination, substantially as set forth, of a stock provided with an eye and with two oppositely-projecting radial driving-tails, one of which tails is bent at right angles to the face of the dog, and one or more set-screws inserted through the wall of the eye of the stock and projecting into said eye.

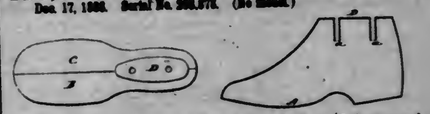
411,621. VETERINARY PARTURITION-INSTRUMENT. ARTHUR P. SHEARDUR, Mendota, Ill. Filed June 12, 1889. Serial No. 313,972. (No model.)



Claim.—1. In a veterinary parturition-instrument, the combination of two opposing and normally divergent extricating-loops with an apertured guide-block moving on the ends of said loops, a cross-piece secured to the said loop ends, and an operating-rod passing through said cross-piece and secured to said guide-block, substantially as set forth.

2. In a veterinary parturition-instrument, the combination of two opposing and normally divergent extricating-loops terminating in straight parallel ends apset at their extreme portions, a cross-piece transversely perforated for the passage therethrough of said ends, a removable retaining-plate secured to said cross-piece, an apertured guide-block moving on the said ends between the said loops and said cross-piece, and an operating-rod passing through said cross-piece and retaining-plate and secured to said guide-block, substantially as set forth.

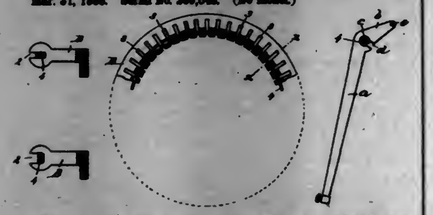
411,622. LAST. EDWARD S. SMITH, Waterbury, Conn. Filed Dec. 17, 1888. Serial No. 293,672. (No model.)



Claim.—A last constructed from several pieces of sheet metal formed into the required shape and so that the edges correspond to the edges of the adjacent parts, and the said parts united by butt-

joints or seams welded or brazed together to form a complete sheet-metal last, substantially as described.

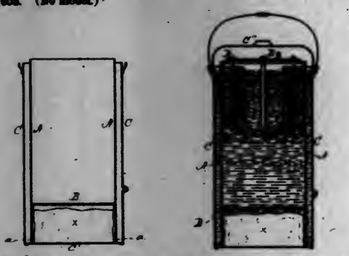
411,623. TYPE-WRITING MACHINE. ANDREW W. STREET, New York, N. Y., assignor to the Yost Writing Machine Company. Filed Mar. 31, 1888. Serial No. 269,048. (No model.)



Claim.—1. In a type-writing machine, the combination of a type-ring provided with a horizontal groove and internal vertical slots radiating from the center of said ring, a fulcrum-ring or pivotal support within said groove, and type carriers or levers having each an eye or bearing and a lateral slot or passage-way leading thereto from the exterior of the lever, substantially as set forth.

2. In a type-writing machine, the combination of a type-ring provided with a groove and internal vertical slots radiating from the center of said ring, a fulcrum-ring or pivotal support within said groove and having two flat sides, and type carriers or levers having each an eye or circular bearing and a lateral slot or passage-way leading thereto of less width than the diameter of the eye or circular bearing, substantially as set forth.

411,624. PROCESS OF REMOVING BUTTERMILK FROM BUTTER. ALBERT F. TRAYER, Maple Hill, Kans. Filed May 4, 1888. Serial No. 273,033. (No model.)



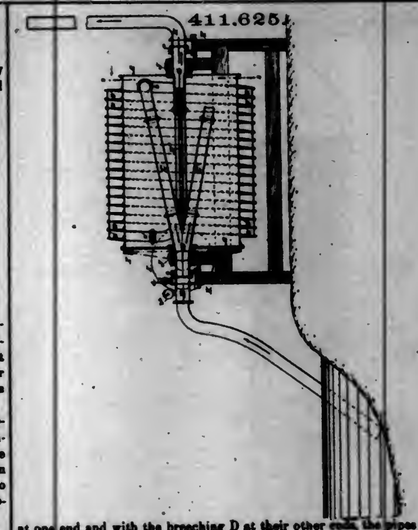
Claim.—The process of separating buttermilk from butter, which consists in first melting butter under sufficiently warm water by holding said butter in bulk below the surface thereof, next allowing the butter to rise in a melted state through the water, whereby the buttermilk is absorbed thereby, and then beating the pure butter which has risen to the surface into a frothy substance, and finally allowing the said substance to cool, whereby it becomes non-granular and solid, substantially as set forth.

411,625. PUMP. ALBERT THIERY, Paris, France. Filed Oct. 19, 1887. Serial No. 252,853. (No model.) Patented in France Oct. 21, 1884, No. 164,908, and in Belgium Apr. 20, 1885, No. 66,562.

Claim.—1. In a lift and force pump, the combination, with the like helical channels mounted rotatively on a common axis, of pipes connecting the receiving ends of said channels with the induction pipe or inlet of the pump, the said induction-pipe provided with an air-inlet *d*, the pipes connecting the delivery ends of the said helical channels with the eduction-pipe of the pump, and the said eduction-pipe, substantially as described and set forth.

2. In a pump, the combination, with the like helical or spirally-arranged channels B B', mounted rotatively on their common axis and having tubular journals on which they rotate, of the pipes C and C', connected, respectively, with the terminals *b* and *b'* of said channels



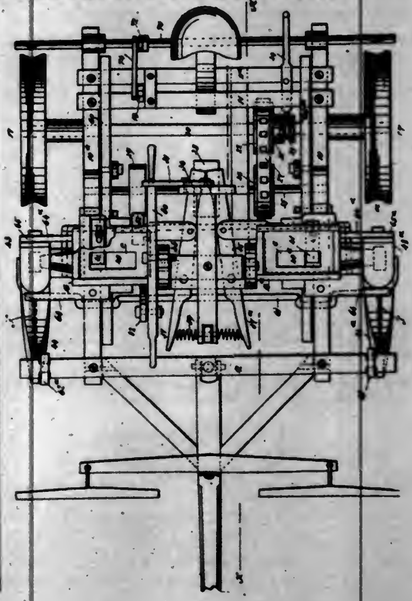


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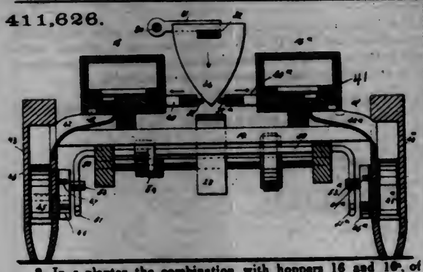
at one end and with the breeching D at their other ends, the pipes F and F' connected at one end with the terminals *e* and *e'* of said channels and at their other ends with the breeching G, the said breechings D and G, and the air-inlet at the induction end of the pump, the pipes C C' and F F' being arranged within the drum-like coils formed by said channels B B', as set forth.

411,626. PLANTER. ARNE S. TRAGESTOL, Brookfield, Iowa. Filed Apr. 26, 1889. Serial No. 308,708. (No model.)

Claim.—1. In a planter, the combination, with a main frame, of the combined furrow-openers and feed-delivery chutes, the double crank-shafts connecting the furrow-openers, levers for operating said crank-shaft, links connecting the crank-shaft and levers, and the slotted guides attached to the forward end of the furrow-openers and to the main frame, substantially as shown and described.



411,626.



2. In a planter, the combination, with hoppers 16 and 16', of slides 40 and 40' and blocks 41, adjustably mounted in recesses formed in the slides, the levers 37 and 37', pivotally connected with the slides 40 and 40', respectively, a double spring 39, carried between the forward ends of said levers, the double cam-faced block 36, and the lever 32, for carrying and operating said block, all arranged and adapted to operate substantially as shown and described.

3. In a planter, the combination, with an axle, of a shaft arranged in advance thereof, chain-wheels carried by the axle and shaft, a chain arranged in connection with such wheels, a cam-faced block 26, a weighted lever 30, a link 33, a lever 32, a wedging-block 36, levers 37 and 37', and slides 40 and 40', all substantially as described.

4. In a planter, the combination, with the shaft 25 and a means for driving the same, of cam-faced blocks 28 and 29, carried by the shaft, a lever 30, a wedging-block 36, connections between the lever 30 and the wedging-block, seed-boxes, slides arranged in connection therewith, levers 37 and 37', to which the slides are connected and upon which the wedging-block 36 acts, furrow-openers, seed-delivery chutes arranged to the rear thereof, tilting plates arranged in the seed-delivery chutes, a shaft 50, having forwardly-extending arms which bear upon projections carried by the tilting plates, and a projection which is borne upon by the cam-faced block 29, substantially as described.

5. In a planter, the combination, with the chutes 43 and 43', of the tilting plates 45 and 45', mounted, respectively, within the same, the blocks 46 and 46', connected to the pivotal supports of said blocks and adapted to rest against the stop or limit pins 47 and 47', a shaft 50, having downwardly-extending projections 51 and 51' and carrying a block 52, which extends in the path of the cam 29, all arranged and adapted to operate substantially as shown and described.

6. In a planter, the combination, with the main frame, of the seed-hoppers 16 and 16', mounted thereon, the slides 40 and 40', reciprocating therein, the levers 37 and 37', pivotally connected to said slides and having the double spring 39 between the forward ends of said levers, the double cam-faced block 36, for operating said levers, the upright standard 35, mounted upon the main frame, the lever 30, pivoted thereto, the cross-bar 31, connecting the lever and cam-faced block, the connecting-rod 32 and link 33, extending to a crank-arm 34, and the shaft 50, connected with the delivery-chutes 43 43', substantially as described, and for the purpose set forth.

411,627. FOWL OR STOCK FEEDER. BENJAMIN WALTON, Compton, Cal. Filed Feb. 19, 1889. Serial No. 300,466. (No model.)



Claim.—1. The combination of the upright end pieces A A, the trough E, the trough C, arranged between the vertical end pieces above the trough E, and covers secured over the said troughs at a sufficient height to give access beneath them to their respective troughs, substantially as set forth.

2. The combination of the upright end pieces A A, the trough E, the trough C, arranged between the vertical end pieces above the trough E, and the longitudinally-slotted covers B and F, substantially as set forth.

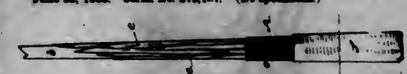
3. The combination of the upright end pieces A A, the trough E, the trough C, arranged above the trough E, and the longitudinally-slotted hinged covers secured above the said troughs, substantially as set forth.

4. The combination of the upright end pieces A A, the troughs E and C, secured between said vertical pieces, and longitudinally-slotted covers arranged above said troughs and provided with the longitudinal hoppers, substantially as set forth.

5. The combination of end pieces, a trough arranged between said end pieces, the slotted cover, and the adjustable side bars, substantially as set forth.

6. The combination of end pieces, the trough, the slotted hinged cover, and the floor-boards, substantially as set forth.

411,628. WHIP. EDWARD E. WARREN, Three Oaks, Mich. Filed June 26, 1888. Serial No. 278,187. (No specimens.)



Claim.—1. As an improved article of manufacture, a whip having a tapering core and an external layer of bone formed of thin flat splints of bone bound flatwise longitudinally upon said previously-formed core with their longitudinal edges overlapped and arranged to break joint, and a binding material around the exterior of the layer of bone, substantially as set forth.

2. In a whip, the tapering resilient core provided with a covering composed of separate and independent thin flat splints and small fibers *c c'* of bone, arranged to break joint, as described, and bound upon the core throughout its length.

3. As an improved article of manufacture, a whip consisting in a resilient core of less length than the whip, a series of separate and independent flat splints *c* of bone, bound upon the core throughout its length, arranged to break joint, and extended beyond the end of the core and there bound together to form the tip B, and the outer lining inclosing the whole, substantially as set forth.

411,629. ARMATURE. CHARLES F. WINSLOW, Hoosick Falls, N. Y. Filed Jan. 26, 1889. Serial No. 297,660. (No model.)



Claim.—1. As armature for dynamo-electric machines or motors, the coils or sections being formed of flat strips of metal wound on edge, and the ends of said coils or sections being bent over toward or against the heads of the armature, substantially as described.

2. As armature for dynamo-electric machines or motors made up of a series of coils or sections which lay over or cross each other at the ends or heads of the armature, the said coils consisting of flat metal strips wound on edge and having their ends, which cross each other, bent over laterally against the heads or ends of the armature to shorten their diameter, for the purpose described.

3. A Siemens armature for dynamo-electric machines or motors, whose winding consists of flat metal strips wound on edge, that portion of the winding which passes over the heads or ends of the armature being turned over or bent flat against said ends, for the purpose described.

411,630. CABLE-GRIPPER. HERBERT M. WRIGHT, San Francisco, Cal. Filed June 21, 1888. Serial No. 315,127. (No model.)

Claim.—1. A cable-grip, substantially as described, comprising the main frame, the grip-frame supported and movable in said main frame, the upper jaw supported on and movable with and independently of said grip-frame, the main lever supported on the grip-frame and connected with and arranged to operate the upper jaw, and the grip-frame lever supported on the main frame and connected with the grip-frame, whereby to operate the same, all substantially as set forth.

2. In a cable-grip, the combination, with the main frame, of the grip-frame supported and movable in said main frame, the upper jaw supported on and movable with and independently of the grip-frame, and the main lever supported on the grip-frame and connected with and arranged to operate the upper jaw, whereby said jaw may be adjusted or moved independently of the grip-frame, substantially as set forth.

3. The combination, in a cable-grip, with the grip-frame movably supported, of the upper jaw, arms or links connecting said upper jaw with the grip-frame, and the main lever pivoted to the grip-frame and arranged to move or operate the said upper jaw, whereby the

said jaw may be moved independently of the movements of the grip-frame, substantially as set forth.



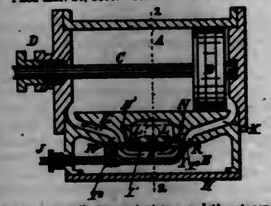
4. In a cable-grip, substantially as described, the combination of the grip-frame, the upper jaw, and the links or arms pivoted at their upper ends to the grip-frame and at their lower ends to the said jaw and movable or swinging in advance and rear of a line dropped from their upper pivots, all substantially as described, whereby the said jaw may be swung to move vertically and in the direction of its length, whereby the grip will be self-tightening, substantially as set forth.

5. In a cable-grip, substantially as described, the combination of a curved rack formed of two side sections, such sections having teeth and the teeth of one section facing in opposite direction to those of the other section, the lever extended between said sections, and the pawls supported on said lever and arranged to engage the sections of the rack, such pawls having a portion fitting between the sections and a lateral portion to engage the same, substantially as set forth.

6. The improved cable-grip, substantially as described, consisting of the main frame having a curved rack and provided with the fixed jaw, the grip-frame movable within said main frame and having a curved rack, the movable or upper jaw supported by said grip-frame and carried by swinging links or arms, and the main and grip-frame levers provided with pawls, substantially as set forth.

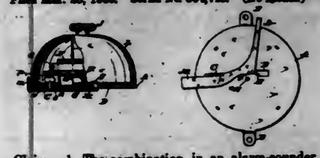
7. In a cable-grip, the combination of the main frame, the grip-frame movable in the main frame and having a shoulder or bearing *i*, the grip-frame lever pivoted to the main frame having a cam by which to engage and depress the grip-frame, and the link I, connected with the said lever and having a portion engaging under the shoulder or bearing *i*, substantially as set forth.

411,631. STEAM-HEATING APPARATUS. JOHN AGATE, Pittsford, N. Y. Filed Mar. 27, 1889. Serial No. 304,969. (No model.)



Claim.—The steam-cylinder and piston and the steam-chest provided with passages K K' and with the supplementary exhaust-ports N N', located between said passages, and the exhaust-ports L L', the slide-valve I, having passage S and solid face parts F F', each face F' having a width greater than that of port E or E' and equal to or a little wider than that of the ports N L or N' L', and the face F being equal to the distance between the ports N N', whereby the valve is adapted to cover all said passages and ports during the admission of steam to the cylinder, and then upon suitable movement to uncover first a supplementary port, and then to cover the same and uncover an exhaust-port L or L', all in combination with a radiator and a pipe having a check-valve communicating with said supplementary ports and with the radiator, substantially as set forth.

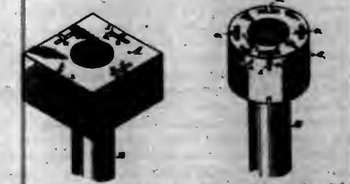
411,632. BURGLAR-ALARM. GEORGE ABEEL, Cleveland, Ohio. Filed Mar. 26, 1888. Serial No. 304,712. (No model.)



Claim.—1. The combination, in an alarm-sounder, of the plate A, a bolt M, loosely secured thereto, having its ends *m* and N projected outside of the diameter of said plate, its front end adapted to rest against an opposing object, the rear end portion N to form a handle by which said portion of the bolt may be thrown into or out of engagement with the retaining-shoulder E, and a spring to throw the bolt longitudinally and transversely and to hold it out of engagement with the movement and the shoulder, substantially as described, and for the purpose set forth.

2. The combination, in an alarm, of the plate A, having a perforation C on one side of its central portion and a perforation D on the other side, diametrically opposite, or thereabout, the latter having a retaining-shoulder E, and a bolt M, having its ends *m* and N projected outside of the diameter of the plate A, said bolt adapted at its front portion for a longitudinal movement and at its rear portion for longitudinal and transverse movement, projected portions *o* to engage the movement, and portion *g* to engage the shoulder E to hold the portion *o* in engagement with the movement, substantially as described, and for the purpose set forth.

411,633. HAMMER. LORENZO D. RALFOUR, Carthage, Mo. Filed Feb. 23, 1889. Serial No. 300,992. (No model.)



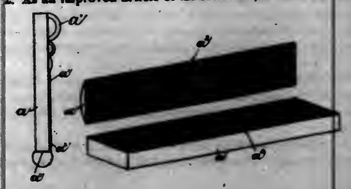
Claim.—1. The combination, substantially as hereinbefore set forth, of the handle and the hammer-head secured to the end of the handle and formed with T-shaped recesses consisting of parts 1 and 2 to hold a tack or nail, the part 1 of said recess being adapted to receive the head of the tack or nail and the part 2 to receive the shank near the head, some of said recesses being formed with the part 1 in the top of the hammer-head and one or more of said recesses being formed with the part 1 in the side of the hammer-head, whereby tacks or nails may be held for insertion both vertically and horizontally.

2. The combination, substantially as hereinbefore set forth, of the hammer-handle, and the square hammer-head secured to the end of the handle and having T-shaped recesses formed in the upper edge to hold tacks, nails, or similar attaching devices both vertically and horizontally.

411,634. VENEER. ELLIOTT H. RALSFORDE, Whitefield, Mass., assignor of one-half to Samuel Abbott, same place. Filed Dec. 27, 1887. Renewed Jan. 30, 1889. Serial No. 297,903. (No specimens.)

Claim.—1. As an improved article of manufacture, a veneered body consisting of a body or surface and a veneer *a'* of cane, substantially as described, provided with corrugations and secured to the said body by adhesive material, substantially as described.

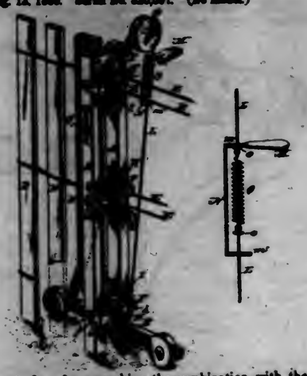
2. As an improved article of manufacture, a veneered body consisting of a body *a* provided with corrugations a^3, and a veneer *a'* of bamboo provided with corrugations a^3 and secured to the body *a* by glue, substantially as described.



411,684.



411,685. FENCE-MACHINE. WILLIAM S. BARKER, Troy, Ohio. Filed Aug. 13, 1889. Serial No. 320,697. (No model.)



Claim.—1. In a fence-machine, the combination, with the twisters and a wire band connected therewith for operating the same, of a handle through which said band passes and a spring connecting the ends of the band and engaged by the handle, substantially as shown and described.

2. In a fence-machine, the combination, with the twisters and the wire band connected therewith for operating the same simultaneously, of the bar provided with a handle and having lateral arms through which the wire band passes, and a spring connecting the ends of the wire between said arms, as set forth.

3. The combination, with the brackets having grooves upon their adjacent faces, of the twister-wheel provided with lateral lugs working in said grooves, substantially as described.

4. The combination, with the brackets having grooves in their adjacent faces, one of said brackets being adjustable, of the twister-wheel provided with lateral lugs, substantially as shown and described.

5. The combination, with the brackets having grooves upon their adjacent faces, of the twister-wheel having lateral lugs engaging said grooves and inwardly-projecting lugs having openings for the passage of the fence-wires, substantially as described.

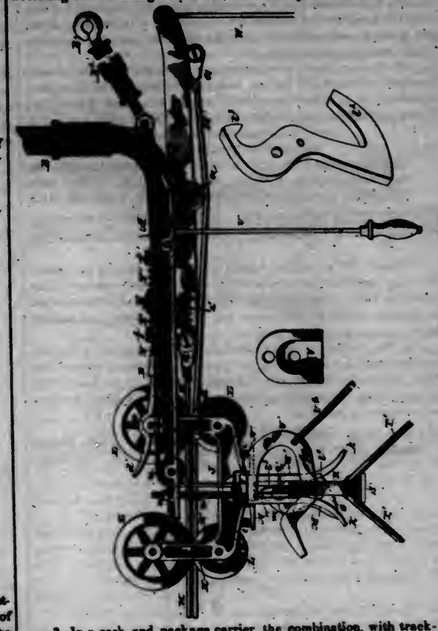
6. The combination, with the brackets composed of a rim and securing-arms with circular grooves in the adjacent faces of the rims, of the twister-wheel consisting of a ring having projecting therefrom laterally lugs having beveled ends working in said grooves, and lugs projecting toward the center of the ring and provided with openings for the passage of the fence-wires, substantially as shown and described.

7. The combination, with the twister-wheel provided with peripheral groove and having depression within said groove, of the wire arranged in said groove, and the thumb-screw passed through the rim of the wheel and having a hooked end engaging the wire and binding it in said depression, as shown and described.

411,636. CASH AND PACKAGE CARRIER. SAMUEL W. BARR, HENRY M. WEAVER, and JACOB H. BARR, Mansfield, Ohio. Filed Nov. 23, 1888. Serial No. 291,570. (No model.)

Claim.—1. In a cash and package carrier, the combination, with track-wires, of a carrier with wheels adapted to travel on such wires, mechanism for spreading the wires to actuate the carrier, and a longitudinally-movable spring-cushioned locking device connected with said mechanism for holding the carrier, substantially as set forth.

2. In a cash and package carrier, the combination, with track-wires, and a carrier with wheels adapted to travel on such track-wires, of mechanism for spreading the wires to actuate the carrier, a longitudinally-movable spring-cushioned locking device connected with said mechanism for holding the carrier, and means for simultaneously liberating and actuating the carrier, substantially as set forth.



3. In a cash and package carrier, the combination, with track-wires and a carrier adapted to ride thereon, of a swinging lever to which the ends of the wires are fastened, a latch-fork having sliding contact with the lever, and springs for cushioning said fork in each direction, substantially as set forth.

4. In a cash and package carrier, the combination, with track-wires and a carrier adapted to ride thereon, of a swinging lever to which the ends of the wires are pivotally secured, and a fork having sliding contact with the lever, said fork having recesses in its tines to receive and hold the carrier, a guide-block on its stem, said block having legs straddling the lever, and springs mounted on the stem on each side of the guide-block, substantially as set forth.

5. In a cash and package carrier, a frame having a double hook both members of which are located in positions to be engaged by the basket-ball, one member being adapted to support the basket, while the other member operates when engaged by the ball to move the basket-supporting member from under the basket-carrying ball.

6. In a cash and package carrier, the combination, with a frame and basket elevating and lowering devices, of a double hook attached to the carrier, both members of the hook being in positions to be engaged by the basket-ball, one member being adapted to support the basket, while the other member when engaged by the ball operates to move the basket-supporting member from under the basket-carrying ball, substantially as set forth.

7. In a cash and package carrier, the combination, with a frame-piece having wheels journaled therein, a pair of integral jaws pivoted to the said frame-piece, and springs interposed between the jaws and frame-piece, of a double hook pivoted in one of said jaws, substantially as set forth.

8. In a cash and package carrier, the combination, with a frame-piece having wheels journaled therein, of a pair of integral slotted jaws pivoted to the frame-piece, said jaws having outwardly-spreading lips and integral ribs, springs interposed between the jaws and frame-piece, and a double latch-hook pivoted to one jaw and adapted to swing in the slot, substantially as set forth.

9. In a cash and package carrier, the combination, with a carrier having a pair of jaws pivoted thereto, and a double latch-hook pivoted in one of said jaws, of a basket and basket-holder, said holder having a trip or staple thereon adapted to engage the upper member of the double hook, substantially as and for the purpose set forth.

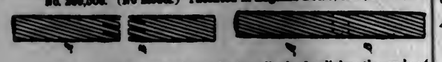
10. In a cash and package carrier, the combination, with a car-

rier having a pair of integral jaws pivoted thereto, and a double latch-hook pivoted to one of the jaws, of a basket having bails and holder, the latter having a trip or bail thereon, and a rounded face for operating the double latch-hook, substantially as set forth.

11. In a cash and package carrier, the combination, with a carrier-frame and devices for supporting a basket, of adjustable blocks, and hooks located below the adjustable blocks for elevating the basket to the basket-supporting devices.

12. In a cash and package carrier, the combination, with a frame mounted on wheels and having basket-supporting devices depending therefrom, of a split foot, a block adjustably secured thereto, and hooks located below the blocks, substantially as set forth.

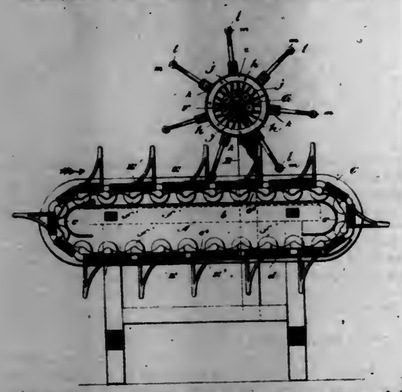
411,637. METHOD OF SPLICING WIRE ROPES. TELFORD C. BATCHELOR, West Kensington, County of Middlesex, and ARTHUR LATCH, South Shields, County of Durham, England. Filed Apr. 3, 1888. Serial No. 269,508. (No model.) Patented in England Dec. 3, 1887, No. 16,675.



Claim.—1. The method herein described of splicing the ends of wire rope comprising numerous wires spirally twisted together, which consists in forming the ends of the rope with corresponding recesses and projections, fitting the projections and recesses together, and welding the wires, substantially as set forth.

2. The method herein described of splicing the ends of wire rope, which consists in cutting away or removing portions of some of the wires at the ends of the rope to form corresponding projections and recesses, fitting the projections into the recesses, and welding the wires, substantially as described.

411,638. TILE OR BRICK CUTTING TABLE. JACOB BEHRING, Malinta, Ohio. Filed July 11, 1889. Serial No. 317,165. (No model.)



Claim.—1. The combination, with the supporting-frame, of the endless carrier composed of hinged connecting-blocks having spaces, as described, separated, and a rotating device having a series of radial cutter-frames provided with cutters adapted to register with said spaces, substantially as set forth.

2. The combination, with the supporting-frame carrying the horizontal flanged portions at each side, of an endless carrier consisting of hinged blocks and having spaces, as described, rollers journaled on said blocks to engage said flanges, and a revoluble device provided with a series of cutter-frames, each having a cutter adapted to register with the spaces between the blocks, substantially as set forth.

3. The combination, with the supporting-frame and revoluble device having the radial cutter-frames, of an endless carrier composed of a series of blocks E E', the blocks E having castings secured to their under sides and provided with journals, the blocks E' provided with castings on their under sides and perforated to engage said journals to form a hinged connection, substantially as set forth.

4. The combination, with the supporting-frame having the side flanges and revoluble device carrying the radial cutter-frames, of an endless carrier composed of a series of blocks E E', the blocks E having castings secured to their under sides and provided with journals, the blocks E' having castings secured to their under sides and perforated to engage said journal, and rollers mounted on the projecting ends of the latter to engage said flanges, substantially as set forth.

5. The combination, with a supporting-frame, of the revoluble device having the radial cutter-frame, and an endless carrier consisting of hinged blocks, every alternate block being provided on its upper side, at each end, with a vertical casting, substantially as set forth.

6. The combination, with the supporting-frame and endless carrier, of a yoke-shaped cutter-frame provided with oppositely-located hooks, and a wire secured to the frame at one side engaging said hooks and connected at its other end to an adjustable thumb-screw, substantially as set forth.

7. The combination, with the supporting-frame and endless carrier, of a transverse shaft, a disk mounted thereon and provided with horizontal marginal lugs and a series of inner perforations, a series of sockets bearing between said lugs and secured by a bolt engaging one of said perforations, and cutter-frame connected to said sockets, substantially as set forth.

8. The combination, with a supporting-frame and endless carrier, of the disk and socket secured thereto, and cutter-frames, each comprising independent sections having inner tongues embracing and bolted to said sockets, substantially as set forth.

411,639. REIN-HOLDER. THOMAS H. BOLLA, Washington, D. C. Filed June 7, 1889. Serial No. 313,465. (No model.)



Claim.—1. A rein-buckle having a portion of one of its side bars cut away and having a pintle projecting from the inner portion of the opposite side bar, and a double tongue or clamp pivoted to said pintle and adapted to be turned at right angles to the frame to admit the reins, and returned to the same plane as the buckle-frame to hold the reins at two points, substantially as specified.

2. The combination of leather A and buckle B, attached thereto at one end and having a tongue *d'*, swiveled therein, and the ring or locking device C, attached at the other end of the leather, all substantially as and for the purposes set forth.

3. A rein-buckle having a portion of one of its side bars cut away and having a pintle projecting from the inner portion of the opposite side bar, and a double tongue or clamp pivoted to said pintle, and combined with means for attaching it to a vehicle, substantially as specified.

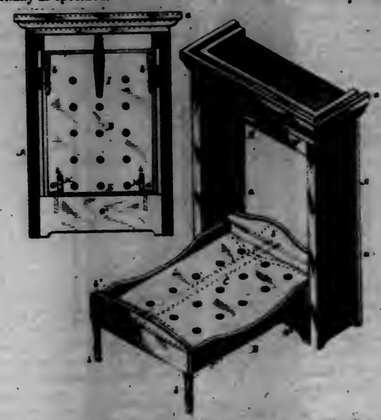
411,640. INSECT-SCREEN. JOHN W. BOUGHTON, Philadelphia, Pa. Filed Aug. 30, 1888. Serial No. 284,126. (No model.)



Claim.—An insect-screen consisting of frames with netting thereon and having longitudinal grooves extending obliquely in reverse directions in the contiguous faces of their top and lower bars, additional grooves communicating with said obliquely-extending grooves, and angular-shaped tongues having angular lips at their outer ends and provided with an ear connected to the side of one of the bars and extending at a right angle thereto, said parts being combined substantially as described.

411,641. WARDROBE-BEDSTEAD. HENRY C. BROWN, North Springfield, Mo. Filed Feb. 28, 1887. Serial No. 228,904. (No model.)

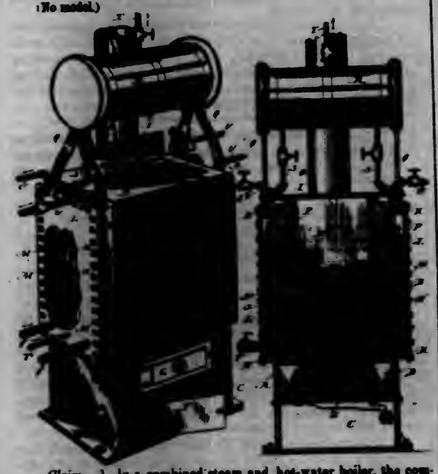
Claim.—1. In a wardrobe-bedstead, the combination, with the frame or casing A, provided with the lower front rail a^4 and the bottom supporting-rail a^7, the eye-straps D, secured to the rail a^7, the rod E, having bearings in the eyes of said straps, and the rollers G, mounted on said rod to the outer sides of said straps, of the bedstead B, moving upon the rollers G and capable of being turned up till it rests vertically upon the supporting-rail a^7 within the lower front rail a^4, substantially as specified.



2. In a wardrobe-bedstead, the combination, with the frame A, having the supporting-rail a^7 and the lower front rail a^4, the eye-straps D, secured to the inner surface of the rail a^7, the rod E, having bearings in the eyes of said straps, and the rollers G, mounted on the rod E to the outer sides of the eye-straps, of the bedstead B and the guide and limiting straps H, secured to the bottom of the bedstead at suitable points to the inner sides of the eye-straps, and provided with the hooked ends A, to limit the motion of the bedstead on the rod E, substantially as specified.

3. The combination, with the frame A, having the supporting-rail a^7 and lower front rail a^4, the eye-straps D, and the rod E, having bearings in the eyes of said straps, of the bedstead B, turning upon said rod till vertically within the frame A upon the rail a^7 and to the inner side of the rail a^4, the hinged folding head and foot boards *b' b²* respectively, and the elastic strap C, secured at its ends to the outer surface of the head-board near the lower edge thereof, and with its central part adapted to engage a button on the foot of the bedstead below the folding foot-board, substantially as specified.

411,642. COMBINED STEAM AND HOT-WATER BOILER. HORACE M. CHAPMAN, Chicago, Ill. Filed Mar. 11, 1889. Serial No. 302,861. (No model.)



Claim.—1. In a combined steam and hot-water boiler, the combination, with an internal vertical heating-chamber, a magazine located centrally therein, and external water-chambers, of a series of horizontal tubes passing through said heating-chamber at each side of the magazine and opening at their ends in said water-chambers, substantially as described.

2. In a combined steam and hot-water boiler, the combination, with a vertical internal heating-chamber, a magazine located centrally therein, and wings or plates on said magazine extending nearly to the walls of said chamber, and external water-chambers opposing said wings, of a series of horizontal tubes passing through the heating-chamber at each side of the magazine and opening into said water-chambers, substantially as described.

411,643. HOBBY-HORSE. JESSE A. CRANDALL, Brooklyn, N. Y. Filed Mar. 21, 1889. Serial No. 304,180. (No model.)



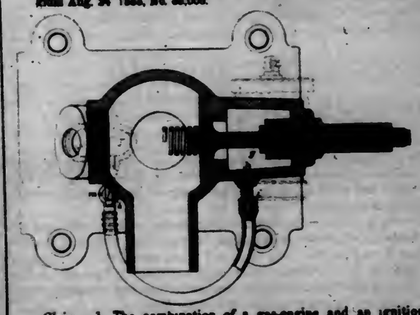
Claim.—1. The combination of the body, the straps pivoted thereto, the legs hung upon said straps, and the links connecting the straps of the front and rear legs at each side of the body, whereby the pair of legs on one side may be vibrated independently of the other pair and the springs controlling said straps, substantially as and for the purpose set forth.

2. The combination of the body and the legs and ears secured to straps pivoted to the body, with the links connecting the straps of the legs and ears, whereby the legs and one ear at opposite sides of the body may be moved independently of the other legs and ear, substantially as specified.

3. The combination of the body, the straps connected to the opposite side pieces thereof, and the ears and legs mounted on said straps, and the tail pivoted on the body, with the connecting-links, whereby each set of straps on opposite sides of the body may be moved together and independently of the other set, substantially as and for the purpose described.

4. The combination of the base-frame, the spring-bars thereon, the seat and foot-rest mounted on said bars, with the animal figure having movable legs and mounted between said spring-bars, the shafts hung below the foot-rest and supported by said figure, the straps pivoted to the body and supporting the legs, the links connecting said straps, and the reins connected thereto for moving the limbs of the figure, all substantially as and for the purpose set forth.

411,644. STARTING-GEAR FOR GAS-ENGINES. BERNARD D. DESOUTTEVILLE and LÉON P. C. MALANDIN, Puteaux-le-Bourg, France. Filed Feb. 4, 1888. Serial No. 263,661. (No model.) Patented in France Jan. 16, 1888, No. 185,161; in Italy Feb. 18, 1888, No. 20,081; in England Feb. 24, 1888, No. 2,605; in Spain May 18, 1888, No. 7,946, and in Belgium Aug. 24 1888, No. 80,008.



Claim.—1. The combination of a gas-engine and an ignition-chamber with a connecting-pipe leading from the gas-supply to the ignition-chamber, the said pipe having a three-way cock, one way opening to an air-supply passage, as and for the purpose set forth.

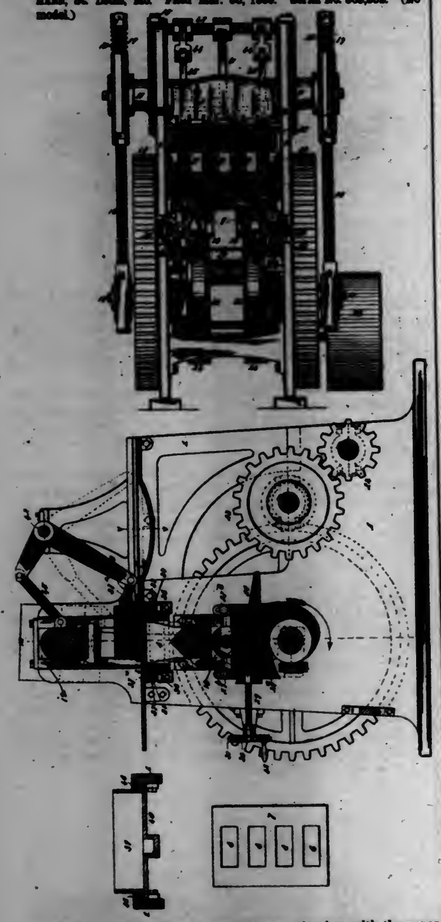
2. The combination of a gas-engine and an ignition-chamber with a connecting-pipe having a three-way cock opening also to an air-supply passage, and an electric igniting device, substantially as described, and for the purpose specified.

3. The combination of a starting-gear for gas-engines, consisting of an ignition-chamber and a connecting-pipe having a three-way cock

with an electric igniting device, and a circuit-opener or switch in the circuit of the induction-coil, as and for the purposes specified.

4. A starting-gear for gas-engines, consisting of a three-way cock, air and gas supplies communicating therewith, an igniter, and a stop-cock between the ignitor and the cylinder, substantially as set forth.

411,645. RECIPROCATING BRICK-MACHINE. Otto I. Dieckmann, St. Louis, Mo. Filed Mar. 30, 1889. Serial No. 305,253. (No model.)



Claim.—1. In a brick-machine, the combination, with the upper and lower plungers, of a vertically-movable mold-box and springs upon which said mold-box is permanently and entirely supported, substantially as described.

2. In a brick-machine, the combination, with the plungers and means, substantially as described, for operating them, of the mold-box having the flanges 37ª arranged one at each of the four corners of said box, the perforated brackets, pins projecting from said flanges through said brackets, and springs surrounding said pins between said flanges and brackets, substantially as set forth.

3. In a brick-machine, the combination, with the upper and lower plungers, and the frame 1, having slots 12, carrying the upper cross-head bearing the plungers, and having extensions 11, working in said slots, of the journals 12ª, divided boxes in which said journals work, the rods 15, passing through said boxes and having nuts at their upper ends, springs bearing between said nuts and the upper divisions of said boxes, the pitmen 16, and the main shaft having cranks for operating said pitmen and cams for operating said lower plunger, substantially as set forth.

411,646. APPARATUS FOR PURIFYING AND REFINING OIL. Christian Doll and Emil Novtel, Philadelphia, Pa. Filed May 2, 1889. Serial No. 309,234. (No model.)



Claim.—1. An apparatus for refining and purifying oil, consisting of a tank, a receiving-reservoir in the upper part of said tank and provided with a discharge-pipe extending to near the bottom of the tank, a horizontal plate surrounding said discharge-pipe in said tank, depending cylinders secured to said plate, forming chambers communicating at alternate ends, a heating pipe within said chambers, said parts being combined substantially as described.

2. A tank with a reservoir therein, the latter having a discharge-pipe within the tank extending to near the bottom thereof, a horizontal plate with nozzles on its upper face and near its outer rim, depending concentric cylinders secured to said plate, forming communicating chambers, and heating-pipes within the inner one of said chambers, said parts being combined substantially as described.

3. An apparatus for refining and purifying oil, consisting of a tank having cocks at different heights thereon, a reservoir in the upper part of said tank having a discharge-pipe within the tank and extending to near the bottom thereof, a horizontal plate having nozzles near its rim, depending cylinders secured to said plate and forming chambers, said chambers having communication at alternate ends, a heating coil-pipe in the lower part of the tank and in the inner chamber, and a deflector on said horizontal plate, said parts being combined substantially as described.

4. In an apparatus for refining and purifying oil, a tank with suitable outlets, a reservoir with discharge-pipe in said tank, a horizontal plate with depending cylinders, forming communicating chambers, the outer one of said chambers having an upward outlet through openings in the horizontal plate, and a heating-pipe in said inner chamber, said parts being combined substantially as described.

411,647. GAS-HEATING BURNER. Albert J. Doty, Philadelphia, Pa., assignor, by mesne assignments, to the Goodwin Gas Stove and Motor Company, same place. Filed June 6, 1887. Serial No. 240,621. (No model.)



Claim.—1. In a gas-heating burner, the combination of the following parts, viz: the plate *f*, plate *j*, and arms *i*, cast in a single piece, the gas-chamber B, having orifices *e* in the vertical sides thereof, and mixing-tube C, having an air-opening *a*, also cast in a single piece, a fastening rivet or screw *g*, passing from the plate *f* to the chamber B and holding both castings together, and a gas-supply pipe D, having a gas-orifice *r* opening into said mixing-tube C, said parts being constructed and combined substantially as set forth.

2. In a gas-heating burner, the combination of a gas-supply pipe D, having a gas-orifice *r*, the mixing-tube C, having an air-opening *a*, the gas-chamber B, provided with orifices *e* in the vertical sides thereof, and the plate *f*, forming a top cover of the gas-chamber B and having radial arms *i*, supporting a surrounding annular plate *j*, so arranged with relation to said gas-chamber B as to form an air-passage between them, which shall supply air upwardly to the flame, said parts being constructed and combined substantially as described.

3. In a gas-heating burner, the combination of, the pipe D, having a gas-orifice *r*, mixing-tube C, provided with air-opening *a*, gas-chamber B, having orifices *e* in the vertical sides thereof, a plate *f*, having radial arms *i*, and an annular plate *j*, having perforations *p* and *g*, supplying air to the flame above the point of ignition, said parts being constructed, combined, and arranged substantially as set forth.

411,648. MULTIPLE HEATING GAS-BURNER. Albert J. Doty, Philadelphia, Pa., assignor, by mesne assignments, to the Goodwin Gas Stove and Motor Company, same place. Filed June 6, 1887. Serial No. 240,622. (No model.)



Claim.—1. A multiple gas-burner consisting of a central chamber B, having a series of hollow arms A radiating therefrom, provided at their ends with gas-jets, a gas-nozzle D, secured within said central chamber B, provided with separate gas jets or orifices *a*, delivering gas into each of said radial arms, said chamber B being perforated at its base with an annular or central aperture *c*, surrounding the gas-nozzle D, said parts being constructed, combined, and arranged substantially as set forth.

2. In a multiple gas-burner, the combination of the following parts, viz: a series of hollow arms A, cast in approximately semicircular form and integrally with the central chamber B, a base-plate for both of the same, consisting of the cross-shaped plate E, having an annular central air-aperture *c*, a central gas-nozzle D, provided with gas-orifices *a* and secured within said chamber B, and projecting downward through the center of the aperture *c* and communicating with the gas-supply pipe F, said parts being constructed, combined, and arranged substantially as set forth.

411,649. GAS-STOVE. Albert J. Doty, Philadelphia, Pa., assignor, by mesne assignments, to the Goodwin Gas Stove and Motor Company, same place. Filed June 6, 1887. Serial No. 240,623. (No model.)



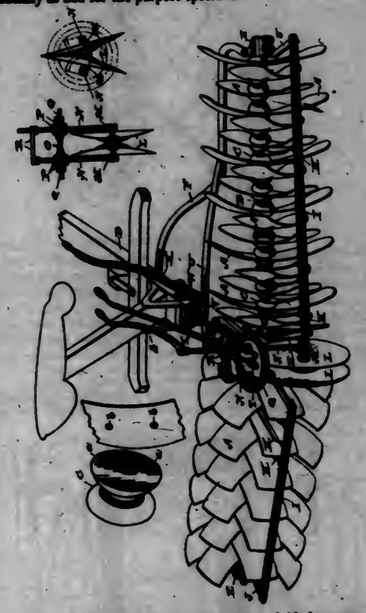
Claim.—1. The combination and arrangement, with the burner F, of the following parts, viz: the concave deflecting-plate B, having a central opening arranged above said burner, a conical heat-distributing plate E, supported above the deflecting-plate B and provided on its upper surface with radial ribs *c*, a griddle D, secured to said plate E in such manner that the said radial ribs of the latter will contact with the under surface of the former, and a body or stand A, provided with an annular notched edge or rim extending vertically above the periphery of the plate B, supported within said body A, said parts being constructed, combined, and arranged as aforesaid in order that the flame may be directed outward through the draft-passage between the plates B and E and find its exit through the notched edges of the rim of the body A of the device, substantially as and for the purpose set forth.

2. The combination, with the griddle D and a burner F, of a concave plate E, located centrally above said burner F and provided with ribs *c*, contacting with the under surface of the griddle, and heat-insulating material *d*, applied to the central portion of the plate E, substantially as set forth.

3. The combination, with the griddle D, burner F, and supporting-frame A, of a deflecting-plate B, having a central opening C, located immediately over the burner F, a concave plate E, provided with radially-arranged ribs *c* on its upper surface contacting with the under surface of the griddle, and heat-insulating material *d*, applied to the central portion of the plate E, said parts being constructed, combined, and arranged substantially as set forth.

411,650. ROTARY FLOW. Joseph Draper, London, Ontario, Canada. Filed Dec. 24, 1888. Serial No. 294,455. (No model.)

Claim.—1. The combination, with a series of blades supported on a spindle, of ferrules fitted onto the spindle, one between each pair of blades, each ferrule having tents projecting from both of its ends designed to fit into holes or recesses formed in the surface of the blades, the tents on one end of each ferrule being set in such relation to the tents on its opposite end that the adjacent blades separated by the said ferrule shall be held at the proper angle to each other, so that their ends shall be substantially upon the line of an Archimedean screw, substantially as and for the purpose specified.



2. The combination, with a series of curved blades arranged as described, of a series of scrapers forked and supported at one end by the ferrule separating the blades and at their other ends adjustably connected to a horizontal bar suitably supported, as described, substantially as and for the purpose specified.

3. A frame and the spindles B and their blades, combined with the pair of concave-disk plows independently supported in proximity to each other between said spindles in such a manner that their outer edges may be angled, substantially as and for the purpose specified.

4. The disks L, independently journaled in proximity to each other and supported by the posts N, carried by the disk O, in combination with the toothed quadrants R and handle S, arranged substantially as and for the purpose specified.

5. The disk O, journaled in the bracket Q, and the posts N, connected to the disk O and arranged to support the disks L, substantially as and for the purpose specified.

6. The plate U, arranged to extend over and rest upon the brace F and fixed to the bracket V, in combination with the lever X, pivoted to the tongue D and having a toothed quadrant formed on it to engage with the rack formed on the bracket V, substantially as and for the purpose specified.

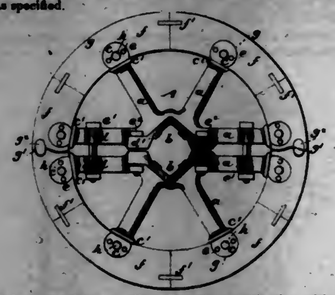
7. The spindle B, having a cylindrical block Y formed upon or connected to it, in combination with a pivoted frame Z, having a hole in it around which an annular rib *e* is formed to fit into an annular recess *d* made in the block Y, substantially as and for the purpose specified.

8. The blocks Y, formed upon or connected to the inner ends of the spindles B and having their ends shaped so that they will butt against and engage with each other with the least possible friction, in combination with the frames Z, forming journal-boxes for the blocks Y and provided with pins *f* to fit into oblong holes *g* made in the bracket G, substantially as and for the purpose specified.

411,651. WOODEN-RIM SPLIT PULLEY. Gardner P. Rand, Racine, Wis. Filed Oct. 11, 1888. Serial No. 287,702. (No model.) Patented in Canada July 6, 1889, No. 29,455.

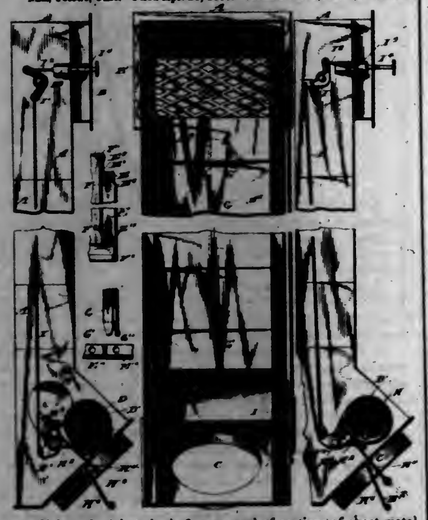
Claim.—1. In a wooden-rim split pulley, the rim having a central

drop flange or web and a spider the arms of which have shouldered plate portions embedded in the central flange or web, said plate portions being provided with integral pins or projections, combined with bolts passing entirely through the web and plate portions, substantially as specified.



2. In a wooden-rim split pulley, the combination, with the rim built up of successive ring portions, the central rims being deeper than the outer ones, whereby a central drop flange or web is formed in said rim, of a spider the arms of which have shouldered plate portions on their ends of a thickness equal to that of the central ring of the drop flange or web and into which they are embedded, said plate portions being also provided with integral pins or projections embedded in the rings on each side of the said central ring, and bolts passing through the plate portions and the web, substantially as specified.

411,652. FURNACE-PIPE. ERNST A. EVERSMAN and DANIEL WAGNER, Toledo, Ohio. Filed Apr. 23, 1889. Serial No. 309,061. (No model.)



Claim.—1. A hot-air shaft composed of sections of sheet metal, said sections having inner and outer walls, having at their ends laterally-extending portions and extensions, the lateral portions being perforated to permit of communication between their respective outer passages between said walls, substantially as specified.

2. A hot-air shaft composed of sections of sheet-metal walls spaced to form an outer passage, said sections fitting into one another and at their ends bent to form oppositely-extending lateral portions and extensions, said lateral portions being perforated for communication of their respective outer passages, substantially as specified.

3. A sheet-metal section of a hot-air shaft, composed of inner walls having the right-angled bends, as described, one of said bent portions being perforated, in combination with outer walls having corresponding bends extending in the opposite direction, one of which bent portions is also perforated, the edges of said walls being turned over each other at the ends, substantially as specified.

4. A sheet-metal section for a hot-air shaft, composed of an outer wall bent and perforated, as specified, in combination with an inner wall formed in two parts, the vertical edges of said parts bent to form wings or ribs, as described, said walls separated to receive the tips of said wings or ribs, said inner wall being bent and perforated, as specified, and having its edges turned over those of said outer wall, substantially as specified.

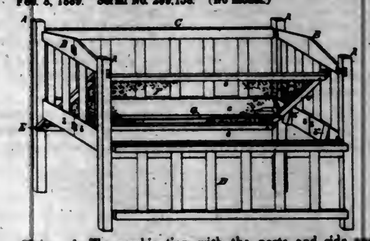
5. A hot-air shaft having an inner and an outer wall constituting an inner and an outer passage, respectively, said outer passage communicating at the bottom thereof with the outer air by an aperture, and both passages having a common register, in combination with a valve for said aperture, a spring tending to open said valve, a bell-crank pivoted near said register, and means for connecting said bell-crank with said valve, substantially as specified.

6. In a hot-air shaft having an inner and an outer passage, the outer passage communicating with the outer air by an aperture, a pivoted valve playing in front of said aperture, a spring attached to the same tending to open it, a stop thereon to limit this tendency of the spring, and an abutment for the stop, in combination with a bell-crank, a slide connected therewith by a link, and means for connecting said valve with said bell-crank, substantially as specified.

7. In a hot-air shaft having an inner and an outer passage, said outer passage communicating with the outer air by an aperture, a pivoted valve playing in front of said aperture, a spring tending to open said valve, and a stop for limiting this tendency of the spring, in combination with means for operating the valve, a link attached to said valve and having a loop, and a locking-pin pivoted near said link and having a projection over which said loop is adapted to fit, substantially as specified.

8. A section of a double-walled air-shaft, having perforated lateral bent portions at each end and provided at one end with slots for the reception of the ribs of an adjacent section and a strengthening-rib at the other, substantially as specified.

411,653. FOLDING CRIB. FRANK FAY, Chester, Mass. Filed Feb. 8, 1889. Serial No. 299,153. (No model.)



Claim.—1. The combination, with the posts and side and end pieces of a crib-frame, of a crib-bottom and a plurality of links, each of which is pivotally connected at one end to said bottom and at the opposite end to one of the posts of said frame, substantially as and for the purpose described.

2. The combination, with the posts, side pieces, and inwardly-folding end pieces of a crib-frame, of a crib-bottom having an unbroken rectangular frame and two links, each of which is pivotally connected at one end to one of the posts of said crib-frame and similarly connected at its opposite end to one of the end pieces of said bottom-frame, substantially as described.

3. The combination, with the posts, side pieces, and inwardly-folding end pieces of a crib-frame, of a rectangular bottom-frame and a rod or similar device extending from end to end of said bottom-frame and having pivotal connection therewith, said rod having its ends bent at substantially a right angle to the body portion thereof, and having each of said ends pivotally connected, respectively, with one of the posts of said crib-frame, substantially as described.

4. In a crib, posts A, side piece C, having grooves or recesses c' within its inner side, side piece D, and inwardly-folding end pieces B B, combined with bottom E, having a portion of its rear side adapted to enter said groove or recess c' when said bottom is in its operative position, and links connecting said bottom to the two rear posts A, substantially as and for the purpose described.

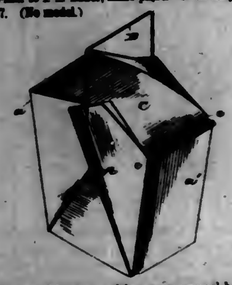
5. In a folding crib, posts A, side piece C, having the grooves or recesses c' therein, side piece D, having cleat d upon its inner side, and inwardly-folding end pieces B B, combined with woven-wire bottom E, having the projecting end pieces e', and rod G, pivotally connected with said end pieces e', said rod being bent at its ends to form arms g and fingers g', and having said fingers journaled in two of said posts A, arranged and operating substantially as set forth.

6. In a folding crib, posts A, the two rearmost of which are provided with holes a, side pieces C D, and inwardly-folding end pieces B B, combined with bottom E and rod G, pivotally connected to said bottom and having its ends bent to form arms g and fingers g', said fingers being inserted in the holes a in said posts and being of greater length than the depth of said holes, whereby space is left between the arms g and the posts, substantially as and for the purpose described.

7. In the folding crib herein described, the combination, with the two rear posts thereof, bottom E, and rod G, pivotally connecting said bottom with said posts, of stops secured to the end pieces of the crib to limit the swinging movement of said rod, substantially as and for the purpose set forth.

8. In a folding crib, side pieces C D, the former being provided with the recesses c' and the latter with cleat d, and inwardly-folding end pieces B B, combined with bottom E, composed of side pieces e e, end pieces e' e', and woven wire F, said end pieces having their rear ends projecting beyond the rear side piece e, rod G, connected to said end pieces e' e' near their rear ends by means of staples a, said rod having its ends bent to form arms g and fingers g' and having said fingers journaled in side piece C, and wedge-shaped blocks b' b', secured to said end pieces B B upon their inner sides, said blocks b' being so located as to serve as stops to limit the forward movement of rod G at a point where the rear ends of end pieces e' e' of the bottom will clear side piece C, arranged and operating substantially as and for the purpose set forth.

411,654. PAPER VESSEL. WASHINGTON POULTNEY, Dayton, Ohio, assignor of one-half to I. L. Baker, same place. Filed May 9, 1889. Serial No. 310,167. (No model.)



Claim.—1. The combination, with a paper vessel having a cover secured thereto at one end, of a retaining-strip secured to an edge of said vessel, adapted to be engaged by the free end of said cover, and provided with pliant projections extending on each side of said cover adapted to be bent over upon said cover to secure it in position, substantially as described.

2. The combination, with a paper vessel having a cover secured thereto at one end and having its sides provided with notches adjacent to its free end, of a retaining-strip secured to an edge of said vessel, adapted to be engaged by said cover, and having pliant projections extending beyond the edges of said cover adapted to be bent over upon said cover and made to engage said notches, substantially as described.

3. The combination, with a paper vessel, a retaining-strip having pliant projections, and a stiffening-plate secured to said vessel and engaging said retaining-strip, of a cover having one end secured to said vessel, the free end of said cover being provided with notches adapted to be engaged by said projections, substantially as described.

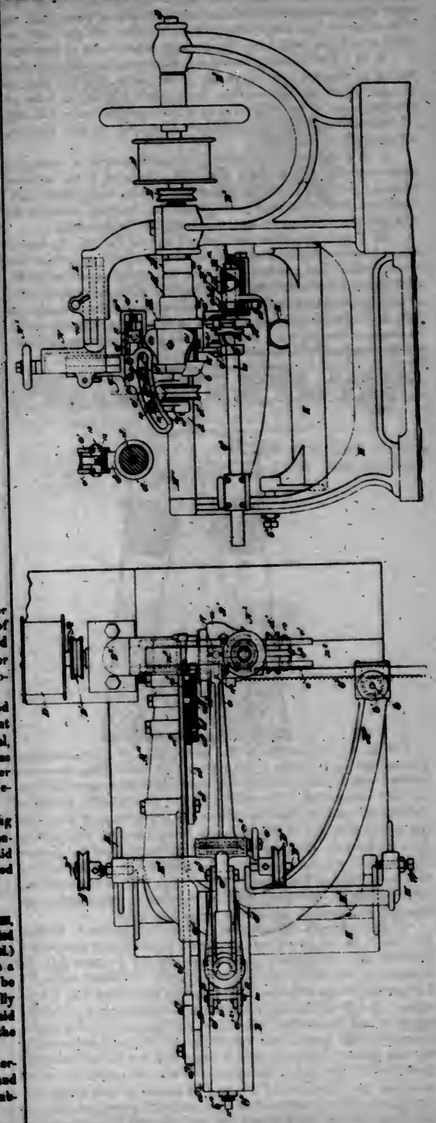
411,655. HEEL-TRIMMING MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed May 20, 1889. Renewed May 18, 1889. Serial No. 311,203. (No model.)

Claim.—1. In a heel-trimming machine, the combination, with a rotary cutter and a jack to hold the shoe the heel of which is to be trimmed, of a pattern-plate and operative mechanism to automatically impart to the said jack a longitudinally-sliding motion while the said cutter acts to trim the sides of the heel, substantially as and for the purposes described.

2. In a heel-trimming machine, a rocking lever and a rocker-frame pivoted thereon, having a track, combined with a jack and with a cam to slide the jack longitudinally upon the said track, substantially as described.

3. In a heel-trimming machine, a rocking lever and a rocker-frame pivoted transversely thereon, having a track, combined with a jack having an extension B fitted to and adapted to slide longitudinally upon the said track, and with a cam intermediate the said rocker-frame and jack to automatically move the jack longitudinally upon the rocker-frame, substantially as described.

4. The combination, in a heel-trimming machine, of the following instrumentalities, namely: a rotary cutter, a sliding jack to hold the shoe the heel of which is to be trimmed, a rocking support for the said jack, a pattern-plate, and a cam moved by it to change the relative positions of the jack and cutter, substantially as described, whereby the heel is presented to the action of the cutter by a substantially right line movement when the side of the heel is being trimmed, substantially as described.



5. The rocking lever, the rocker mounted thereon and provided with a track, the jack mounted to slide upon the rocker, and a cam to move the jack longitudinally with relation to the cutter while the sides of the heel are being trimmed, combined with the pattern-plate, the gears, guard c^6, and rack bars or plates to actuate the said cam as the pattern-plate is rotated, substantially as described.

6. In a heel-trimming machine, a rotating molded cutter and a carriage having an attached rand or counter guard, combined with a track, as 10, upon which the counter-guard-supporting carriage trav-

ch when uncovering more or less of the knives or blades of the molded cutter, substantially as described.

7. In a heel-trimming machine, a rotating cutter and a carriage having an attached rand or counter guard, combined with a track upon which the said counter-guard-supporting carriage travels when uncovering more or less of the knives or blades of the cutter, and with a tipping jack and connections between the said jack and carriage to automatically move the carriage, substantially as described.

8. In a heel-trimming machine, a rotating cutter and a carriage having an attached rand or counter guard, combined with a track, as 10, upon which the said carriage is supported and travels when uncovering more or less of the knives or blades of the cutter, and with an independently-rotating rand-cutter carried by the said carriage, substantially as described.

9. In a heel-trimming machine, a rotating cutter, a carriage, a rand or counter guard, and a rand-cutter mounted in the said carriage, a track upon which the said carriage moves, and a tipping jack, combined with connections, substantially as described, between the said jack and carriage, to operate substantially as described.

10. The rotary cutter and the jack to hold the shoe the heel of which is to be trimmed, combined with a track, as 10, an independent carriage upon said track, a rand or counter guard attached to the said carriage, the shaft *d*, having its bearings in the said carriage, the rand-cutter attached to the said shaft *d*, and connections between the jack and carriage, whereby the jack as it is tipped also moves the carriage on the said track and with it the said rand-cutter and rand-guard, substantially as described.

411,656. AUTOMATIC FOUNTAIN COFFEE-POT. HENRY C. GREEN, St. Louis, Mo. Filed Feb. 1, 1889. Serial No. 298,249. (No model.)



Claim.—1. In a coffee-pot, the combination of the base-section, the strainer-cup 2, having a reduced beveled lower end that fits within the base-section, and a surmounting fountain-chamber above the irremovable base-section of the coffee-pot, the fountain-tube having an undulating expanded base that allows the free passage of the liquid, the surmounting cap 11, the said tube being provided with perforations 12, through which the fountain-jet discharges, and the strainer-cloth 14, secured to the bottom of the strainer-cup, and also secured at a higher level to the conical tubular collar 9, so as to stretch said strainer-cloth at a sharp inclination to re-enforce it from sagging, substantially as described, and for the purpose set forth.

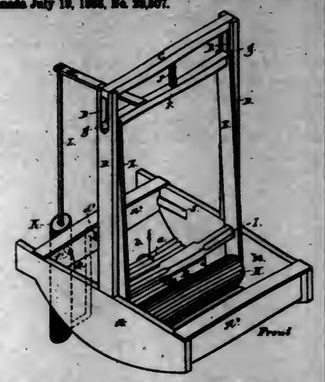
2. In a coffee-pot, the combination of the base-section 1, the fountain-tube 3, having an expanded base with an undulating bottom and provided with perforations near the top for the fountain-jets, the strainer-cup, the bevel base strainer-section of which fits within the base-section of the coffee-pot, the projecting bead-flange 4 on the periphery of said strainer-cup, that rests on the surmounting projecting ring 5 of said base-section, the strainer-cloth provided with a central opening 15, the elastic seam around the periphery of said opening, the said opening fitting around and embracing the fountain-tube, the stay-ring 17, that secures the strainer-cloth to the cup 2 at a lower level than the attachment of said strainer where it embraces the conical fountain-tube to hold said strainer-cloth at a sharp inclination to re-enforce it from sagging, and the stay-ring 18, that secures the center of the strainer to the fountain-tube, substantially as described, and for the purpose set forth.

3. In a coffee-pot, the combination of the base-section, the fountain-tube having an expanded base with a corrugated or undulating bottom and provided with perforations near the top for the fountain-jets, the flaring strainer center bearer-collar 19 around the fountain-tube, the strainer-cup 2, the strainer-cloth 14, provided with the center opening 15, the elastic seam around said opening, the stay-ring 17, that secures the strainer-cloth to the cup, and the stay-ring 18, that secures the center of the strainer to the fountain-tube at a higher level than at its peripheral attachment to the cup to hold said strainer-cloth at a sharp incline to re-enforce the same from sagging, substantially as described, and for the purpose set forth.

411,657. LOTION. PIERRE GRESSETT, Hoopa, Ill. Filed July 6, 1889. Serial No. 316,899. (No specimens.)

Claim.—The herein-described lotion or composition of matter to be used in the treatment of diseases such as described, the same consisting of spirits of camphor, water of ammonia, sulphate of zinc, water, and salt, in about the proportions specified.

411,658. WASHING-MACHINE. FRED. D. HARMON, Baldwin, Mo. Filed Feb. 16, 1888. Serial No. 264,267. (No model.) Patented in Canada July 19, 1888, No. 29,807.



Claim.—1. In a washing-machine, as described, a floor cut away at the rear, a pumping device placed centrally at the rear, and a swinging rubber-roll and its carrying-frame and an arm connecting said frame and pump, all constructed and combined in the manner described, whereby the pump is adapted to deliver a jet of water upon the roll when the roll has been moved to the front rail.

2. In a washing-machine, the combination of the following elements, viz: a swinging frame carrying the washing-roll, a pump centrally located and operated by the movements of said frame to deliver a jet of water at the forward movements of the roll, and a guard over the roll to prevent the upward spattering of the water.

3. In a washing-machine, as described, the combination of the roll and its swinging frame with the floor cut away at the rear and the side wedges or inclines near the top of the side walls and at the rear, whereby the roll-frame may be held at the rear and away from the floor, in the manner and for the purposes set forth.

4. In a washing-machine, as described, the casing provided with perpendicular standards B, the swinging frame E, journaled at its upper end in slotted bearings in said standards, the spring J, the washing-roll H, the corrugated bottom, and the centrally-located pump K, automatically operated by said frame and delivering water in jets upon the roll in the manner set forth.

5. The combination of the roll H, mounted and operated as set forth, the floor *a*, cut away at the rear and having an opening *b* between it and the rear part A^2 of the casing, and the pump K, centrally located and operated by the swinging frame, and the guard C over the roll, substantially as described.

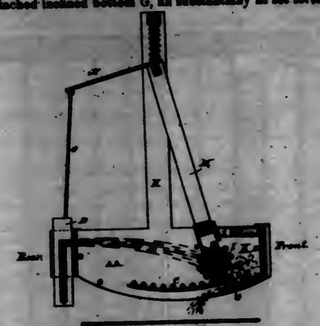
6. The combination of the roll H, swinging frame E, spring J, the arm F, attached to the frame and carrying the piston-rod L, the centrally-located pump K, and floor *a*, cut away, as described, in the manner and for the purpose set forth.

411,659. WASHING-MACHINE. FRED. D. HARMON, Baldwin, Mo. Filed June 20, 1888. Serial No. 278,078. (No model.)

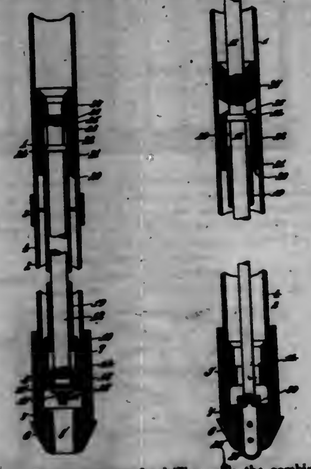
Claim.—1. In a washing-machine, a pumping mechanism operated by the bars on which the washing-roll is carried, a corrugated bottom centrally located and having an opening at the front and rear, and steps near the front end to limit the forward movement of the roll, whereby an open space or chamber is formed at the front of the machine, all combined substantially as and for the purposes set forth.

2. A washing-machine in which are combined the following elements: the frame forming the support for the operative parts, a bottom centrally located and having an opening at the front and rear, a rubbing-roll movable over said bottom and connected with and operating a pumping mechanism to throw a jet of water, as described,

and an open top chamber or recess at the front of the machine having the detached inclined bottom G, all substantially as set forth.



411,660. IMPLEMENT FOR BORING WELLS. LEWIS B. HART, Plaquemine, La. Filed May 13, 1889. Serial No. 310,827. (No model.)



Claim.—1. In an apparatus for drilling wells, the combination, with a well-tube and strainer, of an auger having a cutting-point approximating in form an inverted frustum of a cone and provided with a central opening having its upper end expanded, a hollow plug having openings above its closed rounded extremity, a hydraulic tube carrying said plug, and a packing in the pipe through which said tube passes, substantially as described.

2. In an apparatus for drilling wells, the combination, with a well-tube and strainer, of an auger having a point provided with a central opening, and a hollow plug mounted on the end of the hydraulic tube and provided with openings, part whereof lie above the opening when the plug is seated and discharge within the body of the auger, substantially as described.

3. In an apparatus for drilling wells, the combination, with the well-tube and strainer, of an auger having a body portion with a contracted central opening, a cylindrical nut screwed into a threaded seat in said opening and having a check-valve upon its lower end, a hydraulic tube screwed into said nut, and a boring-point screwed into the body below the valve and having substantially the shape of a frustum of a cone, provided with a central opening, substantially as described.

4. In an apparatus for drilling wells, the combination, with the well-tube and strainer, of an auger having a central opening extending entirely through the same, a hydraulic tube tapped into a nut carrying a spring-raised valve, said nut connected with the auger by a left-hand thread, a washer resting on a shoulder in the auger, a sleeve resting on the washer, a sleeve surrounding the hydraulic tube above the strainer and having concave or countersunk ends and provided with a recess in its upper end receiving a collar on said tube, flexible packings lying in the concave ends of the sleeve, a collar having a conical face and lying between the lower packing and the supporting-sleeve, and a coupling connected to the hydraulic tube and having a conical face resting on the upper packing, substantially as described.

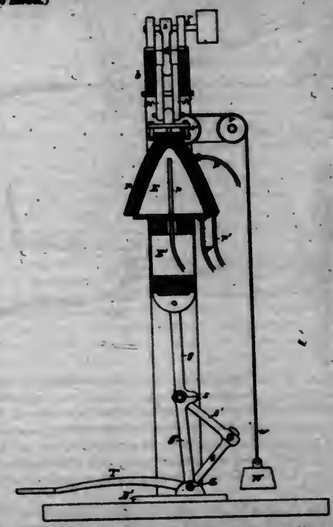
411,661. THILL-COUPLING. LEWIS B. HASKELL, Jr., Salem, Mass., assignor of one-half to Joseph Webster Dean, same place. Filed July 13, 1889. Serial No. 317,988. (No model.)



Claim.—1. The herein-described thill-coupling, consisting of the clasp *b* and its ears B B, the shaft-iron *c*, having eye *d* pivoted to said ears, and the yoke *f f'*, combined with the friction-block *h h'*, the packing *i*, the serrated or corrugated washer *k*, and regulating-screw *g*, having its upper end *g'* serrated or corrugated, substantially as and for the purpose set forth.

2. The clasp *b* and its ears B B, and the shaft-iron eye *d*, pivoted to said ears, combined with the yoke *f f'*, friction-block *h h'*, elastic spring *i*, and its expansive band *l*, the corrugated or serrated washer *k*, and regulating-screw *g*, having upper serrated or corrugated surface *g'*, as and for the purpose set forth.

411,662. MACHINE FOR FINISHING HAT-BODIES. CHARLES H. KELTON, Brooklyn, N. Y. Filed Apr. 6, 1889. Serial No. 306,307. (No model.)



Claim.—1. A machine for finishing felt hat-bodies to prepare them for shaping, said machine comprising a pair of heated conical male and female dies separable from each other and of a size and shape to receive and press the hat-bodies as they come from the battery, all substantially as described.

2. A machine for finishing felt hat-bodies to prepare them for shaping, comprising a pair of steam-heated conical male and female dies separable from each other and of a size and shape to receive and press the hat-bodies as they come from the battery, all substantially as described.

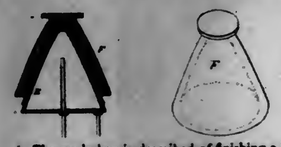
3. The combination of a frame and a pair of conical dies adapted to receive and press a hat-body as it comes from the battery, with means for imparting a short reciprocating motion to one of the dies, all substantially as described.

4. The combination of a frame and a pair of conical dies adapted to receive and press a hat-body, with means for imparting a recipro-

cating motion to one of the dies, and devices for moving the other die toward and from the reciprocating die for the introduction and removal of the hat-body.

5. The combination of the frame and pair of conical dies adapted to receive and press a hat-body, with toggle-levers to raise and depress the lower die and a lever or treadle to operate the toggles, all substantially as described.

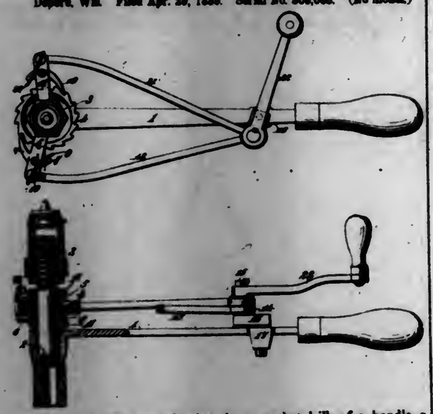
411,663. METHOD OF FINISHING HAT-BODIES. CHARLES H. KEATOR, Brooklyn, N. Y. Filed Apr. 8, 1889. Serial No. 306,808. (No model.)



Claim.—1. The mode herein described of finishing a hat-body to make it ready for the shaping operation, said mode consisting in subjecting the said body to heat and a uniform pressure all over while held in its conical form and free from folds or creases, substantially as set forth.

2. The mode herein described of finishing hat-bodies to make them ready for the shaping operation, said mode consisting in subjecting the hat-bodies to heat and a pounding action uniformly over their whole surfaces while held in their conical form free from folds or creases, substantially as set forth.

411,664. RATCHET-DRILL. DAN KIDNEY and ALBERT VERBOORT, Depere, Wis. Filed Apr. 20, 1889. Serial No. 308,063. (No model.)



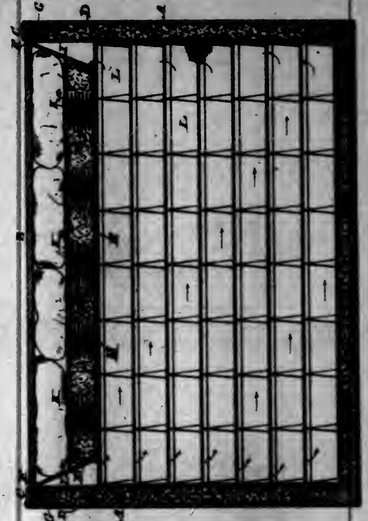
Claim.—1. The combination, in a ratchet-drill, of a handle, a drill-stock having a ratchet-wheel, a pair of pawl-carrying yoke-levers journaled on the drill-stock, a revolving crank journaled on the handle and having an eccentric wrist-pin, two rigid pitmen secured to the wrist-pin and respectively connected with the yoke-levers, and a crank-handle revolving above the pitmen at one side of the drill-stock to continuously revolve the crank in one direction, substantially as described.

2. The combination, in a ratchet-drill, of a handle, a drill-stock having a ratchet-wheel, a pair of pawl-carrying yoke-levers journaled on the drill-stock, a revolving crank journaled on the handle and having an eccentric wrist-pin projecting upward therefrom, two pitmen secured to the wrist-pin and respectively connected with the yoke-levers, and a crank-handle rigidly attached to the wrist-pin and revolving above the pitmen at one side of the drill-stock to continuously revolve the crank and wrist-pin in one direction, substantially as described.

411,665. REFRIGERATOR. MILLER KNICKERBOCKER, Lawtey, Fla. Filed Jan. 16, 1889. Serial No. 296,626. (No model.)

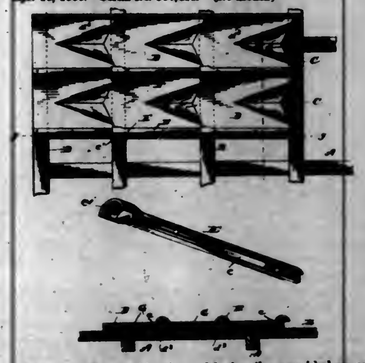
Claim.—1. In a refrigerator-chest, the combination of an air-tight ice-chamber, an elastic absorbent substance in the bottom of said chamber, and a perforated partition between said elastic absorbent substance and the ice within the chamber, substantially as set forth.

2. In a refrigerator-chest, the combination of an air-tight ice-chamber, elastic absorbent substance, and auxiliary spiral springs in the bottom of said chamber and a perforated partition between said absorbent and springs and the ice within the chamber, substantially as set forth.



3. In a refrigerator-chest, the combination of an air-tight ice-chamber, elastic absorbent substance in the bottom of said chamber, a perforated partition between said elastic absorbent substance and the ice within said chamber, and an air-tight packing-chamber below the ice-chamber, substantially as set forth.

411,666. ROOFING-TILE. ROBERT LINDELL, Blakeman, Kans. Filed Apr. 16, 1888. Serial No. 307,411. (No model.)



Claim.—1. The combination, with the tiles provided on one end with a depression or recess and on their opposite end with an undercut portion to form the herein-described lap-joint between the contiguous edges of any two tiles, and being further provided on their upper side with a longitudinal groove, of the retaining-strips provided on their under side with a longitudinal strip or tenon, substantially as set forth.

2. The combination, with the tiles provided on one end with a depression or recess and on their opposite end with an undercut portion to form the herein-described lap-joint between the contiguous edges of any two tiles, and being further provided on their upper side with a longitudinal groove, of the retaining-strips provided on their under side with a longitudinal strip or tenon having one end provided with a semi-cylindrical recess, substantially as set forth.

3. The combination, with the tiles provided on one end with a depression or recess and on their opposite end with an undercut portion to form the herein-described lap-joint between the contiguous edges of any two tiles, and being further provided on their side with a longitudinal groove, of the retaining-strips provided on their under side with a longitudinal strip or tenon located to one side of the center thereof, substantially as set forth.

4. The combination, with the rafters and stringers, of tiles resting on said stringers, said tiles being provided on one end with a depression or recess and on their opposite end with an under-cut to form the herein-described lap-joint between the contiguous edges of any two tiles, and being further provided on their upper side with a longitudinal groove and also a channel, of the retaining-strips provided on their under side with longitudinal strips or tenons, and having one end provided with a semi-cylindrical recess, substantially as set forth.

5. The combination, with the tiles provided on their upper side with a longitudinal groove, said groove being contracted in depth at one end, of the retaining-strip provided with a longitudinal tenon fitting in said groove, the end thereof which registers with the diminished or contracted portion of the groove being correspondingly decreased in width to perfect a neat joint, substantially as set forth.

6. The combination, with the tiles provided on one end with a depression or recess, and on their opposite end with an undercut portion to form the herein-described lap-joint between the contiguous edges of any two tiles, and being further provided on their upper side with a longitudinal groove, said groove diminishing in depth at that end of the tile which is provided with the undercut portion, of the retaining-strips provided with a longitudinal tenon fitting in said groove, the portion of the tenon which registers with the reduced portion of the groove being decreased, so as to afford a perfect joint therewith, substantially as set forth.

411,667. CHURN. WILLIAM F. LITTLE, Jonesborough, Ark. Filed June 12, 1889. Serial No. 314,782. (No model.)



Claim.—The combination, with the frame and the cross-bar *d*, provided with an opening for the passage of the dasher-shaft and open at one side, of the dasher-shaft, the standard A, supported in a socket in the cross-bar parallel with the dasher-shaft, the mechanism for reciprocating the dasher-shaft, and the locking-lever K, pivoted at one end on said cross-bar and provided with the notches *l* and *m* to engage said shaft and standard, said notches being of different sizes, the notch *l* being larger to allow free reciprocation of the dasher-shaft, and the notch *m* smaller to bind the standard A, substantially as shown and described, and for the purpose specified.

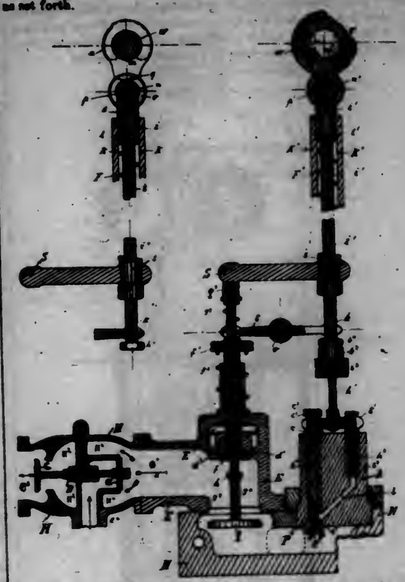
411,668. GAS-ENGINE. JULIUS MATTHIES, Berlin, Germany. Filed Nov. 14, 1888. Serial No. 290,801. (No model.) Patented in Germany Mar. 20, 1888, No. 45,449.

Claim.—1. In a gas-engine, the combination of the casing A, having the bores for the pistons A^2 and A^3, the channel *b*, connecting said bores, and the channel b^3, leading to the burner, and the pistons A^2 and A^3, the piston A^2 being provided with an annular groove *b'*, substantially as set forth.

2. The combination, with the casing E, of a valve *g*, having a stem g^2, the gas-valve *f*, the arm S, acting on the stem of the valve *g*, a lever *t*, acting on the gas-valve *f*, the rod *i*, connecting with said arm S, a lever *t*, and a cam and a roller for operating the rod *i*, substantially as set forth.

3. The combination, with the casing H, having the channels H^1 H^2, of the sliding stem D and the valves G' G' on the opposite ends of the same, substantially as set forth.

4. In a gas-engine, the combination, with a casing, of a valve in the same governing the admission of the mixture of gas and air to the cylinder, a stem on said valve, an arm acting on said stem, a rod to which said arm is secured, two rollers on the opposite end of said arm, one of the rollers being adjustable, a cam acting on the non-adjustable roller, and a cam acting on the adjustable roller, substantially as set forth.



5. In a gas-engine, the combination, with a casing, of a valve controlling the passage of the mixture of gas and air to the cylinder, a stem to which said valve is secured, a gas-valve having a tubular stem surrounding the stem of the valve that controls the admission of the mixture of gas and air to the cylinder, a pivoted lever acting on the upper end of the gas-valve, an arm acting on the upper end of the stem of the valve governing the admission of the mixture of gas and air to the cylinder, a rod to which said arm is secured, a projection or cut in said rod acting on the lever that rests on the gas-valve, a roller on the upper end of said rod, and a cam acting on said roller, substantially as set forth.

6. The combination, with a casing, of the valve G, governing the passage of the mixture of gas and air to the cylinder, the stem g^2, a gas-valve *f*, having a tubular stem surrounding the stem g^2, a spring f^2, pressing the gas-valve upward, the spring g^3, surrounding the stem g^2 and pressing said stem upward, a pivoted lever acting on the upper end of the gas-valve, the arm S, acting on the upper end of the stem g^2, the rod *i*, from which the arm S projects, the cut *k'* on said rod acting on the lever *t*, and a cam for actuating the rod *i*, substantially as set forth.

411,669. VAULT OR SAFE. JAMES H. MYERS, Rochester, N. Y. Filed Jan. 28, 1889. Serial No. 297,510. (No model.)

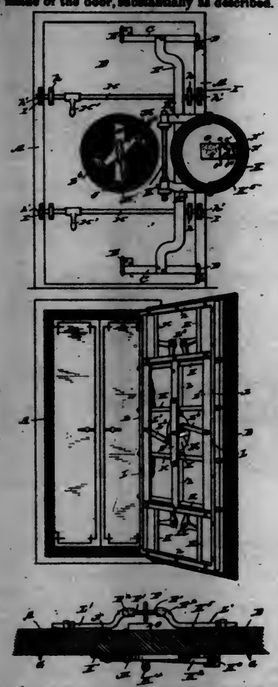
Claim.—1. The combination, with a vault or safe, a door for affording access thereto having suitable bolts and a manually-operated device for operating them located inside the vault, of an aperture through which the bolts of the main door may be operated, an auxiliary door for closing said aperture, and a locking device for said door located entirely within the vault, substantially as described.

2. The combination, with a vault or safe, a door for affording access thereto having suitable bolts, and a manually-operated device located inside the vault for retracting them, of an aperture through which the bolts of the main door may be operated, an auxiliary door for closing said aperture, and a time-lock for guarding said auxiliary door located within the vault, substantially as described.

3. The combination, with a vault or safe, a door for affording access thereto, suitable bolts for securing it, and a manually-operated device located inside the vault for operating them, of an aperture in the main door through which the bolts of the main door may be operated, an auxiliary door for closing said aperture, and a lock for guarding said auxiliary door located within the vault.

4. The combination, with a vault or safe, a door for affording access thereto having suitable bolts, and a manually-operating device for retracting them located on the inside of the safe-door, of an aperture in the main door through which access may be had to the bolt-

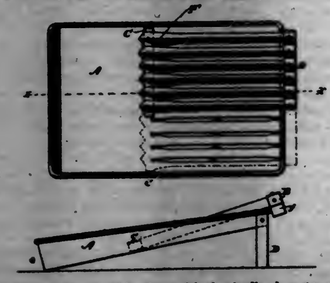
operating device, an auxiliary door for closing said aperture, having suitable projections thereon for co-operating with the sides of the aperture when rotated, a hinged supporting-yoke on which the auxiliary door is supported, a dog for preventing the rotation of said door when in closed position, and an automatic lock for retracting said dog located on the inside of the door, substantially as described.



5. The combination, with a vault or safe, a door for affording access thereto having the packing at the edges, and a pivoted supporting link or links upon which it is hinged, of the locking-bolts adapted to be projected from both sides of said door, having their outer sides chamfered or beveled, substantially as described, whereby the projection of the bolts will tightly compress the packing and hold the door closely to its seat, as set forth.

6. The combination, in a vault or safe, of a main door having suitable locking-bolts inaccessible from the exterior, an aperture through which access may be had to the interior of the safe, an imperforate auxiliary door for closing said aperture, and a locking device for said door located within the safe-walls, substantially as described.

411,670. DRIP-PAN. BERNARD MCGARRITY, Pawtucket, R. I. Filed Feb. 4, 1889. Serial No. 298,992. (Model.)



Claim.—1. The combination, with the inclined rectangular pan having the flat bottom with the slits in the upper portion and the grooves between the slits, of the removable broiler formed with the slits alternating with those in the pan and the retaining devices for holding the broiler at the upper end of the pan, substantially as described.

2. The combination, with the pan having the rectangular body, with the inclined flat bottom having the slits in the upper portion, with the grooves between such slits and the side walls of relatively greater height at the lower end forming a receptacle for the juices, of the broiler at the upper end having the slits alternating with those in the pan, and the depending portions engaging the upper edge of the pan to retain the broiler at the top, substantially as described.

3. The combination, with the pan having the rectangular body, with the inclined flat bottom having the slits at the upper end, with the edges of the slits turned up to form grooves, of the broiler having the corrugated body, with the slits having the downturned edges alternating with those in the pan, and the strengthening-strip at the end, with the depending portion engaging the edge of the pan to retain the broiler at the upper end, substantially as described.

411,671. FLOUR BIN AND SIFTER. JOHN A. MCCLELLAN, Rice, Tex. Filed May 25, 1889. Serial No. 312,094. (No model.)



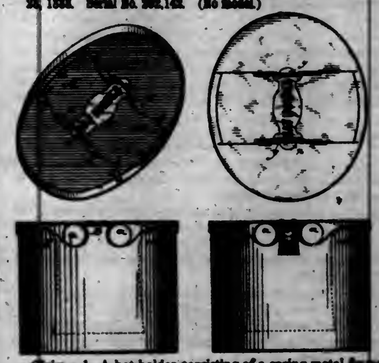
Claim.—1. A bin provided with a door or lid and having sleeves secured to said bin at opposite sides, and screening and sifting mechanism provided with similar sleeves, and two-pronged pins for connecting the screening and sifting mechanism to the bin, substantially as specified.

2. A bin having sleeves secured thereto at opposite sides and removable screening and sifting mechanism provided with similar sleeves, and two-prong pins engaging said sleeves for connecting the sifting and screening mechanism to the bin, the said pins being arranged with their heads in opposite directions, substantially as and for the purpose specified.

3. A screen-frame having recessed and curved end walls and quarto-cylindrical doors hinged thereto upon opposite sides thereof, with their adjacent edges overlapping, substantially as specified.

4. A screen-frame provided with recessed end walls connected by side walls having sleeves thereon, quarto-cylindrical doors hinged to said frame, and sifting and screening mechanism arranged within the screen, combined with a bin having like sleeves and removable prongs engaging said sleeves to detachably hold the screen-frame to the bin, substantially as specified.

411,672. HAT-HOLDER. EDWIN A. NEWMAN, Washington, D. C., assignor of one-half to David L. Swadley, Emporia, Kans. Filed Nov. 26, 1888. Serial No. 292,142. (No model.)



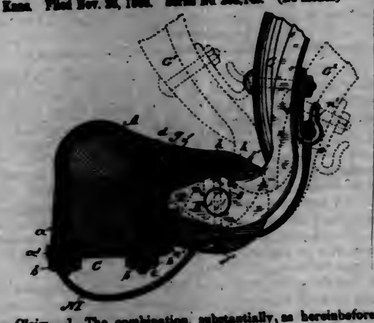
Claim.—1. A hat-holder consisting of a spring-metal frame composed of two similar wings A', each having two parallel sides formed with abrupt bends *c* at their outer ends, and a cross-piece *d*, connecting the two sides and adapted to rest under the brim of the hat.

2. A hat-holder consisting of a spring-wire frame formed of two similar wings A', each of said wings consisting of two sides formed with spring-coils near their inner ends and at their outer ends with abrupt bends *c*, connected by a cross-piece *d*.

3. The combined hat-holder and hat-brush holder herein described, consisting of a spring-wire frame formed with two similar wings A', said wings each having abrupt bends *c* at their outer ends, adapted to rest under the brim of a hat and connected by a cross-piece *d*, and near the middle with spring bends or coils, between which the hat-brush may be held.

4. The combination, substantially as hereinbefore set forth, of the central metallic plate, the spring-metal frame or hat-holder consisting of two similar wings A', extending from each side of the central plate, said wings being each formed with spring-coils near the central plate, and scrolls extending outwardly from said spring-coils and having abrupt bends *c* at their outer ends connected by a cross-piece *d*.

411,673. VEHICLE-SHAFT COUPLING. EDWIN A. NEWMAN, Washington, D. C., assignor of one-half to David L. Swadley, Emporia, Kans. Filed Nov. 26, 1888. Serial No. 292,143. (No model.)

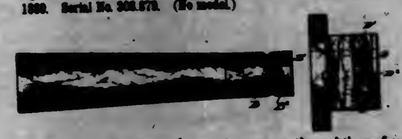


Claim.—1. The combination, substantially, as hereinbefore set forth, of the clip, the forwardly-projecting side pieces, the shafts, the cylindrical pivots resting in open bearings in the side pieces, the removable bottom plate of the clip, the overhanging top flange *d*, projecting beyond the rearwardly-projecting end of the shafts, the cushion D, seated in a socket in the front wall of the clip, said cushion being formed with a concave recess *e*, into which the end of the shafts extend.

2. The combination, substantially as hereinbefore set forth, of the shafts, the open bearings therefor, the strap at one end covering the bearings and secured at its opposite end to the shafts, so that when the shafts are elevated the strip is removed from the bearings.

3. The combination, substantially as hereinbefore set forth, of the shafts, the clips, the forwardly-projecting side pieces, the open bearings therein, the strap enlarged and weighted at one end and secured at its opposite end to the shafts, and the guides for the strip.

411,674. NUT-LOCK. WILLIAM H. OFFUTT, Keyser, W. Va., assignor of one-half to J. Robert Fortune, same place. Filed Mar. 13, 1889. Serial No. 303,079. (No model.)



Claim.—1. A bolt having a spiral groove at the end thereof and a rack between the convolutes of said spiral groove, substantially as shown and described.

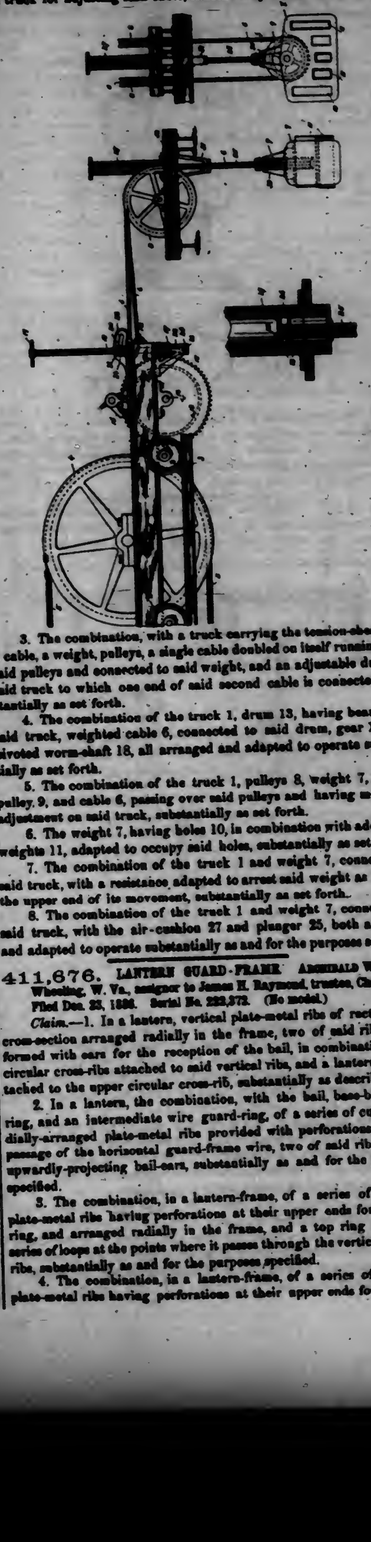
2. A bolt having a spiral groove near the end and a spiral rack, combined with a nut having a boss to engage said groove and a dog to engage the rack, substantially as shown and described.

3. The combination, with a bolt formed at one end with a spiral groove, and between the spirals of the groove with a rack, the teeth of which extend parallel with the axis of the bolt, of a nut having a boss engaging said groove, and a dog to engage said rack, substantially as shown and described.

411,675. TENSION DEVICE FOR THE CABLES OF CABLE RAILWAYS. WILLIAM H. FAHIE, New York, N. Y. Filed Feb. 6, 1889. Serial No. 298,954. (No model.)

Claim.—1. The combination, with the truck carrying the tension sheave or pulley, of a cable, a weight, two sheaves or pulleys, and a single cable doubled on itself, as shown, said cable connecting the weight to the truck and having one member passing over each of said sheaves or pulleys, substantially as set forth.

2. The combination, with the truck-carrying tension-sheave, of a cable, a weight, two sheaves or pulleys, and a single cable doubled on itself, as shown, and connected to said weight and having its two members passing over its two sheaves or pulleys, and mechanism on said truck for adjusting said cable, substantially as set forth.



3. The combination, with a truck carrying the tension-sheave, of a cable, a weight, pulleys, a single cable doubled on itself running over said pulleys and connected to said weight, and an adjustable drum on said truck to which one end of said second cable is connected, substantially as set forth.

4. The combination of the truck 1, drum 13, having bearing on said truck, weighted cable 6, connected to said drum, gear 15, and pivoted worm-shaft 18, all arranged and adapted to operate substantially as set forth.

5. The combination of the truck 1, pulleys 8, weight 7, having pulley 9, and cable 6, passing over said pulleys and having means of adjustment on said truck, substantially as set forth.

6. The weight 7, having holes 10, in combination with additional weights 11, adapted to occupy said holes, substantially as set forth.

7. The combination of the truck 1 and weight 7, connected to said truck, with a resistance adapted to arrest said weight as it nears the upper end of its movement, substantially as set forth.

8. The combination of the truck 1 and weight 7, connected to said truck, with the air-cushion 27 and plunger 25, both arranged and adapted to operate substantially as and for the purposes set forth.

411,676. LANTERN GUARD-FRAME. ARCHIBALD W. PAULL, Wheeling, W. Va., assignor to James H. Raymond, trustee, Chicago, Ill. Filed Dec. 23, 1888. Serial No. 293,372. (No model.)

Claim.—1. In a lantern, vertical plate-metal ribs of rectangular cross-section arranged radially in the frame, two of said ribs being formed with ears for the reception of the bail, in combination with circular cross-ribs attached to said vertical ribs, and a lantern-top attached to the upper circular cross-rib, substantially as described.

2. In a lantern, the combination, with the bail, base-band, top ring, and an intermediate wire guard-ring, of a series of curved radially-arranged plate-metal ribs provided with perforations for the passage of the horizontal guard-frame wire, two of said ribs having upwardly-projecting bail-ears, substantially as and for the purposes specified.

3. The combination, in a lantern-frame, of a series of vertical plate-metal ribs having perforations at their upper ends for the top ring, and arranged radially in the frame, and a top ring having a series of loops at the points where it passes through the vertical guard-ribs, substantially as and for the purposes specified.

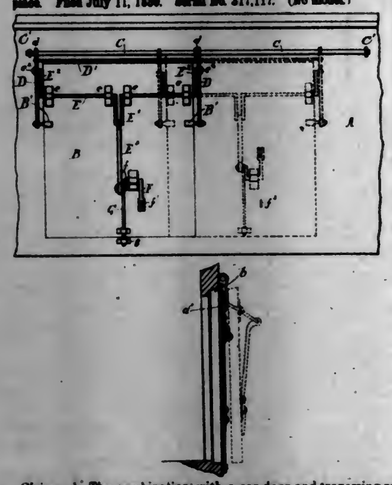
4. The combination, in a lantern-frame, of a series of vertical plate-metal ribs having perforations at their upper ends for the top

ring, two of said ribs having upwardly-projecting bail-ears, said ribs arranged radially in the frame, a top ring having a series of loops at the points where it passes through the vertical guard-ribs, and a bail pivoted in the projecting bail-ears, substantially as and for the purposes specified.



5. The combination of a base-basket comprising ribs of oblong cross-section inserted edgewise to the burner, two ribs being formed with ears for the reception of the bail, the basket having horizontal or cross-ribs, and a top attached to the upper cross-rib, substantially as and for the purposes specified.

411,677. CAR-DOOR. EDWARD L. PRIPPS, Milford, Mich., assignor of two-thirds to Solon H. Wilhelm and Almon D. Webb, both of same place. Filed July 11, 1888. Serial No. 317,117. (No model.)

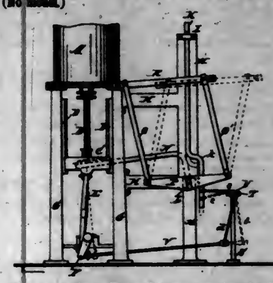


Claim.—1. The combination, with a car-door and traversing rail or rod, of suspenders depending from said rod and engaged with hangers upon the door, a shaft provided with cranks E' E², turned in opposite directions, the latter engaging through slots in the suspenders, a pitman E², and crank-lever F, substantially as and for the purposes described.

2. The combination, with a car-door and its traversing rod, of hangers upon the door engaged with suspenders depending from said rod, a shaft provided with cranks E' E², located between the hangers and the rail, and in connection therewith a pitman and crank-lever for actuating said shaft, substantially as described.

3. The combination, with a car-door and its rail, of hangers upon the door and suspenders depending from the rail, with which the hangers are engaged, a shaft provided with cranks E' E², the latter engaged with the suspenders by a slotted engagement, a pitman E², crank-lever F, and locking-bolt G, substantially as and for the purposes described.

411,678. DEVICE FOR OVERCOMING DEAD-CENTERS. ROBERT L. RAMSAY, Van Cleve, Miss. Filed June 15, 1889. Serial No. 314,348. (No model.)



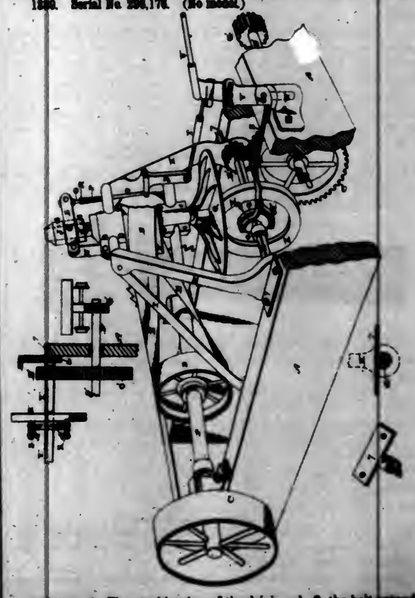
Claim.—1. In a device for overcoming dead-centers, the combination of the main crank with the spring, the rod connecting the spring to the crank, and means for giving tension to the spring in opposite directions, substantially as and for the purpose specified.

2. In a device for overcoming dead-centers, the combination of the main crank, the rod connecting the spring to the crank, the spring, the bar, the lever, and their connections, and means for oscillating the lever, substantially as and for the purpose described.

3. In a device for overcoming dead-centers, the combination of the main crank with the spring, the rod connecting the spring to the crank, the spring-bar, the lever, and their connections, the lever-shaft provided with an arm, and the cross-head, substantially as and for the purpose set forth.

4. In a device for overcoming dead-centers, the combination of the main crank with the spring, the rod connecting the spring to the crank, the spring-bar, the link, the double lever, the rods connecting the lever to the links, the lever-shaft provided with an arm, and the cross-head, substantially as and for the purpose described.

411,679. SAW-MILL FEED. SAMUEL T. REAMY, Tappahannock, Va., assignor to T. J. & F. A. Reamy, Nashville, Tenn. Filed Jan. 12, 1889. Serial No. 296,176. (No model.)



Claim.—1. The combination of the driving-shaft, the belt extending therefrom, the upright frame H, the endwise-moving shaft provided with a disk upon its lower end, and the friction-wheel placed upon the counter-shaft, substantially as shown.

2. The combination of the frame, the driving-shaft mounted

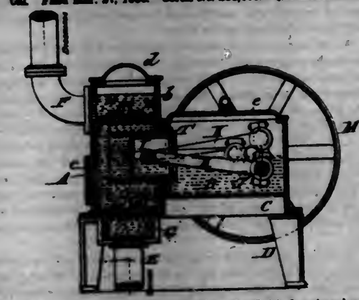
thereon, the driving-belt extending from this shaft, the upright frame H, the endwise-moving shaft provided with a disk upon its lower end, a spring-actuated mechanism for moving the shaft endwise, and the friction-wheel placed upon the shaft Y, substantially as described.

3. The combination of the frame, the saw-shaft, the belt extending from the shaft, the endwise-moving shaft, the frame H, in which the shaft is journaled, the yoke which is applied to the shaft, the spring-actuated rod connected to the yoke, the crank, the connecting-rod, the operating-lever, the disk Q, and friction-wheel which engages with the disk on the lower end of the shaft G, and counter-shaft, substantially as set forth.

4. The combination of the lever U, the partially-revolving post V, to which the lever is connected, the lever Z, secured to the post V, the counter-shaft Y, friction-wheel X, the driving-disk Q, placed upon the endwise-moving shaft G, and an operating mechanism for the shaft G, substantially as specified.

5. The combination of the endwise-moving shaft provided with a driving-disk, a belt for driving the shaft, the frame H, in which the shaft is journaled, the collars applied to the shaft, the pivoted yoke which supports the shaft, the rod O, connected to the free end of the yoke, the spring P, placed upon the rod, the bell-crank S, pivoted upon the frame H, the connecting-rod T, and the lever U, mounted upon the partially-rotary post V, with the arm or lever Z, connected to the post, the laterally-movable friction-wheel X, and the counter-shaft, substantially as described.

411,680. PUMPING-MACHINE. JOHN RICHARDS, San Francisco, Cal. Filed Mar. 27, 1888. Serial No. 268,606. (No model.)



Claim.—1. In a pumping-machine, the fluid-chamber having ingress and egress valves arranged in line vertically with each other, in combination with a lubricant-chamber, single or multiple pistons located between the chambers, and actuating mechanism therefor arranged in contact with the lubricating-liquid, substantially as described.

2. In a pumping-machine, the combination of the supporting box-frame, the fluid-chamber having ingress and egress valves located in vertical line with each other, the lubricant-chamber contiguous to the fluid-chamber, the horizontally-reciprocating pistons operating in guide-sleeves between the chambers, and the actuating mechanism for the pistons, consisting of a crank-shaft and connecting-links arranged in the lubricant-chamber, in the manner and for the purpose substantially as described.

3. In a pumping-machine, the chamber containing lubricating-liquid, in combination with the horizontally-moving pistons of the pumping mechanism, the crank-shaft, and the connecting-links, said parts operating within the lubricant, substantially in the manner and for the purpose specified.

4. In a pumping-machine, the combination of the fluid-chamber, the lubricant-chamber contiguous thereto, and multiple single acting pistons, operating in sleeves supported between the two chambers, as shown, said pistons being exposed on one side to contact with the lubricant and on the other side to contact with the fluid which is being pumped, substantially as described.

5. In a pumping-machine, the two chambers, one containing the fluid to be pumped, the other a lubricant, in combination with pump-barrels between these chambers and pistons operating therein, said pistons being exposed on one side to pumping-fluid and on the other to the lubricant, substantially as described.

6. In a pumping-machine, the combination of the fluid-chamber, the upper and lower compartments therein, as specified, the discharge and suction pipes entering said compartments, respectively, the ingress and egress valves between said compartments and the main interior of the fluid-chamber, the lubricant-chamber, the multiple pump-pistons, the sleeves or barrels within which they operate, and actuating mechanism for said pistons, substantially as described.

7. In a single or multiple pumping-machine, the combination of the supporting frame-work of the machine with two contiguous chambers, one serving as a fluid-chamber and containing the ingress and egress valves, and the other being used as a lubricant-chamber and containing the actuating mechanism of the pump, all substantially as described.

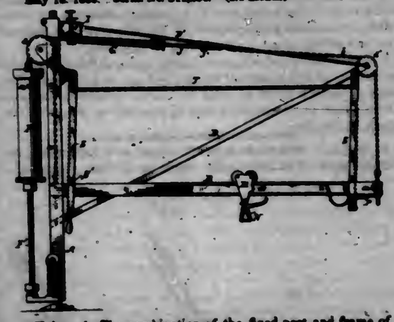
8. The combination of the supporting-frame, the fluid-chamber containing ingress and egress valves vertically in line with each other and provided with a removable plate for access to the ingress-valve and another removable plate for access to the egress-valve and having also an air-chamber above the egress-valve, the lubricant-chamber having a removable plate for access to its interior, and the pumping-pistons, arranged substantially as described.

9. The combination of the rectangular box-frame C, the contiguous chambers A and B, said chamber A having compartments G and H and valves *a* and *b*, the pistons I, crank-shaft J, and link-connections K, all substantially as described.

10. The combination of the fluid-chamber A, lubricant-chamber B, pump barrels or sleeves I', pistons I, crank-shaft J, link-connections K, and a driving-power for the crank-shaft, all substantially as described.

11. The combination of the frame C, having supports D, the chamber A, with discharge F and suction E, the valves *a* and *b*, and compartments G and H in said chamber A, the chamber B, containing lubricant, pump-barrels I', pistons I, shaft J, and links K, substantially as described.

411,681. CRANE. WILLIAM H. RIDGWAY, Centerville, Pa. Filed May 18, 1889. Serial No. 311,260. (No model.)



Claim.—1. The combination of the fixed post and frame of the crane, the movable jib, the suspension-chains, and hoisting mechanism therefor, with means for retarding or restricting the movement of the jib, comprising a liquid-reservoir, a cylinder communicating therewith through a contracted passage, and a plunger adapted to said cylinder, one of the parts being carried by the fixed portion of the crane and the other by a movable portion of the same, substantially as specified.

2. The combination of the fixed post and frame of the crane, the movable jib, the suspension-chains, and hoisting mechanism therefor, with means for restricting and regulating the movement of the jib, comprising a liquid-reservoir, a cylinder communicating therewith, a valve for regulating the area of the passage between the cylinder and reservoir, and a plunger adapted to the cylinder, one of the parts being carried by the fixed portion of the crane and the other by a movable portion of the same, substantially as specified.

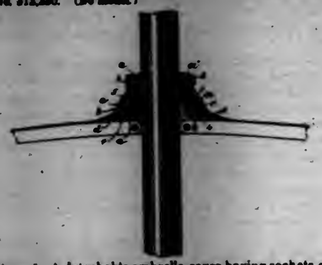
3. The combination of the inclined jib of the crane, the gravity-propelled trolley, and the tripping device for the tongs of the same, with an elastic stop actuated by the trolley as it approaches the limit of its outward movement and serving by its recoil to return the trolley to the higher inner end of the jib after it has delivered its load, substantially as specified.

4. The combination of the jib and its trolley, hoisting devices for the jib, and notched bars and catches for locking the inner and outer ends of the jib, so as to prevent vertical movement, substantially as specified.

5. The combination of the jib and its movable trolley, hoisting devices for the jib, the notched bars and catches for locking the jib in position, said bars being connected and constructed so that when one is in the locking position the other is unlocked, substantially as specified.

6. The combination of the frame and movable jib of the crane, the suspending-chains for the jib, the fixed piston-rod and its piston, and the cylinder connected to the suspension-chains and adapted to the piston, said cylinder being closed at the top but having an escape-opening some distance below the upper end, substantially as specified.

411,682. DETACHABLE COVER FOR UMBRELLAS OR PARASOLS. ANDREW J. ROSEMAN, Boston, Mass. Filed May 27, 1889. Serial No. 312,280. (No model.)



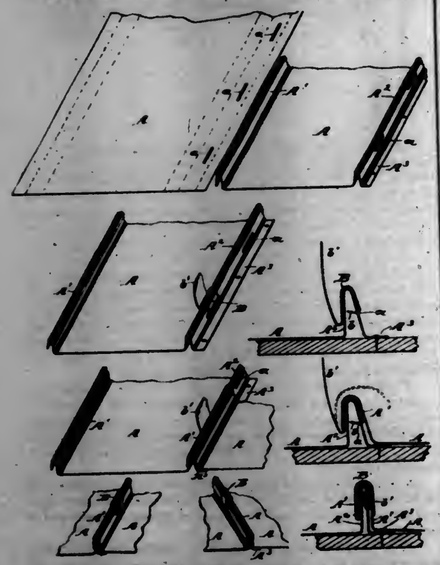
Claim.—1. A detachable umbrella-cover having sockets or other suitable means at the edge to hold it on the bows or ribs, combined with a yielding connection for the stick and two independent collars between which the cover is held, substantially as described.

2. A detachable umbrella-cover having means at the edge for holding it on the bows or ribs, combined with a yielding connection for the stick, and two metallic collars, the upper edge of one of which is turned over the other and formed to bind the cover firmly between them, substantially as described.

3. A detachable umbrella-cover having means at the edge to hold it on the bows or ribs, combined with a yielding connection encircling the stick, two metallic binding-collars for the cover, and an interposed washer of yielding material, substantially as described.

4. A detachable umbrella-cover having means at the edge to hold it on the bows or ribs, combined with a yielding connection encircling the stick, a metallic shield or collar for binding or holding the cover frictionally, and an interposed washer *d*, attached to the cover, substantially as described.

411,683. METALLIC ROOFING. LOVELEY L. SAGENDORPH, Cincinnati, Ohio. Filed July 5, 1889. Serial No. 316,568. (No model.)



Claim.—1. The means herein shown and described for connecting roofing-sheets, the same consisting of a cleat hooked at one end into an opening in the side of one flange-cap, the other end of said cleat being bent back and over the overlapping cap of the adjacent sheet, as set forth.

2. In combination with a roofing-sheet nailed at one side direct to the sheeting, the means herein shown for retaining the cap of the adjacent sheet in place, and consisting of a cleat hooked at one end into an opening in the outer face of one of the flange-caps above the plane of the sheet, the free end of said cleat being bent back and over the overlapping cap of the adjacent sheet, substantially as set forth.

3. In a metallic roof, the sheets A, each sheet having at one side the flange-cap A′ and at the other side the flange-cap A^2, the latter terminating in the nailing-flange A^3, said cap A^2 having in its outer surface suitable openings *a* and a cleat B, one end of said cleat being hooked into the openings *a* between the two flanges of the cap A^2, the free end of the cleat being bent over the cap of the adjacent sheet, substantially as set forth.

411,684. FLOORING-STRIP. ADOLPH M. SCHILLING, Chicago, Ill. Filed Mar. 9, 1889. Serial No. 302,704. (No model.)



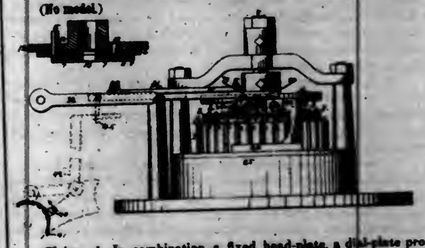
Claim.—1. As an article of manufacture, an improved flooring-strip provided with one or more nail-holes square in cross-section, each having its outer end countersunk to receive the nail-head, substantially as and for the purpose shown.

2. As an article of manufacture, an improved flooring-strip provided with one or more nail-receiving holes inclined downward and inward, made in a plane at right angles to the grain of the strip, of a diameter equal to or greater than the thickness of a flooring-strip nail, and in the direction of the grain made narrower than the broadest portion of the nail, substantially as and for the purpose described.

3. As an article of manufacture, an improved flooring-strip having the nail-holes made rectangular in cross-section, with their diameters at right angles to the grain of the strip greater than the thickness of the ordinary form of flooring-strip nails to be used, and their diameters in the direction of the grain less than the width of the broadest portions of such nails, substantially as and for the purpose specified.

4. As an improved article of manufacture, a flooring-strip having one or more rectangular nail-holes for the reception of flooring-nails of the ordinary form, each starting at the angle between the upper side of the tongue and the strip side and running inward and downward within the strip, and made of a diameter equal to or greater than the thickness of the nail in a direction at right angles to the grain of the strip and narrower than the widest part of the nail in the direction of the grain, and having its mouth made flaring or countersunk to receive the nail-head, substantially as and for the purpose shown and described.

411,685. CIRCULAR-RIB-KNITTING MACHINE. RICHARD SCHOFIELD, Paris, Ontario, Canada. Filed Mar. 12, 1887. Serial No. 230,663. (No model.)



Claim.—1. In combination, a fixed head-plate, a dial-plate provided with suitable needles, a disk-formed base centrally mounted on the dial-plate shaft and eccentrically pivoted to the fixed head-plate, means for oscillating the disk-formed base, a needle-projecting cam fixed centrally to the disk-formed base, a needle-retracting cam pivoted to the said base, and means for locking the pivoted cam to the base, the needle-projecting cam and the disk-formed base being provided with an elongated opening at the point where the dial-plate shaft passes through, whereby the said cam and disk-formed base are permitted an oscillating movement on their eccentric connection with the fixed head-plate, substantially as set forth.

2. In combination, the fixed head-plate, the dial-plate provided with needles, the disk-formed base, the needle-projecting cam fixed to the disk-base, the disk-formed base being pivoted eccentrically to the fixed head-plate and permitted an oscillating movement, the needle-retracting cam pivoted to the disk-formed base, means for oscillating the disk-formed base, and means for locking the heel end of the retracting-cam to the base in different positions to determine the inward movement of the needles, substantially as set forth.

3. In combination, the fixed head-plate provided with an opening, the dial-plate provided with needles, the disk-formed base pivoted to the fixed head-plate, means for oscillating the disk-formed base, the needle-projecting cam fixed to the disk-formed base, the needle-retracting cam pivoted to the disk-formed base, and means for adjusting one end of the needle-retracting cam relatively to the disk-formed base, the said adjusting mechanism being located opposite the opening in the fixed head, whereby the adjustments may be made without separating the parts, substantially as set forth.

4. In combination, the fixed head-plate, the oscillating disk-formed base pivoted to the head, the projecting and retracting cams thereon to operate the dial-needles, a lever to operate the oscillating disk-formed base, means for vibrating the lever, the said lever being connected at one end to the oscillating disk-formed base and at the other end to its actuating mechanism, and the said operating-lever being formed in two sections having the same pivotal support, and means for locking one of the sections in different adjustments transversely to the other section, substantially as set forth.

5. In combination, the knitting-needles and their rotary support, a pair of fixed jaws between which the yarns pass to the needles, and a reciprocating slide provided with yarn-guides and with an arm or jaw adapted to alternately engage the faces of the fixed jaws to break the yarn, substantially as set forth.

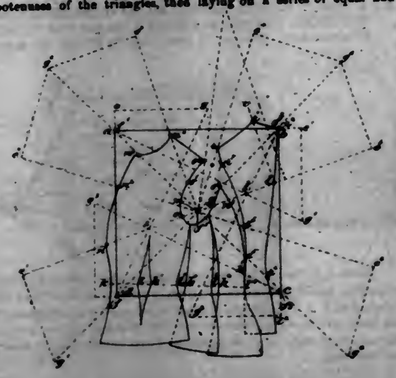
6. The herein-described yarn-changing device, consisting, essentially, of the fixed jaws between which the yarns are directed and the reciprocating slide provided with a clamping-jaw adapted to move back and forth between the fixed jaws, and further provided with yarn-guides to direct the yarns between the jaws, substantially as set forth.

7. The herein-described yarn-changing device, consisting, essentially, of fixed jaws between which the yarn is directed and the reciprocating slide having a movement transverse to the line in which the yarn is fed to the needles, and provided with a depending clamping-jaw adapted to move back and forth between the fixed jaws, and further provided with yarn-guides secured thereto to move simultaneously therewith, substantially as and for the purpose set forth.

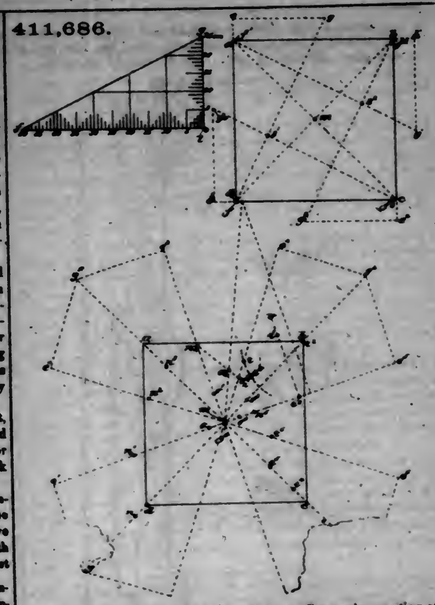
8. The herein-described yarn-changing device, consisting, essentially, of fixed jaws having concave faces and the reciprocating slide provided with a clamping-jaw convex on its sides toward the concave-faced jaws, the said reciprocating slide being provided with yarn-guides, substantially as set forth.

411,686. SYSTEM OF LAYING OUT PATTERNS FOR GARMENTS. CARL SCHNEIDER, Dresden, Saxony, Germany, assignor to himself and Richard Kraemmler, same place. Filed Apr. 19, 1889. Serial No. 307,797. (No model.)

Claim.—The method set forth of cutting wearing-apparel, the same consisting in developing the design from a diagram of a square the sides of which correspond in length with one-half the measurement of the body, such as the waist measurement, laying off upon the square on its interior surface a series of right-angled triangles, each having a base of twenty-five centimeters and a perpendicular of fifty centimeters, the smaller angles being placed at the angles of the square and the perpendiculars coinciding in part with its sides, establishing the central point of the square and the points of intersection of the hypotenuses of the triangles, then laying off a series of equal and

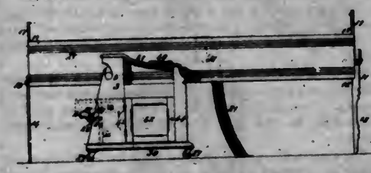


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similar right-angled triangles having their smaller angles meeting at the center of the square and the hypotenuses of each passing through the angles of the square and the perpendiculars intersecting both the adjacent sides of the square, laying off upon the lines thus formed the decimal parts of one side of the square, as set forth, laying off a right-angled triangle with one of its acute angles at the center of the square, and the base thereof coinciding with one of the perpendiculars intersecting the side of the square, laying off the decimal measurement set forth upon the hypotenuse of said triangle, erecting a line upon the perpendicular which intersects the side of the square, striking from one angle of the square as a center an arc with a radius of four-tenths of the side of the square, and from the point r an arc having a radius of one-tenth of said side, thus establishing the point r^1 and connecting the cutting-points in the manner set forth, substantially as described.

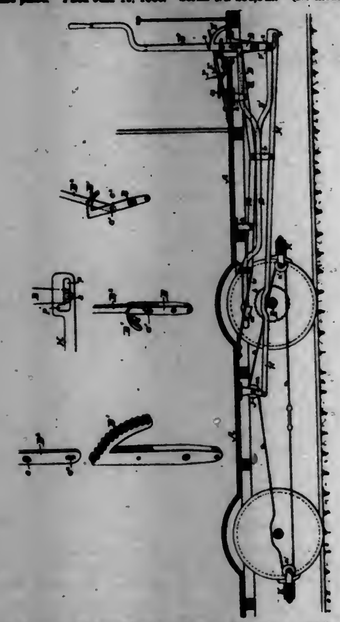
411,687. COMBINED FOLDING BEDSTEAD, SETTEE, &c. EDWARD H. SHEDDY and ANDREW M. BOOTHE, St. Louis, Mo. Filed Apr. 26, 1888. Serial No. 271,944. (No model.)



Claim.—1. The combination of the pivoted bedstead, the stationary settee and its frame that provides the curvilinear slotted bearings for the pivot-pins of said bedstead, the depository-box and wash-cupboard within said settee-frame, the door to the wash-cupboard, the elevator wash-stand secured to said door, the standard-bearer of the wash-stand, sectional brackets in which the standard-bearer slides when elevating the wash-stand for usage and when lowering it for folding (when the door closes) within the cupboard, and the means for the sliding attachment of said wash-stand to said door and locking it in its elevated position, substantially as and for the purpose set forth.

2. In combination with a combined settee and bedstead, a door to the settee, having an upper bracket and a lower sectional bracket, a frame carrying a bowl, and an elevating-standard bifurcated at its lower end and adapted to engage one of the parts of the sectional bracket when the bowl is elevated, substantially as shown and described.

411,688. CAR STARTER AND BRAKE. CHARLES A. SHANK, Philadelphia, Pa., assignor to Walter Smith and J. Rex Allen, both of same place. Filed Jan. 19, 1889. Serial No. 296,842. (No model.)



Claim.—1. The combination of the axle having a ratchet-wheel, the platform-lever having rods carrying pawls for engaging with said ratchet-wheel, and a brake-operating rod also connected to said lever, but independent of the pawl-rods, substantially as specified.

2. The combination of the axle having a ratchet-wheel, the platform-lever, the rods connected thereto and having pawls engaging with said ratchet-wheel, a brake-rod movable into or out of operative connection with the platform-lever, a treadle on the platform, and means for connecting said treadle to the pawl-rods and brake-rod, whereby one may be thrown into action when the other is thrown out of action, substantially as specified.

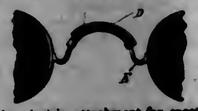
3. The combination of the platform-lever with the brake-rod having a horizontal slot with vertical offset for the reception of a pin on the lever, substantially as specified.

4. The combination of the platform-lever having an operating-arm loosely pivoted thereto, a notched quadrant on one of said parts, and an engaging stud or projection on the other part, substantially as specified.

5. The combination of the platform-lever having an operating-arm loosely pivoted thereto, a notched quadrant on one of said parts, a stud on the other part for engaging with said quadrant, and a retainer for holding the lever after it has been moved, all substantially as specified.

6. The combination of the platform-lever having a forked arm terminating in a notched quadrant, and an operating-arm for said lever having a slot-and-pin pivot-connection therewith, and a stud for engaging said notched quadrant, all substantially as specified.

411,689. ELECTRIC ATTACHMENT FOR EYEGLASSES. CHARLES C. SMITH, Mohawk, and BERNAH W. MARTIN, Ilion, assignors to the Electrical Spectacle and Eye-Glass Manufacturing Company, (Limited,) Mohawk, N. Y. Filed Feb. 8, 1889. Serial No. 299,167. (No model.)

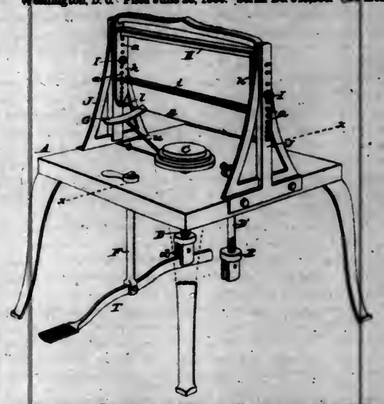


Claim.—1. An electric attachment for spectacles, consisting of two T-strips of different metals having their T's adapted to be bent around the bridge of said spectacles, substantially as described.

2. An electric attachment for spectacles, consisting of two T-strips of different metals held together by means of clasps bent as described, and having their T's adapted to be bent around the bridge of said spectacles, substantially as described.

3. An electric attachment for spectacles, consisting of a plain strip in T form of one metal and a branched T-strip of another metal, the branches of the latter being bent around the body of the former and the T's of both being adapted to be bent around the bridge of said spectacles, substantially as described.

411,690. TILE-CUTTING MACHINE. THOMAS BRIDENTHAL, Jr., Washington, D. C. Filed June 26, 1889. Serial No. 315,598. (No model.)



Claim.—1. The combination, in a tile or pipe cutting machine, of a swinging cutter-frame having a cutter permanently secured thereto and a frame for supporting the same, the two being connected by adjustable pivots, whereby the cutter can be made to move in the arcs of different circles without changing the height of the cutter in relation to the pipe-support, substantially as described.

2. The chuck C, in combination with the movable support or rod D and a foot lever or treadle for operating the same.

3. In combination with the pivoted or swinging cutter-frame, the chuck C, adapted to fit within the end of the pipe and hold the same while being cut.

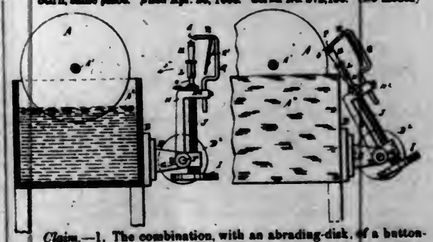
4. In a tile-cutting machine, the chuck C, adapted to fit within the end of the pipe and arranged to hold the pipe at the required angle in relation to the swinging cutter *e*, substantially as shown and described.

5. In combination with the chuck C, arranged to hold the pipe at an angle to the cutter *e*, the separately-adjustable hinged brace G, constructed and arranged to operate substantially as and for the purpose set forth.

6. In combination with the supports or rods D and D', the internally-adjustable foot lever or treadle, substantially as and for the purpose set forth.

7. In combination with the movable support D or D' and a foot lever or treadle for operating the same, a stop for limiting the movement of the support.

411,691. MACHINE FOR GRINDING AND FINISHING THE EDGES OF BUTTONS. MAX STERN, New York, N. Y., assignor of one-half to Leo Stern, same place. Filed Apr. 20, 1888. Serial No. 272,159. (No model.)



Claim.—1. The combination, with an abrading-disk, of a button-supporting frame mounted to swing toward and from the rim of the abrading-disk, a lever, a plate on said lever mounted to swing toward and from the top of the button-support and provided with an aperture through which the eye of the button can pass, substantially as shown and described.

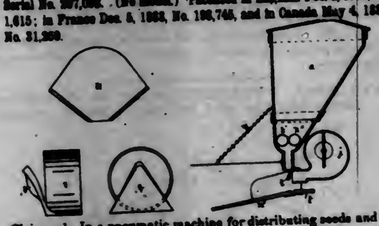
2. The combination, with an abrading-disk, of a frame mounted to swing toward and from the rim of said abrading-disk, a rotative shaft in said frame, a button-support on the shaft, an arm on said frame, a lever pivoted on said arm, and an apertured disk on one end of said lever, substantially as shown and described.

3. The combination, with an abrading-disk, of a frame mounted to swing toward and from the rim of the same, a rotative shaft in said frame, a chuck on said shaft, a button-support in said chuck, an arm on the frame, an angle-lever on said arm, an apertured plate on one end of said angle-lever, and a spring acting on the angle-lever and pressing that end carrying the apertured plate from the end of the button-support, substantially as shown and described.

4. The combination of the shaft D, having a friction driving-disk, the shaft F in line with the shaft D, which shaft F is mounted to slide in the direction of its length and to rock, a spring for pressing the shaft F in the direction from the shaft D, a frame on said shaft, a rotative shaft in said frame, a friction driving-disk on the rotative shaft in the frame, a beveled collar on the shaft F, and a fixed sleeve having a beveled end adjacent to the bevel of the collar on the shaft F, substantially as shown and described.

5. The combination, with a shaft and an abrading-disk on the same, of a board mounted longitudinally adjustable in the direction of the shaft carrying the abrading-disk, a driving-shaft on said board, a swinging frame on said shaft, and a rotative shaft in said swinging frame and driven by said driving-shaft, and a button-holder on said rotative shaft, substantially as shown and described.

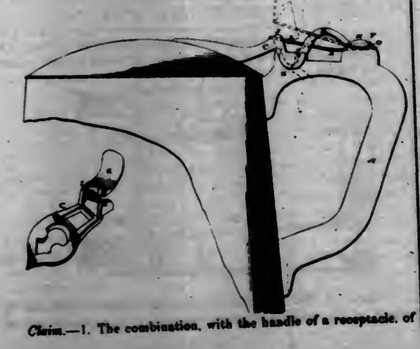
411,692. SEEDER AND FERTILIZER-DISTRIBUTER. GEORGE F. STRAWSON, Newbury, County of Berks, England. Filed Jan. 21, 1889. Serial No. 297,092. (No model.) Patented in England Feb. 3, 1888, No. 1,615; in France Dec. 5, 1888, No. 190,748, and in Canada May 4, 1889, No. 31,269.



Claim.—1. In a pneumatic machine for distributing seeds and insecticide-powder or other dry composts, the combination of feeding device *k' F'*, delivery-nozzle *r*, and spreading or scattering board *n*.

2. In a pneumatic machine for distributing seed and dry insecticides and composts, the combination of feeding device *k' F'*, delivery spout or nozzle *r*, scattering-board *n*, and wind-guard *p*.

411,693. HANDLE. HIRAM R. STERNER, Groton, N. Y. Filed Apr. 26, 1889. Serial No. 308,057. (No model.)



Claim.—1. The combination, with the handle of a receptacle, of a lid-casting having its front end secured to the lid and its rear end formed into an operating-piece, the said casting journaled upon the handle near its center, and a spring having one end secured to the handle and its opposite free end bearing upon the said casting in front of said journal when the lid is closed and in rear thereof when open, whereby the cover is held either open or closed, substantially as described.

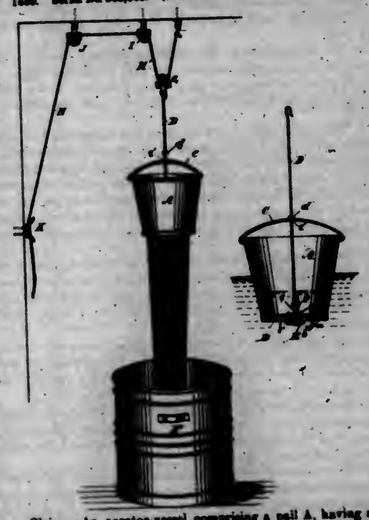
2. The combination, with the handle of a receptacle having a recess in the upper side, of a lid-casting journaled in the said recess and having its front end secured to the lid and its rear end formed into an operating-piece, and a spring having its rear end rigidly secured to the handle and its opposite free end extending forward and bearing upon the said casting, whereby it is held firmly but detachably on the handle, substantially as shown.

3. The combination, with the handle of a receptacle having a recess in its upper side, an operating lid-casting having a journal resting in said recess, and a projection in front of said bearing when the lid is closed and in rear thereof when turned in a vertical position, of a horizontal flat spring having its rear end secured to the handle and its free front end resting upon the said projection, whereby the lid-casting is held firmly but detachably upon the said handle and either open or closed, substantially as shown and described.

4. The combination, with the handle of a receptacle having a recess in its upper side, of a lid-casting having a projection resting in the said recess and downwardly-projecting lugs upon each side whereof for holding it in place, and a spring having its rear end secured to the handle and its free end extending forward and resting upon the said casting, in the manner described, substantially as specified.

5. The combination, with the handle of a receptacle and a lid-casting journaled thereon having its front end secured to the cover, the said handle having a horizontal aperture provided with a vertical projection, of a flat spring having an aperture in its rear end fitting over the said projection and its forward end extending forward and bearing upon the said lid-casting, in the manner described, substantially as set forth.

411,694. MILK-AERATOR. PITT W. STRONG, Brockville, assignor of one-half to Ogle Gates, Smith's Falls, Ontario, Canada. Filed Apr. 3, 1889. Serial No. 305,998. (No model.)

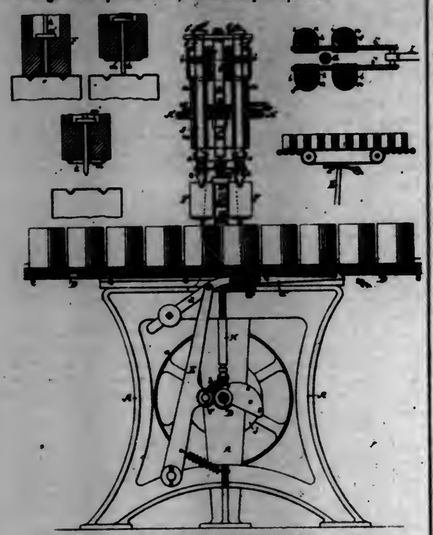


Claim.—An aerator-vessel comprising a pail A, having a perforated bottom provided with a central port *b'*, and a bar C across the top, a rod D, passing loosely through said bar and port and provided with a suspending-pulley G and stop *d*, and a valve E, connected to the lower end of said rod below the bottom of the pail, whereby the port is opened by the downward movement of the rod when the pail is afloat and closed when the pail is lifted by the rod for its suspension, as set forth.

411,695. CAN-CAPPING MACHINE. THEOPHILUS VAN KANNEL and GEORGE R. LOMYOOD, Philadelphia, Pa., assignors to George H. Odbert, same place. Filed Mar. 12, 1889. Serial No. 302,992. (No model.)

Claim.—1. The combination of the capping-iron spindle and means for raising and lowering and rotating the same, with a capping-iron

universally jointed to said spindle, whereby it is free to assume different angles in respect thereto, substantially as specified.



2. The combination of the capping-iron spindle and means for raising, lowering, and rotating the same, with a capping-iron and a universally-jointed and laterally-swinging connection between said spindle and iron, said connection comprising two links and four sets of pivots, two of which are at right angles to the other two, substantially as set forth.

3. The combination of the capping-iron and its spindle with a universal-joint connection between the two, comprising upper and lower links and an interposed pivot-block, the pivots of one pair of links being at right angles to those of the other pair, substantially as set forth.

4. The combination of the frame of the machine, a can-carrier mounted so as to be free to traverse thereon and having openings or notches therein, a lever carrying a pawl for engaging with said notches, and a cam acting on said lever and having that portion of its surface which imparts the forward thrust divided into three parts, the first and last of which impart slow movement to the lever, while the intermediate portion imparts a rapid movement, substantially as specified.

5. The combination of the notched can-carrier guided on the frame of the machine, the vibrating lever, and a pawl carried thereby and engaging with the notches of the can-carrier, said pawl being made in two parts, one adjustable longitudinally in respect to the other, all substantially as specified.

6. The combination of the traversing can-carrier, a series of capping-irons, a lifting-rod having a yoke from which said capping-irons are suspended, an arm acting on said lifting-rod, and a cam and cam-rod, whereby said arm is actuated, substantially as specified.

7. The combination of the capping-irons, the lifting-rod therefor, and an operating-cam for said rod having the portion which controls the descent of the rod in two parts, the first abrupt and the second less abrupt, substantially as specified.

8. The combination of the capping-irons, the lifting-rod therefor, and an operating-cam for said rod having two lifting portions, with an intermediate dwell, whereby there are two steps in the rise of the capping-irons, substantially as specified.

9. The combination of a series of capping-irons having spindles with pinions thereon, means for raising and lowering said spindles, and a vertically confined and reciprocated rack the width of which is equal to the extent of rise and fall of the spindles, substantially as specified.

10. The combination of the series of capping-irons and their spindles having pinions, means for raising and lowering said spindles, vertically confined racks equal in width to the extent of rise and fall of the spindles, a lever connected to said racks, and a cam for acting upon said lever, substantially as specified.

11. The combination of the capping-irons having spindles with pinions thereon, racks for operating said pinions, and a rack-operating cam having two portions, one for imparting short quick movements to the rack and the other for imparting longer movements, all substantially as and for the purpose set forth.

12. The combination of the capping-iron and its hollow spindle, the universal-joint connection between the two, a retainer-rod passing through an enlarged opening in the bottom of the iron, and a disk covering said opening and confined laterally to the retainer-rod, but vertically unconfined thereto, as set forth.

13. The combination of the can-carrier, the capping-iron, the blast-pipe and its valve, and a shaft having a cam for effecting the raising and lowering of the capping-irons, and a cam for opening and closing the valve in the blast-pipe, whereby the blast may be cut off during the soldering operation and while the capping-irons are in action, substantially as specified.

14. The combination of a series of capping-irons and radially-adjustable bearings for the spindles of the irons, whereby the latter may be simultaneously adjusted both longitudinally and laterally to suit different sizes of cans, substantially as specified.

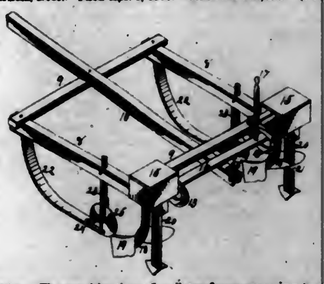
15. The combination of a series of capping-irons, radially-guided bearings for the spindles of the irons, and a cam-disk for effecting the radial adjustment of the spindle-bearings, substantially as specified.

16. The combination of the capping-irons laterally adjustable in respect to each other to suit different sizes of cans and having spindles with driving-pinions thereon, with a duplex operating-rack for said pinions, said racks being likewise adjustable laterally, substantially as specified.

17. The combination of the capping-iron spindles, the guided sleeves therefor radially adjustable on the frames, pinions on the spindles, and a laterally-adjustable duplex rack gearing with said pinions and adapted to guides on the sleeves of the spindles, as set forth.

18. The combination of the can-carrying tray and a supporting-guide therefor having laterally-adjustable tracks or ways for the tray, as set forth.

411,696. DOUBLE-LISTER CORN-PLANTER. WILLIAM WATSON, Fairfield, Nebr. Filed Apr. 6, 1889. Serial No. 306,260. (No model.)

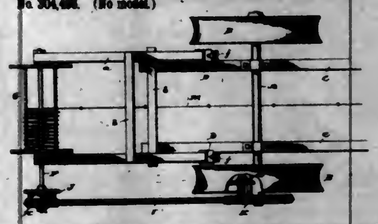


Claim.—The combination of a lister-frame carrying two double mold-board plows, a subsoiler in rear of each of said plows, runners secured to the frame and extending rearwardly, colters located in front of the plows, a main frame having a hinge-joint connection with the lister-frame, a driver's seat located thereon, and a hand-lever for adjusting the relation of the two frames with each other, substantially as set forth.

411,697. WITHDRAWN.

411,698. WITHDRAWN.

411,699. CHECK-ROW WIRE-REEL ATTACHMENT. WILLIAM H. WEEKS and GEORGE WEEKS, Hazwood, Ill. Filed Mar. 23, 1889. Serial No. 304,498. (No model.)

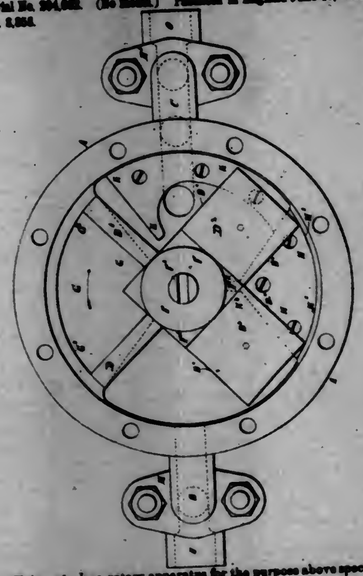


Claim.—1. The combination, with the planter-frame and its wheels, of the attachment thereto, consisting of the sprocket-wheels, sprocket-chain, drum, and smooth pulley, all substantially as shown and described.

2. The combination, with the planter-frame and the wheels, of the castings on the planter-frame, the blocks c, the attachment-frame detachably held in said castings and resting on said blocks, the drum journaled in the rear end of said attachment-frame, the sprocket-wheel on the bearing-wheel, the sprocket-wheel on the shaft of the drum, and the endless chain connecting said sprocket-wheels, substantially as and for the purpose specified.

3. In an attachment to corn-planters, the combination, with the side bars, of the transverse shaft journaled in the rear ends of said side bars and extended beyond one of the same, the drum on said shaft between the side bars, the sprocket-wheel on said extended end, the smooth pulley also on said extended end and of less diameter than said sprocket-wheel, and the endless sprocket-chain connecting the said sprocket-wheel with a sprocket-wheel on the wheel of the planter, substantially as shown and described.

411,700. ROTARY METER. WILLIAM WILLS, Bromley, and JESSE SMITH and WILLIAM H. SMITH, Penge, England. Filed Dec. 19, 1888. Serial No. 294,022. (No model.) Patented in England June 16, 1888, No. 8,854.



Claim.—1. In a rotary apparatus for the purposes above specified, the combination of a cylindrical chamber or casing having wide and narrow segments with parallel sides and of different radii, a central rotary hub, spindles carried thereby, so that their axes intersect each other, vanes fixed in pairs upon the said spindles at right angles to each other and having their sides parallel to the axis of the corresponding spindle and their outer ends straight and at right angles to their sides, and an incline or striking-piece for turning the said vanes about their axes in their rotation about the axis of the hub, for the purposes above specified.

2. In a rotary apparatus for the purposes specified, the combination of the cylindrical chamber or casing A, having the wide and narrow segments G G' G² and H H' H², with parallel sides and of different radii, the rotary hub F, the spindles E E', carried thereby, so that their axes intersect each other, the vanes D D' D² D³, having parallel sides and straight ends at right angles thereto and fixed in pairs upon the said spindles, the incline or striking-piece K, for turning or adjusting the vanes in their rotation about the axis of the said hub, and the guide L, for facilitating the entrance of the vanes into the narrow segments, substantially as and for the purposes set forth.

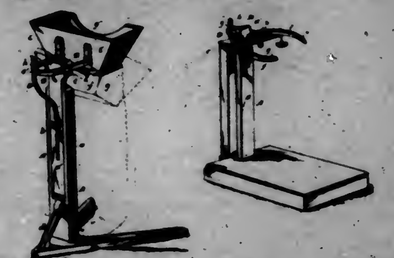
3. In a rotary apparatus for the purposes described, the combination, with the cylindrical chamber or casing, of square or rectangular vanes fixed in pairs upon spindles E E', the axis of which intersect each other, a rotary hub F, through which the said spindles are passed, and which is provided with a square part or collar F², having bearing-surfaces equal in width to the said vanes, and an incline or striking-piece K, for turning or adjusting the vanes in their rotation about the axis of the said hub, substantially as and for the purpose set forth.

4. In a rotary apparatus for the purposes specified, the combination, with the cylindrical chamber or casing, of the hollow hub F, the vanes D D' D² D³, the spindles E E', having taper parts to receive the said vanes and extending through the said hub, with their axes intersecting each other, and the bush or plug surrounding one of the said spindles and closing the cavity in the said hub, substantially as and for the purposes set forth.

5. In a rotary apparatus for the purposes specified, the combination of the cylindrical chamber or casing, the laterally-projecting inlet and outlet pipes B C, having flanges M M' in a plane at right angles to and intersecting the axis of the said chamber or casing, the hollow hub F, the vanes D D' D² D³, the spindles E E', having taper parts to receive the said vanes and extending through the said hub, with their axes intersecting each other, and the bush or plug surrounding one of the said spindles and closing the cavity in the said hub, substantially as and for the purposes set forth.

6. In a rotary apparatus for the purposes specified, the combination, with the square or rectangular vanes and the hub having the square part or collar, of the cylindrical chamber or casing provided with the wide and narrow segments, and the entrance and exit edges H³ of the narrow segment converging for a short distance from the cylindrical part of the said hub and then diverging, substantially as and for the purpose set forth.

411,701. BAG-HOLDER. BENJAMIN K. WILSON, Cherryfield, Me. Filed June 20, 1889. Serial No. 316,008. (No model.)



Claim.—1. In a bag-holder, a standard consisting of a stationary part recessed upon its rear side and a vertically-adjustable part fitting within the recess and held in its adjusted position by a thumb-screw, in combination with a spring-catch carried by the adjustable part and a bag-holding device pivotally connected to the upper end of the adjustable part of the standard, and having a rearward U-shaped extension adapted to automatically engage with said spring-catch, substantially as shown and described.

2. The bag-holder described, consisting of the adjustable standard, the jaws pivotally connected with the upper part of said standard by means of a horizontal pivot and provided with a rearward extension, and a spring-plate attached at its lower end to the rear side of the upper part of said standard, and formed at its upper end with a square shoulder and forwardly-inclined upper face, substantially as shown and described, and for the purpose specified.

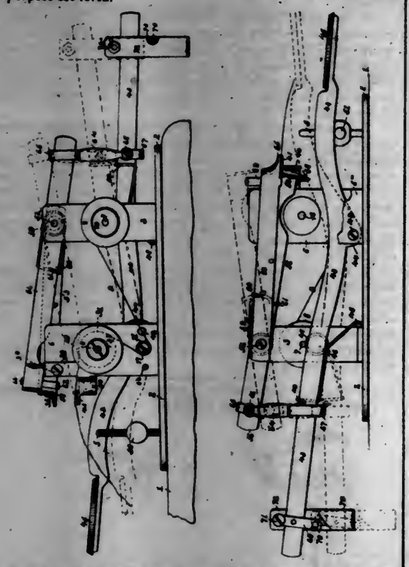
411,702. THREAD-SLACKENING DEVICE FOR SEWING-MACHINES. CHARLES J. WOODWARD, Brooklyn, N. Y. Filed Aug. 24, 1888. Serial No. 283,494. (No model.)

Claim.—1. In combination with the pull-off mechanism, the nipper mechanism, a tension-shaft having tension device and a brake-wheel fixed thereon, a brake-lever adapted to engage said brake-wheel, one end of said lever carrying a latch-lever, and mechanism for tripping the latter, substantially as and for the purpose set forth.

2. The combination of the pull-off and nipper levers, said pull-off lever having a projection for acting on the thread, the brake mechanism having connection with said levers, whereby both may be operated simultaneously, the tension-shaft and brake-wheel thereon, and the bed or table with which the nipper-lever engages to nip the thread when the brake-wheel is released by said brake mechanism, substantially as set forth.

3. The combination of the tension device mounted on a rotatable shaft carrying a brake-wheel, pull-off and nipper levers, said pull-off lever having a projection, a spring connected with said levers and tending to press them in opposite directions, a stop for preventing said levers being pressed away from each other, mechanism for operating the two levers carrying a brake-shoe for acting on the brake-wheel, and a bed or table with which the nipper-lever engages to nip the

thread when operated by said mechanism, substantially as and for the purpose set forth.



4. The combination of the brake-lever and tension-shaft having a brake-wheel and tension device with pull-off and nipper levers connected by adjustable pitmans and links to said brake-lever, said pull-off lever having a projection, and a bed or table with which the nipper-lever engages, substantially as and for the purpose set forth.

5. The combination of the tension-shaft having a brake-wheel, the brake-lever, a spring adapted to throw said lever against the brake-wheel, nipping mechanism by which the thread may be held, a tension device around which the thread passes to said nipping mechanism, pull-off mechanism, and a stop to limit the movement of the lever when withdrawn from the brake-wheel, substantially as described.

6. The combination of the tension-shaft having a tension device and a brake-wheel, the brake-lever formed with a brake-shoe, a spring for holding the brake-lever in normal position, means for releasing the brake-lever, a pull-off lever connected with and operated by said brake-lever, said pull-off lever having a projection for acting on the thread, and nipper mechanism, substantially as described.

7. The combination of the tension-shaft having a tension device and brake-wheel thereon, a braking device, a bracket having a U-shaped part and jaw, the nipper-lever having a jaw, and the pull-off lever having a laterally-projecting end, and operating mechanism for said levers and brake, substantially as described.

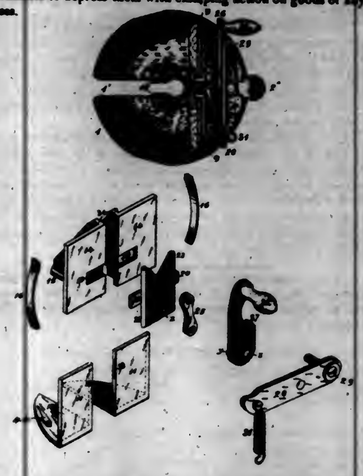
8. The combination of the tension-shaft and wheel, the bracket having a U-shaped part and lower jaw, the nipper-lever having an upper jaw, the pull-off lever having a projection, the brake-lever, connection between the nipper-lever and pull-off lever, and connection between the pull-off lever and brake-lever, substantially as and for the purpose set forth.

9. The combination of the tension-shaft, the bracket having a U-shaped part and lower jaw, the nipper-lever having an upper jaw, a pull-off lever having a finger, a bolt by which the levers are fulcrumed, a spring surrounding the bolt and having one end engaging over the nipper-lever and the other end engaging under the pull-off lever, and means for operating the levers.

10. The combination of the brake-lever, the block secured to the rear end of the brake-lever, the latch-lever hinged to the block, a sewing-machine and its tension mechanism, a bracket, a device on the bracket for lifting the latch-lever, and the nipper and pull-off mechanism, substantially as and for the purpose set forth.

411,708. BUTTON-HOLE CLAMP FOR SEWING-MACHINES. CHARLES J. WOODWARD, Brooklyn, N. Y. Filed May 21, 1889. Serial No. 312,769. (No model.)

Claim.—1. In a button-hole clamp for sewing-machines, the combination, with spring-depressed fulcrum-bar, of operating-lever fulcrumed thereto and having link-and-slide connection with the clamp-jaws, whereby the same lever which raises the clamp-jaws is made available to depress them with clamping action on goods of any thickness.



2. In a button-hole clamp for sewing-machines, the combination, with the two sets of both laterally and vertically separable clamping-jaws, of the vertically-moved slide having a projection which occupies recesses in the upper clamping-jaws, an operating-lever linked to said slide and fulcrumed in spring-depressed fulcrum-bar, and whose lip is adapted to engage with and partially rotate the spreading-cam, the said fulcrum-bar, and the said spreading-cam, whereby the same lever is instrumental in the successive operations of raising the upper clamp-jaws, of depressing the same, and of spreading the two sets of lower and upper jaws and locking them to the clamped and spread condition on goods of any thickness, as set forth.

3. In a button-hole clamp for sewing-machines, the combination, with spreading-cam on vertical axis, of the spring-contracted upper and lower clamp-jaws, the lower clamp-jaw shanks being inclosed within and forced apart by the upper clamp-jaw shanks, as set forth.

4. In a button-hole clamp for sewing-machines, the combination of the pair of right and left U-formed standards, the inclosed jaw-shanks and their contracting-springs, the vertical spreading-cam, (separating the right and left cam-shanks,) and the operating-lever, as set forth.

5. In a button-hole clamp for sewing-machines, the combination, with the operating-lever and with the standards and the winged spreading-cam, of adjustable back-stop 39 10 41 and adjustable front or amplitude stop 40 42, as set forth.

6. In a button-hole clamp for sewing-machines, the combination, with base 1, having the pivot-post 6, and with standards 2 9 and the spreading-cam 7, of the back-stop 30 10 41, having the lip 43 for preventing vertical displacement of the spreading-cam.

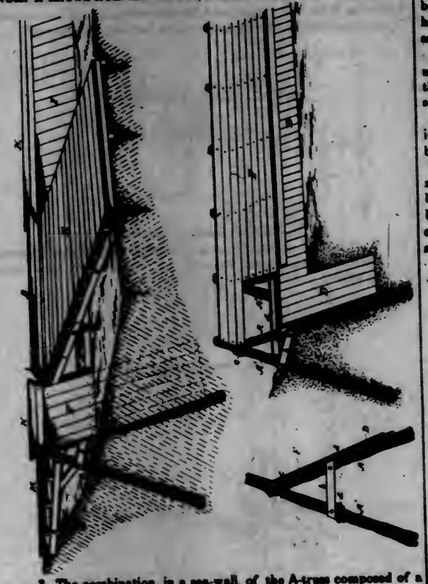
7. In a button-hole clamp for sewing-machines, the combination of the following elements, to wit: the base-plate 1 1', having the spreading-cam 7, the pair of right and left U-formed standards 9 9, having the rear extension 4, the quadruplex clamp 13 13 15 15, and the contracting-springs 16 16, as set forth.

8. In a button-hole clamp for sewing-machines, the combination of the following elements, to wit: the movable base 1, having the right and left U-formed standards 9 9, having the rear extension 4, the spring-depressed fulcrum-bar 28, the operating-lever 26 *x y* 37, the link 25, the slide 20 21, and the pair of normally-contracted upper clamp-jaws having the recesses 19 19, as and for the purposes set forth.

411,704. CONSTRUCTION OF BREAKWATERS, SEA-WALLS, JETTIES, &c. THEODORE F. WOOD, Bridgeton, N. J. Filed June 20, 1889. Serial No. 315,092. (No model.)

Claim.—1. The combination, in a breakwater or jetty, of the piles 'A A', forming an A-truss, substantially as shown, with a cross-piece uniting these piles and clamps or stringer-bars tying the series of piles together, with vertical sheathing on the exterior piles, substantially as described.

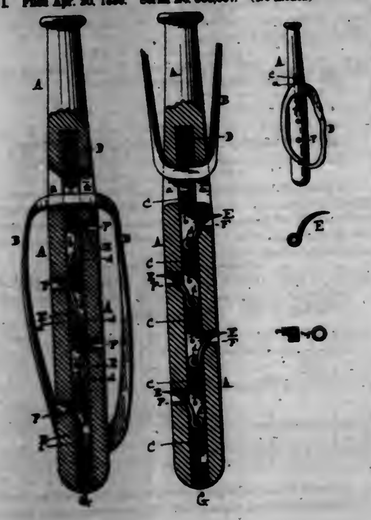
2. The combination, in a sea-wall, break-water, or jetty, of the piles formed in the shape of an A-truss, the rear piles extending beyond the junction, braces connecting the piles together, sheathing on the exterior face of the piles, and sheathing on the extended portion of the rear piles at an incline to the main sheathing, whereby the water is thrown from the sea-wall, substantially as described.



3. The combination, in a sea-wall, of the A-truss composed of a series of piles arranged substantially as described, with extensions of the rear piles, sheathing on the main portions of the sea-wall, and sheathing on the extended portions of the rear piles, with a driveway, and a hinged portion of the extended sheathing adapted to lie flat upon the driveway or to be placed in an upright position, substantially as described.

4. The combination of the A-truss with the extension of the rear piles extending above the junction of the two piles forming the truss, sheathing on the outer surface of the front pile, with a board walk on the rear of the sea-wall, and a seat supported by the extension of the rear pile, substantially as shown and described.

411,705. POLICEMAN'S CLUB. CHARLES R. ADAMS, Providence, R. I. Filed Apr. 20, 1889. Serial No. 308,007. (No model.)



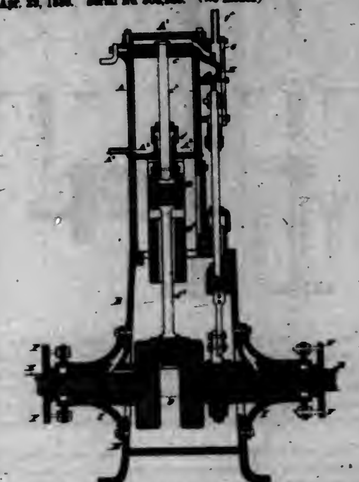
Claim.—1. A policeman's club having a central longitudinal bore and holes at intervals extending from the outer surface thereof to said bore, in combination with a bar movable lengthwise in said bore and having barbs pivotally mounted on said bar and extensible through said holes by a pulling device, substantially as specified.

2. A club having side perforations and a central bore, in combination with barbs mounted pivotally within said bore and extensible through said perforations, and a pulling device to operate said barbs, substantially as described.

3. A club having a bore or channel, barbs mounted and movable in said bore or channel, and a pulling device adapted to extend said barbs beyond the outer surface of the club, substantially as described.

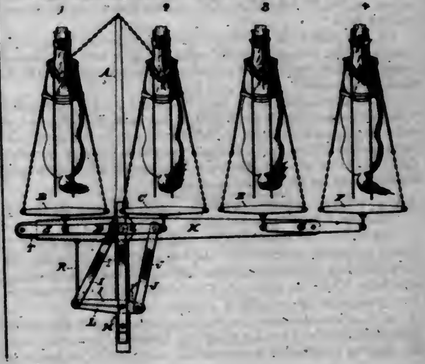
4. The combination of a club having a longitudinal bore and holes at intervals extending from the outer surface thereof to said bore, a bar movable lengthwise in said bore, barbs pivotally mounted on said bar, a pulling device adapted to draw said bar and to extend said barbs outwardly, and a spring adapted to automatically withdraw said bar and its connected barbs inwardly, substantially as specified.

411,706. STEAM-ENGINE. ALBERT T. BOOTH, Louisville, Ky. Filed Apr. 22, 1889. Serial No. 308,268. (No model.)



Claim.—The combination, in a single-acting vertical engine in which the cylinder is provided with a steam-port at its upper end and an exhaust-port independent of the lower side of the piston, of a lower head in the cylinder, between the crank-pit and the piston, provided with a stuffing-box for the piston-rod, and a pipe leading from the lower end of the cylinder to the atmosphere to carry off the water of condensation that escapes past the piston, substantially as and for the purpose described.

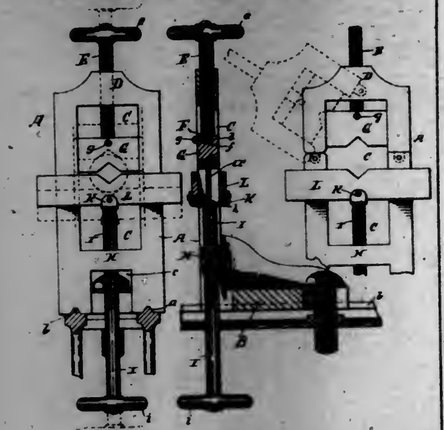
411,707. FOUR-HORSE EVENER. JOHN C. BOSSE, Rich Prairie, Minn. Filed May 11, 1889. Serial No. 310,450. (No model.)



Claim.—1. A four-horse evener comprising a short main lever having its short arm connected to a long draft-lever carrying the doubletree of the field horses, and its long arm connected to the doubletree of the pole horses and to a thrust-bar, which is also connected to the latter doubletree, substantially as specified.

2. The combination, with the main iron lever L, having arms of unequal length, of the long draft-lever K, carrying the doubletree of the field horses, the oblique strap-connections I and J, the doubletree of the pole horses, the thrust-bar, the lateral guiding-strap, and the tie-rod connecting the long arm of said main lever to said thrust-bar, substantially as specified.

411,708. **WORK-HOLDER.** WILLIAM B. BRADSHAW, Lectonia, Ohio. Filed May 3, 1889. Serial No. 310,042. (No model.)



Claim.—1. In a work-holder, the combination of the cut-out frame, as shown, a pair of independently-sliding jaws adapted to slide one above and into the other within part of the said cut-out portion, with the adjusting-screws, one of which has its bearing in one of the said jaws, and the other having its bearing in a strap secured to the other of said jaws, substantially as described, and for the purpose set forth.

2. In a work-holder, the combination of the cut-out frame, the sliding jaws having a V-shaped notch formed in their upper and lower portions, respectively, with a perforated strap having its ends bent to receive one of the said jaws, and a pair of oppositely-situated adjusting-screws, substantially as shown and described.

3. In a work-holder, the combination of the cut-out frame, a pair of sliding jaws, one of which forms a journal-bearing and the other of which is adapted to accommodate a journal-bearing strap, with the journaled adjusting-screws, substantially as shown, and for the purpose specified.

4. In a work-holder, the combination of the cut-out frame having the upper and lower portions screw-threaded, with a slotted sliding jaw and a sliding jaw having a hole in the top thereof adapted to receive the end of an adjusting-screw, substantially as and for the purpose set forth.

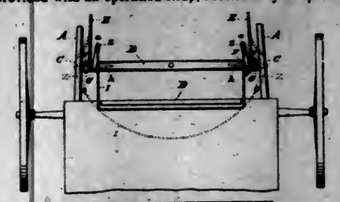
5. In a work-holder, the combination of the cut-out frame, of the hinged portion thereof, with the adjustable jaws having V-shaped notches formed therein, and the adjusting-screws, substantially as shown and described.

6. In combination with a work-holder, the frame A, the sliding V-shaped notched jaws G and L, located one above the other, one of which is adapted to slide into the other, the perforated strap, the adjusting-screws having journal end portions, and an enlarged head *f* on the end of one of the said adjusting-screws, substantially as shown and described, and for the purpose set forth.

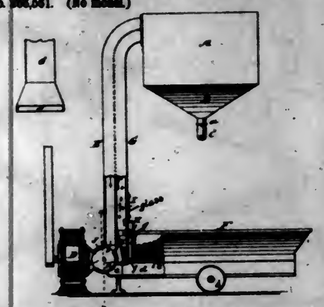
411,709. **HORSE-DETACHER.** DAVID R. BROWN, Passaic, N. J. Filed Feb. 7, 1889. Serial No. 299,026. (No model.)

Claim.—1. The horse-detacher consisting of the attachment F, having the broad bearing end *l*, and the lever-hook G, having the hook portion N, pivoted to said end bearing, the inwardly-extending connection V, and the over-curved lever-arm Z, extending from said lever-connection, substantially as specified.

2. In a horse-detacher, the shouldered attachment F, adapted to be secured to the end of a singletree and having the broad end bearing *l*, and in combination therewith the lever-hook G, consisting of the hook portion N, pivoted to said end bearing and having its inner edge in line with the shoulder of the attachment, the connection V, extending inward therefrom, and the forward over-curved lever-arm Z, provided with an operating-strap, substantially as specified.



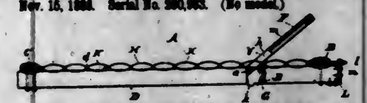
411,710. **APPARATUS FOR COOLING, STONING, AND RACKING COFFEE.** ROBERT BURR, Brooklyn, N. Y. Filed Mar. 8, 1888. Serial No. 266,561. (No model.)



Claim.—1. The combination of an air-suction apparatus, a receptacle for containing the material to be operated on and having an air-channel *g*, a hopper, a suction-pipe leading from the hopper to the air-suction apparatus, a delivery-pipe leading from the hopper to the receptacle and having an air-channel *f* in communication with the air-channel of said receptacle, and a gate for controlling communication between said receptacle and channels *f* and *g*, substantially as described.

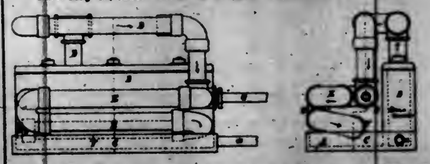
2. The combination of an air-suction apparatus provided with a valve-chamber J and a channel *e*, a rotary valve K in the valve-chamber, a receptacle F, having a perforated bottom and an air-channel *d* thereunder for connecting with the air-channel *e*, a hopper A, a delivery-pipe G, leading from the hopper to the receptacle and having an air-channel *f* in communication with the receptacle above the perforated bottom, and a suction-pipe E between the hopper and the air-suction apparatus, substantially as described.

411,711. **BED-BOTTOM.** ELON R. CASE, Robinsville, Ind. Filed Nov. 15, 1888. Serial No. 290,963. (No model.)



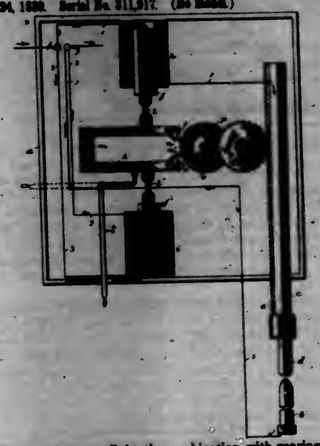
Claim.—A bed-bottom consisting of the transverse series of elliptic springs, the end bars B and C, extending through the end spirals, and the side rail having the angle-irons, and adjusting devices for the bar B, consisting of the notted screw-threaded bolts engaging said angle-irons, substantially as specified.

411,712. **VAPOR-GENERATOR.** GEORGE W. CLARK, Boston, Mass., assignor of one-half to the Automatic Heater Company, Portland, Me. Filed May 19, 1888. Serial No. 274,498. (No model.)



Claim.—The combination of the trough C, having as its rear wall or boundary the steam-generator B, the water-supply pipe a, connected with said generator, the retort E and tube F above the trough and connected together, said tube F having the holes *b*, the steam-conduit D, leading from the generator B into the retort E, and the hydrocarbon-supply pipe G, leading also into the retort E, as set forth.

411,713. **ARC LAMP.** FRANK P. ORR, Terre Haute, Ind. Filed May 24, 1889. Serial No. 311,917. (No model.)



Claim.—1. In an arc light, the combination, with gearing to positively adjust the carbons, of a freely and vertically swinging armature-lever or frame pivoted at one end and having a pair of parallel arms each provided with means, respectively, to operate said gearing in opposite directions to raise or lower the carbon, an electro-magnetic device directly acting on said lever to draw the same in one direction to operate the gearing to lengthen the arc, and an opposing shunt electro-magnetic device directly acting on said frame directly against the force of the main magnetic device to swing the frame in the opposite direction and actuate the gearing to lower the carbon, substantially as described.

2. In an arc light, the combination, with gearing to positively adjust the carbons and a notched wheel to operate said gearing in both directions, of a single freely-swinging armature-lever or frame having a pair of pawls to engage said notched wheel and respectively rotate the same in opposite directions when said lever is swung in opposite directions, a magnet in the main circuit to draw said lever in one direction and raise the carbon, and an opposing shunt-magnet to draw said lever in the opposite direction against the force of the main magnet to lower the carbon, substantially as described.

3. In an arc light, the combination, with mechanical means to adjust the carbons and a notched wheel to actuate the same to raise or lower the carbon, of an armature-lever pivoted at one end to swing in a vertical plane and having a pair of arms extending from the pivotal point toward said wheel, pawls on the ends of said arms to respectively and oppositely rotate the wheel when said lever is swung in opposite directions, a series coil directly above and having its armature connected to the upper arm of said lever to raise the same, and a shunt-coil directly below and having its armature connected to the lower arm of the same, substantially as described.

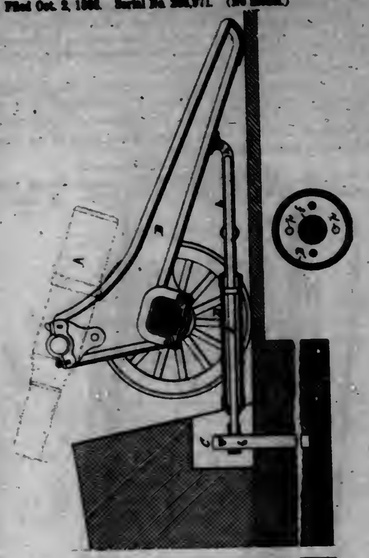
4. The combination of an approximately U-shaped frame pivoted at its closed end to swing in a vertical plane, oppositely-extending pawls on the ends of the arms thereof having stops, a ratchet-wheel rotated in opposite directions by said pawls, gearing operated by said wheel, a carbon-holder having a rack engaged by the gearing, a vertical series coil located above and having a core loosely connected with the upper arm of said frame, and a vertical shunt-coil located below and having its core loosely connected with the lower arm of said frame, substantially as described.

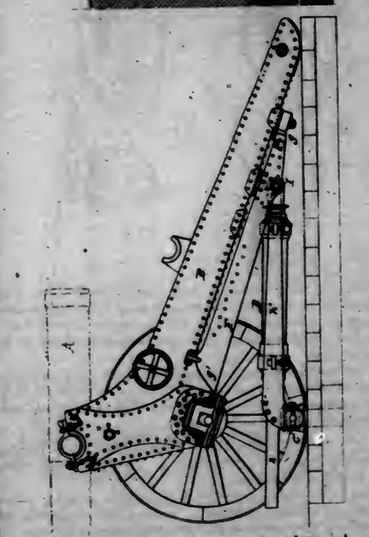
5. In an arc light, the combination of a swinging frame to raise or lower a carbon, a series and a shunt electro-magnetic device to swing the frame in opposite directions, and a lever connected with said frame and by which the same can be operated by hand to raise the carbon, substantially as described.

411,714. **PREPARING PYROTECHNIC COMPOUNDS.** ANTONIO EM. GRAMEN, Naples, Italy, assignor to Charles H. Reusens and George A. Mannix, both of Petersburg, Va. Filed Jan. 5, 1889. Serial No. 295,994. (No specimens.)

Claim.—The process herein described for the manufacture of the pyrotechnic compound set forth, said process consisting in dissolving picric acid in hot water, adding carbonate of magnesia thereto to form a solution of picrate of magnesia, then dissolving nitrate of potash in water, and mingling the latter solution with the former, producing a precipitate consisting of a picrate of potash, $(C_6H_2(NO_2)_3OK.)$ reducing said precipitate to a granular condition, and drying, substantially as described.

411,715. **HYDRAULIC BUFFER FOR SIEGE AND OTHER GUN CARRIAGES.** PIERRE L. A. DE MONTGOLFIER, St. Chamond, Loire, France. Filed Oct. 2, 1888. Serial No. 288,071. (No model.)





Claim.—1. The combination of a gun-carriage and an upright pivot fixed in the foundation and about which the carriage can move in a horizontal plane, with a buffer-cylinder and a piston, one connected to the carriage and the other to the fixed pivot, and the piston having a rod passing through the opposite ends of the cylinder, all substantially as described.

2. The combination of a gun-carriage and a fixed pivot therefor with a buffer-cylinder and a piston, one connected to the carriage and

the other universally jointed to the pivot, the said piston having a rod passing through opposite ends of the cylinder, all substantially as described.

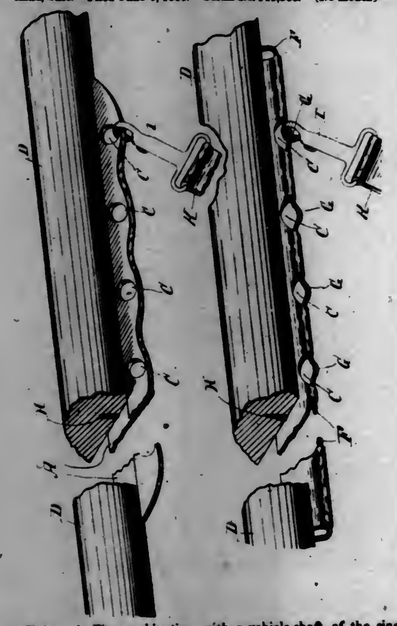
3. The combination of a gun-carriage and a pivot therefor with a buffer-cylinder connected to the said carriage and a piston having a rod passing through opposite ends of the cylinder and connected to the pivot, all substantially as described.

4. The combination of a gun-carriage and a fixed pivot therefor with a buffer-cylinder and a piston, one connected to the carriage and the other universally jointed to the pivot, substantially as described.

5. The combination of a gun-carriage and a pivot therefor with a piston and a rod universally jointed to the pivot, a buffer-cylinder in which the piston works, and cheeks connecting the cylinder with the carriage, all substantially as set forth.

6. The combination of a gun-carriage having a beam or stiffener F connected at one end to the trail and at the other to the body of the carriage, with a fixed pivot for the carriage and a buffer-cylinder and piston, one connected to the pivot and the other to the beam or stiffener, all substantially as specified.

411,716. HOLDBACK-FASTENING. CHARLES FOLSOM, Bellefontaine, Ohio. Filed June 6, 1889. Serial No. 313,288. (No model.)



Claim.—1. The combination, with a vehicle-shaft, of the single plate attached to the under side and projecting inward on the same plane with the shaft, the projecting part having the holes C therein for the reception of the snaps on the holdback-strap, as and for the purpose set forth.

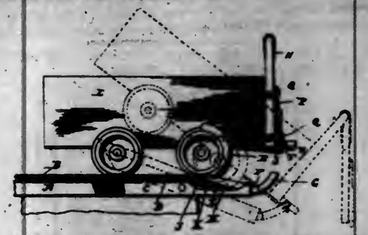
2. The combination, with a buggy-shaft, of the sheet-metal piece E, having holes C therein, and the wire F, secured between the pieces of sheet metal and bent at G to form a loop to receive the holdback-snap, as and for the purpose set forth.

411,717. PREPARING FLOUR FROM CURD OF MILK. WILHELM SUTTER, Rorschach, St. Gall, Switzerland. Filed Jan. 31, 1889. Serial No. 298,259. (No specimens.)

Claim.—The process hereinbefore set forth for preparing a flour from curd, said process consisting in curdling milk, separating the curd from the whey, comminuting the curd, exposing the same repeatedly to alternate heating and cooling processes, and then grinding the curd, substantially as described.

411,718. DUMPING-CAR. FRANK J. GIBB, Tyrone, Pa. Filed Jan. 30, 1889. Serial No. 298,008. (No model.)

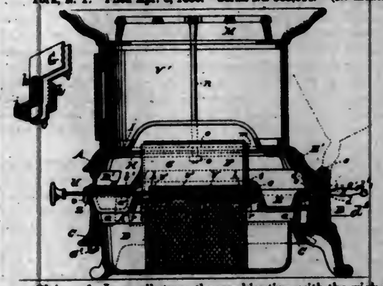
Claim.—1. The combination, with the car having an opening in its bottom, of the swinging end-gate, the bolt mounted thereon and adapted to engage said opening, and the spring secured to the bottom of the car and carrying a pin adapted to enter said opening and bear against the end of the bolt, as set forth.



2. The combination of the platform having a tilting section, the car moving over the platform and provided with the swinging end-gate, the bolt mounted on the end-gate and engaging the bottom of the car, the spring secured to the bottom of the car and bearing against the bolt, and the rock-shaft mounted on the tilting section of the platform and having a crank-arm at one end adapted to bear against the spring and provided with an operating-lever at its other end, as set forth.

3. The combination of a dumping-car having a swinging end-gate hinged to its upper front end, a bolt or latch arranged to slide vertically on said end-gate and engaging an opening or keeper in the bottom of the car, an arm or spring attached to the under side of the car and having a stud bearing against the lower end of the bolt, and a rock-shaft having an arm which, when the car is tilted, may be brought into contact with the spring or arm, so as to release the bolt of the end-gate, substantially as set forth.

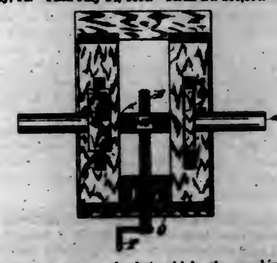
411,719. OIL-STOVE. JACOB GOLDSTEIN and ISRAEL BLOCK, New York, N. Y. Filed Apr. 3, 1889. Serial No. 305,811. (No model.)



Claim.—1. In an oil-stove, the combination, with the wick-holder pan and its hollow slotted ridges, of the wick-tubes recessed at their lower ends, as shown, and having at the sides of said recesses vertical bearing lugs or flanges for the wick-rollers, said lugs or flanges having horizontally-extended slotted flanges for the fastening-screws connecting the same to said ridges, substantially as specified.

2. In an oil-stove, the wick-tubes having their lower edges cut away or recessed, the lateral vertical bearing-flanges thereof, the fastening-flanges, and the exposed solid wick-rollers socketed and provided with extended operating-rods, substantially as specified.

411,720. TWO-WHEELED VEHICLE. ROBERT W. HARR, Allegheny, Pa. Filed July 24, 1888. Serial No. 280,896. (No model.)



Claim.—1. In a two-wheeled vehicle, the combination, with the body A, having the flanges or guides *c c* located on either side of its base, of the frame A', having the grooved side pieces *a*', in which said flanges move, the threaded bent *g*, attached to the axle, the threaded rod E, having the sleeve *e*, and the bar G, depending from the body, the several parts being constructed and arranged substantially as described, so that by turning said rod the body will be shifted on the reach, as set forth.

2. In a two-wheeled vehicle, the combination, with an adjustable body and means for operating the same, of auxiliary springs arranged substantially as described, and for the purpose set forth.

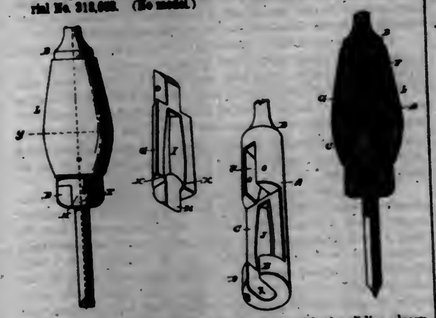
3. In a two-wheeled vehicle, the combination of the following elements: screw-threaded rod E, provided with a shoulder *e*, crank F, bearing G, plates D D, runners *c c*, projection *g*, spring-bar *d*', and auxiliary springs *b b*, moving with the body A, all arranged and operating substantially as described.

411,721. SMOKE-COMPRESSOR. WILLIAM W. HARPER, Aveilles, Ohio. Filed Dec. 20, 1887. Serial No. 258,497. (No model.)



Claim.—An implement to compress corn or fodder for tying, consisting of the handle A, having secured to it the forwardly-extending plate B, the curved transverse plate C, secured to the forward ends of said plates and provided with the central slot *c* and hook D, the anti-friction roller E, journaled in bearings in the slot *c* opposite to the hook, the reel F, journaled in the plates B and having one of its flanges formed into a ratchet to engage the detent or latch J, the rope K, having its inner end secured to the reel F, passing through the slot *c*, and having secured to its outer end a ring L, for attachment to the hook D, substantially as specified.

411,722. BIT-STOCK. GEORGE R. JACKSON and STILLMAN P. TAMER, Birmingham, Conn. Filed Apr. 27, 1889. Renewed July 26, 1889. Serial No. 318,003. (No model.)



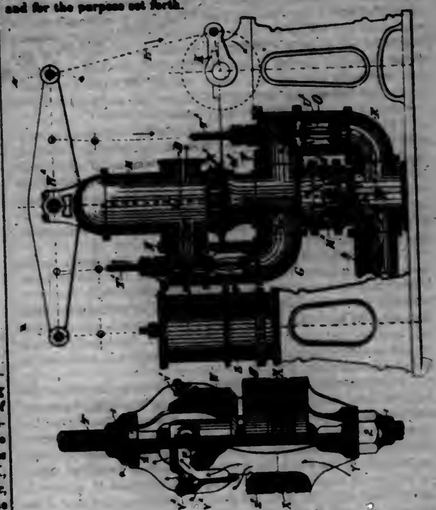
Claim.—In a bit-stock, the combination, with the sliding sleeve, of the fixed jaw provided with the recess C and the shoulders or upstanding portions D E, forming a seat for the neck of a bit, and the movable jaw pivoted within the recess F and entering the recess C and having the tongue or extension H designed to enter between the upstanding portions D E and engage the bit-neck, substantially as specified.

411,723. METHOD OF FIXING BEER, &c. ADOLF G. JERSCHA, Gottlieben, and ADOLF BINDHARM, Bruntingen, Switzerland. Filed June 18, 1888. Serial No. 314,472. (No specimens.)

Claim.—The herein-described method of fixing fermented liquids or liquids undergoing fermentation, which consists in, first, saturating a suitable inert porous substance—such as burnt brick, for example—with the unfermented wort, and, secondly, immersing the porous substance so saturated into the fermented liquid or liquid undergoing fermentation, substantially as and for the purpose set forth.

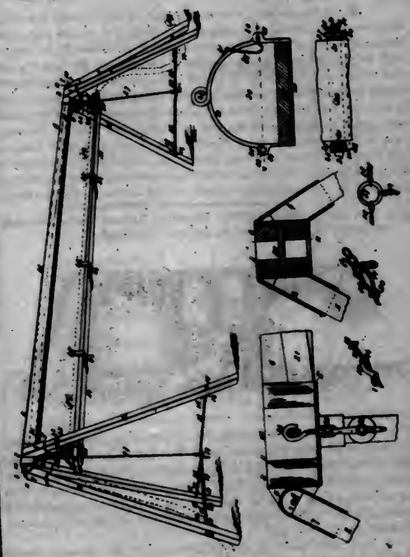
411,724. HOSE-ELEVATOR FOR FIRE-ENGINES. ANDREW J. LOEBS, Brooklyn, N. Y. Filed Jan. 30, 1888. Serial No. 262,147. (No model.)

Claim.—1. The general arrangement of a central column B J C, subdivided into valve-chambers with valves R' R², and air-chamber M, supporting-beam W³, the whole forming a direct and continuous connection between suction and delivery consists A and D, in combination with pump-cylinders N and O, provided with connecting-connection E F G H, and buckets U' U², operated by rods T' T² from beam W³, and fitted with valves W and V², all constructed to operate substantially as and for the purpose set forth.



2. In combination with a central column B J C, provided with ball-valves R' R², two cylinders N and O, arranged with buckets U' U², fitted with double-beat valve W and relief-valve V², all constructed substantially as and for the purpose herein described.

411,725. HOSE-ELEVATOR OVER RAILROAD-TRACKS. THOMAS MCELHINEY, St. Louis, Mo. Filed July 23, 1889. Serial No. 318,218. (No model.)



Claim.—1. In a hose-elevator, the combination of the two tripods, the coupling-beam, the carry-beam that supports the hose, and the block and tackle suspended from the structure, by which hoisting-tackle the said carry-beam and hose are elevated, substantially as described, and for the purpose set forth.

2. In a hose-elevator, the combination of the stationary lateral tripod-legs, the pivotally-adjustable straddling rear legs, the coupling-beam, the metal heads having pendent sockets in which the tops of the lateral legs are seated and boxings in which the ends of the coupling-beam are seated, the projecting rear flanges 11, integral with said metal heads, the pivotal metal socket-heads 7, in which the tops of said adjustable rear legs are seated, and the pivot-pins 8, on which said metal heads 7 and the adjustable rear legs are journaled, substantially as described, and for the purpose set forth.

3. In a hose-elevator, the combination of the tripods constructed with stationary laterally-projecting legs and rear pivotally-adjustable legs and having metal socket-heads in which the legs of said tripods are seated, and the parallel longitudinally-separated sections of the coupling-beam seated in the metal boxings of the tripod-heads, and the block-and-tackle-supporting bars 23, the ends of which are secured in and couple the said sections of the beam, substantially as described, and for the purpose set forth.

4. In a hose-elevator, the combination of the tripods having metal socket-heads in which the legs are seated, the lateral socket-heads being stationary and the rear socket-head pivotally secured to said stationary part, the eyelet-bolts 12, secured to said legs, the straddle-chains 16, the outer ends of which are secured to the eyelets of said eyebolts, and the triple junction-ring 17, to which the inner ends of said straddle-chains are secured, substantially as described, and for the purpose set forth.

5. In a hose-elevator, the combination of the tripods with wooden legs and metal socket-heads, the lateral or side legs being stationary and the rear legs pivotally hinged to the other part of said head, the eyelet-bolts 12, secured to said legs, the spring-snaps that engage in said eyelets, the straddle-chains secured to said spring-snaps, the triple junction-ring 17, to which the straddle-chains from the lateral legs of the tripod are secured, the ring-linked adjusting-chain 19, secured to said junction-rings, the locking-hooks 18 on the inner terminal of the straddle-chain that connects the rear pivoted leg, and the loose mounted rings 20, that fasten the locking-hooks, substantially as described, and for the purpose set forth.

6. In a hose-elevator, the combination of the tripods, the longitudinally-sectional coupling-beam, the carry-beam 26, and the bail-hangers that carry said beam, the bail of said hanger being hinged at one end and lock-bolted at the other end to the carrier-hanger frame and suspended from said beam, substantially as described, and for the purpose set forth.

7. In a hose-elevator, the combination of the tripods, the coupling-beam that unites said tripods, the block and tackle suspended from said coupling-beam, the carrier-hanger hose-frames 35, the hinged bails from which said hanger-frames are suspended, the locking-pins that secure said bails in their closed position, the carry-beam seated in said hangers that carries the hose, and the studded brackets secured to said carry-beams that fence in the hose, the grab-hook of the block and tackle engaging with the bail of said hanger and the hoisting-rope of said tackle, thereby effecting the elevation of said hangers, said carry-beam, and said hose, said hoisting-rope being attachable to the triple junction-ring 17 to secure the retention of the elevation of said hose, &c., substantially as described, and for the purpose set forth.

411,726. BRICK-KILN. VALDEMAR HENRIS, Odense, Denmark. Filed Jan. 28, 1889. Serial No. 297,990. (No model.)



Claim.—1. In a brick-furnace, the combination of the firing-chamber, horizontal flues below the same, vertical ducts communicating with the horizontal flues and firing-chambers, collecting-flues communicating with the horizontal flues, a hot-air duct communicating with the collecting-flues, a hot-air chamber, and a valve for regulating the communication between the hot-air duct and the hot-air chamber, substantially as described.

2. In a brick-machine, the combination of the firing-chambers located at each end thereof, a hot-air duct communicating indirectly therewith, a hot-air chamber communicating with the said firing-chambers, and valves for connecting the hot-air ducts and hot-air chambers, substantially as described.

3. In a brick-machine, the combination of the firing-chambers located at each end thereof, a hot-air duct communicating indirectly therewith, a hot-air chamber communicating with the said firing-chambers, and valves for connecting the hot-air ducts and hot-air chambers, a smoke-collecting chamber extending parallel to the hot-air chamber, and a valve for connecting the hot-air duct and smoke-collecting chamber, substantially as described.

411,727. METAL-SHEARS. LOYAL C. HOUTS, Grimes, Iowa. Filed May 10, 1889. Serial No. 310,269. (No model.)



Claim.—1. In a metal-shearing machine, the herein-described base, composed of a lower portion having an upwardly and rearwardly inclined surface, and an upper portion rising from the edge of the lower portion and having a downwardly and rearwardly inclined lower surface, substantially as and for the purpose set forth.

2. In a metal-shearing machine, the combination, with the base composed of a lower portion and an upper portion extending upwardly from the edge of said lower portion, of a knife-carrying lever connected pivotally to the inner side of said upper portion, a flanged guard-plate secured to the upper end of the upper portion of the base, and a connecting-bolt extending transversely through the said guard-plate, knife-carrying lever, and the upper portion of the base, substantially as and for the purpose set forth.

3. In a metal-shearing machine, the combination of the base composed of a lower portion and an upper portion extending upwardly from the edge thereof and having a circular recess near its front end, the knife-carrying lever having a laterally-extending trunnion mounted in said recess, and a transverse connecting-bolt, substantially as herein described, and for the purpose set forth.

4. In a metal-shearing machine, the combination, with a base composed of a lower portion and an upper portion extending upwardly from the edge of the same and having a circular recess near its front end, of a knife-carrying lever having a laterally-extending trunnion mounted in said recess, a guard-plate having a laterally-extending flange bolted to the upper end of the base, and a transverse connecting-bolt extending through said guard-plate, knife-carrying lever, and the upper portion of the base, substantially as and for the purpose set forth.

5. In a metal-shearing machine, the combination of the base composed of a lower portion having an upwardly and rearwardly inclined upper surface, and an upper portion extending vertically from the edge of said lower portion and having an upwardly and rearwardly inclined lower surface, and provided near its front end with a laterally-extending circular recess, the knife-carrying lever having a laterally-extending trunnion, the flanged guard-plate bolted to the upper end of the upper portion of the base, a connecting-bolt extending transversely through the guard-plate, the knife-carrying lever, and the upper portion of the base, an operating-lever connected pivotally with the rear end of the knife-carrying lever, and toggles connecting said operating-lever with the lug extending upwardly from the rear end of the base, substantially as and for the purpose herein shown and specified.

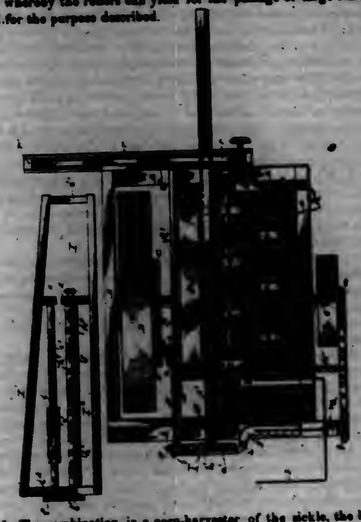
411,728. CORN-HARVESTING MACHINE. JAMES A. HOWDEN, Vail, Iowa, assignor of one-half to John A. Hines, same place, and Hugh Langan, Centreville, Dak. Filed May 6, 1889. Serial No. 309,677. (No model.)

Claim.—1. In a corn-harvesting machine, the combination, with the cutting apparatus, of the conveying-belts, the roller provided with grooves for the reception of said belts, the upper husking-roller having ribs such as described at intervals of its periphery, and the elongated frame-bars having bearings for the rear ends of said roller-shafts, said bars being arranged to yield, for the purpose set forth and described.

2. In a corn-harvesting machine, the combination of the elongated frame-bars arranged to yield near their center, with the ribbed husking-roller and a smooth husking-roller, both having bearings near the center of said yielding bars, as and for the purpose set forth.

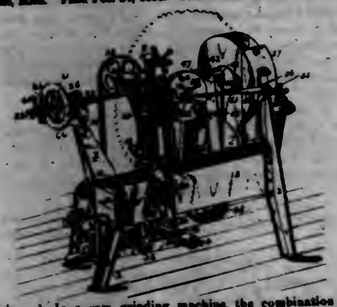
3. In a combined corn harvesting and husking machine, the combination of the sickle, an endless-belt platform immediately in the rear of the sickle, husking-rollers arranged at right angles with the sickle and in a plane transverse to the movement of said belts, and the yielding frame carrying said husking-rollers, as set forth.

4. The combination, in a corn harvesting and husking machine, with the husking-rollers, of the yielding-frame bars provided with bearings for said rollers and having a passage between them for the stalks, whereby the rollers can yield for the passage of large stalks, as and for the purpose described.



5. The combination, in a corn-harvester of the sickle, the belts or chains, the yielding frame-bars, husking-rollers, the aprons for conveying away the corn ears and stalks, respectively, said aprons being parallel to each other and at right angles to the cornstalk receiving and feeding belts or chains, all operating together as set forth.

411,729. SAW-GRINDING MACHINE. WILLIS J. PERKINS, Grand Rapids, Mich. Filed Feb. 27, 1888. Serial No. 265,376. (No model.)



Claim.—1. In a saw-grinding machine, the combination of a movable saw-support, a tapering gage connected to and movable with the support and bearing directly on one face of the saw, and a grinding-wheel bearing on the face of the saw directly opposite the gage, substantially as described.

2. In a saw-grinding machine, a rotating grinder, a pivoted frame, a rotating shaft mounted on said frame at the end opposite the pivot, a saw-clamp on said shaft, and a shifter for swinging the frame toward and away from the grinder, substantially as stated.

3. In a saw-grinding machine, a rotating shaft and a spring-head thereon to which a saw may be affixed, a gage connected to said shaft, and a grinding-wheel in proximity to one face of the gage, substantially as described.

4. In a saw-grinding machine, the combination of a rotating shaft mounted in a swinging frame, a gage connected to said shaft so as to move with the swinging frame, and a grinding-wheel in proximity to the gage, all in combination, as set forth.

5. In a saw-grinding machine, the combination of a grinding-wheel, a gage or rest in proximity to the wheel, a rotating saw-carrying shaft and a shifter therefor, and a water-trough in which the lower part of the saw runs when shifted toward or farther from the grinding-wheel.

6. The combination, with a rotating saw-carrying shaft and a shifter therefor, of a plurality of rests at different elevations, against which rests one face of the saw bears, and a grinding-wheel operating against the other face of the saw, as set forth.

7. In a saw-grinder, a rotating saw-carrying shaft, a swinging frame on which said shaft is mounted, a screw-shaft connected with the frame, and a train of gears connected with the saw-carrying shaft and with the screw-shaft by which the swinging frame may be actuated as the saw is rotated, substantially as described.

8. The combination, in a saw-grinding machine, of a movable support bearing the saw, a gage having the face contour desired for the saw bearing directly on one face thereof, and a grinding-wheel bearing on the opposite face of the saw, whereby the gage determines the bevel of the saw, as set forth.

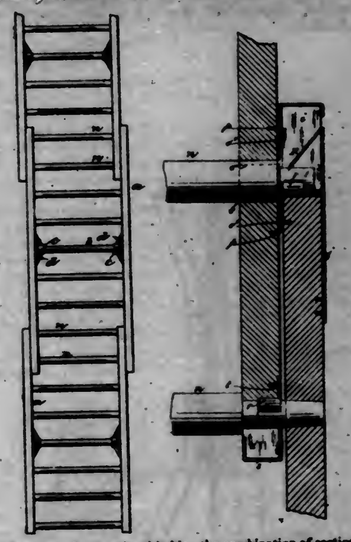
9. The combination, with a movable saw-support, of a beveled gage connected to said support in position to bear directly against one face of the saw, an adjustable bearing-piece serving as a support for said gage, and a grinding-wheel in position to operate on the face of the saw opposite the gage, substantially as described.

10. In a saw-grinding machine, the combination of a rotating grinding-wheel, a rotating saw-shaft, a trough in which the bottom of the saw runs, and a spout leading from the vicinity of the grinding-wheel to the trough, as set forth.

11. In a saw-grinder, the combination, with the rotating saw-carrying shaft and spring having a bearing-pressure against the saw, of the plurality of rests or bearings for the saw on the opposite side of the saw from the spring, as set forth.

12. The combination of the rotating saw-carrying shaft and a shifter therefor and a series of rests against which one face of the saw bears, an arm holding one of said rests, and a bolt holding said arm to the machine, substantially as described.

411,780. SECTIONAL LADDER. CALEB C. PERKINS, Elizabeth, N. J. Filed June 18, 1888. Serial No. 314,749. (No model.)



Claim.—1. In a sectional ladder, the combination of sections provided with slots in the ends of the sides of the sections, metallic bearings applied to the said slots, metallic rung-extension fitting in said bearings, and metallic springs pressing upon the said rung-extensions, the direction of pressure being in the direction of the length of the ladder.

2. In a ladder, the combination of collars applied to the opposite ends of the rungs of the ladder at the middle of the said ladder, and arms on said collar secured to the sides of the ladder.

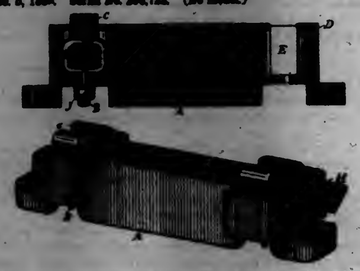
3. In a ladder, the combination of rungs, sides, and collars partially surrounding the middle rung, and arms connected to each collar and attached to the ladder-sides.

4. In a ladder, the combination, with the side of the ladder, of a rung-extension having arms which are attached to the ladder-sides.

5. In a ladder, the combination of ladder-sides provided with slots at the ends of the sides, the slot being formed by arms I and metallic

bearings in said slots, and having arms *s* secured to the ladder-sides and bent over the arms *i*.

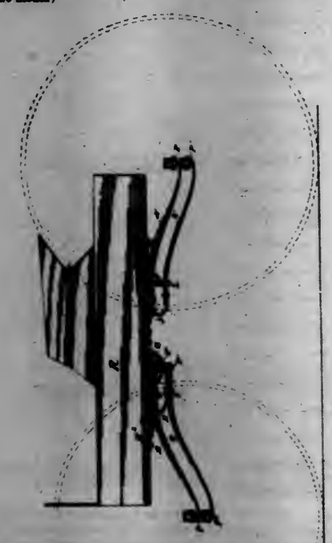
411,781. SHAFTING-CHUCK. WINFIELD S. ROGERS, Cincinnati, Ohio, assignor to the Universal Radial Drill Company, same place. Filed Feb. 5, 1889. Serial No. 299,722. (No model.)



Claim.—1. In shafting chucks or vises, the combination, substantially as set forth, of a frame or body having a V-slot in the top part and having suitable recesses at proper intervals, clamping-jaws, and fastening devices engaging said jaws by which the article may be clamped upon the shaft, as shown.

2. In shafting chucks or vises, the combination, substantially as set forth, of a frame or body having a V-slot on the top part and carrying a loose V-shaped slide and having suitable recesses at proper intervals, clamping-jaws, and fastening devices engaging said jaws to draw downward and clamp the article to be worked, as shown.

411,782. SPRING-PLATFORM FOR ROAD-WAGONS. CYRUS W. BALDWIN, Cleveland, Ohio. Filed June 24, 1889. Serial No. 315,300. (No model.)



Claim.—1. In a spring-platform, the combination of a fifth-wheel placed in the rear of the front axle and secured to the bottom of the body, side springs diagonally extended from the fifth-wheel to the axle at or near the opposite shoulders thereof, and a longitudinally-arranged central spring also extended from said fifth-wheel to the axle, said side and central springs having their inner ends rigidly connected to the fifth-wheel and their outer ends pivotally connected to the axle in different horizontal planes, substantially as and for the purpose set forth.

2. In a rear spring-platform for road-wagons, the combination, with the bottom of the body and the hind axle, side springs radially extended from the bottom to the axle at widely-separated points, a longitudinally-arranged central spring also extended from the bottom of said body to the axle, the outer ends of said side and central springs being pivotally connected to the axle, their inner ends rigidly secured in relation to the bottom of the body, and having both ends of said central springs suspended in a lower plane than the side springs, whereby to prevent the rotation of the axle by the vibration of the springs, substantially as set forth.

3. In a spring platform of the character described, the combination of a fifth-wheel placed in the rear of the front axle, provided with an upper plate secured to the bottom of the body, a lower plate provided with a pivotal boss on its bottom surface, a brace or hanger attached to the bottom frame of the body and provided with a central bearing adapted to support the pivotal boss and lower plate, a flanged spool passing through the upper plate, and a bolt extended through said spool, lower plate, and hanger, substantially as set forth.

4. In a spring-platform, a fifth-wheel provided with an upper fixed plate, a brace or hanger extending over the pivotal point of the wheel, a spool passed through said upper plate and resting upon its under plate at its pivotal point, and a bolt passing through the spool, lower plate, and hanger, substantially as described.

5. In a spring-platform of the character described, a fifth-wheel secured to the bottom of the body, a hanger extended over the pivotal center of the wheel and connected with the upper plate and the body, the lower plate of said wheel being pivoted between the upper plate and hanger, and a safety-hook at the front portion of said fifth-wheel, substantially as set forth.

6. In a spring-platform of the character described, a fifth-wheel secured to the bottom of the body, a hanger extending over the pivotal center of said wheel, its lower plate pivoted between the upper plate and hanger, and springs rigidly attached to the lower plate and extending radially therefrom to the axle, substantially as set forth.

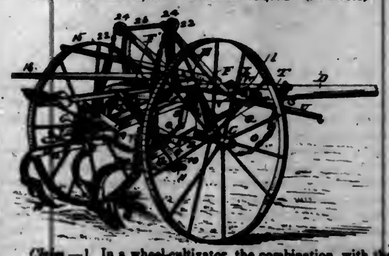
7. In a rear spring-platform, a plate rigidly attached to the bottom frame of the wagon-body and side springs rigidly attached to said plate and extending radially therefrom to the axle at or near its shoulders, in combination with a longitudinal central spring attached to the plate by a loop in one of its leaves at the inner end and a spool and bolt placed to the rear end of the loop, substantially as described.

8. In a spring-platform, a central spring having its inner end attached to the pivot of the fifth-wheel, one or more of its leaves being bent upward and attached to the lower plate of the wheel, in combination with side springs directly attached to said lower plate and a hanger and bolt securing the lower plate and springs to the bottom frame of the body, substantially as described.

9. In a spring-platform of the character described, a fifth-wheel provided with an upper fixed plate, and a lower plate provided with stops on its periphery located equidistant from the center and in front, in combination with a centrally-located safety-hook rigidly fixed in relation to bottom of the body, extended over the lower plate of the wheel, and adapted to engage the stops on said plate, substantially as set forth.

10. In a road-wagon, a fifth-wheel consisting of two plates secured to the bottom of the body, each plate being provided with a central hub and radial arms extending from the hub to the periphery, said arms in the lower plate being adapted to receive the inner ends of springs extending thence to the axle, substantially as set forth.

411,738. WHEEL-CULTIVATOR. HALLECK O. SANDERS, Madison, Wis. Filed June 15, 1889. Serial No. 314,294. (No model.)

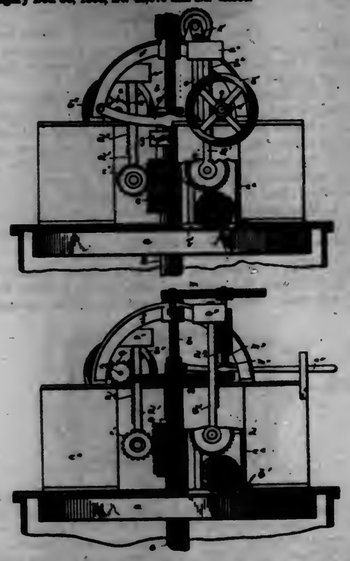


Claim.—1. In a wheel-cultivator, the combination, with the cultivator-beam, the arched axle, the inclined guard-bearing, and the transverse shifting-rod, of the universal sleeve on said shifting-rod, the bifurcated shifting-lever engaging the universal sleeve and engaging also the notched axle of the cultivator-beam connected to the universal sleeve, the arc-rack at the rear end of the cultivator-beam, the lever pivoted to the cultivator-beam and provided with the front bent end and the detent at its rear end, the hinged cultivator-shank connected to the pivoted lever by a slotted link-arm, and transverse pins, substantially as specified.

2. In a wheel-cultivator, the combination, with the main frame,

of the laterally-movable universal sleeve and its shifting-lever, the cultivator-beam connected thereto by a vertical rod having a wear-plate at its upper end, the segmental rack secured to the rear end of the cultivator-beam, the pivoted cultivator-shank on the rear of the cultivator-beam, the pivoted lever having the bifurcated downwardly-bent front end and the spring-detent at its rear end, the slotted link connecting the hinged lever to the pivoted cultivator-beam, the vertical racks connected at their upper ends and provided with pulleys, the lifting-levers provided with the laterally-projecting arms for engaging the vertical racks, and the chains connecting the lifting-levers with the cultivator-beams, substantially as specified.

411,784. APPARATUS FOR GRINDING WOOD. FRIEDRICH H. SENNING, Schleifenwerk, near Rudau, Saxony, Germany. Filed Nov. 27, 1888. Serial No. 292,694. (No model.) Patented in Germany June 6, 1888, No. 46,645; in Norway Aug. 31, 1888, No. 1,079, and in Austria-Hungary Dec. 20, 1888, No. 44,070 and No. 45,893.



Claim.—1. A wood-reducing machine comprising a horizontal rotary grinder mounted on a spindle, a box to receive the wood and allow it to rest upon the face of the grinder, and gearing connected with and actuated by the grinder-spindle and adapted to engage the wood block in the box and hold the block upon the grinder and turn the block, whereby the periphery of the block is uniformly reduced, substantially as described.

2. A wood-reducing machine provided with a toothed roll adapted to hold a block of wood against the grinder and turn or rotate the wood, so that no greater than a certain fixed width of grinding-surface on the periphery of the block shall be reached, substantially as described.

3. A wood-reducing machine comprising a horizontal grinder, a box to receive a block of wood and allow the same to rest upon the grinder, and one or more rotary toothed rolls to hold the block against the grinder and turn the wood, for the purpose set forth.

4. In a wood-reducing machine, the combination of a weighted rod to hold a block of wood against the grinder and gearing partially carried by and moving with the rod to turn the block upon its longitudinal axis, whereby a fine long uniform fiber is produced, substantially as described.

5. In a wood-reducing machine, the combination of a vertically-movable weighted rod, a toothed roll mounted upon the lower end of the same and adapted to engage a block of wood and hold the same against the grinder, and gearing to rotate said roll and thereby turn the block, substantially as described.

6. In a wood-grinder, a horizontal rotary grinder, in combination with a vertically-movable weighted rod adapted to hold a block of wood upon the upper face of the grinder and gearing to rotate said block upon its longitudinal axis, whereby the periphery of the wood will be uniformly reduced, substantially as described.

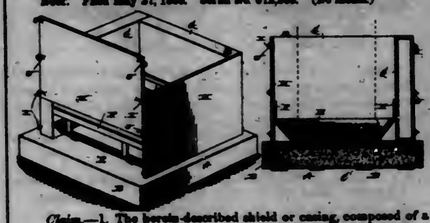
7. In a wood-grinder, the combination, with a horizontal rotary grinder, of one or more vertically-movable rods adapted to press a block of wood upon the face of the grinder, rotary means carried by the same to engage the wood and hold the same against the grinder and rotate the wood on its horizontal axis, and gearing to rotate said means, substantially as described.

8. In a wood-grinder, a horizontal rotary grinder and a box having an open bottom above the grinder and adapted to receive and retain a block of wood on the face of the grinder, in combination with a vertically-movable weighted rod in the box to hold the wood upon the face of the grinder and provided with a vertical rack, and a shaft provided with a gear engaging said rack and adapted to raise the rod, substantially as described.

9. In a wood-reducing machine, the combination of a toothed roll to engage a block of wood and hold the same in engagement with the grinder, a worm-gear to rotate said roll, and a worm on the grinder-spindle to rotate said gear, substantially as described.

10. In a wood-reducing machine, the combination of a vertically-movable weighted rod, means for raising the same, a toothed roll upon the lower end of the same to engage a block of wood and hold the same against the grinder, a worm-gear carried by the rod to rotate the roll, the grinder-spindle, a worm on the same to rotate said gear, and means for throwing the worm into or out of gear with the spindle, substantially as described.

411,785. GUARD FOR STOVES. GEORGE W. SLAWSON, Davenport, Iowa. Filed May 27, 1889. Serial No. 312,203. (No model.)



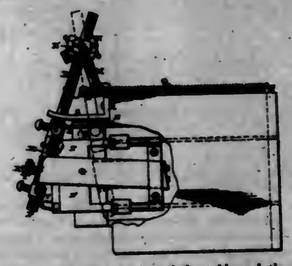
Claim.—1. The herein-described shield or casing, composed of a series of sections connected separably by means of suitable hinge-connections, substantially as set forth.

2. The herein-described shield or casing, consisting of a flat vertical tank or tanks and plates connected together adjustably and separably by hinge-connections and adapted to be mounted upon a suitable base around a stove supported upon said base, substantially as set forth.

3. The combination, with the base, of the shield or casing mounted upon said base and composed of the sections provided at their ends with hooks and eyes, by means of which they may be connected adjustably and separably, substantially as and for the purpose set forth.

4. The combination of the base, the tanks or hollow casing-sections mounted upon said base, and the feeder-plates, said hollow casing-sections and feeder-plates being provided with hooks and eyes, whereby the latter are rendered vertically adjustable and detachable, substantially as and for the purpose set forth.

411,786. CIGAR-BUNCHING MACHINE. FREDERIC C. SHALDEN, Allegheny, Pa. Filed Jan. 30, 1889. Serial No. 297,992. (Model.)



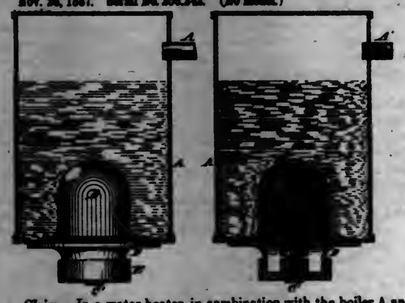
Claim.—1. The combination of the table and the apron with a spring-actuated pivoted lever, the bunching-roll placed upon the lever, the adjusting devices placed upon the lever for holding the roller in any desired position, and a treadle mechanism for moving the rod or lever through a portion of a circle, substantially as set forth.

2. The combination of the frame A, the casting secured thereto, a supporting-frame L, mounted upon the casting, an adjustable bearing or support mounted upon the frame, a pivoted box or bearing, a spring-actuated lever P, which passes through the box or bearing, a bench-

ing-roller placed upon the lever, the table, the apron, and treadle mechanism for moving the rod or lever, substantially as specified.

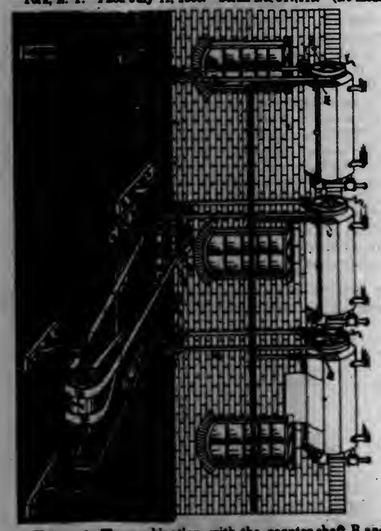
3. The combination of the table and the apron with the bunching-roller, the lever upon which the bunching-roller is placed, a treadle mechanism for moving the lever, a spring for returning the lever to position, the pivoted box or bearing through which the rod or lever passes, and a suitable casing provided with projecting arms for holding the lever in position, substantially as shown.

411,787. ELECTRIC WATER-HEATER. DANIEL W. SMITH, St. Louis, Mo., assignor of one-half to Joseph C. Addington, same place. Filed Nov. 26, 1887. Serial No. 256,343. (No model.)



Claim.—In a water-heater, in combination with the boiler A and a metallic dome or housing B, located therein, a steam-pipe A', connected with said boiler, and an independently-inclosed electric heater F, having a metallic casing C, secured in dome B by means of a downwardly-projecting flange D and a collar E, screwed thereon, all substantially as and for the purpose herein set forth.

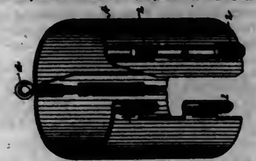
411,788. REVERSING-BELT GEAR. HAMILTON E. SMITH, New York, N. Y. Filed July 11, 1888. Serial No. 317,119. (No model.)



Claim.—1. The combination, with the counter-shaft B and with an automatic reversing-belt gear constructed to change the direction in which the counter-shaft turns automatically after a certain fixed number of revolutions, of a set of fast and loose pulleys *b b'*, mounted on the counter-shaft B, a set of fast and loose pulleys *c c'*, mounted on the shaft S of a working machine, the belt C, the belt-shifting slide K, constructed to engage both branches of the belt C, the upright shaft N, the handle *n*, the arm *n'*, the pit *n²*, and the head *k'*, secured to the slide K and engaging the pin *n²*, substantially as described.

2. The combination, with a counter-shaft B and with an automatic belt-gear constructed to change the direction in which the counter-shaft turns automatically after a certain fixed number of revolutions, of a set of fast and loose pulleys *b b'*, mounted on the counter-shaft B, a set of fast and loose pulleys *c c'*, mounted on the shaft S of a working machine, the belt C, the belt-shifting slide K, constructed to engage both branches of the belt C, the upright shaft N, the handle *n*, the arm *n'*, the pit *n²*, and the head *k'*, secured to the slide K and engaging the pin *n²*, substantially as described.

411,739. FLOWER-POT. JULIUS H. TRAYER, Mount Pleasant, N. C. Filed Dec. 22, 1888. Serial No. 294,412. (No model.)



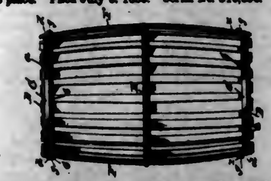
Claim.—1. A flower-pot made of a piece of suitable metal, provided on one edge with downward-extending lugs adapted to fit in grooves or recesses formed on the opposite edge, whereby the pot will be held together, substantially as described.

2. The combination, with the flower-pot, one edge of which is provided with downward-extending lugs adapted to fit in grooves or recesses formed in the opposite edge, of a pin engaging the said openings for holding the pot securely together, substantially as described.

3. The combination, with the pot having inclined slits near the lower end thereof, of a bottom having arms adapted to engage the slits, substantially as and for the purpose specified.

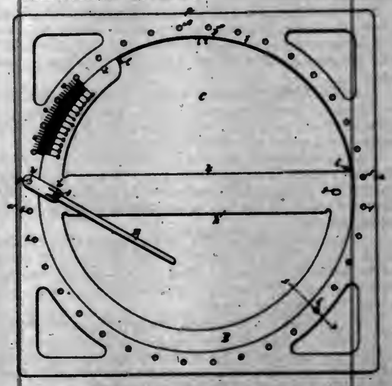
4. The combination, with the pot having inclined slits near the lower end thereof, of a perforated bottom having arms adapted to engage the slits, substantially as described.

411,740. FRUIT OR VEGETABLE CRATE. THOMAS B. ASHFORD, Kinston, N. C., assignor of three-fourths to Henry B. Harper, same place. Filed July 8, 1889. Serial No. 316,858. (No model.)



Claim.—The combination, with a central partition and heads of less diameter than the partition, of staves secured to the central partition and at their ends sprang inward and secured to the heads, and the binding-wires passed around the staves near their attachment to the heads between said attachment and the central partition and drawn tight, the staves being thereby drawn inward, as shown at X, the ends of the wires being twisted to prevent springing of the ends of the staves from the heads, substantially as shown and described.

411,741. PROTRACTOR. CHARLES R. W. DOW, Providence, R. I., assignor to Darling, Brown & Sharpe, same place. Filed Dec. 3, 1888. Serial No. 292,537. (No model.)

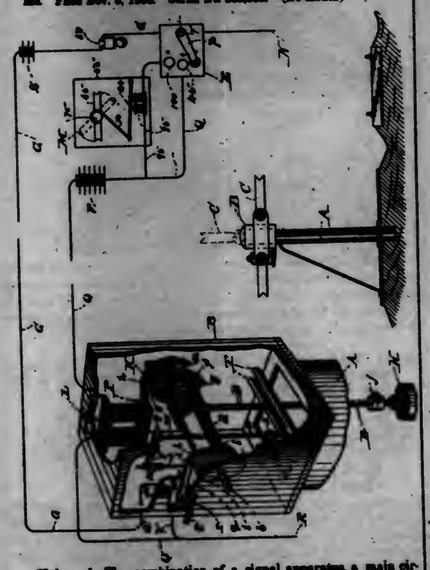


Claim.—1. A protractor having in combination a frame provided with a grooved circular opening and an arc having a grooved edge and fitting the circular opening of the frame, with a wire inserted into the groove between the arc and frame, substantially as described.

2. A reversible protractor having in combination a frame provided with a circular opening and with four sides at right angles to each other, and an arc fitting the circular opening and adapted to make a complete revolution within the said opening, substantially as described.

3. In a protractor, the combination, with a frame provided with a circular opening and an arc fitting the circular opening of the frame, the frame and arc being provided with adjusting-holes, of the adjusting-lever provided with pins adapted to enter the holes of the arc and frame, substantially as described.

411,742. RAILWAY-SIGNAL. ALONZO B. FOX, Whitinsville, Mass., assignor to the Gould-Tisdale Receiving Semaphore Company, Portland, Me. Filed Nov. 3, 1888. Serial No. 289,955. (No model.)



Claim.—1. The combination of a signal apparatus, a main circuit, an electro-magnet in said circuit in connection with said apparatus for controlling it, an auxiliary circuit having an alarm, an indicator, a supplemental wire connecting said indicator with the main circuit, a switch-board having two contact-studs adjacent to each other, one being connected with the main circuit and the other with said supplemental wire, a switch-key connected with the auxiliary circuit, and a circuit-changer connected with the main circuit and actuated by the signal apparatus to unite both circuits when the signal apparatus is actuated.

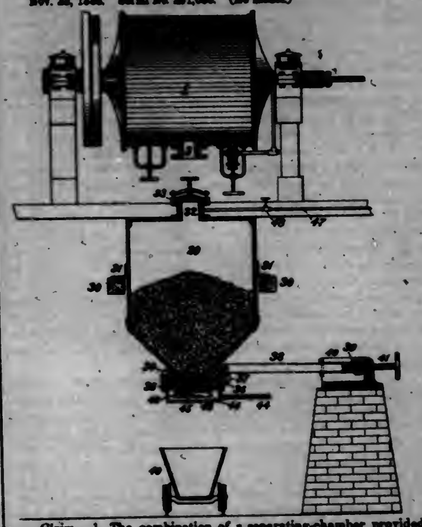
2. The combination of a shaft, a signal operated thereby, an actuator for rotating said shaft, an escapement for controlling the movement of said shaft, a main circuit, an electro-magnet in the main circuit for releasing the escapement, an auxiliary circuit, a pivoted arm connected with the main circuit, and a cam-wheel on said shaft engaging said arm and lifting it to unite both circuits when the shaft is turned.

3. In a semaphore-signal device, the combination of the post A, the shaft *b* in said post bearing the semaphore-arm, scape-wheel *f*, and check-wheel *h*, the retaining-pawl K, in engagement with the scape-wheel, an electro-magnet for releasing the same, a cord in said shaft provided with a weight, the pivoted bar *g*, in engagement with said check-wheel, and the insulated spring 25, connected with an auxiliary electric circuit, whereby a bell may be rung when said bar is elevated to enable the semaphore-shaft to be wound, substantially as described.

4. In a semaphore-signal device, a lever *y*, and pivoted bar *w*, provided with the forked bar T, in combination with the semaphore-shaft *b*, provided with the check-wheel *h*, the pivoted bar *g*, in engagement with said wheel, the pin *z*, fitted to slide in said lever and having the check-nut 16, and the cord D on said shaft, provided with the weight H and check-nut *j*, whereby said nut will engage the forked bar and force the pivoted bar *g* into engagement with the check-wheel after the cord has been wound onto said shaft, substantially as set forth.

5. In a semaphore-signal device, the combination of the post A, the shaft *b*, bearing the arm C, scape-wheel *f*, and check-wheel *h*, the cord D, provided with the weight H, and check-nut *j*, the pawl K, provided with the armature P, the magnet L in the main-line wire Q, the pivoted bar *g*, the branch wire *v*, the lever *y*, and rod *w*, provided with the forked bar T, the pin *z*, fitted to slide in said lever and provided with the nut 16, the insulated spring 25, connected with the auxiliary-line wire G, provided with the bell 50, the indicator M, operated by a magnet in a branch wire 15, and the switch E, all being combined and arranged to operate substantially as described.

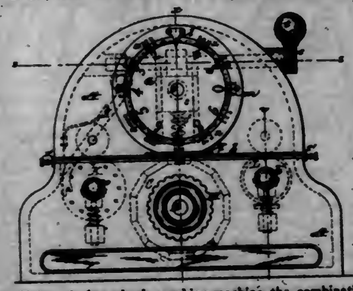
411,743. FILTERING APPARATUS. GEORGE W. GOSS, Pittsburg, Pa., assignor to the Ore Reduction Company, same place. Filed Nov. 28, 1888. Serial No. 291,686. (No model.)



Claim.—1. The combination of a separating-chamber provided with an upper charging-opening and door and a lower discharge-opening, a movable filter-box hinged or pivoted to the chamber in position to cover and uncover the discharge-opening, and a fluid-pressure supply-pipe leading into the chamber above the normal level of charge, substantially as set forth.

2. The combination of a separating-chamber provided with an upper charging-opening and door and a lower discharge-opening, a movable filter-box hinged or pivoted to the chamber in position to cover and uncover the discharge-opening, a fluid-discharge chamber provided with a discharge-pipe and communicating at top with the filter-box, and a fluid-pressure supply-pipe leading into the separating-chamber above the normal level of charge, substantially as set forth.

411,744. CHECK-PUNCHING MACHINE. WINSLOW W. GUPTILL, Boston, Mass. Filed Dec. 3, 1888. Serial No. 292,809. (No model.)



Claim.—1. In a check-punching machine, the combination of a rotary wheel provided with a series of dies and a rotary wheel carry-

ing a series of punches corresponding to said dies and having a movement toward and from said die-wheel, said die and punch wheels being mounted on shafts connected by gears, substantially as and for the purpose set forth.

2. In a check-punching machine, a rotary wheel carrying a series of punches and mounted on a shaft supported at its front end in a vertically-sliding box or bearing, said wheel having figures on its front side to indicate the positions of the punches, in combination with a rotary wheel having a series of dies corresponding to the punches and mounted on a shaft geared to the shaft of the punch-wheel, whereby the two wheels are adapted to be rotated simultaneously by hand, a feed-table for supporting the check to be punched, a lever for depressing the punch-wheel to cause the punches carried thereby to pass through the paper, and a feeding device for moving the check after each figure has been punched out, substantially as set forth.

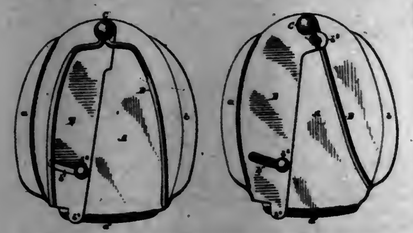
3. In a check-punching machine, a rotary wheel mounted on a horizontal shaft and having a series of straight faces, each provided with a removable die-plate, in combination with a rotary wheel carrying a series of punches and having a movement toward and from said die-wheel, said punch-wheel being mounted on a shaft geared at its rear end to the shaft of the die-wheel, a feed table or support, a stripper-plate or clearer placed between the punch and die wheels, and a feeding device for moving the check after each operation of the punch, all constructed and arranged to operate substantially as described.

4. In a check-punching machine, the combination of a rotary wheel carrying a series of removable dies and provided with a knob or hand-wheel for turning the same, a rotary wheel carrying a series of punches and having a movement toward and from the die-wheel, said die and punch wheels being mounted on shafts connected at their rear ends by gears, a hand-lever for depressing the punch-wheel, a spring for raising the same after each depression, a feed-table for supporting the check, a stripper-plate or clearer placed between the die and punch wheels, a printing device consisting of a printing-roll, a pressure-roll acting in conjunction therewith, and an inking device, the shaft of said printing-roll yielding downwardly and being adapted to be depressed by the hand to admit the check between the two rolls, and a feeding device for moving the check after each figure has been punched out, substantially as set forth.

5. In a check-punching machine, the combination of a rotary wheel carrying a series of removable dies and provided with a knob or hand-wheel for turning the same, a rotary wheel carrying a series of punches and having a movement toward and from the die-wheel, said die and punch wheels being mounted on shafts connected at their rear ends by gears, a shaft *r*, provided with a hand-lever *s* and having an arm *u*, bearing on the vertically-sliding box *c* of the shaft D of the punch-wheel G, and adapted to depress said wheel, and an arm or lever *s'*, connected with and operating the feeding device for moving the check after each figure has been punched out, substantially as set forth.

6. In a check-punching machine, the combination, with the rotary punch and die wheels operating substantially as described, of the printing device consisting of the printing and impression rolls L *l'*, the former mounted on a spring-supported downwardly-yielding shaft *k'*, adapted to be depressed by hand to allow of the introduction of the check between said rolls, and an inking device for the printing-roll, substantially as set forth.

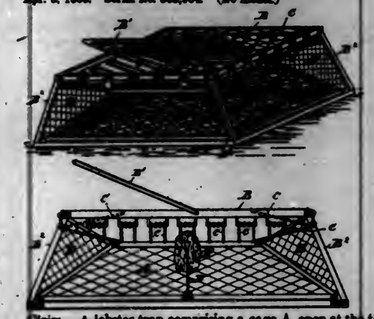
411,745. HOOF-PAD. ARTHUR D. HAMLIN, Portland, Me., assignor to Dennis A. Meaher, same place. Filed Jan. 26, 1887. Serial No. 225,563. (No model.)



Claim.—1. The herein-described snow-plate or protector comprising the imperforate larger lower plate A, of suitable size to fill the entire space within a horseshoe and having the flange *b* and the curved rear edge *a'*, the smaller upper plate B, provided with the flange *a*, the slot *b'*, concentric with the pivot, the lip *b²* to hold down the spring, and the curved extension *b³*, lying upon the curved edge *a'* and moving thereon, the bolt *b⁴*, the pivot or bolt C, connecting said plates near their front ends, and the spring D, attached to said pivot and with its free ends bearing against the flanges *a b*, substantially as and for the purpose specified.

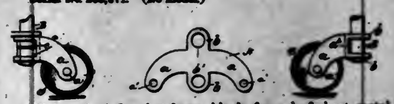
2. The imperforate plate A, of suitable size to fill the space inside the horseshoe, and having its lower end bent at *a'*, and a headed bolt *b³*, combined with the smaller plate B, pivoted to and moving over said plate A and slotted at *b'* and having the bent finger-piece *b⁴* resting on and moving over the end *a'* of the larger plate, and the spring D, substantially as described.

411,746. LOBSTER-TRAP. GEORGE HUME, Cape, Nova Scotia, Canada, assignor of one-half to Henry L. Forbes, Raymond, Me. Filed Apr. 3, 1889. Serial No. 305,904. (No model.)



Claim.—A lobster-trap comprising a cage A, open at the top and having upwardly-converging sides, a top B, elevated above the cage and projecting over the sides, fingers C, hinged to said top and falling across the top edge of the cage to close the entrance, and wings E, leading up to the entrance, as set forth.

411,747. CASTER. WILLIAM LIVINGSTONE, Jersey City, assignor of one-half to John Toler, trustee, Newark, N. J. Filed Sept. 16, 1888. Serial No. 286,671. (No model.)



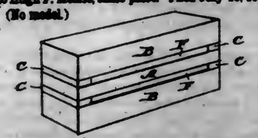
Claim.—1. A bracket-frame blank formed of sheet metal and provided with two laterally-projecting arms adapted to form the supporting-limbs of a caster, and also provided with two perforated ears adapted to form the upper and lower bearings for a pintle, substantially as set forth.

2. In a caster, a sheet-metal bracket-frame having its limbs bent parallel and provided with perforated bent ears or wings adapted to receive and support a pintle, substantially as set forth.

3. In a caster, the combination, with a sheet-metal plate having perforated ears formed integral therewith, of a tubular bearing located between the ears, substantially as set forth.

4. In a caster, the combination, with a pintle and a bracket-frame having perforated ears and provided with tubular extensions that lie between these ears, and also provided with parallel limbs integral with the ears, of a caster-wheel mounted to rotate between the limbs of the bracket-frame, substantially as set forth.

411,748. FAGOT. THOMAS MERKLE, Louisville, Ky., assignor of one-half to Hugh P. Meikle, same place. Filed July 13, 1888. Serial No. 317,866. (No model.)

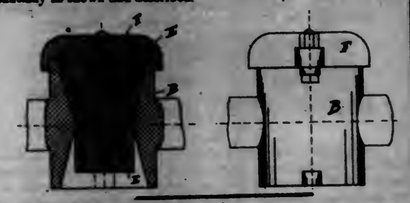


Claim.—1. A fagot composed of a plurality of pieces of iron and steel having interposed between them pieces by which the former are separated to produce heating-flues, substantially as set forth.

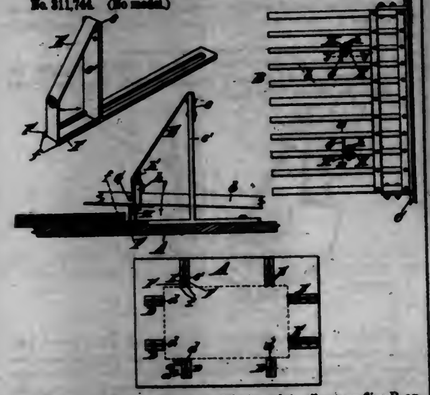
2. In a fagot, the combination, with the central pieces A, of iron, of the exterior pieces B, of steel, and the interposed strips C, arranged to produce flues F, substantially as set forth.

411,749. ELECTRIC INSULATOR. LOUIS STEARNS, Boston, Mass., assignor to the Gould & Watson Company, of Massachusetts, and Charles Tennant Lee, Boston, Mass. Filed Aug. 13, 1888. Serial No. 282,474. (No model.)

Claim.—An insulator comprising a block having an enlarged end and flaring or beveled sides, a frame or support having an aperture beveled or flaring at either end, whereby the frame may be reversed and the block inserted at either end of the aperture, a cap adapted to be secured to either side of the frame, and a layer of insulating material interposed between the block and the frame and cap, substantially as shown and described.



411,750. PAPER-JOGGER. WILLIAM RENDTEL, Cincinnati, Ohio, assignor to Andrew Van Ritter, same place. Filed May 22, 1888. Serial No. 311,744. (No model.)



Claim.—1. The combination of fly-board A, vibratory flier B, angular guides D on said fly-board, pendent spring-jogger E, mounted on suitable supports, also on said fly-board, strike-bars G on said flier, and sheet gages or stops H, also on said flier, constructed, arranged, and adapted to operate substantially as and for the purpose specified.

2. A paper-jogger composed of a pendent spring E, attached at its upper end to an upright *d'*, having a slotted foot or base plate, through which latter is passed a set-screw into the fly-board to adjustably and detachably secure the device in position, substantially as herein set forth.

3. The combination, with the resilient paper-jogger E and its supporting frame or standard, of the toes or bars F, having a suitable space or opening between them, and their outer ends beveled, substantially as and for the purpose specified.

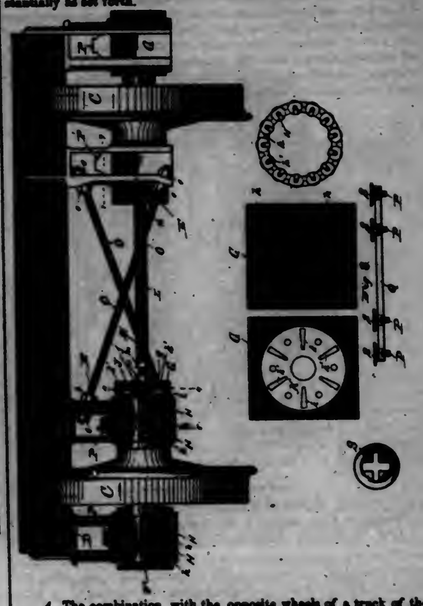
4. The combination, with the flier B, having fingers *b*, of two or more right-angled or bent gage-plates or sheet-holders H, open boxes or square clamp-collars A, slid upon and encompassing said fingers and one limb of each of said plates, and thumbscrews *h'*, whose shanks pass through the upper cross-bars of said boxes *h* and engage the upper faces of said fingers, substantially in the manner and for the purpose specified.

411,751. CAR-TRUCK. SAMUEL W. TANNER, Chicago, Ill., assignor to the Tanner Anti-Friction Wheel Company, same place. Filed Jan. 19, 1889. Serial No. 296,815. (No model.)

Claim.—1. In a truck the wheels whereof are provided with independent axles and bearings at each end of each axles, the combination, with the inner axle-journal, of a box provided with an anti-friction end-thrust-resisting device, substantially as specified.

2. In a truck the wheels whereof are provided with independent axles and bearings at each end of each axles, the combination, with the inner axle-journal, of a box provided with an anti-friction bearing and an anti-friction end-thrust-resisting device, substantially as set forth.

3. The combination, with the opposite wheels of a truck of the kind herein shown, of a brace extending from the box of one wheel to the box of the opposite wheel in the axial lines of the wheels, substantially as set forth.



4. The combination, with the opposite wheels of a truck of the kind herein shown, of an adjustable brace extending from the box of one wheel to the box of the opposite wheel in the axial line of the wheels, substantially as specified.

5. The combination, with the opposite wheels of a truck of the kind herein shown, of adjustable braces extending diagonally from the inner pedestal of one wheel to the inner pedestal of the opposite wheel, substantially as set forth.

6. The combination of the opposite wheels of a truck of the kind herein shown, adjustable braces extending diagonally from the inner pedestal of one wheel to the inner pedestal of the opposite wheel, each brace being also adapted to resist strains in both directions, substantially as set forth.

7. In a truck of the kind herein shown, the equalising-bars at both sides of the truck and the cross-bars uniting them, combined and operating substantially as set forth.

8. The truck of the kind herein shown, wherein the equalising-bars at both sides of the truck are tied together, substantially as set forth.

9. The combination, with the equalising-bars and the cross-bars uniting them, of the springs R, located at the junction of said bars, substantially as set forth.

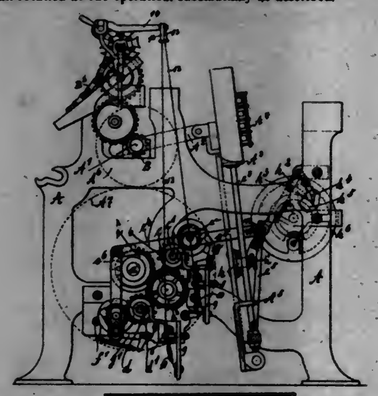
10. The combination, with the equalising-bars and the cross-bars uniting them, of the springs R, and the metal seats for each springs spanning the junctions of the bars, substantially as set forth.

411,752. SHUTTLE-BOX MECHANISM FOR LOOMS. HORACE WYMAN, Worcester, Mass., assignor of one-half to the Crompton Loom Works, same place. Filed July 2, 1888. Serial No. 278,316. (No model.)

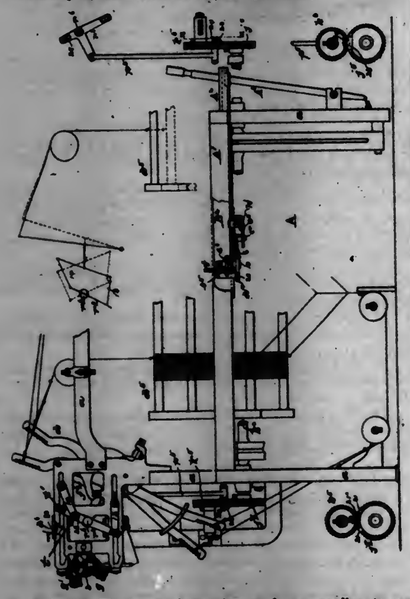
Claim.—1. A series of shuttle-boxes, a lever to move the same, a crank and eccentric, shuttle-box-shifting gears having long and short teeth and connected with the crank and eccentric, the intermittingly-moving driving-gear, and indicating-gears located intermediate the said driving-gear and shifting-gears and actuated by the driving-gear to impart to the said shifting-gears a half-rotation and then run out of mesh therewith and leave the said shifting-gears at rest, combined with means to change the relative positions of the said gears longitudinally in the direction of their axes of rotation to again enable the shifting-gears to be started and partially rotated, substantially as described.

2. A series of shuttle-boxes, a lever to move the same, a crank and eccentric, shuttle box-shifting gears attached thereto and having long and short teeth, the intermittingly-moving driving-gear, and indicating-gears located intermediate the said driving-gear and shifting-

gears, and actuated by the driving-gear to impart to the said shifting-gears a half-rotation and then run out of mesh therewith and leave the said shifting-gears at rest, combined with means to change the relative positions of the said gears longitudinally in the direction of their axes of rotation to again enable the shifting-gears to be started and partially rotated, and with stopping devices carried by the said indicating and shifting gears to prevent the latter making more than a half-rotation at one operation, substantially as described.



411,753. SHEDDING MECHANISM FOR LOOMS. HORACE WYMAN, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed July 12, 1888. Serial No. 279,753. (No model.)



Claim.—1. The harness-levers, harness-frames, cording to connect the said levers and frames, two hooked jacks in operative connection with each harness-lever, two reversely-moving lifters, a rock-shaft having arms or levers, and means to connect the said lifters and arms at different distances from the center of the rock-shaft to thereby move said lifters over unequal distances, as described, and a pattern device whereby the harness-frames are moved to bring all the warps into the same plane before the formation of each shed, substantially as described.

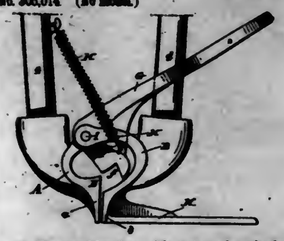
2. The shaft J^2, the gear j^2, having two teeth 21, with a space between them, and a projection 23, and the gear J^3, having an isolated tooth 20, and two spaces, one at each side, a flange 24, combined with the harness-frames, harness-levers, connected cording, connected hooked jacks, lifters, and means between the said gear J^3 and lifters to reciprocate them, the said gear and lifters having a slight dwell during each rotation of the crank-shaft to afford more time for the passage of the shuttle through the shed, substantially as described.

411,754. BALANCED SLIDE-VALVE. JAMES C. AMBERG, Bedford, Iowa. Filed Dec. 21, 1888. Serial No. 294,230. (No model.)



Claim.—The combination of the slide-valve, the circular countersunk disk secured on the upper side of the same, the packing-disk seated in said countersunk disk, the packing-ring surrounding the latter, the springs interposed between the circular countersunk disk and the body of the valve and having upturned ends bearing against the under side of the packing-ring, and the hood or cap having longitudinal supporting-ribs and provided on its upper side with a spring pressing against the under side of the top of the valve-chest, substantially as set forth.

411,755. ROOFING-TONGS. THOMAS R. BENNETT, Wilmington, Del., assignor of one-half to Robert H. Jones, same place. Filed Mar. 27, 1889. Serial No. 305,014. (No model.)



Claim.—1. The combination, with two main gripping-jaws having curved inner surfaces and straight gripping-faces, of an inner jaw adapted to sweep over said curved inner surface to bend over the edge of the metal, said gripping-jaws and inner jaw being pivoted together in line with each other and all out of plumb with the bite of the gripping-faces of the gripping-jaws.

2. The combination, with two main gripping-jaws having curved inner surfaces and straight gripping-faces, of an inner jaw adapted to sweep over said curved inner surface to bend over the edge of the metal, said gripping-jaws and inner jaw being pivoted together in line with each other and all out of plumb with the bite of the gripping-faces of the gripping-jaws, and a foot-lever to operate said inner jaw.

3. In roofing-tongs, the combination of two main gripping-jaws formed with an opening or space between their inner surfaces, and an inner jaw adapted to move within said opening or space to bend over the edge of the metal, said gripping-jaws and inner jaw being pivoted on a common axis and all out of plumb with the bite of the gripping-faces of the gripping-jaws.

4. In roofing-tongs, the main gripping-jaws pivoted together, one of said jaws having an angular horizontal ledge or lip, in combination with an inner pivoted jaw provided with an angular cut or recess along its edge adapted to sweep over said angular ledge or lip for the purpose of bending the metal.

5. In roofing-tongs, the combination of the curved jaws A and B, having the straight gripping-surfaces *a* and *b*, one of said gripping-surfaces projecting above the other and forming the ledge or lip E, in combination with the pivoted jaw F, having the angular cut or groove *f* upon its edge, and means to operate said jaw.

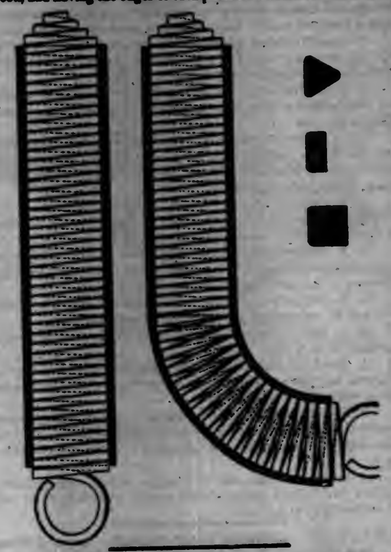
411,756. DEVICE FOR BENDING METAL PIPE. HENRY M. BRENNAN, Brooklyn, N. Y. Filed July 12, 1888. Serial No. 317,371. (No model.)

Claim.—1. A tapering spiral coil of wire for bending metallic pipe.

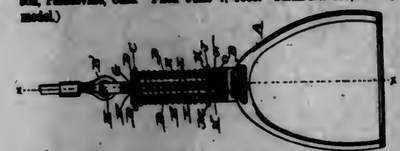
2. A tapering spiral coil of wire for bending metallic pipe, having the surface of the wire forming the exterior of the coil somewhat flattened.

3. A tapering spiral coil for bending metallic pipe constructed of wire, having a flat or plane surface on the side forming the exterior of the coil.

4. A tapering spiral coil for bending metallic pipe constructed of wire, having a flat or plane surface on the side forming the exterior of the coil, and having the edges of such plane or flat surface rounded off.



411,757. STIRRUP. JOHN BELL, Cincinnati, assignor to H. H. Johnson, Painesville, Ohio. Filed June 7, 1888. Serial No. 313,466. (No model.)



Claim.—The combination, in a stirrup, of the spring attachment comprising the top and bottom plates, fixed side rods, movable center rod, and their respective springs, arranged as described, the downwardly-projecting hooked and clinched block N, and the stirrup having a slot at its upper end conforming in shape to the concave-convex hooked and clinched end of the block, substantially as and for the purpose shown and set forth.

411,758. LETTER-PRESS. HARDY W. CAMPBELL and JOHN P. DAVIS, Racine, Wis., assignors to the Racine Malleable and Wrought Iron Company, same place. Filed Nov. 26, 1888. Serial No. 291,988. (No model.)



Claim.—In a letter-press, the combination of the base-plate A, the movable plate B, the elastic strap E, attached to said plate B, the vertical pressure-rod D, the horizontal lever C, and the handle H, provided with the cam or elbow A and pivoted to the lever C, the key *c*, and the vertical bars G G, substantially as described and set forth.

411,759. CORN-CLEANER. JOHN R. CORNWALL, Moline, Ill., assignor to the Barnard & Leas Manufacturing Company, same place. Filed May 11, 1888. Serial No. 273,543. (No model.)

Claim.—1. In a grain-separator, the combination of a fan and two air-trunks, with a shaking-shoe extending beneath one air-trunk and to an opening in the side of the other air-trunk, and provided with aprons and a screen, whereby grain delivered onto the shoe is passed through one air-trunk, again received upon the shoe, passed through the screen, and into the second air-trunk, substantially as described.



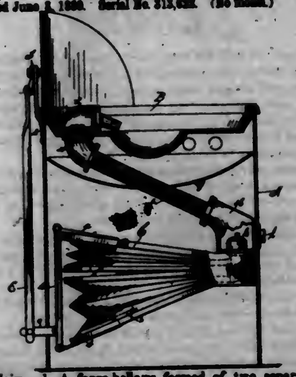
2. The combination of the vibrating shoe G, constructed substantially as described, with the vertical air-trunks E and F, and the fan communicating therewith, air-trunk E being situated above the delivery end of the shoe and adapted to receive the grain in its passage from the upper apron of the shoe to the screen thereof, and air-trunk F receiving the grain as it finally leaves the shoe, substantially as specified.

3. The combination of the fan and pair of vertical air-trunks E and F, having openings in their sides and at bottom, with a vibrating shoe extended below trunk E and discharging into the trunk F and having an apron entering trunk E through its side opening to deliver grain therethrough, and a screen extending below said trunk E, and an apron below said screen adapted to receive the grain after its passage therethrough and deliver it to the air-trunk F, all substantially as described.

4. In a grain-separator, the combination of the vertical air-trunks E and F, and fan, with the screen-shoe extended below trunk E and to an opening in trunk F, and having an apron G' delivering grain into trunk E, a screen receiving the grain after its passage through trunk E, and an apron below said screen adapted to deliver the grain into air-trunk F, said aprons having serrated edges to distribute the grain in the trunks, substantially as described.

5. In a separator, the combination, with the fan and two air-separating trunks, of a vibrating shoe G, constructed substantially as described, extended beneath one air-trunk to the other and provided with two aprons, and a sieve located between the aprons and adapted to deliver the material received on the shoe to both of the air-trunks successively, and subject the material to the action of the sieve in its passage from one air-trunk to the other, substantially as and for the purpose described.

411,760. PORTABLE FORGE. ALBERT R. DAIN, Pittsburg, Pa. Filed June 4, 1888. Serial No. 313,628. (No model.)



Claim.—1. A forge-bellows formed of two separate compartments, either of which is adapted to be expanded when the other is contracted, whereby a constant draft is had, substantially as and for the purpose herein set forth.

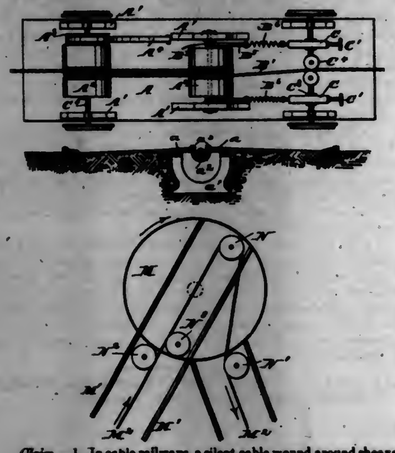
2. In a portable forge provided with a suitable fire-hearth, the combination of the bellows, substantially as described, and means for contracting and expanding either section alternately, whereby a constant draft is had, the valves attached to the nozzle of either section, respectively, and the air-chamber connected by a pipe or tube with the tuyere, substantially as and for the purpose set forth.

411,761. CABLE-SHEAVE. JOSEPH D. DAVIES, Cincinnati, Ohio, assignor of one-half to Henry Martin, same place. Filed Nov. 10, 1888. Serial No. 290,804. (No model.)



Claim.—In combination with the sheave proper, having outer circular flanges A and a recess *a* between them, the bottom connecting portion of said flanges having openings d^3, the segments D, having projections *d*, said projections having an opening d^3, through which a wedge *d'* is inserted for retaining the segments in place, substantially as set forth.

411,762. CABLE RAILWAY. JOSEPH D. DAVIES, Cincinnati, Ohio, assignor of one-half to Henry Martin, same place. Filed Nov. 24, 1888. Serial No. 291,807. (No model.)



Claim.—1. In cable railways, a sheet cable wound around sheaves attached to the car, the cable passing around in grooves in both of said sheaves, said sheaves being widened, as shown, to act as guides should the cable slip out of the grooves in the sheaves, one of said sheaves being attached to the same axle on which one set of wheels are attached, in combination with suitable motive power attached to the car, substantially as set forth.

2. In cable railways, a cable wound around sheaves under the car, a pulley attached to one of said sheaves, which sheave and pulley are attached to one of the axles of the car, in combination with a motor attached to the car, substantially as set forth.

3. In cable railways, a cable wound around adjustable sheaves attached to the car, one of said sheaves being mounted in the axle on which one set of wheels are attached, in combination with a motor in the car, substantially as set forth.

4. In cable railways, cable E', grooved drums A^3, motor B, belt A^4, pulley A^5, and connecting parts, substantially as set forth.

5. In cable railways, a cable wound around sheaves attached to the car, suitable motive power connected to the car, in combination with a turn-table operated automatically by the car, substantially as set forth.

6. In cable railways, a cable wound around sheaves attached to the car and suitable motive power attached to the car, in combination with a brake consisting of band D^2, blocks E, lever D^4, sleeve D', screw-threaded shank D^5, and connecting parts, substantially as set forth.

7. In cable railways, a cable wound around sheaves attached to the car, and suitable motive power attached to the car, in combination with a U-shaped conduit having flanges *a*, substantially as set forth.

8. In cable railways, a silent cable passing over sheaves under the car, and suitable motive power attached to the car, in combination with a double conduit, substantially as set forth.

9. In cable railways, a rail having a hooked portion *a'* to guide the cable around a curve, in combination with a silent cable, substantially as set forth.

10. In cable railways, a cable wound around sheaves under the car, and suitable motive power attached to the car, in combination with a gripping-lever, as *b*, pull-rod A, and connecting operating mechanism, substantially as set forth.

11. In cable railways, a U-shaped conduit made in sections, provided with flanges, as *a*, extending over to connect to the side arms of the lower conduit, substantially as set forth.

12. In cable railways, a U-shaped conduit made in sections and perforated, having flanges, as *a*, which extend over to connect to the side arms of the lower conduit, substantially as specified.

13. In cable railways, a lower conduit, in combination with pieces, as a^4 and a^5, substantially as and for the purposes specified.

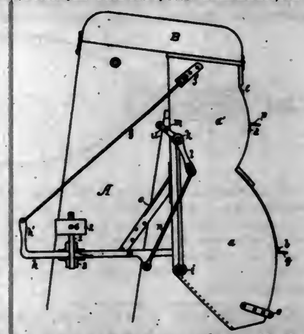
14. In cable railways, a conduit provided with lugs, as a^5, substantially as set forth.

15. In cable railways, a device for gripping the cable, consisting of a lever, as *b*, pull-rod A, rod A^2, and connecting and operating mechanism, substantially as set forth.

16. In cable railways, a cable, cable car, a turn-table, and sheaves on said turn-table, and in combination therewith, as shown, said turn-table being operated by the car passing onto it, substantially as set forth.

17. In cable railways, the combination, with a cable and cable car, of a turn-table, in connection with suitable sheaves N, N', N^2, and N^3, substantially as set forth.

411,768. AUTOMATIC GRAIN-WEIGHER. THOMAS J. UNDERWOOD, Decatur, Ill. Filed Oct. 3, 1888. Serial No. 287,562. (No model.)



Claim.—1. In automatic grain-scales, in combination, weighing-bucket *w*, rigidly secured to the scale-beam and having door *y*, pivoted at *z*, cut-off bucket *r*, having door *s*, pivoted at *t*, rod *n*, connecting the scale-beam with the cut-off bucket, projections *p* and *q* on the cut-off bucket and weighing-bucket, respectively, and stops *c* and *d*, to open the doors by limiting the downward swing of the projections, as and for the purpose set forth.

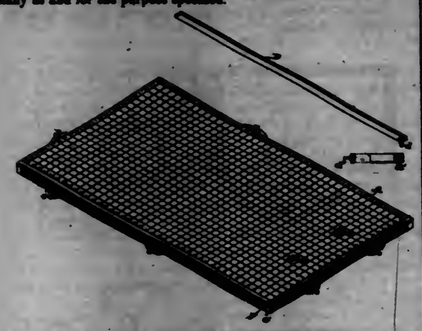
2. In automatic grain-scales, in combination, weighing-bucket *w*, secured to the scale-beam and having door *y*, cut-off bucket *r*, having door *s* and arm *n*, lever *l m*, fulcrumed on the pivot of the cut-off bucket and secured at one end to arm *u*, and rod *n*, connecting the scale-beam with lever *l m*, as and for the purpose set forth.

3. In combination, a weighing-bucket secured to a scale-beam, and a vertical bar adjustable on the beam and carrying a vertically-adjustable weight, as and for the purpose set forth.

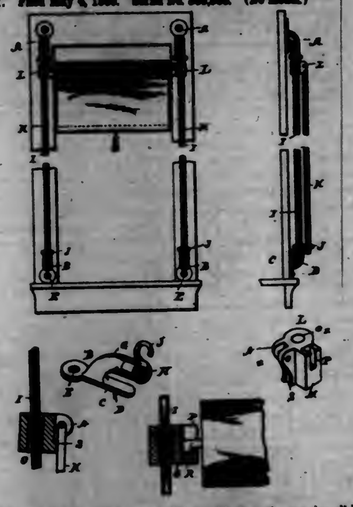
411,764. GLASS-CUTTING APPARATUS. CHARLES W. WIDMER, Canton, Ohio. Filed May 27, 1889. Serial No. 312,326. (No model.)

Claim.—1. The board A, composed of strips *a*, the grooves *c*, located upon the side and end of said board, the grooves *d*, crossing each other at right angles, and the straight-edge D, provided with the pin *d'*, adapted to engage the grooves *c*, substantially as and for the purpose set forth.

2. The board A, provided with the grooves *c*, and the colored grooves *d*, located in line with the grooves *c*, and the straight-edge D, provided with the pin *d'*, adapted to engage the grooves *c*, substantially as and for the purposes specified.



411,765. CURTAIN-FIXTURE. FRED. H. RADDATZ, Sherman Lake, N. Y. Filed May 4, 1889. Serial No. 309,556. (No model.)



Claim.—1. The combination of the guide-bar, the carrier sliding thereon and having the shoulder S on its front side, the said carrier supporting the curtain-roller, and the operating-lever pivoted to the front side of the carrier and bearing on the said shoulder S, as set forth.

2. The combination of the guide-bar, the carrier sliding thereon and supporting the curtain-roller and provided on its front side with the perforated lugs N and the shoulder S, the hook J near the lower end of the guide-bar, and the operating-lever having its upper end pivoted between the lugs N and bearing on the shoulder S, and having its lower end engaging the hook J, as set forth.

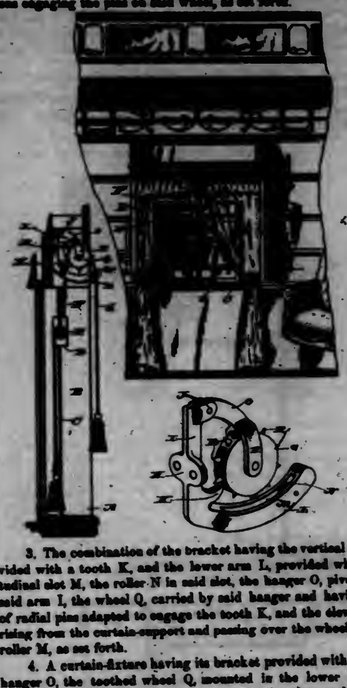
3. The socket-casting consisting of the base-plate C, having the spur D and perforation E, the socket-arm G rising from the base-plate and having the recess H in its end, and the hook J at the end of said arm, as set forth.

4. In a curtain-fixture, the combination of the guide-bar I, the carrier for the curtain-roller sliding thereon, the operating-lever K connected to the carrier, and the socket-casting to receive the lower end of the rod I, and provided with a hook J to engage with the lever K, as set forth.

411,766. CURTAIN-FIXTURE. FRED. H. RADDATZ, Sherman Lake, N. Y. Filed May 4, 1889. Serial No. 309,561. (No model.)

Claim.—1. In a curtain-fixture, the combination of the bracket H, the hanger O, pivoted thereto, and the wheel mounted in the said hanger and adapted to engage a tooth on the bracket, as set forth.

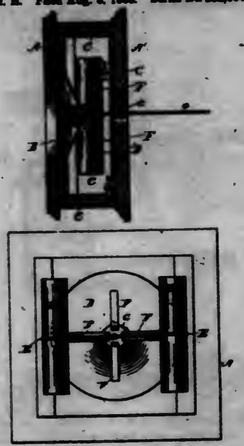
2. The combination of the curtain-support, the bracket H, having the tooth K, the hanger O, pivoted to said bracket, the wheel Q, carried by said hanger and having a series of radial pins adapted to engage the said tooth, and the elevating-band secured to the curtain-support and passing over the wheel Q, and having a series of perforations engaging the pins on said wheel, as set forth.



3. The combination of the bracket having the vertical arm I, provided with a tooth K, and the lower arm L, provided with a longitudinal slot M, the roller N in said slot, the hanger O, pivoted to the said arm I, the wheel Q, carried by said hanger and having a series of radial pins adapted to engage the tooth K, and the elevating-band rising from the curtain-support and passing over the wheel Q and the roller M, as set forth.

4. A curtain-fixture having its bracket provided with a swinging hanger O, the toothed wheel Q, mounted in the lower end of the hanger and adapted to engage a lug on the bracket, and the elevating-band secured to the curtain-support and passing over the toothed wheel, as set forth.

411,767. MECHANICAL TELEPHONE. WILLIAM H. EASTMAN, Concord, N. H. Filed Aug. 6, 1888. Serial No. 282,087. (No model.)



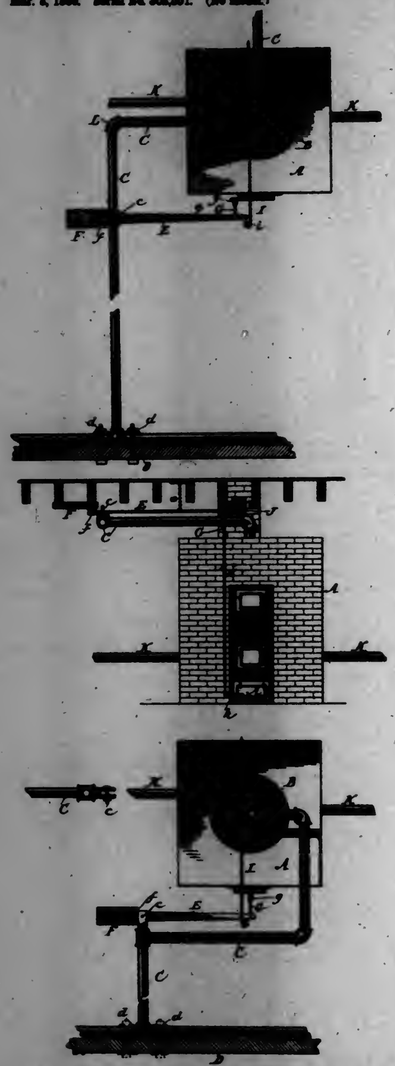
Claim.—1. In a mechanical telephone, a case or lining of glass in the rear of and inclosing the diaphragm, substantially as set forth.

2. In a mechanical telephone, the combination, with the transmission-line, of a device for deadening extraneous vibrations, consisting of a liquid-tight chamber filled with a suitable liquid, as water or

alcohol, and a vibration-conductor extending from the said chamber to the line-wire, substantially as set forth.

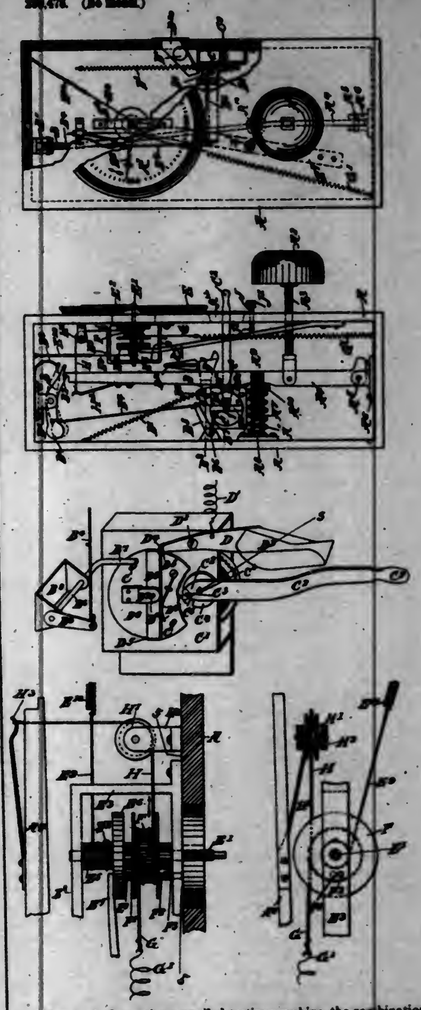
3. In a mechanical telephone, the combination, with the diaphragm, of a rider provided with metallic arms, as F F F F, said rider being suitably connected with the center of said diaphragm, and perforated to allow the passage of the line-wire, all substantially as set forth.

411,768. DRAFT-REGULATOR. WILLIAM R. HAXTUN, Kewanee, Ill., assignor to the Haxtun Steam Heater Company, same place. Filed Mar. 6, 1888. Serial No. 302,851. (No model.)



Claim.—The combination, with a furnace, a boiler, and a hot-water or steam circulating pipe held stationary at some point, but free to expand and contract with variations in temperature of the hot water or steam that flows through said pipe from the boiler, of a freely-swinging lever pivoted directly to said circulating-pipe at a distance from its fixed point, and a connection between said lever and a draft-door of the furnace, substantially as described.

411,769. COIN-CONTROLLED BLOW-TESTING MACHINE. JOHN F. KINSWILL, Chicago, Ill., assignor to T. J. Holmes, C. W. Reed, and Charles L. Wakefield, all of same place. Filed Feb. 11, 1889. Serial No. 299,670. (No model.)



Claim.—1. In a coin-controlled testing-machine, the combination of a testing apparatus, a lock therefor, a clock mechanism which controls such lock, and a coin-controlled release for such clock mechanism.

2. In a coin-controlled testing-machine, the combination of an apparatus with a lock therefor, a clock mechanism which when at rest holds such lock in engagement and when in operation leaves the same free, and a coin-controlled catch for such clock mechanism.

3. In a coin-controlled testing-machine, the combination of a testing apparatus, a lock therefor, with a clock mechanism having a movable part which when at rest holds the lock, and a coin-controlled catch for such movable part which normally holds the same locked.

4. In a coin-controlled testing-machine, the combination of a pivoted bar with a spring on one side and a striking-cushion on the other connected therewith, a lock which normally prevents the bar from rocking, a clock mechanism which controls such lock, and a coin-controlled catch for such clock mechanism which normally prevents said clock mechanism from moving and thus from releasing the lock.

5. In a coin-controlled testing-machine, the combination of a testing apparatus with a time-lock therefor independent of said testing apparatus when the same is released, and a coin-controlled catch for such lock which, when operated by a coin, releases said lock, and thereby releases the testing apparatus and after a predetermined period of time automatically again locks the same independent of any operation of said apparatus.

6. In a coin-controlled testing-machine, the combination of a testing apparatus with a lock therefor, a time mechanism which, when in operation, releases said lock for a considerable period, and a coin-controlled catch for such time mechanism which normally holds it out of operation and adapted to release the time mechanism when the coin is introduced.

7. In a coin-controlled testing-machine, the combination of a testing apparatus with a lock therefor, a clock mechanism controlling said lock, a notched disk rotated by the said clock mechanism, connections therefrom to the lock so as to hold the apparatus locked when the clock mechanism is not in motion, and a dog which engages a notch on each disk at one end and locks the disk and carries a scoop at the other to receive the coin and release the dog from said disk and allow the same to rotate and release said apparatus.

8. In a coin-controlled testing-machine, the combination of a testing apparatus with a lock therefor, a clock mechanism, a disk rotated by the said clock mechanism, and connections therefrom to the lock, so as to hold the apparatus locked when the clock mechanism is not in motion, a dog which engages a notch on each disk at one end and carries a scoop at the other to receive the coin, and a spring-bar pivoted on each disk adapted as soon as the dog is raised to slip under the end thereof and prevent the clock mechanism from again being locked until it has made a portion of its revolution.

9. In a coin-controlled testing-machine, the combination, with mechanism the movement of which is to be registered, of a dial with a hand which moves over the same, a shaft to which the hand is secured, a drum loosely mounted on such shaft, flexible connections between said drum and said mechanism, whereby the drum is rotated in one direction when such mechanism is operated, a spring to return the drum to its normal position, and two pins—one on such shaft and one on such drum—so that when the drum is rotated in one direction it carries the shaft and hand with it, but does not so carry them when rotated in the opposite direction.

10. In a strength-testing machine, the combination of mechanism the movement of which is to be registered, a dial, a shaft carrying a hand to move over the dial, a drum loosely mounted on such shaft, a flexible connection between said drum and said mechanism to rotate the drum in one direction, a spring connected with the drum to return the same to its normal position, pins on the shaft and drum to cause the shaft to rotate in one direction with the drum, a spring connected with and adapted to return the shaft and its hand to zero, and stops or pins to prevent the shaft rotating in the opposite direction past zero, substantially as described.

11. In a coin-controlled testing-machine, the combination, with mechanism the movement of which is to be registered, of a dial with a hand which moves over the same, a frame, a shaft to which the hand is secured, a drum loosely mounted on such shaft, flexible connections between such drum and mechanism to rotate the drum in one direction, and four pins—two on the drum, one rigid with the shaft, and one rigid with the frame—those on the drum adapted to engage the other two in opposite directions, so that the drum cannot move beyond a certain point in one direction and when traveling in the other direction may carry the shaft with it.

12. In a coin-controlled strength-testing machine, the combination of a spring rocking-bar and a striking-cushion attached thereto, a rotary shaft having an indicating-hand attached thereto, a rotary drum loosely mounted on said shaft, means to lock the shaft to the drum when rotating in one direction, springs to return the shaft and drum to their normal positions, and a cord connecting the free end of said rocking-bar with said drum to rotate the same and the hand, substantially as described.

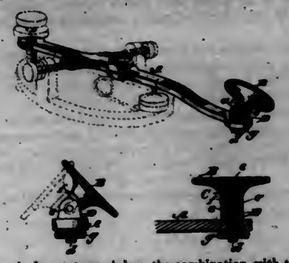
13. The combination, with a registering mechanism, of a spring rocking-bar connected with and adapted to operate said mechanism, a lock for the bar to hold the same rigid, and a coin-controlled lever or catch adapted, when operated by a coin, to release said lock and hence the bar, as and for the purpose set forth.

14. The combination of a rocking-bar, a pivoted lock or catch for the bar, a rock-shaft connected with said lock to release said bar, a clock mechanism to operate said shaft, and a coin-controlled catch for said clock-work which, when operated by a coin, releases the clock and thereby unlocks the bar for a predetermined period of time, as and for the purpose set forth.

15. The combination, with mechanism the movement of which is to be registered, of a time-lock for said mechanism which, when operated, releases the mechanism and after a predetermined time automatically relocks the same independent of any movement of the mechanism, said time-lock comprising a lock and clock-work controlling the same, and a coin-controlled release for the clock-work, substantially as described.

16. The combination, with a case and mechanism the movement of which is to be registered, of a time-lock for said mechanism comprising a lock and clock-work controlling the same, means connected with the winding-shaft of said clock-work and extending to the exterior of the case, whereby the clock-work can be wound up, and a coin-controlled release and lock for the clock-work, substantially as described.

411,770. TELEGRAPH-KEY. HARRY S. THEIS, HANNAS G. LANE, and VIRTUS OSBORN, Washington, D. C. Filed Dec. 15, 1888. Renewed Mar. 11, 1889. Serial No. 302,963. (No model.)



Claim.—1. In a telegraph-key, the combination, with the vibrating key-lever, of a button mounted thereon and adjustable to either side of said lever, substantially as and for the purpose specified.

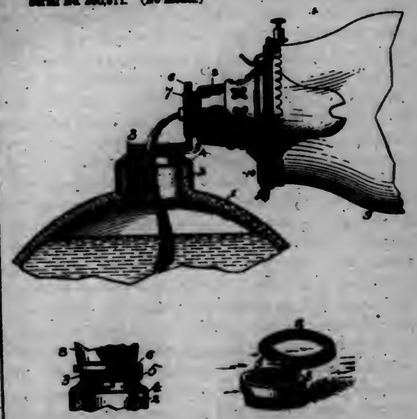
2. In a telegraphic key, the combination, with the key-lever, of a button connected thereto by a universal joint and mechanism whereby the button may be held in any position to which it may be adjusted, substantially as specified.

3. The combination, with the vibratory key-lever of a telegraph-instrument, of a button adjustable upon said key-lever to bring the top or top surface of said button into planes of different inclinations upon all sides of a vertical line passing through the pivoted axis of said button, substantially as described, and for the purpose specified.

4. In combination, the button B, screwed upon a threaded shank C, pivoted to the lug D, carrying a jam-nut *g*, substantially as shown and described.

5. In combination, the button B, screwed upon the screw-threaded shank C, pivoted to the lug D, carrying a jam-nut *g* and a washer *f*, interposed between the top of the bifurcated lug D and the bottom of the button B, all constructed and arranged substantially as shown and described, and for the purpose specified.

411,771. LAMP. CLIFFORD P. THAYER, Holbrook, assignor of one-half to Charles Sumner Bates, Braintree, Mass. Filed Nov. 14, 1888. Serial No. 290,811. (No model.)



Claim.—1. The herein-described device, consisting, essentially, of two internally-threaded rings hinged together, to swing toward and from each other, substantially as described.

2. As a new article of manufacture, the herein-described device, comprising two hinged internally-threaded rings, one of which is also externally threaded, substantially as described.

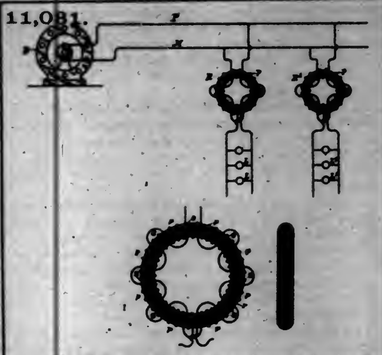
3. In a lamp, the combination, with the oil-reservoir and the burner, of two hinged internally-threaded rings, one of which is secured to the oil-reservoir, substantially as described.

REISSUES.

11,031. SYSTEM OF ELECTRICAL DISTRIBUTION. RANKIN KENNEDY, Glasgow, County of Lanark, Scotland, assignor, by mesne assignments, to the Westinghouse Electric Company, Pittsburg, Pa. Filed Aug. 23, 1889. Serial No. 321,251. Original No. 407,204, dated July 16, 1889.

Claim.—The method of distributing and regulating alternating electric currents by secondary generators, which consists in producing in two or more derived circuits constituting the primaries of two or more secondary generators a counter electro-motive force which, when any secondary is open, is practically equal to the applied electro-motive force in its primary and in controlling said electro-motive force by the current flowing in the corresponding secondary when the secondary is closed in such manner that the current in the primary shall

11,031.



vary with and be approximately inversely proportional to the resistance in the secondary, substantially as described.

PHOTO LITH NORRIS PETERS WASH'N D.C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of New York.

KREMENTZ *v.* COTTLE COMPANY.

Decided June 21, 1889.

KREMENTZ—COLLAR-BUTTON.

The patent granted to complainant May 6, 1884, for a collar or sleeve button having a hollow head and stem, the said head, stem, and the base-plate or back of the said button being shaped and made of a single continuous piece of sheet metal, is void for want of novelty. The Stokes patent, No. 171,882, January 4, 1876, covers a button composed of a single piece of sheet metal, the only difference being that the head is flat and solid instead of round and hollow, like complainant's; and the Keats patent, No. 177,353, May 9, 1876, also covers a button made of a single piece of sheet metal having a hollow head and hollow stem of the same form as complainant's.

ON FINAL hearing upon bill for infringement of patent.

Mr. Louis C. Roegener for the complainant.
Mr. Edwin H. Brown for the defendant.

WALLACE, *J.*:

The patent in suit granted to complainant May 6, 1884, is, in the words of the claim, for—

a collar or sleeve button having a hollow head and stem, the said head, stem, and the base-plate or back of the said button being shaped and made of a single continuous piece of sheet metal, substantially as shown and described.

The specification and drawings describe and illustrate a button in the form of a stud. It is made of a single piece of metal without soldering or joints. By means of any suitable dies a metal plate is pressed into the form of a cap, with a flange or rim at the bottom, and then the sides of the cap are pressed together about the middle in any suitable manner to form the head and stem.

The prior state of the art may be sufficiently understood by referring to only two of the several earlier patents in the record.

The patent to Stokes, No. 171,882, granted January 4, 1876, describes a stud composed of one piece of sheet metal, in which the head and stem are made by striking them up or raising them out of the metal base-plate by means of a punch and die. The stud is of substantially the same form as the stud of the complainant's patent, except that the head is flat instead of round, the stem is hollow, and the head is solid.

The patent to Keats, No. 177,353, granted May 9, 1876, describes a button or stud made of a single piece of sheet metal having a hollow head and hollow stem, and is of the same form as the stud of the complainant's patent. It has an extra shank or base-plate. In making it the sheet-metal blank is formed in two sections having the desired configuration, one of which is doubled over upon the other, and the edges are brought together by lateral pressure.

It thus appears by the two prior patents referred to that the complainant was not the first to make a hollow stud, or a hollow stud from a single piece of metal, or a stud from a single continuous piece of metal, or a partly hollow stud from a single continuous piece of metal. So far as appears he was the first to make a stud from a single continuous piece of metal in which the head was hollow and round in shape. The stud of the Stokes patent would be his if the head were not flat and preferably solid, instead of being round and hollow. The stud of the Keats patent would be his if it were not folded over and joined by lateral pressure at the sides, so as not to be made of a continuous piece of metal. For the particular use for which the Stokes stud was designed a flat and solid head was preferable, and for the particular use for which the Keats stud was designed a joint or seam at the sides was not objectionable. For the use for which the complainant's stud was designed a round head was preferable, and a seam at the sides was objectionable. He desired to improve upon his predecessors by making a stud without a seam, and thus obviate the necessity of soldering, and which should be hollow throughout and thereby save material; and he desired to make a stud differing somewhat in details of the configuration of the parts from that of Stokes or Keats. The idea and the method of making a seamless stud out of a single continuous piece of metal was suggested and fully shown by the patent of Stokes, and the idea and method of saving material by having the entire stud hollow was suggested and fully shown by the patent to Keats. It is not open to reasonable doubt that any competent mechanic versed in the manufacture of hollow sheet-metal articles having before him the patents of Stokes and Keats could have made these improvements and modifications without exercising invention and by applying the ordinary skill of the calling. Indeed, the stud of the Stokes patent alone is a substantial anticipation of the complainant's patent. The different manipulation of the blank necessary to introduce the desired modifications of form, and the hollow head, which distinguish the studs, was within the obvious knowledge of the skilled mechanic.

It must be held that the patent is invalid for want of novelty. The bill is dismissed, with costs.

U. S. Circuit Court—District of Massachusetts.

RAYMOND *et al. v.* BOSTON WOVEN HOSE COMPANY.

Decided July 12, 1889.

INFRINGEMENT—INJUNCTION.

A preliminary injunction against the infringement of a patent will be denied where plaintiff does not show a prior adjudication sustaining the validity of the patent, or public acquiescence on which a presumption of validity may be based and where it does not clearly appear that there is an infringement.

BILL TO restrain infringement of patent.

Messrs. Clarke & Raymond for the complainants.
Mr. David Hall Rice for the defendant.

COLT, *J.*:

The complainants are the owners of two patents, numbered, respectively, 197,716 and 197,717, dated December 4, 1877, granted to J. A. Caldwell, the first being for an improved strap for securing hose to the coupling and the second for an implement for fastening such hose-straps. The defendant is charged with infringement of these patents. The present hearing is upon a motion for a preliminary injunction. The first ground of defense is that the plaintiffs have shown neither prior adjudication sustaining the validity of the patents nor public acquiescence upon which a presumption of validity may be based, and that therefore whatever the decision of the court may be upon final hearing on the merits the present motion, under a well-settled rule of law, must be denied. I think this point is well taken. It is admitted that there has been no prior adjudication upholding the validity of these patents. As to public acquiescence, the evidence goes to prove that this strap and implement have never been put upon the market. The reason assigned by the complainants for not making and selling the Caldwell strap—namely, that it is more costly than the Adlan and Earle straps—does not affect the question of public acquiescence. In the absence of the manufacture and sale of the patented article it can hardly be said that there has been public acquiescence. If nobody had use for the article during the time of the alleged acquiescence, or its merits were priced so low that nobody cared to adopt it, no lapse of time has any tendency to raise a presumption that the patent is valid. (Walk. Pat., section 668.) But further than this, I have some doubt on the question of infringement. As to the tool patent, I have serious doubt whether the defendant infringes. The claim of the patent specifically recites that the grooves or notches in the jaws of the pivoted levers shall be located out of line with each other, and this feature seems to be necessary for the practical working of the tool when applied to fastening a Caldwell hose-strap. In the Hudson, or alleged infringing tool, we find in place of notches out of line two holes punched in the jaws in alignment with each other. In the case of the strap patent it must be admitted that the question of infringement is closer. The specification states that the band is made of self-anncaled wire, of such length that the enlarged ends will extend beyond and overlap each other, so as to admit of their being twisted by turning the implement, whereby they are locked or hooked together, and the portion of the hose under the band is thus forced into the corrugations of the coupling and securely held. A wire band provided with enlarged ends is one of the main features of the claim of the patent. The defendant's hose-band does not have the enlargement shown in the Caldwell band, though I am aware that the language of the specification is very broad on this point. The defendant uses hooks at the end of the band instead of the Caldwell enlargements. I do not think the defendant's band, in spite of the opposite contention, can be practically applied with the Caldwell tool. The manner of operation and the purpose of the defendant's hooks cannot be said to be the same as the Caldwell enlargements. Construing these patents in the light of the prior state of the art, I am not free from doubt on the question of infringement.

Upon all the facts of this case as presented in the papers before me I am satisfied that the motion for a preliminary injunction should be denied.

REPORT OF THE COMMISSIONER OF PATENTS

FOR THE FISCAL YEAR 1888-1889.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 16, 1889.

SIR: I have the honor to submit the following report of the business of this Office for the fiscal year ended June 30, 1889:

Received:	
Applications for patents	36,740
Applications for design patents	908
Applications for reissue patents	101
Applications for registration of trade-marks	1,981
Applications for registration of labels	772
Caveats	2,345
Total	42,047
Number of patents granted, including reissues and designs	21,518
Number of trade-marks registered	1,111
Number of labels registered	312
Total	22,941
Number of patents withheld for non-payment of final fees	2,858
Number of patents expired	11,980

Receipts and Expenditures.

Receipts from all sources	$1,186,557 22
Expenditures (including printing and binding, stationery, and contingent expenses)	999,697 24
Surplus	$186,859 98

Balance in the Treasury of the United States on account of the Patent fund.

June 30, 1888	$3,337,666 65
June 30, 1889	186,859 98
Total	$3,524,526 63

Comparative Statement.

	Receipts.	Expenditures.
June 30, 1885	$1,074,974 35	$970,277 58
June 30, 1886	1,206,167 80	991,839 41
June 30, 1887	1,150,046 05	981,644 09
June 30, 1888	1,122,994 83	953,720 14
June 30, 1889	1,186,557 22	999,697 24

Comparative Statement showing the increase in the number of applications for Patents, including Reissues, Designs, Trade-Marks, and Labels.

June 30, 1885	35,688
June 30, 1886	38,678
June 30, 1887	38,408
June 30, 1888	37,769
June 30, 1889	39,702

Number of applications awaiting action on the part of the Office.

July 1, 1885	5,786
July 1, 1886	6,772
July 1, 1887	7,001
July 1, 1888	7,227
July 1, 1889	7,073

From the foregoing it will be seen that the total number of applications received, including designs, reissues, &c., was 42,047; that the number of patents granted was 22,941; that the total receipts were $1,186,557.22; that the total expenditures were $999,697.24, leaving a surplus of $186,859.98 to be turned into the Treasury of the United States to the credit of the patent fund, and making a total balance in the Treasury on account of the patent fund of $3,524,526.63.

CONDITION OF BUSINESS.

At the close of the fiscal year 1888-1889 the business of the Patent Office was in a satisfactory condition as compared with former years. The examinations of applications for patents carried on in twenty-four of the thirty examining divisions had been brought up to within two months of that date, and of the remaining six divisions one-half were less than three months in arrears. I find in the Commissioner's report for the fiscal year ending in 1887 the statement that the condition of the work in the bureau, then existing, would compare favorably with any previous year, coupled with the statement that only one division was in arrears over six months and only seven exceeding three months. It will be observed that the present condition is still more satisfactory. It is believed, however, that the arrears in work in all the divisions can be practically done away with at an early date through the cordial co-operation of the force with the efforts of the Commissioner.

THE NECESSITY OF ADDITIONAL ROOM.

That the work of the Office may be promptly dispatched it is indispensable that more room and better facilities should be provided. I can add nothing upon this subject to what has been urgently said by my predecessors, except to allude to representative instances showing the crowded condition of the rooms in which the work is sought to be accomplished. The room occupied by Division XXVIII has nineteen by twenty-three feet of floor-space. In it are nine desks, occupied by nine men and women. In addition to the desks are book and file cases arranged against the wall and extending upon all sides of the room. In the room occupied by Division V the floor-space is thirty-five by twenty feet in extent. In it are ten desks occupied by ten persons. Book and file cases extend around the room on every side. These instances differ only in degree from nearly all the rooms devoted to the business of this Bureau. I share in the belief entertained by Commissioner Hall that the saving which would be effected by supplying the Patent Office with sufficient room and adequate conveniences, accompanied by the suitable rearrangement of the location of the divisions with reference to each other, would be sufficient to pay the rental for a building adequate to the needs of an entire bureau.

LEGISLATION.

It is, I believe, generally conceded that legislation is needed amendatory of the Revised Statutes relating to patents. Some of the provisions which should be altered are section 4885, relating to the date of patents; section 4887, relating to the duration of patents for inventions previously patented in a foreign country, and section 4936, relating to reimbursement of moneys paid by mistake into the Treasury. Other sections could be amended to the advantage of the patent system. More specific suggestions will be made upon this subject in my report to Congress. The opinion is

indeed gaining ground that a revision of the patent act would be of advantage not only to the inventor but to the public generally.

DECISIONS OF FEDERAL COURTS.

An opinion has found expression that the policy of the Patent Office in adjudicating upon questions arising in the granting of patents should conform more nearly to the decisions of the Federal courts. There can be no doubt of the correctness of this view, and accordingly it would be wise for Congress to require the clerks of the Federal courts to furnish certified copies of all decisions and opinions in patent causes for publication in the OFFICIAL GAZETTE.

COMPENSATION OF PRINCIPAL EXAMINERS.

I cannot close this report without directing attention to the fact that some of the employés of this Bureau are grossly underpaid. The most conspicuous instance of this character is the compensation of Principal Examiners. The Revised Statutes fix the salaries of these officers at $2,500 per annum. This sum was established by Congress in the year 1848. (9 Statutes at Large, 231.) It has never been increased. On the contrary the amount appropriated for a number of years has been $2,400. These examiners are experts of the highest order. Their duties call for superior legal ability. As heads of divisions they must have executive capacity. They frequently resign their positions for the simple reason that they can do better for themselves in a private capacity. Two have resigned for that reason since the present Commissioner assumed office in April last. I believe that a public sentiment has at last developed that will sustain Congress in providing that the Principal Examiners of the Patent Office shall be fairly and fully paid.

Very respectfully, your obedient servant,

C. E. MITCHELL,
Commissioner.

THE SECRETARY OF THE INTERIOR.

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AND OF

UNITED STATES COURTS

IN THE MATTER OF

PATENTS, TRADE-MARKS, &c.

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DIGEST OF DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS

IN THE MATTER OF

PATENTS, TRADE-MARKS, &c.

OFFICIAL GAZETTE—July-September, 1889.

DIGEST OF DECISIONS.

[Decisions of United States courts designated by an asterisk (*).]

ABANDONED APPLICATIONS.

1. EFFECT OF ALLUSION IN A PATENT TO ABANDONED CLAIMS IN A FORMER APPLICATION ON QUESTION OF DILIGENCE.

When an applicant, who is also patentee of an invention other than that involved in controversy, alludes in his patent to abandoned claims in a former application, the only effect that can be given to such reference is as evidence of continued interest in the subject-matter of the earlier application and of diligence in seeking to perfect and patent the invention; but such an allusion can have no effect whatever in that direction when the former application had been for nearly two years unprosecuted, and all the claims therein which had any relationship to his pending application had been deliberately stricken out and positively abandoned at the time the patent was issued.

[Beach *v.* Fowler, 821.

2. SAME—ABANDONED APPLICATION NOT A BAR TO SUBSEQUENTLY GRANTED PATENT.

An abandoned application cannot of itself constitute a bar to a subsequently granted patent. [Id.

3. SAME—PROOF OF DATE OF CONCEPTION BY ABANDONED APPLICATION.

If the thing described in the abandoned application is the same invention that is subsequently patented, it certainly does establish conception of the invention as of its own date, and if proof *dehors* the patent establishes reduction to practice or introduction into public use, and the time of the reduction to practice or of public use is in dispute, then the application shows that reduction to practice *might* have taken place at any time subsequent to its date; but when, as in the present case, there is no proof even of experiment, it can have no other effect than to establish the date of conception of the invention which it discloses. [Id.

4. COPIES OF ABANDONED OR REJECTED APPLICATIONS.

Whenever a reasonable suggestion of its necessity for the purposes of evidence is made by the person requesting it, the Commissioner of Patents cannot lawfully refuse to furnish a certified copy of an abandoned or rejected application for a patent. The right to be furnished such a copy is given to the public by statute, and the refusal thereof entitles the applicant to the writ of *mandamus* against the Commissioner to compel a compliance with such request.

[*United States *ex rel.* Pollok *v.* Hall, Commissioner of Patents, 1263.

5. SAME—MANDAMUS TO OBTAIN.

An attorney at law who has requested such a copy in behalf of his client and been refused has such an interest in the subject-matter as entitles him to commence proceedings in his own name as relator for the writ of *mandamus*. [*Id.

ABANDONED CLAIMS.

(See Abandoned Applications, 1; Priority of Invention.)

ACCESS TO ABANDONED OR REJECTED FILES.

(See Abandoned Applications, 4, 5.)

AMENDED BILL.

(See Suits for Infringement.)

AMENDMENTS.

(See Appeal to Examiners-in-Chief, 1; Motion to Dissolve Interference, 4.)

AMENDMENTS TOUCHING THE MERITS UNDER RULE 68.

When an amendment touching the merits is presented nearly two years after the case is in condition for appeal to the Examiners-in-Chief, and no showing or attempt at any showing whatever is made why the amendment was not presented earlier, a petition that the case be reopened and that applicant be heard upon the amendment must be denied.

[*Ex parte* Cordrey, 397.

ANALOGOUS DEVICES.

(See Infringement, 1, 2, 4.)

ANTICIPATION.

(See Invention, 2, 3; Particular Patents, 7, 9, 17.)

APPEAL.

(See Interference, 3, 4, 5, 6, 7.)

APPEAL TO EXAMINERS-IN-CHIEF.

(See Amendments.)

OBJECTIONS GOING TO THE MERITS.

When applicant claims the combination of a "stitch-forming and cloth-feeding mechanism" in a sewing-machine and "an automatic expansible or yielding hemmer and feller," and the examiner objects to the claim for the reason that the "means for securing an automatic action of the hemmer and feller" and "the means for securing an expansible or yielding action thereof" are not stated, and the applicant insists that his invention resides in a combination of which the peculiar hemmer and feller is an element, irrespective of the mere means by which its automatic action or its expansible or yielding action is secured, *Held* that the objection of the examiner presents a question of fact which relates to the merits, upon which applicant has a right of appeal to the Examiners-in-Chief.

[*Ex parte* Laskey, 539.

ASSIGNMENTS.

(See Use of Patented Articles, 1, 2.)

1. CONDITION IN ASSIGNMENT.

A provision in an assignment of a patent, that the net profits arising from sales, royalties, settlements, or other sources are to be divided between the parties to the assignment, so as to give the patentee one-fourth thereof, does not in any respect modify or limit the absolute transfer of title.

[*Rude *et al.* *v.* Westcott *et al.*, 220.

2. SAME.

Nor does a clause appointing the assignees attorneys of the patentee, with authority to use his name whenever they deem proper in the management of the business connected with the ownership of the patent, restrict in any way the interest or power of the assignees. Such a clause is simply unnecessary.

[*Id.

ATTORNEYS.

(See Abandoned Applications, 5; Assignments, 2.)

BAR TO PATENT.

(See Abandoned Applications, 2.)

CHANGE OF STRUCTURE.

(See Infringement, 1.)

CLAIMS.

(See Appeal to Examiners-in-Chief.)

PROVINCE OF CLAIMS.
It is the province of claims to relegate to the specification the enumeration of such details of construction as shall be found upon examination to be immaterial to the true scope of the actual invention. The object of enumerating these parts is to enable persons skilled in the art to practice the invention in the form set out in the patent, but not to so limit the claim of the inventor as to make it the easy prey of the infringer.
[*Ex parte* Laskey, 539.

COMBINATIONS.

(See Appeal to Examiners-in-Chief; Joinder of Invention; Particular Patents, 4.)

COMBINATIONS—PATENTABILITY.
The rearrangement of an old combination, when each element operates practically as before, is not patentable unless a new or greatly-improved result is obtained.
[*Consolidated Roller Mill Company *v.* Coombs, 255.

COMMISSIONER OF PATENTS.

(See Abandoned Applications, 3, 4; Interference, 3, 4, 5, 6, 7.)

CONCEPTION OF INVENTION.

(See Abandoned Applications, 3.)

CONSTRUCTION OF CLAIMS.

CONSTRUCTION OF CLAIMS.
Claims of patents should receive such interpretation as will enlarge or restrict them, so as to cover the actual invention when not absolutely inconsistent with the language used by the patentee. (*Winans* v. *Denmead*, 15 How., 330; *Van Marter* v. *Miller*, 15 Blatchf., 562.) If, upon the one hand, the state of the art shows the invention to have been a narrow one, a strict interpretation will be given the claims. (*Manufacturing Co.* v. *Ladd*, 102 U. S., 408.) And it is of no practical consequence whether such restrictions are imposed by the Patent Office or not. (*Toepfer* v. *Goetz*, 41 O. G., 943.) If, upon the other hand, the patentee has taken a decided step in advance of the state of the art at the time his application was filed, the courts will, if possible, construe the language of his claim so as to give him the full benefit of his improvement. (*Turrill* v. *R. R. Co.*, 1 Wall., 491; *Rubber Co.* v. *Goodyear*, 9 Wall., 788.)
[*Consolidated Roller Mill Company *v.* Coombs, 255.

CONSTRUCTION OF RULES.

(See Interference, 3, 4, 5; Motion to Dissolve Interference.)

CONSTRUCTION OF SPECIFICATIONS AND PATENTS.

(See Invention; Particular Patents, 2; Reissues.)

CONSTRUCTION OF STATUTES.

(See Interference, 5.)

CONTEMPT OF COURT.

(See Motion for Attachment for Contempt.)

COPIES OF ABANDONED OR REJECTED FILES.

(See Abandoned Applications, 3, 4.)

DAMAGES AND PROFITS.

(See Master's Report.)

1. MEASURE OF DAMAGES—ROYALTIES.
In order that a royalty may be accepted as a measure of damages against an infringer who is a stranger to the license establishing it, it must be paid or secured before the infringement complained of; it must be paid by such a number of persons as to indicate a general acquiescence in its reasonableness by those who have occasion to use the invention, and it must be uniform at the places where the licenses are issued.
[*Rude *et al. v.* Westcott *et al.*, 399.

2. SAME—PROOF OF DAMAGES.
Where complainants have failed to establish a royalty as measure of damages, and no evidence of the value of the invention to defendants is adduced, except the conjectural estimates of witnesses who had no practical knowledge of the subject, a decree for anything more than nominal damages cannot be sustained.
[*Id.

DELAY.

(See Abandoned Applications, 1; Amendments; Priority of Invention; Reissues, 3.)

DILIGENCE.

(See Abandoned Applications, 1.)

DIVISION OF APPLICATION.

(See Joinder of Invention; Separate Patents.)

1. PATENTS UPON DIVIDED APPLICATIONS—VOID PROCESS.
Under Rule 41, Rules of Practice of the Patent Office, as interpreted by *ex parte Blythe* (30 O. G., 1321) and *ex parte Herr*, (41 O. G., 463,) two patents in which the description was substantially the same, No. 348,072 for a composition for transfer surfaces for producing copies of type-writing, and No. 348,073, for a process of reproducing surfaces for type-writing and manifolding, were obtained with a single claim on each, instead of one patent with two different claims, each embodying one of the above inventions. Suit for infringement was instituted upon Patent No. 348,073 alone. *Held* that the claim of this patent covering the mere taking of a coloring substance already known and applying it to paper did not involve invention, and in view of the state of the art the patent is void.
[*Underwood *et al. v.* Gerber *et al.*, 116.

2. DIVISION—PROCESS AND APPARATUS.
Division of an application should not be demanded unless there is in the given case such a total want of interdependence between the two matters claimed as would render them absolutely independent and distinct inventions.
[*Ex parte* McMahan, 255.

3. SAME.
When the apparatus cannot operate for any other purpose than to carry out the process, and the process can be carried out only by a machine operated substantially upon the principle of that shown by the applicant, division should not be required.
[Id.

4. SAME.
In such case there is no reason for requiring a division upon the ground that the examination of the Office would be facilitated, because the field of search is precisely the same whether the application is divided or not.
[Id.

DRAWINGS.

ALTERATIONS OF DRAWINGS.
When a figure is added to an original drawing on file in the Office, without direction or permission of the Office, it must be erased or canceled, even though it has been added in good faith.
[*Ex parte* Cordrey, 397.

ENLARGEMENT OF CLAIMS.

(See Particular Patents, 1, 14, 18, 20; Reissues.)

EQUIVALENTS.

(See Particular Patents, 4, 21.)

EVIDENCE.

(See Infringement, 3; Interference, 1, 2; Testimony before Examiner.)

EVIDENCE OF INVENTION.

(See Invention, 1.)

EXAMINATION OF APPLICATIONS.

(See Amendments; Appeal to Examiners-in-Chief; Joinder of Invention.)

EXAMINERS.

(See Interference, 3, 4, 5.)

EXAMINERS-IN-CHIEF.

(See Appeal to Examiners-in-Chief.)

INFRINGEMENT.

(See Infringement, 5, 8, 11; Injunction, 2; Particular Patents, 2, 21, 22; Trade-Marks, 4.)

1. CHANGE OF FORM BUT PRODUCING SAME RESULT.
The combination covered by the third claim of plaintiffs' patent, which includes an inclined and retreating anvil to sustain the wire of the staple while being bent and to support the staple while being driven, is infringed by defendant's device having a two-part anvil, which, though different in form, accomplishes the same result in the same way.
[*Thompson *et al. v.* American Bank Note Company, 540.

2. SAME.
The only difference between the two gripping devices is that the pulleys in the defendant's device are connected with the movable jaw, while in the device of the patent they are connected with the fixed jaw; and in the patented devices the movement of the lower jaw to release the cable is a vertical movement both as respects the fixed jaw and the pulleys, while in the defendant's apparatus the movement of the lower jaw is a vertical movement as respects the fixed jaw, but not as respects the pulleys. These are merely formal differences. They do not involve any inventive thought and are immaterial as respects the function and mode of operation of the parts of the combination.
[*Root *v.* Third Avenue Railroad Company, 674.

3. INFRINGEMENT CONDUCTED SECRETLY.
In a suit for an alleged infringement conducted secretly in a manufactory reliable evidence tending to show such infringement must be produced. The plaintiff cannot depend upon the chance of obtaining evidence to support the charge from the defendant and his workmen or from an inspection of his machinery.
[*Dobson *et al. v.* Graham, 976.

4. INFRINGEMENT—OMISSION OF PART OF A COMBINATION.
Defendant's lock was substantially identical with the lock of the defendant in *Yale Lock Co.* v. *Berkshire Nat. Bank*, except that in the latter there was an additional dog controlled by the time mechanism, which dog added nothing to the efficiency or value of the lock. The defense of that case was assumed by a lock company, or its president, who afterward became president of defendant, and all the questions presented here were presented in that case. On the authority of that case *Held* that defendant's lock was an infringement.
[*Yale & Towne Manufacturing Company *et al.* v. Consolidated Time Lock Company, 1399.

INJUNCTION.

(See Motion for Attachment for Contempt.)

1. PRELIMINARY INJUNCTION—STAY OF.
It is well settled that while a patent may be adjudged valid and the defendant an infringer the award of a preliminary injunction is purely a matter of discretion, and courts are in the habit of withholding it upon such terms as to the giving of a bond and the like as may seem just and equitable, having regard to the comparative injury that will result to the parties by granting or withholding it.
[*Consolidated Roller Mill Company *v.* Coombs, 973.

2. INJUNCTION AFTER FINAL DECREE—SAME.
The power of the court to stay an injunction, even after final decree, not denied.
[*Id.

3. INFRINGEMENT—INJUNCTION.
A preliminary injunction against the infringement of a patent will be denied where plaintiff does not show a prior adjudication sustaining the validity of the patent, or public acquiescence on which a presumption of validity may be based and where it does not clearly appear that there is an infringement.
[*Raymond *et al. v.* Boston Woven Hose Company, 1776.

INTERFERENCE.

(See Motion to Dissolve Interference; Priority of Invention.)

1. MOTION TO DISSOLVE INTERFERENCE UPON THE GROUND OF ESTOPPEL BY OATH OF APPLICANT TO A PRELIMINARY STATEMENT AND BY THE TESTIMONY OF HIS WITNESSES IN A PREVIOUS INTERFERENCE WHEREIN HE WAS ONE OF TWO JOINT APPLICANTS.
An applicant in a pending interference who claims to have been the sole inventor is not estopped by reason of his oath in a preliminary statement in a previous interference, wherein he was one of two joint applicants, nor by the testimony of his witnesses in that interference, from correcting an error, if an error can be shown to exist, as to the date when his invention went into public use, when the former statement of applicant and testimony of his witnesses were made with reference to an interference proceeding in which the question of two years' prior public use was not directly in issue.
[Mead *v.* Brown, 397.

2. SAME.
In such a case there is no irregularity in declaring the pending interference, and a motion to dissolve such interference upon the ground that the party claimed to be estopped has no legal standing in the Office will be denied.
[Id.

3. MOTION TO DISMISS AN APPEAL FROM DECISION OF PRIMARY EXAMINER GRANTING OR DENYING A MOTION TO DISSOLVE AN INTERFERENCE ON THE GROUND THAT NO INTERFERENCE IN FACT EXISTS UNDER RULE 122.
From a decision of the Primary Examiner granting or denying a motion to dissolve an interference on the ground that no interference in fact exists, an appeal lies to the Commissioner under the first paragraph of Rule 124 without any reference whatever to the reasons which the examiner may give for deciding the motion either affirmatively or negatively.
[Von Weisbach *v.* Lungren, 537.

4. SAME.
A motion to dismiss such appeal on the ground that the decision of the Primary Examiner is affirmative of appellant's right to a patent, that the law makes no provision for appeal from such favorable decision, and that the Commissioner of Patents is without jurisdiction of said appeal, must be denied.
[Id.

5. JURISDICTION OF THE COMMISSIONER.
The ultimate authority under the statute upon the question whether an interference exists in fact is "the opinion of the Commissioner," (Rev. Stats., sec. 4904,) and it is more than doubtful whether a construction of Rule 124 which would deprive the Commissioner of jurisdiction could possibly be a valid one.
[Id.

6. MOTION TO DISSOLVE—APPEAL.
No appeal lies to the Commissioner from a decision upon a motion to dissolve except upon the ground that there is no interference in fact, or that there has been such irregularity in the declaration as to preclude a proper determination of the question of priority.
[Manny *v.* Easley *v.* Greenwood, Jr., 536.

7. SAME—JURISDICTION.
Where it appears upon the face of the papers that the real ground of a motion to dissolve relates to the merits, the Commissioner will not take jurisdiction either by appeal or petition.
[Id.

8. FAILURE TO DECLARE INTERFERENCE.
The fact that in such case the Office failed to declare an interference prior to the issue of the patent does not establish the fact that there is no conflict between the application and the patent.
[Bechman *v.* Johnson, 673.

9. SAME—DECLARING ISSUE.
When it appears that one party to an interference cannot be allowed a method claim while the other party bars the way, the issue covering the method practiced is properly declared, in spite of minor differences in the conflicting claims.
[Beach *v.* Fowler, 921.

INTERFERENCE BETWEEN A PATENT AND A PENDING APPLICATION.

(See Interference, 8; Motion to Dissolve Interference, 1, 2, 3.)

INVENTION.

(See Division of Application, 1; Particular Patents, 10, 12, 16.)

1. Change of Method—Process.
A change in the method of making an article of manufacture producing a different and beneficial result, although the difference consists only in improving or cheapening the article, and the change and its advantages not having been seen or made by others interested in seeing and making it, is sufficient evidence of invention to sustain a process patent.
[*Zinsser *et al. v.* Kremer, 114.

2. Change of Location of Parts.
The defendant's entire machine is simply a rearrangement of the Gray combination for the obvious purpose of an attempt to avoid his patent. The result attained by both combinations is the same. The means adopted to attain such result differ only in the location of the several elements and such dependent differences as are made necessary by such change of location.
[*Consolidated Roller Mill Company *v.* Coombs, 253.

3. Mechanical Skill.
Any differences in construction and material between the structure described by the first claim of the Hovey patent and the devices covered by the prior patents and used by the Clay Street Hill Road do not constitute invention, but merely involve ordinary mechanical skill, and are not patentable.
[*National Cable Railway Company *v.* Mt. Adams & Eden Park Inclined Railway Company, 1400.

ISSUE IN INTERFERENCE.

(See Interference, 9.)

JOINDER OF INVENTION.

1. Elements of the Same Machine.
When one particular element of a machine is dependent upon and acts with the other elements thereof to produce a single result, it may be claimed in the same application with them without regard to the Office classification.
[*Ex parte* Coe, 1119.

2. Apparatus Attached.
An apparatus attached to a photographer's lamp for feeding a magnesium spray to the flame may be claimed in the same application with other parts of the lamp.
[*Ex parte* Jlinsky, 1399.

JURISDICTION.

(See Interference, 7.)

LICENSES.

(See Use of Patented Articles.)

MACHINES.

(See Joinder of Invention, 1.)

MANDAMUS.

(See Abandoned Applications, 3, 4.)

MASTER'S REPORT.

1. Measure of Damages—Exceptions to Master's Report.
The master, having found that the complainant had failed to establish by trustworthy legal proof any basis for the computation of profits, stopped his investigations upon the ground that as the defendants had destroyed the complainant's standard there could be no standard until the complainant voluntarily created one.
[*Webster Loom Company *v.* E. S. & N. D. Higgins, 1119.

2. Report Recommitted.
Report recommitted to master, with instructions to estimate the amount of profits in accordance with the rule stated in the opinion of Judge Wallace in a previous case. [*Id.

MEASURE OF DAMAGES.

(See Damages and Profits; Master's Report.)

MECHANICAL SKILL.

(See Invention, 3; Particular Patents, 4, 17.)

METHOD.

(See Interference, 9.)

MOTION FOR ATTACHMENT FOR CONTEMPT.

Practice in the Courts.
Upon a motion for an attachment against the defendants for contempt in violating an injunction granted at final hearing, *Held* that as the present alleged infringing device differs from that adjudged to be an infringement, and also from the patented device, the question presented ought not to be determined upon such a motion as this, but only by an original suit.
[*The Pennsylvania Diamond Drill Company *v.* Simpson *et al.*, 676.

MOTION TO DISMISS AN APPEAL.

(See Interference, 3, 4, 5.)

MOTION TO DISSOLVE AN INTERFERENCE.

(See Interference, 1, 2, 6, 7.)

1. Appeal on Motion to Dissolve an Interference Between an Application and a Patent Issued Inadvertently During the Pendency of that Application.
When an interference is declared between an application and a patent issued inadvertently during the pendency of that application, and the applicant files a motion to dissolve the interference and to stay proceedings without having made any proof of service of notice of said motion upon the opposite party, said motion will not be entertained. (Rule 153.)
[Bechman *v.* Johnson, 678.

2. Same—Rule 94.
The case is the same as if the interference had been declared between two pending applications, and the interference is rightly declared when declared under Rule 94, paragraph 1, without the affidavit called for by Rule 94, paragraph 2.
[Id.

3. Same—Petition.
While a motion to dissolve the interference and suspend proceedings will be refused if made without notice to the opposite party, *Quære*, whether in a case like the present a petition, without notice to the opposite party, to *vacate* the order establishing the interference might not be sustained. [Id.

4. Amendment Pending the Interference.
Pending the interference in such case an amendment which does not come within the terms of Rules 106, 107, 109 will not be received or considered. (Rule 130.) [Id.

OATH.

(See Interference, 1, 2.)

OLD ELEMENTS.

(See Particular Patents, 4, 10, 16.)

PARTICULAR PATENTS.

1. Cross—Packing for Oil-Wells.
The second claim of reissued Letters Patent No. 7,771, granted July 3, 1877, to John R. Cross, for an improvement in packing for oil-wells, obtained 12 years after the date of the original patent, is an undue expansion of the first claim of the original patent.
[*Consolidated Oil Well Packer Company *v.* Galey, 975.

2. Cubley—Banjos.
Banjos made under Letters Patent No. 274,915, granted April 3, 1883, to E. J. Cubley, for improvement in banjos, in which the parchment rests directly on a rim consisting of a metal shell, in form like the old wooden rim, but differing from any rim previously made, and producing by such rim distinctive musical properties, do not infringe Letters Patent issued May 17, 1873, to C. E. Dobson, for an improvement consisting of a ring, either of metal or wood, to ease the wear of the parchment against the rim, and improve the tone of the instrument; nor do they infringe Letters Patent issued November 18, 1881, to Henry C. Dobson, whose improvement consists of a metal ring between the parchment and a rim of wood and metal, and which eases the parchment, as does the ring in the first patent, and produces a metallic musical sound.
[*Dobson *et al. v.* Cubley, 1366.

3. De Quillfeldt—Bottle-Stoppers—Reissues.
Reissue Letters Patent No. 7,722, granted June 5, 1877, to Charles De Quillfeldt, for an improvement in bottle-stoppers, construed, and *Held* that the first claim, when read in connection with the specification and drawings of the original patent, contains the same elements found in the first claim of the original patent, combined and operated in the same way and producing the same results.
[*Putnam *et al. v.* The Keystone Bottle Stopper Company *et al.*, 113.

4. Dowling—Feed Mechanism for Roller-Mills.
Letters Patent No. 269,516, granted December 4, 1883, to Daniel E. Dowling, for an improvement in feed mechanism for roller-mills, *Held* to be an aggregation of old elements adapted to a new machine, but producing practically the same results. No invention involved in putting these devices together and placing them in the hopper of a flouring-mill.
[*The Consolidated Roller Mill Company *v.* Coombs, 255.

5. Eppelsheimer—Clamp Apparatus for Connecting Street-Cars, &c.
Letters Patent No. 180,757, granted March 16, 1875, to William Eppelsheimer, for an improvement in clamp apparatus for connecting street-cars, &c., *Held* to be infringed by the defendant's device.
[*Root *v.* Third Avenue Railroad Company, 674.

6. Gray—Grinding-Mills.
Letters Patent No. 222,893, granted December 23, 1879, to William D. Gray, for an improvement in grinding-mills, construed and sustained, and *Held* that Gray's invention is for such an improvement as to entitle him to a liberal construction of the claims of the patent and a liberal application of the doctrine of equivalents.
[*The Consolidated Roller Mill Company *v.* Coombs, 255.

7. Hovey—Endless-Rope Railways—Anticipation.
The first claim of Letters Patent No. 193,372, granted to Asa E. Hovey September 18, 1877, for improvement in endless-rope traction-railways, which is "the construction and arrangement together of the brackets * * * and rails * * * forming the frame or skeleton for a rope-tunnel for endless-rope traction-railways, said brackets forming a support for the groove-rails and for the planking forming the sides or shell of the tunnel," is void for want of invention, having been anticipated by the Gardner patent, No. 19,736, of March 23, 1858, the Thompson patent, No. 131,913, of October 1, 1872, and the structure used in 1873 by the Clay Street Hill Road, of San Francisco, Cal.
[*National Cable Railway Company *v.* Mt. Adams & Eden Park Inclined Railway Company, 1400.

8. Same—Infringement.
If such first claim could be sustained by limiting its scope, so as to make it cover all of the elements described in the specifications, it is not infringed by the structure used by defendant, the Mt. Adams & Eden Park Inclined Railway Company.
[*Id.

9. Same—Anticipation.
The first branch of the sixth claim of said Letters Patent, in reference to the combination, "with the rope tunnel or chamber, of pulleys journaled in the same, upon which the rope runs," was anticipated by the Gardner patent and is not patentable.
[*Id.

10. Same—Same.
The second branch of the sixth claim, relating to the "means for lubricating the bearings of said pulleys from the outside of the tunnel," lacks invention, and is not patentable, in view of the well-known use of tubes to carry oil to inaccessible journals.
[*Id.

11. Same—Infringement.
Even if such sixth claim were patentable, it is not infringed by defendant, who does not use any oil reservoirs or tubes leading from the outside of the tunnel to the shaft-bearings, such as are covered by said sixth claim.
[*Id.

12. Krementz—Collar-Button.
Patent No. 298,308 granted to G. Krementz May 6, 1884, for a collar or sleeve button having a hollow head and stem, the said head, stem, and the base-plate or back of the said button being shaped and made of a single continuous piece of sheet metal, is void for want of novelty. The Stokes patent, No. 171,382, January 4, 1876, covers a button composed of a single piece of sheet metal, the only difference being that the head is flat and solid instead of round and hollow, like complainant's; and the Keats patent, No. 177,353, May 9, 1876, also covers a button made of a single piece of sheet metal having a hollow head and hollow stem of the same form as complainant's.
[*Krements *v.* Cottle Company, 1775.

13. Leggett—Lining Barrels with Glue.
Reissue Letters Patent No. 5,785, granted March 10, 1874, to Edward W. Leggett, for an improved mode of lining the inside of oil-barrels with glue, the claims for which were a process "wherein the glutinous material, instead of being produced by reduction from a previously solid state, is permitted to attain only a certain liquid consistency, and is then applied to the package and permitted to harden thereon for the first time," and "a barrel, cask, &c., coated or sized by the material, and by the mode or process whereby it is absorbed into and strengthened by the wood fiber," are void for want of invention.
[*Leggett *v.* Standard Oil Company, 1121.

14. Little—Time-Locks—Validity.
The first and seventh claims of reissued Letters Patent No. 8,550, granted January 1, 1879, to the Yale Lock Manufacturing Company, as assignee of Samuel Little, for an improvement in time-locks, *Held* valid, and the seventh claim *Held* not an expansion of the original patent, on the authority of *Yale Lock Co. v. Berkshire Nat. Bank* (17 Fed. Rep., 581) and *Yale Lock Co. v. New Haven Sav. Bank*. (20 Fed. Rep., 167.)
[*Yale & Towne Manufacturing Company *et al. v.* Consolidated Time Lock Company, 1399.

15. Low—Tile Decoration.
Letters Patent No. 336,242 and 336,243, both granted to John G. Low February 16, 1886, for tile decoration, declared void for want of invention.
[*Low *v.* Barstow Stove Company, 202.

16. Lowe—Process and Apparatus for the Manufacture of Illuminating or Heating Gas.
Letters Patent No. 167,847, granted September 21, 1875, to Thaddeus S. C. Lowe, for an improved process and apparatus for the manufacture of illuminating or heating gas, contain a process for the manufacture of water-gas containing but little nitrogen. The presence of nitrogen in illuminating-gas is deleterious, and when it amounts to 9 per cent. or more it amounts to a serious fault. The feature of the process consists in producing the gas in a close chamber—that is, one from which the air is excluded—or by an alternating, as distinguished from a continuous, process. All of the essential apparatus was old, except the fixing-chamber, which is so arranged as to be heated internally by the products of combustion that escape from the generator and envelop the refractory material. *Held* that as the invention introduced a very desirable advantage into the process of making illuminating-gas by which the expense is greatly lessened, the facts that the older inventions which are now claimed to be susceptible of being modified by mere mechanical skill into the one in question remained without modification until the patentee made it, and that his improvement at once commended itself to those skilled in the art, are sufficient to show patentable invention.
[*Guarantee Trust and Safe Deposit Company *et al. v.* New Haven Gas-Light Company, 1661.

17. Marmon—Roller-Mills.
Letters Patent No. 274,508, granted March 27, 1883, to D. W. Marmon, for an improvement in roller-mills, construed, and so much of claim 1 as is not covered by the Gray patent—to wit: "means for adjusting simultaneously both ends of the counter-shaft"—*Held* to be so far anticipated as to involve only mechanical skill.
[*Consolidated Roller Mill Company *v.* Coombs, 255.

18. Martin—Deep-Well Packing.
The fourth claim of reissued Letters Patent No. 7,344, granted July 25, 1876, to Francis Martin, for deep-well packing, compared with the second claim of the original patent, and *Held* to be not an enlargement or expansion of the original claim, but a statement in more clear and precise language of what is contained in the modified language of the original claim. The question of patentable novelty not considered.
[*Consolidated Oil Well Packer Company *v.* Galey, 975.

19. Mussgiller and Schedler—Treating Beer and other Liquids.
Reissue Letters Patent No. 9,129, granted March 23, 1880, upon the application of Friedrich C. Mussgiller and R. W. Schedler, for an improvement in treating beer and other liquids, sustained.
[*Zinsser *et al. v.* Kremer, 114.

20. Robinson and Strong—Packing for Deep Wells.
Reissued Letters Patent No. 8,786, granted July 1, 1879, to John K. Robinson and D. A. Strong, for packing for deep wells, *Held* to be an unwarranted enlargement of the original patent. The thing which was the subject of the original patent and the thing which it is desired to bring within the terms of the reissue are entirely dissimilar.
[*Consolidated Oil Well Packer Company *v.* Galey, 975.

21. Shumard—Sash-Balance.
The novel feature of Letters Patent No. 285,079, granted September 18, 1883, to Warren Shumard, for an improvement in sash-balances, is a brake so arranged as to be adjustable from the outside; and the second and third claims of this patent are infringed by a sash-balance having a band-brake bearing on the periphery of the drum.
[*Coleman Hardware Company *et al. v.* Kellogg, Johnson & Bliss *et al.*, 262.

22. Shumard—Sash-Balance—Infringement.
Patent No. 285,079, granted September 18, 1883, to Warren Shumard, for a sash-balance which has a brake so arranged as to be adjustable from the outside, the brake being an ordinary brake-shoe bearing on the periphery of the drum, with the pressure secured by a spring, is infringed by the use of a band-brake bearing on the periphery of the drum and adjustable from the outside, band-brakes having been well-known equivalents for spring-brakes at the time of the issue of the Shumard patent.
[*Coleman Hardware Company *et al. v.* Kellogg *et al.*, 1266.

23. Vom Hofe—Bottle-Stoppers.
Letters Patent No. 167,141, granted August 24, 1875, to William Vom Hofe, for an improvement in bottle-stoppers, not anticipated by a previous patent to said Vom Hofe, No. 163,533, dated May 18, 1875.
[*Putnam *et al. v.* The Keystone Bottle Stopper Company, *et al.*, 113.

PATENTABILITY.

(See Invention, 3.)

PETITION.

(See Interference, 7.)

PRACTICE IN THE COURTS.

(See Separate Patents; Suits for Infringement; Testimony before Examiner.)

PRACTICE IN THE PATENT OFFICE.

(See Abandoned Applications, 1, 2, 3; Amendments; Appeal to Examiners-in-Chief; Division of Application, 2, 3, 4; Injunction, 2; Interference; Joinder of Invention; Motion to Dissolve Interference.)

PRELIMINARY STATEMENTS.

(See Interference, 1.)

PRIORITY OF INVENTION.

PRIORITY OF INVENTION—LACHES.

When one of the parties to an interference has made the invention independently of the other party and has reduced it to practice upon an extended commercial scale, and has obtained a patent which he has held unchallenged for nearly a year, he must be adjudged the prior inventor as against the other who, though he may have been the first to conceive the invention, without any excuse for his non-action, never did anything toward reducing it to practice, but who bases his claim to priority on a previous application filed by him which contained claims for the invention in controversy, which claims were rejected and positively and deliberately abandoned nearly four years before the filing of the application involved in this interference.

[Beach *v.* Fowler, 821.

PROCESS.

(See Invention, 1.)

PROCESS AND APPARATUS.

(See Division of Application, 2, 3, 4.)

PROCESS AND PRODUCT.

(See Division of Application, 1; Separate Patents; Suits for Infringement.)

REDUCTION TO PRACTICE.

(See Abandoned Applications, 3; Priority of Invention.)

REHEARING.

(See Amendments.)

REISSUES.

(See Particular Patents, 1, 3, 13, 14, 18, 19, 20.)

1. AMPLIFICATION OF SPECIFICATION IN REISSUE.

While a comparison of the two patents evinces that the specification of the reissue is amplified, yet this amplification is in matters of an explanatory nature and embraces nothing of any importance which is not plainly disclosed in the original specification and accompanying drawings.

[*Putnam *et al. v.* The Keystone Bottle Stopper Company *et al.*, 113.)

2. EXPANSION OF INVENTION—VOID.

Complainant's original patent embraced hair-crimpers of two kinds—one in which the fabric is stitched to the soft-metal core, the other in which the fabric is fastened to the core by a metal fold made by turning over the thin edges of the core, or of a strip of sheet-lead inside the fabric over the core. The original contained the clause: "I also modify my invention in various other equivalent ways, such as would suggest themselves to any intelligent mechanic," &c. The reissued patent contained claims for fastening the fabric to the core by cementing them together. *Held* that the reissue was invalid, being an expansion of the original and embracing a new invention.

[*Philadelphia Novelty Manufacturing Company *v.* Rouss, 1664.

3. SAME—LACHES.

If it be conceded that the inventions claimed in the reissue were described in the original, then, such claims being expansions and more than 2 years having elapsed after the original was granted before the reissue was applied for, the doctrine of laches applies and the delay must be held unreasonable in the absence of explanatory averments in the bill. [*Id.

REJECTED APPLICATIONS.

(See Abandoned Applications, 4, 5.)

RESULT.

(See Infringement, 1.)

ROYALTY.

(See Damages and Profits.)

SEPARATE PATENTS.

(See Division of Application, 1; Suits for Infringement.)

SUITS FOR INFRINGEMENT.

The complainants insist that their position is precisely the same as if they held a single patent with two claims—one for the process or composition of matter producing the coloring-substance, the other for the combination of that substance with paper. This might be so if they could be considered as holding both patents; but in this suit they have carefully abstained from declaring upon the first patent or even in any way referring to it. By not declaring upon it as its present owner, they leave it to the defendant to be availed of as if it were the property of a stranger.

[*Underwood *et al. v.* Gerber *et al.*, 116.

SERVICE OF NOTICE.

(See Motion to Dissolve Interference, 1, 3.)

SPECIFICATIONS.

(See Claims.)

SUBSEQUENT PATENTS.

(See Abandoned Applications, 1, 2.)

SUBSEQUENT PATENTS WITHOUT RESERVATION.

A former patent, No. 265,927, granted October 10, 1882, to Marmon jointly with one Warrington, construed, and *Held* that no one can take out a patent either jointly or severally for an invention, and, after the patent is issued, without reservation in his original application, obtain a second patent with broader claims for the device.

[*Consolidated Roller Mill Company *v.* Coombs, 255.

SUITS FOR INFRINGEMENT.

(See Division of Application, 1; Separate Patents.)

AMENDED BILL.

In a suit to restrain the infringement of a patent complainant was defeated because he sued on one only of two patents relating to the same invention. (48 O. G., 116.) The evidence introduced would be necessary under a bill based on the omitted patent. *Held* that he should be permitted to amend by bringing in the other patent, and alleging its infringement, and that the case should be opened for taking additional testimony, but that relief should be granted only on condition that complainant give an undertaking to pay the expense of such additional testimony, including witness fees, mileage, master's or examiner's fees, and printing.

[*Underwood *et al. v.* Gerber *et al.*, 675.

SUPREME COURT OF DISTRICT OF COLUMBIA.

(See Abandoned Applications, 4, 5.)

TERRITORIAL RIGHTS.

(See Use of Patented Articles, 1, 2.)

TESTIMONY BEFORE EXAMINER.

PRACTICE IN THE COURTS—TESTIMONY BEFORE EXAMINER.

On a motion for the appointment of an examiner to take testimony in an equity cause the court will not limit or restrict the taking of testimony or determine what is proper testimony. Objections taken to evidence on the ground of incompetency or irrelevancy properly come before the court at the final hearing.

[*United States *v.* American Bell Telephone Company and Alexander Graham Bell, 894.

TITLE TO PATENT.

(See Separate Patents.)

TRADE-MARKS.

1. USE OF A PATENTEE'S NAME IN CONNECTION WITH A PATENTED ARTICLE AS DESCRIPTIVE THEREOF DOES NOT CONSTITUTE A TRADE-MARK.

The name which is given to a patented device to distinguish it as a patented article from other articles of the same character is not, properly speaking, a Trade-Mark.

[*Adee *v.* Peck Brothers & Co., 823.

2. SAME—IT DESIGNATES STRUCTURE BUT NOT WORKMANSHIP OR MANUFACTURER.

It designates nothing except that the structure has a definite character as the structure that was patented, and indicates nothing in regard to the character of the workmanship or the person by whom it was manufactured. [*Id.

3. TRADE-MARK DEFINED.

A Trade-Mark is something different from the article itself, which the mark designates, and is a name, mark, or device attached to the article to indicate its origin. [*Id.

4. INFRINGEMENT OF PATENT, NOT OF TRADE-MARK.

The selling by the defendant of valves under the name of "Foley's," or "Foley's Patent Valves and Overflows," signifies that they are the kind of valves invented and patented by Foley, but not that they are the valves which he or his successor is manufacturing. [*Id.

5. TRADE-MARKS—WHAT CONSTITUTES.

The word "Valvoline," compounded and used on packages of lubricating-oils by plaintiffs, and registered as a Trade-Mark, may be used for that purpose, and the use thereof by defendant in the same manner will be enjoined, though defendant uses his own name in connection with the word.

[*Leonard *et al. v.* White's Golden Lubricator Company, 1401.

USE OF PATENTED ARTICLES.

1. USE OF PATENTED ARTICLES — ASSIGNMENTS — TERRITORIAL RIGHTS.

Where an assignment of territorial rights has been made, the subsequent purchase of the patented article from the inventor or a later assignee (with notice) will not entitle the purchaser to use said article within the territory of the first-mentioned assignee.

[*Sheldon Axle Company *v.* Standard Axle Works, 117.

2. FORMER DECISION REVIEWED.

Adams v. Burks (23 O. G., 114) commented upon, and *Held* not to conflict. [*Id.

VALID PATENTS.

(See Particular Patents, 2, 3, 5, 6, 14, 16, 17, 19, 23.)

VIOLATION OF AN INJUNCTION.

(See Motion for Attachment for Contempt.)

VOID PATENTS.

(See Division of Application, 1; Particular Patents, 1, 4, 7, 9, 12, 13, 15, 17, 20; Reissues, 2, 3.)

WITNESS.

(See Damages and Profits, 2; Interference, 1.)

ALPHABETICAL LIST OF PATENTEES

FOR

THE QUARTER ENDING SEPTEMBER 30, 1889.

[Claims and drawings of Designs do not appear in the Monthly Volumes or the Gazette. Separate indexes for Designs, Trade-Marks, Labels, and Disclaimers follow this.]

Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
			Specification.	Drawing.	Volume.	Page.
Abbe, Edwin W., New Britain, Conn. Sash-cord fastener	411,426	Sept. 24	2042	540	48	1668
Abbott, Charles H., *et al.* (See Kimble, Smith W., assignor.)						
Abbott, David S., Olean, N. Y. Slab-sawing machine	410,777	Sept. 10	1004	269	48	1408
Abbott, Samuel. (See Balmforth, Elliott H., assignor.)						
Abel, Frank, Kansas City, Mo. Excelsior-machine	411,412	Sept. 24	1939	517	48	1667
Abel, Frederick A., London, and J. Dewar, Cambridge, county of Cambridge, England. Nitro-gelatine explosive	409,549	Aug. 20	2034	.....	48	1067
Abraham, Jacob. (See Clayton and Abraham.)						
Abraham, John H., assignor to Conestoga Cigar Company, Lancaster, Pa. Cigar-bunching machine	406,329	July 2	430	118 119	48	87
	407,761	July 30	2611	677	48	543
Acheson, Edward G., Pittsburg, Pa. Calelectric generator	407,762	July 30	2612	677	48	543
Acheson, Edward G., Pittsburg, Pa. Calelectric generator	407,763	July 30	2613	677	48	543
Achor, Lewis, and T. Hamilton, Martinsville; said Hamilton assignor to C. H. Irwin, Wilmington, Ohio. Heating apparatus	411,541	Sept. 24	2120	559	48	1702
Ackroyd, Thomas H., and A. Broadley, Birkenshaw, near Leeds, county of York, England. Apparatus for drawing slivers from gill-boxes	407,391	July 23	2073	530	48	428
Acme Cash Railway Corporation. (See Sweesey, Moses C., assignor.)						
Acme Hay Harvester Company. (See Alden, Horace A., assignor.)						
Acme Machinery Company. (See Luehrs and Coe, assignors.)						
Actien-Gesellschaft für Anilin Fabrikation *et al.* (See Sandmeyer, Traugott, assignor.)						
Actien-Gesellschaft für Cartonnagen Industrie. (See Remus, Theodor, assignor.)						
Adair, James, New York, N. Y. Shirt	407,764	July 30	2615	677	48	543
Adair, James, New York, N. Y. Shirt	407,765	July 30	2616	678	48	543
Adam, William, Kidderminster, county of Worcester, England. Loom for weaving tufted fabrics, &c	409,550	Aug. 20	2035	536	48	1068
	411,705	Sept. 24	2372	629	48	1755
Adams, Charles R., Providence, R. I. Policeman's club	409,159	Aug. 20	1481	391	48	979
Adams, George B. (See Hunt, Henry C., assignor.)						
Adams, George E., Irvington, N. J. Pouch or bag	406,121	July 2	140	41	48	39
Adams, Harry E., Wheeling, W. Va. Attachment for desks	411,210	Sept. 17	1646	438	48	1606
Adams, Henry J., North Jay, Me. Water-wheel	409,091	Aug. 13	1364	359	48	948
Adams, John M., San Francisco, Cal. Ore-concentrator belt	409,092	Aug. 13	1365	359	48	948
Adams, John M., San Francisco, Cal. Ore-concentrator belt						
Adams, John S., assignor to Jenney Electric Company, Indianapolis, Ind. Structure for supporting lamps above streets	410,626	Sept. 10	749	203	48	1421
Adams, Peter. (See Shepard and Adams.)						
Adams, Thomas, Highland, N. Y. Toy gun	408,062	July 30	3065	802	48	627
Adams, Thomas, Highland, N. Y. Toy gun	408,334	Aug. 6	195	50	48	717
Adams, Thomas E., Cleveland, Ohio. Device for suspending electric conductors	410,725	Sept. 10	920	247	48	1451
Adamson, Andrew J., Sabetha, Kans. Wagon-box fastener	408,398	Aug. 6	289	72	48	734
Adamson, James H., North Melbourne, Victoria. Harvesting-machine						
Addington, Joseph C. (See Smith, Daniel W., assignor.)						
Adee & Co., Fred. (See Sanger, John N., assignor.)						
Adee & Co., Fred. (See Smith, Benjamin C., assignor.)						
Adler, Max. (See Wilzin, Louis, assignor.)						
Advance Electric Company. (See Ward, George C., assignor.)						
Aerated Fuel Company. (See Bullard, James H., assignor.)						
Agan, Celia A., *et al.* (See Agan, Hiram, assignor.)						
Agan, Hiram, assignor to C. A. Agan and C. H. Dunning, Rome, and E. B. French, Oneida, N. Y. Hog-scraper	407,562	July 23	2333	603	48	482
	411,631	Sept. 24	2200	601	48	1732
Agate, John, Pittsford, N. Y. Steam-heating apparatus	409,093	Aug. 13	1366	360	48	948
Agee, George S., Burnham, Mo. Governor	411,542	Sept. 24	2120	559	48	1702
Agee, Reuben M., and E. Lane, Canton, Mo. Rail-joint	408,063	July 30	3066	802	48	626
Ager, Wilson, Bloomsburg, Pa. Scouring and decorticating cereals	411,316	Sept. 17	1798	481	48	1635
Ager, Wilson, Bloomsburg, Pa. Scouring and decorticating cereals	409,606	Aug. 27	2569	672	48	1192
Agger, Peter, Cincinnati, Ohio. Crib or cradle	410,479	Sept. 3	531	142	48	1373
Ahern, Daniel J., Boston, Mass. Making metallic brushes						
Aiken, Henry. (See Kennedy and Aiken.)						
Aiken, Henry, Homestead, Pa. Machine for shaping sheet metal	411,116	Sept. 17	1508	400 401 402	48	1579
Aiken, Henry, Homestead, Pa. Making metal ties	411,117	Sept. 17	1511	402 403	48	1580

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Akbar Manufacturing Company. (See Goodenough, Thomas, assignor.)						
Akron Iron Company. (See Hadfield, Reuben, assignor.)						
Aktiebolaget Extraktor. (See Johansson, Carl A., assignor.)						
Aktiebolaget Finspongs Styckebruk. (See Thronsen, Harald T. J., assignor.)						
Albach, William H., Mansfield, Ohio, assignor to Barr Cash and Package Carrier Company. Cash carrier	411,515	Sept. 24	2082	550	48	1694
Albany Coal Tar Dye and Chemical Company. (See Greville-Williams, Rupert, assignor.)						
Albee, Honestus M., Newark, N. J. Routing and wood-working machine	408,366	Aug. 6	237	60, 61	48	725
Albert, Aaron B., assignor of two-thirds to A. S. Knapp and C. Steveson, Indianapolis, Ind. Folding chair	407,714	July 23	2533	655	48	520
Albin, Jacob, Seymour, Ind. Carpet tacking and stretching machine	411,543	Sept. 24	2121	559	48	1703
Albright, John W., Burlington, Iowa. Neck-yoke center	406,250	July 2	310	85	48	62
Alcott, Rufus C. (See Evans, David, assignor.)						
Alden, Horace A., assignor to Acme Hay Harvester Company, Peoria, Ill. Horse hay-rake	406,864	July 16	1271	335	48	265
Alden Type Machine Company. (See Johnson and Low, assignors.)						
Alden Type Machine Company. (See Low, Abbott A., assignor.)						
Aldersley, Edwin, *et al.* (See Comer, John, assignor.)						
Aldrich, Ernest O., Lock Haven, Pa. Gate	407,986	July 30	2956	769	48	606
Aldrich, Nathaniel B., Fall River, Mass. Secondary battery	408,367	Aug. 6	240	61	48	726
Aldrich, Washington W. (See McDougall, John, assignor.)						
Alexander, Phoebus H. (See Dey, Harry E., assignor.)						
Alison & Co., J. Gordon. (See Lambinet, Edouard, assignor.)						
Alison, James G., Birkenhead, county of Chester, England. Indicator for the motions of the engines in steamships	407,503	July 23	2240	578	48	461
Alker, John H., Pittsburg, Pa. Tongs and guide for bolt-heading machines	409,595	Aug. 20	2107	555	48	1101
Alkins, Charles, Chicago, Ill. Railway switch-stand	408,830	Aug. 13	949	252	48	869
Allan, John, Hoboken, N. J. Packing	411,562	Sept. 24	2150	569	48	1708
Allen, Aaron B., Pueblo, Colo. Car-coupling	407,459	July 23	2186	564	48	450
Allen, Alonzo W., Philadelphia, Pa. Spindle-holder for spinning-machines, &c.	410,392	Sept. 3	392	104	48	1346
Allen, Andrew, Piasa, Ill. Gate	409,094	Aug. 13	1367	360	48	949
Allen, Charles A. (See Gifford and Allen.)						
Allen, Charles A., Chicago, Ill. Cigar-moistener	406,076	July 2	76	22	48	17
Allen, Cotton H. (See Waggoner, Albert, assignor.)						
Allen, Daniel, Jr., Boston, Mass., assignor to Type-Writer Improvement Company, Portland, Me. Type-writing machine	410,627	Sept. 10	751	204	48	1422
Allen, David H., Miamisburg, Ohio. Wire fence	408,282	Aug. 6	117	29	48	702
Allen, Eugene E., Grand Rapids, Mich. Surgical pump for transfusion of blood	409,000	Aug. 13	1215	320	48	920
Allen, George L., Worcester, Mass. Arch-fender for steam-boiler furnaces	408,449	Aug. 6	366	96	48	751
Allen, George L., Worcester, Mass. Furnace-grate	409,657	Aug. 27	2207	581	48	1125
Allen, Harry W., assignor of one-half to R. S. Hobbs, Chicago, Ill. Paper-hanger's folding table	411,366	Sept. 17	1865	499	48	1648
Allen, Homer H., Oceanside, Cal. Rest for buggy-tops	407,049	July 16	1536	403	48	315
Allen, J. Rex, *et al.* (See Shank, Charles A., assignor.)						
Allen, James, and E. Hackett, Florence, Ala. Car-coupling	409,343	Aug. 20	1748	459	48	1030
Allen, James W., St. Louis, Mo. Cane or parasol watch	409,267	Aug. 20	1627	430	48	1008
Allen, Richard N., Cleveland, Ohio. Electrically-propelled vehicle	409,815	Aug. 27	2159	645	48	1171
Allen, Samuel L., Cinnaminson, N. J. Sled	408,681	Aug. 13	737	193	48	827
Allert, Rudolf, Brooklyn, N. Y. Apparatus for dissolving and supplying lupuline to beer	411,563	Sept. 24	2151	570	48	1708
Allis & Company, E. P. (See Hinkley, George M., assignor.)	—					
Allis & Company, Edward P. (See Gray, William D., assignor.)						
Allison, George A., assignor of one-half to F. L. Sayles, Pascoag, R. I. Carding-machine	411,367	Sept. 17	1866	499	48	1648
Allison, Oscar W., Rochester, N. Y. Cigarette-machine	406,610	July 9	877	236, 237	48	180
Allison, Oscar W., Rochester, N. Y. Cigarette-machine	406,611	July 9	881	237, 238	48	180
Allison, Oscar W., Rochester, N. Y. Cigarette-machine	406,612	July 9	885	238, 239	48	181
Allison, Oscar W., Rochester, N. Y. Cigarette-machine	406,613	July 9	887	239	48	181
Allman, Isaac F., Jersey City, N. J. Ignitor for gas-engines	411,211	Sept. 17	1648	438	48	1606
Allstatter, Robert, assignor to Long & Allstatter Company, Hamilton, Ohio. Cultivator	407,273	July 16	1887	491	48	384
Alston, William H., Buffalo, Dak. Ter. Band-cutter and feeder for thrashing-machines	409,897	Aug. 27	2570	673	48	1192
Amborn, George, Jr., assignor to Campbell Machine Company, Pawtucket, R. I. Combined welt and upper guide	407,987	July 30	2957	769	48	606
American Automatic Refrigerating Company. (See Holmes, Joseph E., assignor.)						
American Automaton Weighing Machine Company. (See Favre, Jean C. J. C., assignor.)						
American Ballot Box Association. (See Howell, Silas J., assignor.)						
American Buckle and Cartridge Company. (See Place, William B., assignor.)						
American Motor Company. (See McNett, Lyman F., assignor.)						
American Press Association. (See Thomason, Frank D., assignor.)						
American Printing Press Company. (See Fowler and Henkle, assignors.)						
American Ring Company. (See Nobbs, Edward P., assignor.)						
American Roll Paper Company. (See Ehrlich, Leo, assignor.)						
American Roll Paper Company. (See Hotchkiss, Edward, assignor.)						
American Roll Paper Company. (See Tivy and Ehrlich, assignors.)						
American Roll Paper Company. (See Williamson, Charles R., assignor.)						
American Screw Company. (See Rogers, Charles D., assignor.)						
American Ship Windlass Company. (See Delon, Charles W., assignor.)						
American Waltham Watch Company. (See Mason, Charles T., assignor.)						
American Waltham Watch Company. (See Schmalz, François, assignor.)						
American Writing Machine Company. (See Barnes, James W., assignor.)						
American Writing Machine Company. (See Yost, George W. N., assignor.)						
American Zylonite Company. (See Schüpphaus, Charles R., assignor.)						
Ames, Chester L., Cabery, assignor of one-half to C. Brunner, Peru, Ill. Automatic car-brake	408,567	Aug. 6	561	147	48	787
Ames, Joseph H. (See Warren and Ames.)						
Amory, Arthur and R., Boston, Mass. Automatic cut-off for secondary batteries	406,981	July 16	1442	379	48	298
Amory, Robert. (See Amory, Arthur and R.)						
Amos, George W., Burlingame, Kans. Stove-truck	408,568	Aug. 6	562	147	48	788
Amoskeag Indurated Fibre Ware Company. (See Keyes, Frank E., assignor.)						
Amundson, John A. (See Lotz, Friedrich, assignor.)						
Ancienne Fabrique Vacheron and Constantin. (See Roux, Ernest J., assignor.)						
Andersen, Peter, assignor to H. G. Olds, Fort Wayne, Ind. Fifth-wheel for vehicles	411,564	Sept. 24	2152	570	48	1708
Anderson, Adolph V., San Francisco, Cal. Pipe-cutter	406,077	July 2	76	22	48	17

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Anderson, Alfred. (See Curl, Jesse B., assignor.)						
Anderson, Euclid, Peekskill, N. Y. Bolt	411,000	Sept. 17	1383	357	48	1543
Anderson, Frank, Peekskill, N. Y. Automatic telegraph	406,962	July 16	1444	378	48	296
Anderson, Frank, Peekskill, N. Y. Automatic telegraph	407,460	July 23	2187	564	48	450
Anderson, Frank, Peekskill, N. Y. Automatic telegraphy	407,461	July 23	2188	564, 565	48	450
Anderson, Frank, Peekskill, N. Y. Automatic telegraphic recorder	407,462	July 23	2190	565	48	451
Anderson, Frank E. (See Hodgson, Samuel, assignor.)						
Anderson, George K., Memphis, Tenn. Type-writing machine	410,628	Sept. 10	754	204	48	1422
Anderson, Hugh G., Benela, Miss. Plow or cultivator	410,480	Sept. 3	533	143	48	1373
Anderson, James C., Highland Park, Ill. Brick-machine	406,414	July 9	559	157	48	121
Anderson, James C., Highland Park, Ill. Manufacturing ornamental bricks	406,687	July 9	1004	269	48	203
Anderson, James C., Highland Park, Ill. Enameling or incrusting bricks, &c	406,688	July 9	1005	......	48	204
Anderson, James C., Highland Park, Ill. Ornamental brick	407,145	July 16	1688	......	48	346
Anderson, James C., Highland Park, Ill. Ornamental brick	407,146	July 16	1689	......	48	346
Anderson, James C., Highland Park, Ill. Ornamental brick	407,147	July 16	1690	......	48	346
Anderson, James C., Highland Park, Ill. Machine for making building-blocks	411,413	Sept. 24	1941	517	48	1667
Anderson, Lee, assignor of two-thirds to T. Broad and J. Martin, Paris, Tex. Hame-fastener	406,497	July 9	710	196	48	150
Anderson, Mons. (See Lee, Syver, assignor.)						
Anderson, Peter W., Chicago, Ill. Building	411,516	Sept. 24	2084	550	48	1695
Anderson, Valerius D., Cleveland, Ohio. Combined agitator and conveyer	409,816	Aug. 27	2160	645	48	1172
Anderson, William, Hulton, Pa. Mantel	409,596	Aug. 20	2107	555	48	1101
Anderson, William F. (See Cohen, Robert L., assignor.)						
Anderson, Zachariah J., Fort Worth, Tex. Baling-press	407,315	July 23	1945	507	48	405
Andersson, Emil. (See Holm, Jöransson, and Andersson.)						
Andreas, Thomas, Pittsville, Wis. Safety-tip for vehicle-tongues	406,188	July 2	234	63	48	46
Andrews & Company. (See Barr and Teufel, assignors.)						
Andrews, Thomas I. (See Farrington, Darius, assignor.)						
Andrews, Willard J., assignor to J. U. Musick, St. Louis, Mo. Stove-grate	411,317	Sept. 17	1800	481	48	1635
Andrews, William R., Union City, Tenn. Lifting-jack	406,689	July 9	1006	270	48	204
Andrews, William S., New York, N. Y., and T. Spencer, Westbrook, Conn. Dynamo	406,415	July 9	561	158	48	121
Andrews, William T. (See Calef, Joseph W., assignor.)						
Andrus, Newell P., Brooklyn, assignor of one-half to R. J. Haxby, New Brighton, N. Y. Water-heater	410,529	Sept. 3	509	161	48	1386
Andrus, William, Reedsburg, Wis. Feed-trough	408,569	Aug. 6	563	147	48	788
Andrus, Williams. (See Metcalf, Foster M., assignor.)						
Angell, Edwin E., Malden, Mass. Can-heading mechanism	410,341	Sept. 3	325	85	48	1331
Angell, Edwin E., Boston, Mass. Elevator-lock	411,274	Sept. 17	1735	463	48	1624
Angell, Joseph S., assignor of one-half to A. B. Galloway, Fulton, Ark. Cotton-chopper	406,157	July 2	187	53	48	38
Angerer, Victor, assignor to W. Wharton, Jr., & Company, (incorporated,) Philadelphia, Pa. Hoist	406,251	July 2	311	86	48	62
Angus, Henry R., Brooklyn, N. Y. Purifying and devolatilizing petroleum distillates	407,274	July 16	1888	492	48	384
Angus, William. (See Angus, William T. and W.)						
Angus, William T. and W., Sydney, New South Wales. Convertible seat for vehicles	410,393	Sept. 3	393	105	48	1346
Annandale, James H., Polton, county of Mid-Lothian, Scotland. Steam-boiler or other furnace	411,084	Sept. 17	1450	387	48	1569
Annibale, Allevi, Chicago, Ill. Lamp	406,983	July 16	1447	379	48	298
Ansley, George W., and J. H. Boyd, Medical Lake, Wash. Ter. Rotary or disk harrow	407,463	July 23	2192	565	48	451
Ansonia Brass and Copper Company. (See Walton, William R., assignor.)						
Antes, John F. (See King, Henry T., assignor.)						
Anthony & Company, E. & H. T. (See Barker, Erastus B., assignor.)						
Anthony, William A., assignor to Mather Electric Company, Manchester, Conn. Electro-magnetic separator	411,414	Sept. 24	1943	518	48	1667
Anwerter, Isaac L., Columbia, Pa. Tire-bender	406,984	July 16	1448	379	48	299
Apex Refining Company. (See Pitt, William H., assignor.)						
Applegarth, Rufus W. (See Moore, Everett D., assignor.)						
Applegarth, Rufus W., and E. D. Moore, Baltimore, Md. Water-coil boiler	409,134	Aug. 13	1429	376	48	961
Applegate, James R., Philadelphia, Pa. Merry-go-round	409,898	Aug. 27	2571	673	48	1192
Appleyard, Edward P., and J. Johnson, Bolton, assignors to C. A. Barrett, London, England. Apparatus for preventing fraud in vending-machines	407,428	July 23	2136	551	48	440
Arbuckle, John, Brooklyn, N. Y. Mitten, &c	406,690	July 9	1007	270	48	204
Archambault, Antoine, Northampton, Mass. Window-screen	408,786	Aug. 13	900	240	48	859
Archer, James G., Brookfield, Mo. Hay-sling	407,316	July 23	1946	507	48	405
Archibald, Everett H., Lawrence, Mass. Loom-picker	406,416	July 9	562	158	48	121
Archibald, Isaac W. (See Felt and Archibald.)						
Arci, Juan B., assignor to T. C. Arci, Brooklyn, N. Y. Street-washer	408,646	Aug. 6	679	176	48	809
Arci, Thekla C. (See Arci, Juan B., assignor.)						
Aria, Charles D., London, county of Middlesex, England. Moderator or carcel lamp	409,899	Aug. 27	2572	673, 674	48	1193
Aria, Charles D., London, England. Lamp	411,318	Sept. 17	1801	481	48	1635
Argo, John T., Poindexter, Ky. Automatic switch for railways	407,504	July 23	2242	578, 579	48	462
Arlington Mills. (See Petzold, Charles G., assignor.)						
Armbruster, Otto, Brooklyn, N. Y. Perfume-carrier	407,464	July 23	2194	565	48	452
Armson, John E., Northville, Mich. Revolving clothes-bar	409,442	Aug. 20	1887	498, 499	48	1059
Armstrong, Francis N. (See Blume and Armstrong.)						
Armstrong, George, Elmira, Ill. Tank-heater	407,988	July 30	2959	770	48	606
Armstrong, John, Vine Creek, Kans. Corn-harvester	408,947	Aug. 13	1136	300, 301	48	906
Armstrong, John, Vine Creek, Kans. Corn-harvester	409,443	Aug. 20	1888	499	48	1060
Armstrong, Thomas L., E. Clark, Oakland, and G. Cottrell, assignors to Union Fence Manufacturing Company, San Francisco, Cal. Fence-making machine	406,516	July 9	740	203	48	155
Arnett, William D., Springfield, Ohio. Seeder	410,064	Aug. 27	2798	737	48	1236
Arnold, Albert A., Jacksonville, Fla. Oil-can	410,342	Sept. 3	326	85	48	1332
Arnold, Alfred B., assignor of five-eighths to Arnold Car Brake and Starter Company, Columbus, Ind. Car brake and starter	406,382	July 2	504	141	48	101
Arnold Car Brake and Starter Company. (See Arnold, Alfred B., assignor.)						
Arnold, Charles L., Wilmington, N. C. Sleeping-car	407,563	July 23	2334	603, 604	48	482
Arnold, Eliphaz W., assignor of one-half to G. W. Osgood, Weymouth, Mass. Last	409,551	Aug. 20	2036	537	48	1088
Arnold, Francis P., Pembroke, Mass. Rand-forming machine	406,865	July 16	1273	335	48	265

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Arnold, G. R. (See Stobaugh, John D., assignor.)						
Arnold, Horace L., Brooklyn, N. Y., assignor to Arnold Type Writer Company. Type-writing machine	410,629	Sept. 10	756	205	48	1423
Arnold, John L., and G. W. Goldinger, Avenue, Pa. Nut-lock	409,766	Aug. 27	2379	624	48	1156
Arnold, Satterlee, Morristown, N. J. Roller-stud	410,569	Sept. 10	663	177	48	1405
Arnold, Satterlee, Morristown, N. J. Universal joint	410,570	Sept. 10	664	177	48	1405
Arnold, Saxton J., Everett, Mass. Whiffletree	406,691	July 9	1006	270	48	204
Arnold Type Writer Company. (See Arnold, Horace L., assignor.)						
Arnold, Vindex, and W. L. Yergin, assignors of one-half to A. Ruddock and A. Case, Marshall, Mich. Wire-stretcher	409,597	Aug. 20	2108	556	48	1101
Arrick, William T. (See Davis, Alexander H. S., assignor.)						
Arter, George, Cleveland, Ohio. Burglar-alarm	411,632	Sept. 24	2261	601	48	1732
Asbury, John. (See Turner and Asbury.)						
Ash, Joseph S., assignor of one-half to C. B. Cowan, Canal Winchester, Ohio. Dust-collector	408,787	Aug. 13	901	241	48	859
Ashey, John P. (See Estabrook and Ashey.)						
Ashford, Thomas B., assignor of three-fourths to H. D. Harper, Kinston, N. C. Fruit or vegetable crate	411,740	Sept. 24	2415	640	48	1764
Ashley, Charles A., assignor of three-fourths to A. Clark, R. A. and L. E. Ashley, Stockton, Cal. Raising and lowering mechanism for harvesters	406,614	July 9	889	{218 / 240}	48	181
Ashley, Lucius E., *et al.* (See Ashley, Charles A., assignor.)						
Ashley, Robert A., *et al.* (See Ashley, Charles A., assignor.)						
Ashley, Thomas C., *et al.* (See Guthrie, James F., Jr., assignor.)						
Ashtabula Carriage Bow Company. (See Pfaff, Rudolf H., assignor.)						
Ashton, Sarah C., *et al.* (See McCarty, William F. M., assignor.)						
Ashworth, Clarence E., Minneapolis, Minn. Pipe-forming machine	410,630	Sept. 10	759	205	48	1423
Ashworth, Elijah. (See Ashworth, George and E.)						
Ashworth, George and E., Manchester, county of Lancaster, England. Carding-engine	406,985	July 16	1449	366	48	299
Ashworth, John, Somerville, Mass. Covered elastic endless band	409,001	Aug. 13	1216	321	48	920
Asire, George H., South Bend, Ind. Steam-boiler	410,394	Sept. 3	394	103	48	1346
Askren, James C., Bedford, Iowa. Balanced slide-valve	411,754	Sept. 24	2437	645	48	1768
Atherholt, Ezra P., Addison, assignor of one-half to G. R. Blood, Metamora, Mich. Spring-tooth fastener for cultivators	409,817	Aug. 27	2461	645	48	1172
Atkins, Charles H., Palmer, assignor to G. F. Blake Manufacturing Company, Boston, Mass. Hydraulic governor for steam-pumps	406,615	July 9	890	240	48	182
Atkins, Leroy, Trenton, Mo. Grain-steamer	406,682	Aug. 13	739	189	48	827
Atkinson, Henry C., assignor of one-half to W. T. Welch, Scottville, Ky. Soldering-clamp for eaves-troughs and spouts	406,616	July 9	891	240	48	182
Atlantic Refining Company. (See Mitchell, James G., assignor.)						
Atsatt, J. Charles F., Mattapoisett, Mass. Device for automatically regulating combustion in hot-water and hot-air heating apparatus	406,018	July 9	1	1	48	3
Attleberry, William W., Chesterfield, Ill. Wagon-brake	410,631	Sept. 10	761	205	48	1424
Atterbury, Thomas B., Pittsburg, Pa. Ornamenting open-ended glassware	406,692	July 9	1009	270	48	204
Atterbury, Thomas B., Pittsburg, Pa. Apparatus for ornamenting open-ended glassware	406,693	July 9	1011	271	48	204
Atwater, Henry W., East Orange, N. J. Necktie-fastener	411,001	Sept. 17	1323	357	48	1543
Atwater, Hiram W., Rochelle, Ill. Carpet-fastener	408,806	July 16	1275	335	48	265
Atwood, Lewis J., and F. W. Tobey, assignors to Plume & Atwood Manufacturing Company, Waterbury, Conn. Argand lamp	411,517	Sept. 24	2065	551	48	1695
Atzel, John F. (See Collins, John W., assignor.)						
Augustine, Charles C., assignor to Steel, Van Rossum & Co., Philadelphia, Pa. Heating-stove	410,229	Sept. 3	141	38	48	1296
Austin, Alvah H., Webster City, Iowa. Ice-breaker	406,694	July 9	1012	271	48	205
Austin, Pauline, Brooklyn, N. Y. Child's-carriage attachment	406,330	July 2	433	119	48	87
Autenrieth, Ernst F. (See Hutchinson and Autenrieth.)						
Autenrieth, Ernst F., New York, assignor to Glen Cove Machine Company, (limited,) Brooklyn, N. Y. Journal-box for planing-machines	408,821	Aug. 13	950	259	48	870
Automatic Car Coupler Heating Company. (See Murdock, Charles F., assignor.)						
Automatic Heater Company. (See Clark, George W., assignor.)						
Automatic Heel Trimming and Burnishing Machine Company. (See Evans, Warren C., assignor.)						
Automatic Lubricating Tubular Axle Company. (See Seymour, Frederick J., assignor.)						
Automatic Vending Box Company. (See O'Kelly, James M., assignor.)						
Avery Manufacturing Company, W. G. (See Avery, William G., assignor.)						
Avery Planter Company. (See Avery, Robert H., assignor.)						
Avery, Robert H., assignor to Avery Planter Company, Peoria, Ill. Cultivator	407,706	July 30	2617	672	48	543
Avery, Robert H., assignor to Avery Planter Company, Peoria, Ill. Corn-planter	407,848	July 30	2745	712	48	566
Avery, Thomas C., New York, N. Y. Baker for clams	410,703	Sept. 10	869	224	48	1444
Avery, William G., assignor to W. G. Avery Manufacturing Company, Cleveland, Ohio. Bevel	408,368	Aug. 6	241	63	48	726
Axtell, Henry A., Turner's Falls, Mass. Machine for grinding and polishing cutlery	410,259	Sept. 3	184	48	48	1304
Axthelm, Ernst, Pittsburg, Pa. Elevator alarm-indicator	408,399	Aug. 6	290	79	48	735
Ayer, Albert E., assignor to F. H. Hathorne and I. P. T. Edmunds, Boston, Mass. Shoe-tying machine	411,565	Sept. 24	2154	{570 / 571}	48	1709
Ayer, Melville C., Biddeford, Me. Turfing implement	409,900	Aug. 27	2574	674	48	1193
Aymond, Alph. and H. La Rue, St. Charles, Mo. Nut-lock	407,317	July 23	1947	507	48	405
Ayres, James, Keokuk, Iowa. Bridge-guard	408,064	July 30	3008	802	48	628
Ayres, Ruben B. (See Meyer, Max, assignor.)						
Ayrton, William. (See Shepherd, Ayrton, and Clegg.)						
Babbitt, Artemas B., assignor to C. C. Walworth, Boston, Mass. Collapsible tap	408,570	Aug. 6	564	{147 / 148}	48	788
Babbitt, Edwin D., New York, N. Y. Sun and vapor bath	408,204	Aug. 6	1	1	48	679
Babcock Buggy Company, H. H. (See Davis, Francis G., assignor.)						
Babcock, Cortland S. (See Ensminger, Christian, assignor.)						
Babcock, Erskine L. (See Rohan, Philip, assignor.)						
Babcock, Samuel. (See Mansfield, Henry A., assignor.)						
Bach, Jacques. (See Kranich and Bach.)						
Bachelder, Elmer N., and F. E. Lovejoy, Portland, Me. Weighing oil-tank	408,450	Aug. 6	367	96	48	751
Bachler, Christian F. (See Lightwardt and Bachler.)						
Bachnick, William, Kansas City, Kans. Intestine-cleaner	407,505	July 23	2244	{579 / 580}	48	462
Bachrach, Abraham, *et al.* (See Dumais, Jean B. Z., assignor.)						
Bachrach, Charles, *et al.* (See Dumais, Jean B. Z., assignor.)						
Backlejau, Théophile, Mechlin, Belgium. Pressure-regulator	408,788	Aug. 13	902	241	48	860
Backstrom, Charles A., New York, N. Y. Incandescent lamp	408,496	July 9	711	196	48	150

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bacon, Charles A., and H. F. Low, Manchester, N. H. Mop	408,571	Aug. 6	565	148	48	788
Bacon, Charles H., Danielsonville, Conn. Exhibitor	409,160	Aug. 20	1482	391	48	979
Bacon, H. D. (See Hanscom, William W., assignor.)						
Bacon, Herschel A. (See Sawin, Charles A., assignor.)						
Bagg, James D., Springfield, Mass. Automatic coupling and valve-controlling mechanism for the steam or air pipes of cars	407,148 / 410,980	July 16 / Sept. 3	1690 / 165	441 / 48	48	346 / 1305
Bagley, Charles H., Boston, Mass. Fastening for rims						
Bagley & Sewall Company. (See Campbell, Charles H., assignor.)						
Bahrs, George H., San Francisco, Cal. Pilot or wheel guard for street-cars	409,901	Aug. 27	2575	675	48	1193
Bailey, George E., assignor to G. E. Bailey & Sons, Mansfield, Mass. Baker's oven	411,180	Sept. 17	1599	425	48	1596
Bailey, George F. (See Sheldon and Bailey.)						
Bailey, Oliver J. (See Kirk, Robert, assignor.)						
Bailey & Sons, George E. (See Bailey, George E., assignor.)						
Bailey, William. (See Carley, Thomas, assignor.)						
Bain, George A., Woodstock, Ontario, Canada. Bob-sleigh	406,867 / 407,318	July 16 / July 23	1276 / 1948	335 / 508	48	202 / 405
Bain, Nelly, New York, N. Y. Armpit-shield						
Bair, Joseph H. (See Kurtz, Harry H., assignor.)						
Bairstow, William H., Bridgenorth, county of Salop, England. Pile fabric	411,085	Sept. 17	1460	388	48	1569
Baker, Albert R. (See Brown, John F., assignor.)	409,283	Aug. 6	118	30	48	702
Baker, Bion A., Greeley, Iowa. Stalk-cutter wheel for sulky-plows	407,564	July 23	2336	604	48	462
Baker, Clayton L., Moline, Ill. Top-prop nut for vehicles	406,617	July 9	892	{241 / 242}	48	182
Baker, Francis, Boston, Mass. Fire-escape and ladder	408,189	July 2	235	64	48	46
Baker, Fred W., Rochester, N. Y. Water-filter	407,319	July 23	1949	508	48	406
Baker, George F., *et al.* (See Bee, Benjamin F., assignor.)						
Baker, Hamilton, Pittsburg, Ohio. Machine for binding straw						
Baker, Henry C. (See McRae and Baker.)						
Baker, I. L. (See Foglesong, Washington, assignor.)						
Baker, Isaac E., Red Wing, assignor of one-half to L. S. Hogeboom, Minneapolis, Minn. Attachment for dust-collectors	409,658 / 410,961	Aug. 27 / Sept. 3	2208 / 186	581 / 49	48	1125 / 1305
Baker, James, St. Louis, Mo. Hot-air furnace						
Baker, John A. (See Miller, John D., assignor.)						
Baker, Joseph W., Corry, Pa. Washing-machine	406,556 / 406,331	July 9 / July 2	796 / 434	216 / 120	48	106 / 87
Baker, William H., Chicago, Ill. Electric coupling and circuit-closer						
Baldwin, Cyrus W., Yonkers, N. Y., assignor to W. E. Hale, Chicago, Ill. Gas-engine	407,320	July 23	1952	{508 / 509}	48	406
Baldwin, Cyrus W., Yonkers, N. Y., assignor to W. E. Hale, Chicago, Ill. Gas-engine	407,321	July 23	1954	509	48	407
Baldwin, Cyrus W., Yonkers, N. Y., assignor to W. E. Hale, Chicago, Ill. Gas-engine	408,683	Aug. 13	740	{193 / 194}	48	827
Baldwin, William A., Chicago, Ill. Making aluminium alloys	406,383 / 410,669	July 2 / Sept. 10	509 / 1134	..... / 305	48	102 / 1496
Bales, Thomas M., Dublin, Ind. Fanning-mill	411,632	Sept. 24	2260	601	48	1732
Balfour, Lorenzo D., Carthage, Mo. Hammer	407,585	July 23	2337	604	48	463
Ball, Alfred P., Jersey City, N. J. Automatically-moving figure				{566 / 567 / 568 / 569}		
Ball, James, assignor to Holyoke Envelope Company, Holyoke, Mass. Envelope-machine	409,624	Aug. 20	2155		48	1100
Ballou, Walter B., North Attleborough, Mass. Bracelet	407,566	July 23	2338	604	48	463
Balmforth, Elliott H., assignor of one-half to S. Abbott, Wakefield, Mass. Veneer	411,634	Sept. 24	2263	601	48	1732
Balmore, John, and W. S. Rockwell, New York, N. Y. Boiler-setting	409,552	Aug. 20	2037	537	48	1068
Bane, Seth T., Detroit, Mich. Shield for horseshoe-calks	407,506	July 23	2246	580	48	463
Banfield, Charles. (See Francis and Banfield.)						
Banker, George W., Brooklyn, N. Y. Packing-case	408,664	Aug. 13	742	194	48	838
Banks, George L., assignor to W. E. Case, D. S. Romig, and A. F. Defevers, Fall River, Kans. Check-row corn-planter	410,140	Sept. 3	1	1	48	1269
Bannerman, William. (See Bead, Charles F., assignor.)						
Banta, Harry S., Kansas City, Mo. Device for adjusting and securing cams	411,275	Sept. 17	1736	464	48	1694
Bapteroosse & Company, F. (See Knesa, Victor J., assignor.)						
Barber & Co., L. A. (See Carpenter and Brott, assignors.)						
Barber, Hiram, Jr., Mitchell, Dak. Ter. Spring-draft attachment for vehicles	410,230	Sept. 3	142	36, 37	48	1296
Barber, Richard H., assignor of one-third to R. Innis, Rich Hill, Mo. Latch	406,019	July 2	2	1	48	3
Barclean, C. W. (See Jones, Walter F., assignor.)						
Bardenheier, George, Allegheny, Pa. Vehicle-spring	410,262	Sept. 3	187	49	48	1305
Bardsley, William. (See Crofford, Warren K., assignor.)						
Bardsley, William, Kearney, N. J., and W. K. Crofford, New York, N. Y. Device for operating elevator-hatchways	407,849 / 410,395	July 30 / Sept. 3	2746 / 397	714 / 106	48	506 / 1347
Bardwell, Lucian P., Pratt, Kans. Mailing device for newspapers, &c	406,158	July 2	188	54	48	30
Bardy, Charles, Paris, assignor to M. V. B. Petit, St. Denis, France. Purifying fatty acids	410,343	Sept. 3	327	86	48	1332
Barker, Anthony, Pittsburg, Pa. Undulating furnace-hearth or basin	407,275	July 16	1890	492	48	385
Barker, Erastus B., Newark, N. J. Photographic camera	411,487	Sept. 24	2042	540	48	1686
Barker, Erastus B., Newark, N. J. Plate-washing frame						
Barker, Erastus B., assignor to E. & H. T. Anthony & Company, New York, N. Y. Photographic paper-roll holder	407,050	July 16	1536	403	48	316
Barker, Erastus B., assignor to E. & H. T. Anthony & Company, New York, N. Y. Roll-holder for photographic cameras	408,451 / 407,322	Aug. 6 / July 23	369 / 1955	96, 97 / 510	48	752 / 407
Barker, Frank W., Chicago, Ill. Stand-pipe and fire-escape						
Barker, Jacob, Columbia, assignor of one-half to L. L. Frierson, Mount Pleasant, Tenn. Packing and refrigerating vessel	410,461 / 407,323	Sept. 3 / July 23	535 / 1957	143 / 510	48	1373 / 407
Barker, John F., Springfield, Mass. Gas-burning device	408,948	Aug. 13	1139	301	48	907
Barker, William H., Lawrence, Kans. Electric-arc lamp	410,462	Sept. 3	537	142	48	1373
Barker, William S., Troy, Ohio. Fence-machine	411,635	Sept. 24	2264	602	48	1733
Barker, William S., Troy, Ohio. Fence-machine	406,417	July 9	563	158	48	121
Barlow, John T., Richmond, Va. Railway-gate						
Barnard, Charles A., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Bolting-reel	406,384	July 2	510	141	48	102
Barnard, Heman A. (See Corawall and Barnard.)						
Barnard, Heman A., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Grain-scourer	406,385	July 2	511	142	48	102
Barnard & Leas Manufacturing Company. (See Barnard, Charles A., assignor.)						
Barnard & Leas Manufacturing Company. (See Barnard, Heman A., assignor.)						
Barnard & Leas Manufacturing Company. (See Cornwall, John B., assignor.)						
Barnard & Leas Manufacturing Company. (See Cornwall and Barnard, assignors.)						
Barnes, David L., Chicago, Ill., assignor to Consolidated Coupling Company, of New Jersey. Car-coupling	407,808	July 30	2690	698	48	556

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Barnes, David L., Chicago, Ill., assignor to A. J. Leith, New York, N. Y., and W. R. Stirling, Chicago, Ill. Railway-car	409,002	Aug. 13	1217	321 322	48	920
Barnes, James W., Newark, N. J., assignor to American Writing Machine Company, Hartford, Conn. Type-writing machine	411,428	Sept. 24	2043	540	48	1686
Barnes, Joshua B., Springfield, Ill. Balanced slide-valve	406,557	July 9	798	216	48	166
Barnes, Joshua B., Springfield, Ill. Spark-arrester	409,344	Aug. 20	1740	459	48	1030
Barnes, Joshua B., assignor of one-half to J. J. Seldner, Baltimore, Md. Dust-collector	407,392	July 23	2074	536 537	48	428
Barnes, William J., Oshkosh, Wis. Signal appliance	406,558	July 9	799	216	48	166
Barnett, Charles H., New York, N. Y. Automatic cock or cut-off for gas-burners	411,566	Sept. 24	2158	571	48	1709
Barney & Kilby *et al.* (See Schlmansky, Otto, assignor.)						
Barnhart, Harvey P. and S. L., Potsdam, N. Y. Means for capping and sealing milk-bottles	411,368	Sept. 17	1870	500	48	1648
Barnhart, Henry M., Marion, Ohio. Crane	410,870	Sept. 10	1135	305	48	1496
Barnhart, Samuel L. (See Barnhart, Harvey P. and S. L.)						
Barnum, Joseph P., assignor to himself, C. Godshaw, and J. S. Cain, Louisville, Ky. Ammonia-soda apparatus	409,382	Aug. 20	1804	475	48	1041
Barr, Benjamin H., Kansas City, Mo. Wheelbarrow	411,319	Sept. 17	1802	488	48	1636
Barr Cash and Package Carrier Company. (See Albach, William H., assignor.)						
Barr, Jacob H. (See Barr, Weaver, and Barr.)						
Barr, Jacob N., Milwaukee, Wis. Contracting-chill	411,369	Sept. 17	1871	500	48	1649
Barr, John N., Milwaukee, Wis. Harness-loop	409,726	Aug. 27	2318	608	48	1145
Barr, John N., assignor of one-half to G. D. Benjamin, Edgar, Nebr. Cash and package carrier	411,636	Sept. 24	2266	602	48	1733
Barr, Samuel W., H. M. Weaver, and J. H. Barr, Mansfield, Ohio.	409,767	Aug. 27	2380	624 625	48	1157
Barraclough, Benjamin, Bradford, England. Twilled woven fabric						
Barradall, Norborne D., Dallas, and A. J. Bradley, Fort Worth, Tex. said Barradall assignor to said Bradley. Automatic printing device	407,631	July 23	2122	552	48	498
Barret, Benjamin T., and R. Nussbeck, Henderson, Ky. Wire-fastener	408,065	July 30	3070	803	48	628
Barrett Battery Company, John A. (See Barrett, John A., assignor.)						
Barrett, Charles A. (See Appleyard and Johnson, assignors.)						
Barrett, John A., Brooklyn, N. Y., assignor to J. A. Barrett Battery Company, Baltimore, Md. Electric measuring-instrument	408,157	July 30	3218	840	48	655
Barrett, John P. (See Hyland, David M., assignor.)						
Barrett, Samuel D. (See Stafford and Barrett.)						
Barrett, Sidney H., Springfield, Mass., assignor to Railway Electric Car Lighting and Signal Company, of New York. Connector for secondary batteries	411,370	Sept. 17	1873	500	48	1649
Barrett, Vasan N., Atlanta, Ga. Cooking-stove	407,149	July 16	1602	441	48	347
Barron, Edwin, London, England. Caster	411,181	Sept. 17	1600	422	48	1597
Barrow, Daniel. (See Sexton, William L., assignor.)						
Barrow, James S., *et al.* (See Goodspeed, Charles P., assignor.)						
Barrow, Marion J., New Bloomfield, Mo. Fence	406,695	July 9	1013	271	48	205
Barry, C. Lawrence, and G. B. Upham, Boston, Mass. Producing dramatic performances	406,252	July 2	312	86	48	62
Barry, Henry, assignor of two-thirds to D. Norton and C. Franke, Chicago, Ill. Animal-trap	407,887	July 30	2802	730	48	578
Barry, James C., Rochester, N. Y. Fire-place grate	407,989	July 30	2962	770	48	607
Barth, Gustav A., assignor to P. Chouteau, St. Louis, Mo. Stock or tool-holder for direct-acting engines	409,659	Aug. 27	2209	581 582	48	1125
Barth, Otto J. (See Hall and Barth.)						
Bartlett, Frank L., Portland, Me. Refining fumes	406,868	July 16	1277	336	48	266
Bartlett, Frank L., Portland, Me. Manufacturing pigments	406,869	July 16	1278	336	48	266
Bartlett, Frank L., Portland, Me. Smelting ores	406,870	July 16	1281	336 337	48	266
Bartlett, Frank L., Portland, Me. Apparatus for the manufacture of pigments	406,871	July 16	1283	337	48	267
Bartlett & Rowell. (See Rowell, Almon B., assignor.)						
Barton, Albert G., Three Rivers, Mich. Field-roller	406,078	July 2	78	22	48	18
Barton, Edwin W., Lawrence, Mass. Roll for Jordan pulp-engines	407,276	July 16	1893	499	48	385
Barton, John (See Hawkins and Barton.)						
Barton, William, Liverpool, county of Lancaster, England. Distance-instrument	407,767	July 30	2617	679	48	544
Bartsch, Edwin. (See Kirkwood, Jay W., assignor.)						
Barwis, Thomas S., Arthabaskaville, Quebec, Canada. Hand-car	406,696	July 9	1014	271	48	205
Bash, David W., assignor to Sandwich Enterprise Company, Sandwich, Ill. Cultivator	406,418	July 9	564	139	48	122
Bashaw, Julian S., Chipley, Fla. Combined car coupling and brake	411,567	Sept. 24	2159	571 572	48	1710
Basin, Henry T., Decaturville, Ohio. Saw gumming and sharpening machine	406,079	July 2	79	22	48	18
Bass, Edward W. H., Quincy, Mass. Machine for cutting webbing	411,415	Sept. 24	1944	518	48	1668
Bassett, Fred. H., Saranac Lake, N. Y. Curtain-fixture	411,765	Sept. 24	2450	649	48	1771
Bassett, Fred. H., Saranac Lake, N. Y. Curtain-fixture	411,766	Sept. 24	2451	649	48	1771
Bast, Johann G., Brooklyn, N. Y. Renewable memorandum-book	409,383	Aug. 20	1808	475 476	48	1041
Batchelor, Telford C., West Kensington, county of Middlesex, and A. Latch, South Shields, county of Durham, England. Splicing wire ropes	411,637	Sept. 24	2268	603	48	1734
Bates, Albert J., Joliet, Ill. Barb-wire machine	406,190	July 2	236	69	48	47
Bates, Charles S. (See Thayer, Clifford P., assignor.)						
Batlle, Emilio, Barcelona, Spain. Vehicle-wheel	411,429	Sept. 24	2045	541	48	1686
Batt, Charles F., Brooklyn, N. Y. Self-locking differential hoist	411,096	Sept. 17	1461	389	48	1569
Battey, Sumter B., New York, N. Y. Gas-lighter	409,727	Aug. 27	2319	610	48	1145
Battin, Henry S., Chicago, Ill. Apparatus for manufacturing gas	410,820	Sept. 10	1066	283	48	1483
Batty, Albert, *et al.*, administrators. (See Batty, Job.)						
Batty, Hannah, *et al.*, administrators. (See Batty, Job.)						
Batty, Job, deceased; H. and A. Batty, Philadelphia, Pa., administrators. Feeding device for carding-machines	407,150	July 16	1604	441	48	347
Bauer, Ferdinand, Brooklyn, N. Y. Pump	410,396	Sept. 3	398	106	48	1347
Bauer, Robert A., assignor of one-half to H. G. Krekel, Grand Rapids, Mich. Bag-string cutter	407,567	July 23	2338	605	48	483
Bauer, Theodor, Munich, Bavaria, Germany. Coke-oven	406,966	July 16	1451	389	48	300
Baughman, James A., assignor of one-half to J. L. Whitford, Charlotte, Mich. Toe-weight	407,768	July 30	2619	679	48	544
Baumann, Alfred F., Watertown, Wis. Guard for rocking-chairs or analogous articles of furniture	409,444	Aug. 20	1890	500	48	1060
Baumer, Anton F., Syracuse, N. Y. Candle	407,051	July 16	1538	403	48	316
Bausch, John J., Rochester, N. Y. Lens-blocking	407,990	July 30	2963	770	48	607
Bayles, James C., New York, N. Y. Pipe or tube	406,392	July 2	435	120	48	87
Baylies, Lawson W., Neola, Iowa. Combined end-gate and scoop-board	407,567	July 23	2347	540	48	463
Beach, George A., Chicago, Ill. Flexible drip-cup for umbrellas	406,020	July 2	3	1	48	3
Beach, George I. (See Benedict, Heman A., assignor.)						
Beall, Fletcher W., Birmingham, Ala. Coupling and uncoupling stick	408,158	July 30	3221	841	48	655

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Bean, Charles E., assignor of one-half to Lackawanna Mills, Scranton, Pa. Circular-knitting machine	407,917	July 30	2853	742 743 744	48	586
Bean, Edwin E., Boston, Mass. Manufacture of cutting-wheels for sole-edge trimmers	409,598	Aug. 20	2110	556	48	1101
Bean, Roscoe, assignor to Tricycle Manufacturing Company, Springfield Ohio. Vehicle-wheel	407,769	July 30	2620	679	48	544
Beanblossom, Emmett M. (See Morgan and Beanblossom.)						
Bear, Montague M., Chicago, Ill. Child's carriage	406,872	July 16	1286	337 338	48	267
Beasley Supply Company. (See Smith, Friend W., assignor.)						
Beattie, James F., Wheeler, Pa. Apparatus for oiling mine-cars	410,530	Sept. 3	600	161	48	1386
Beatty, Henry O., Sacramento, Cal. Steam-motor for pumps	408,400	Aug. 6	291	73	48	735
Beatty, Thomas. (See Knouff and Pope, assignors.)						
Beauland, Amand, New York, N. Y. Necktie-fastener	407,508	July 23	2348	580	48	483
Beaumont, John W., Birmingham, Ala. Roofing or sheathing	408,066	July 30	3070	803	48	628
Becher, James A., Mishawaka, Ind. Bolt-threading machine	411,002	Sept. 17	1325	357	48	1543
Beck, August. (See Love, Joseph W., assignor.)						
Beck, C. W., *et al.* (See Kingwill, John F., assignor.)						
Beck, Edward, Chicago, Ill. Pipe-coupling	407,151	July 16	1604	442	48	347
Beck, George M., Frankfort, Ind. Washing-machine	407,152	July 16	1605	442	48	347
Beck, Robert M., Chambersburg, Pa. Lubricator	409,600	Aug. 27	2211	582	48	1126
Becker, Albert C., assignor to Lake Shore Manufacturing Company, Manitowoc, Wis. Grater and slicer	411,568	Sept. 24	2160	572	48	1710
Becker, John J., Scranton, Pa. Apron for cigar-machines	408,067	July 30	3072	803	48	629
Beckmann, Jacob H., St. Louis, Mo. Safety-nut for valves	409,533	Aug. 20	2098	537	48	1068
Beckwith, Walter C., Festoria, Ohio. Railway-torpedo	409,902	Aug. 27	2576	675	48	1194
Bedford, Charles S., Leeds, county of York, England. Compound dye	409,384	Aug. 20	1810	.....	48	1042
Bee, Benjamin F., assignor to E. Small, Harwich, A. D. Makepeace, and G. F. Baker, Barnstable, Mass. Cranberry-picker	410,397	Sept. 3	400	106	48	1347
Beebe, Charles S., Moline, Ill. Vehicle-seat	409,445	Aug. 20	1890	500	48	1060
Beebe, George, assignor to W. M. Beebe, Penn Yan, N. Y. Two-wheeled vehicle	407,715	July 23	2534	656	48	521
Beebe, William M. (See Beebe, George, assignor.)						
Beeman, William S., Ashland, Wis. Speed-reducing mechanism for lubricators	406,419	July 9	565	139	48	122
Beers, Louis G. (See Dreadul, Paul, assignor.)						
Beers, Philo M., Bridgeport, Conn. Machine for polishing the eyes of needles	407,394	July 23	1958	510 511	48	408
Beery, John V., *et al.* (See Burdsall, Stephen, assignor.)						
Beeson, Thomas B., assignor of one-half to R. H. Jones, Wilmington, Del. Roofing-tongs	411,755	Sept. 24	2436	645	48	1768
Beetz, Peter, Brooklyn, N. Y. Coin-controlled grip-tester or similar device	411,569	Sept. 24	2161	572	48	1710
Begiebing, Hugo F., New York, N. Y. Bath-tub	410,344	Sept. 3	329	86	48	1332
Behr, Arno, Chicago, Ill. Manufacturing starch	406,559	July 9	800	.....	48	167
Behr, Hans C., assignor of one-half to B. T. Lacy, San Francisco, Cal. Adjustable gear for crushing-rolls	409,095	Aug. 13	1368	360 361	48	949
Beighel, Silvb J., Pittsburg, Pa. Rack for papers, &c.	410,571	Sept. 10	965	177	48	1405
Beisling, Henry F., Philadelphia, Pa. Testing device	411,570	Sept. 24	2164	573	48	1710
Bejach, Oscar, Cincinnati, Ohio. Tobacco-moistening cabinet	408,789	Aug. 13	903	241	48	800
Belden, Harry B., and M. A. Taylor, Oakland, Cal. Casket-pedestal	406,191	July 2	237	64	48	47
Belden, Henry S., Canton, Ohio. Vapor-burner	407,632	July 23	2424	629	48	498
Belding, Thomas C., Canton, assignor to Universal Plow Company, Wooster, Ohio. Rolling colter	407,568	July 23	2339	605	48	483
Belfeld, Henry, *et al.* (See Gochring, John R., assignor.)						
Belfeld, T. Brown, *et al.* (See Gochring, John R., assignor.)						
Bell, Frank. (See Kellogg, Fortunatus G., assignor.)						
Bell, Harold J., Woodbury, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Incandescent gas-lamp	408,068	July 30	3073	804	48	629
Bell, Harold J., Woodbury, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Incandescent gas-lamp	408,072	July 30	3079	805	48	630
Bell, Harold J., Gloucester City, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Incandescent gas-lamp	408,069	July 30	3075	804	48	629
Bell, Harold J., Gloucester City, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Shade-holder	408,070	July 30	3077	804	48	629
Bell, Harold J., Gloucester City, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Gas-governor	408,071	July 30	3078	805	48	629
Bell, Harold J., Gloucester City, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Gas-heating burner	408,073	July 30	3080	805 806	48	630
Bell, Harold J., Gloucester City, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Incandescent gas-lamp	409,554	Aug. 20	2039	538	48	1068
Bell, Harold J., Gloucester City, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Burner-carriage for gas-burners	409,625	Aug. 20	2160	569	48	1110
Bell, Harold J., Gloucester City, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Gas-pressure regulator	409,626	Aug. 20	2161	569	48	1110
Bell, Harold J., Gloucester City, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Gas-pressure regulator	409,627	Aug. 20	2163	569 570	48	1111
Bell, John T., Dayton, Ohio, assignor to Ohio Rake Company. Harrow-disk	409,818	Aug. 27	2461	646	48	1172
Bell, Joseph, Brooklyn, N. Y. Revivifying gas-lime	406,192	July 2	239	.....	48	47
Bell, Thomas A., Trenton, N. J. Saggar	408,369	Aug. 6	242	61	48	726
Bell, Thomas M., assignor to C. Scott Spring Company, Philadelphia, Pa. Graduated car-spring	406,697	July 9	1014	272	48	205
Bellhouse, Edward L., Manchester, county of Lancaster, England. Apparatus for hydraulic packing-presses	406,193	July 2	239	65	48	47
Bellman, Oscar, Hagerstown, Md. Steam-boiler	410,065	Aug. 27	2799	737	48	1236
Bement, Alburto. (See Davis and Bement.)						
Bement, Clarence E., Lansing, Mich. Seat for harrow-teeth	410,141	Sept. 3	2	1	48	1269
Bement, Clarence S., *et al.* (See Caldwell, James C., assignor.)						
Bement, Frank, *et al.* (See Caldwell, James C., assignor.)						
Bement, William P., *et al.* (See Caldwell, James C., assignor.)						
Bemis, Albert T., Louisville, Ky. Steam-engine	411,706	Sept. 24	2273	630	48	1755
Bemis, Sumner A., Springfield, and L. Pfnget, Boston, Mass. Electric and cable railway car	410,871	Sept. 10	1136	306	48	1496
Benas, Magnus, New York, N. Y. Box	409,661	Aug. 27	2213	582	48	1125
Bénazet, Jean, Rheims, France. Heddle-making machine	407,325	July 23	1963	511 512	48	409
Benedict, Arthur L., New Canaan, Conn. Window-screen	409,555	Aug. 20	2041	538	48	1069

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Benedict, Heman A., assignor of one-half to G. I. Beach, Syracuse, N. Y. Panel	406,618	July 9	994	242	48	183
Benjamin, Dana H. (See Burton and Benjamin.)						
Benjamin, Edwin, South Evanston, Ill., assignor to Benjamin Machine Company. Molding-cutter	410,572	Sept. 10	666	177	48	1405
Benjamin, George D. (See Barr, John N., assignor.)						
Benjamin Machine Company. (See Benjamin, Edwin, assignor.)						
Benner, Willis, New York, N. Y. Lamp	407,153	July 16	1696	442, 443	48	347
Bennett Brothers & Company. (See Kirk and Horton, assignors.)						
Bennett, Edwin H., Jr., Bayonne, N. J. Electric machine	407,154	July 16	1699	443, 444	48	348
Bennett, Frank H., Twickenham, county of Middlesex, and J. Dowling, London, England. Button-hole sewing-machine	409,728	Aug. 27	2390	610, 611	48	1146
Bennett, Stephen, Buffalo, N. Y. Hydrocarbon-burner	406,284	Aug. 6	119	30	48	703
Bensing, Jacob, Malinta, Ohio. Tile or brick cutting table	411,638	Sept. 24	2369	603	48	1734
Bensinger, Moses. (See Carney, Thomas, assignor.)						
Benson, John Z., and A. Blanchard, Rolfe, Iowa. Implement for dehorning cattle	410,345	Sept. 3	330	87	48	1332
Benthall, John C., Schulenburg, Tex. Cultivator	406,619	July 9	996	242	48	183
Bentley, Daniel B., assignor of one-half to D. H. Goodrich, Geneva, Nebr. Pruning-shears	406,620	July 9	998	243	48	184
Bentley, Edward M., New York, N. Y. Electrical resistance	409,135	Aug. 13	1431	376	48	961
Bentley, John H. and T. W., Paterson, N. J. Heddle for weaving gauzes	410,483	Sept. 3	538	144	48	1373
Bentley, Joseph J., Sadorus, Ill. Rotary engine	406,060	July 2	79	23, 24	48	18
Bentley, Thomas W. (See Bentley, John H. and T. W.)						
Berger, R., *et al.* (See Comer, John, assignor.)						
Bergman, Edward F., Frankfort, assignor of one-half to J. R. Slack, Ilion, N. Y. Spring-scale	406,499	July 9	712	196	48	150
Bergman, Edward F., Frankfort, assignor of one-half to J. R. Slack, Ilion, N. Y. Spring-scale	410,952	Sept. 10	1248	336	48	1519
Bergmann & Company. (See Klein, Philip H., Jr., assignor.)						
Bergmann, Theodor, Gaggenau, Baden, Germany, assignor to J. H. Volkmann, New York, N. Y. Vending apparatus	406,870	Aug. 13	1026	272	48	884
Bergtold, Charles A., New York, N. Y. Grinding-mill	411,571	Sept. 24	2164	573	48	1711
Berkholz, John P., Philadelphia, Pa. Machine for cutting screw-blanks and screws	410,484	Sept. 3	539	144	48	1374
Berlin, Alvin E., and P. Wright, Denver, Colo. Packing and sales case	407,918	July 30	2856	744	48	587
Berlin & Montello Granite Company. (See Burns, Edward, assignor.)						
Bernigole, Bernard, *et al.* (See Verpilliier, Emile, assignor.)						
Bernstein Electric Light Manufacturing Company. (See Bussmann, Oscar S., assignor.)						
Berry, Benjamin, and D. B. Briggs, Bradford, England. Means for lubricating picking-tappets of weaving-looms	411,490	Sept. 24	2046	541	48	1656
Berry, Ida M., Sullivan, Ill. Meat and vegetable chopper	410,662	Sept. 10	839	225	48	1439
Berry, John V., New York, N. Y. Automatic copy-holder and line-indicator	407,314	July 16	1940	505	48	396
Berry, Robert C. (See Studley and Berry.)						
Bertram, August, assignor to M. J. Dolphin, Brooklyn, N. Y. Letter postmarking and canceling machine	408,401	Aug. 6	294	73	48	736
Bertrand, Ernst, Kladno, Bohemia, Austria-Hungary, assignor to Pottstown Iron Company, Pottstown, Pa. Basic process of making steel	408,572	Aug. 6	566	.....	48	788
Bertrand, Joseph E., Boston, assignor of one-half to M. Bray, Newton, Mass. Sole-sewing machine	409,161	Aug. 20	1483	391, 392, 393	48	979
Bertsch, Charles A., Cambridge City, Ind. Bending-roll	408,685	Aug. 13	743	195	48	828
Bertsch, William. (See Haller, John, assignor.)						
Bertsch, William, Philadelphia, Pa. Manifold memorandum-book	409,768	Aug. 27	2381	625	48	1157
Bessler, George J., *et al.* (See McFarlane, John, assignor.)						
Best, Daniel, San Leandro, Cal. Combined harvester and thrasher	410,307	Sept. 3	264	69	48	1319
Best, Marion L., *et al.* (See Best, William T., assignor.)						
Best, Mattie M., *et al.* (See Best, William T., assignor.)						
Best, William T., assignor to M. L. and M. M. Best, Minneapolis, Minn. Target-trap	407,429	July 23	2138	551, 552	48	441
Bettini, Gianni, Stamford, Conn. Music-leaf turner	408,908	Aug. 13	1083	284, 285	48	895
Bettini, Gianni, New York, N. Y. Recording and reproducing sounds	409,003	Aug. 13	1219	320	48	921
Bettini, Gianni, New York, N. Y. Apparatus for the record and reproduction of sounds	409,004	Aug. 13	1220	321	48	921
Bettini, Gianni, New York, N. Y. Apparatus for the record and reproduction of sounds	409,005	Aug. 13	1223	324	48	921
Betts, Albert C., Brunswick, N. Y. Wire-fence machine	410,263	Sept. 3	188	49, 50	48	1305
Betz, William, *et al.* (See Swanger, David, assignor.) (Reissue.)						
Beynon, George. (See Taylor, Andrew, assignor.)						
Beynon, John R., assignor of one-half to J. B. Murphy, Watertown, Wis. Grain-separator	407,052	July 16	1539	404	48	316
Bickford, John E., Whitman, Mass. Pegging-machine	409,729	Aug. 27	2324	611, 612	48	1146
Biddle, Alexander W., Philadelphia, Pa. Sash-balance	406,987	July 16	1452	381	48	300
Bidwell, George H., New York, N. Y. Hand-exerciser	410,778	Sept. 10	1007	270	48	1470
Bidwell, Jason A., Cleveland, Ohio. Machine for slotting screw-heads	407,155	July 16	1701	444	48	349
Biedinger, Charles G., Cincinnati, Ohio. Bottle-wrapper	411,371	Sept. 17	1873	500	48	1649
Biggerstaff, John C., Dahinda, Ill. Car-coupling	410,142	Sept. 3	3	1	48	1269
Biggs, Ambrose B., London, England. Cigarette-machine	410,231	Sept. 3	143	37, 38	48	1296
Billings, Luther G., Washington, D. C. Type-writer cabinet	411,003	Sept. 17	1327	357, 358	48	1544
Billings, Luther G., Washington, D. C. Cabinet for type-writers	411,004	Sept. 17	1330	358	48	1544
Bingham, Charles F., Buffalo, N. Y. Stop-cock box	406,253	July 2	313	86	48	63
Binns, David, and C. Wolff, Brooklyn, N. Y. Automatic switch for horse-railways	409,268	Aug. 20	1628	430	48	1008
Bird, Alexander B., Canandaigua, N. Y. Life-insurance policy	408,686	Aug. 13	746	195	48	828
Bird, Charles H., *et al.* (See McNaughton, Peter, assignor.)						
Bird, George E., *et al.* (See Hanson, Freeman, assignor.)						
Birdsall, Samuel, assignor of one-half to J. G. Hoffman, Perrysburg, Ohio. Hinge	406,968	July 16	1455	381	48	300
Birkery, Cornelius, Hartford, Conn. Culinary utensil	410,632	Sept. 10	762	206	48	1424
Birmingham, John P., assignor of one-half to A. T. Staton, Lexington, Va. Corn and fertilizer dropper	411,005	Sept. 17	1332	358	48	1545
Bishop, Edward A., assignor of one-half to H. Proehl and W. G. Gittings, Racine, Wis. Device for printing signs	406,812	July 9	1193	317	48	240
Bishop, Walter S., assignor to himself and F. B. Pardee, New Haven, Conn. Safety-fuse for electric conductors	409,628	Aug. 20	2165	570	48	1111
Bissell & Co., George P. (See Myers, William J., assignor.)						
Bissell, Joseph E., Bartold, Mo. Lamp	411,212	Sept. 17	1650	439	48	1607

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Bittner, C. J. P. (See Grammes, Lewis F., assignor.)						
Black, Elihu. (See Hill, Charles D., assignor.)						
Black, George, St. Charles, Iowa. Device for feeding stock	409,168	Aug. 20	1488	393	48	969
Blackburn, George A., and D. J. Brimm, Columbia, S. C. Temporary binder	410,346	Sept. 3	331	87	48	1333
Blackinton, Will J., Otter Lake, Mich. Bob-sled	406,580	July 9	801	217	48	167
Blackman, George V. (See Parmenter and Blackman.)						
Blackmore, George C., Newark, N. J. Water-heater	409,314	Aug. 20	1706	448	48	1022
Blackwell, Francis O., New York, N. Y. Electric-railway switch	406,490	July 9	586	150	48	123
Blackwell, Francis O., New York, N. Y. Electrical resistance	406,647	Aug. 6	681	176	48	289
Blackwell, Francis O., New York, N. Y. Electric-railway plow	410,264	Sept. 3	190	50	48	1306
Blackwell, Francis O., New York, N. Y. Commutator-brush	410,265	Sept. 3	193	50	48	1307
Blackwell, Josiah L., New York, N. Y. Electric-railway circuit	406,421	July 9	569	160	48	123
Blaha, Anton, Milwaukee, Wis. Valve-gear for steam-engines	408,436	Aug. 6	372	97	48	752
Blair, Barton L. (See Loewer and Blair.)						
Blair, Thomas S., Jr., Pittsburg, Pa. Manufacture of steel	407,156	July 16	1703	444	48	349
Blaisdell, Hiram W., Yuma, Ariz. Ter. Sinking wells	409,446	Aug. 20	1691	500	48	1060
Blake & Johnson. (See Manville, Frank B., assignor.)						
Blake Manufacturing Company, George F. (See Atkins, Charles H., assignor.)						
Blake, William, *et al.* (See Lerulh, Michel J., assignor.)						
Blake, William L. (See Carleton, Charles A., assignor.)						
Blakely, Edward A. (See Collyer, Robert H., assignor.)						
Blakemore, Herbert D., Moline, Ill. Disk harrow	410,573	Sept. 10	667	178	48	1405
Blakesley, Alpheus M., Rock Island, Ill. Stove	410,143	Sept. 3	4	2	48	1269
Blakesley, Gilbert H., assignor to Blakesley Novelty Company, Bristol, Conn. Making armlets, &c.	411,416	Sept. 24	1946	518	48	1698
Blakesley Novelty Company. (See Blakesley, Gilbert H., assignor.)						
Blanchard, Addison H. (See Ferguson and Blanchard.)						
Blanchard, Albert. (See Benson and Blanchard.)						
Blank, Alois, St. Louis, Mo. Water-proof and fire-proof material for roofing	409,006	Aug. 13	1369	361	48	949
Blankley, James A. (See Stewart and Blankley.)						
Blankner, William, Columbus, Ohio. Extension-table	409,662	Aug. 27	2313	583	48	1126
Blaszkaye, John, Cleveland, Ohio. Spool-holder	408,159	July 2	190	54	48	39
Blatt, Ludwig, Cannstadt, Würtemberg, Germany. Pipe-connection for pneumatic brakes	411,006	Sept. 17	1334	359	48	1543
Bleich, John J., and J. F. Sarratt, Paducah, Ky. Holder for spectacle-cases	411,118	Sept. 17	1512	403	48	1589
Bleitke, John, McKeesport, Pa. Car-coupling	406,366	July 2	515	142	48	103
Blesch, August F., Columbus, Ohio. Water-closet	411,067	Sept. 17	1462	388	48	1569
Bley, Jacob H., New York, N. Y. Clasp	406,021	July 2	4	2	48	3
Blickensderfer, George C., Erie, Pa., assignor to Blickensderfer Manufacturing Company, New York, N. Y. Type-writing machine	410,682	Sept. 10	803	216, 217	48	1432
Blickensderfer Manufacturing Company. (See Blickensderfer, George C., assignor.)						
Bliss Manufacturing Company, R. (See Wilson, Vincent W., assignor.)						
Bloch, David M., New York, N. Y. Postage-stamp holder	407,309	July 23	2248	581	48	463
Blocher, John, Franklin Grove, assignor of one-half to D. F. Riddelsbarger, China, Ill. Mattress	410,133	Aug. 27	2030	769	48	1260
Block, Herman C., Milwaukee, Wis. Device for winding bandages, &c.	409,447	Aug. 20	1892	500	48	1061
Block, Israel. (See Goldstein and Block.)						
Bloeser, Rudolph, Scranton, Pa. Bottle-stopper	407,157	July 16	1704	445	48	349
Blood, Frank L., *et al.* (See Radford, Cass M., assignor.)						
Blood, George R. (See Atherholt, Ezra P., assignor.)						
Bloom, Charles J., Atchison, Kans. Fruit-gatherer	411,007	Sept. 17	1335	359	48	1545
Blosfeld, Charles E., and C. Schnur, Mount Vernon, Ind., assignors, by mesne assignments, to said Schnur. Foot-warmer	411,182	Sept. 17	1601	426	48	1597
Blount, Eugene L, Cambridge, Mass., assignor to Blount Manufacturing Company, Portland, Me. Door-check	406,021	July 9	899	243	48	184
Blount, Eugene L., Somerville, D. E. Kempster, Boston, J. H. Carrier, Somerville, and B. Dore, Lynn, assignors to Boston Type Writer Company, Boston, Mass. Type-writing machine	410,966	Sept. 3	194	51, 52	48	1307
Blount Manufacturing Company. (See Blount, Eugene L., assignor.)						
Blum, Ferdinand S. M., *et al.* (See Wenger, Julius, assignor.)						
Blum, William, Newark, N. J. Buckle	407,919	July 30	2857	744	48	587
Blume, Charles A., and F. N. Armstrong; said Armstrong assignor to D. Lanum, Colfax, Ind. Running-gear for vehicles	411,372	Sept. 17	1874	501	48	1649
Bly, John, Tioga, Pa. Walking-beam	409,365	Aug. 20	1611	476	48	1042
Boardman, Frederick R., assignor of one-half to R. C. W. Peterson and M. P. Hardt, London, county of Surrey, England. Arc lamp	411,088	Sept. 17	1464	389	48	1570
Boatman, Samuel T., Roanoke, Mo. Corn-row marker	407,158	July 16	1706	445	48	349
Bobo, Charles D., Nevada City, Cal. Obstetrical instrument	411,572	Sept. 24	2165	573	48	1711
Boda, William J., Dayton, Ohio. Hinge	407,809	July 30	2691	698	48	556
Bodefeld, Meinolph, St. Louis, Mo. Pneumatic-railway system	409,769	Aug. 27	2382	625, 626	48	1157
Body, William C. D., Grass Valley, Cal. Safety-catch for cars of inclined railways	407,947	July 30	2900	755	48	596
Boeck, Charles H., Milwaukee, Wis. Oil-stove	407,560	July 23	2341	605	48	464
Boefer, Christian L., and C. C. Kruse, Kansas City, Mo. Making weiss-beer extract	410,672	Sept. 10	1139	.....	48	1497
Boehm, John C., Rich Prairie, Minn. Four-horse evener	411,707	Sept. 24	2274	630	48	1755
Boehning, William F., Minneapolis, Minn. Dust-collector	406,985	Aug. 6	121	30	48	703
Boehnlein, Joseph, Cincinnati, Ohio. Milestone-dress	407,326	July 23	1966	512	48	469
Bockel, William, Philadelphia, Pa. Pump	409,163	Aug. 20	1488	393	48	980
Boemermann, George, Brooklyn, N. Y. Combined cash-indicator and coin-counter	411,573	Sept. 24	2166	573, 574, 575	48	1711
Boen, John T., Atlanta, Ga. Pick	407,053	July 16	1541	404	48	316
Boesch, Gustave R., Freetown, Mass. Breech-loading gun	408,453	Aug. 6	373	98	48	753
Boettiger, John P., Cold Springs, N. Y. Centrifugal machine	408,822	Aug. 13	951	253	48	870
Bogardus, Hudson, assignor to Bogardus New Art Company, Newark, N. J. Combined work-bench and tool-cabinet	410,396	Sept. 3	401	107	48	1347
Bogardus New Art Company. (See Bogardus, Hudson, assignor.)						
Bogert, James, Yonkers, N. Y. Construction of arches	411,213	Sept. 17	1651	439, 440	48	1607
Boggs, Taylor, Delaware, Ohio. Corn-harvester	407,633	July 23	2426	629	48	499
Böhm, Theodor, and L. Eichelberg, Berlin, Germany. Combined shoe or boot scraper and bell-pull	410,633	Sept. 10	763	206	48	1424
Bohn, Louis H., Allegheny, Pa. Machine for edging roofing-sheets	410,066	Aug. 27	2800	737	48	1237
Boice, Hewitt. (See Wands, Lucius L., assignor.)						
Boisier, Hermann R., New York, N. Y. Regulator for dynamo-electric machines	408,205	Aug. 6	3	1	48	679

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Boissier, Hermann R., New York, N. Y. Dynamo-electric machine	408,206	Aug. 6	4	1	48	679
Bolls, Thomas H., Washington, D. C. Rein-holder	411,639	Sept. 24	2571	604	48	1734
Bolton, Edward, Cincinnati, Ohio. Distilling-column	410,634	Sept. 10	765	207	48	1425
Bolton, Robert B. (See Stewart, John A., assignor.)						
Bommarius, Frederick, New Orleans, La., assignor to Carroll Flexible Match Company, of Missouri. Apparatus for winding flexible lighting-matches	407,716	July 23	2535	634	48	521
Bommarius, Frederick, New Orleans, La., assignor to Carroll Flexible Match Company, of Missouri. Preparing flexible matches	407,717	July 23	2536	.....	48	521
Bommarius, Frederick, New Orleans, La., and G. Staunton, St. Louis, Mo., assignors to Carroll Flexible Match Company, of Missouri. Match-machine	407,718	July 23	2536	634 / 657	48	521
Bond, Benjamin R., London, England. Cloth-measuring machine	410,485	Sept. 3	510	143 / 144	48	1374
Bond, Charles F., assignor to W. Bannerman, Chicago, Ill. Disinfectant	408,454	Aug. 6	375	.....	48	753
Bond, Joseph, Buffalo, N. Y. Sectional boiler	407,920	July 30	2838	745	48	587
Bonelli, Eugene S., San Francisco, Cal. Exercising device for musicians	410,748	Sept. 10	957	257 / 258	48	1458
Bonn, John H. (See Vogelgesang, Max, assignor.)						
Bonner, Ninevah R., and I. L. Burlingame, Pana, Ill. Paint compound	409,904	Aug. 27	2578	.....	48	1194
Bonner, Whitmill J., Montague, Tex. Car-coupling	407,430	July 23	2140	550	48	441
Bonte, George H., Cincinnati, Ohio. Roller-tension for self-binding harvesters	407,634	July 23	2429	630	48	500
Bonwell, William H., Brookville, Ind. Cultivator	406,422	July 9	572	169	48	134
Boogher, Davis R., St. Louis, Mo. Incrustation-preventive	406,698	July 9	1016	.....	48	265
Boogher, David R., St. Louis, Mo. Incrustation-preventive	411,320	Sept. 17	1603	.....	48	1636
Bookwalter, John W., Springfield, Ohio, assignor to Bookwalter Steel and Iron Company, Jersey City, N. J. Refining iron	411,417	Sept. 24	1947	519	48	1668
Bookwalter, John W., Springfield, Ohio, assignor to Bookwalter Steel and Iron Company, Jersey City, N. J. Converting crude iron into malleable iron or steel	411,418	Sept. 24	1949	519	48	1668
Bookwalter, John W., Springfield, Ohio, assignor to Bookwalter Steel and Iron Company, Jersey City, N. J. Converting crude iron into malleable iron or steel	411,419	Sept. 24	1952	519	48	1669
Bookwalter Steel and Iron Company. (See Bookwalter, John W., assignor.)						
Bookwalter Steel and Iron Company. (See Robert, Gustavo L., assignor.)						
Booth, Nathaniel, administrator. (See Booth, Nathaniel, Sr.)						
Booth, Nathaniel, Sr., deceased; N. Booth, Hollidayaburg, Pa., administrator. Compound for purifying iron in blast and puddling furnaces	407,921	July 30	2860	.....	48	587
Borchers, Richard C., Philadelphia, Pa. Friction-coupling	410,232	Sept. 3	146	38	48	1297
Borgfeldt & Co., George. (See Emanuel, Max, assignor.)						
Borgfeldt, Nicholas H., Brooklyn, N. Y. Time-signal	406,989	July 16	1456	361	48	300
Borntraeger, Henry W., assignor to Carnegie, Phipps & Co., (limited,) Pittsburg, Pa. Metal pile or fagot	410,134	Aug. 27	2931	769	48	1260
Borsch, John L., Philadelphia, Pa. Eyeglasses	410,233	Sept. 3	147	39	48	1297
Boston Type Writer Company. (See Blount, Kempster, Currier, and Dore, assignors.)						
Bostwick & Burgess Manufacturing Company. (See Burgess, Charles W., assignor.)						
Bostwick, Frederick. (See De la Mar, Joseph, assignor.)						
Bosworth, Charles B. (See Meady and Bosworth.)						
Bosworth, Clark D., and J. F. Foster, Buffalo, N. Y. Stove-pipe damper	406,022	July 2	5	2	48	3
Botello, Mariano, Mexico, Mexico. Leaf-turner	410,486	Sept. 3	542	146	48	1375
Botsford, Harry L., Clifton, Dak. Ter. Hay-loader	406,699	July 9	1016	273	48	205
Bottome, Turner D., New York, assignor to J. B. Tibbits, Hoosick, N. Y. Manufacture of incandescent-lamp filaments	408,286	Aug. 6	122	30	48	703
Bottome, Turner D., New York, assignor to J. B. Tibbits, Hoosick, N. Y. Secondary battery	408,287	Aug. 6	124	31	48	703
Boucher, Amos, Monclova, Ohio. Railway-switch	411,069	Sept. 17	1465	369	48	1570
Boughton, John W., Philadelphia, Pa. Insect-screen	411,640	Sept. 24	2272	604	48	1734
Bouino, Jemengio, *et al.* (See Virnoche, Maxime, assignor.)						
Bourgeois, Arthur A., Ariel, La. Rice-hulling machine	409,905	Aug. 27	2579	675	48	1194
Bove, John. (See Dreimiller and Bove.)						
Bowen, J. J., *et al.* (See Roe, Alpheus E., assignor.)						
Bowen, Phillip A., Milwaukee, Wis. Horse-checking device	407,054	July 16	1542	404	48	317
Bowen, Robert. (See Pringle, James, assignor.)						
Bower, Henry, Philadelphia, Pa. Facilitating chemical reactions	410,067	Aug. 27	2801	736	48	1237
Bower, John F., Chicago, Ill. Signaling apparatus for elevators	406,423	July 9	574	151	48	124
Bowers, Alphonzo B., San Francisco, Cal. Dredging apparatus	411,183	Sept. 17	1602	426	48	1597
Bowling, Enoch C., assignor of one-half to H P. Glover, Ypsilanti, Mich. Garment-stay. (Reissue)	11,009	July 2	555	156	48	112
Bowman, John D., Altoona, Pa. Combined pressure-gage and safety-valve	406,990	July 16	1457	381	48	300
Bowns, John, Sheffield, county of York, England. Disk-pump	410,308	Sept. 3	366	89	48	1320
Bowser, John, assignor of part to J. W. and G. W. Richardson, G. W. Pratt, and J. L. Thornton, Marion, Va. Railway-gate	406,387	July 2	516	143	48	103
Boyce, James A., Wellsborough, Pa. Tellurian	408,335	Aug. 6	197	56	48	718
Boyd, Edward K., Chicago, Ill. Stem winding and setting watch	408,573	Aug. 6	567	148	48	788
Boyd, John, Elmhurst, Ill. Making butter	406,061	July 2	81	24	48	18
Boyd, Joseph H. (See Ansley and Boyd.)						
Boyd, Nathaniel W., Steelton, Pa. High-signal switch-stand	406,500	July 9	714	196	48	150
Boyer, Allen P., Sturgis, Mich. Hay-carrier	409,164	Aug. 20	1489	394	48	960
Boykin, Archable T., Oden, Tex. Combined stalk-cutter and rake	406,082	July 2	83	24 / 25	48	18
Boynton, Eben M., West Newbury, Mass. Locomotive	409,006	Aug. 13	1224	324 / 325	48	922
Boynton Furnace Company. (See Boynton, Nathaniel A., assignor.)						
Boynton, Nathaniel A., assignor to Boynton Furnace Company, New York, N. Y. Water-heater	407,850	July 30	2747	714 / 715	48	567
Boynton, Nathaniel A., assignor to Boynton Furnace Company, New York, N. Y. Water-heating apparatus	408,455	Aug. 6	376	99	48	753
Brab, August, assignor to Kohnen & Co., Ehrenfeld, near Cologne, Prussia, Germany. Manufacture of paper barrels	410,736	Sept. 10	922	247 / 248	48	1452
Brabb, George W., and L. M. Smith, Romeo, Mich. Road-cart	409,663	Aug. 27	2215	585	48	1126
Bracewell, John, North Adams, Mass. Aniline-black discharge	409,819	Aug. 27	2463	.....	48	1172
Bracewell, John, North Adams, Mass. Pigment-resist	409,820	Aug. 27	2464	.....	48	1172
Bracewell, John, North Adams, Mass. Printing aniline-black	409,821	Aug. 27	2466	.....	48	1172
Bracewell, John, North Adams, Mass. Printing aniline-black	409,822	Aug. 27	2468	.....	48	1173
Bracewell, John, North Adams, Mass. Aniline-black	409,823	Aug. 27	2470	.....	48	1173
Bracewell, John, North Adams, Mass. Printing on aniline-black	409,906	Aug. 27	2580	.....	48	1194
Bracewell, John, North Adams, Mass. Painting dark-blue colors	407,277	July 16	1894	493	48	385
Bracken, Frank, assignor to H. Roberts, Pittsburg, Pa. Metal-coiling apparatus						
Braden, Norman S. (See Jenne, Charles H., assignor.)						
Bradford, Julien M., Portland, Me. Regulator for dynamo-electric machines	410,663	Sept. 10	806	217	48	1432

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bradley, Andrew J. (See Barradall and Bradley.)						
Bradley, Charles S., Yonkers, N. Y. System of electrical distribution	409,449	Aug. 20	1895	501	48	1061
Bradley, Charles S., Yonkers, N. Y. System of electrical distribution	409,450	Aug. 20	1896	501 / 502	48	1061
Bradley, Charles S., Yonkers, assignor to Bradley Electric Power Company, New York, N. Y. Secondary battery	409,448	Aug. 20	1893	501	48	1061
Bradley, Edward. (See Crane, Thomas S., assignor.)						
Bradley Electric Power Company. (See Bradley, Charles S., assignor.)						
Bradley & Hubbard Manufacturing Company. (See Jauch, Joseph, assignor.)						
Bradley, John M. (See Lorse, James K., assignor.)	411,373	Sept. 17	1676	502	48	1650
Bradley, Peter T., Kansas City, Mo. Horse-collar fastening	406,254	July 2	314	87	48	63
Bradley, Walter A., Buffalo, N. Y. Automatic grain-scale	407,570	July 23	2342	605 / 606	48	424
Bradley, William F., assignor of one-half to W. B. Shiflette, Old Round Rock, Tex. Gate	411,490	Sept. 24	1953	519	48	1669
Bradley, William W., assignor to J. C. Dueber, Newport, Ky. Watch-case pendant	411,706	Sept. 24	2375	630	48	1758
Bradshaw, William B., Leetonia, Ohio. Work-holder	406,023	July 2	5	2,3	48	3
Bradshaw, William H., Orange, N. J. Plow						
Bradstreet, George S. (See Thissell and Bradstreet.)						
Brady, Albert B., *et al.* (See Witherell, Loren R., assignor.)	409,345	Aug. 20	1751	.....	48	1031
Brady, Charles F., Brooklyn, N. Y. Printing pyroxyline compounds						
Brady, Edwin W., *et al.* (See Witherell, Loren R., assignor.)						
Brady, Oscar W., *et al.* (See Witherell, Loren R., assignor.)	409,556	Aug. 20	2043	538 / 539	48	1089
Bragg, John, Cleveland, Ohio. Oil-burner	410,309	Sept. 3	267	70	48	1320
Braggins, Seth, Rochester, N. Y. Steam-boiler	409,894	Aug. 27	2472	646	48	1173
Brainard, Loverett, Hartford, Conn. Book-binding						
Braithwaite, Davies. (See Buxton, Braithwaite, and Smith.)						
Bramwell, William C., Hyde Park, Mass. Feeding mechanism for machines for treating wool	411,080	Sept. 17	1468	389 / 390	48	1570
Brandly, Al. R., New York, N. Y. Faucet	408,687	Aug. 13	748	195	48	828
Brandt, Edward J., Watertown, Wis. Spark-conductor	406,622	July 9	901	243	48	184
Brange, Paul H. (See Kelly and Brange.)						
Brann, Robert C. (See Wallace, William, assignor.)						
Brashear, John A. (See Kornblum, Brashear, and Painter.)						
Brashear, P. F. (See Lingle, John M., assignor.)						
Bratton, George W., *et al.* (See Lightbipe, James A., assignor.)	411,006	Sept. 17	1335	339	48	1545
Braun, Ludwig W., Chicago, Ill. Window-screen	408,909	Aug. 13	1065	285	48	895
Bray, John D., Montreal, Quebec, Canada. Fountain-pen						
Bray, Mellen. (See Bertrand, Joseph E., assignor.)						
Brayer, John F., assignor to Cooperative Foundry Company, Rochester, N. Y. Stove-grate	411,184	Sept. 17	1604	426	48	1597
Brayshaw, James, North Weymouth, Mass. Making hammocks	408,307	Aug. 6	7	2	48	680
Brayton, Albert P., Jr. (See Pelton, Lester A., assignor.)						
Brazee, Stephen, Preston Hollow, N. Y. Fruit-picker	409,907	Aug. 27	2581	676	48	1194
Brecht, Gustavus V., St. Louis, Mo. Meat-cutter	409,908	Aug. 27	2582	676	48	1195
Brede, Carl. (See Poggendorff and Brede.)						
Brede, Frits. (See Poggendorff and Brede.)						
Brede, William, Hamakua, Hawaii. Pocket-knife	407,055	July 16	1543	404	48	317
Breden, Adalmar. (See Koffler, Friedrich W., assignor.)						
Breed, Richard E., Pittsburg, Pa. Tool-socket	408,336	Aug. 6	198	50	48	718
Bregier, William, St. Louis, Mo. Safety-lantern for varnishers of brewers' vats	409,007	Aug. 13	1297	325	48	922
Breinig, Granville M., New Milford, Conn. Wood-filler	410,144	Sept. 3	6	.....	48	1270
Breinig, Granville M., New Milford, Conn. Producing artificial stone	410,635	Sept. 10	765	.....	48	1425
Breinig, Granville M., New Milford, Conn.						
Bremer, Isidor. (See Crook, Samuel H., assignor.)						
Brennan, Nicholas, assignor of one-half to L. P. Lawrence, Boston, Mass. Corn sheller and grinder	410,399	Sept. 3	407	108	48	1348
Brenner, David H., Grand Rapids, Mich. Machine for cutting wooden dishes	409,909	Aug. 27	2583	676	48	1195
Brenner, Joseph, *et al.* (See Woelfel, Christian, assignor.)						
Brent, Robert B. (See McDonald and Brent.)						
Bresnahan Bros. (See Bresnahan, Timothy A., assignor.)						
Bresnahan, Timothy A., assignor to Bresnahan Bros., Lynn, Mass. Sole-shaping machine	409,969	Aug. 20	1629	431	48	1008
Bretney, Eugene, Indianapolis, Ind. Dust-collector	408,074	July 30	3061	806	48	630
Brevoort, Henry L. (See Roberts and Brevoort.)						
Brewer, James, Denver, Colo. Anti-friction journal-box	408,288	Aug. 6	125	31	48	704
Brewer, John G., Albany, N. Y. Pump and siphon	408,648	Aug. 6	662	176	48	810
Brewster, William F., New York, N. Y. Recording thermometer-clock	410,664	Sept. 10	800	218	48	1433
Breyfogle, C. W., *et al.* (See Jennings, Byron, assignor.)						
Breymann, George H., Toledo, Ohio. Laying submarine pipes	409,008	Aug. 13	1230	325	48	923
Brick, Charles, South Bend, Ind. Potato-digger	407,465	July 23	2194	566	48	452
Bricken, Alexander W., Mackville, Ky. Trace	409,168	Aug. 20	1401	394	48	961
Bridgess, Appleton S. (See Montgomery, George V., assignor.)						
Brievogle, Frank D. (See Huckins, Daniel J., assignor.)						
Briggs, Adelbert, Taunton, Mass. Wire shoe-nail	408,159	July 30	3222	841	48	655
Briggs, Daniel B. (See Berry and Briggs.)						
Briggs, Herbert G., *et al.* (See Hanson, Freeman, assignor.)						
Briggs, James E., assignor of one-half to J. H. Sherwood, Brooklyn, N. Y. Device for operating hatchway-covers, &c	410,727	Sept. 10	923	248	48	1452
Brigham, Henry M., Brooklyn, N. Y. Device for bending metal pipe	411,756	Sept. 24	2439	646	48	1766
Brigham, Kasson A., Gilroy, Cal. Two-wheeled vehicle	409,346	Aug. 20	1752	460	48	1031
Bright, Colonel E. (See Curtis and Huntley, assignors.)						
Brilhart, William W., Indiana, Pa. Spectacle-case	410,234	Sept. 3	148	30	48	1297
Brimm, Daniel J. (See Blackburn and Brimm.)						
Bris, Léon Q., Paris, France. Obtaining alloys of aluminium	410,574	Sept. 10	668	178	48	1496
Brining, Thomas, Leeds, county of York, England. Tacking-tool for boots or shoes	408,160	July 30	3223	841	48	656
Brining, Thomas, assignor of one-half to G. Lister, Leeds, county of York, England. Machine for cutting shoe-uppers	407,159	July 16	1707	445 / 446	48	350
Brining, Thomas, Leeds, county of York, assignor of one-half to G. Lister, Headingly, Leeds, England. Machine for riveting boots or shoes	409,347	Aug. 20	1753	460 / 461	48	1031
Brinkerhoff, Warren M., Auburn, N. Y. Picture-hanger	406,255	July 2	316	87	48	63
Brinkerhoff, Warren M., Auburn, N. Y. Spring-tooth for harrows	406,256	July 2	318	87	48	64
Brinkerhoff, Warren M., Auburn, N. Y. Picture-hanger	406,623	July 9	903	244	48	185
Brinson, Thomas, Eagle Rock, Idaho Ter. Thill-coupling	407,160	July 16	1709	446	48	350
Briscoe, William, Philadelphia, Pa. Apparatus for melting snow and ice	411,574	Sept. 24	2172	575	48	1712
Brion, Charles M., Providence, R. I. Eaves-trough	406,333	July 2	436	120	48	86

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bristol, Benjamin H., *et al.* (See Bristol, William H., assignor.)						
Bristol Clock Case Company. (See Durward, John M., assignor.)						
Bristol, Franklin B., *et al.* (See Bristol. William H., assignor.)						
Bristol, William H., Hoboken, N. J., assignor to himself and B. H. and F. B. Bristol, Nangatuck, Conn. Belt-fastener	408,161	July 30	3225	842	48	656
Brix, Alexander, Frankfort-on-the-Main, Prussia, Germany. Device for drawing in perspective	406,083	July 2	85	25	48	19
Broad, Thomas, *et al.* (See Anderson, Lee, assignor.)						
Broadley, Allan. (See Ackroyd and Broadley.)						
Brock, Samuel W., Hamilton, Ohio. Trousers-elevator	410,704	Sept. 10	870	234	48	1444
Brock, William E., Plainfield, N. J., assignor to New York Glass Enameling Company, New York, N. Y. Gage-knife	409,629	Aug. 20	2166	570	48	1111
Brock, William H., Brooklyn, N. Y. Chain	411,575	Sept. 24	2173	576	48	1713
Brockman, Herman. (See Mill, Anton, assignor.)						
Brodesser, Peter H., and P. J. Ternes, Milwaukee, Wis. Meat-cutter	407,056	July 16	1544	405	48	317
Broer, Joseph W., Chicago, Ill. Lamp-stove	406,991	July 16	1450	382	48	301
Bronson, F. E., *et al.* (See Hopkins, Edwin F., assignor.)						
Brook, James W., Lynchburg, Va. Folding crate	409,386	Aug. 20	1812	476, 477	48	1042
Brook, James W., Lynchburg, Va. Vehicle-wheel	410,347	Sept. 3	333	87	48	1333
Brook, Tom. (See Paterson and Brook.)						
Brooks, David, Jr., Philadelpaia, Pa., assignor to Electric Cable Construction and Maintenance Company, of Pennsylvania. Introducing molten insulating material into underground conduits	408,574	Aug. 6	568	148	48	789
Brooks, David, Jr., assignor to Electric Cable Construction and Maintenance Company, Philadelphia, Pa. Air-tight covering for electric cables	410,953	Sept. 10	1249	336	48	1519
Brooks, Edward J., East Orange, N. J. Seal for mail-packages, &c.	407,057	July 16	1546	405	48	317
Brooks, James W., trustee. (See Glidden, Charles W., assignor.)						
Brooks, James W., trustee. (See Harrigan, Michael T., assignor.)						
Brooks, James W., trustee. (See Tripp, Eliphalet A., assignor.)						
Brooks, William B., Jr., *et al.* (See Wallace, John S., assignor.)						
Brooks, William D., assignor of one-third to D. D. Mallary, Baltimore, Md. Can-soldering machine	407,161	July 16	1710	446	48	350
Brooks, William F., Bridgeport, Conn. Corset-clasp	407,770	July 30	2021	679	48	544
Brooksmith, Edward, Tremont, N. Y. Scaffold	409,167	Aug. 20	1492	395	48	981
Broomell, Henry, Philadelphia, Pa. Turbine water-wheel	410,467	Sept. 3	544	146	48	1375
Brosius, John M., Atlanta, Ga. Motor for sewing-machines	407,668	July 16	1547	406	48	317
Brosius, John M., Atlanta, Ga. Tobacco-box	407,635	July 23	2430	630	48	500
Brosius, John M., Atlanta, Ga. Draw-bridge	408,370	Aug. 6	244	62	48	726
Brott, Lucien A. (See Carpenter and Brott.)						
Brott, Lucien A., assignor to Crandall Type Writer Company, Groton, N. Y. Ribbon movement for type-writing machines	406,289	Aug. 6	127	31	48	704
Brough, John W. (See Loomis, Alvah, assignor.)						
Brower, Asher A. (See Henshaw, Puterbaugh, Brower, and Hurlbut.)						
Brower, James F., Rodney, Mich. Saw-gummer	409,825	Aug. 27	2472	646	48	1173
Brown, Alexander E., Cleveland, Ohio. Grab-bucket	407,103	July 16	1712	447	48	351
Brown, Alexander E., Cleveland, Ohio. Hoisting and conveying machine	408,456	Aug. 6	377	99	48	754
Brown, Alexander T., Syracuse, N. Y. Cleaner for type-writing machines	406,873	July 16	1288	338	48	268
Brown, Alexander T., Syracuse, N. Y. Type-writing machine	411,421	Sept. 24	1955	520	48	1669
Brown, Alfred S., *et al.* (See Teala, Nikola, assignor.)						
Brown, Archie, *et al.* (See Hontz, Edward, assignor.)						
Brown, Archie, assignor of one-half to J. S. Irwin, Blunt, Dak. Ter. Wheeled scraper	411,119	Sept. 17	1514	403	48	1580
Brown, Arthur F., assignor to Stoddard Manufacturing Company, Dayton, Ohio. Combined seeder and harrow	406,290	Aug. 6	128	31, 32	48	704
Brown, Charles F. (See Stanley, Oramel C., assignor.)						
Brown, Charles J., *et al.* (See Cowell, Julius J., assignor.)						
Brown, Charles M., Chicago, Ill. Mowing-machine	411,276	Sept. 17	1737	464	48	1625
Brown, Cyril P., Spring Lake, Mich. Leaf-turner	410,779	Sept. 10	1008	270	48	1470
Brown, David R., Pacolet, S. C. Horse-detacher	411,709	Sept. 24	2376	630	48	1756
Brown, David W., Washington, D. C. Repreparing graphophone-tablets	408,649	Aug. 6	684	176, 177	48	810
Brown, Dominic D., assignor to M. E. Brown, Utica, N. Y. Baling or bundling machine	411,422	Sept. 24	1956	520	48	1669
Brown, Edward J., Washington, D. C. Drawer	410,068	Aug. 27	2801	738	48	1237
Brown, Edwin F., *et al.* (See Phelps, Charles H., assignor.)						
Brown, Edwin L., *et al.* (See Phelps, Charles H., assignor.)						
Brown, Egbert T., and S. Page, Buffalo, N. Y. Ash sifter and dumper	410,575	Sept. 10	670	179	48	1406
Brown, Eugene H., Bennington, Vt. Trimming attachment for machines for sewing knit fabrics	406,424	July 9	576	161, 162	48	124
Brown, Henry, and J. Gough, Columbus, Ohio. Safety attachment for railway-switches	409,168	Aug. 20	1493	395	48	981
Brown, Henry C., North Springfield, Mo. Wardrobe-bedstead	411,641	Sept. 24	2273	604	48	1734
Brown, Hezekiah, Brownsville, Kans. Water-motor	408,075	July 30	3082	806, 807	48	631
Brown, Howard W., Oakland, Cal. Copying-sheet	409,896	Aug. 27	2473	.....	48	1173
Brown, Irving, Cleveland, Ohio. Chain-link	411,321	Sept. 17	1803	482	48	1636
Brown, Jesse B., Nashville, Tenn. Paper file or holder	409,730	Aug. 27	2325	612	48	1146
Brown, John F., Chicago, Ill., assignor to A. R. Baker, Indianapolis, Ind. Order-holder	409,827	Aug. 27	2474	646	48	1173
Brown, John J., West Covington, Ky. Safe	406,122	July 2	141	41	48	30
Brown, Joseph, Santa Rosa, Cal. Latch	410,728	Sept. 10	996	248	48	1452
Brown, Joseph N., assignor of one-half to F. E. Presley, Farwell, Mich. Weighing hand-truck	411,576	Sept. 24	2174	576	48	1713
Brown, Lauriston S., assignor of one-half to M. L. Brown, Oriskany Falls, N. Y., and C. A. Todd, Lebanon, Mo. Lawn-mower	407,163	July 16	1715	447	48	351
Brown Manufacturing Company, D. J., *et al.* (See Schlumansky, Otto, assignor.)						
Brown, Mary E. (See Brown, Dominic D., assignor.)						
Brown, Minnie L., *et al.* (See Brown, Lauriston S., assignor.)						
Brown, Peter S. (See Orr and Brown.)						
Brown, Richard B., Philadelphia, Pa. Water-regulator for boilers	407,991	July 30	2964	771	48	607
Brown, Robert, Penicnick, county of Mid-Lothian, Scotland, assignor of one-half to G. Dinwoodie, New York, N. Y. Dandy-roll for paper-making machines	407,992	July 30	2966	771	48	607
Brown, Walter M., Albany, N. Y. Steam-generator	409,664	Aug. 27	2216	583	48	1127
Brown, William J., and J. O. Thorn, Toronto, Ontario, Canada. Sheet-metal shingle	409,387	Aug. 20	1814	477	48	1043
Brown, William M., Jr., Sacramento, Cal. Pipe-coupling	407,922	July 30	2860	745	48	587
Browne, George W., Rochester, N. Y. Ornament and advertising device	407,646	July 23	2431	630	48	500
Brownell, Emerson P., Beebe Plain, Quebec, Canada. Spool-machine	409,665	Aug. 27	2218	584	48	1127

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Brownell, Frederick B., St. Louis, Mo. Fare-box attachment	408,076	July 30	3063	807	48	631
Browning, John M. and M. S., Ogden, Utah, Ter. Magazine fire-arm	409,599	Aug. 20	2111	556, 557	48	1101
Browning, John M. and M. S., Ogden, Utah, Ter. Magazine fire-arm	409,600	Aug. 20	2114	557	48	1102
Browning, Joseph, assignor to J. F., F. M., and E. S. Simons, Philadelphia, Pa. Thimble-embossing machine	407,087	July 23	2432	630, 631	48	501
Browning, Matthew S. (See Browning, John M. and M. S.)						
Broyer, Philibert. (See Engel, Clement, assignor.)						
Brubaker, Andrew and W. H., Ashland, Ohio. Fire-kindler	410,488	Sept. 3	546	147	48	1375
Brubaker, William H. (See Brubaker, Andrew and W. H.)						
Brubaker, William H., Ashland, Ohio. Automatic wagon-brake	410,489	Sept. 3	408	109	48	1349
Bruce, James W., Aitch, Ohio. Automatic wagon-brake	407,810	July 30	2692	699	48	557
Bruce, Miner W., Knox Center, Nebr. Hose-supporter	407,811	July 30	2693	699	48	557
Bruce, Miner W., Knox Center, Nebr. Necktie	408,575	Aug. 6	568	149	48	789
Bruce, Norman H., Waterford, N. Y. Trimming attachment for looping-machines	409,557	Aug. 20	2044	539, 540	48	1089
Bruce, Norman H., Waterford, N. Y. Trimming and brushing attachment for turning-off machines						
Bruckner, Charles C., and H. W. Thornton, New York, N. Y. Magic lantern for advertising or other purposes	410,135	Aug. 27	2932	770	48	1260
Bruemmer, Gerhard, Philadelphia, Pa. Bean-cutter	411,235	Sept. 17	1677	449	48	1614
Brunner, Charles. (See Ames, Chester L., assignor.)						
Brunner, Charles. (See Lewis, George W., assignor.)						
Brush Electric Company. (See Pfannkuche, Gustav, assignor.)						
Bryan, Thomas B., *et al.* (See Rood, Amos D., assignor.)						
Bryant, Edson L., assignor of one-half to Wallace & Sons, Ansonia, Conn. Wick-raiser for central-draft lamps	409,910	Aug. 27	2585	676	48	1195
Bryson, Andrew, Jr. (See Pendleton and Bryson.)						
Bryson, Andrew, Jr. (See Pendleton, Bryson, and Tiera.)						
Buchanan, Laurens E., Waco, Mo. Combined dress stay and fastener	410,954	Sept. 10	1250	336	48	1519
Buchanan, William, New York, N. Y. Ball-and-socket joint	406,561	July 9	602	217, 218	48	167
Buchholz, Gustav A., deceased, Frankfort-on-the-Main, Prussia, Germany; O. Knight administrator and assignor of one-third to J. U. Robertson, New York, N. Y. Grain hulling and reducing machine	408,077	July 30	3064	807, 808	48	631
Buchmüller, Julius. (See Petry, Franz J., assignor.)						
Buckeye Car Seal and Manufacturing Company. (See Gibson, Adelbert R., assignor.)						
Buckley, John, Boston, Mass. Electric motor	406,874	July 16	1289	338	48	268
Buckley, Paul, and E. H. Decker, Chicago, Ill. Glove	406,650	Aug. 6	688	177	48	811
Buckman, Samuel Y., Philadelphia, Pa. Roofing double-seaming machine	407,466	July 23	2196	566	48	452
Buckmaster, John, Alton, Ill. Show-case	409,009	Aug. 13	1232	326	48	923
Bucyrus Foundry and Manufacturing Company. (See Thompson, John, assignor.)						
Budde & Westerman. (See Weiss, Albert R., assignor.)						
Buell, Charles E., Newark, N. J. Electric generator	407,327	July 23	1967	512	48	409
Buffum, Herbert H., Whitman, Mass. Machine for sewing shoes	410,145	Sept. 3	6	2	48	1270
Bugbee, Truman G., Sheboygan, Wis. Table-leaf support	407,812	July 30	2694	699	48	557
Buland, Knut, Linn Grove, Iowa. Ledger-index device	411,577	Sept. 24	2175	576	48	1713
Bulger, John W., East Liverpool, Ohio. Self-sealing jar	409,169	Aug. 20	1493	396	48	982
Bull, John, Cincinnati, assignor to E. E. Johnson, Palmesville, Ohio. Stirrup	409,558	Aug. 20	2048	540	48	1090
Bull, John, Cincinnati, assignor to E. E. Johnson, Palmesville, Ohio. Stirrup	411,757	Sept. 24	2440	646	48	1769
Bull, William C. (See White, James H., assignor.)						
Bullard, Edward P. (See Libby, Charles L., assignor.)						
Bullard, Edward P., Bridgeport, Conn. Brake for lathe-spindles	408,291	Aug. 6	130	32	48	705
Bullard, Edward P., Bridgeport, Conn. Screw-cutting machine	410,146	Sept. 3	10	3	48	1270
Bullard, James H., assignor to Aerated Fuel Company, Springfield, Mass. Apparatus for burning hydrocarbons as fuel	407,638	July 23	2434	631	48	501
Bullard, James H., assignor to Aerated Fuel Company, Springfield, Mass. Burner and burner-tank for hydrocarbon fuel	407,639	July 23	2436	631	48	501
Bullis, George W., Ann Arbor, Mich. Refrigerator	407,059	July 16	1549	406	48	318
Bullock, Milan C., Chicago, Ill. Portable derrick	407,993	July 30	2967	771, 772, 773	48	607
Bullock, Milan C., Chicago, Ill. Valve for steam-engines	407,994	July 30	2969	772, 773	48	608
Buocke, Richard D., Jersey City, N. J., assignor to W. W. Fouché, Jr., New York, N. Y. Sizing compound	407,510	July 23	2250	.....	48	463
Bunting, William, Jr., Flushing, assignor to Meyer-Sniffen Company, (limited,) New York, N. Y. Water-closet	408,371	Aug. 6	246	62	48	726
Burden, John M., Huntsville, Ky. Car-coupling	407,164	July 16	1716	448	48	351
Burdick, Harry C., New York, N. Y. Paper-bag machine	407,813	July 30	2695	699	48	557
Burdick, Harry C., New York, N. Y. Manufacture of paper bags	407,814	July 30	2697	700	48	558
Burdon, David P. (See Phelps and Burdon.)						
Burdsall, Stephen, assignor to J. V. Beery and D. Davis, Fremont, Ohio. Shifting rail for vehicles	408,651	Aug. 6	669	177	48	811
Burger, Frank M., Joliet, Ill. Potato-digger	408,208	Aug. 6	8	2	48	620
Burger & Lee. (See Waller, Arthur R., assignor.)						
Burger, Theodore W., Dunellen, N. J. Covering for interior walls	407,923	July 30	2802	745	48	588
Burgess, Benjamin A., London, Ontario, Canada. Lubricator	406,813	July 9	1194	317	48	240
Burgess, Charles M., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Lock-case	408,688	Aug. 13	749	195	48	829
Burgess, Charles W., assignor to Bostwick & Burgess Manufacturing Company, Norwalk, Ohio. Musical instrument	409,315	Aug. 20	1707	440	48	1022
Burgess, Harley, and J. A. Helms, Pittwood, Ill. Horse hay-fork	410,147	Sept. 3	11	4	48	1271
Burgie, Henry C. (See Collins and Burgie.)						
Burgoin, Edward L., Los Angeles, Cal. Pipe-bender	406,992	July 16	1461	382	48	301
Burk, William H., Sheboygan, Wis. Feed-water heater	406,635	July 9	966	244	48	185
Burk, William H., Sheboygan, Wis. Extension-table	409,911	Aug. 27	2586	677	48	1196
Burkelman, Charles, New York, N. Y. Portable roofing-tank apparatus	409,912	Aug. 27	2586	677	48	1196
Burkhart, John D., Dayton, Wash. Ter. Adjusting attachment for thrashing-machines	407,511	July 23	2250	581	48	463
Burkman, Walfrid, assignor to C. H. Froet, Los Angeles, Cal. Brick-machine	406,562	July 9	605	218, 219	48	167
Burlingame, Ira L. (See Bonner and Burlingame.)						
Burnam, Allen E., *et al.* (See Olin, Edgar W., assignor.)						
Burnet, Robert, East Orange, N. J. Paper-feeding machine	408,209	Aug. 6	10	3	48	620
Burnett, William J., Huron, Dak. Ter. Culinary utensil	410,489	Sept. 3	547	147	48	1375
Burnham, John, Lima, Ohio. Weather-strip	408,949	Aug. 13	1141	301, 302	48	907

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Burns, Edward, Montello, Wis., assignor of one-half to Berlin & Montello Granite Company, Chicago, Ill. Dumping-platform	409,913	Aug. 27	2589	678	48	1196
Burns, Frank, Westfield, N. Y. Type-writing machine	409,914	Aug. 27	2590	678 679	48	1197
Burns, Robert, Brooklyn, N. Y. Apparatus for cooling, stoning, and bagging coffee	411,710	Sept. 24	2377	631	48	1756
Burns, Robert B., Philadelphia, Pa. Reversible railway-rail	408,078	July 30	3085	806	48	631
Burr, Sanford S., Winnetka, and C. Teufel, assignors to A. H. Andrews & Company, Chicago, Ill. Folding bed	406,814	July 9	1195	317 318	48	240
Burr, Theodore B., Harlan, Iowa. End-gate	411,578	Sept. 24	2176	576	48	1713
Burrell, Frederick J., Thetford, county of Norfolk, England. Combined traction-engine and digging-machine	406,194	July 2	241	65, 66	48	48
Burrill, John. (See Dutton, George E., assignor.)						
Burson, William W., Chicago, Ill. Whiffletree-clip	408,689	Aug. 13	749	196	48	899
Burt & Hurlbut Company. (See Burt, Lou, assignor.)						
Burt, Lee. (See Mouat and Burt.)						
Burt, Lou, assignor to Burt & Hurlbut Company, Detroit, Mich. Jewelry-tray	408,576	Aug. 6	572	149	48	789
Burtch, William C., and E. M. Gurnee, assignors of one-tenth to F. Ridgway, Kansas City, Mo. Anti-friction bearing	406,950	Aug. 13	1142	302	48	907
Burton, Augustus G. (See Harris, James C., assignor.)						
Burton, Charles C., and D. H. Benjamin, Utica, N. Y. Washing-machine	408,690	Aug. 13	750	196 197 198	48	899
Burton, George D., Boston, Mass. Feed-trough	406,495	July 9	577	162	48	125
Burton, John D., Pittsburg, Pa. Metal roofing	406,094	July 2	8	3	48	4
Burton, John M., Wichita, Kans. Stock-car	408,691	Aug. 13	756	198	48	830
Burwell, William H., Sparta, Ga. Car-coupling	411,236	Sept. 17	1678	449	48	1614
Bury, Theodore, Cleveland, Ohio. Window-ventilator	407,328	July 23	1969	513	48	409
Busb, Charles W., Selden, Ohio. Fence-making machine	407,329	July 23	1969	513	48	409
Bushnell, Cornelius S., assignor to Everlasting Roofing Company, New Haven, Conn. Packing roofing composition	408,951	Aug. 13	1143	302	48	908
Busse, Rudolph. (See Huebner and Busse.)						
Bussmann, Oscar S., Somerville, Mass., assignor to Bernstein Electric Light Manufacturing Company, Portland, Me. Safety-switch for incandescent lights and other electrically-controlled devices	411,423	Sept. 24	1958	590	48	1670
Bustin, Charles F., Boston, Mass. Saddle-tree	408,577	Aug. 6	573	149	48	789
Butler, Cora A., Canton, Ohio. Fire-escape	408,257	July 2	319	88	48	64
Butler, James O., Verbena, Ala. Gang circular sawing machine	408,790	Aug. 13	904	242	48	860
Butler, Jonathan S., Springfield, Ill. Vapor-stove	408,079	July 30	3086	809	48	631
Butler, Thomas A., Oliver Springs, Tenn. Combined roller and seed-sower	410,873	Sept. 10	1140	307	48	1497
Butterfield, Hiram A., St. Louis, Mo. Car-brake	410,874	Sept. 10	1141	307	48	1497
Butts, Frank H., Minneapolis, Minn. Means for utilizing radiated heat of boilers	409,915	Aug. 27	2593	679	48	1197
Buts, Albert M., Minneapolis, Minn., assignor, by mesne assignments, to Consolidated Temperature Controlling Company, of Minnesota. Thermostat	409,316	Aug. 20	1708	449	48	1023
Buts, Walter D., Norristown, Pa. Press for knitted or woven fabrics	408,578	Aug. 6	574	150	48	789
Buts, Walter D., Norristown, Pa. Circular-knitting machine	408,952	Aug. 13	1145	302 303	48	908
Buxton, John E. (See Olson, Jacob, assignor.)						
Buxton, John H., D. Braithwaite, and M. Smith, Manchester, county of Lancaster, England. Printing-machine	407,393	July 23	2077	537 538	48	429
Busby, Charles E., assignor to H. B. and F. A. Richlé, Philadelphia, Pa. Testing-machine	406,024	July 2	86	25, 26	48	19
Byor, Gustav A., Edgar, Nebr. Handle	406,496	July 9	578	162	48	125
Byram, William H., and J. Redman, Fishkill Landing, N. Y. Boiler	406,624	July 9	904	244	48	185
Cabell, Samuel G., Washington, D. C. Means for preventing incrustation in steam-boilers	409,136	Aug. 13	1434	377	48	902
Cady, Orrin, Cincinnati, Ohio, assignor to W. B. Pritchard, Waterbury, Conn. Thread-cutter for thimbles	407,719	July 23	2540	657	48	522
Caffrey, Richard, *et al.* (See Driscoll, Jeremiah, assignor.)						
Cahn, Manrice, Weatherford, Tex. Device for removing broken screws, &c.	410,780	Sept. 10	1010	270	48	1470
Cahoon, William, Jr., assignor of one-half to E. L. Lefevre, Little Rock, Ark. Type-writing machine	410,490	Sept. 3	548	147 148	48	1376
Cail, Richard, Newcastle-upon-Tyne, county of Northumberland, England. Projectile	406,334	July 2	437	121	48	88
Cain, John S., *et al.* (See Barnum, Joseph P., assignor.)						
Cain, Thomas J., Cleveland, Ohio. Bottle-stopper	411,277	Sept. 17	1741	465	48	1625
Caine, William H., assignor of one-half to L. T. Mead, Stillwater, Minn. Safety-lock and shackle for railway-switches	409,388	Aug. 20	1814	477	48	1043
Cairns, Charles L., Jersey City, N. J. Centrifugal separator	408,791	Aug. 13	906	242	48	860
Calahan, Edward A., Brooklyn, N. Y. Door-spring	406,025	July 2	8	3	48	4
Caldwell, Frank G., Wheeling, W. Va. Metal ceiling	409,916	Aug. 27	2594	679	48	1197
Caldwell, Henry M., assignor to H. J. G. Cattanach, Sydney, New South Wales. Deodorant and disinfectant	406,700	July 9	1017	.....	48	206
Caldwell, Homer M., assignor to Harrington & Richardson Arms Company, Worcester, Mass. Revolving fire-arm	408,457	Aug. 6	381	100	48	754
Caldwell, James C., assignor to C. S. Bement, F. B. Miles, W. P. and F. Bement, Philadelphia, Pa. Device for tilting the tool of a slotting-machine	409,451	Aug. 20	1900	502	48	1062
Caldwell, John A., Bay Ridge, N. Y. Steam-boiler	407,888	July 30	2804	730	48	578
Caldwell, Marvin A., *et al.* (See Gifford and Allen, assignors.)						
Calef, Joseph W., North Easton, assignor to W. T. Andrews, Boston, Mass. Knife for cutting corn, &c.	407,571	July 23	2343	606	48	484
California Bituminous Block Manufacturing Company. (See Patterson and Groat, assignors.)						
Calkins, Almon H., Chicago, Ill. Oil-stove	408,210	Aug. 6	11	3	48	680
Calkins, Almon H., Chicago, Ill. Oil-stove	408,211	Aug. 6	15	3	48	681
Callander, Austin, Merrickville, Ontario, Canada. Harrow	411,009	Sept. 17	1337	360	48	1546
Calumet Fire Clay Company. (See Smith, Martin V., assignor.)						
Cambria Iron Company. (See Coffin, John, assignor.)						
Cameron, John M., Philadelphia, Pa. Plumb-bob	409,917	Aug. 27	2594	680	48	1197
Camp, Bushrod H., assignor to Corbin Cabinet Lock Company, New Britain, Conn. Frame for doors of post-office lock-boxes	409,559	Aug. 20	2049	540	48	1090
Camp, Horace B., Tallmadge, Ohio. Paving-brick	411,010	Sept. 17	1339	360	48	1546
Camp, Horace B., assignor to Turner, Vaughn & Taylor, Cuyahoga Falls, Ohio. Machine for making curved pipe	410,531	Sept. 3	602	162	48	1386
Campany, Milton E., Hamilton, Mich. Railway-car signal	407,278	July 16	1895	493	48	386
Campany, Milton E., Hamilton, Mich. Train-signaling apparatus	407,279	July 16	1897	491	48	386
Campbell, Andrew, Brooklyn, N. Y. Grip and appliance for cable-road cars	408,692	Aug. 13	758	199 200	48	830

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Campbell, Andrew C., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Trimming device for sewing-machines	407,572	July 23	2344	606	48	484
Campbell, Charles H., assignor to Bagley & Sewall Company, Watertown, N. Y. Paper-pulp screen	407,995	July 30	2971	773 774	48	906
Campbell, Duncan H., assignor to Campbell Machine Company, Pawtucket, R. I. Machine for waxing thread and winding the same on shuttle-bobbins	408,270	Aug. 20	1631	431 432	48	1009
Campbell, Hardy W., and J. P. Davies, assignors to Racine Malleable and Wrought Iron Company, Racine, Wis. Letter-press	411,756	Sept. 24	2441	646	48	1769
Campbell, Henry F., Malden, assignor to A. C. Pond, trustee, Boston, Mass. Metallic circuit	411,127	Sept. 17	1537	410	48	1585
Campbell, John. (See Foster and Campbell.)						
Campbell, John R., Clyde, Minn. Shoe for sled-runners	409,317	Aug. 20	1710	449	48	1023
Campbell, John W., assignor of one-third to J. F. Logan, Toronto, Ontario, Canada. Head-rest	409,369	Aug. 20	1816	478	48	1043
Campbell, Joseph V. (See Zell, Robert R., assignor.)						
Campbell Machine Company. (See Amborn, George, Jr., assignor.)						
Campbell Machine Company. (See Campbell, Duncan H., assignor.)						
Campbell Machine Company. (See Turner, Joseph S., assignor.)						
Campbell, Myron, South Bend, Ind. Rope-clasp	407,573	July 23	2344	607	48	484
Canda, Ferdinand E., New York, N. Y. Car-wheel chill	406,458	Aug. 6	382	100	48	754
Candee, William N., assignor to himself and G. S. Thorne, Buffalo, N. Y. Automatic twine-holder	409,137	Aug. 13	1435	377	48	903
Canet, Jean B. G. A., Paris, France, assignor of one-half to J. Whitworth & Co., (limited,) Manchester, England. Gun-carriage	410,908	Sept. 10	1275	343 344 345 346	48	1524
Cannon, George W., Poughkeepsie, N. Y. Hand-elevator	408,693	Aug. 13	764	200	48	832
Canny, Charles C. (See Cook, George W., assignor.)						
Capitaine, Emil, Berlin, Germany. Gas-motor	406,160	July 2	191	51	48	39
Capitaine, Emil, Berlin, Germany. Igniting device for petroleum-gas engines	408,459	Aug. 6	383	100	48	754
Capitaine, Emil, Berlin, Germany. Atomizer for petroleum-gas engines	408,460	Aug. 6	384	101	48	754
Capitaine, Emil, Berlin, Germany. Fuel-injector for explosive engines	408,461	Aug. 6	385	101	48	755
Capitaine, Emil, Berlin, Germany. Valve-gear for gas-engines	410,729	Sept. 10	927	249	48	1432
Card, George F., assignor to G. F. Card Manufacturing Company, Covington, Ky. Electro-dynamic machine	408,910	Aug. 13	1067	285 286 287	48	896
Card Manufacturing Company, George F. (See Card, George F., assignor.)						
Card, William J., assignor to B. L. Gage, Olean, N. Y., and W. Mellinn. Thill-coupling	406,388	July 2	517	143 144	48	104
Cardiff, Patrick, Astoria, Oreg. Removable saw-tooth	409,271	Aug. 20	1633	432	48	1009
Carey, Alfred E., Westminster, and E. Latham, London, county of Middlesex, England. Machine for making concrete, &c.	409,560	Aug. 20	2051	541	48	1090
Carey, John B., Brooklyn, N. Y. Railway-gate	411,579	Sept. 24	2177	577	48	1713
Carey, Philip, Cincinnati, Ohio. Covering for steam pipes or boilers	411,091	Sept. 17	1470	390	48	1571
Carhart, Edwin M., Providence, R. I. Burglar-alarm	410,663	Sept. 10	840	225	48	1439
Carleton, Charles A., Westbrook, assignor to W. L. Blake, Portland, Me. Steam-trap	406,875	July 16	1291	338	48	968
Carley, Benjamin, Paterson, N. J. Slide-valve	406,258	July 2	320	86	48	64
Carley, Oliver F., Westfield, Pa., assignor of two-thirds to D. C. Conklin, Olean, N. Y., and S. E. Young, Columbus, Ohio. Heating tan-liquor	407,380	July 16	1899	494	48	387
Carley, Oliver F., Westfield, Pa., assignor of two-thirds to D. C. Conklin, Olean, N. Y., and S. E. Young, Columbus, Ohio. Apparatus for heating tan-liquor	407,381	July 16	1900	494 495	48	387
Carlisle, George H., Detroit, Mich. Photographic-plate holder	408,085	July 2	87	20	48	20
Carlough, Daniel. (See Cooke and Carlough.)						
Carmichael, John H., Emmetsburg, Iowa. Label-holder for bottles	408,212	Aug. 6	16	4	48	681
Carmichael, William N. (See Trask and Carmichael.)						
Carmont, William E., Catford, London, county of Kent, England. Horseshoe	410,781	Sept. 10	1011	271	48	1471
Carnegie, Phipps & Co. (See Borntraeger, Henry W., assignor.)						
Carnegie, Phipps & Co. (See Simpson, James H., assignor.)						
Carnes, Charles T., Marietta, Ga. Churn	411,322	Sept. 17	1804	482	48	1636
Carney, Thomas, assignor to himself and M. Bensinger, Chicago, Ill. Cash indicator and register	407,815	July 30	2999	700	48	558
Carpeles, Philip, Milwaukee, Wis. Trunk	408,402	Aug. 6	386	101	48	755
Carpenter, Albert E. (See De Cew and Carpenter.)						
Carpenter, Amos H., *et al.* (See Lawrence, Victor V., assignor.)						
Carpenter, Amos H., Waterford, Vt. Windmill	406,259	July 2	321	89	48	64
Carpenter, Amos H., Waterford, Vt. Feathering paddle-wheel	410,148	Sept. 3	13	4	48	1271
Carpenter, Charles C., 3d, and L. A. Brott, assignors to L. A. Barber & Co., Groton, N. Y. Making barrels of musical instruments	410,875	Sept. 10	1141	307	48	1497
Carpenter, Edmund H., Jackson, Mich. Vehicle-spring	410,705	Sept. 10	871	234	48	1444
Carpenter, Frederick H., Louisville, Ohio. Carding-machine	409,918	Aug. 27	2595	680	48	1198
Carpenter, Horace N., Southbridge, Mass. Burnishing-machine	406,026	July 2	9	3, 4	48	5
Carper, Kent H., assignor to Carper Spark Conductor Company, Salem, Va. Spark-conductor	411,323	Sept. 17	1805	482 483	48	1636
Carper Spark Conductor Company. (See Carper, Kent H., assignor.)						
Carr, Charles, Boston, Mass. Suspension-track	406,195	July 2	242	66	48	48
Carr, Joseph J., assignor to Wilkes-Barré Molding Machine Company, Wilkes-Barré, Pa. Molding	408,579	Aug. 6	576	150	48	790
Carr, Joseph J., assignor to Wilkes-Barré Molding Machine Company, Wilkes-Barré, Pa. Mold-forming device	409,666	Aug. 27	2225	584	48	1128
Carr, Joseph J., assignor to Wilkes-Barré Molding Machine Company, Wilkes-Barré, Pa. Machine for making sand-molds	409,667	Aug. 27	2226	585 586 587	48	1128
Carr, Milo V., Smithville, N. Y. Device for turning cheese	408,792	Aug. 13	907	242	48	861
Carrick, Thomas J., Baltimore, Md., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Head-rest for chairs	408,823	Aug. 13	952	253	48	870
Carroll, Alexander H., Philadelphia, Pa. Hoof-clamp	408,060	July 30	3087	809	48	632
Carroll Flexible Match Company. (See Bommarius, Frederick, assignor.)						
Carroll Flexible Match Company. (See Bommarius and Staunton, assignors.)						
Carroll, Joseph. (See Deagan and Carroll.)						
Carroll, William H., and F. Lemmon, Chicago, Ill. Temporary binder	410,532	Sept. 3	602	162	48	1387
Carroll, William T., Worcester, Mass. Saddle for top rolls of spinning-machines	408,292	Aug. 6	131	33	48	705
Carson, James M. (See Farrow and Carson.)						
Carson, Robert D., Philadelphia, Pa. Arc lamp	409,390	Aug. 20	1817	478 479	48	1044

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Carson, Thomas H., East Saginaw, Mich. Washing-machine	407,616	July 30	2700	701	48	558
Carss, Ogle. (See Strong, Pitt W., assignor.)						
Carter, Charles H., Brooklyn, N. Y. Electrode for secondary batteries	410,136	Aug. 27	2934	770	48	1261
Carter, Charles H., Brooklyn, N. Y. Electric clock system	411,138	Sept. 17	1539	410 411	48	1565
Carter & Company. (See Carter, John R., assignor.)						
Carter & Company. (See McDowell, Thomas, assignor.)						
Carter, Edward B., Huntsville, Ala. Brick-mold	408,213	Aug. 6	17	4	48	681
Carter, Edwin E., Allegheny, Pa. Cutter for mining-machines	409,138	Aug. 13	1436	377	48	963
Carter, Elmira, Clio, Tex. Burglar-alarm	409,919	Aug. 27	2596	680	48	1198
Carter, George F., Orange, N. J. Muff-block	406,260	July 2	323	89	48	65
Carter, James T., and W. Koepke, Warrenton, Tex. Combination-tool	406,993	July 16	1402	382	48	301
Carter, John R., Toronto, Ontario, Canada, assignor, by mesne assignments, to Carter & Company, (limited,) Niagara Falls, N. Y. Machine for numbering paper	409,920	Aug. 27	2598	681	48	1196
Carter, John W., Newton, Mass. Sponge-holder for mucilage-bottles	409,770	Aug. 27	2367	626	48	1157
Carter, Robert A., Pittsburg, Pa. Rolling-mill	406,791	July 9	1018	273	48	206
Cartwright, Mattie E., St. Louis, Mo. Plaiting apparatus	406,086	July 2	89	26	48	20
Case, Artirus, *et al.* (See Arnold and Yergin, assignors.)						
Case, Charles A., New York, N. Y. Steam road-roller	408,372	Aug. 6	247	63	48	727
Case, Cromwell O., assignor to P. & F. Corbin, New Britain, Conn. Making parts of hollow door-knobs	407,817	July 30	2701	701	48	558
Case, Cromwell O., assignor to P. & F. Corbin, New Britain, Conn. Door-knob	409,010	Aug. 13	1234	326	48	923
Case, Elon E., Noblesville, Ind. Bed-bottom	411,711	Sept. 24	2378	631	48	1756
Case, Homer W., South Bend, Ind. Body for drays	410,491	Sept. 3	551	148	48	1376
Case, John M., assignor to Case Manufacturing Company, Columbus, Ohio. Dust-collector for middlings-purifiers	407,948	July 30	2901	756	48	596
Case, John M., assignor to Case Manufacturing Company, Columbus, Ohio. Dust-collector.	407,949	July 30	2904	756 757	48	597
Case, John M., assignor to Case Manufacturing Company, Columbus, Ohio. Grain-scourer	410,069	Aug. 27	2805	738	48	1237
Case, John M., assignor to Case Manufacturing Company, Columbus, Ohio. Grain-scourer.	410,070	Aug. 27	2807	739	48	1238
Case Manufacturing Company. (See Case, John M., assignor.)						
Case, William E., *et al.* (See Banks, George L., assignor.)						
Casey, Andrew J., Lewisburg, assignor of one-half to A. J. Casey, Russellville, Ky. Combined cutter, pulverizer, drag, and roller	409,391	Aug. 20	1819	479	48	1044
Casey, Firmin M., Mount Vernon, N. Y. Insulated nippers and cutting-instrument	409,097	Aug. 13	1370	361	48	949
Cash, Arthur W., Bridgeport, Conn. Horse-tail band	405,123	July 2	142	42	48	30
Casper, Andrew, Argo, and A. Jacobson, Omaha, Nebr. Live-stock marker	410,782	Sept. 10	1012	271	48	1472
Cassidy, Thomas E., Hoosick Falls, N. Y. Combined surface, scratch, and depth gage	409,921	Aug. 27	2600	681	48	1199
Castanien, Alfred. (See Leckron, Benjamin E., assignor.)						
Castner, Hamilton Y., London, England. Purifying aluminium chlorides	409,668	Aug. 27	2234	.....	48	1130
Castor, Samuel B. (See Castor, William H. and S. B.)						
Castor, William H. and S. B., Wayne, Ind. Gas-pressure pump	406,261	July 2	324	90	48	65
Caswell, Horace T. (See Davidson, George A., assignor.)						
Cathcart, Alexander T. (See Cathcart, William L. and A. T.)						
Cathcart, William L. and A. T., Gwynedd, Pa. Circular-knitting machine	410,071	Aug. 27	2808	740 741 742 743	48	1238
Catlin, Charles A., Providence, R. I. Charging liquids with gas	407,818	July 30	2701	701	48	558
Catlin, Charles A., assignor of one-half to C. S. Sweetland, Providence, R. I. Composition for flooring, roofing, and other purposes	406,563	July 9	806	.....	48	168
Caton Bros., Bixby & Co. (See Hedges, James, assignor.)						
Cattanach, Harry J. G. (See Caldwell, Henry M., assignor.)						
Cavanaugh, James L., Canton, Ohio. Whip and rein holder	406,876	July 16	1292	339	48	268
Casaña, Adrian, Madrid, Spain. Mechanical telegraphic apparatus	408,214	Aug. 6	18	4	48	681
Cazin, Francis M. F., New York, N. Y. Apparatus for drying starch-refuse, brewers' grains, &c	408,824	Aug. 13	953	253 254	48	670
Cefrey, Arsène T., Boston, Mass. Florist's figure	407,331	July 23	1972	513	48	410
Celluloid Novelty Company. (See Furman, John A., assignor.)						
Chabanel, Jean, Paris, France. Apparatus for separating, filtering, and disinfecting fecal matters	406,161	July 2	193	54	48	39
Chadbourne, Joseph S., and L. C. Stuckey, Rosamond, Cal. Railway-rail joint	410,149	Sept. 3	15	5	48	1271
Chadd, William, assignor of one-half to G. Shelley, Wilkes-Barré, Pa. Tent	410,783	Sept. 10	1014	271	48	1471
Chaddock, David C., Minerva, Ohio. Gate	408,825	Aug. 13	958	254	48	871
Chadwick, James M., assignor of one-half to A. T. Fuller, Gadsden, Ala. Percolator for coffee-pots	408,061	July 30	3067	806	48	632
Chafey, William H., Sherburne, N. Y. Wheeled vehicle	410,310	Sept. 3	269	70	48	1320
Chagnon, Elzear C., *et al.* (See Virnoche, Maxime, assignor.)						
Chagnon, Elzear C., and M. Virnoche, Woonsocket, R. I. Can or box	408,911	Aug. 13	1090	287	48	896
Challoner, Frank, Omro, Wis. Shingle-sawing machine	409,011	Aug. 13	1234	326 327	48	923
Challoner, John, Oshkosh, Wis. Shingle-sawing machine	411,580	Sept. 24	2178	577	48	1714
Chambers, Abram, Bagwell, Tex. Cotton-chopper	409,771	Aug. 27	2368	626	48	1158
Chambers, Hugh. (See Chambers, William, H., and J.)						
Chambers, James. (See Chambers, William, H., and J.)						
Chambers, James, Rochester, Ind. Washing-machine	408,062	July 30	3069	809	48	632
Chambers, James M., assignor to Chambers Patent Barrel Heater Company, St. Louis, Mo. Apparatus for heating and drying barrels or casks	407,720	July 23	2541	656	48	522
Chambers, John T., Jr. (See Huguley and Chambers.)						
Chambers, Malcolm B., Glenferrie Road, Malvern, Victoria. Machine for labeling cans	408,580	Aug. 6	577	150 151	48	790
Chambers Patent Barrel Heater Company. (See Chambers, James M., assignor.)						
Chambers, William B. (See Friend, Samuel, assignor.)						
Chambers, William, H., and J., Strathleven Place, Dumbarton, county of Dumbarton, Scotland. Collapsible bulwark for life-boats, &c	408,793	Aug. 13	908	243	48	861
Champlin, Stasia F. (See Keller, Franklin P., assignor.)						
Chandler, Clarence A., East Bridgewater, Mass. Vise	406,815	July 9	1197	318	48	240
Chandler, Josiah. (See Chandler, Samuel, Sr., S., Jr., and J.)						
Chandler, Samuel, Sr., S., Jr., and J., assignors to Kirkham, Hulett & Chandler, (limited,) London, England. Apparatus for washing and scrubbing gas	406,124	July 2	143	41	48	30
Chantrell, John, assignor of one-half to E. B. Wiegand, Reading, Pa. Staple forming, setting, and clinching machine	407,431	July 23	2141	552 553	48	441
Chapman, Alfred, Liverpool, England. Evaporating apparatus	411,011	Sept. 17	1339	360	48	1546

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Chapman, Alfred, Liverpool, England. Vacuum evaporating apparatus	411,012	Sept. 17	1340	361	48	1546
Chapman, Charles H., Groton, Mass. Support for spinning-spindles	408,581	Aug. 6	578	151	48	790
Chapman, Charles H., Groton, Mass. Support for spinning-spindles	408,582	Aug. 6	580	151	48	791
Chapman, Horace M., Chicago, Ill. Combined steam and hot-water boiler	411,642	Sept. 24	2274	605	48	1735
Chapman, John A., Milwaukee, Wis. Vehicle-gear	409,731	Aug. 27	2327	612	48	1147
Chapman, John A., Milwaukee, Wis. Vehicle-shaft coupling	409,732	Aug. 27	2329	612	48	1147
Chapman, Matthew T., Aurora, Ill. Apparatus for operating rotary drills	409,272	Aug. 20	1634	432 433	48	1009
Chapman, Matthew T., Aurora, Ill. Expansion-drill	410,311	Sept. 3	270	70	48	1321
Chapman, William E., Brooklyn, N. Y. Derrick	411,314	Sept. 17	1632	440 441	48	1608
Chappatte, Edward C., Philadelphia, Pa. Watch-case	406,916	July 9	1196	318	48	241
Chappell, Florance J. D., assignor of forty-nine one-hundredths to W. H. Riddle, Baltimore, Md. Canopy-support for childrens' carriages	406,389	July 2	518	144	48	104
Chappell, Thomas C. (See Moore and Chappell.)						
Chase, George S., Cambridge, Mass. Insect-destroyer	407,574	July 23	2345	607	48	484
Chase, Henry A., Boston, Mass. Electric conduit	410,150	Sept. 3	16	5, 6	48	1272
Chase, Marguret H. (See Welch, Howard F., assignor.)						
Chase, Milton, Haverhill, Mass. Nail-blank plate	411,278	Sept. 17	1742	465	48	1625
Chase, Thomas R., *et al.* (See Gibbs, James E., assignor.)						
Chaudefosse, Gustave T., St. Louis, Mo., assignor to Sonora Mining and Dry Concentrator Company, East St. Louis, Ill. Dry-ore concentrator	406,335	July 2	438	121 122	48	88
Cheney Company, P. C. (See Keyes, Frank E., assignor.)						
Cheney, James W., Indianapolis, Ind. Blacksmith's mandrel	407,851	July 30	2750	715	48	567
Cherry, Joseph S. (See Hewes, William F., assignor.)						
Cherry, Samuel D., Seneca, S. C. Churn	410,492	Sept. 3	532	148	48	1376
Chester, George T., Lockport, N. Y. Barrel-hoop	406,202	July 2	325	90	48	65
Chesterton, Ernest H., Los Angeles, Cal. Finger-guard	408,912	Aug. 13	1091	287	48	896
Chew, Noah M., Southport, Ind. Plant-setting machine	406,336	July 2	440	122	48	88
Chicago Exhaust and Blow Pipe Company. (See Kutsche, Oswald, assignor.)						
Chilcott, Amon W., Matteon, Ill. Gate	407,060	July 16	1550	406 407	48	318
Childs, Charles H., Cleveland, Ohio. Vapor-burner. (Reissue)	11,024	Aug. 20	2201	579	48	1117
Childs, James. (See Jones, Charles, assignor.)						
Childs, Jesse A., and W. E. Muir, Coushatta, La. Seed-planter and fertilizer-distributer	411,215	Sept. 17	1638	441	48	1608
Chlunock, Frank R., Brooklyn, N. Y. Electric wiring	406,994	July 16	1463	383	48	302
Chisholm, Boyd & White. (See White, Bruce C., assignor.)						
Chisholm, William. (See Dow, Joseph H., assignor.) (Reissue.)						
Chittenden, George R. (See Darby and Chittenden.)						
Chivill, John, assignor to Webster & Comstock Manufacturing Company, Chicago, Ill. Shaft-coupling	408,953	Aug. 13	1148	304	48	908
Chorlton, Isaac, and G. L. Scott, Manchester, county of Lancaster, England. Bed-frame	407,165	July 16	1717	448	48	352
Chonteau, Pierre. (See Barth, Gustav A., assignor.)						
Christeneen, Andrew M., Frisco, Utah Ter. Cradle	406,125	July 2	144	43	48	30
Christian, Edmund. (See Emery and Christian.)						
Christie, John H. (See Sibley, Augustine W., assignor.)						
Christie, John J., assignor of one-half to C. M. Williams, Henderson, Tenn. Automatic buggy-brake	406,817	July 9	1200	319	48	241
Christman, John H., assignor of one-half to L. H. Redfield, Syracuse, N. Y. Bottle-stopper	409,922	Aug. 27	2601	681	48	1199
Christoph, André T., Paris, France. Rectification of alcohol	408,583	Aug. 6	581	.....	48	791
Church, Henry A., Providence, R. I. Combined thread-guide and latch-opener for knitting-machines	406,626	July 9	907	245	48	186
Church, Henry W., Graniteville, Mass. Wool-washing machine	410,312	Sept. 3	272	71	48	1321
Church, Isaac, Toledo, Ohio. Expansion-bolt device	406,564	July 9	809	219	48	168
Church, Isaac, Toledo, Ohio. Expansion-bolt	406,565	July 9	810	219	48	168
Church, Melvin B., Grand Rapids, Mich. Mailing-sheet list	407,640	July 23	2439	632	48	502
Church, Melvin B., Grand Rapids, Mich. Ornamentation of walls	409,012	Aug. 13	1240	.....	48	925
Chute, Charles R., *et al.* (See White, Clarence O., assignor.)						
Cilley, Frank H., Boston, Mass. Construction of metallic structures	411,013	Sept. 17	1342	361	48	1547
Cisco, George W., Montvale, N. J. Car-brake	407,575	July 23	2346	607	48	485
Cisco, George W., Montvale, N. J. Device for operating brakes	407,576	July 23	2347	608	48	485
Ciurcu, Alexandre, Paris, France. Apparatus and means for propelling by reaction	407,394	July 23	2079	538	48	429
Claflin, Frank O., assignor of one-half to T. S. Mann, Boston, Mass. Coin-operated toy	409,923	Aug. 27	2602	682	48	1199
Clapp Automatic Fire-Extinguisher Company. (See Clapp, Joseph, assignor.)						
Clapp, Joseph, Evanston, Ill., assignor to Clapp Automatic Fire-Extinguisher Company, of Illinois. Automatic valve	406,087	July 2	90	27	48	30
Clapp, Joseph, Evanston, assignor to Clapp Automatic Fire-Extinguisher Company, Chicago, Ill. Automatic fire-extinguishing apparatus	406,088	July 2	93	27	48	31
Clare, John, Imogen, Iowa. Cultivator	408,594	Aug. 13	765	200	48	832
Clark, Albert M. (See Wheeler and Clark.)						
Clark, Alvin B., assignor of one-half to O. T. Knode, Richmond, Ind. Harmonica-holder	411,374	Sept. 17	1877	502	48	1650
Clark, Asa, *et al.* (See Ashley, Charles A., assignor.)						
Clark, Charlemagne. (See Clark, Edwin M. and C.)						
Clark, Cynthia J., *et al.* (See Clark, Jasper, assignor.)						
Clark, E. Clinton. (See Eastwick, Edward P., assignor.)						
Clark, Edward. (See Armstrong, Clark, and Cottrell.)						
Clark, Edward S., *et al.*, executors. (See Taft, Gustavus E.)						
Clark, Edwin M. and C., Detroit, Mich. Surface cattle-guard	408,695	Aug. 13	767	201	48	838
Clark, Finley Y., Saratoga, N. Y. Bottle-stopper	409,924	Aug. 27	2603	682	48	1200
Clark, Franklin D., and F. Rice, Waukesha, Wis.; said Rice assignor to said Clark. Automatic cut-off	406,877	July 16	1293	339	48	269
Clark, Franklin S., Wilmington, N. C. Retort for distilling wood and making charcoal	407,166	July 16	1719	449	48	352
Clark, George W., Johnstown, Ohio. Brace for fence or gate posts	407,330	July 23	1970	513	48	410
Clark, George W., Boston, Mass., assignor of one-half to Automatic Heater Company, Portland, Me. Vapor-generator	411,712	Sept. 24	2379	631	48	1756
Clark, Hardy M., J. Taylor, and J. B. Henshaw, Manning, Iowa; said Taylor assignor to said Clark and Henshaw. Steam-generator	410,267	Sept. 3	196	52	48	1308
Clark, James H., Flatbush, assignor to C. E. Harris, Brooklyn, N. Y. Car-brake	408,794	Aug. 13	909	243	48	861
Clark, Jasper, assignor to T. C. Northcott and C. J. Clark, Elmira, N. Y. Combined punch and shears	407,167	July 16	1721	449	48	352
Clark, Jay W. (See McPherson, Henry, assignor.)						
Clark, John B. (See Croker, George H., assignor.)						
Clark, Thomas, Philadelphia, Pa. Corner-block for billiard and pool tables	408,584	Aug. 6	583	151	48	791

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Clark, Thomas R., *et al.* (See Flagg, Thomas J., assignor.)						
Clark, William P., Elberton, Ga. Cotton-chopper	407,512	July 23	2251	581	48	463
Clark, William S., Philadelphia, Pa. Apparatus for testing and disinfecting drain or soil pipes	409,013	Aug. 13	1241	328	48	925
Clark, William S., Philadelphia, Pa. Drain and soil pipe	409,014	Aug. 13	1243	328	48	925
Clarke, Robert, Gravesend, N. Y. Bottle-trap	408,215	Aug. 6	19	4	48	681
Clarkson, George H. (See Spiegel, William G., assignor.)						
Clause, John J., Chicago, Ill. Rotary printing-machine	410,576	Sept. 10	671	179	48	1406
Claussen, Edward E. (See Lorens, William A., assignor.)						
Claussen, Edward E. (See Lorens and Claussen.)						
Claussen, Edward E., Hartford, and G. Mortson, Bridgeport, Conn. Paper-bag machine	411,544	Sept. 24	2122	{560 561	48	1703
Clayton, George W., Cleveland, Ohio. Hydraulic elevator	410,583	Sept. 3	604	162	48	1367
Clayton, Herbert F., and G. H. Holdroyd, Huddersfield, county of York, England. Filter	409,273	Aug. 20	1640	434	48	1010
Clayton, John, and J. Abraham, New York, N. Y. Card-holder	406,196	July 2	243	67	48	48
Cleaveland, Albert H., Belvidere, Ill. Window-screen	406,878	July 16	1294	339	48	269
Clegg, Ralph. (See Shepherd, Ayrton, and Clegg.)						
Cleland, Annie, New Orleans, La. Flower-box	409,925	Aug. 27	2605	682	48	1200
Clement, James I. (See Clement, Nathaniel C. and J. I.)						
Clement, Lewis M., Oakland, and G. C. Watriss, San Francisco, Cal. Cable or electric street-railway	409,926	Aug. 27	2606	682	48	1200
Clement, Nathaniel C. and J. I., West Plains, Mo. Heating-drum for fruit-driers	408,083	July 30	3069	810	48	632
Clements, Abner B., U. S. Navy, assignor to Levy, Dreyfus & Co., New York, N. Y. Opera or field glass	409,927	Aug. 27	2607	683	48	1200
Clemes, William H., assignor to Taylor & Boggis Foundry Company, Cleveland, Ohio. Wick-tube for oil-stoves	406,027	July 2	10	4	48	5
Clemins, Mike, and C. A. Tice, Herkimer, N. Y. Drying-frame for knitted drawers	409,630	Aug. 20	2166	570	48	1111
Clemons, Abram O. and R. N., 2d, Dresden, N. Y. Fifth-wheel for vehicles	409,733	Aug. 27	2330	613	48	1147
Clemons, Robert N., 2d. (See Clemons, Abram O. and R. N., 2d.)						
Cleveland, Charles R., assignor to W. H. Peck, Newark, N. J. Bag-hinge stay	407,332	July 23	1973	514	48	410
Clever, Henry H., Cleversburg, Pa. Lifting-jack	408,373	Aug. 6	248	63	48	727
Cliff, Edward, Nyack, N. Y. Spring-vehicle	408,871	Aug. 13	1030	273	48	884
Clifford, Walter E., Fitchburg, Mass. Clutch	411,237	Sept. 17	1679	449	48	1614
Clifford, Wheelock N., Waltham, Mass. Watch-winding mechanism	406,702	July 9	1020	273	48	206
Cline, George J., Goshen, Ind. Fence-machine	407,061	July 16	1551	407	48	318
Cline, George J., Goshen, Ind. Corn-planter	407,168	July 16	1722	449	48	352
Clorer, Wilhelm, assignor to E. Levi, L. and D. Oestreicher, Mannheim, Baden, Germany. Machine for twisting and covering cords, &c	408,690	Aug. 13	767	{201 202	48	832
Close, Levi, Leona, Kans. Band-cutter and feeder	408,084	July 30	3090	810	48	632
Cloud, John W., Buffalo, N. Y. Rail-joint	410,151	Sept. 3	18	6	48	1272
Cluxton, James R., Xenia, Ohio. Compound for the scrubbing-surfaces of wash-boards	406,427	July 9	579	162	48	125
Coes, Edward K., Providence, R. I., assignor to Detroit Spiral Tube Company, Detroit, Mich. Single-ply spiral tubing	409,171	Aug. 20	1495	396	48	982
Cobb, Henry B., Wilmington, Del. Incasing tubing composed of plastic materials	408,374	Aug. 6	250	63	48	727
Cobb, Henry B., Wilmington, Del. Lead-press	408,375	Aug. 6	252	63	48	728
Cobb, Henry B., Wilmington, Del. Manufacturing tubing	408,376	Aug. 6	254	64	48	728
Cobb, Henry B., Wilmington, Del. Lead-press	408,377	Aug. 6	256	64	48	728
Coburn, Joseph L., Newmarket, Ontario, assignor to N. Coburn and E. J. Martin, Toronto, Canada. Horse-blanket	409,392	Aug. 20	1820	479	48	1044
Coburn, Naomi, *et al.* (See Coburn, Joseph L., assignor.)						
Cochran, Cassius M., Marion, Ind. Gate	406,703	July 9	1023	{273 274	48	206
Cockrell, William A., Dayton, Ohio. Dust-collector	410,152	Sept. 3	20	6, 7	48	1272
Cody, Frederick A. (See Schnis and Cody.)						
Cody, Lorenzo J., Sault Ste. Marie, Mich. Elevated railway	410,577	Sept. 10	672	{179 180	48	1406
Coe, Benjamin L., assignor to Steele & Johnson Manufacturing Company, Waterbury, Conn. Shade or globe holder	409,928	Aug. 27	2608	683	48	1200
Coe, Daniel S. (See Luehrs and Coe.)						
Coe, William W., *et al.* (See Emerson, Edward W., assignor.)						
Coffey, Henry R., Stockton, Cal. Fare-register	410,578	Sept. 10	674	180	48	1407
Coffield, Charles H., Rockdale, Tex. Bird-cage	410,401	Sept. 3	410	109	48	1349
Coffin, Charles L., Detroit, Mich. Electric welding	409,015	Aug. 13	1243	328	48	925
Coffin, John, Johnstown, Pa., assignor to Cambria Iron Company, of Pennsylvania. Continuously annealing and plating wire	410,313	Sept. 3	274	37	48	1321
Coffin, John, Johnstown, Pa., assignor to Cambria Iron Company, of Pennsylvania. Apparatus for coiling galvanized wire	410,314	Sept. 3	275	71, 72	48	1321
Coffin, William L., Bloomingport, Ind. Potato-planter and seed-drill	408,585	Aug. 6	583	152	48	791
Coggeshall, William T., Melrose, Mass. Boiler-fine scraper	411,324	Sept. 17	1807	483	48	1636
Cohen, Israel S. (See Schmidt, Oscar W., assignor.)						
Cohen, Max, New York, N. Y. Shirt	409,016	Aug. 13	1244	329	48	925
Cohen, Robert L., Camden, N. J., assignor of one-half to W. F. Anderson, Philadelphia, Pa. Electric-arc lamp	410,493	Sept. 3	554	{148 149	48	1377
Cohn, Moses M. (See Johnson, Alfred E., assignor.)						
Colbert, Michael J. (See Maloney, James A., assignor.)						
Colburn, Alvin, Lynn, Mass. Polishing-wheel	410,749	Sept. 10	959	258	48	1459
Colby, Edward J., Chicago, Ill. Coin-released spirometer	406,069	July 2	95	22	48	21
Colby, Edward J., Chicago, Ill. Coin-controlled testing-machine	411,424	Sept. 24	1959	521	48	1670
Colby, Lucius W. (See Hacker, Colby, and Helton.)						
Cole, Wesley, and V. C. Dillmann, Kansas City, Mo. Wagon bolster-spring	406,879	July 16	1295	339	48	269
Cole, William R., Detroit, Mich. Signaling apparatus	411,120	Sept. 17	1516	404	48	1581
Coleman, Isaiah B., Elmira, N. Y. Flanging apparatus	408,586	Aug. 6	585	152	48	791
Coleman, James H. (See Cummins and Coleman.)						
Colket, George H. (See Van Kannel and Lockwood, assignors.)						
Colley, Frederick, Johnstown, Pa., assignor to Johnson Steel Street Rail Company, of Kentucky. Machine for rolling girder-rails	410,821	Sept. 10	1067	{286 287	48	1464
Colley, Frederick, Johnstown, Pa., assignor to Johnson Company, of Kentucky. Rolls for rolling side-bearing rails	410,935	Sept. 10	1251	327	48	1519
Collier, James W., New York, N. Y. Incandescent-electric-lamp socket	409,929	Aug. 27	2609	683	48	1201
Collins, James L., and H. C. Burgle, Chicago, Ill. Heating-stove	409,432	Aug. 20	1901	{502 503	48	1062
Collins, John W., assignor of one-half to J. F. Atzel, Washington, D. C. Stopper for bottles	407,169	July 16	1723	450	48	353
Collins, Samuel F., and G. S. Slack, Binghamton, N. Y. Thermostatic draft-regulator	406,704	July 9	1021	274	48	207

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Collis, Fred L., Freedom, Ill. Corn-husker and feed-cutter	408,099	July 2	97	28	48	21
Collis, John, Des Moines, Iowa. Pipe-hanger	411,318	Sept. 24	2067	551	48	1665
Collyer, Robert H., assignor to E. A. Blakely, New Orleans, La. Cotton-seed cleaner	408,085	July 30	3092	810	48	633
Colt, James B., New York, N. Y. Magic lantern	411,092	Sept. 17	1471	390	48	1571
Colville, John, Brunswick, Ga. Machine for boring and trimming slats	410,784	Sept. 10	1015	{272 273	48	1471
Comer, John, assignor of three-fourths to R. Berger, E. Aldersley, Anderson, and F. H. Deakin, Redding, Cal. Lubricator for shaft-bearings	407,771	July 30	2032	679	48	544
Comey, Robert H., Camden, N. J. Machine for tying skeins of yarn, &c	408,216	Aug. 6	19	5	48	682
Commercial Telegram Company. (See Healy, Clarence L., assignor.)						
Comstock, Harry, assignor to Hunter & Comstock Arms Company, Fulton, N. Y. Breech-loading gun	409,017	Aug. 13	1245	329	48	926
Comstock, Willie S., Binghamton, N. Y. Dado-guide	410,319	Sept. 3	334	88	48	1333
Condon, Samuel E., assignor to himself, M. Mickleborough, and N. W. Pratt, Brooklyn, N. Y. Tool for cutting out boiler-tubes	408,162	July 30	3026	842	48	656
Conestoga Cigar Company. (See Abraham, John H., assignor.)						
Conkle, Andrew, Jr., assignor of two-thirds to A. V. and J. H. McVicker, Babb, Ga. Guano-distributer	411,545	Sept. 24	2126	561	48	1703
Conklin, Dewitt C., *et al.* (See Carley, Oliver F., assignor.)						
Conklin, Nathaniel A., Brooklyn, N. Y. Apparatus for elevating water	406,880	July 16	1296	340	48	269
Conkling, Gurdon, Glens Falls, N. Y. Magnetic separator. (Reissue)	11,012	July 16	1942	{505 506	48	396
Conkling, Gurdon, Glens Falls, N. Y. Separating magnetic from non-magnetic particles	410,876	Sept. 10	1142	{307 308	48	1497
Conkling, Gurdon, Glens Falls, assignor to Conkling Ore Dephosphorizing Company, New York, N. Y. Magnetic separator	406,337	July 2	441	122	48	89
Conkling, Gurdon, Glens Falls, assignor to Conkling Ore Dephosphorizing Company, New York, N. Y. Magnetic separator	410,877	Sept. 10	1143	308	48	1497
Conkling Ore Dephosphorizing Company. (See Conkling, Gurdon, assignor.)						
Conley, Edward, Boston, Mass. Beating-engine for paper-pulp	407,641	July 23	2439	632	48	502
Conly, John. (See Keller and Conly.)						
Connee, James, Port Arthur, Ontario, Canada. Automatic weighing-scales	407,170	July 16	1725	450	48	353
Conn, Charles G., Elkhart, Ind. Clarionet	410,072	Aug 27	2831	743	48	1241
Conner, John R. (See Lincoln, George E., assignor.)						
Connett, Martin L., Bellefontaine, Ohio. Calipers and dividers	409,828	Aug. 27	2475	647	48	1173
Connett, Martin L., Bellefontaine, Ohio, assignor, by mesne assignments, to M. F. Connett and J. H. Morse, Kansas City, Mo. Fabric-turning implement	409,139	Aug. 13	1436	{377 378	48	963
Connett, Matthew F., *et al.* (See Connett, Martin L., assignor.)						
Connolly, John B., Minneapolis, Minn. Horse-collar	409,158	Aug. 13	1472	388	48	970
Conover, Stewart. (See Willson and Conover.)						
Conrad, Martin, and C. Hots, Chicago, Ill. Wagon-gear	409,829	Aug. 27	2475	{647 648	48	1173
Conrad, William C. (See Thiele, Felix, assignor.)						
Conrey, James C., Pittsburg, Pa., assignor of one-half to Union Water Meter Company, of Massachusetts. Cross for gas mains or pipes	408,826	Aug. 13	959	255	48	871
Consolidated Coupling Company. (See Barnes, David L., assignor.)						
Consolidated Temperature Controlling Company. (See Butz, Albert M., assignor.)						
Cook, Allen. (See Gregory, Albert A., assignor.)						
Cook, Edward M., New York, N. Y. Apparatus for drying or otherwise treating materials	408,217	Aug. 6	21	5	48	687
Cook, Erwin A., McComb, assignor of one-half to H. W. Doty, Findlay, Ohio. Accelerating the flow of natural gas from gas-wells	408,652	Aug. 6	699	177	48	811
Cook, Frederic, New Orleans, La. Bagasse-furnace	408,587	Aug. 6	586	153	48	792
Cook, Frederic, New Orleans, La. Bagasse-furnace	408,588	Aug. 6	588	153	48	792
Cook, Frederick W., San Francisco, Cal. Saw-mill set-works	410,340	Sept. 3	335	88	48	1334
Cook, Frederick W., assignor of one-half to H. P. Gregory & Co., San Francisco, Cal. Gang-edger	410,315	Sept. 3	281	72, 73	48	1323
Cook, George W., assignor of one-third to C. C. Canny, Detroit, Mich. Underground conduit for electrical conductors	406,818	July 9	1201	319	48	241
Cook, Henry C., Mount Joy, Iowa. Band-cutter and feeder	410,785	Sept. 10	1018	273	48	1473
Cook, Horace W. (See Creaby and Cook.)						
Cook, James, Darlington, S. C. Combined needle-threader and thread-cutter	411,325	Sept. 17	1808	483	48	1637
Cook, Sidney, assignor to himself and W. M. Ogilvie, Orlando, Fla. Roller-colter	407,062	July 16	1552	407	48	319
Cook, Thomas P., assignor of one-half to L. M. Tucker, Columbus, Miss. Spring-motor	410,137	Aug. 27	2935	771	48	1261
Cooke, Augustus R., Syracuse, N. Y. Stop-motion for dental engines	407,950	July 30	2906	757	48	597
Cooke, Ernest W., Chicago, Ill., assignor of one-third to C. P. Warren. Measuring apparatus for filling street-lamps	411,375	Sept. 17	1878	502	48	1650
Cooke, Joseph S. (See Totten, Francis E., assignor.)						
Cooke, Watts, and D. Carlough, Paterson, N. J. Apparatus for upsetting eye-bars	406,501	July 9	715	197	48	151
Cookson, Frederick N., Wolverhampton, England. Feeding mechanism for sewing-machines	411,491	Sept. 24	2046	{541 542	48	1687
Cooley, Charles H., Hartford, Conn. Regulator for grain-scales	410,138	Aug. 27	2938	772	48	1261
Cooley, Charles H., assignor to Pratt & Whitney Company, Hartford, Conn. Regulator for grain-scales	409,669	Aug. 27	2235	587	48	1130
Cooley, Orville, and E. Pridmore, assignors to Johnston Harvester Company, Batavia, N. Y. Grain-binding harvester	408,163	July 30	3228	842	48	656
Cooley, Orville, E. Pridmore, and H. M. Johnston, assignors to Johnston Harvester Company, Batavia, N. Y. Self-binding harvester	406,502	July 9	716	197	48	151
Coombs, Vinton. (See Tebbs, Lane, and Coombs.)						
Coon, James V. D., *et al.* (See Morian, Carlos C., assignor.)						
Coon, John B., Cold Spring, Mo. Combined seeder and harrow	406,881	July 16	1297	340	48	269
Cooper, Alfred J., Duryea, Pa. Mining-machine	409,772	Aug. 27	2389	627	48	1156
Cooper, Alfred J., and E. E. Wigzell, London, England. Electric registering deep-sea sounder	410,786	Sept. 10	1020	274	48	1473
Cooper Boiler and Engine Company. (See Cooper, George D., assignor.)						
Cooper, Charles B., New York, N. Y. Pipe elbow or section	409,631	Aug. 20	2167	571	48	1111
Cooper, Charles B., assignor to W. F. Wallace and H. E. Cooper, New York, N. Y. Making pipe-elbows	410,534	Sept. 3	605	162	48	1367
Cooper, Charles J., Moline, Ill. Harness-saddle	408,827	Aug. 13	960	255	48	871
Cooper, Daniel, Grand Rapids, Mich. Car-coupling	410,579	Sept. 10	675	180	48	1407
Cooper, George D., assignor to Cooper Boiler and Engine Company, St. Johns, Mich. Steam-generator	407,395	July 23	2061	538	48	430
Cooper, George W. (See Giles, Stephen, assignor.)						
Cooper, Henry, Jersey City, N. J. Coin-freed striking-machine	409,453	Aug. 20	1902	{503 504	48	1062

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Cooper, Henry, Brooklyn, and J. P. O'Brien, assignors of one-half to B. Van Leer, New York, N. Y. Coin-operative blow-testing machine	410,402	Sept. 3	411	116	48	1349
Cooper, Hugh E., *et al.* (See Cooper, Charles B., assignor.)						
Cooper, William H., assignor to M. Seward & Son, New Haven, Conn. Perch-bearing for fifth-wheels	409,561	Aug. 20	2052	541	48	1091
Cooperative Foundry Company. (See Brayer, John F., assignor.)						
Cope, Oliver, assignor of one-third to J. Otis, San Francisco, Cal. Cable-railway brake	407,171	July 16	1796	456 / 451	48	353
Copeland, David W., Syracuse, N. Y. Cash-carrier apparatus	406,627	July 9	908	245	48	186
Copeland, Lucius D., Camden, N. J. Stuffing-box	406,892	July 16	1299	341	48	270
Corbin Cabinet Lock Company. (See Camp, Bushrod H., assignor.)						
Corbin, P. & F. (See Case, Cromwell O., assignor.)						
Corbin, P. & F. (See Fagan, Robert, assignor.)						
Corbin, P. & F. (See Leach, Henry, assignor.)						
Corbus, John. (See Mets, Frank, assignor.)						
Corcoran, Andrew J., Jersey City, N. J. Windmill	411,581	Sept. 24	2180	570	48	1714
Corder, William J., Orange, Tex. Lubricant	406,883	July 16	1299	.....	48	270
Cordrey, Thomas P., Canton, Ohio. Steam fruit-canner	409,274	Aug. 20	1641	434	48	1010
Corell, Abram O., Charlotte, Mich. Fence-bracket	409,172	Aug. 20	1496	396	48	982
Corey, David A. (See Luscomb and Corey.)						
Corey, John A., Rockville, R. I. Saw-handle	407,333	July 23	1974	514	48	410
Corley, John W. (See Stovel and Corley.)						
Corliss, Emily A., administratrix. (See Corliss, George H.)						
Corliss, George H., deceased; E. A. Corliss, Providence, R. I., administratrix. Adjustment of gibs of cross-heads of steam-engines	406,091	July 2	98	29	48	21
Cornelius, Nicholas, assignor of two-thirds to H. Stanley and E. C. Teuscher, St. Louis, Mo. Flour-mill	410,878	Sept. 10	1144	309	48	1498
Cornelius, Nicholas, assignor of two-thirds to H. Stanley and E. C. Tuescher, St. Louis, Mo. Flour-mill	410,879	Sept. 10	1146	309	48	1498
Cornell Engine Company. (See Cornell, Lewis T., assignor.)						
Cornell, Lewis T., assignor to Cornell Engine Company, Chicago, Ill. Gas-engine	406,265	July 2	326	90, 91	48	66
Cornell, Stephen E., Brooklyn, N. Y. Box or canister	408,954	Aug. 13	1149	304	48	908
Cornell, William H., Titusville, Pa. Sectional screw conveyer	409,454	Aug. 20	1905	508	48	1063
Cornillie, Charles P. (See Cornillie, Edward A. and C. P.)						
Cornillie, Edward A. and C. P., Milwaukee, Wis. Knockdown table	409,930	Aug. 27	2611	682	48	1201
Cornwall, John B., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Rotary bolt	409,632	Aug. 20	2168	571	48	1112
Cornwall, John B., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Corn-cleaner	411,759	Sept. 24	2441	646 / 647	48	1769
Cornwall, John B., and H. A. Barnard, assignors to Barnard & Leas Manufacturing Company, Moline, Ill. Split pulley	409,140	Aug. 13	1439	378	48	904
Cornwell, Charles, assignor of one-half to H. C. Dunlap, Philadelphia, Pa. Steam-trap	406,264	July 2	328	91	48	66
Corrigan, Patrick D., assignor of one-half to J. W. Gallman, Wellsville, N. Y. Window	410,535	Sept. 3	606	160	48	1367
Cosby, Anderson B. (See Dudley and Cosby.)						
Cosgrave, James B., Binghamton, N. Y. Bottle-stopper	408,872	Aug. 13	1031	273	48	885
Cossey, Michael, Forestville, Iowa. Brake for vehicles	406,628	July 9	909	245	48	186
Costa, Louis. (See Repetti, Joseph, assignor.)						
Cottrell, Calvert B., Stonington, Conn. Stop-cylinder printing-machine	407,172	July 16	1728	451 / 452	48	353
Cottrell, George. (See Armstrong, Clark, and Cottrell.)						
Cottrell, Herbert, Newark, N. J. Apparatus for vaporizing oil	406,503	July 9	719	197 / 198	48	151
Cottrell, Herbert, Newark, N. J. Vaporizing oil	406,504	July 9	722	198 / 199	48	152
Cottrell, William H., *et al.* (See Morrison, Horatio B., assignor.)						
Coughlin, William H., assignor of one-half to H. H. Fairbanks, Worcester, Mass. Instrument for connecting line-wires	411,093	Sept. 17	1472	390	48	1571
Coughtry, John W., Cigarville, N. Y. Cigar-bunching machine	410,268	Sept. 3	198	53	48	1308
Coulter, George A., assignor of one-half to J. C. Ish, Omaha, Nebr. Electric horse-disconnector	406,629	July 9	911	246	48	187
Coulter, J. W., *et al.* (See Roundtree, John T., assignor.)						
Coupal, Joseph. (See Coupal, Peter A. and J.)						
Coupal, Peter A., Boston, and J. Coupal, Quincy, Mass. Seam-finishing machine	410,636	Sept. 10	766	207	48	1425
Courtney, Cyrus W., Bliss, Idaho Ter. Car-coupling	406,884	July 16	1300	341	48	270
Couteau, Jules, Béziers, Hérault, France. Adjustable garment-pattern	406,197	July 2	244	67	48	48
Cowan, Charles B. (See Ash, Joseph S., assignor.)						
Cowan, Stephen G. (See Freeman, Potts, and Cowan.)						
Cowdery, Warren H. (See Silliman and Cowdery.)						
Cowell, Julius J., assignor of two-thirds to C. J. Brown and C. D. Olney, Weedsport, N. Y. Miter-machine	409,455	Aug. 20	1906	504 / 505	48	1063
Cowie, James, Leisenring, Pa. Safety attachment for elevators	406,630	July 9	912	246	48	187
Cowles, George C., assignor of one-half to E. Germain, East Saginaw, Mich. Drive-pulley (Reissue)	11,020	Aug. 6	734	190 / 191	48	819
Cowley, Covel R., Wyoming, and L. H. Cowley, assignors of one-third to W. A. Sutherland, Rochester, N. Y. Motor for land-carriages	410,536	Sept. 3	607	163	48	1367
Cowley, Leonard H. (See Cowley, Covel R. and L. H.)						
Cox, Albert. (See Foster, Andrew T., assignor.)						
Cox, Frank P., Terre Haute, Ind. Arc lamp	411,713	Sept. 24	2380	632	48	1757
Cox, Jacob D., Jr., assignor to Cox & Prentiss, Cleveland, Ohio. Machine for back-clearing twist-drills	407,577	July 23	2349	625 / 626	48	485
Cox, Jacob D., Jr., assignor to Cox & Prentiss, Cleveland, Ohio. Mechanism for back-clearing twist-drills	407,721	July 23	2542	696	48	522
Cox, Patrick, Rochester, N. Y. Machine for marking soles	410,316	Sept. 3	284	73, 74	48	1324
Cox, Patrick, Rochester, N. Y. Apparatus for molding spring-heels of soles	410,317	Sept. 3	285	74	48	1324
Cox & Prentiss. (See Cox, Jacob D., Jr., assignor.)						
Cox, Stephen J. (See Townsend, Eli C., assignor.)						
Coyle, Andrew M., Washington, D. C. Dry closet	408,066	July 30	3094	811	48	633
Coyle, Edward S., Ballston, N. Y. Axle-lubricator	408,018	Aug. 13	1248	330	48	926
Coyne, Thomas F., Brooklyn, N. Y. Sink-back	406,198	July 2	245	67, 68	48	49
Crabtree, James, Heckmondwike, county of York, England. Chenille fabric	409,931	Aug. 27	2612	684	48	1201
Crafts, Perry F., Leeds, Mass. Hand-hold	405,995	July 16	1464	383	48	302
Craig, Frank P., Holton, Kans. Cultivator	406,589	Aug. 6	589	153	48	792
Craig, James D., Rogers Park, Ill., assignor to Keyless Lock Company, of Illinois. Combination-lock	408,795	Aug. 13	910	243	48	861

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Craig, William S., assignor to National Cash Register Company, Dayton, Ohio. Cash indicator and register	406,498	July 9	580	163 / 164	48	125
Craighead & Kintz Company. (See Kintz, Joseph, assignor.)						
Craigie, Hugh H., Stamford, Conn. Water-closet tank	408,218	Aug. 6	24	5	48	682
Craigie, Hugh H., New York, N. Y. Water-closet	410,369	Sept. 3	202	53, 54	48	1309
Crain, James H., Mounds Junction, Ill. Fence	410,494	Sept. 3	555	149	48	1377
Cramberg, George G., and J. H. Ranck, Dallas City, Ill. Harness	407,852	July 30	2750	715	48	567
Crandal, Mary E., Hyde Park, and E. B. Reeme, Chicago, Ill. Dress-shield	409,173	Aug. 20	1497	397	48	982
Crandal, Henry F., assignor to M. Lyman, Waverly, N. Y. Game or puzzle	410,956	Sept. 10	1252	337	48	1520
Crandall, Charles M., assignor to M. Lyman, Waverly, N. Y. Game or puzzle	407,063	July 16	1554	407 / 408	48	319
Crandall, Henry F., assignor to Milwaukee Harvester Company, Milwaukee, Wis. Harvester	408,463	Aug. 6	387	101 / 102	48	755
Crandall, Henry F., assignor to Milwaukee Harvester Company, Milwaukee, Wis. Reel-adjusting mechanism for harvesters	411,643	Sept. 24	2277	605	48	1735
Crandall, Jesse A., Brooklyn, N. Y. Hobby-horse						
Crandall Type Writer Company. (See Brott, Lucien A., assignor.)						
Crandall Type Writer Company. (See Twiss, Freeman L., assignor.)						
Crane & Co., J. S. (See Crane, John S., assignor.)						
Crane, Edward B., California, Mo. Vulcanizer	410,073	Aug. 27	2831	743	48	1241
Crane, Erastus W., *et al.* (See McNaughton, Peter, assignor.)						
Crane, John S., assignor to J. S. Crane & Co., Lake Village, N. H. Knitting-machine	410,495	Sept. 3	556	149	48	1377
Crane, Richard T., Chicago, Ill. Stuffing-box for valves	411,425	Sept. 24	1961	521	48	1670
Crane, Thomas S., East Orange, N. J., assignor to E. Bradley, New York, N. Y. Machine for cutting boards from logs	410,403	Sept. 3	414	110 / 111	48	1350
Crane, Zenas, Jr., Dalton, Mass. Finishing paper	406,505	July 9	794	199	48	152
Cranford, Henry L. (See Richardson, Clifford, assignor.)						
Cranson, Giles S., Silver Creek, N. Y. Grain-scourer	407,578	July 23	2351	609	48	486
Cranson, Giles S., Silver Creek, N. Y. Grain-scourer	407,722	July 23	2544	659	48	522
Craus, Henry S., Mount Vernon, N. Y. Attachment for ladies' satchels	406,996	July 16	1466	383	48	302
Craven, John R., Cincinnati, Ohio. Truck for carrying brick-pallets	406,885	July 16	1301	341	48	270
Craver, Steele & Austin. (See Pettit and Lottridge, assignors.)						
Crawford, James G., Boston, Mass. Starching-machine	409,019	Aug. 13	1249	330	48	927
Crawley, James E., Whitewater, Wis. Water heater and condenser	406,265	July 2	330	91	48	66
Crawley, James E., St. Louis, Mo. Metal wheel	406,705	July 9	1025	274	48	207
Crecelius, Louis J., St. Louis, Mo. Lifting-jack	407,173	July 16	1730	452	48	354
Crecelius, Louis J., assignor to A. Warren, St. Louis, Mo. Lifting-jack	407,174	July 16	1732	452	48	354
Crecelius, Louis J., assignor to A. Warren, St. Louis, Mo. Lifting-jack	410,074	Aug. 27	2832	743	48	1242
Crecelius, Louis J., assignor to A. Warren, St. Louis, Mo. Lifting-jack	406,506	July 9	795	199	48	152
Cree, James T., Worcester, Mass. Shuttle-motion for looms						
Crepeau, Ferdinand, *et al.* (See Virnoche, Maxime, assignor.)						
Crepe, La Fayette, Sheridan Lake, Colo. Mail-bag fastener	407,858	July 30	2751	716	48	568
Creque, Allen P., New York, N. Y. Apparatus for heating and purifying water	407,819	July 30	2703	701	48	559
Cresap, Charles W., Eyota, Minn. Bob-sleigh	406,028	July 2	12	4	48	5
Cridge, Alfred H., New York, N. Y. Implement for separating checks, tickets, &c	406,199	July 2	246	68	48	49
Criley, John M., Loveland, Ohio. Butter press or printer	409,734	Aug. 27	2351	613	48	1148
Critchlow, John M., Beaver Falls, assignor of one-half to E. T. Roberts, Titusville, Pa., and H. McKay, London, Canada. Apparatus for the manufacture of gas	406,819	July 9	1202	319	48	241
Crittenden, Simeon, Chatfield, Minn. Butter-package	409,318	Aug. 20	1711	450	48	1023
Crocker, William O. and W. P., Turner's Falls, Mass., assignors of one-half to New England Fibre Company, of Massachusetts. Digester	406,886	July 16	1302	341	48	270
Crocker, William P. (See Crocker, William O. and W. P.)						
Crofford, Warren K. (See Bardsley and Crofford.)						
Crofford, Warren K., New York, N. Y., assignor of one-third to W. Bardsley, Kearney Township, N. J. Paper-clip for writing-tablets	410,560	Sept. 10	676	181	48	1407
Croft, Henry, Jr. (See Mast and Croft.)						
Croker, George H., Seacombe, county of Chester, assignor of one-half to J. B. Clark, Liverpool, England. Machine for delinting cotton-seed	406,798	Aug. 13	916	244	48	862
Crompton Loom Works. (See Wyman, Horace, assignor.)						
Crompton Loom Works. (See Wyman and Gale, assignors.)						
Cronk, William S., Apopka, Fla. Washing-machine	408,797	Aug. 13	918	244	48	862
Crook, Charles, Brooklyn, N. Y. Straw-board-lining-cutter machine	407,467	July 23	2197	566	48	452
Crook, Joseph E., assignor of one-half to A. T. Wall & Co., Providence, R. I. Ornamental chain	407,723	July 23	2545	659	48	523
Crook, Samuel H., assignor of one-half to I. Bremer, New York, N. Y. Window-cleaning chair	410,957	Sept. 10	1253	337	48	1520
Crosby, Adon D., Cuba, N. Y. Bucket for chain-pumps	409,592	Aug. 20	2054	541	48	1091
Crosby, Charles H., and H. W. Cook, Boston, Mass. Cover for cooking-vessels	411,185	Sept. 17	1607	427	48	1296
Crosby Steam Gage and Valve Company. (See Moody and Bosworth, assignors.)						
Cross, George H., St. Johnsbury, Vt. Dough-machine	410,350	Sept. 3	336	88	48	1334
Cross, Jerome A., Fultonville, N. Y. Hay-carrier	407,924	July 30	2802	746	48	586
Cross, William C., Boston, Mass. Lasting boots and shoes	406,338	July 2	442	123	48	89
Crossley, William J., Openshaw, Manchester, county of Lancaster, England, assignor to Gas-Motoren-Fabrik-Deuts, Deutz-on-the-Rhine, Germany. Compound gas or oil motor-engine	406,706	July 9	1026	274 / 275	48	207
Crouch, George, New York, N. Y. Nail for trunks, &c	407,468	July 23	2198	567	48	453
Crouch, William T. (See Sherman and Crouch.)						
Crowell, George G., Cincinnati, Ohio. Tool for dressing abrasive surfaces	410,581	Sept. 10	677	181	48	1408
Crowley, Charles F. (See Heitman, Henry, assignor.)						
Crowner, States R., assignor of one-half to W. J. Miles, Newell, Iowa. Steam-generator	407,469	July 23	2199	567	48	453
Crowther, John, Elmwood Place, Ohio. Cable-guide pulley	406,820	July 9	1203	320	48	242
Crozier, George W., Muncie, Ind. Gas-pressure regulator	408,873	Aug. 13	1032	273	48	885
Cruft, Charles A., London, England, assignor to Spratts Patent, (America,) (limited,) New York, N. Y. Knockdown bench for dogs, &c	408,464	Aug. 6	289	102	48	756
Cruickshank, Alexander, Weston, Ontario, Canada. Lumber-measure	407,175	July 16	1732	453	48	355
Cubley, Edwin J., Ravenswood, Ill. Drum	407,579	July 23	2352	609	48	486
Culmer, John W., assignor to J. H. Logan, New Brighton, Pa. Gas-meter	409,275	Aug. 20	1642	435	48	1010
Culp, Peter, Garrett County, Md. Hen's nest or coop	408,998	Aug. 13	961	255	48	871
Cummings, William F., and H. C. McDuffee, Bradford, Vt. Seed-planter	408,378	Aug. 6	258	64, 65	48	729
Cummins, George W., and J. H. Coleman, New Haven, Conn. Preventing the oxidation of metals while in a heated condition	409,276	Aug. 20	1648	435	48	1012
Cumnock, Victor I., Lowell, Mass. Electric stop-motion for drawing-frames, &c	408,929	Aug. 13	962	255	48	872
Cuneo, Joseph. (See Rossasco, John, assignor.)						
Cunningham, A. C. (See Warren and Radford, assignors.)						
Cunningham, Albert, and E. J. Muller, Milwaukee, Wis. Saw-mill set-works	407,334	July 23	1975	514 / 515	48	410
Cunningham, David H., Elizabeth, N. J. Machine for cutting cloth and patterns	406,821	July 9	1205	320	48	242

Alphabetical list of patentees, July to September, inclusive—Continued.

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Pages.
Cunningham, James F., Sr., Anson, Tex. Cotton-harvester	406,366	July 2	331	91, 92	48	67
Cunningham, John H., Chelsea, Mass. Sectional metal pole	406,379	Aug. 6	960	6	48	729
Cunningham, William E., assignor to Wallace Manufacturing Company, Frankfort, Ind. Clay-working machine	408,337	Aug. 6	199	51	48	718
Cunningham, William R., assignor to Wallace Manufacturing Company, Frankfort, Ind. Brick-machine	409,348	Aug. 20	1757	402	48	1032
Cunningham, William R., assignor to Wallace Manufacturing Company, Frankfort, Ind. Machine for cutting brick or other clay products	411,546	Sept. 24	2127	509, 510, 511	48	1704
Curl, Jesse B., assignor of one-half to A. Anderson, Des Moines, Iowa. Vapor-burning stove	410,537	Sept. 3	608	169, 170	48	1388
Curley, Thomas, assignor of one-half to W. Bailey, Troy, N. Y. Ball-and-socket joint for steam-pipe connections	409,277	Aug. 20	1650	435	48	1012
Curran, John J., Toledo, Ohio. Water-filter	406,126	July 2	145	49	48	31
Currie, John W., Solomon City, Kans. Windmill	409,932	Aug. 27	2613	624, 625	48	1901
Currie, Stanley C. C., Philadelphia, Pa., assignor to United Electric Improvement Company, Gloucester, N. J. Insulating-plate for secondary batteries	406,267	July 2	333	92	48	67
Currie, Stanley C. C., Philadelphia, Pa., assignor to United Electric Improvement Company, Gloucester, N. J. Cut-out	406,268	July 2	334	92	48	67
Currie, Stanley C. C., Philadelphia, Pa., assignor to United Electric Improvement Company, Gloucester, N. J. Dynamo-armature	406,429	July 9	582	164	48	126
Currie, Stanley C. C., Philadelphia, Pa., assignor to United Electric Improvement Company, Gloucester City, N. J. Electric motor	408,590	Aug. 6	591	133, 134	48	792
Currie, Stanley C. C., Philadelphia, Pa., assignor to United Electric Improvement Company, Gloucester City, N. J. Apparatus for automatically charging secondary batteries	410,153	Sept. 3	22	7	48	1273
Currier, James H. (See Blount, Kempster, Currier, and Dore.)						
Curtice Brothers Company. (See Curtice, Simeon G., assignor.)						
Curtice, Henry J., *et al.* (See Smith, John R., assignor.)						
Curtice, Jesse M., Louisville, Ky. Churn	409,020	Aug. 13	1251	330, 331	48	927
Curtice, Simeon G., Rochester, N. Y., assignor to Curtice Brothers Company, of New York. Packing-case for bottles	410,496	Sept. 3	557	150	48	1377
Curtice, William H., assignor to Portable Fan Company, Louisville, Ky. Portable fan	410,497	Sept. 3	558	150	48	1378
Curtin, Cornelius J., High Falls, N. Y. Rolls	408,219	Aug. 6	26	6	48	6:3
Curtin, Cornelius J., High Falls, N. Y. Metallic barrel	409,601	Aug. 20	2118	557	48	1103
Curtis, Charles B. (See Forcier, Joseph J., assignor.)						
Curtis & Curtis. (See Curtis, Roderick P., assignor.)						
Curtis, Henry E., Springfield, Mass., assignor to Yost Writing Machine Company. Type-writing machine	411,563	Sept. 24	2182	579	48	1715
Curtis, John, North Dorset, Vt. Steam-engine	409,563	Aug. 20	2055	542	48	1091
Curtis, Liddie, Calicoon Depot, N. Y. Adjustable rolling-pin	409,564	Aug. 20	2057	542	48	1092
Curtis, Nelson. (See Farrington and Curtis.)						
Curtis, Nelson, Boston, Mass. Steam-pressure regulator	406,029	July 2	12	5	48	5
Curtis, Roderick P., Southport, assignor to Curtis & Curtis, Bridgeport, Conn. Pipe-threading machine	406,092	July 2	99	29	48	22
Curtis, Wallace B., and W. H. Huntley, Pomeroy, assignors of one-third to C. E. Bright, Columbus, Ohio. Sheet-metal roofing, ceiling, or siding	407,772	July 30	2023	600	48	544
Cutbirth, William H., and J. Summers, Hollandsburg, Ind. Welding compound	406,887	July 16	1304	.....	48	271
Cutbirth, William H., and J. Summers, Hollandsburg, Ind. Whiffletree-hook	409,174	Aug. 20	1498	397	48	982
Cutler, Henry H., Newton, Mass. Circuit for electric railways	407,470	July 23	2200	587	48	453
D'Amour, Edward. (See Milliken and D'Amour.)						
D'Unger, Robert D., Chicago, Ill. Telephone receiving-instrument	409,736	Aug. 27	2333	613	48	1148
Dacey, Cornelius P., assignor of one-half to E. L. Firnkoess, Cincinnati, Ohio. Poultice or sponge holder for horses' feet	409,633	Aug. 20	2170	571	48	1112
Daft, Leo, Plainfield, N. J. Tubular conductor for electric railways	410,498	Sept. 3	559	150, 151	48	1378
Daggett, John F., Elgin, Ill. Wire-stitching machine	409,830	Aug. 27	2479	648, 649	48	1174
Dahl, Olof, Brooklyn, N. Y. Generating electricity by gas-batteries	411,426	Sept. 24	1962	521	48	1670
Dain, Albert E., Pittsburg, Pa. Portable forge	411,760	Sept. 24	2443	647	48	1769
Daintree, Robert H., New York, N. Y. Dental jaw-prop	410,665	Sept. 10	812	218	48	1433
Dale, Charles J. (See Dale, Henry J., assignor.)						
Dale, Henry J., Lake View, assignor of one-half to C. J. Dale, Chicago, Ill. Cuff-holder	410,750	Sept. 10	959	256	48	1459
Daley Manufacturing Company. (See Daley, Michael, assignor.)						
Daley, Michael, assignor to Daley Manufacturing Company, De Kalb, Ill. Disk harrow	411,376	Sept. 17	1880	500	48	1650
Dalrymple, George, Fair Haven, Vt. Machine for sawing stone	408,293	Aug. 6	133	33, 34	48	705
Dalrymple, James W., Solsberry, Ind. Photographic washing apparatus	406,269	July 2	336	92	48	68
Daly, William, New York, N. Y. Fuel-cartridge	408,220	Aug. 6	27	6	48	663
Damm, Fredrick C., Cleveland, Ohio. Machine for molding plastic materials	406,707	July 9	1027	275, 276	48	207
Dampierre, Bazile Z., Cleveland, Ohio. Dough-raising tray	411,279	Sept. 17	1743	495	48	1626
Danals, Cyrus A., Zanesville, Ohio. Automatic pole-changer	411,238	Sept. 17	1681	450	48	1614
Dane, Joseph W. (See Haskell, Luther D., Jr., assignor.)						
Daniels, Fred H., Worcester, Mass. Wire-drawing machine	406,030	July 2	14	5	48	5
Daniels, Fred H., Worcester, Mass. Wire-rod-rolling mill	407,176	July 16	1735	453, 454	48	355
Daniels, Fred H., Worcester, Mass. Rolling-mill plant	407,177	July 16	1737	454, 455	48	355
Daniels, Henry A., Yonkers, N. Y. Automatic air-compressor for pumps	410,075	Aug. 27	2033	544	48	1242
Daniels, William H., Southampton, England. Propeller-wheel	406,708	July 9	1030	276	48	208
Darby, Daniel H., and G. R. Chittenden, Mendon, Ill. Clasp for ribbon-rolls	406,517	July 9	743	200	48	155
Darby, John H., Brymbo, county of Denbigh, assignor to P. C. Gilchrist, London, England. Recarbonizing steel	406,430	July 9	584	165	48	126
Darling, Brown & Sharpe. (See Dow, Charles E. W., assignor.)						
Darling, Henry M., assignor to A. S. Davis, Seneca Falls, N. Y. Feeding mechanism for lathes	409,456	Aug. 20	1908	505, 506	48	1063
Darling, Samuel, Providence, R. I. Fire-pot for hot-air furnaces	410,880	Sept. 10	1147	300	48	1498
Darracq, Pierre A., Le Pré St. Gervais, France. Sewing-machine	406,431	July 9	585	165, 166	48	126
Dashiell, Charles C., Washington, D. C. Conduit for electrical wires	411,427	Sept. 24	1963	522	48	1671
Dauchy Iron Works. (See Ross, Christian H., assignor.)						
Davenport, Samuel A. (See Sturgeon, John C., assignor.)						
Davenport, Serena H., St. Paul, Minn. Trunk tray and cover	407,178	July 16	1740	455	48	356

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Pages.
Davenport, William H., Norwich, Conn. Breech-loading fire-arm	408,031	July 2	17	6	48	6
Davenport, William H., Norwich, Conn. Mechanism for fastening barrels to gunstocks	408,032	July 2	18	6	48	6
Davey, Henry, Westminster, county of Middlesex, England. Pumping-engine	407,580	July 23	2354	610	48	486
Davey, Henry, Westminster, county of Middlesex, England. Air-compressor	409,773	Aug. 27	2392	627	48	1150
Davids, Charles H., Brooklyn, N. Y. Numbering device	410,958	Sept. 10	1254	338	48	1520
Davidson, Charles J., Sioux City, Iowa. Boiler	410,351	Sept. 3	337	88	48	1334
Davidson, Edward C., New York, N. Y. Incandescent as-burner	410,540	Sept. 3	612	164, 165	48	1389
Davidson, George A., Malden, assignor of one-half to H. T. Caswell, Troy, N. Y. Machine for sawing stone	409,670	Aug. 27	2236	598	48	1130
Davidson, George A., Malden, assignor of one-half to H. T. Caswell, Troy, N. Y. Stone-sawing machine	409,774	Aug. 27	2394	627	48	1150
Davidson, Samuel C., Belfast, Ireland. Stove or air heating apparatus	408,402	Aug. 6	300	74	48	737
Davies, John P. (See Campbell and Davies.)						
Davies, John W., Worcester, Mass. Show-card	407,982	July 16	1901	495	48	387
Davies, Joseph D., assignor of one-half to H. Martin, Cincinnati, Ohio. Cable-sheave	411,761	Sept. 24	2444	647	48	1770
Davies, Joseph D., assignor of one-half to H. Martin, Cincinnati, Ohio. Cable railway	411,762	Sept. 24	2445	648	48	1770
Davies, Walter D., Brooklyn, N. Y. Clock-pendulum	408,955	Aug. 13	1150	304	48	909
Davis, Adelbert S. (See Darling, Henry M., assignor.)						
Davis, Alexander H. S., assignor of one-fourth to W. T. Arrick, Washington, D. C. Car-coupling	408,593	Aug. 6	595	155	48	793
Davis, Augustus B. (See Folsom and Davis.)	406,033	July 2	19	6	48	6
Davis, Benjamin F., Treeheart, Tex. Rail-joint	408,653	Aug. 6	601	176, 179	48	811
Davis, Charles D., Washington, D. C., assignor to L. Miller, Philadelphia, Pa. Hydraulic press	11,011	July 9	1268	334	48	253
Davis, Charles E., assignor, by mesne assignments, to Trans-Continental Car Lock and Seal Company, Chicago, Ill. Seal-lock. (Reissue)						
Davis, Charlie F. (See Jinkins, Thomas W., assignor.)						
Davis, David, *et al.* (See Burdsall, Stephen, assignor.)	410,490	Sept. 3	561	151	48	1378
Davis, De Leon, San Antonio, Tex. Screw and slide valve	407,869	July 30	2806	731	48	578
Davis, Edward S. (See Peck and Davis.)	409,602	Aug. 20	2119	558	48	1103
Davis, Edwin E., Bluff Dale, Tex. Ant-trap						
Davis, Eli W., Pittsburg, Pa. Sand-box for railway-cars	409,141	Aug. 13	1440	378	48	964
Davis, Francis G., assignor to H. H. Babcock Buggy Company, Watertown, N. Y. Jump seat vehicle	410,751	Sept. 10	960	258, 259	48	1459
Davis & Furber Machine Company. (See Wright, Edward, assignor.)						
Davis, George H., Worcester, Mass. Velocipede	410,538	Sept. 3	610	164	48	1388
Davis, George M., and A. Bement, Chicago, Ill.; said Bement assignor to said Davis. Back-pressure valve						
Davis, George N., *et al.* (See Tracy, William P., assignor.)	408,087	July 30	3095	811	48	633
Davis, George P., Detroit, assignor to Oriel Cabinet Company, Grand Rapids, Mich. Bracket for desks	406,034	July 2	20	6, 7	48	7
Davis, Henry A., and H. C. Perham, assignors to Kitson Machine Company, Lowell, Mass. Machine for opening and cleaning cotton	406,127	July 2	147	43	48	31
Davis, Henry J., Jr., Central Institute, Ala. Combined seed-planter and fertiliser-distributer	409,021	Aug. 13	1252	331	48	927
Davis, Isaac B., Hartford, Conn. Machine for flanging boiler-heads	407,996	July 30	2973	774, 775	48	609
Davis, John B. (See Walker and Davis.)	409,933	Aug. 27	2615	685	48	1902
Davis, John E., Jr., West Point, Miss. Car-coupling	407,724	July 23	2546	659, 660	48	523
Davis, John G., Detroit, Mich. Cash-carrier apparatus	408,654	Aug. 6	603	179	48	812
Davis, John P., *et al.* (See Hires, Phillip, assignor.)	410,500	Sept. 3	562	159	48	1379
Davis, John S., Cleveland, Ohio. Grain-conveyer for harvesters	410,539	Sept. 3	611	164	48	1388
Davis, John S., assignor to Davis Platform Binder Company, Cleveland, Ohio. Carrier-belt for harvesters	408,338	Aug. 6	200	51	48	718
Davis, Lewis A., assignor to Delaware Corn Harvester Company, Delaware, Ohio. Corn-harvester	406,880	July 16	1306	342, 343	48	271
Davis, Lewis A., assignor to Delaware Corn Harvester Company, Delaware, Ohio. Corn-harvester	407,997	July 30	2974	775	48	609
Davis Platform Binder Company. (See Davis, John S., assignor.)						
Davis, Roderic S. (See Metsler and Davis.)						
Davis, Spencer E., assignor to Van Brunt & Davis Company, Horicon, Wis. Roller	406,221	Aug. 6	28	6	45	663
Davis, Van R., Temple, Ga. Feeding mechanism for cotton-gins	406,888	July 16	1305	342	48	271
Davis, William E., Racine, Wis. Yielding connection for pulleys	410,537	Sept. 10	768	206	48	1493
Davis, William E., assignor to S. Freeman & Sons Manufacturing Company, Racine, Wis. Straw-cutter	408,501	Aug. 6	593	154	48	793
Davis, William H. H., Philadelphia, Pa. Waste-pipe coupling	408,502	Aug. 6	594	154	48	793
Davis, William M., Plymouth, Mass. Insulator	406,432	July 9	590	166	48	127
Davis, Zebulon, Cleveland, Ohio. Wick-raiser for central-draft lamps	408,956	Aug. 13	1151	304	48	909
Davis, Zebulon, Cleveland, Ohio. Burner for central-draft lamps	406,709	July 9	1030	276	48	208
Davy, John W., Kingston, Ontario, Canada. Light-tower	408,874	Aug. 13	1033	273, 274	48	885
Dawson, Helmit N., Oak Hill, Kans. Foot-warmer	409,175	Aug. 20	1498	.....	48	983
Dawson, James W., St. Louis, Mo. Invisible burglar-alarm electric mat	406,200	July 2	246	68	48	49
Dawson, Robert, Framingham, Mass. Stop mechanism for doubling-machines	406,270	July 2	337	.....	48	68
Dawson, Wallace, Montreal, Quebec, Canada. Vermifuge	406,631	July 9	913	.....	48	187
Day, Charles. (See Harris and Day.)	410,822	Sept. 10	1069	287	48	1484
Day, Jeremiah E., assignor of one-half to J. Pracy, San Francisco, Cal. Well-boring apparatus	406,507	July 9	727	200	48	153
Day, John H., *et al.* (See Day and Spofford, assignors.)	406,339	July 2	444	.....	48	89
Day, John H., Albany, N. Y. Making dry flour-paste						
Day, John H., Albany, N. Y. Dry flour-paste						
Day, John H., Albany, N. Y. Machine for spreading viscous substances						
Day, John H., New York, and C. Spofford, Brooklyn, assignors to J. H. Day and G. Lester, Richmond Hill, N. Y. Type-writing machine						
Day, Moses H., Brookline, Mass. Combustible substance						
Day Projectile Company. (See Day, Selden A., assignor.)						
Day, Selden A., Bowling Green Ohio, assignor to Day Projectile Company, New York, N. Y. Lubricating-projectile	407,890	July 30	2807	731	48	578
Day, William O., Seneca Falls, N. Y. Pincushion	406,340	July 2	444	123	48	89
Dayton, William H., Torrington, Conn. Swaging-machine	408,294	Aug. 6	134	34	48	705

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
De Beaumont, Alexandre, Philadelphia, Pa. Feed-water heater	410,139	Aug. 27	2939	772	48	1262
De Camp, Alfred H., Boonton, N. J. Aerial tramway	411,584	Sept. 24	2183	579, 580	48	1715
De Caracena, Josefa O., New York, N. Y. Dress-waist	408,594	Aug. 6	597	155	48	794
De Cew, Egerton, and A. E. Carpenter, Hamilton, Ontario, Canada. Machine for soldering caps on fruit-cans	407,773	July 30	2624	680	48	545
De Chardonnet, Hilaire, Besançon, France. Dyeing artificial silk	410,404	Sept. 3	419	.....	48	1351
De Ferranti, Sebastian Z., Hampstead, county of Middlesex, England. Electric meter	408,205	Aug. 6	135	34, 35	48	706
De Ferranti, Sebastian Z., Hampstead, county of Middlesex, England. Dynamo-electric machine	408,403	Aug. 6	302	75, 76	48	737
De Ferranti, Sebastian Z., Hampstead, county of Middlesex, England. Dynamo-electric machine	408,404	Aug. 6	305	76, 77	48	738
De Ferranti, Sebastian Z., Hampstead, county of Middlesex, England. Conductor for conveying electricity	409,181	Aug. 20	1506	399, 400	48	984
De Ferranti, Sebastian Z., Hampstead, county of Middlesex, England. Distribution of electrical energy	409,182	Aug. 20	1508	400	48	984
De Ferranti, Sebastian Z., Hampstead, county of Middlesex, England. Joint for electric mains	409,183	Aug. 20	1509	400	48	984
De Ferranti, Sebastian Z., Hampstead, county of Middlesex, England. Dynamo-electric machine	409,349	Aug. 20	1758	462, 463	48	1032
De Ferranti, Sebastian Z., Hampstead, county of Middlesex, England. Distribution of electrical energy	409,565	Aug. 20	2058	542, 543	48	1092
De Ferranti, Sebastian Z., Hampstead, county of Middlesex, England. Distribution of electrical energy	409,566	Aug. 20	2059	543	48	1092
De Ferranti, Sebastian Z., Hampstead, county of Middlesex, England. Electric railway	409,775	Aug. 27	2395	628	48	1159
De Foresta, Pietro F., Florence, Italy. Car-brake	410,881	Sept. 10	1148	310	48	1498
De Gruyter, Ferdinand A. L., Amsterdam, Holland. Apparatus for raising and lowering boats	407,891	July 30	2810	731	48	579
De Gruyter, Ferdinand A. L., Amsterdam, Holland. Apparatus for raising and lowering boats	407,892	July 30	2811	732	48	579
De Haën, Carl J. E., List, near Hanover, Prussia, Germany. Double sulphate of antimony	407,925	July 30	2864	.....	48	588
De Kalb, Enoch E., Syracuse, N. Y. Swinging window	409,634	Aug. 20	2171	571, 572	48	1112
De Kalb, Enoch E., Syracuse, N. Y. Holder for windows	409,635	Aug. 20	2172	572	48	1112
De La Chapelle, Ernest, and J. Pearce, Ottawa, Ill. Glass-furnace. (Reissue)	11,018	Aug. 6	731	190	48	819
De la Mar, Joseph, Poughkeepsie, assignor of one-half to F. Bostwick, Pine Plains, N. Y. Cigar-bunching machine	410,959	Sept. 10	1255	338, 339	48	1520
De Lamere, Thomas J. (See Odell and De Lamere.)						
De Land, Frank A., Memphis, Mich. Attachment for lawn-mowers	406,433	July 9	591	166	48	128
De Montgolfier, Pierre L. A., St. Chamond, Loire, France. Hydraulic buffer for siege and other gun carriages	411,715	Sept. 24	2383	632	48	1757
De Mooy, John, Jr., assignor to Taylor & Boggis Foundry Company, Cleveland, Ohio. Oil-stove	410,638	Sept. 10	769	208	48	1426
De Redon, Constant F., New York, N. Y., assignor, by mesne assignments, to Postage Stamp Service Machine Company, of New York. Vending apparatus	406,633	July 9	916	247	48	187
De Redon, Constant F., assignor to F. L. Wellman, New York, N. Y. Vending apparatus	406,634	July 9	920	247, 248, 249	48	188
De Soldenhoff, Richard, 71 St. Mary Street, Cardiff, county of Glamorgan, England. Furnace for the desiccation, incineration, and carbonization of precipitants, &c., resulting from sludge, &c	409,022	Aug. 13	1254	331, 332	48	927
De Soldenhoff, Richard, Cardiff, county of Glamorgan, England. Apparatus for the manufacture of coke	409,567	Aug. 20	2060	543	48	1092
De Vars, Hilarion A. B. H., Paris, France. Ozone apparatus	409,903	Aug. 27	2577	675	48	1194
De Weese, Clinton B., Sidney, Ohio. Elevating-truck	410,157	Sept. 3	31	9	48	1274
De Witt, Abraham, Bluffton, Ind. Measuring-vessel	409,023	Aug. 13	1256	332	48	928
Deadman, Austin. (See Deadman, William H., assignor.)						
Deadman, William H., assignor of one-half to A. Deadman, Alpena, Mich. Snow-plow	407,513	July 23	2252	581, 582	48	464
Deagan, John C., and J. Carroll, St. Louis, Mo.; said Carroll assignor to said Deagan. Musical instrument	408,655	Aug. 6	694	179	48	812
Deakin, Frederick H., *et al.* (See Comer, John, assignor.)						
Dean, Albert H., assignor of one-half to L. K. Slayton, Bridgeport, Conn. Corset-clasp	407,283	July 16	1902	495	48	387
Dean, Charles A., and F. H. Robie, Boston, Mass. Machine for ornamenting paper	410,154	Sept. 3	24	7	48	1273
Dean, Charles A., and F. H. Robie, Boston, Mass. Machine for ornamenting paper	410,155	Sept. 3	26	8	48	1274
Dean, John A., North Ogden, Utah Ter. Car-coupling	411,216	Sept. 17	1655	442	48	1608
Debouteville, Edouard D., and L. P. C. Malandin, Fontaine-le-Bourg, France. Apparatus for carbureting air	407,998	July 30	2975	775	48	609
Debouteville, Edouard D., and L. P. C. Malandin, Fontaine-le-Bourg, France. Starting-gear for gas-engines	411,644	Sept. 24	2278	605	48	1735
Decker, Earle H. (See Buckley and Decker.)						
Decker, John, assignor of one-half to L. D. Muman, Cookport, Pa. Wire-fence machine	408,164	July 30	3230	843	48	657
Decker Machine Company. (See Krausse, Karl L., assignor.)						
Decley, Robert. (See Miller, Alexander, assignor.)						
Deering, Mark L., Cleveland, Ohio. Composition of matter	408,222	Aug. 6	29	.....	48	663
Deering, William. (See Pitkin and Steward, assignors.)						
Defevera, Alonzo F., *et al.* (See Banks, George L., assignor.)						
Del Grande, Antonio, Naples, Italy, assignor to C. N. Romaine and G. A. Mannie, Petersburg, Va. Preparing pyrotechnic compounds	411,714	Sept. 24	2382	.....	48	1757
Delaloe, Léon, and A. Piat, Paris, France. Riveting-machine	409,393	Aug. 20	1821	420	48	1045
Delaney, Alexander, Petersburg, Va. Machine for molding wheels	410,156	Sept. 3	27	8	48	1274
Delany, Patrick B., New York, N. Y. Galvanic battery	406,997	July 16	1466	383	48	302
Delaware Corn Harvester Company. (See Davis, Lewis A., assignor.)						
Delker, Mathew, Detroit, Mich. Bung	411,239	Sept. 17	1682	450	48	1614
Dellenbaugh, Charles R., assignor of three-fourths to W. H. Hoover, C. Nees, and J. W. King, Pittsburg, Pa. Steam-engine	409,155	Aug. 13	1460	386	48	968
Delmage, William A., Lowell, Mass. Combined carpenter's rule, calipers, dividers, &c	409,934	Aug. 27	2619	685, 686	48	1203
Delon, Charles W., Wiscasset, Me., assignor to American Ship Windlass Company, Providence, R. I. Anchor-tripper	409,176	Aug. 20	1499	397	48	983
Delony, Willie L. (See Sykes, John T., assignor.)						
Demarest, Dewitt C., Denver, Colo. Fountain-pen	407,999	July 30	2977	775	48	610
Demarest, Dewitt C., Denver, Colo. Fountain-pen	408,000	July 30	2979	776	48	610
Deming, Levi S., Middletown, Conn. Derrick	411,585	Sept. 24	2186	580	48	1716

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Denham, Frederic B., New York, N. Y. Game apparatus	406,632	July 9	913	246, 247	48	187
Denio, William L., Rochester, N. Y. Fire-alarm system	410,318	Sept. 3	986	75	48	1324
Denison, Sylvester P. (See Wheeler, George A., assignor.)						
Denman, Henry A., Newburg, assignor to himself and S. Dunlap, Brooklyn, N. Y. Clothes-line holder for windows	410,787	Sept. 10	1024	275	48	1474
Denman, William M., Lampasas, Tex. Baling-press	408,061	July 30	3097	580, 611, 612	48	634
Denn, Clayton, Philadelphia, Pa. Machine for linking warps	407,514	July 23	2253	582	48	464
Dennis, Joseph W., and F. A. Shoemaker, Buffalo, N. Y. Steam-engine	409,457	Aug. 20	1912	506	48	1064
Denniston, William H. (See Stewart, William T., assignor.)						
Denton, Whitley, Centreville, Mich. Carding-machine for making mottled rovings	410,923	Sept. 10	1070	287	48	1424
Deourion, Alfred. (See Mantion, Millen, and Deourion.)						
Deppe, Nelson R., Confluence, Pa. Spreader	408,698	July 30	3096	811	48	633
Deppe, Nelson R., Confluence, Pa. Wagon-standard	409,935	Aug. 27	2621	686	48	1203
Derr, Fuller S. (See Frymire and Derr.)						
Dee Brisay, James, Vancouver, British Columbia, Canada. Locomotive	409,936	Aug. 27	2621	686, 687	48	1203
Detroit Spiral Tube Company. (See Coss, Edward K., assignor.)						
Devereaux, Robert M., assignor or one-half to J. S. McDonald, Chicago, Ill. Alarm bottle-stopper	410,730	Sept. 10	929	249	48	1453
Devereux, Walter B., Aspen, Colo. Apparatus for separating lead or bullion in smelting from slags, mattes, or speiss	407,335	July 23	1979	515	48	412
Devereux, Walter B., Aspen, Colo. Apparatus for separating slags, mattes, and spiess, and lead or base bullion in lead-smelting	407,336	July 23	1982	516	48	412
Devereux, Walter B., Glenwood Springs, Colo. Separating lead and base bullion from slag, &c	407,337	July 23	1985	516	48	412
Devlan, Harriett B., Jersey City, N. J. Packing for journals	411,326	Sept. 17	1909	.....	48	1637
Devlin, Thomas C., Pueblo, Colo. Automatic pool-register	409,977	Aug. 27	2625	688	48	1204
Devore, Levi M., Freeport, Ill. Curry-comb	409,458	Aug. 20	1913	506	48	1064
Devore, Levi M., Freeport, Ill. Stove-pipe damper	409,459	Aug. 20	1914	506, 507	48	1065
Dewar, James. (See Abel and Dewar.)						
Dewey Corporation. (See Dewey, Mark W., assignor.)						
Dewey, Frederic P., Washington, D. C. Condensing fumes from metallurgic furnaces	411,014	Sept. 17	1343	361	48	1547
Dewey, John M., Shell Rock, Iowa. Stock-waterer	410,892	Sept. 10	1149	310	48	1499
Dewey, Mark W., assignor of two-thirds to E. Laass and C. H. Duell, Syracuse, N. Y. Electrical type-writer	406,390	July 2	519	144, 145	48	104
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Electric heating apparatus for railway systems	406,899	July 16	1307	343	48	271
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Selecting-telegraph	407,581	July 23	2356	610, 611	48	486
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Magnetically reducing friction	408,465	Aug. 6	391	102	48	736
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Electric metal-working	408,675	Aug. 13	1034	274	48	885
Dewey, Seymour B., Cleveland, Ohio. Artificial tooth-crown	409,671	Aug. 27	2237	588	48	1130
Dewhirst, Simon, Voris, Mo. Brick-kiln	410,768	Sept. 10	1024	275	48	1474
Dey, Alexander, Glasgow, county of Lanark, Scotland. Workman's time-recorder	411,586	Sept. 24	2188	580, 581, 582	48	1716
Dey, Alexander, Glasgow, county of Lanark, Scotland. Razor-sharpening machine	411,587	Sept. 24	2191	582	48	1717
Dey, Harry E., New York, N. Y., assignor to P. H. Alexander, Hyde Park, Mass. Secondary battery	406,822	July 9	1206	320	48	242
Dibble, Harvey D., Rochford, Dak. Ter. System of electric propulsion	406,391	July 2	523	145, 146	48	104
Dibley, Joseph A., East Kendall, N. Y. Road-cart	407,725	July 23	2548	660	48	523
Dick, Alexander H., Cramer's Hill, N. J. Grindstone tool-holder	411,217	Sept. 17	1657	442	48	1609
Dick, John, Toronto, Ontario, Canada. Camp-bed	411,015	Sept. 17	1343	361	48	1547
Dick, John, Meadville, Pa. Steam-boiler	411,094	Sept. 17	1474	391	48	1571
Dicke, Wilhelm H., assignor of one-half to A. H. Gaertner, St. Louis, Mo. Caster for furniture	408,656	Aug. 6	696	180	48	812
Dickenshied, Frederick, *et al.* (See Lorey, William, assignor.)						
Dickinson, George O., Stockton, Utah Ter. Concentrating and amalgamating machine	406,635	July 9	925	249, 250	48	189
Dickson, Charles T., Cincinnati, Ohio. Telephone-holder	411,588	Sept. 24	2193	582	48	1717
Dickson, John G., assignor of two-thirds to J. W. and A. E. McDonald, Beaver Falls, Pa. Sole-protector for boots or shoes	409,938	Aug. 27	2627	689	48	1204
Dickson, John G. and R., and P. Snyder, Pittsburg, Pa. Trolley for electric railways	409,603	Aug. 20	2119	558	48	1103
Dickson, Robert. (See Dickson and Snyder.)						
Dieckmann, Otto L., St. Louis, Mo. Reciprocating brick-machine	411,645	Sept. 24	2280	606	48	1736
Dieterichs, Emil F., Cleveland, Ohio. Spouted can	409,350	Aug. 20	1761	464	48	1033
Dieuzet, Theodore J., assignor of one-half to W. R. William, Bloomfield, N. J. Linting machine	411,139	Sept. 17	1540	411	48	1585
Digen, Abraham G., Granite Falls, Minn. Riveting-machine	409,939	Aug. 27	2628	689	48	1204
Dillard, Robert M., assignor of one-half to C. P. Russell, Goodland, Kans. Hame-strap fastener	407,893	July 30	2812	732	48	580
Dille, Henry H., Richmond, Ind. Pawl-and-ratchet mechanism	408,090	July 30	3099	812	48	634
Dillmann, Victor C. (See Cole and Dillmann.)						
Dillon, Charles H., assignor of one-half to J. Q. Hennigan, North Attleborough, Mass. Flushing-valve	410,541	Sept. 3	614	165	48	1389
Dillon, Daniel H., Nelson, Nebr. Check-row corn-planter	407,179	July 16	1741	455, 456	48	356
Dillon, John W. (See McGlinchey, Charles E., assignor.)						
Dils, Thomas M., Davenport, Iowa. Towel-rack	406,998	July 16	1468	384	48	302
Dimmick, Eber, Scranton, Pa. Steamer	410,752	Sept. 10	963	259	48	1459
Dimichert, Constant, Montilier, near Morat, Freyburg, Switzerland. Stem winding and setting watch	407,642	July 23	2441	632	48	502
Dinwoodie, George. (See Brown, Robert, assignor.)						
Dion, Léon O., Natick, Mass. Caster	408,595	Aug. 6	598	155	48	794
Diss, Charles J. (See Kennedy, Patrick, Jr., assignor.)						
Distin, Henry J., Philadelphia, Pa. Grinding-tool	408,876	Aug. 13	1038	274	48	886
Dittmann, Robert W. A., assignor to A. F. Richter, Hamburg, Germany. Hinged button	407,643	July 23	2441	632	48	502
Dix, Joseph, Abbotsford, Wis. Floor-jack	411,589	Sept. 24	2194	583	48	1718
Dixon, Henry, and J. W. and H. S. Kopp, Dayton, Ohio. Brush for washing windows	406,128	July 2	148	44	48	31

Alphabetical list of patentees, July to September, inclusive—Continued.

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Dixon, John W. (See Dixon and Kopp.)						
Dixon, Robert, Sydney, assignor to T. L. Richardson, Murrawoombie, near Nyngan, New South Wales. Animal-shears	410,352	Sept. 3	338	69	48	1335
Dixon, Samuel M., Milwaukee, Wis. Machine for cutting curved surfaces	409,024	Aug. 13	1257	324	48	928
Dixson, Charles H., Port Norris, N. J. Door-check	409,735	Aug. 27	2332	653	48	1148
Doane, Azadore M., assignor to Leeds-Barratt Supply Company, Chicago, Ill. Condenser-head for the exhaust-pipes of steam-engines	408,296	Aug. 6	137	35	48	706
Dobbs, Seneca, Rochester, N. Y. Clothes-line stretcher	408,339	Aug. 6	202	51	48	719
Dockstader, Preston C., Colorado Springs, Colo. Locking rail-joint	407,644	July 23	2442	623	48	502
Dockstader, Preston C., Colorado Springs, Colo. Lock-rail joint	411,186	Sept. 17	1607	417	48	1508
Dodge, Charles. (See Humphreys, William P., assignor.)						
Dodge, Cheeseman. (See Semon, Jacob S., assignor.)						
Dodge Coal Storage Company. (See Dodge, James M., assignor.)						
Dodge, Edward A., Silver Reef, Utah Ter. Quicksilver-catcher	410,076	Aug. 27	2835	744	48	1242
Dodge, James M., Philadelphia, Pa., assignor to Dodge Coal Storage Company, Naugatuck, Conn. Apparatus for conveying coal and discharging the same in piles	408,957	Aug. 13	1152	305	48	909
Dodge, James M., Philadelphia, Pa., assignor to Dodge Coal Storage Company, Naugatuck, Conn. Chain conveyer for forming and removing piles of coal	408,958	Aug. 13	1155	{305 / 306}	48	909
Dodge, James M., Philadelphia, Pa., assignor to Dodge Coal Storage Company, Naugatuck, Conn. Removing piles of coal	409,568	Aug. 20	2062	544	48	1093
Dodge, James M., Philadelphia, Pa., assignor to Dodge Coal Storage Company, Naugatuck, Conn. Conveyer for piling coal	409,604	Aug. 20	2120	556	48	1103
Dodge, James M., Philadelphia, Pa., assignor to Dodge Coal Storage Company, Naugatuck, Conn. Piling coal or analogous material	409,636	Aug. 20	2173	{572 / 573}	48	1112
Dodge, James M., assignor to Dodge Coal Storage Company, Philadelphia, Pa. Apparatus for unloading boats	410,883	Sept. 10	1150	311	48	1499
Dodge, Miles B., assignor to Parke & Lacey, San Francisco, Cal. Ore-concentrator	406,201	July 2	247	68,69	48	49
Dodge, Rodolph L., Portland, Me. Dress-form	411,428	Sept. 24	1965	522	48	1671
Dodge, Willard A., Alfred Centre, N. Y. Roundabout	408,798	Aug. 13	918	245	48	863
Dodge, William B., Stuart's Draft, Va. Road-cart	410,501	Sept. 3	563	152	48	1379
Dodson, Isaac B., Danville, Va. Type-writing machine	407,180	July 16	1743	456	48	357
Doherty, C. J., *et al.* (See Zoeller, Theodore J., assignor.)						
Doherty, Charles. (See Everett, Pierce E., assignor.)						
Doherty, Daniel E., *et al.* (See Zoeller, Theodore J., assignor.)						
Dolan, Bernard A. (See Van Anadall and Dolan.)						
Dolese & Shepard. (See Patnoe, George W., assignor.)						
Dolge, Alfred. (See Müller, Fritz, assignor.)						
Dolphin, Matthew J. (See Bertram, August, assignor.)	408,405	Aug. 6	307	78	48	738
Dolphin, Matthew J., Brooklyn, N. Y. Letter feeding and separating machine	409,142	Aug. 13	1441	379	48	964
Dom, Alexander, Mount Healthy, Ohio. Clamp-file						
Donaldson, Richard A., *et al.* (See Hipperling, William, assignor.)	410,158	Sept. 3	32	9	48	1275
Donaldson, Robert B., Washington, D. C. Dental instrument						
Doney, Asa, Chicago, Ill., assignor to J. B. Selby, Milwaukee, Wis. Device for vaporizing hydrocarbon oil and burning the same	410,639	Sept. 10	770	208	48	1426
Donlon, Thomas, assignor to Hitchcock Manufacturing Company, Cortland, N. Y. Jaw-trap	406,202	July 2	249	69	48	50
Donnald, John Q., Hartwell, Ga. Spark-arrester	411,327	Sept. 17	1810	483	48	1637
Donnell, Edward P., Chicago, Ill. Stapling-machine	406,891	July 16	1310	{343 / 344}	48	272
Donnell, Orin S., Franklin, Me. Music-holder	411,280	Sept. 17	1743	465	48	1626
Donnell, William A., assignor of one-half to J. Drake, Greensburg, Ind. Combined well packing and anchor	406,102	July 2	194	55	48	40
Donner, Will H., Columbus, Ind. Signal	410,270	Sept. 3	205	54	48	1309
Donner, Will H., Columbus, Ind. Signal for mills	410,502	Sept. 3	565	152	48	1379
Dooley, Patrick F., Malone, N. Y. Roll-grinder	411,095	Sept. 17	1475	391	48	1572
Doolittle, Emmet W., Garden Grove, Iowa. Road-cart	410,353	Sept. 3	340	89	48	1335
Doolittle, James. (See Graham and Doolittle.)						
Dorchester, Edward G., Geneva, N. Y. Cartridge-loader	411,500	Sept. 24	2196	{583 / 584}	48	1716
Dore, Benjamin. (See Blount, Kempster, Carrier, and Dore.)						
Doren, Lewis W., assignor to H. Schmaseu, St. Louis, Mo. Sash-balance	409,569	Aug. 20	2064	544	48	1093
Dörge, Wilhelm. (See Dulsdicker, Carl, assignor.)						
Doriot, Constant. (See Lacavalerie and Doriot.)						
Dorn, Christian, and E. Noppel, Philadelphia, Pa. Apparatus for purifying and refining oil	411,646	Sept. 24	2981	606	48	1736
Dorn, Lorenzo, Gloverville, N. Y. Blow-pipe	410,503	Sept. 3	566	153	48	1379
Dornbirer, Jacob, Sandusky, Ohio. Filter for rain-water	407,854	July 30	2753	716	48	568
Dosch, Benton G., and F. C. Sawhill, Allegheny, Pa. Attachment for gas-stoves	410,504	Sept. 3	568	153	48	1380
Doty, Albert J., assignor, by mesne assignments, to Goodwin Gas Stove and Meter Company, Philadelphia, Pa. Gas-heating burner	411,647	Sept. 24	2982	607	48	1736
Doty, Albert J., assignor, by mesne assignments, to Goodwin Gas Stove and Meter Company, Philadelphia, Pa. Multiple heating gas-burner	411,648	Sept. 24	2983	607	48	1737
Doty, Albert J., assignor, by mesne assignments, to Goodwin Gas Stove and Meter Company, Philadelphia, Pa. Gas-stove	411,649	Sept. 24	2984	607	48	1737
Doty, H. Walter. (See Cook, Erwin A., assignor.)						
Doubleday, Bertha C. (See Doubleday, William C., assignor.)	408,959	Aug. 13	1157	306	48	910
Doubleday, William C., assignor to B. C. Doubleday, Lima, Ohio. Vending apparatus	410,077	Aug. 27	2836	744	48	1242
Doud, Benson, Chili, Ind. Fence-wire holder and stretcher	406,636	July 9	927	230	48	169
Dougans, Matthew, assignor of one-half to E. P. King, Worcester, Mass. Galvanic battery	407,472	July 23	2201	568	48	453
Doughty, William H., assignor of one-half to W. Nagle, Brooklyn, N. Y. Treadle-motion	409,177	Aug. 20	1500	397	48	963
Douglass, Robert C., assignor to Pneumatic Power and Railroad Gate Company, Chicago, Ill. Railway-gate	408,697	Aug. 13	769	202	48	832
Doup, Thomas, Jr., Columbus, Ind. Road-gate	406,341	July 2	445	{123 / 124}	48	89
Douse, Thomas R., Chatham, county of Kent, England. Electrical fire-extinguisher	407,473	July 23	2202	568	48	453
Dover Stamping Company. (See Kirby, John L., assignor.)						
Dow, Alonzo, Wooster, Ohio. Electro-galvanic belt	411,74-	Sept. 24	2416	641	48	1764
Dow, Charles E. W., assignor to Darling, Brown & Sharpe, Providence, R. I. Protractor	410,824	Sept. 10	1071	288	48	1484
Dow, Charles H., Hyde Park, Mass. Checkrein-hook	11,028	Sept. 3	657	{174 / 175}	48	1397
Dow, Joseph H., assignor of one-half to W. Chisholm, Cleveland, Ohio. Rotary steam-engine. (Reissue.)	411,328	Sept. 17	1811	484	48	1637
Dow, Matthew J., Alba, Mich. Churn	407,820	July 30	2706	702	48	559
Dowagiac Manufacturing Company. (See Fowle, Charles L., assignor.)						
Dowler, Frank K., Jamestown, N. Y. Hoof-expander						

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Dowling, James. (See Bennett and Dowling.)						
Dowling, Robert H., assignor of two-thirds to C. and C. H. Follett, Newark, Ohio. Car-coupling	410,542	Sept. 3	615	165	48	1389
Downie, John G., Beaver Falls, Pa. Steam-engine	407,338	July 23	1987	516	48	412
Downing, John C. (See Keller, Adam, assignor.)						
Downing, William H., Goodell, Pa. Gas governor or regulator	407,645	July 23	2445	633	48	503
Downton, James W. S. (See Downton, Robert L., assignor.)						
Downton, Robert L., assignor of one-half to J. W. S. Downton, St. Louis, Mo. Dust-collector	409,025	Aug. 13	1261	333	48	929
Doyle, John. (See Morrissey and Doyle.) (Reissue.)	407,181	July 16	1745	456	48	357
Dozier, James H., assignor to L. D. Dozier, St. Louis, Mo. Fire-place						
Dozier, Lewis D. (See Dozier, James H., assignor.)	411,650	Sept. 24	2285	608	48	1737
Drader, Joseph, London, Ontario, Canada. Rotary plow	407,064	July 16	1555	408	48	319
Drake, Edwin L., Winchester, Tenn., assignor of one-half to R. W. Smith, La Grange, Ga. Ice-cream freezer						
Drake, Hobart A. (See Miller and Drake.)						
Drake, Joseph. (See Donnell, William A., assignor.)	407,774	July 30	2625	681	48	545
Drake, Millard N., Hanover, Mich. Felt boot	409,631	Aug. 27	2423	619	48	1174
Drake, William H., Chicago, Ill. Wall socket-plate for building-timbers	409,632	Aug. 27	2424	649	48	1174
Drake, William H., Chicago, Ill. Compound fire-proof column	410,225	Sept. 3	148	39	48	1297
Draper, Daniel A., East Cambridge, and A. Tonks, Malden, Mass. Fire-arm	406,165	July 30	3231	843	48	657
Draper, George O., Hopedale, Mass. Support for spinning-spindles	410,354	Sept. 3	341	90	48	1335
Draper, George O., assignor to G. Draper & Sons, Hopedale, Mass. Support for spinning-spindles	410,355	Sept. 3	342	90	48	1335
Draper, Jabez. (See Holt and Draper.)	411,492	Sept. 24	2049	542	48	1687
Draper, Jabez, Stockton, Cal. Punch						
Draper & Sons, George. (See Draper, George O., assignor.)						
Draper & Sons, George. (See Jaquith, Gilman, assignor.)						
Draper & Sons, George. (See Lees, James, assignor.)	406,223	Aug. 6	30	6	48	683
Draper, Thomas B., Red Oak, Iowa. Device for sampling hay	406,166	July 30	3232	843	48	657
Draper, William F., Hopedale, Mass. Support for spinning-spindles	406,823	July 9	1207	321	48	243
Draper, William F., Hopedale, assignor to Sawyer Spindle Company, Boston, Mass. Support for spinning-spindles	411,389	Sept. 17	1812	484	48	1637
Dreger, Max, assignor to Gruson werk, Magdeburg, Prussia, Germany. Transportable or field gun	408,466	Aug. 6	393	103	48	756
Dreimiller, Caspar, Brooklyn, N. Y., and J. Bove, West Hoboken, N. J. Coin-operated vending apparatus	410,078	Aug. 27	2836	745	48	1242
Drendul, Paul, assignor to L. G. Beers, Chicago, Ill. Sand-screen	406,035	July 2	22	7	48	7
Dressler, Solomon R., Bradford, Pa. Pipe-coupling	411,501	Sept. 24	2199	585	48	1719
Drew, Le Roy O., Carthage, Dak. Ter. Mowing-machine	407,855	July 30	2755	716	48	568
Dreyfuss, Bernard, New York, N. Y. Card and check box						
Driscoll, David F. (See Handeland, Ole, assignor.)	408,167	July 30	3233	844	48	657
Driscoll, Jeremiah, assignor to himself, R. Caffrey, M. F. Fitz Gibbons, and W. Driscoll, Taunton, Mass. Shoe-string fastener						
Driscoll, William, *et al.* (See Driscoll, Jeremiah, assignor.)	408,467	Aug. 6	395	{103 / 104}	48	757
Droste, August H. W., St. Charles, Mo. Grain weighing and registering machine	408,434	July 9	592	167	48	198
Druecker, John. (See Druecker, Joseph and J.)						
Druecker, Joseph, Druecker, Wm., and J. Druecker, Chicago, Ill. Limekiln	409,776	Aug. 27	2396	628	48	1159
Drumheller, George W., and C. H. North, assignors of one-half to S. M. York, Cleveland, Ohio. Machine for cutting gear	407,312	July 16	1939	505	48	306
Du Shane, James, South Bend, Ind. Curry-comb	407,182	July 16	1746	.....	48	357
Dubbs, Jesse A., Allegheny, Pa. Refining oils	408,830	Aug. 13	964	256	48	872
Dubois, Jules, Brooklyn, N. Y. Watch-case	408,168	July 30	3234	844	48	657
Dubrow, John H., assignor to W. A. Smith and R. S. West, Cleveland, Ohio. Sad-iron	411,493	Sept. 24	2051	548	48	1687
Ducker, John, Santa Rosa, Cal. Book-rest and easel	410,640	Sept. 10	773	209	48	1426
Duclos, John C., assignor of one-half to R. E. Weldon, Creighton, Mo. Post-hole digger	411,281	Sept. 17	1745	466	48	1626
Dudley, Beverley R., and A. D. Cosby, Richmond, Va. Indicator for barber's shops	407,474	July 23	2204	568	48	453
Dudley, Dana, Lynn, Mass., assignor to Hotchkiss Ordnance Company, (limited,) London, England. Compressing air for pneumatic guns	407,475	July 23	2204	568	48	454
Dudley, Dana, Lynn, Mass., assignor to Hotchkiss Ordnance Company, (limited,) London, England. Pneumatic piston-gun	407,476	July 23	2205	569	48	454
Dudley, Dana, Lynn, Mass., assignor to Hotchkiss Ordnance Company, (limited,) London, England. Pneumatic gun	406,566	July 9	611	220	48	108
Dudley, Plimmon H., New York, N. Y. Preserving railway-ties	406,960	Aug. 13	1160	306	48	910
Dudley, Plimmon H., New York, N. Y. Railway-tie plate	411,187	Sept. 17	1609	427	48	1509
Dudley, Sumner A., Taunton, Mass. Loom-shuttle						
Dueber, John C. (See Bradley, William W., assignor.)						
Duell, Charles H., *et al.* (See Dewey, Mark W., assignor.)	409,394	Aug. 20	1822	{480 / 481}	48	1045
Duff, Joseph, Lansing, Ontario, Canada. Dumping-car	409,395	Aug. 20	1825	{481 / 482}	48	1045
Duff, Joseph, Lansing, Ontario, Canada. Dumping-car	407,515	July 23	2256	583	48	464
Duffield, William W., Detroit, Mich. Draftsman's protractor	410,543	Sept. 3	616	165	48	1389
Duffins, Joseph H., assignor of one-half to J. W. Roop, Harrisburg, Pa. Car-coupling	409,940	Aug. 27	2029	600	48	1905
Duffy, Edward C., Pawtucket, R. I. Yarn-reel	406,636	July 2	23	7	48	7
Duggan, James F., Quincy, Mass. Railway-switch	409,777	Aug. 27	2398	628	48	1160
Duhamel, James F., Washington, D. C. Trousers-stretcher						
Duisdicker, Carl, Minden, Westphalia, assignor to W. Dörge, Braunschweig, Germany. Chalk-holder	408,297	Aug. 6	138	35	48	706
Dulebohn, John G., Elizabethtown, Pa. Gate-latch	406,037	July 2	25	7	48	8
Dumais, Jean B. Z., assignor of three-fourths to A. and C. Bachrach and D. L. Langevin, Chicago, Ill. Soot and spark arrester	406,710	July 9	1034	277	48	208
Dumont, James H., Kingston, N. Y. Game-board	406,342	July 2	446	124	48	90
Dumont, Louis, *et al.* (See Verpillier, Emile, assignor.)	407,432	July 23	2145	554	48	442
Dunbar, Warren, Minneapolis, Minn. Discharge apparatus for coal or ore bins	410,159	Sept. 3	33	9	48	1275
Duncan, John H., and F. A. Hale, Syracuse, N. Y. Cistern-cleaner	407,582	July 23	2350	611	48	487
Duncan, William D., Boston, Mass. Shackle	406,999	July 16	1469	384	48	303
Duncombe, Nellie C., New York, N. Y. Decorating metal surfaces	407,646	July 23	2446	633	48	503
Dunham, George H., *et al.* (See Smith, Roswell T., assignor.)						
Dunlap, Ephraim L., Kingfield, Me. Animal-trap						

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Dunlap, Henry C. (See Cornwell, Charles, assignor.)						
Dunlap, John W., Sr., assignor of part to R. J. Shaw, C. R. Mair, and W. H. Rowe, Pittsburg, Pa. Magneto-electric individual switching apparatus	408,468	Aug. 6	398	104	48	757
Dunlap, Samuel. (See Denman, Henry A., assignor.)						
Dunn, Franklin M., A. Petticord, and J. H. King, Baltimore, Md. Electrical circuit closer for water-indicators	409,460	Aug. 20	1913	507	48	1065
Dunn, Isaac L., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Metallic bottom plate for pigeon-holes	408,001	July 30	2980	776	48	611
Dunn, James, Cleveland, Ohio. Tackle-block	411,240	Sept. 17	1668	450	48	1514
Dunn, James H., Dubois, Pa. Coffin	408,169	July 30	3234	844	48	657
Dunn, Samuel, Greenwood, Ark. Combined andiron and fender	406,508	July 9	729	200	48	153
Dunning, Charles H., *et al.* (See Agan, Hiram, assignor.)						
Dunning, Theodore R., Middletown, N. Y. Metallic railway-tie	406,129	July 2	149	44	48	31
Duplex Shoe Trimmer Company. (See Trask, Charles H., assignor.)						
Durfee, Bradford K., *et al.* (See Hartley, Charles J., assignor.)						
Durkin, James F., Scottdale, Pa. Automatic car-brake	411,547	Sept. 24	2131	564	48	1704
Durkin, Michael T., Brooklyn, N. Y. Metal-forming machine	407,516	July 23	2256	583	48	465
Durward, John M., assignor to Bristol Clock Case Company, Bristol, Conn. Clock-case	410,825	Sept. 10	1072	288	48	1484
Dutcher, John A., *et al.* (See Zimmerling, August F., assignor.)						
Dutcher, Pierrepont E., *et al.* (See Zimmerling, August F., assignor.)						
Dutton, George E., Medford, assignor of one-half to J. Burrill, Boston, Mass. Case-hook	408,380	Aug. 6	261	65	48	730
Dwelley, Lucius H., Foxcroft, Me. Combined hay raking and loading device	408,799	Aug. 13	919	245	48	863
Dwight, George S., deceased; M. T. Dwight, Montclair, N. J., administratrix. Apparatus for the manufacture of fuel-gas	406,637	July 9	928	{250 251	48	190
Dwight, Mary T., administratrix. (See Dwight, George S.)						
Dyer, Isaac T., assignor to himself and P. Fish, Chicago, Ill. Apparatus for heating cars	409,278	Aug. 20	1651	436	48	1012
Dyer, Isaac T., assignor to himself and P. Fish, Chicago, Ill. Apparatus for elevating water	409,279	Aug. 20	1652	436	48	1012
Eames, Charles J., New York, N. Y. Reducing-stack	407,000	July 16	1473	394	48	303
Eames, Elisha D., Watertown, N. Y. Automatic brake-adjuster	410,979	Aug. 27	2837	715	48	1243
Eames, Elisha D., Watertown, assignor of one-half to W. A. Foster, Corning, N. Y. Automatic brake-adjuster	410,909	Sept. 10	1250	339	48	1521
Eames, Gardner T., Racine, Wis. Wooden-rim split pulley	411,651	Sept. 24	2288	608	48	1737
Earle, Harry L., assignor to Earle Manufacturing Company, Minneapolis, Minn. Band-cutter and feeder	409,461	Aug. 20	1916	{507 508	48	1065
Earle Manufacturing Company. (See Earle, Harry L., assignor.)						
Earley, William, Philadelphia, Pa. Portable heater	408,469	Aug. 6	400	105	48	758
Earnshaw, Ellis, assignor of one-half to G. W. Fisher, Grafton, Mass. Shuttle-binder for looms	408,470	Aug. 6	401	105	48	758
Easley, John L., New York, N. Y. Lemon-juice extractor	410,789	Sept. 10	1026	276	48	1474
Eastern Electrical Manufacturing Company. (See Gould, Claude C., assignor.)						
Eastman, David, assignor of one-half to F. Sweeney, Detroit, Mich. Device for stretching and drying lace curtains	410,790	Sept. 10	1027	276	48	1474
Eastman Dry Plate and Film Company. (See Eastman, George, assignor.)						
Eastman, George, Rochester, N. Y. Roll-holder indicator	407,306	July 23	2082	538	48	430
Eastman, George, assignor to Eastman Dry Plate and Film Company, Rochester, N. Y. Photographic roll-holder	407,647	July 23	2447	631	48	503
Eastman, George, assignor to Eastman Dry Plate and Film Company, Rochester, N. Y. Camera	408,596	Aug. 6	599	{155 156	48	794
Eastman, Richard S., Manchester, N. H., assignor of one-half to A. W. Glines, Boston, Mass. Automatic railway-switch	410,961	Sept. 10	1261	340	48	1521
Eastman, William H., Concord, N. H. Mechanical telephone	411,767	Sept. 24	2452	650	48	1771
Easton, Daniel, Grafton, Nebr. Sash-holder	411,330	Sept. 17	1813	485	48	1637
Eastwick, Edward P., Jr., New York, assignor to E. C. Clark, Saratoga, N. Y. Car-coupling	407,821	July 30	2706	702	48	559
Eaton, Ambrose C. (See Eaton, David H. and A. C.)						
Eaton, David H. and A. C., Waverly, N. Y. Shipping-can for perishable articles	411,096	Sept. 17	1477	391	48	1572
Eaton, William S., Sag Harbor, assignor to Fahys Watch Case Company, New York, N. Y. Engraving-machine	409,026	Aug. 13	1263	333	48	930
Eberhardt, Henry, Chicago, Ill., assignor to Gilbert & Bennett Manufacturing Company, Georgetown, Conn. Gate-hinge	406,412	July 2	551	154	48	110
Eberhardt, Henry E. (See Eberhardt, Ulrich and H. E.)						
Eberhardt, Ulrich, Newark, N. J. Tapping attachment for drilling-machines	408,698	Aug. 13	770	{202 203	48	833
Eberhardt, Ulrich, Newark, N. J. Dirt-guard for shaping-machines	409,941	Aug. 27	2630	690	48	1205
Eberhardt, Ulrich and H. E., Newark, N. J. Drilling-machine	407,339	July 23	1989	517	48	413
Ebert, John S., Brooklyn, N. Y. Mechanism for operating hoists	409,737	Aug. 27	2333	614	48	1148
Ebert, Lorens. (See Hoffmann and Ebert.)						
Eck, James L., Kutztown, Pa. Circular-knitting machine	410,505	Sept. 3	569	{153 154	48	1360
Eckenroth, George. (See Rullmann and Eckenroth.)						
Eckstrom, Andrew M. (See Seibert and Eckstrom.)						
Eddy, Willard, Haddam, Conn. Electric signaling apparatus	408,224	Aug. 6	31	7	48	684
Edgar, Dennis P., Jackson, Mich. Car-coupling	410,544	Sept. 3	617	166	48	1390
Edgar, Ellis F., Woodbridge, N. J. Apparatus for burning hydrocarbon oils	410,826	Sept. 10	1074	288	48	1485
Edgar, Ellis F., Woodbridge, N. J. Apparatus for vaporizing and burning hydrocarbon oils	410,827	Sept. 10	1075	289	48	1485
Edgerton, Nathan H, Philadelphia, Pa. Steam-engine	409,672	Aug. 27	2238	{588 589	48	1130
Edison Electric Light Company. (See Edison, Thomas A., assignor.)						
Edison, Thomas A., Llewellyn Park, N. J. Manufacture of incandescent electric lamps	406,130	July 2	150	44	48	32
Edison, Thomas A., Llewellyn Park, N. J. Phonograph	406,568	July 9	814	220	48	169
Edison, Thomas A., Llewellyn Park, N. J. Phonogram-blank	406,569	July 9	815	220	48	169
Edison, Thomas A., Llewellyn Park, N. J. Phonograph	406,570	July 9	815	221	48	169
Edison, Thomas A., Llewellyn Park, N. J. Treating phonogram-blanks	406,571	July 9	816	221	48	169
Edison, Thomas A., Llewellyn Park, N. J. Automatic determining device for phonographs	406,572	July 9	817	222	48	169
Edison, Thomas A., Llewellyn Park, N. J. Automatic determining device for phonographs	406,573	July 9	819	222	48	170
Edison, Thomas A., Llewellyn Park, N. J. Automatic determining device for phonographs	406,574	July 9	821	222	48	170
Edison, Thomas A., Llewellyn Park, N. J. Automatic determining device for phonographs	406,575	July 9	822	223	48	170

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Edison, Thomas A., Llewellyn Park, N. J. Phonogram-blank	406,576	July 9	824	223	48	170
Edison, Thomas A., Llewellyn Park, N. J. Manufacture of incandescent electric lamps	411,018	Sept. 17	1346	362	48	1548
Edison, Thomas A., Llewellyn Park, N. J. Manufacture of incandescent electric lamps	411,019	Sept. 17	1347	362	48	1548
Edison, Thomas A., Llewellyn Park, N. J. Manufacture of carbon filaments	411,020	Sept. 17	1348	.....	48	1548
Edison, Thomas A., Llewellyn Park, N. J. Telephone	406,567	July 9	813	220	48	169
Edison, Thomas A., Menlo Park, N. J. Carbonizing-flask	411,017	Sept. 17	1345	362	48	1548
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Electric meter	406,894	July 9	1207	321	48	243
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Electric meter	406,895	July 9	1209	321	48	243
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Manufacture of carbon filaments	411,016	Sept. 17	1344	362	48	1547
Edmands, Isaac P. T., trustee. (See Ethridge, Frank N., assignor.)						
Edmunds, Isaac P. T., *et al.* (See Ayer, Albert E., assignor.)						
Edson, Elijah H., Rochester, N. Y. Safety-heater for railway-cars	407,726	July 23	2549	660	48	523
Edson, William N., assignor of one-half to S. Frankenstein, Chicago, Ill. Injector oil-burner	407,065	July 16	1556	409	48	319
Edwards, Albert, Brooklyn, N. Y. Portfolio	407,284	July 16	1903	495	48	388
Edwards, Ayres M., Lewiston, Me. Teacher's dial	407,183	July 16	1747	457	48	357
Edwards, Edward P., Sterling, Ill. Foot-guard for railway-tracks	410,666	Sept. 10	813	218	48	1433
Edwards, Evan A. (See Phelps and Edwards.)						
Edwards, Joseph, Brooklyn, N. Y. Dumping-scow	408,290	Aug. 6	139	35, 36	48	706
Edwards, Joseph, Brooklyn, N. Y. Dumping-scow	409,942	Aug. 27	2039	{690 691	48	1205
Edwards, Richard J., Galena, Ill. Car-coupling	410,060	Aug. 27	2838	745	48	1243
Edwards, Thomas, Sr., Chicago, Ill. Floor-beam connection	407,066	July 16	1558	409	48	320
Effler, Philip A., *et al.* (See Horn, Ferdinand, assignor.)						
Egan, James P., New York, N. Y. Pen-holder	407,517	July 23	2257	583	48	465
Egan, Patrick J., Carleton, New Brunswick, Canada. Car-coupling	406,203	July 2	250	69	48	50
Egbert, Peter V., Genoa, N. Y. Scraper	406,093	July 2	100	20	48	22
Egelston, Edgar A., Albion, N. Y. Washing-machine	411,494	Sept. 24	2058	542	48	1688
Eggimann, August. (See Jericka and Eggimann.)						
Egley, John C. (See Frederick and Egley.)						
Ehnlich, Ernst, Berlin, Germany. Pocket-inkstand	411,021	Sept. 17	1349	363	48	1548
Ehrenwerth, Simon. (See Paul, Albert, assignor.)						
Ehret, Michael, Jr., Philadelphia, Pa. Roofing-paper roll	407,563	July 23	2360	611	48	487
Ehrlich, Johannes, Marion, Kans. Flue-cleaner	407,856	July 30	2756	716	48	569
Ehrlich, Leo. (See Tivy and Ehrlich.)						
Ehrlich, Leo, St. Louis, Mo. Letter-box	409,027	Aug. 13	1266	333	48	930
Ehrlich, Leo, assignor to American Roll Paper Company, St. Louis, Mo. Paper-cutter	407,518	July 23	2258	584	48	465
Ehrlich, Leo, assignor to American Roll Paper Company, St. Louis, Mo. Paper-cutter	407,519	July 23	2259	584	48	465
Ehrlich, Leo, assignor to American Roll Paper Company, St. Louis, Mo. Combined paper printer and cutter	408,597	Aug. 6	604	156	48	795
Ehrlich, Leo, assignor to American Roll Paper Company, St Louis, Mo. Roll-paper holder and cutter	408,598	Aug. 6	604	156	48	795
Ehrlich, Leo, assignor to American Roll Paper Company, St. Louis, Mo. Roll-paper holder and cutter	409,028	Aug. 13	1267	334	48	930
Eiche, Friedrich, Schandau, Saxony, Germany. Key-hole guard	410,506	Sept. 3	571	154	48	1380
Eichelberg, Leopold. (See Böhm and Eichelberg.)						
Eickershoff, John H., assignor to Triumph Compound Engine Company, Cincinnati, Ohio. Single-acting compound engine	407,184	July 16	1748	457	48	358
Eiseman, Max, and J. Kaiser, Chicago, Ill. Cuff-holder	409,833	Aug. 27	2485	649	48	1174
Elbert, Vincent L., Minneapolis, Minn. Apparatus for the manufacture of gas	411,022	Sept. 17	1350	363	48	1548
Elder, Joseph, Peoria, Ill. Carburetor	409,570	Aug. 20	2064	544	48	1093
Eldredge, Curtis B. (See Eldredge, John V. D., assignor.)						
Eldredge, John V. D., assignor of one-half to C. B. Eldredge, Detroit, Mich. Car-coupling	408,699	Aug. 13	774	203	48	833
Eldridge, George V., Somerville, Mass. Water-closet attachment	407,397	July 23	2084	539	48	430
Eldridge, James R., assignor to himself and R. McKinnon, Yarmouth, Nova Scotia, Canada. Whistle	407,067	July 16	1559	409	48	320
Electric Cable Construction and Maintenance Company. (See Brooks, David, Jr., assignor.)						
Electric Cutting Machine Company. (See Nevens, Frank W., assignor.) (Reissue.)						
Electric Gold and Silver Chlorination Company. (See Wiswell, Jacob C., assignor.)						
Electrical Accumulator Company. (See Faure, Camille A., assignor.)						
Electrical Accumulator Company. (See Griscom, William W., assignor.)						
Electrical Spectacle and Eye Glass Manufacturing Company. (See Smith and Martin, assignors.)						
Electrical Supply Company. (See Phalan, James H., assignor.)						
Electro-Automatic Transit Company. (See Weems, David G., assignor.)						
Electro Dynamic Company. (See Griscom, William W., assignor.)						
Elfering, John H., Chicago, Ill. Coin-operated induction-coil	409,738	Aug. 27	2335	614	48	1148
Elfers, August H., Phœnix, Aris. Ter. Water-elevator	408,406	Aug. 6	309	78, 79	48	739
Elfreth, Jacob R. (See Riess, Frederick W., assignor.)						
Elge, Alexander A. (See Mixter, Henry M., assignor.)						
Elgin National Watch Company. (See Hunter, George, assignor.) (Reissue.)						
Elkins, Ira S., New York, N. Y. Metal lathing	408,599	Aug. 6	605	156	48	795
Ellenwood, Raymond E., Cohoes, N. Y. Attachment for looping machines	406,638	July 9	933	252	48	191
Ellicott, Benjamin W., Flemington, N. J. Metal railway-tie	410,684	Sept. 10	842	226	48	1439
Elling, William H., Cleveland, Ohio. Type-writing machine	407,185	July 16	1750	{458 459	48	358
Elliot, W. G., *et al.* (See Grassler, William F., assignor.)						
Eliot, William H., Brooklyn, N. Y. Apparatus for transferring packages to moving cars	406,343	July 2	447	124	48	90
Elliott, Austin, Kansas City, Kans. Car-coupling	406,639	July 9	934	252	48	191
Elliott, Francis E., Miles, Wash. Ter. Combined tobacco and match case	409,029	Aug. 13	1268	334	48	931
Elliott, George S., Mobile, Ala. Shutter-worker	411,548	Sept. 24	2132	{564 565	48	1704
Elliott, Gilbert R., Boston, Mass. Store-service apparatus	409,098	Aug. 13	1370	{361 362	48	949
Elliott, James W., assignor of one-half to G. Witting, Columbus, Tex. Seed-cotton cleaner and distributer	410,962	Sept. 10	1262	340	48	1521
Elliott, Julius A., assignor of one-half to A. S. J. Gammon, Norfolk, Va. Back-band hook	410,061	Aug. 27	2339	745	48	1243
Elliott, Larkin V., Mooresville, Ind. Acoustic telephone	410,791	Sept. 10	1029	278	48	1475
Elliott, William E., Marion, Iowa. Button-machine	408,700	Aug. 13	775	{303 304	48	834
Elliott, William P., and A. Farrar, Chicago, Ill. Gate	406,577	July 9	825	223	48	171
Ellis, Augustin, Bedford, Ind. Cultivator	409,695	Aug. 20	2122	558	48	1163

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Ellis, David R., Chicago, Ill. Oil-filter	410,319	Sept. 3	290	75	48	1325
Ellis, Elijah P., Oak Hall, Kans. Flour-bin	406,038	July 2	25	8	48	8
Ellis, John, Jersey City, assignor of one-half to W. T. Wallis, East Orange, N. J. Folding baby-carriage	410,963	Sept. 10	1264	340 341	48	1522
Ellis, Lewis S., Eminence, Ky. Crupper	408,240	Aug. 6	203	51	48	719
Ellis, W. S., *et al.* (See Waterman, George, assignor.)						
Ellis, Washington L., assignor of one-half to M. E. and D. Pratt, Prattville, Ala. Saw-gin	410,082	Aug. 27	2840	746	48	1243
Ellis, William W., *et al.* (See Waterman, George, assignor.)						
Elsas, Julius, and H. Weissenburger, Canustadt, Würtemberg, Germany. Loom-shuttle	411,097	Sept. 17	1478	392	48	1573
Elterich, G. Otto. (See Elterich, Otto P. and G. O.)						
Elterich, Otto P. and G. O., assignors of one-third to C. Heitemeyer, Newark, N. J. Heating-stove	407,001	July 16	1474	384	48	303
Elterich, Otto P. and G. O., assignors of one-third to C. Heitemeyer, Newark, N. J. Furnace-grate	407,002	July 16	1476	385	48	304
Elterich, Otto P. and G. O., assignors of one-third to C. Heitemeyer, Newark, N. J. Mantel for stoves	407,003	July 16	1477	385	48	304
Emanuel, Max, London, England, assignor to G. Borgfeldt & Co., New York, N. Y. Money-box	409,778	Aug. 27	2399	629	48	1160
Emerson, Charles H., Yonkers, N. Y. Coasting-toboggan	406,892	July 16	1312	344 345	48	273
Emerson, Charles T., Lawrence, Mass. Faucet and faucet-bushing	408,831	Aug. 13	965	256	48	872
Emerson & Co., Charles H. (See McLaren, John R., Jr., assignor.)						
Emerson, Edward W., assignor to himself, W. W. Coe, and F. G. Reynolds, Boston, Mass. Theatrical appliance	406,271	July 2	338	93	48	68
Emerson, James C., Waterbury Centre, Vt. Cuff-holder	406,435	July 9	596	167	48	128
Emerson, James E. (See Midgley, Thomas, assignor.)						
Emerson, Talcott & Company. (See Jones, James H., assignor.)						
Emery, Henry C. W., and E. Christian, London, England. Tobacco-pipe	408,341	Aug. 6	204	52	48	719
Emmens, Stephen H., London, England. Projectile for smooth-bore guns	407,648	July 23	2450	634	48	504
Emmens, Stephen H., London, England. Gun and projectile for high explosives	409,943	Aug. 27	2634	691	48	1206
Emmens, Stephen H., London, England. Gun for throwing externally-applied projectiles	410,390	Sept. 3	299	76	48	1325
Emmert, John W., Eaton Rapids, Mich. Attachment for shears	406,039	July 2	26	8	48	8
Emmons, Charles C. (See Hine, Charles M., assignor.)						
Emmons, Freeman, *et al.* (See Radford, Case M., assignor.)						
Endres, Josef, and E. Schoellig, Long Island City, N. Y. Making ornamental glass panels	409,834	Aug. 27	2486	650	48	1175
Engel, Clement, assignor of one-half to P. Broyer, St. Paul, Minn. Lemon-squeezer	407,433	July 23	2147	554	48	442
Engels, Emil, Engelskirchen, near Cologne, Germany. Device for protecting gage-glass tubes	409,280	Aug. 20	1653	436	48	1013
Engels, William H., Farmington, Ark. Hand-car	408,225	Aug. 6	35	8	48	684
Engler, Karl, Home, Kans. Manufacture of writing-surfaces	407,649	July 23	2451	.....	48	504
Engler, Nicholas J., Ipswich, Dak. Ter. Stove	406,204	July 2	251	69	48	50
English, James G., New Haven, Conn. Carriage-pole crab	408,961	Aug. 13	1161	307	48	910
Ennes, John D., Norfolk, Va. Dental-bib clamp	410,063	Aug. 27	2842	746	48	1243
Enoch, Jacob, New York, N. Y. Vegetable-slicer	410,582	Sept. 10	678	181	48	1408
Ensign, Charles H., Temescal, and P. B. Wright, Berkeley, Cal. Packing for stuffing-boxes	408,407	Aug. 6	311	79	48	739
Ensminger, Christian, assignor, by mesne assignments, of one-half to C. S. Babcock, Albany, N. Y. Combined square, level, protractor, &c.	407,285	July 16	1905	496	48	388
Epple, Herman, Belleville, Ill. Reel or swift	410,405	Sept. 3	420	111	48	1351
Eppler, Andrew, Jr., Boston, Mass. Shoe-sewing machine	409,261	Aug. 20	1655	436 437	48	1013
Erdmann, Adolph, Hamburg, Germany. Copying-press	406,578	July 9	827	224	48	171
Erickson, Erick E., assignor of one half to W. Thayer, Boston, Mass. Insulating-coupling for pipes	408,600	Aug. 6	606	157	48	795
Ernst, Victor H., Jersey City, N. J. Secondary battery	408,002	July 30	2981	776	48	611
Eschenbach, Gus W. (See Steiner, Henry W., assignor.)						
Essig, Isaiah R., Canton, Ohio. Fence-machine	410,706	Sept. 10	873	235	48	1445
Estabrook, Sylvester B., Leicester, and J. P. Ashey, Worcester, Mass. Measuring can or canister	407,650	July 23	2452	635	48	504
Esten, George T. (See Parker and Esten.)						
Ethier, Callixte, St. Jérôme, Quebec, Canada. Bedstead	408,299	Aug. 6	140	36	48	707
Ethridge, Frank N., Lynn, assignor, by mesne assignments, to I. P. T. Edmands, trustee, Boston, Mass. Heel-trimming machine	411,121	Sept. 17	1517	404 405 406	48	1581
Ette, Charles G., St. Louis, Mo. Self-closing hydrant	408,091	July 30	3102	812 813	48	634
Euvrard, Louis J., Montclair, N. J. Sink-coupling	406,272	July 2	339	93	48	68
Evans, Clark W., Plainfield, N. J. Wire band for boxes	406,803	July 16	1316	345	48	273
Evans, David, assignor of one-half to R. C. Alcott, Ansonia, Conn. Machine for tinning copper sheets	408,832	Aug. 13	966	256 257	48	872
Evans, George H., Jr., Independence, Kans. Corn-planter	411,282	Sept. 17	1745	466	48	1626
Evans, James, *et al.* (See Kleman, Henry, assignor.)						
Evans, James M., Providence, R. I., and J. M. Shay, Fall River, Mass. Shuttle-supplying mechanism for looms	409,282	Aug. 20	1657	437	48	1013
Evans, Samuel D., Asbury Park, N. J. Solar bath	407,434	July 23	2148	555	48	443
Evans, Samuel W., Jr., Philadelphia, Pa. Ferrule	410,828	Sept. 10	1076	289	48	1485
Evans, Warren C., assignor to Automatic Heel Trimming and Burnishing Machine Company, Exeter, N. H. Machine for treating boots or shoes	406,226	July 9	1210	322	48	243
Evans, William, Philadelphia, Pa. Stake-pocket	410,731	Sept. 10	931	249	48	1453
Everding, Charles, Branford, Conn. Sharpening device	407,651	July 23	2453	635	48	504
Everett, Charles, Denton, Tex. Electric belt	409,673	Aug. 27	2239	589	48	1131
Everett, Henry H., Passaic, N. J. Car-coupling	410,667	Sept. 10	815	219	48	1433
Everett, Pierce E., Kansas City, Mo. Self-closing faucet	406,273	July 2	340	93	48	68
Everett, Pierce E., assignor to C. Doherty, Kansas City, Mo. Self-acting faucet	408,701	Aug. 13	778	203	48	835
Everitt, Percival, New York, N. Y. Machine for disclosing articles in exchange for a coin	411,549	Sept. 24	2133	565	48	1705
Everlasting Roofing Company. (See Bushnell, Cornelius S., assignor.)						
Everman, Ernst A., and D. Wagner, Toledo, Ohio. Furnace-pipe	411,652	Sept. 24	2289	608	48	1738
Eversole, Theodore W., Garrett, Ind. Soldering-iron	408,408	Aug. 6	312	79	48	739
Everson, George H., Pittsburg, Pa. Metallic wheel	409,944	Aug. 27	2636	691	48	1206
Everson, George H., Pittsburg, Pa., assignor to Rolled Steel Carriage Wheel Company, Trenton N. J. Metallic wheel	409,945	Aug. 27	2637	691	48	1206
Ewald, Julius. (See Smith, Knuth, Thompson, and Ewald.)						
Ewers, Hartwig P. F., Lübeck, Germany. Machine for seaming tin boxes	411,331	Sept. 17	1814	483 484	48	1638
Ewig, John, Washington, D. C., assignor to G. Menger, Philadelphia, Pa. Waistband-fastener	408,300	Aug. 6	141	36	48	707

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Ewing, James D., assignor to Keystone Watch Case Company, Philadelphia, Pa. Watch-case spring	409,739	Aug. 27	2337	614	48	1149
Eynon, William, and W. Seaman, Wilmington, Del. Roll for rolling horseshoe-blanks	408,711	July 9	1035	277	48	909
Eynon, William, and W. Seaman, Wilmington, Del. Plant of machinery for the manufacture of horseshoes	406,712	July 9	1036	277	48	909
Eynon, William, and W. Seaman, Wilmington, Del. Horseshoe-bending machine	406,713	July 9	1037	277 278	48	909
Ezell, Frank, Maranham, Brazil. Means for securing dishes to the tables of steamships	407,477	July 23	2307	569	48	455
Fagan, Robert, assignor to P. & F. Corbin, New Britain, Conn. Sash-cord fastener	409,030	Aug. 13	1269	334	48	931
Fahys Watch Case Company. (See Eaton, William S., assignor.)						
Fail, George W., Bethany, Mo. Trace	406,436	July 9	597	168	48	129
Fain, Emmet C., Granbury, Tex. Rack for displaying dry goods	406,131	July 2	151	44, 45	48	32
Fain, William T., Lead Hill, Ark. Hoisting apparatus	410,507	Sept. 3	572	154	48	1380
Fairbanks & Company, E. & T. (See Miller, William J., assignor.)						
Fairbanks, Henry, and H. Parker, St. Johnsbury, Vt. Machine for forming bodies from successive layers of pulp	408,092	July 30	3105	813	48	635
Fairbanks, Herbert H. (See Coughlin, William H., assignor.)						
Fairbanks, Horace S., Racine, Wis. Wagon-body corner	410,508	Sept. 3	573	154	48	1381
Fairchild, Frank. H., Atchison, Kans. Artificial limb	411,377	Sept. 17	1881	503	48	1651
Fairchild, Frank L., Mount Vernon, Ohio. Fence-post	409,396	Aug. 20	1628	432	48	1046
Fairfield, George A., and G. E. Witherell, assignors to Hartford Machine Screw Company, Hartford, Conn. Metal-screw machine	409,674	Aug. 27	2240	589 590 591	48	1131
Fairweather, Lydia, Richmond Hill, N. Y. Combined clothes-horse and ironing-board	408,471	Aug. 6	403	105	48	758
Fakes, Morven R., Carbondale, Ill. Churn	410,356	Sept. 3	343	90	48	1336
Fallon, William, Newburg, N. Y. Perforating-tool	407,068	July 16	1560	409	48	330
Farbenfabriken, vormals Fr. Bayer & Co. (See Pätzinger, William, assignor.)						
Farbenfabriken, vormals Fr. Bayer & Co., *et al.* (See Sandmeyer, Traugott, assignor.)						
Farewell, Helen, Detroit, Mich. Wash-boiler	407,727	July 23	2550	660	48	584
Faries, Robert, Decatur, Ill. Display-rack	406,163	July 2	196	55	48	40
Faries, Robert, Decatur, Ill. Display-rack	407,340	July 23	1993	517	48	413
Farley, Henry W., Urbana, Ill. Boot-jack	410,229	Sept. 10	1077	280	48	1485
Farmer, James, Salford, county of Lancaster, England. Machine for printing or embossing fabrics, &c.	408,913	Aug. 13	1092	287 288	48	897
Farmer, John W. (See Howard, Willie J., assignor.)						
Farquhar, Francis, M. J., and H. B., Wilmington, Ohio. Hot-air and hot-water heater	409,746	Aug. 27	2338	614 615	48	1149
Farquhar, Henry B. (See Farquhar, Francis, M. J., and H. B.)						
Farquhar, Milton J. (See Farquhar, Francis, M. J., and H. B.)						
Farrar, Arthur. (See Elliott and Farrar.)						
Farrar, Gilbert W. (See Gilbert and Farrar.)						
Farrington, Clarence H. (See Mann and Farrington.)						
Farrington, Darius, Brooklyn, N. Y., assignor of one-half to T. I. Andrews, Rahway, N. J.	410,160	Sept. 3	35	10	48	1376
Retainer for bed-coverings	411,140	Sept. 17	1542	412	48	1586
Farrington, George B., and N. Curtis, Bridgeport, Conn. Shell for winding paper	410,685	Sept. 10	844	326 327	48	1439
Farrow, James E., Southport, and J. M. Carson, Salford, county of Lancaster, England. Cash indicator and register	408,833	Aug. 13	968	257	48	873
Faul, William J., Brooklyn, N. Y. Lubricator	410,406	Sept. 3	421	111	48	1351
Faul, William J., Brooklyn, N. Y. Lubricator for loose pulleys						
Faulkner, John. (See Latlan, Tripp, and Faulkner.)						
Faure, Camille A., New York, N. Y., assignor to Electrical Accumulator Company, of New York. Secondary battery	409,178	Aug. 20	1501	398	48	983
Favre, Jean C. J. C., Montreal, Quebec, Canada, assignor, by mesne assignments, to American Automaton Weighing Machine Company, of New York. Coin-controlled weighing-machine	406,132	July 2	153	45	48	32
Fawcett, Alexander, Mount Vernon, Ohio. Gate	408,601	Aug. 6	607	157	48	796
Fay, Charles P. (See Starrett and Fay.)						
Fay, Frank, Chester, Mass. Folding crib	411,653	Sept. 24	2291	609	48	1738
Fay, Winslow L., Elyria, Ohio. Recoil-spring for baby-carriages	410,583	Sept. 10	679	182	48	1406
Fearnley, George B., Brixton, county of Surrey, England. Gas-pressure gage and regulator	406,894	July 16	1317	345	48	273
Feeny, John W., Elmira, assignor of one-half to J. B. Marston, Buffalo, N. Y. Lantern attachment	411,218	Sept. 17	1658	443	48	1609
Feea, John, near French Camp, Cal. Bag-holder	409,946	Aug. 27	2637	692	48	1206
Fefel, Henry H., assignor of one-half to T. A. Pearce, Philadelphia, Pa. Sewing-machine	407,186	July 16	1754	459	48	359
Fefel, Henry H., assignor of one-half to T. A. Pearce, Philadelphia, Pa. Combined seaming, trimming, and overseaming machine	407,286	July 16	1907	496	48	388
Feldmann, Alexander, Linden, near Hanover, Prussia, Germany. Making fire-proof materials	406,714	July 9	1039	.....	48	210
Felkel, Henry N., De Funiak Springs, Fla. Tellurian	408,600	Aug. 13	923	246	48	863
Felldin, Abraham, Auburn, N. Y. String stretching and tuning device	408,602	Aug. 6	608	157	48	796
Fellows, James F., Troy, N. Y. Making apparel-collars	409,179	Aug. 20	1502	398	48	983
Fellows, John M., Burlington, Ind. Land-roller	407,580	July 23	2260	584 585 590	48	465
Felt, Frank, and I. W. Archibald, Everett, Mass. Type-writing machine	406,437	July 9	598	168	48	129
Felt, Seth C., New Boston, Mich. Sleigh	410,584	Sept. 10	681	182	48	1406
Felter, George C., Haverstraw, N. Y. Radiator foot-rest	406,640	July 9	935	252	48	191
Fenhagen, Frank C., *et al.* (See Toulmin, Morton, assignor.)						
Fenner, Charles A., Mystic River, Conn. Folding bed or cradle	406,715	July 9	1039	278	48	210
Fenner, George P., New London, Conn. Sheet-delivery apparatus for printing-machines	406,716	July 9	1040	278	48	210
Fenner, George P., New London, Conn. Cylinder printing-machine	407,652	July 23	2454	635	48	504
Fenner, George P., New London, Conn. Gripper-motion for printing-machines	408,603	Aug. 6	609	157	48	796
Fensom, James, Alpina, Mich. Sawing-machine	406,274	July 2	342	94	48	69
Ferguson, Charles W., Jonesville, Wis. Car-coupling link	408,962	Aug. 13	1162	307	48	910
Ferguson, James C., Belton, Tex. Stone-sawing machine	410,585	Sept. 10	683	182	48	1408
Ferguson, John H., Kokomo, Ind. Running-gear for vehicles	408,604	Aug. 6	609	158	48	796
Ferguson, Thomas E., and A. H. Blanchard, Toledo, Ohio. Device for separating weevil and weevil-dust from grain	409,180	Aug. 20	1504	399	48	984
Fernald, Alexander B. (See Haines, John H. J., assignor.)						
Ferne, James H., Montreal, Quebec, Canada. Soldering-iron	410,084	Aug. 27	2842	746	48	1243
Ferrari, Andrew, Glassborough, N. J., assignor, by mesne assignments, Whitney Glass Works, of New Jersey. Glass-furnace	407,187	July 16	1755	459	48	359
Ferren, Ebenezer, Manchester, N. H. Car-coupling	406,344	July 2	448	124 125	48	90

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Ferrenburg, James P., Hege, Ind. Churn	410,884	Sept. 10	1153	311	48	1499
Ferris, Ida M., Osage City, Kans. Abdominal supporter	407,341	July 23	1903	518	48	413
Ferris, Sherwood B., Lakewood, N. J. Clasp	409,779	Aug. 27	2400	622	48	1160
Ferry, Charles H. (See Munton, James, assignor.)						
Ferry & Napier. (See Harsin, William G., assignor.)						
Fetters, David, Baltimore, Md. Ironing-board and table	409,947	Aug. 27	2638	698	48	1207
Feurt, William A. (See Timmons, John F., assignor.)						
Fickett, Albert, assignor of one-half to T. W. Hulett, Rochester, N. Y. Smoke and gas consuming furnace	407,287	July 16	1909	497	48	389
Field, Albert D., assignor to Globe Curtain Pole Company, Waterbury, Conn. Fastener for stair-rods	406,827	July 9	1213	325	48	244
Field, Benjamin F., Chicago, Ill. Water-purifier and scale-arrester	410,509	Sept. 3	574	153	48	1381
Field, Cyrus W., *et al.* (See Field, Stephen D., assignor.)						
Field, David D., trustee, *et al.* (See Field, Stephen D., assignor.)						
Field, George B., New York, N. Y. Feed-water heater and purifier	408,605	Aug. 6	611	158	48	797
Field, Henry M., *et al.* (See Field, Stephen D., assignor.)						
Field, John K., London, England. Refining mineral oil	408,472	Aug. 6	404	.....	48	750
Field, Stephen D., Stockbridge, Mass. Electric signal-receiving instrument	409,675	Aug. 27	2246	591	48	1132
Field, Stephen D., New York, N. Y., assignor to D. D. Field, trustee, S. J., C. W., H. M., and S. D. Field. Electric railway	407,188	July 16	1756	466	48	360
Field, Stephen J., *et al.* (See Field, Stephen D., assignor.)						
Field, Wallace L. (See Lawson and Field.)						
Fields, Hannibal D., Columbus, Ohio. Band-saw guide	411,241	Sept. 17	1684	456	48	1615
Fietsch, Herman, Jr., assignor of one-half to D. W. Ryan, Chicago, Ill. Block for stereotype or electrotype plates	406,928	July 9	1215	323	48	244
Fifield, George A., Dubuque, Iowa. Inkstand	409,351	Aug. 20	1761	464	48	1033
Fike, Henry P., Chili, Ind. Chart for drafting garments	409,184	Aug. 20	1510	400	48	965
Fine, William O., Moreland, assignor of one-third to M. Torsell, Chicago, Ill. Head-light signal attachment	406,717	July 9	1041	279	48	210
Finlay, Leonard, Little Rock, Ark. Device for adjusting piston-rods and piston-heads in cylinders	408,381	Aug. 6	262	63	48	730
Finley, Charles A., Holton, Kans. Railway-signal	407,653	July 23	2455	636	48	505
Finley, James R., assignor of one-half to W. J. Ginn and M. McGlennen, Delphi, Ind. Drawing-knife	406,392	July 2	525	146	48	105
Finn, George H., *et al.* (See McClellan, James M., assignor.)						
Finney, Wesley T., Bentonville, Ind. Suspender-buckle	408,834	Aug. 13	969	257	48	873
Firm, Joseph L., Jersey City, N. J. Rotary printing-machine	410,271	Sept. 3	205	54, 55	48	1309
Firmhoces, Eugene L. (See Dacey, Cornelius P., assignor.)						
Firstbrook, William A., Toronto, Ontario, Canada. Sealing device for hasp-fasteners	406,895	July 16	1318	345	48	273
Firth, Edwin, Troy, N. Y. Horseshoe-blank-cutting machine	408,226	Aug. 6	36	8, 9	48	685
Fischer, Beuno, assignor to C. S. Larrabee, trustee, Frankfort-on-the-Main, Germany. Sewing-machine	408,227	Aug. 6	41	9, 10	48	686
Fischer, Engelbert, Chicago, Ill. Resawing-machine	411,098	Sept. 17	1479	386	48	1573
Fischer, Georg, Nuremberg, Bavaria, Germany. Musical top	407,521	July 23	2262	585	48	466
Fischer, Wilhelm, Vienna, Austria-Hungary. Automatic distributer for cards or other articles	409,571	Aug. 20	2065	545	48	1093
Fischer, William V., Knoxville, Tenn. Liner for machinery	409,676	Aug. 27	2249	592	48	1132
Fish, John S., Cheestoe, Ga. Apparatus for forcing gas through mains	406,718	July 9	1043	279	48	211
Fish, Perry J., Akron, Ohio. Machine for making curved pipe	411,023	Sept. 17	1352	369	48	1549
Fish, Peter. (See Dyer, Isaac T., assignor.)						
Fishbaugh, Charles, York, Nebr. Heater for stock-watering tanks	410,357	Sept. 3	344	90	48	1336
Fisher, Alfred G., Springfield, Mass. Temporary binder	408,003	July 30	2983	777	48	611
Fisher, Andrew H. (See Vogl and Hess, assignors.)						
Fisher, Benjamin. (See Westwood, John T., assignor.)						
Fisher, Conrad H., Waco, Tex. Fence-making implement	411,429	Sept. 24	1966	522	48	1671
Fisher, George W. (See Earnshaw, Ellis, assignor.)						
Fisk, Alonzo B., Winthrop, Mass., assignor to Gould-Tisdale Revolving Semaphore Company, Portland, Me. Railway-signal	411,742	Sept. 24	2417	641	48	1765
Fisk, Henry C., *et al.* (See Flagg, Thomas J., assignor.)						
Fisk, Nathan S., Utica, N. Y. Telephonic apparatus	407,004	July 16	1478	385	48	304
Fiske, Bradley A., U. S. Navy. Range-finder	406,929	July 9	1216	343	48	244
Fiske, Bradley A., U. S. Navy. Finding range and position of distant objects	406,930	July 9	1216	343	48	245
Fiske, John D., Baltimore, Md. Apparatus for loading or unloading vessels	408,702	Aug. 13	780	205	48	835
Fitch, Alvah B., Franklin Grove, Ill. Railway-tie	410,236	Sept. 3	150	39	48	1298
Fitch, Arden S., New York, N. Y. Magneto-electric machine	410,964	Sept. 10	1267	341	48	1522
Fitch, Arden S., New York, N. Y. Magneto-electric machine	410,965	Sept. 10	1270	342	48	1523
Fitch, Arden S., New York, N. Y. Magneto-electric machine	410,966	Sept. 10	1272	342, 343	48	1523
Fitch, Charles T., Elizabeth, N. J. Pallet for drying brick	409,948	Aug. 27	2639	692	48	1207
Fitch, Grant, and R. W. Williams, Milwaukee, Wis. Sash-fastener	408,228	Aug. 6	44	10	48	686
Fite, Thomas A., Parsons, Kans. Extension-step for railway-cars	411,495	Sept. 24	2033	543	48	1668
Fits Gibbons, M. F., *et al.* (See Driscoll, Jeremiah, assignor.)						
Fitzgerald, Peter J., Sharon Hill, Pa. Vapor-lamp	410,407	Sept. 3	422	112	48	1352
Fitzhugh, Henry A. (See McComas and Fitzhugh.)						
Flad, Henry, St. Louis, Mo. Rheobathometer	409,780	Aug. 27	2401	629	48	1160
Flagg, Thomas J., assignor to himself, H. C. Fisk, and T. R. Clark, New York, N. Y. Combined sash and belt	410,510	Sept. 3	576	153	48	1381
Flatau, Louis S., Pittsburg, Tex. Cultivator and seeder	406,905	July 2	252	70	48	50
Flatau, Louis S., Pittsburg, Tex. Baling-press	406,906	July 2	254	70	48	51
Flatau, Louis S., Pittsburg, Tex. Whiffletree	406,907	July 2	255	70	48	51
Fleehearty, John T., assignor of one-half to S. B. Sexton, Jr., Baltimore, Md. Light for stove-doors	408,963	Aug. 13	1164	307	48	911
Fleming, James A., Hoopeston, Ill. Car-coupling	408,606	Aug. 6	613	158	48	797
Fletcher, Doc W., assignor of one-fourth to W. R. Fletcher, St. Louis, Mo. Steam-generator	409,781	Aug. 27	2406	630	48	1161
Fletcher, George H., Detroit, Mich. Car-brake	408,677	Aug. 13	1039	275	48	886
Fletcher, Louis S., Blue Springs, Nebr. Gage for marking spouting	407,288	July 16	1910	497	48	389
Fletcher, Walter R. (See Fletcher, Doc W., assignor.)						
Flewelling, William W. (See Ford, Pierce, assignor.)						
Flint, Frederick W., Mount Airy, Ga. Electric drinking-vessel	408,607	Aug. 6	614	159	48	797
Flint, Samuel E., assignor of one-third to W. F. Mills, St. Louis, Mo. Smoke-preventer for furnaces	406,393	July 2	526	146, 147	48	105
Focht, George, Hoboken, N. J. Coal-tub	406,164	July 2	197	55	48	40
Focken, Hermann, New York, N. Y. Joiner's set	408,473	Aug. 6	405	105	48	750

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Fogarty, Patrick, assignor of one-half to O. McCoy, Oxford, Ohio. Folding coop	410,511	Sept. 3	577	155	48	1381
Fogiesong, Washington, assignor of one-half to I. L. Baker, Dayton, Ohio. Paper vessel	411,654	Sept. 24	2293	609	48	1739
Folsey, James W., assignor of one-half to E. H. Winston, Chelsea Hill, Va. Apparatus for heating tires	408,719	July 9	1045	279	48	211
Follett, Charles, *et al.* (See Dowling, Robert H., assignor.)						
Follett, Charles C., Waterville, Me. Lag-strap for loom picker-sticks	408,703	Aug. 13	782	206	48	835
Follett, Charles H., *et al.* (See Dowling, Robert H., assignor.)						
Follett, Melville C., *et al.* (See Marian, Carlo C., assignor.)						
Folsom, Charles, Bellefontaine, Ohio. Holdback-fastening	411,716	Sept. 24	2365	632	48	1758
Folsom, Charles H. (See Mahoney, William P., assignor.)						
Folsom, Charles W., and A. B. Davis, Wakefield, Mass. Lock and latch combined	407,926	July 30	2865	746, 747	48	568
Fonda, William B., *et al.* (See Lewis, Robert B., assignor.)						
Foos Manufacturing Company. (See Winchell, James F., assignor.)						
Foote, Henry C. (See Hill and Foote.)						
Foote, Lewis A., Lansing, Minn. Car-seal	408,474	Aug. 6	406	106	48	750
Foote, Theodore M., Boston, Mass. Electric lighting of railway-cars	410,586	Sept. 10	684	183, 184	48	1409
Forbes, Walter T., Atlanta, and R. C. Kerr, Augusta, Ga. Metallic railway-tie	408,964	Aug. 13	1164	308	48	911
Forcier, Joseph J., assignor of one-half to C. B. Curtis, Bay City, Mich. Centrifugal pump	406,394	July 2	527	147	48	105
Ford, Edward C., assignor of one-half to A. Löffler, Washington, D. C. Smoke-house	409,319	Aug. 20	1712	450	48	1023
Ford, Pierce, assignor of one-half to W. W. Flewelling, Tucson, Ariz. Ter. Registering mechanism	410,685	Sept. 10	1154	311	48	1499
Ford, Thomas E. (See Van Hoorebeke and Ford.)						
Forhan, Henry L. (See Hurst, George, assignor.)						
Forman, Thomas K., Waukegon, Ill. Child's carriage	409,677	Aug. 27	2250	592	48	1132
Forney, Matthias N., New York, N. Y. Locomotive-engine	408,004	July 30	2984	777	48	611
Fornirasco, Domenico, Belton, Tex. Valve	409,031	Aug. 13	1270	334	48	931
Forschner, Charles, New York, N. Y. Spring-scale	406,518	July 9	744	204	48	156
Forsyth, James B. (See Nelson, Anthony, assignor.)						
Forsythe, Andrew J., and G. L. Gwinn, Kokomo, Ind. Tension device for fence-machines	411,122	Sept. 17	1520	406	48	1582
Fort Wayne Electric Light Company. (See Slattery, Marmaduke M. M., assignor.)						
Forter, Samuel. (See Kennedy and Forter.)						
Foss, Charles H., Tewksbury, Mass. Cleaner for carding-cylinders	407,189	July 16	1759	460	48	300
Foss, John E., Weymouth, Mass. Edge-burnishing tool	406,133	July 2	154	45	48	33
Foster, Andrew T., assignor of one-half to A. Cox, Belle Union, Ind. Lap-ring	407,584	July 23	2361	611	48	487
Foster Brothers. (See Jones, Joseph L., assignor.)						
Foster, Grace L., Milford, Iowa. Organ-pedal	407,085	July 16	1479	385	48	304
Foster, James, Samarang, and J. Campbell, Soerabaya, Java. Evaporating apparatus	407,398	July 23	2085	539	48	430
Foster, James F. (See Bosworth and Foster.)						
Foster, John E., Ferndale, Cal. Horse-blanket	409,352	Aug. 20	1763	464	48	1033
Foster, John T., Arlington, N. J. Manufacture of pens	410,272	Sept. 3	209	55	48	1310
Foster, Lucian M., Troy, N. Y., assignor to B. Poole, Topafield, Mass. Registering and canceling ballot-box	408,003	July 30	3107	813	48	635
Foster, Mark W., Pecatonica, Ill. Gate	409,185	Aug. 20	1512	401	48	985
Foster, Merriam & Company. (See Mosman, Charles F., assignor.)						
Foster, Orlando A., *et al.* (See Mansfield, George W., assignor.)						
Foster, Richard, Cazenovia, N. Y. Transplanting implement	409,949	Aug. 27	2640	692	48	1207
Foster, Robert G. W., Toledo, Ohio. Thill-coupling	409,741	Aug. 27	2340	615	48	1149
Foster, William A. (See Eames, Elisha D., assignor.)						
Fouché, William W., Jr. (See Buncke, Richard D., assignor.)						
Foulds, Alfred J. and H. A., Philadelphia, Pa. Steam-engine	408,704	Aug. 13	782	206	48	836
Foulds, Henry A. (See Foulds, Alfred J. and H. A.)						
Fouts, John B. (See Hoover, Ellis A., assignor.)						
Fouts, William H., Keokuk, Iowa. Door-check	406,509	July 9	730	201	48	153
Foxle, Charles L., assignor to Dowagiac Manufacturing Company, Dowagiac, Mich. Shoe for grain-drills	411,141	Sept. 17	1543	412	48	1586
Fowler, Charles W., Cloverport, Ky. Registering-machine	409,950	Aug. 27	2640	693	48	1207
Fowler, Edwin P., National City, Cal. Removing vermin or scales from plants	408,508	Aug. 6	615	.....	48	797
Fowler, Herbert E., New Haven, Conn. Knife-cleaner	409,742	Aug. 27	2341	615	48	1150
Fowler, Herbert E., New Haven, Conn., assignor to United States Pipe Bending and Coiling Company, Chicago, Ill. Bending and coiling pipe	408,005	July 30	2986	777, 778	48	611
Fowler, Herbert E., New Haven, Conn., assignor to United States Pipe Bending and Coiling Company, Chicago, Ill. Machine for bending and coiling pipe	408,006	July 30	2987	778, 779	48	612
Fowler, Joseph C., and E. A. Henkle, assignors to American Printing Press Company, Washington, D. C. Printing-machine	408,094	July 30	3109	814, 815	48	636
Fowler, Joseph C., and E. A. Henkle, assignors to American Printing Press Company, Washington, D. C. Folding-machine	408,095	July 30	3113	815, 816, 817	48	636
Fowler, Philip S., Lowville, N. Y. Creaming-can	409,951	Aug. 27	2642	693	48	1207
Fox, Albert E., *et al.* (See Hill, George J., assignor.)						
Fox, Andrew M., Miamisburg, Ohio. Fountain-pen	409,952	Aug. 27	2643	693	48	1207
Fox, Frederick G., *et al.* (See Hill, George J., assignor.)						
Fox, John J., Flushing, N. Y. Transferring prints, &c.	406,519	July 9	745	.....	48	156
Fox, John J., Flushing, N. Y. Transferring prints, &c.	406,720	July 9	1046	.....	48	211
Fox, Joseph F. (See Hawk, Smith, and Fox.)						
Fox, Peter, Englewood, Ill. Heating apparatus	408,301	Aug. 6	143	36	48	707
Fox Solid Pressed Steel Company. (See Hughes, Edward W. M., assignor.)						
Fox, William S., Philadelphia, Pa. Device for molding articles from glass	406,165	July 2	198	55	48	40
Fox, William T., Rochester, N. Y. Piston-meter	410,408	Sept. 3	423	112	48	1312
Foye, Merritt S., Lynn, Mass. Water-cooler	407,190	July 16	1760	461	48	300
Fraley, George B., San Francisco, Cal. Electric railway	411,496	Sept. 24	2054	543	48	1668
France, Albert L., and A. E. Yelton, Milldale, Ky. Signal attachment for lamps or lanterns	409,320	Aug. 20	1714	450	48	1024
Francis, Evan J., and C. Banfield, Leechburg, Pa. Sheet-heating furnace	408,475	Aug. 6	407	106	48	750
Frank, Gustave. (See Schimper, Rudolph J., assignor.)						
Frank, Marcus J., Emmett, Ohio. Harrow	409,953	Aug. 27	2644	693	48	1208
Franke, Charles, *et al.* (See Barry, Henry, assignor.)						
Frankenstein, Simon. (See Edson, William N., assignor.)						
Franz, Andrew, Creighton, Mo. Slat-fastener	406,438	July 9	600	168	48	129
Frans, Robert S., Glenshaw, Pa. Gas-furnace	407,289	July 16	1911	497	48	389
Fraser, Robert, Liverpool, county of Lancaster, England. Feed-water heating and circulating apparatus	407,435	July 23	2149	555, 556	48	443

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Frazer, William A., *et al.* (See Ripson, John D., assignor.)						
Frazer, William H., Mullan, Idaho Ter., assignor of one-half to J. Mullan, Washington, D.C. Cap for faces	406,096	July 30	3121	817	48	638
Frazier, Thomas J., Lyons, Iowa. Steam-motor	406,229	Aug. 6	45	10	48	687
Frederick, Christian, Wilmington, Del. Circular-knitting machine	406,170	July 30	3235	844 845	48	658
Frederick, Christian, Wilmington, Del., and J. C. Egley; said Egley assignor to T. A. Pearce, Philadelphia, Pa. Circular-knitting machine	406,007	July 30	2989	779	48	612
Freeland, Robert, Cincinnati, Ohio. Advertising device	406,609	Aug. 6	616	159	48	797
Freeman, Leander W., Liberty, Ind. Hay-rake	409,632	Aug. 13	1211	335	48	931
Freeman, Methren T., J. S. Potts, and S. G. Cowan, Richmond, Va. Bill or tariff holder	407,857	July 30	2757	717	48	569
Freeman & Sons Manufacturing Company, S. (See Davis, William E., assignor.)						
Freidel, Leonard, assignor to Morris Box Lid Company, Pittsburg, Pa. Car-axle-box lid	406,721	July 9	1047	279	48	211
Fremont Cultivator Company. (See O'Brian, Leonard W., assignor.)						
French, Edward B., *et al.* (See Agan, Hiram, assignor.)						
French, Edward B. (See Wells, Burton H., assignor.)						
French, Stephen A., Cranbury, N. J. Can for coffee, grain, &c.	408,657	Aug. 6	606	160	48	812
Frese, Diedrich, Lamoille, Ill. Feed-cutter	406,696	July 16	1318	346	48	274
Frey, J. Fremont, Indianapolis, Ind. Backing compound for stereotype-matrices	410,630	Sept. 10	1078	.....	48	1485
Frey, William, New Cumberland, Ohio. Sawdust-elevator	411,332	Sept. 17	1816	496	48	1638
Freyer, Carl W., Walsenburg, Colo. Potato-planter	408,097	July 30	3121	817	48	638
Freytag, John, Dayton, Ohio. Measuring-vessel	406,641	July 9	936	232 233	48	191
Fricker, Henry, London, England, assignor to F. L. Wanzer, Hamilton, Canada. Cooking edibles	411,378	Sept. 17	1882	503	48	1651
Friedland, Elias J., New York, N. Y. Neckscarf-fastener	410,732	Sept. 10	992	250	48	1453
Friedmann, Joseph, Seymour, Conn. Fountain-pen	407,585	July 23	2362	612	48	488
Friedmann, Joseph, Seymour, Conn. Fountain-pen	407,586	July 23	2363	612	48	488
Friend, John E. (See Purchas and Friend.)						
Friend, Samuel, assignor of one-half to W. B. Chambers, Decatur, Ill. Machine for separating gravel from clay	409,186	Aug. 20	1513	401	48	985
Friend, Samuel, assignor of one-half to W. B. Chambers, Decatur, Ill. Separating gravel from clay	409,187	Aug. 20	1514	401	48	985
Frierson, Luther L. (See Barker, Jacob, assignor.)						
Frierson, Luther L. (See Rich, John F., assignor.)						
Frierson, Luther L., Mount Pleasant, Tenn. Cover for packing-vessels	410,512	Sept. 3	578	155	48	1382
Fries, Jacob, Reading, Pa. Water-heating apparatus	408,008	July 30	2991	779 780	48	612
Frisch, Louis, Chicago, Ill. Brewing ale, beer, and porter	407,191	July 16	1762	461	48	360
Frisbie, George C., Cease's Mills, Pa. Horse-detacher	411,242	Sept. 17	1686	451	48	1615
Frisch, Louis, Chicago, Ill. Brewing ale, beer, and porter	408,610	Aug. 6	617	159 160	48	798
Frizell, Charles, Boston, Mass. Extension-ladder						
Frost, Charles H. (See Burkman, Walfrid, assignor.)						
Frost, George. (See Frost, Stiles, assignor.)						
Frost, Stiles, assignor to G. Frost, Newton, Mass. Microscope	407,192	July 16	1763	461	48	360
Frost, William G., Lebanon, Ind. Wire-stretcher	406,642	July 9	937	253	48	191
Frye, George V., and C. H. Kleinbeck, Chicago, Ill. Caramel-package	411,430	Sept. 24	1968	522	48	1672
Frymire, Louis N., and F. S. Derr, Watsontown, Pa. Music-leaf turner	411,431	Sept. 24	1968	523	48	1672
Fuel Gas and Electric Engineering Company. (See Smithley, John, assignor.)						
Fuel Gas and Electric Engineering Company. (See Walker, James H., assignor.)						
Fugate, Jerome W., Lawrence, Kans. Implement for dehorning cattle	406,208	July 2	256	71	48	51
Fuller, Abbott F. (See Shinn, John, assignor.)						
Fuller, Asariah T. (See Chadwick, James M., assignor.)						
Fuller & Johnson Manufacturing Company. (See Johnson and Starks, assignors.)						
Fuller, Willard H., Passaic, N. J., assignor to Scovill Manufacturing Company, New York, N. Y. Photographic camera	407,587	July 23	2364	612	48	488
Fulwider, Horace M., Redmon, Ill. Grain-weighing machine	406,722	July 9	1048	280	48	211
Furbish & Son Machine Company, M. A. (See Knowlton and Meyer, assignors.)						
Furlong, Lawrence F., assignor to F. C. Rockwell, Hartford, Conn. Cut-out	410,545	Sept. 3	618	166	48	1390
Furman, John A., Newark, N. J., assignor to Celluloid Novelty Company, of New York. Ferrule for umbrellas and canes	408,965	Aug. 13	1165	308	48	911
Furman, Oliver P., assignor of one-half to L. T. Mason, Hornellsville, N. Y. Fire-escape	406,831	July 9	1221	324	48	345
Furry, John E., Stockton, Cal. Fire-ladder truck	409,635	Aug. 27	2486	650	48	1175
Furst, Michael, Brooklyn, N. Y. Machine for making rope	407,522	July 23	2363	585 586	48	466
Fyrberg, Andrew. (See Hanson and Fyrberg.)						
Gabel, Thomas R., Albuquerque, N. Mex. Ter. Ratchet track-jack	411,411	Sept. 17	1935	515	48	1660
Gaertner, August H. (See Dicke, Wilhelm H., assignor.)						
Gage, B. L., *et al.* (See Card, William J., assignor.)						
Gage, James E., Concord, N. H. Means for attaching fore-end stocks to gun-barrels	409,188	Aug. 20	1515	402	48	985
Galger, Robert, Jersey City, N. J. Check-punching machine	408,658	Aug. 6	697	189	48	812
Gail, Carl, Chicago, Ill. Box-blocker	409,743	Aug. 27	2343	615 616	48	1150
Gaines, Edward P., and W. P. Orr; said Gaines assignor to said Orr and W. P. Harwell, Bradshaw, Tenn. Hub	407,342	July 23	1994	518	48	414
Galbraith, David R. S., Auckland, New Zealand. Ore-roasting furnace	408,476	Aug. 6	608	166	48	759
Gale, Augustus I., Albion, Mich. Sulky-plow	408,966	Aug. 13	1166	308	48	911
Gale, Charles H. (See Williams, Norman W., assignor.)						
Gale, Jonathan G. (See Wyman and Gale.)						
Gale, Moses F., Brooklyn, N. Y. Folding joint for chandeliers	406,094	July 2	101	30	48	22
Gallager, Henry, Savannah, Ga. Car-brake	410,513	Sept. 3	579	156	48	1382
Gallaway, Albert I., St. Louis, Mo. Coasting-sled	408,723	July 9	1050	280	48	212
Gallman, John W. (See Corrigan, Patrick D., assignor.)						
Galloway, Adolphus B. (See Angell, Joseph S., assignor.)						
Gally, Merritt, New York, N. Y. Mechanical musical instrument	409,678	Aug. 27	2251	592	48	1133
Galvin, James, Detroit, Mich. Valve	411,283	Sept. 17	1747	466 467	48	1626
Gamble, John A. (See Rutter, Allen E., assignor.)						
Gammon, Albert S. J. (See Elliott, Julius A., assignor.)						
Gandy, Frederick, Cincinnati, Ohio. Smoke-box for locomotives	409,033	Aug. 13	1272	335	48	931
Gandy, Oliver S., Newport, N. J. Handle for buckets or fruit-baskets	410,686	Sept. 10	847	227	48	1440
Garand, Joseph H., Philadelphia, Pa. Clothes-line support and holder	407,193	July 16	1763	462	48	361
Garben, Adolph F. C., Minneapolis, Minn. Toy building-blocks	409,744	Aug. 27	2314	616	48	1150
Garcin, Edward H., Richmond, Va. Packing-disk for hydraulic presses	407,478	July 23	2208	569	48	455

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Garcin, Leon P., assignor of one-half to J. Lafferty, San Francisco, Cal. Machine for forming bulleta	407,343	July 23	1995	518 519	48	416
Gardner, Edward. (See Hepburn and Gardner.)						
Gardner, John H., Dalton, Ga. Hay-press	410,237	Sept. 3	152	40	48	1298
Gardner, John H., Dalton, Ga., assignor to J. E. Sanders and S. Waddell, Union City, Tenn. Baling-press	407,290	July 16	1912	498	48	389
Garfield, Joel, Worcester, Mass. Mowing-machine	406,520	July 9	747	204 205	48	156
Garland, Harry W. (See Wells, Charles S., assignor.)						
Garland, Howard P., San Francisco, Cal. Making rollers for jute-slivering machines	407,194	July 16	1764	462	48	361
Garrell, Gustave, Baltimore, Md. Compound for preventing mortar from freezing	409,397	Aug. 20	1529	.....	48	1046
Garretson, Joel G., Buffalo, N. Y. Table-leaf support	406,967	Aug. 13	1168	306	48	912
Garrison, Myers A., Englewood, Ill. Railway-car	408,611	Aug. 6	618	160	48	798
Garrison, Charles M., Wichita, Kans. Roofing-sheet	407,193	July 16	1766	462	48	361
Garside, William N. (See Walters and Garside.)						
Gary, George, Wichita, Kans. House-moving truck	411,024	Sept. 17	1354	364	48	1549
Gas-Motoren-Fabrik-Deutz. (See Crossley, William J., assignor.)						
Gas-Motoren-Fabrik-Deutz. (See Otto, Nicolaus A., assignor.)						
Gaskill, Harvey F., deceased, Lockport, N. Y.; M. E. Gaskill executrix. Duplex engine	411,497	Sept. 24	2055	543 544	48	1686
Gaskill, Mary E., executrix. (See Gaskill, Harvey F.)						
Gates, Eugene H. (See Gates, Parker J. and E. H.)	407,344	July 23	1999	519	48	416
Gates, Eugene N., Fitchburg, Mass. Furnace-grate	410,409	Sept. 3	495	113	48	1352
Gates, Henry L., Milwaukee, Wis. Sheet-metal pipe	411,432	Sept. 24	1970	563	48	1672
Gates, Isaac, Marion, Iowa. Iron tower	406,724	July 9	1052	280	48	212
Gates, Matthias, Wichita, Kans. Adjustable miter-bevel	411,009	Sept. 17	1481	393 394	48	1573
Gates, Parker J., Duryea, Pa., and E. H. Gates, Brooklyn, N. Y. Spring-motor	411,142	Sept. 17	1544	412	48	1586
Gathright, John R., Louisville, Ky., assignor to himself, W. A. Merriwether, and R. M. Kelly. Envelope-ballot	409,745	Aug. 27	2345	616	48	1150
Gaul, Harry R., assignor to Keystone Watch Case Company, Philadelphia, Pa. Watch-case spring	409,398	Aug. 20	1530	482	48	1046
Ganmer, Jeremiah F., Dow, Ind. Straw-stacker	409,572	Aug. 20	2067	545 546	48	1094
Gaunt, Thomas, Brooklyn, N. Y. Apparatus for evaporating liquids	411,284	Sept. 17	1748	467	48	1627
Gay, Joshua G., Ottawa, Ill. Road-cart	409,782	Aug. 27	2408	630	48	1161
Gaylor, Leonard B., Stamford, Conn. Anti-friction bearing	406,510	July 9	731	201	48	153
Gaylord, Fremont E., Kansas City, Mo. Steam-engine governor						
Gaynor Electric Company. (See Gaynor, Thomas F., assignor.)						
Gaynor, Thomas F., assignor to Gaynor Electric Company, Louisville, Ky. Electric switch	406,897	July 16	1320	346	48	276
Gaynor, Thomas F., assignor to Gaynor Electric Company, Louisville, Ky. Electro-mechanical bell striking machine	408,968	Aug. 13	1169	309 310	48	912
Gaze, Edwin B., London, England. Umbrella or parasol	410,273	Sept. 3	211	55	48	1310
Gearhart, Joel H., assignor to himself and W. A. Thacher, Leadville, Colo. Dumping-car	409,954	Aug. 27	2645	694	48	1209
Geddes, George, Fair Mount, assignor to C. G. Thyng, Olean, N. Y. Two-wheeled vehicle	409,321	Aug. 20	1715	451	48	1034
Gee, William, New York, N. Y. Apparatus for dispensing soda-water, &c.	409,955	Aug. 27	2646	694	48	1209
Gee, William, New York, N. Y. Apparatus for dispensing effervescing drinks	410,514	Sept. 3	580	156	48	1382
Geiger, Georg K., Springfield, Mass. Mangle	408,477	Aug. 6	609	167	48	760
Geigy & Co., John R. (See Geigy, Rodolph, assignor.)						
Geigy & Co., John R. (See Sandmeyer, Traugott, assignor.)						
Geigy, Rodolph, assignor to J. R. Geigy & Co., Basle, Switzerland. Making a violet dye	410,733	Sept. 10	933	.....	48	1453
Gent, Joseph F., Columbus, Ind. Malting and germinating apparatus	409,956	Aug. 27	2647	694 695 696	48	1209
Gent, Joseph F., Columbus, Ind. Drying apparatus	410,085	Aug. 27	2843	746 747	48	1246
George, M. M. (See Ramsey, John W., assignor.)						
Gerald, Amos F., Fairfield, Me. Bridle-bit	408,705	Aug. 13	784	206	48	836
Gerard, George L., New Haven, Conn. Clothes-drier	408,342	Aug. 6	205	52	48	719
Gerbel, Wilhelm, Rorschach, St. Gall, Switzerland. Preparing flour from curd of milk	411,717	Sept. 24	2386	.....	48	1758
Gerber, Jean B., San Francisco, Cal. Submarine boat	406,725	July 9	1053	280 281	48	212
Gerhardt, Lincoln, Washington, D. C. Lamp or lantern lighting device	410,238	Sept. 3	154	40	48	1298
Germain, Edward. (See Cowles, George C., assignor.) (Reissue.)	411,143	Sept. 17	1544	412	48	1586
Gessner, David, Worcester, Mass. Cloth-pressing machine	411,144	Sept. 17	1545	413	48	1586
Gessner, David, Worcester, Mass. Cloth-pressing machine	409,957	Aug. 27	2651	696	48	1209
Gessner, Ernst, Aue, Saxony, Germany. Ring-spinning machine	409,958	Aug. 27	2654	696	48	1209
Gessner, Ernst, Aue, Saxony, Germany. Spinning-machine	409,959	Aug. 27	2655	697	48	1209
Gessner, Ernst, Aue, Saxony, Germany. Spinning-machine	409,960	Aug. 27	2657	697	48	1209
Gessner, Ernst, Aue, Saxony, Germany. Spinning-machine						
Gets, Christian, *et al.* (See Lorey, William, assignor.)						
Gfell, John H. (See Gira and Gfell.)	410,753	Sept. 10	964	259	48	1460
Ghirardi, Etienne, assignor of one-half to H. C. Minor, Houma, La. Car-coupling	410,754	Sept. 10	965	259	48	1460
Ghirardi, Etienne, assignor of one-half to H. C. Minor, Houma, La. Car-coupling	410,755	Sept. 10	966	260	48	1460
Ghirardi, Etienne, assignor of one-half to H. C. Minor, Houma, La. Car-coupling	410,792	Sept. 10	1029	276	48	1475
Gibbons, James, Jersey City, N. J. Gas-stove	411,592	Sept. 24	2202	586	48	1719
Gibbons, Peter J., and D. B. Shelly, Pittston, Pa. Storm-apron for vehicles						
Gibbons, Watson E., Springfield, Mass., assignor to Morgan Envelope Company, of Massachusetts. Toilet-paper holder	407,345	July 23	2000	519	48	415
Gibbs, Frank J., Tyrone, Pa. Dumping-car	411,718	Sept. 24	2386	532	48	1758
Gibbs, George, Milwaukee, Wis. Shield and reflector for incandescent electric lamps	408,478	Aug. 6	611	167	48	760
Gibbs, Hiram H., Indianapolis, Ind. Road-cart	408,969	Aug. 13	1178	310	48	913
Gibbs, James E., Jonesborough, Tenn. Churn-dasher	406,395	July 2	529	147	48	106
Gibbs, James E., Jonesborough, assignor of two-thirds to E. C. Kirkpatrick and T. R. Chase, Johnson City, Tenn. Quilting-frame for sewing-machines	409,143	Aug. 13	1442	379	48	984
Gibbs, Lucius O. (See Webster and Gibbs.)						
Gibson, Adelbert R., assignor of one-half to Buckeye Car Seal and Manufacturing Company, Cleveland, Ohio. Signal-lantern	407,436	July 22	2151	556	48	443
Gibson, C. C., *et al.* (See Grassler, William F., assignor.)						
Gibson, David H. (See Kelsey and Gibson.)	410,667	Sept. 10	848	228	48	1440
Gibson, James, Kansas City, Mo. Wire-guy gripper	407,346	July 23	2001	519 520	48	415
Gibson, James A. J., Crawford, Ala. Machine for crushing seeds						

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Gies, Gerhard E. (See Royce and Gies.)						
Giese, Daniel, Peoria, Ill. Coal-drill	406,040	July 2	27	8	48	8
Gifford, Cyrus P., and C. A. Allen, assignors to R. J. Moorehead and M. A. Caldwell, North East, Pa. Child's adjustable chair	408,612	Aug. 6	620	160	48	799
Gifford, Hiram H., Rescommon, Mich. Washing-machine	409,399	Aug. 20	1832	483	48	1047
Gilbert & Bennett Manufacturing Company. (See Eberhardt, Henry, assignor.)						
Gilbert, Edmund D. (See Gordon, Gilbert, and Pfautz.)						
Gilbert, Oliver F., and G. W. Farrar, East Saginaw, Mich. Steam-generator	408,613	Aug. 6	621	160	48	799
Gilbert, Palmer B. (See Winsor, Holt, and Gilbert.)						
Gilchrist, Percy C. (See Darby, John H., assignor.)						
Gildard, Henry, Lewiston, Me. Striping attachment for warp-dressing machines	407,758	July 23	2603	674	48	535
Giles, Julian A., assignor to C. C. Place, Oswego, N. Y. Pipe-wrench	408,479	Aug. 6	412	107	48	760
Giles, Stephen, assignor of one-half to G. W. Cooper, Patten, Me. Churn-motor	408,801	Aug. 13	994	246	48	864
Gilfillan, Adam W., Mendocino, Cal. High and low water alarm for steam-boilers	409,189	Aug. 20	1516	405	48	986
Gill, Albert L., Allentown, N. J. Thrashing-machine	408,362	Aug. 6	263	66	48	730
Gill, Clark L., Madison, Wis. Folding bed	408,171	July 30	3237	845	48	658
Gill, James C., assignor to Hemingray Glass Company, Covington, Ky. Insulator for electric wires	406,041	July 2	28	8	48	8
Gill, John L., Jr., Philadelphia, Pa. Steam-boiler furnace	408,098	July 30	3123	815	48	638
Gill, John L., Jr., Philadelphia, Pa. Steam-boiler house	408,172	July 30	3238	845	48	658
Gill, Owen A., Baltimore, Md. Apparatus for weighing and putting up package tea, &c.	410,868	Sept. 10	1156	315	48	1500
Gillespie, Richard S., Hamilton, Bermuda. Stop-valve	408,706	Aug. 13	785	207	48	836
Gillespie, Robert W., St. Louis Mo. Seal-lock	409,034	Aug. 13	1273	335	48	931
Gilmore, Elijah S., assignor of two-thirds to N. W. Spaulding, San Francisco, Cal. Sawregulating attachment for band sawing-machines	406,209	July 2	257	71	48	52
Gilmore, Elijah S., assignor of two-thirds to N. W. Spaulding, San Francisco, Cal. Band sawing-machine	406,396	July 2	530	148	48	106
Ginn, Willis J., *et al.* (See Finley, James R., assignor.)						
Ginna, Stephen A., *et al.* (See Hipperling, William, assignor.)						
Gira, Frank A., and J. H. Gfell, Bellevue, Ohio. Tidy-holder	411,188	Sept. 17	1610	428	48	1599
Girsin, Franz, New York, N. Y. Caisson	409,190	Aug. 20	1518	406	48	986
Gironi, Peter G., Brooklyn, assignor to New York School Book Clearing House, New York, N. Y. Time-indicator	410,967	Sept. 10	1274	343	48	1524
Githens, Joseph C., New York, N. Y., assignor to Rand Drill Company, of New York. Steam rock-drill	408,878	Aug. 13	1040	275	48	887
Gittings, James C., W. J. Pohlman, and G. Yakel, Baltimore, Md., said Pohlman and Yakel assignors to said J. C. Gittings. Awning-blind	406,134	July 2	156	45, 46	48	33
Gittings, W. G., *et al.* (See Bishop, Edward A., assignor.)						
Given, John L., Bridgeport, Conn. Pneumatic cash-carrier apparatus	411,334	Sept. 17	1821	482	48	1639
Given, John L., Melrose, and G. B. Kelly, Boston, Mass. Pneumatic mail-dispatch apparatus	411,333	Sept. 17	1817	482	48	1638
Gladding, Jesse G., Bristol, R. I. Combined trousers and boots	411,433	Sept. 24	1972	482	48	1672
Gladwin, Frederic E., San Francisco, Cal. Type-writing machine	409,655	Aug. 20	2196	578	48	1116
Glankler, Frank, and W. W. Simmons, Memphis, Tenn. Barrel-hooping machine	411,219	Sept. 17	1659	443	48	1609
Glaser, Friedrich K. (See Kaselowski, Gramm, and Kürbitz, assignors.)						
Glasson, William M., Socorro, N. Mex. Ter. Steam-boiler	408,343	Aug. 6	206	52, 53	48	720
Glen Cove Machine Company. (See Autenrieth, Ernst F., assignor.)						
Glen Cove Machine Company. (See Hutchinson and Autenrieth, assignors.)						
Glen Cove Manufacturing Company. (See Grimm, Paul H., assignor.)						
Glendale Elastic Fabric Company *et al.* (See Moore, George C., assignor.)						
Glenn, James M., Cincinnati, Ohio. Fire-escape	407,196	July 16	1767	463	48	361
Glidden, Charles W., Lynn, Mass. Nail for boots or shoes	408,173	July 30	3240	846	48	659
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-nailing machine	409,637	Aug. 20	2175	573	48	1112
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Top-lift plate	409,783	Aug. 27	2411	631	48	1162
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-trimming machine	410,086	Aug. 27	2847	748	48	1245
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-trimming machine	410,087	Aug. 27	2850	749	48	1245
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-trimming machine	410,088	Aug. 27	2853	749	48	1246
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Sole-trimming machine	410,089	Aug. 27	2855	749	48	1246
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-trimming machine	410,090	Aug. 27	2856	749 750	48	1247
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-trimming machine	410,358	Sept. 3	345	91	48	1336
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-trimming machine	411,655	Sept. 24	2294	609 610	48	1739
Glidden, Joseph F., De Kalb, Ill. Horse-collar fastener	409,144	Aug. 13	1443	379	48	964
Glines, Alonzo W. (See Eastman, Richard S., assignor.)						
Glitsch, Walther, Geneva, Switzerland. Calipers and dividers	410,274	Sept. 3	212	55	48	1311
Globe Curtain Pole Company. (See Field, Albert D.)						
Glover, Henry P. (See Bowling, Enoch C., assignor.) (Reissue.)						
Glover, Robert E., Granger, Mo. Weighing-scales	409,191	Aug. 20	1519	403	48	986
Gochnauer, Joseph S., East Berlin, Pa. Hay-fork	411,220	Sept. 17	1661	444	48	1610
Goddard, Nate W., *et al.* (See Smith, Roswell T., assignor.)						
Goddard, Silas W. (See Layng, George, assignor.)						
Godsal, Philip T., Eton, county of Buckingham, England. Breech-loading small-arm	411,145	Sept. 17	1548	413	48	1587
Godshaw, Charles, *et al.* (See Barnum, Joseph P., assignor.)						
Godwin, Leroy C., *et al.* (See Lewis, George W., assignor.)						
Goebring, Charles L., Allegheny, Pa. Molding-machine	410,867	Sept. 10	1161	312 313	48	1501
Goebring, John R., assignor to H. and T. B. Belfield, Philadelphia, Pa. Injector	407,197	July 16	1768	464	48	362
Goesta, George W., assignor to Ore Reduction Company, Pittsburg, Pa. Filtering apparatus	411,743	Sept. 24	2420	641	48	1765
Golden, Theodore E., Columbus, Ga. Shaft-hanger	407,347	July 23	2001	520	48	415
Goldinger, George W. (See Arnold and Goldinger.)						
Goldschmidt, Isaac, *et al.* (See Rockwell, Warren C., assignor.)						
Goldsmith, Max S. (See Moeller and Goldsmith.)						
Goldsmith, Nathaniel O. (See Weir and Goldsmith.)						
Goldsmith, Nathaniel O., assignor to Weir Frog Company, Cincinnati, Ohio. Switch-stand	408,174	July 30	3241	846	48	659

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Goldstein, Jacob, and I. Block, New York, N. Y. Oil-stove	411,719	Sept. 24	2387	633	48	1758
Goll, Henry. (See Scheiker, Gaspard, assignor.)	411,221	Sept. 17	1662	444	48	1610
Gooch, Charles, Cincinnati, Ohio. Game board or apparatus						
Good, John, assignor of one-half to J. E. Herring, Napanee, Ontario, Canada. Steam-boiler furnace	409,784	Aug. 27	2411	631	48	1162
Goodale, Benjamin N., Saco, Me., assignor to Sawyer Spindle Company, Boston, Mass. Support for spinning-spindles	409,638	Aug. 20	2176	573	48	1113
Goodenough, Thomas, Woodside, assignor to Akbar Manufacturing Company, New York, N. Y. Pneumatic door-check	409,961	Aug. 27	2650	697	48	1210
Goodfellow, John H., Troy, N. Y., assignor, by mesne assignments, to Lamson Consolidated Store Service Company, of New Jersey. Store-service apparatus	410,239	Sept. 3	155	40, 41	48	1399
Goodline, George, Paterson, N. J. Tension-regulating device for loom-shuttles	406,135	July 2	158	46	48	32
Goodman, Henry M., Louisville, Ky. Axle-lubricator	409,573	Aug. 20	2071	546	48	1094
Goodrich, Daniel H. (See Bentley, Daniel B., assignor.)						
Goodrich, George A., Colfax, Iowa. Rotating pigeon-hole case	408,230	Aug. 6	47	11	48	687
Goodrich, Hanson, McLeansborough, Ill. Coffee-pot	408,707	Aug. 13	787	207	48	836
Goodrich, Hervey K., Sherman, Tex. Compressed air and steam apparatus for sinking wells	406,898	July 16	1322	346	48	274
Goodrich, Louisa M. (See Henry, Frank, assignor.)						
Goodridge, Charles L., Portland, Me. Relighting the flame in hydrocarbon-furnaces	411,243	Sept. 17	1688	451	48	1615
Goodspeed, Charles P., Brooklyn, assignor of two-fifths to R. A. Robbins, New York, and J. S. Barrow, Brooklyn, N. Y. Wick-adjusting mechanism	409,639	Aug. 20	2177	573	48	1113
Goodwin, Charles O., Malden, assignor of one-half to P. B. Wiley, Wakefield, Mass. Apparatus for applying sheaths to electrical conductors	410,410	Sept. 3	426	113	48	1352
Goodwin Gas Stove and Meter Company. (See Doty, Albert J., assignor.)						
Goodwin, Hiram P. (See Hunt, Marshall E., assignor.)	408,009	July 30	2993	780	48	613
Goodwin, Julius C., Philadelphia, Pa. Overseaming sewing-machine	409,192	Aug. 20	1520	403	48	987
Goodwin, Maxwell J., Somerville, Mass. Safety-guard for street-cars						
Goostree, Andrew J., Foxville, Ill. Appliance for controlling and preventing fire in buildings	410,359	Sept. 3	347	91	48	1336
Gordon, Edward F., and H. Hobbs, deceased; A. W. Hobbs administratrix, Concord, N. H. Steam-generator	408,708	Aug. 13	788	207 208	48	836
Gordon, Elorso J., assignor of one-half to C. S. Hecox, Greenville, Mich. Grate-bar	411,379	Sept. 17	1885	504	48	1651
Gordon, Fred. W. (See Laureau and Gordon.)	406,275	July 2	344	94	48	69
Gordon, Henry D., Wilmington, Del. Crank-pin						
Gordon, Strobel & Laureau. (See Laureau and Gordon, assignors.)	409,353	Aug. 20	1764	464 465	48	1033
Gordon, Thomas, Philadelphia, Pa. Lamp	408,010	July 30	2995	780 781	48	613
Gordon, Thomas J., Olathe, Kans. Burglar-alarm	408,175	July 30	3242	846 847	48	659
Gordon, William J., E. D. Gilbert, and D. M. Pfautz, Philadelphia, Pa., assignors to Philadelphia Locomotive Vehicle and Stationary Motor Company, of New Jersey. Spring-motor	407,588	July 23	2365	612	48	486
Gore, Henry A. (See Ru Ton and Gore.)						
Gorham, Annie L., St. Johnsbury, Vt. Writing-desk						
Gough, John. (See Brown and Gough.)						
Gould, Claude C., Batavia, assignor to Eastern Electrical Manufacturing Company, Wheatfield, N. Y. Telephone switch system	409,574	Aug. 20	2072	547	48	1095
Gould, John J., Washington, D. C. Label or card holder	408,099	July 30	3124	816	48	638
Gould-Tisdale Revolving Semaphore Company. (See Fisk, Alonzo B., assignor.)						
Gould & Watson Company. (See Lee, Charles T., assignor.)						
Gould & Watson Company, *et al.* (See McCarthy, Louis, assignor.)						
Goulding, George P., assignor of one-half to Yawman & Erbe, Rochester, N. Y. Bottle-stopper	406,892	July 9	1223	324	48	245
Goyne, Arthur H., *et al.* (See Goyne, Charles A., assignor.)						
Goyne, Charles A., assignor of three-fourths to F. H., A. H., and T. R. Goyne, Ashland, Pa. Blower for furnaces	410,091	Aug. 27	2362	750	48	1348
Goyne, F. H., *et al.* (See Goyne, Charles A., assignor.)						
Goyne, Thomas R., *et al.* (See Goyne, Charles A., assignor.)	409,575	Aug. 20	2075	547 548	48	1005
Grab, Frederick A., New York, N. Y. Cigar-bunching machine						
Grace, Edward. (See Parshall, Charles H., Sr., assignor.)	408,176	July 30	3244	847	48	660
Graebert, Gustav J., Detroit, Mich. Steam-trap	410,831	Sept. 10	1079	290	48	1486
Graessle, William T., Philadelphia, Pa. Watch-pendant winding and setting device						
Graf, Robert R., assignor, by mesne assignments, to National Refrigerating Company, Baltimore, Md. Refrigerator	409,035	Aug. 13	1274	336	48	932
Graff, Matthew, and J. Johnson, Pittsburg, Pa. Reducing metallic ores	406,210	July 2	258		48	52
Grafton, Henry, Chancery Lane, county of Middlesex, England. Keying wheels	408,635	Aug. 13	970	257	48	873
Graham, Alexander, Harrisonville, Mo. Lawn-mower	411,498	Sept. 24	2056	544	48	1689
Graham, Alvaro B., Chicago, assignor to L. C. Tallmadge, Evanston, and C. J. Haines, trustee, Chicago, Ill. Mower	408,100	July 30	3125	818	48	639
Graham, Carroll G., Marion, Iowa. Line-wire insulator	408,383	Aug. 6	364	66	48	730
Graham, Elias, and J. Doolittle, Hazel Dell, Ill. Feed-trough	406,511	July 9	732	201	48	153
Graham, Jacob V., *et al.* (See Smith, Zalmon W., assignor.)						
Graham, James A., assignor to Milwaukee Harvester Company, Milwaukee, Wis. Grain-binder	407,069	July 16	1560	410	48	320
Gramm, Karl. (See Kaselowsky, Gramm, and Kürbitz.)						
Grammes, Lewis F., assignor of one-half to C. J. P. Bittner, Allentown, Pa. Box-nailing machine	409,145	Aug. 13	1444	379	48	965
Grand Detour Plow Company. (See Ruef, Charles S., assignor.)						
Grange, William. (See Smith, Orren M., assignor.)						
Granger Foundry and Machine Company. (See Granger, William S., assignor.)						
Granger, William S., assignor to Granger Foundry and Machine Company, Providence, R. I. Cloth-calendering roll	407,858	July 30	2759	717	48	569
Grant, Alexander, assignor of one-half to M. N. Miller, Los Angeles, Cal. Steam-boiler	411,434	Sept. 24	1973	523	48	1673
Grant, George B., Lexington, Mass. Machine for planing gear-teeth	407,437	July 23	2152	556	48	444
Grant, James C. (See Norwood, Richard W., assignor.)	407,859	July 30	2759	718	48	569
Grant, Oscar B., Austin, Minn. Ventilator						
Grantham, E. H., *et al.* (See Ronaldtree, John T., assignor.)						
Grasser, Charles. (See Smith and Grasser.)						
Grassler, William F., assignor of three-fourths to C. C. Gibson, W. G. Elliot, and W. B. Updegraff, Williamsport, Pa. Electric railway-signal	409,146	Aug. 13	1447	380	48	965
Graves, Charles O., Washington, Kans. Heating-stove	406,521	July 9	752	205	48	157
Graves, George H., *et al.* (See Guthrie, James F., Jr., assignor.)	409,576	Aug. 20	2077	548	48	1096
Gray, James A. S., Cincinnati, Ohio. Petroleum-furnace						

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Gray, James R., Ayer, Mass. Automatic fire-extinguisher	408,302	Aug. 6	144	37	48	707
Gray, Philander R. and P. R., Jr., Elizabeth, N. J. Refrigerative apparatus	406,345	July 2	450	125 126	48	90
Gray, William, Hartford, Conn. Coin-controlled apparatus for telephones	408,709	Aug. 13	789	208	48	837
Gray, William D., Milwaukee, Wis., assignor to E. P. Allis & Company, of Wisconsin. Shaft-coupling	408,011	July 30	2997	781	48	613
Gray, William D., Milwaukee, Wis., assignor to E. P. Allis & Company, of Wisconsin. Friction-clutch	408,012	July 30	2998	782	48	614
Gray, William D. A., and J. D. Klepper, Limestone, Tenn. Post-hole digger	411,285	Sept. 17	1749	467	48	1027
Gray, William M., and W. M. White, Crawfordsville, Ind. Register for slat-fence looms	410,587	Sept. 10	687	184	48	1409
Greeley & Company, E. S. (See Smith, Thomas J., assignor.)						
Greeley, R. P. M. (See Peirce, Parker I., assignor.)						
Green & Co., George D. (See Nolley, David D., assignor.)						
Green, Henry C., St. Louis, Mo. Automatic fountain coffee-pot	411,656	Sept. 24	2298	610	48	1740
Green, Joseph J., Canton, Ohio. Hoist	406,579	July 9	827	224	48	171
Green, Joseph W., Jr., *et al.* (See Moore, George C., assignor.)						
Green, Nelson E., Minneapolis, Minn. Driving-head for sewer-sheathing	407,348	July 23	2003	520	48	415
Green, Sarah F., Brooklyn, N. Y. Self-adjusting cover for vessels	409,354	Aug. 20	1765	465	48	1033
Green, Sidney, Brooklyn, N. Y. Photographer's portable compartment for transferring plates	407,728	July 23	2551	661	48	524
Greene, Benjamin F., Pittsburg, Pa. Bottle-stopper	410,668	Sept. 10	816	219	48	1434
Greenhalgh, James, assignor of one-half to J. F. Mulvey, Woonsocket, R. I. Flushing-tank	409,147	Aug. 13	1448	380 381	48	965
Greening, Frederick, Uxbridge, England, assignor of two-thirds to O. R. Peck, Toronto, Canada, and T. W. T. Potts, London, England. Substitute for ivory, &c.	406,344	Aug. 6	207	.....	48	720
Greenlee, George J., Belvidere, Ill. Grain-binder	411,025	Sept. 17	1356	364 365	48	1549
Greenough, John J., Boston, Mass. Step for sleeping-car berths	410,793	Sept. 10	1035	277	48	1476
Greensfelder, Moses, Baltimore, Md. Cigar-machine	409,785	Aug. 27	2412	631	48	1162
Greenwood, Arthur. (See Halford and Metford, assignors.)						
Greer, William H. C., Sherman, Tex. Suspension-bridge	411,499	Sept. 24	2057	545	48	1689
Greg, Arthur, Eagley Mills, near Bolton, county of Lancaster, England. Self-acting sawing-machine	407,523	July 23	2264	586 587	48	466
Gregory, Albert A., assignor of one-half to A. Cook, Canton, Ohio. Axle-lubricator	409,962	Aug. 27	2660	698	48	1210
Gregory & Co., H. P. (See Cook, Frederick W., assignor.)						
Gregory, Edward G. (See Pollock, Joseph, assignor.)						
Gregory, George H., New York, N. Y. Gas-fitting	409,577	Aug. 20	2078	549	48	1096
Gresham, James, Stretford, near Manchester, county of Lancaster, England. Applying sand to rails of railways	409,578	Aug. 20	2079	549	48	1096
Greville-Williams, Rupert, assignor to Albany Coal Tar Dye and Chemical Company, Albany, N. Y. Compound orcin dye. (Reissue)	11,016	July 30	3317	.....	48	671
Greville-Williams, Rupert, assignor to Albany Coal Tar Dye and Chemical Company, Albany, N. Y. Making orcine dye	410,057	Aug. 27	2792	.....	48	1235
Greville-Williams, Rupert, assignor to Albany Coal Tar Dye and Chemical Company, Albany, N. Y. Making orcine dye	410,058	Aug. 27	2793	.....	48	1235
Grey, Elmer H. (See Seymour, William S., assignor.)						
Grey, Sylvester P., Nashville, Tenn. Circular saw	411,189	Sept. 17	1611	428	48	1499
Grice, Alexander P., *et al.* (See Lewis, George W., assignor)						
Griffen, Charles H. (See Taber, William, assignor.)						
Griffin, Edwin C., Brooklyn, assignor to Griffin Manufacturing Company, New York, N. Y. Pulverizing-mill	410,756	Sept. 10	967	260 261	48	1560
Griffin, Edwin C., Brooklyn, assignor to Griffin Manufacturing Company, New York, N. Y. Pulverizing-mill	410,757	Sept. 10	971	261	48	1461
Griffin, Edwin C., Brooklyn, assignor to Griffin Manufacturing Company, New York, N. Y. Pulverizing-mill	410,758	Sept. 10	974	262	48	1462
Griffin, James K., Brooklyn, N. Y. Pulverizing-mill	409,579	Aug. 20	2082	549 550	48	1096
Griffin Manufacturing Company. (See Griffin, Edwin C., assignor.)						
Griffin, Patrick H., Buffalo, N. Y. Car-wheel grinder	411,244	Sept. 17	1689	451 454	48	1615
Griffin, Thomas A., Chicago, Ill. Balancing apparatus for wheels, &c.	407,589	July 23	2366	613	48	488
Griffith, Humphrey G., Indianapolis, Ind. Lautern	408,614	Aug. 6	622	161	48	799
Griffith, Jacob K., Philadelphia, Pa. Tap-nozzle	411,519	Sept. 24	2067	551	48	1695
Grimes, Orlando M., New Haven, Conn. Machine for grinding and polishing rifle-barrels	406,643	July 9	938	253 254	48	192
Grimm, Paul H., assignor to Glen Cove Manufacturing Company, Glen Cove, N. Y. Obtaining cattle-food from starch refuse	406,166	July 2	199	.....	48	41
Grimmesey, Hiram F. (See McNutt and Grimmesey.)						
Grimston, George S., Greenwich, county of Kent, assignor to Lucigen Light Company, (limited,) Westminster, England. Vapor-burner	407,198	July 16	1770	464	48	362
Griscom, Samuel E., Philadelphia, Pa. Ore-separator	409,099	Aug. 13	1375	363	48	950
Griscom, William M., Berlin, Germany. Rotary engine	408,101	July 30	3128	819	48	639
Griscom, William W., Haverford College, Pa. Means for propelling vehicles by secondary batteries	406,833	July 9	1223	324 325	48	245
Griscom, William W., Haverford College, Pa. Mechanical movement	409,193	Aug. 20	1521	402	48	987
Griscom, William W., Haverford College, Pa., assignor to Electrical Accumulator Company, of New York. Secondary battery	406,439	July 9	601	160	48	129
Griscom, William W., Haverford College, assignor to Electro Dynamic Company, Philadelphia, Pa. Automatic regulation of electrical circuits	407,006	July 16	1480	389	48	304
Griscom, William W., Haverford College, assignor to Electro Dynamic Company, Philadelphia, Pa. Means for propelling vehicles by secondary batteries	408,231	Aug. 6	48	11	48	687
Griscom, William W., Haverford College, assignor to Electro Dynamic Company, Philadelphia, Pa. Means for propelling vehicles by secondary batteries	408,232	Aug. 6	51	11, 12	48	688
Griscom, William W., Haverford College, assignor to Electro Dynamic Company, Philadelphia, Pa. Vehicle-motor	408,233	Aug. 6	53	12	48	688
Grisenthwaite, Thomas. (See Sanford and Grisenthwaite.)						
Griswold, Merritt W., Ridgewood, N. J. Manufacture of window-glass	410,546	Sept. 3	619	160	48	1390
Groat, Elias. (See Patterson and Groat.)						
Grosbéty, Peter, Neoga, Ill. Lotion	411,657	Sept. 24	2300	.....	48	1740
Groshon, John A., New York, N. Y. Direct-acting steam-engine	410,411	Sept. 3	428	113 114	48	1353
Groshon, John A., New York, N. Y. Steam-engine	410,412	Sept. 3	430	114	48	1353
Gross, Milton H., Abilene, Kans. Saw-set	407,438	July 23	2155	537	48	444
Gross, Samuel E., Chicago, Ill. Seed-planting	407,822	July 30	2708	705	48	559

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Groswith, Henry, assignor of three-fourths to C. W. Kennedy and R. F. Rankin, Philadelphia, Pa. Galvanic battery	406,726	July 9	1054	281	48	213
Gruber, George C., and T. D. Wogan, Marita, Ohio. Burglar-alarm	407,654	July 23	2456	630	48	505
Grumbach, Charles, Houston, Tex. Heel attachment	407,860	July 30	2760	718	48	569
Gruesonwerk. (See Dreger, Max, assignor.)	410,688	Sept. 10	849	.....	48	1441
Guelick, Otto E. C., Detroit, Mich. Artificial stone	409,400	Aug. 20	1533	483	48	1047
Gueringer, Edward J. (See Le Beau, John M. V., assignor.)	410,092	Aug. 27	2663	751	48	1243
Gumbinner, Paul, New York, N. Y. Drapery-trimming	410,515	Sept. 3	583	157	48	1383
Gummer, Henry R., Dayton, Ohio. Burner for gas-stoves						
Gunckel, Winfield O., Terre Haute, Ind. Revolving coal-screen	406,345	Aug. 6	208	53	48	720
Gunklach & Co., A. (See Heine, Frederick, assignor.)	407,070	July 16	1561	410	48	321
Gunn, Andrew J., Valley Falls, Kans. Car-coupling	411,146	Sept. 17	1550	414	48	1527
Gunn, Robert, Buffalo, N. Y. Device for operating car-coupling pins	411,147	Sept. 17	1551	414	48	1527
Gunz, Oscar F., Rutherford, N. J. Stem winding and setting watch	411,744	Sept. 24	2422	641 642	48	1765
Gunz, Oscar F., Rutherford, N. J. Stem winding and setting watch						
Guptill, Winslow W., Boston, Mass. Check-punching machine	407,199	July 16	1771	464 465	48	362
Gurnee, Elbert M. (See Burtch and Gurnee.)	407,200	July 16	1774	465	48	363
Gustafson, Axel R., Marinette, Wis. Laundry-machine						
Guthrie, James F., Somerville, Mass. Fire-escape	406,834	July 9	1226	325	48	246
Guthrie, James F., Jr., Somerville, assignor to T. C. Ashley, Boston, and G. H. Graves, Malden, Mass. Nipple-holder	408,836	Aug. 13	971	258	48	873
Guy, Joseph, New York, N. Y. Water-closet	406,580	July 9	828	224	48	171
Guyot, Sumner H., Boston, Mass. Nasal respirator	409,322	Aug. 20	1716	451	48	1024
Guyton, Joshua S., Granger, Mo. Wire-tightener						
Gwinn, George L. (See Forsythe and Gwinn.)	411,026	Sept. 17	1359	365	48	1550
Haas, Edwin, Philadelphia, Pa. Syrup-faucet	406,346	July 2	453	126	48	91
Haas, George. (See Melchior and Haas.)	407,951	July 30	2907	757	48	597
Haas, Levi, Chester, Pa. Railway-tie	407 594	July 30	2813	732	48	580
Haas, William L., Charles City, Iowa. Gate	411,550	Sept. 24	2134	565 566	48	1705
Haberkorn, Theodore H., Fort Wayne, Ind. Valve for steam-engines						
Haberlein, Edward F., McPherson, Kans. Windmill	406,727	July 9	1055	281	48	213
Hacker, Joseph, L. W. Colby, and J. W. Helton, Waterloo, Iowa. Water-heater	408,303	Aug. 6	146	37	48	708
Hackett, Edmond. (See Allen and Hackett.)						
Hackney, Herbert, Topeka, Kans. Steam-boiler	410,413	Sept. 3	432	115	48	1354
Hackney, Herbert, Topeka, Kans., assignor to Hackney Steam Boiler Improvement Company, of Illinois. Feed-water purifier for steam-boilers						
Hackney Steam Boiler Improvement Company. (See Hackney, Herbert, assignor.)						
Hadcock, Judson F. (See Terrill, Delancy E., assignor.)	410,275	Sept. 3	213	56	48	1311
Hadfield, Reuben, assignor to Akron Iron Company, Akron, Ohio. Clutch for rods	406,042	July 2	29	9	48	6
Hadley, Horace W., Orange, Mass. Rotary shuttle-actuating mechanism for sewing-machines	410,276	Sept. 3	213	56	48	1311
Haenichen, Friedrich and O., Philadelphia, Pa., assignors to themselves and O. Seebass, New York, N. Y. Neutralizing the residual magnetism in electro-magnets	409,283	Aug. 20	1660	438	48	1014
Haenichen, Otto. (See Haenichen, Friedrich and O.)	407,349	July 23	2004	520	48	416
Hager, John H., Marietta, Mich. Device for carrying and applying postage-stamps	409,036	Aug. 13	1275	336	48	932
Hagerty, Michael H., Brooklyn, N. Y. Mold for glassware	407,479	July 23	2209	570	48	455
Hagey, Lewis W., St. Louis, Mo. Heating-stove	407,927	July 30	2868	717	48	589
Haglund, Oscar B., Nyköping, Södermannland, Sweden. Lock	411,435	Sept. 24	1974	524	48	1673
Haight, Jonathan, Pittsfield, Mass. Umbrella-tree	406,043	July 2	31	9	48	8
Haight, Levi A., Tyndall, Dak. Ter. Flour or meal safe	411,190	Sept. 17	1642	428	48	1599
Haiu, John B., Edgerton, Wis. Holdback for vehicles						
Haines, Burr A., Smithville, N. J. Combined wrench and screw-driver	411,436	Sept. 24	1975	524	48	1673
Haines, Charles J., trustee, *et al.* (See Graham, Alvaro B., assignor.)						
Haines, John H. J., Flushing, N. Y. Canning food	407,399	July 23	2067	540	48	431
Haines, John H. J., Flushing, N. Y., assignor of one-half to A. B. Fernald, Jersey City, N. J. Welding metal foil	409,323	Aug. 20	1717	451	48	1025
Hainkel, Sigel, assignor of one-half to L. Wolf, Quincy, Ill. Riding-saddle	408,970	Aug. 13	1177	311	48	913
Haldeman, Ephraim A., Chicago, Ill. Drafting-board	409,606	Aug. 20	2124	559	48	1104
Hale, Frank A. (See Duncan and Hale.)						
Hale, Henry S., Philadelphia, Pa. Folding bedstead						
Hale, William E. (See Baldwin, Cyrus W., assignor.)						
Haley, Thomas. (See McNeil, Murdock, assignor.)						
Halford, Henry S., Wistow, and W. E. Metford, Redland, Bristol, assignors of one-third to A. Greenwood, Leeds, England. Projectile	406,728	July 9	1057	281	48	213
Hall, Edward C., *et al.* (See Kinney, Robert, assignor.)	406,522	July 9	753	205	48	157
Hall, Frank C., assignor to W. C. Stevenson, Philadelphia, Pa. Grinding-mill	407,201	July 16	1775	465	48	363
Hall, Frank J., Philadelphia, Pa. Loom-shuttle	406,899	July 16	1324	347	48	274
Hall, Hiram, Jr., Spruce Head, Me. Ax-helve	410,669	Sept. 10	817	219	48	1434
Hall, John A., *et al.* (See Wanner, Martin, assignor.)						
Hall, Lester, and O. J. Barth, Kansas City, Mo. Grate-bar	406,835	July 9	1226	325	48	246
Hall, Martin E., U. S. Navy, assignor of one-half to M. C. Hall, Lowell, Mass. Valve-gear	409,284	Aug. 20	1661	438 439	48	1014
Hall, Mary C. (See Hall, Martin E., assignor.)	408,615	Aug. 6	696	161	48	800
Hall, Milan W., Brooklyn, N. Y. Steam-engine	410,414	Sept. 3	434	115	48	1354
Hall, Osborn B., Malden, Mass. Automatic fire-extinguishing apparatus	407,524	July 23	2206	567	48	467
Hall, Perry E., Sr., Ashtabula, Ohio. Plumber's adjustable bracket	409,100	Aug. 13	1377	363	48	951
Hall, Samuel, St. John, New Brunswick, Canada. Brush-holding cabinet	407,655	July 23	2457	636	48	505
Hall, Stephen T., St. Paul, Minn. Valve for steam or water	409,580	Aug. 20	2085	550	48	1097
Hall, Theodore F., assignor to J. Short, Marietta, Ohio. Drive-chain	407,590	July 23	2367	613	48	488
Hall, Thomas, and D. Young, Lawrence, Mass., said Young assignor to said Hall. Picker-staff check for looms	408,102	July 30	3129	819	48	639
Hall, William E., Butte City, Mont. Ter. Indicator and signal for elevators						
Hall, Zachary T., Philadelphia, Pa. Tray	409,148	Aug. 13	1450	381	48	966
Haller, John, assignor of one-half to W. Bertsch, Port Clinton, Ohio. Device for holding fruit-cans	407,928	July 30	2870	747	48	589
Hallock, Daniel Y., Southold, N. Y. Potato-digger	408,837	Aug. 13	973	259	48	874
Hallowell, Charles T., Philadelphia, Pa. Railway-signal	409,101	Aug. 13	1378	363	48	951
Halstead, Charles, Providence, R. I. Covering for rollers	410,300	Sept. 3	348	91	48	1337
Ham, Benjamin F., Cimarron, Kans. Windmill	410,886	Sept. 10	1165	313 314	48	1502
Haman, Fredrick H., Wapakoneta, Ohio. Churn						

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Hambay, James T., Wilkinsburg, assignor to Union Switch and Signal Company, Pittsburg, Pa. Coupling for signal-rods	406,211	July 2	259	71, 72	48	52
Hambay, James T., Wilkinsburg, assignor to Union Switch and Signal Company, Pittsburg, Pa. Switch and signal interlocking apparatus	406,212	July 2	261	72	48	52
Hambay, James T., Wilkinsburg, assignor to Union Switch and Signal Company, Pittsburg, Pa. Switch and signal apparatus	406,213	July 2	263	72, 73	48	52
Hambay, James T., Wilkinsburg, assignor to Union Switch and Signal Company, Pittsburg, Pa. Mechanism for operating signals	408,616	Aug. 6	627	102	48	800
Hambujer, Ephraim, Detroit, Mich. Slate-pencil sharpener	406,900	July 16	1324	347	48	274
Hamilton, Clarence J., assignor of one-half to C. A. Pinckney, Plymouth, Mich. Pump-rod coupling	406,276	July 2	345	94	48	70
Hamilton, Clarence J., assignor of one-half to R. L. Root, Plymouth, Mich. Air-gun	408,971	Aug. 13	1179	311	48	913
Hamilton, Cornelius J., assignor to J. H. Wilson, Philadelphia, Pa. Gas-burner	407,291	July 16	1913	498	48	389
Hamilton, James E., assignor to Hamilton Manufacturing Company, Two Rivers, Wis. Cutting-stick for paper-cutting machines	407,861	July 30	2761	718	48	569
Hamilton, James T., Council Bluffs, Iowa. Harrow	408,234	Aug. 6	55	12	48	699
Hamilton, John J., St. Louis, Mo. Parallel-ruler	407,350	July 23	2005	521	48	416
Hamilton Manufacturing Company. (See Hamilton, James E., assignor.)						
Hamilton, Silas H., New York, N. Y., assignor to Niagara Hydraulic Electric Company, Alexandria, Va. Apparatus for utilizing the force of water-falls	407,007	July 16	1481	386 / 387	48	305
Hamilton, Tobias. (See Achor and Hamilton.)						
Hamilton, Walter S., *et al.* (See Wray, Robert, assignor.)						
Hamlin, Arthur D., assignor of one-half to D. A. Meaher, Portland, Me. Hoof-pad	410,093	Aug. 27	2864	751	48	1248
Hamlin, Arthur D., assignor to D. A. Meaher, Portland, Me. Hoof-pad	411,745	Sept. 24	2424	642	48	1766
Hamlin, George B., Providence, R. I. Buckboard-vehicle	410,094	Aug. 27	2866	751	48	1248
Hammann, Edward, Brooklyn, assignor to J. L. Mott Iron Works, New York, N. Y. Water-closet	411,520	Sept. 24	2090	551	48	1696
Hammelmann, Charles, Buffalo, N. Y. Portable forge	410,161	Sept. 3	37	10	48	1276
Hammerly, Anton, *et al.* (See Swanger, David, assignor.) (Reissue.)						
Hammerslough, Louis. (See Wolf, Julius J., assignor.)						
Hammesfahr, Ernst, Solingen, Prussia, Germany. Drop-hammer	409,836	Aug. 27	2487	650	48	1175
Hammond, Henry, New Haven, Conn. Manufacture of axes	407,501	July 23	2368	614	48	489
Hammond, Henry, New Haven, Conn. Wrench	410,240	Sept. 3	156	41	48	1299
Hampton, Robert I., Athens, Ga. Coupling for the steam-pipes of railway-cars	406,397	July 2	533	149	48	106
Hampton, Robert I., Athens, Ga. Coupling for steam-pipes of railway-cars	410,889	Sept. 10	1166	314	48	1502
Hancock, Joseph W., Knighton, county of Leicester, England. Semaphore-signal	406,836	July 9	1227	326	48	246
Hand, Furman S., and E. Richardson, Flanagan, Ill. Fastening for rubber shoes	407,525	July 23	2267	587	48	467
Hand Stitch Broom Sewing Machine Company. (See Lipe, Charles E., assignor.)						
Hand Stitch Broom Sewing Machine Company. (See McCombs, George F., assignor.)						
Handeland, Ole, assignor to himself and D. F. Driscoll, Fort Sisseton, Dak. Ter. Lantern	411,222	Sept. 17	1662	444	48	1610
Handy, Benjamin F. (See Murphy, Jeremiah, Jr., assignor.)						
Hänisch, Emil, Benthen O. S., and M. Schroeder, Neumühl, Germany. Apparatus for extracting sulphurous acid	410,415	Sept. 3	437	115	48	1335
Hanley, Edwin K. (See Terry and Hanley.)						
Hanmore, Hiram M., Santa Cruz, Cal. Non-heat-conducting fabric	406,644	July 9	940	254	48	192
Hanna, Cyrus T., Pittsburg, Pa. Bolting-reel	408,914	Aug. 13	1094	288 / 289	48	897
Hanrahan, Joseph F., Ottawa, Ontario, Canada. Refrigerator-car	407,862	July 30	2762	719	48	570
Hanres, Prosper, Brussels, Belgium. Steam-boiler	411,191	Sept. 17	1613	428 / 429	48	1599
Hansbury, Harry S. (See Hansbury, Peter R., assignor.)						
Hansbury, Peter R., assignor to H. S. Hansbury, Philadelphia, Pa. Garment-protector	410,416	Sept. 3	439	116	48	1355
Hanscom, Abbie P., executrix. (See Hanscom, William W.)						
Hanscom, William W., deceased; A. P. Hanscom executrix and assignor to H. D. Bacon, San Francisco, Cal. Hose-coupling	408,409	Aug. 6	313	79	48	739
Hansen, Carsten, Morgan, Iowa. Gate	411,437	Sept. 24	1976	524	48	1673
Hansen, Michael, and F. Roepert, Litchfield, Minn.; said Roepert assignor to said Hansen. Ventilated pad	406,837	July 9	1228	326	48	246
Hanson, Freeman, Bar Mills, assignor of three-fourths to C. B. Harmon, Biddeford, G. E. Bird and H. G. Briggs, Portland, Me. Steam-pipe coupling	410,547	Sept. 3	621	166	48	1390
Hanson, Freeman, Bar Mills, assignor of one-half to C. B. Harmon, Biddeford, Me. Lamp-chimney holder	410,548	Sept. 3	623	167	48	1391
Hanson, Olaus, and A. Fyrberg, assignors to I. Johnson, Worcester, Mass. Velocipede	406,561	July 9	829	224 / 225	48	171
Harbaugh, Solomon, Geneva, Nebr. Windmill	410,361	Sept. 3	349	92	48	1337
Harder, Charles N. (See Sagendorph, Longley L., assignor.)						
Hardie, Robert W., Albany, N. Y. Emery-wheel	409,837	Aug. 27	2489	650 / 651	48	1175
Harding, Fred. H., Baldwin, Me. Washing-machine	411,658	Sept. 24	2301	611	48	1740
Harding, Fred. H., Baldwin, Me. Washing-machine	411,659	Sept. 24	2303	611	48	1740
Harding, John H., New York, N. Y. Ornamenting open-mesh woven material with plastics	408,710	Aug. 13	790	208	48	837
Hardt, Mads P., *et al.* (See Boardman, Frederick R., assignor.)						
Hardy, Louis W., Yellow Springs, Ohio. Door-check	409,894	Aug. 20	1522	404	48	987
Hare, Robert W., Allegheny, Pa. Two-wheeled vehicle	411,720	Sept. 24	2388	633	48	1758
Harigel, Emil. (See Stoppie and Harigel.)						
Harigel, Emil, Bellville, Tex. Shot-canister	411,122	Sept. 17	1581	406	48	1582
Harkness, Levret B., Boston, Mass. Curtain supporter and adjuster	407,592	July 23	2370	614	48	489
Harlan, Samuel C., Lake City, Minn. Carpet-stretcher	407,823	July 30	2709	703	48	559
Harles, William, St. Louis, Mo. Fire-lighter	411,335	Sept. 17	1623	488	48	1639
Harley, Howard W., *et al.* (See Woelfel, Christian, assignor.)						
Harman, John B., Gilboa, Ohio. Sack-holder	409,195	Aug. 20	1523	404	48	987
Harmer, Harvey D., assignor of one-half to E. W. Hart, Council Bluffs, Iowa. Nipple-holder	407,292	July 16	1914	493	48	390
Harmon, Charles B., *et al.* (See Hanson, Freeman, assignor.)						
Harold, Michael, Lima, Ohio. Apparatus for drilling and pumping oil or other wells	407,202	July 16	1776	466 / 467	48	363
Harper, Henry D. (See Ashford, Thomas B., assignor.)						
Harpel, Edgar S., Tyler, Tex. Mechanical motor	406,440	July 9	602	169	48	130
Harrell, Amaziah D., Wabash, Ind. Hand-motor for vehicles	409,581	Aug. 20	2026	550	48	1087
Harrigan, Michael T., Wollaston, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-trimmer	406,582	July 9	831	225	48	172
Harrington, Ephraim. (See Plimpton and Harrington.)						
Harrington & Richardson Arms Company. (See Caldwell, Homer M., assignor.)						
Harrington, Samuel E., North Amherst, Mass. Sash-holder	407,952	July 30	2908	758	48	597

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Harrington, Stephen T., Butte City, Mont. Ter. Combined candle-holder and cap-nipper	406,441	July 9	603	169	48	130
Harris, Benjamin T., Brooklyn, N. Y. Feed-bag	409,838	Aug. 27	2499	651	48	1175
Harris, Charles B., New York, N. Y. Making incandescing elements for gas-burners	409,607	Aug. 20	2136	550	48	1104
Harris, Charles B., New York, N. Y. Incandescent gas-burner	410,549	Sept. 3	624	167	48	1391
Harris, Charles B., New York, N. Y. Fire-extinguishing apparatus	411,192	Sept. 17	1615	429	48	1599
Harris, Charles E. (See Clark, James H., assignor.)						
Harris, Charles R., Williamsport, Pa. Door-plate	406,729	July 9	1057	282	48	213
Harris & Co., T. C. (See Harris, Thomas C., assignor.)						
Harris, George W. (See Harris, William H. and G. W.)						
Harris, Jabez G., assignor to Harris & Jones, Providence, R. I. Apparatus for graining printing-plates	406,798	July 2	536	149	48	107
Harris, James C., Dayton, Ohio, assignor of one-half to A. G. Burton, Chicago, Ill. Safe-lock	407,775	July 30	2626	681	48	545
Harris & Jones. (See Harris, Jabez G., assignor.)						
Harris, Joseph G., Sedalia, Mo. Cider mill and press	406,347	July 2	451	127	48	91
Harris, Joseph G., Sedalia, Mo. Corn-planter	410,707	Sept. 10	875	235	48	1445
Harris, Joseph G., Sedalia, Mo. Corn-planter. (See Harris, Joshua W. (See Nissley, Mumma, Hostetter, and Harris.)						
Harris, Joshua W. (See Nissley, Mumma, Hostetter, and Harris.)	408,103	July 30	3130	819	48	640
Harris, Lafayette, assignor of one-half to O. W. Jay, Pony, Mont. Ter. Wheel felly support	411,551	Sept. 24	2136	566	48	1706
Harris, Lander S., Detroit, Mich. Regulator for shunt-wound dynamos or other electrical apparatus	408,410	Aug. 6	314	80	48	740
Harris, Philander A., Paterson, N. J. Shade-fastener	408,104	July 30	3131	819	48	640
Harris, Samuel D., Middletown, Conn. Harness-tug loop						
Harris, Samuel R. (See Silliman and Cowdery, assignors.)	410,516	Sept. 3	584	.....	48	1363
Harris, Thomas B., and C. Day, Xenia, Ohio. Incrustation preventive	410,277	Sept. 3	215	76	48	1311
Harris, Thomas C., assignor to T. C. Harris & Co., Troy, N. Y. Sewing-machine	407,303	July 16	1780	467	48	364
Harris, William H. and G. W., Steele City, Nebr. Hay or straw burner						
Harrison, Arthur W., assignor of one-half to J. F. Waggaman, Washington, D. C. Folding pillow	407,776	July 30	2632	682	48	546
Harsin, William G., Newburg, assignor to Ferry & Napier, New York, N. Y. Press for hat-brims	406,214	July 2	264	73	48	53
Hart, Albert J., San Francisco, Cal. Thread-controlled stop mechanism for sewing-machines	409,963	Aug. 27	2661	698	48	1210
Hart, Charles L., Brooklyn, N. Y. Sheet-metal pipe	409,196	Aug. 20	1524	404	48	987
Hart, Edward W. (See Harmer, Harvey D., assignor.)						
Hart, Henry N. (See Marcus, Solms, assignor.)	406,044	July 2	32	9	48	9
Hart, Henry T., Burnside, Conn. Paper-bag holder	410,832	Sept. 10	1080	290	48	1486
Hart, Hubert C., Unionville, Conn. Heeling-machine	410,833	Sept. 10	1082	290	48	1486
Hart, Hubert C., Unionville, Conn. Making heels for boots or shoes	410,834	Sept. 10	1083	291	48	1486
Hart, Hubert C., Unionville, Conn. Manufacture of cutlery-handles	406,215	July 2	265	.....	48	53
Hart, Isaac C., assignor of one-half to W. G. Wade, Cincinnati, Ohio. Plastering compound	410,890	Sept. 10	1167	314	48	1502
Hart, James C., Bath-on-the-Hudson, N. Y. Corn-planter	411,669	Sept. 24	2301	611	48	1741
Hart, Lewis B., Plaquemine, La. Implement for boring wells						
Hart, Stacy B., assignor to Hart Weigher Company, Peoria, Ill. Elevator attachment for grain-separators	411,438	Sept. 24	1977	524	48	1673
Hart, Stacy B., assignor to Hart Weigher Company, Peoria, Ill. Grain-conveyer	411,439	Sept. 24	1978	525	48	1674
Hart, Thomas F., and G. S. Hill, Lynn, Mass.; said Hill assignor to said Hart. Sewing-machine	406,277	July 2	346	95	48	70
Hart Weigher Company. (See Hart, Stacy B., assignor.)						
Harter, Walter E., West Nanticoke, Pa. Dressing leather	406,901	July 16	1325	.....	48	275
Harter, William W., Arcanum, Ohio. Shock-compressor	411,721	Sept. 24	2390	633	48	1759
Hartford Machine Screw Company. (See Fairfield and Witherell, assignors.)						
Hartford Machine Screw Company. (See Witherell, George E., assignor.)						
Hartley, Charles J., assignor of two-thirds to J. K. Warren and B. K. Durfee, Decatur, Ill. Automatic grain-weigher	410,241	Sept. 3	157	41	48	1299
Hartley, Charles J., assignor of two-thirds to J. K. Warren and B. K. Durfee, Decatur, Ill. Register and automatic stop	410,242	Sept. 3	158	42	48	1299
Hartley, Charles J., assignor of two-thirds to J. K. Warren and B. K Durfee, Decatur, Ill. Automatic grain-weigher	410,243	Sept. 3	160	42	48	1299
Hartman, H. W. (See Rogers, Seymour, assignor.)						
Hartness, James, Torrington, Conn. Turret-lathe having a supplemental drill-spindle	409,786	Aug. 27	2415	631 / 632	48	1162
Hartung, Carl, Magdeburg, Germany. Valve-gear	409,197	Aug. 20	1525	404	48	988
Harvey, Charles T., Philadelphia, Pa. Bicycle	409,964	Aug. 27	2663	698	48	1211
Harvey, George A. (See Stevens and Harvey.)				699		
Harvey, John H., Rich Hill, Ohio. Running-gear for vehicles	409,965	Aug. 27	2663	698 / 699	48	1211
Harvey, John W., Kansas City, Mo. Car-brake	410,891	Sept. 10	1169	315	48	1502
Harvie, Lewis E., Frankfort, Ky. Lock-hinge	406,730	July 9	1058	282	48	213
Harvie, Lewis E., Frankfort, Ky. Coupling for furniture	406,731	July 9	1060	282	48	214
Harvie, Lewis E., Frankfort, Ky. Coupling for furniture. (See Harwell, William P. (See Gaines and Orr, assignors.)						
Harwell, William P. (See Gaines and Orr, assignors.)	410,588	Sept. 10	688	184	48	1409
Hasbrouck, Eli P., Syracuse, N. Y. Match-safe	409,582	Aug. 20	2067	551	48	1097
Hasbrouck, George, Cleveland, Ohio. Sash-lift	408,235	Aug. 6	55	13	48	689
Hascnpflug, George, Cleveland, Ohio. Sash-lift. (See Haskell, Frank, Westbrook, Me. Device for drying warps, piece goods, &c.						
Haskell, Frank, Westbrook, Me. Device for drying warps, piece goods, &c.	411,661	Sept. 24	2306	612	48	1741
Haskell, Louis W. (See Thompson and Haskell.)	411,521	Sept. 24	2091	552	48	1696
Haskell, Luther D., Jr., assignor of one-half to J. W. Dane, Salem, Mass. Thill-coupling						
Haskell, Sanford R., Albany, N. Y. Umbrella-holder	409,037	Aug. 13	1277	336	48	932
Haslam, James, Bury Road, Tonge, near Bolton, county of Lancaster, England. Chemical fire-extinguisher	409,038	Aug. 13	1278	337	48	932
Haslam, James, Bury Road, Tonge, near Bolton, county of Lancaster, England. Chemical fire-extinguishing apparatus	406,732	July 9	1061	282	48	214
Hasse, Julius T., and H. M. Vacherot, Dresden, Saxony, assignors to Stettiner Chamotte-fabrik Actien-Gesellschaft, Stettin, Prussia, Germany. Retort and muffle furnace						
Hastings, James L. (See Stewart and Hastings.)	409,583	Aug. 20	2088	.....	48	1096
Hastings, James L., Philadelphia, Pa., assignor, by mesne assignments, to Welsbach Incandescent Gas Light Company, of New Jersey. Refractory compound	409,584	Aug. 20	2089	.....	48	1096
Hastings, James L., Philadelphia, Pa., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Plastic mineral composition	409,679	Aug. 27	2252	592	48	1133
Hastings, James T., Chicago, Ill. Metal-rolls	409,746	Aug. 27	2346	617	48	1151
Hastings, James T., Chicago, Ill. Metal-rolls	409,747	Aug. 27	2347	617	48	1151
Hastings, James T., Chicago, Ill. Metal-rolls						
Hastings, Michael, Brooklyn, N. Y., assignor to T. W. and C. A. Williams, New London, Conn. Bed-plate for steam-engines	409,198	Aug. 20	1526	405	48	988
Hastings, Michael, Brooklyn, N. Y., assignor to T. W. and C. A. Williams, New London, Conn. Piston-rod guide	409,199	Aug. 20	1527	405	48	988

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Hastings, Michael, Brooklyn, N. Y., assignor to T. W. and C. A. Williams, New London, Conn. Pressure-regulator	409,200	Aug. 20	1529	405	48	988
Hatch, Jonathan, South Windham, Conn. Paper-making machine	409,201	Aug. 20	1530	405	48	988
Hathaway, Oliver B., Edison, Ohio. Weather-strip	408,346	Aug. 6	210	53	48	720
Hathorne, Francis H., *et al.* (See Ayer, Albert E., assignor.)						
Hattersley, Richard L., and J. Hill, Keighley, county of York, England. Shedding mechanism for looms	409,787	Aug. 27	2416	632 633	48	1163
Hausknecht, Ednard. (See Schloemer and Hausknecht.)						
Hauss, Augustus P., New Albany, Ind. Mail-bag deliverer	410,095	Aug. 27	2867	751 752	48	1249
Havey, Michael, Chicago, Ill. Water-circulating heater	406,902	July 16	1326	347	48	275
Haviland, John W. (See Thomas and Haviland.)						
Hawk, Hale E., Bucyrus, W. Smith and J. F. Fox, Pierce, Ohio. Churn	408,480	Aug. 6	413	108	48	761
Hawkins, Dayton C., assignor to R. W. Rippetor, Terre Haute, Ind. Combined nail-extractor and box-opener	409,355	Aug. 20	1766	465	48	1033
Hawkins, Eugene T., New York, N. Y. Brake for baby-carriages	406,167	July 2	200	56	48	41
Hawkins, John G., and J. Barton, Peterborough, county of Northampton, England. Regulating gas-burner	407,656	July 23	2458	636 637	48	505
Hawkridge, Samuel, Hoboken, N. J. Curling-iron	407,439	July 23	2157	557	48	445
Hawley, John B., Hamden, N. Y. Plow	409,202	Aug. 20	1531	406	48	989
Hawyer, Oscar S., Truxton, N. Y. Railway-frog	406,278	July 2	349	95	48	70
Haxby, Robert J. (See Andrus, Newell P., assignor.)						
Haxtun Steam Heater Company. (See Haxtun, William E., assignor.)						
Haxtun Steam Heater Company. (See Sandford, William B., assignor.)						
Haxtun, William E., assignor to Haxtun Steam Heater Company, Kewanee, Ill. Draft-regulator	411,768	Sept. 24	2453	650	48	1772
Hay, Clark, Portland, Oreg. Supply and waste cock	408,617	Aug. 6	628	162	48	801
Hayes, Charles W., Washington, D. C. Dust-guard for car-axle boxes	411,100	Sept. 17	1435	394	48	1574
Hayes, Eugenio K., Kewanee, Ill. Force-pump	406,442	July 9	604	170	48	130
Hayes, Thomas E., and A. J. Read, Milwaukee, Wis. Journal-box	408,659	Aug. 6	699	181	48	813
Hays, James P., North Temescal, Cal. Lifting-jack	406,523	July 9	754	205	48	157
Head, Daniel J. (See Monk, Luther S., assignor.)						
Heald, John, Springfield, Mass. Cornet	408,972	Aug. 13	1181	311 312	48	914
Healy, Byron J. (See Howard and Healy.)						
Healy, Clarence L., New York, N. Y. Relay for quadruplex telegraphs	407,480	July 23	2211	570	48	455
Healy, Clarence L., Brooklyn, assignor to Commercial Telegram Company, New York, N. Y. Printing-telegraph	407,729	July 23	2552	661	48	594
Healy, Clarence L., Brooklyn, assignor to Commercial Telegram Company, New York, N. Y. Printing-telegraph	407,730	July 23	2553	661	48	595
Heap, William, Muskegon, Mich. Piano-stool	409,585	Aug. 20	2090	551	48	1098
Heaphy, Michael J., Brooklyn, N. Y. Cut-off valve	406,443	July 9	606	171	48	131
Hearn, George A., assignor to H. Hurrell, Plymouth, England. Case or wrapper for cards, photographs, books, &c.	407,440	July 23	2158	557	48	445
Hearne, Robert G., Kansas City, Mo. Paper-file	406,444	July 9	607	171 172	48	131
Heath, Alfred R., Covington, Ind. Car-coupling	408,481	Aug. 6	415	108 109	48	761
Heath, William H., Taunton, Mass. Machine for treating shingles	406,045	July 2	32	9, 10	48	9
Hebblethwaite, John H., assignor of one-half to J. Wright, Rock Falls, Ill. Shaft-coupling	406,838	July 9	1229	326	48	246
Hebert, Henry B., New York, N. Y. Sash-fastener	406,903	July 16	1328	348	48	275
Hebert, Joseph, Lafayette, La. Scrubbing-machine	408,602	Aug. 13	925	246	48	864
Hecking, Max, Dortmund, Prussia, Germany. Feed-water heater	410,517	Sept. 3	585	157	48	1383
Hecox, Charles S. (See Gordon, Elonso J., assignor.)						
Hedbavny, Anton, New York, N. Y. Machine for removing water-hairs from pelts, &c.	408,879	Aug. 13	1042	275	48	887
Hedges, James, assignor of three-fourths to Caton Bros., Bixby & Co., Foxborough, Mass. Hat-molding machine	410,969	Sept. 10	1290	346	48	1525
Heidenreich, Heinrich, assignor to H. Zimmern, New York, N. Y. Watch-movement holder	407,481	July 23	2212	571	48	456
Heilner & Strauss. (See Kern, Ferdinand, assignor.)						
Heindel, William H., Majenica, Ind. Clay fence-post	411,027	Sept. 17	1361	366	48	1550
Heine, Frederick, assignor to A. Gunklach & Co., Cincinnati, Ohio. Barber's chair	408,236	Aug. 6	56	13	48	689
Heine, Herman, Milwaukee, Wis. Attachment for shoe-brushes	406,279	July 2	350	96	48	71
Heinsius, Gustav, Dresden, Saxony, Germany. Lithographic press	410,708	Sept. 10	878	230	48	1446
Heisey, Augustus H. (See Moeckel, Gustave A. and A. C., assignors.)						
Heitman, Henry, Brooklyn, assignor of one-half to C. F. Crowley, New Brighton, N. Y. Street or station indicator	410,550	Sept. 3	625	167 168	48	1391
Heitmeyer, Clemens. (See Eiterich, Otto P. and G. O., assignors.)						
Helland, Hans, and F. Matzow, Houston, Tex. Apparatus for stamping envelopes	411,593	Sept. 24	2203	586	48	1720
Heller, Friedrich G. A., assignor to Siemens & Halske, Berlin, Germany. Cut-out	411,380	Sept. 17	1987	504	48	1651
Heller, Julius, Teplitz, Austria-Hungary. Candlestick	408,973	Aug. 13	1182	312	48	914
Heller, Micajah B., Broyles, S. C. Heel-sweep attachment	411,440	Sept. 24	1980	525	48	1674
Hellwig, Karl M., Berlin, Germany. Antiseptic tooth-pick	410,794	Sept. 10	1035	.....	48	1476
Helm, Edmund, assignor of one-half to T. Helm, Philadelphia, Pa. Table-leaf support	410,892	Sept. 10	1171	313	48	1503
Helm, Theodore. (See Helm, Edmund, assignor.)						
Helme, Norval W., R. Stockdale, and R. N. Helme, Lancaster, England. Composition for the treatment of paper-hangings	407,008	July 16	1482	.....	48	305
Helme, Robert N. (See Helme, Stockdale, and Helme.)						
Helmick, Nathaniel D., Palatine, W. Va. Self-oiling wheel	407,777	July 30	2633	669	48	546
Helme, Jesse A. (See Burgess and Helme.)						
Helton, John W. (See Hacker, Colby, and Helton.)						
Helvey, George H., assignor to Hooven, Owens & Rentschler Company, Hamilton, Ohio. Valve-gear	406,904	July 16	1330	349	48	275
Hemingray Glass Company. (See Gill, James C., assignor.)						
Hempel, Adolph, Cöslin, Prussia, Germany. Pulp-engine	406,136	July 2	159	46	48	33
Hemsley, Alexander, Philadelphia, Pa. Compound for producing flash-light	407,351	July 23	2006	.....	48	416
Henderson, William A., Malden, Mass. Soldering metal pipes	407,778	July 30	2634	669	48	546
Hendrix, Laron S., Gardner, Mass. Sinker for butter-jars	410,893	Sept. 10	1172	313	48	1503
Henkle, Edward A. (See Fowler and Henkle.)						
Hennig, Henry, Paterson, N. J. Hanger for clothes	409,839	Aug. 27	2493	651	48	1176
Hennig, Henry, Paterson, N. J. Clothes-line stretcher	409,840	Aug. 27	2494	651	48	1176
Hennigan, John Q. (See Dillon, Charles H., assignor.)						
Henning, Benjamin S., New York, N. Y., assignor to Henning Gravity Tunnel Company, of West Virginia. System of transportation	408,711	Aug. 13	792	209	48	837

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Henning Gravity Tunnel Company. (See Henning, Benjamin S., assignor.)						
Henning, Julius, Minneapolis, Minn. Metallic shingle	410,894	Sept. 10	1172	315 316	48	1503
Henninger, David P., Paris, Mo. Railway-rail coupling and bolt	406,348	July 2	456	127	48	91
Henrichsen, Frederick J., assignor to Henrichsen Manufacturing Company, Racine, Wis. Broadcast seeder	407,657	July 23	2459	637	48	505
Henrichsen Manufacturing Company. (See Henrichsen, Frederick J., assignor.)						
Henry, Frank, assignor to L. M. Goodrich, Chicago, Ill. Tuck-marker for sewing-machines	409,841	Aug. 27	2495	652	48	1176
Henry, Margaret. (See Henry, Samuel and M.)						
Henry, Samuel and M., Rockford, Ill. Table	407,824	July 30	2710	703	48	560
Henschel, Hermann, Luckenwalde, Prussia, Germany. Paper-box-making machine	408,712	Aug. 13	794	209 210	48	838
Henshaw, James B. (See Clark, Taylor, and Henshaw.)						
Henshaw, Oscar F., J. W. Puterbaugh, A. A. Brower, and S. W. Hurlbut, Clarinda, Iowa. Carpet-stretcher	409,966	Aug. 27	2065	699	48	1211
Hent, Reuben W., San Francisco, Cal. Roller-bearing	408,237	Aug. 6	57	13	48	689
Hent, Reuben W., San Francisco, Cal. Roller-bearing	411,500	Sept. 24	2058	545	48	1689
Henthorn, John T., Providence, R. I. Roof-covering	408,304	Aug. 6	147	37	48	708
Hentschel, Augustin, Berlin, Germany. Apparatus for removing snow and cleaning roadways	410,895	Sept. 10	1174	316	48	1503
Hepburn, Duncan D., London, and E. Gardner, Cornbrook, Manchester, England. Dental chair	406,349	July 2	457	127 128	48	92
Herder, Rudolph H., Chicago, Ill. Vinegar generator and filter	406,905	July 16	1331	348	48	276
Herkner, Henry F., Brooklyn, N. Y. Knit fabric for hose	408,324	Aug. 6	265	66	48	731
Herman, Adolph E., Terre Haute, Ind. Vehicle-axle	409,680	Aug. 27	2253	593	48	1133
Herman, Adolph E., Terre Haute, Ind. Carriage-axle nut	409,681	Aug. 27	2254	593	48	1133
Herman, Adolph E., Terre Haute, Ind.	407,526	July 23	2208	587	48	467
Herman, Emile J., assignor to Safety Hatch Door Company, St. Louis, Mo. Hatchway	408,713	Aug. 13	796	210	48	838
Herman, Emile J., assignor to Safety Hatch Door Company, St. Louis, Mo. Hatchway	410,278	Sept. 3	217	56, 57	48	1311
Herman, Emile J., assignor to Safety Hatch Door Company, St. Louis, Mo. Hatchway	406,280	July 2	351	96	48	71
Hermann, Edward A., Indianapolis, Ind. Weed-cutter	411,336	Sept. 17	1825	488	48	1640
Herndon, Thomas H., Birmingham, Ala. Weighing-scale						
Hero Fruit Jar Company. (See Perry, Frank W., assignor.)						
Herr, Austin, Washington, D. C. Separating garlic from wheat	408,618	Aug. 6	629	169 163 164	48	801
Herr, Austin, Washington, D. C. Machine for separating garlic from wheat	408,619	Aug. 6	632	164 165	48	801
Herr, Austin, Washington, D. C. Drying or evaporating apparatus	408,660	Aug. 6	700	181	48	813
Herr, Christian K. (See Lehman and Herr.)						
Herring, James E. (See Good, John, assignor.)	407,929	July 30	2871	747	48	589
Herrmann, Carl, New York, N. Y. Cracker-cutting die	406,733	July 9	1002	283	48	214
Hervey, Calvin M., Fulton, Ark. Sulky-plow	406,281	July 2	352	96, 97	48	71
Herzig, Edward, West Hoboken, assignor to R. and H. Simon, Union, N. J. Loom						
Hess, John. (See Vogl and Hess.)						
Hetherington, John M., Manchester, county of Lancaster, England. Apparatus for controlling the grinding of carding-engine flats	409,462	Aug. 20	1918	508	48	1065
Hetzel & Co., George C. (See Smith, Job, assignor.)	411,148	Sept. 17	1552	414	48	1588
Heuer, Edouard, Bienne, Switzerland. Repeating-watch	409,203	Aug. 20	1532	406	48	989
Heusner, Louis D., Chicago, Ill. Railway-ticket						
Hewes, William F., assignor of one-half to J. S. Cherry, Shirley, Mass. Drinking-fountain for fowls	406,095	July 2	103	30	48	22
Hey, George W., Syracuse, N. Y., assignor to International Postal Supply Company of New York. Stamp-canceling and postmarking machine	408,411	Aug. 6	315	80	48	740
Heysinger, Isaac W., Philadelphia, Pa. Hair curling and crimping device	411,028	Sept. 17	1361	366	48	1550
Heywood, John J. (See Seymour, Francis, assignor.)						
Heywood, John J., Fall River, Mass., assignor of one-half to F. Seymour, Paterson, N. J. Support for spinning-spindles	410,279	Sept. 3	218	57	48	1312
Hibbard, John O., Hartwell, Ohio. Mustache-protector	409,013	July 30	3000	782	48	614
Hicks, Hiram G., Worcester, Mass. Welding compound	407,650	July 23	2462	.....	48	506
Hicks, Horatio F., Ashland, Oreg. Oar	408,482	Aug. 6	417	109	48	761
Hicks, James R., Kansas City, Mo. Rotary harrow	407,658	July 23	2461	637	48	506
Hicks, Oliver H., Chicago, Ill., assignor to Morgan Envelope Company, Springfield, Mass. Manufacturing bundles of toilet-paper	411,193	Sept. 17	1616	429	48	1600
Hicks, William, assignor of one-half to E. B. Russel, Danville, Ky. Hemp-brake	409,102	Aug. 13	1379	364	48	951
Higgins, James, and J. Sullivan, Grand Rapids, Mich. Fence	406,645	July 9	940	254	48	192
Higham, Daniel, Philadelphia, Pa., assignor to Higham Patent Right Company, Rockland, Me. System of electrical distribution	407,204	July 16	1782	467	48	364
Higham, Daniel, Philadelphia, Pa., assignor to Higham Patent Right Company, Rockland, Me. Armature-core for dynamos	409,463	Aug. 20	1920	508	48	1066
Higham, Daniel, assignor to Higham Electric Motor Company, Philadelphia, Pa. Regulation of electric motors	407,293	July 16	1915	498	48	390
Higham Electric Motor Company. (See Higham, Daniel, assignor.)	409,682	Aug. 27	2255	593	48	1134
Higham, Howard H., Philadelphia, Pa. Child's wagon or cart	411,029	Sept. 17	1364	366	48	1551
Higham Patent Right Company. (See Higham, Daniel, assignor.)	407,527	July 23	2209	588	48	468
Hightree, Warren W., Hubbard, Ohio. Tension-machine for use in constructing fences	409,285	Aug. 20	1667	439	48	1015
Hilchen, Ernest H., Jersey City, N. J. Inhaler-mask	410,589	Sept. 10	669	184	48	1409
Hildreth, Henry L., Saginaw, Mich. Sawdust-burner						
Hill, Benjamin B., Philadelphia, Pa. Self-inking time and dating stamp						
Hill, Burwell O. (See Tigner and Hill.)						
Hill, Charles D., St. Louis, Mo., assignor of one-half to E. Black, Monmouth, Ill. Horse-detacher	410,097	Aug. 27	2871	753	48	1249
Hill, Charles F., Hasleton, Pa. System of protection from lightning	407,660	July 23	2463	637	48	508
Hill, Christian C., assignor to Hill Manufacturing Company, Chicago, Ill. Perforating-stamp	409,324	Aug. 20	1718	452	48	1025
Hill, Dan L., West Swanzey, N. H. Machine for making wire hinges	411,194	Sept. 17	1617	429 430 431	48	1600
Hill, Ebenezer, South Norwalk, Conn. Fluid-compressor	407,205	July 16	1783	467	48	365
Hill, Edward A., Chicago, Ill. Grain-door for cars	406,399	July 2	537	149	48	107
Hill, Edward A., Chicago, Ill. Suspender-buckle	411,101	Sept. 17	1486	394	48	1574
Hill, George J., assignor of two-thirds to J. T. Story, A. E. and F. G. Fox, Buffalo, N. Y. Combined dating and cutting machine	410,970	Sept. 10	1281	346	48	1525
Hill, George S. (See Hart and Hill.)						
Hill, Harry W., and L. J. Hirt, Cleveland, Ohio. Friction-clutch	409,586	Aug. 20	2092	551 552	48	1098

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Hill, James. (See Hattersley and Hill.)						
Hill, James W., assignor to Peoria Pulley and Wheel Company, Peoria, Ill. Mold for casting wheels	408,105	July 30	3132	820, 821	48	640
Hill, Julian P., Buffalo, N. Y. Barrel-truck	406,646	July 9	941	254	48	192
Hill, Louis A., Philadelphia, Pa. Bicycle	407,930	July 30	2872	748	48	590
Hill Manufacturing Company. (See Hill, Christian C., assignor.)						
Hill, Robert K., and H. C. Foote, Woodbury, N. J. Machine for crimping the ends of paper tubes	410,518	Sept. 3	586	157	48	1383
Hill, Warren S., Boston, Mass. Cut-out for electric circuits	406,906	July 16	1332	340	48	276
Hillman, Edwin B., Peoria, Ill. Mailing-box	409,039	Aug. 13	1279	337	48	932
Hillman, William, and J. F. Ripple, Schulenburg, Tex. Baling-press	411,501	Sept. 24	2061	545	48	1600
Hills Company. (See Marcil, Michel, assignor.)						
Hilton, Edward, Woonsocket, R. I. Spinning-mule	409,286	Aug. 20	1668	439	48	1015
Hind, John S., Oakland, Iowa. Combined harrow and cultivator	407,206	July 16	1785	468	48	365
Hine, Charles M., New York, N. Y., assignor of one-half to C. C. Emmons, Pittsburg, Pa. Plaiting attachment for sewing-machines	407,400	July 23	2089	540	48	431
Hinkley, George M., assignor of one-half to E. P. Allis & Company, Milwaukee, Wis. Sawmill dog	411,195	Sept. 17	1621	431	48	1601
Hinman, Charles E., and T. E. McCracken, assignors of one-half to W. O. Russell, McCook, Nebr., and A. J. Pate, Denver, Colo. Milk delivery and shipping can	407,207	July 16	1786	466	48	365
Hintze, Charles F., St. Louis, Mo. Folding-machine	410,098	Aug. 27	2874	754	48	1250
Hipperling, William, New York, N. Y., assignor to S. A. Ginna, Plainfield, N. J., and R. A. Donaldson, Brooklyn, N. Y. Can-soldering machine	406,647	July 9	942	255	48	193
Hires, Phillip, assignor to himself, W. C. Porter, and J. P. Davis, Clinton, Ky. Ironing-board	407,528	July 23	2270	588	48	468
Hirlimann, Charles J., Fort Lee, N. J. Galvanic battery	407,931	July 30	2873	748	48	590
Hirlimann, Charles J., Fort Lee, N. J. Combined electric motor and blower	411,030	Sept. 17	1365	366	48	1551
Hirschler, Sigmund S. (See Welti, Jacob, assignor.)						
Hirshfeld, Jacob, New York, N. Y., assignor of one-half to A. G. Spalding & Bros., Chicago, Ill., and New York, N. Y. Outing-belt	407,401	July 23	2090	540	48	431
Hirst, Charles, Woonsocket, R. I. Let-off mechanism for looms	410,835	Sept. 10	1084	291	48	1467
Hirt, Louis J. (See Hill and Hirt.)						
Hiss, William J., *et al.* (See Spofford, Charles, assignor.)						
Hitchcock Manufacturing Company. (See Donlon, Thomas, assignor.)						
Hitchcock, Thomas J., Portland, Mich. Hook for hay-carriers	408,620	Aug. 6	636	165	48	602
Hix, Oliver P., Rockland, Me. Coupling for hose or pipe	410,417	Sept. 3	439	116	48	1355
Hoadley, Miles S. (See Zeigler, William R., assignor.)						
Hoadley, Silvester, Gosport, Ind. Price-calculating device	407,825	July 30	2711	703	48	560
Hobbs, Armenia W., administratrix. (See Gordon and Hobbs.)						
Hobbs, Horatio. (See Gordon and Hobbs.)						
Hobbs, Robert S. (See Allen, Harry W., assignor.)						
Hobron, Charles B., Boerne, Tex. Axle-box	410,590	Sept. 10	690	185	48	1410
Hobson, Arthur E., assignor of one-half to I. J. Steane & Co., Hartford, Conn. Die for forming flat or hollow ware	410,280	Sept. 3	219	57	48	1312
Hobson, Artaur E., assignor of one-half to I. J. Steane & Co., Hartford, Conn. Die for forming flat or hollow ware	410,281	Sept. 3	220	58	48	1312
Hodge, John D., Kearney, N. J. Pipe-wrench	411,502	Sept. 24	2063	546	48	1600
Hodges, Addison S., Chelsea, Mass. Apparatus for molding sash-weights, &c.	411,441	Sept. 24	1981	525, 526	48	1674
Hodgins, John T., assignor of five-ninths to S. G. Hodgins and W. Stromberg, St. Louis, Mo. Cable-grip device	408,263	July 30	3316	866	48	671
Hodgins, Samuel G., *et al.* (See Hodgins, John T., assignor.)						
Hodgson, John G. (See Norton and Hodgson.)						
Hodgson, John G., assignor to E. Norton, Maywood, and O. W. Norton, Chicago, Ill. Soldering-machine	408,238	Aug. 6	60	13	48	690
Hodgson, John G., and E. Norton, Maywood, assignors to said E. Norton and O. W. Norton, Chicago, Ill. Machine for hemming can-caps with sheet-solder rings	408,317	Aug. 6	165	41, 42	48	711
Hodgson, Samuel, Medway, Mass., assignor to himself and F. E. Anderson, Orange, N. J. Scouring and washing machine	410,519	Sept. 3	587	157, 158	48	1383
Hodnett, William C., Douglasville, Ga. Vehicle-wheel	407,779	July 30	2635	662	48	546
Hoefer, Frederick W., Freeport, Ill. Curry-comb	410,971	Sept. 10	1282	347	48	1526
Hoefer, Frederick W., assignor to Warner Manufacturing Company, Freeport, Ill. Door-spring	409,587	Aug. 20	2095	552	48	1098
Hoeffle, Fred. (See Jeffrey, Harry, assignor.)						
Hoelljes, Henry, New York, N. Y. Operating gas-engines	408,483	Aug. 6	418	109, 110	48	762
Hoelscher, Frank P., Newport, Ky. Combined violin-support and garment-protector	409,842	Aug. 27	2496	652	48	1176
Hoenig, M. J., *et al.* (See Ripson, John D., assignor.)						
Hoffman, Andrew E., Fort Wayne, Ind. Feed mechanism for saw-mill carriages	409,464	Aug. 20	1921	509	48	1066
Hoffman, Henry, Jr., assignor to Norwalk Lock Company, South Norwalk, Conn. Door-latch handle	408,974	Aug. 13	1182	312	48	914
Hoffman, John G. (See Birdsall, Samuel, assignor.)						
Hoffman, Lina M., Philadelphia, Pa. Invalid-chair	410,591	Sept. 10	691	185	48	1410
Hoffmann, Constantin, Elsfelt, Saxe-Meiningen, and L. Ebert, Scheibe, Schwarzburg-Rudolstadt, Germany. Means for boiling, cooling, &c., beer	411,337	Sept. 17	1827	488	48	1640
Hoffmann, Rudolf, Zurich, assignor to Maschinenfabrik Oerlikon, near Zurich, Switzerland. Commutator-brush for dynamo-electric machines or motors	410,896	Sept. 10	1175	316, 317	48	1504
Hoffmann, Rudolf, Zurich, assignor to Maschinenfabrik Oerlikon, near Zurich, Switzerland. Steam-engine governor	410,897	Sept. 10	1176	317	48	1504
Hogan, John J., New York, N. Y. Boiler	410,162	Sept. 3	39	10	48	1276
Hogan, John J., New York, N. Y. Coupling for radiator-sections	411,031	Sept. 17	1366	367	48	1551
Hogeboom, Levi S. (See Baker, Isaac E., assignor.)						
Hogue, Lovren E., Greenville, Pa. Injector for steam-boilers	408,714	Aug. 13	796	210	48	838
Hogue, Lovren E., Greenville, Pa. Injector	408,715	Aug. 13	797	210	48	838
Hoke, Quinton J., assignor to himself and J. R. Lindsay, Yorkville, S. C. Car-coupling	409,967	Aug. 27	2666	699, 700	48	1211
Holdroyd, George H. (See Clayton and Holdroyd.)						
Holdsworth, Samuel, Durham, England. Jacquard apparatus	411,338	Sept. 17	1829	489	48	1640
Holeman, Ashbel, Elwood, Nebr. Pump attachment	406,137	July 2	159	46	48	33
Holland, Franklin, New Britain, Conn. Micrometer-gage	410,163	Sept. 3	41	11	48	1276
Holland, Hugh. (See McClure and Holland.)						
Hollenbeck, Frank A., Syracuse, N. Y. Knob attachment	407,661	July 23	2464	636	48	506
Hollenbeck, William J., Cortland, N. Y. Wagon-jack	407,529	July 23	2271	588, 589	48	468

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Holler, John E., Huntersville, N. C. Plow	407,482	July 23	2213	571	48	436
Hollerith, Herman, New York, N. Y. Integrating apparatus	408,106	July 30	3135	821	48	641
Hollings & Co., R. (See Hollings, John C., assignor.)	407,393	July 23	2371	614	48	489
Hollings, John C., Boston, Mass. Electric fixture	410,689	Sept. 10	850	228	48	1441
Hollings, John C., Boston, Mass. Electric-light fixture.						
Hollings, John C., assignor to R. Hollings & Co., Boston, Mass. Shade for illuminating-burners	407,731	July 23	2555	661	48	525
Holm, Edward, M. Joranason, and E. Andersson, Chicago, Ill., assignors, by mesne assignments, to said Holm. Embossing device for laundry-work	410,551	Sept. 3	627	168	48	1391
Holman, Calvin J. (See Nickerson and Holman.)						
Holmes, Booth & Haydens. (See Limont, Alexander H., assignor.)	408,305	Aug. 6	148	37	48	708
Holmes, Charles A., Irving Park, Ill. Eraser-holder						
Holmes, Charles L. (See Holmes, William C., assignor.)						
Holmes, Joseph E., Washington, D. C., assignor to American Automatic Refrigerating Company, Richmond, Va. Apparatus for distilling anhydrous ammonia	410,244	Sept. 3	161	42, 43	48	1300
Holmes, T. J., *et al.* (See Kingwill, John F., assignor.)	406,90,	July 16	1334	349	48	276
Holmes, Watson M., Hoosick Falls, N. Y. Grain-binder	406,908	July 16	1336	349	48	277
Holmes, Watson M., Hoosick Falls, N. Y. Needle-arm for grain-binders	409,401	Aug. 20	1834	483	48	1047
Holmes, William, Ulster Park, N. Y. Attachment for lamp-burners						
Holmes, William C., assignor of one-half to C. L. Holmes, Waterbury, Conn. Electric pen-holder	409,968	Aug. 27	2669	700	48	1212
Holt, Benjamin, Stockton, Cal. Header and thrasher	408,412	Aug. 6	318	81	48	740
Holt, Benjamin, and J. Draper, Stockton, Cal. Traveling thrasher	408,413	Aug. 6	380	92	48	741
Holt, Benjamin F. (See Tamplin and Holt.)	409,465	Aug. 20	1923	509	48	1067
Holt, Noah W., assignor to Knickerbocker Company, Jackson, Mich. Dust-collector						
Holt, William G. (See Winsor, Holt, and Gilbert.)	406,282	July 2	353	97	48	72
Holthause, Emil, Brooklyn, N. Y. Feed-water heater and purifier	408,716	Aug. 13	798	211	48	838
Holton, Tyree L., Maysville, Ky. Invalid elevator and conveyer						
Holyoke Envelope Company. (See Ball, James, assignor.)						
Homan, William C., assignor to E. Miller & Company, Meriden, Conn. Suspension device for lamps	408,107	July 30	3138	821	48	641
Homan, William C., assignor to E. Miller & Company, Meriden, Conn. Argand lamp	408,306	Aug. 6	150	38	48	708
Homan, William C., assignor to E. Miller & Company, Meriden, Conn. Suspension device for lamps	408,975	Aug. 13	1183	312	48	914
Hone, Harry L., Lexington, Ky. Piano-action	409,325	Aug. 20	1790	452	48	1025
Honiss, William H. (See Lorenz and Honiss.)						
Hood, Alexander. (See Robertson, James C., assignor.)	411,594	Sept. 24	2805	586, 587	48	1720
Hooker, John J., Tideswell, Stockport, county of Derby, England. Car starter and brake						
Hooker, William C., Abingdon, Ill. Device for opening and closing swing-gates	409,909	Aug. 27	2670	700	48	1212
Hooven, Owens & Rentschler Company. (See Helvey, George H., assignor.)						
Hoover, Ellis A., West Milton, assignor of one-half to J. B. Fouts, Troy, Ohio. Automatic grain-weigher	409,396	Aug. 20	1721	453	48	1025
Hoover, Isaac W., Avery, Ohio. Potato screen and separator	406,096	July 2	103	30	48	23
Hoover, Reuben, Boone, Iowa. Combined step-ladder, ironing-board, and stand	406,734	July 9	1063	283	48	214
Hoover, William H., *et al.* (See Dellenbauch, Charles R., assignor.)	406,648	July 9	944	255	48	193
Hope, John, Jr., Providence, R. I. Latch						
Hope, John T. (See Hope, Luke J. and J. T.)	411,522	Sept. 24	2091	552	48	1696
Hope, Luke J. and J. T., Kansas City, Mo. Ventilating apparatus	407,208	July 16	1788	468	48	365
Hopkins, Benjamin G., assignor to H. Roberts, Hartford, Conn. Bed-frame						
Hopkins & Dickinson Manufacturing Company. (See Schade, John, assignor.)						
Hopkins, Edwin F., assignor of three fourths to T. H. Rowland and F. E. Bronson, Oberlin, Ohio. Signal-lantern	408,803	Aug. 13	926	247	48	864
Hopkins, Floyd, Belvidere, Ill. Gate	407,662	July 23	2465	638	48	506
Hopkins, Harvey L., assignor to Peristalt Machine Company, Chicago, Ill. Movement-cure apparatus	407,071	July 16	1562	411	48	321
Hopkins, James R., Somerville, Mass. Fireman's hat	407,209	July 16	1789	469	48	366
Hoppea, John J., Springfield, Ohio. Feed-water heater	406,512	July 9	733	201	48	154
Hopson, John, Jr., New London, Conn. Draft-regulator	406,138	July 2	160	47	48	33
Hopson, John, Jr., New London, Conn. Thermometer	406,139	July 2	162	47	48	34
Horn, Ferdinand, assignor of one-half to P. A. Effler and G. Lang, Columbus, Ohio. Stamp-canceling device	409,640	Aug. 20	2178	574	48	1113
Horne, J. W. (See Purington, Andrew B., assignor.)						
Horne, William L. (See Reams and Horne.)	406,283	July 2	355	97	48	72
Horner, Martin L., Astoria, Ill. Tongue-support						
Horner, Richard C. (See Hyde and Horner.)						
Horton, Charles H. (See Kirk and Horton.)	407,072	July 16	1564	411	48	321
Horton, William J., Halifax, Nova Scotia, Canada. Screen attachment for windows	407,009	July 16	1483	387	48	305
Horwits, Julius H., New York, N. Y. Cigar-box	407,594	July 23	2372	614	48	489
Hosea, William T., Magnolia, Ala. Adjustable cover-holding hinge for buckets, &c.						
Hostetter, Jacob. (See Nissley, Mumma, Hostetter, and Harris.)						
Hotchkiss, Edward, assignor to American Roll Paper Company, St. Louis, Mo. Roll-paper holder and cutter	408,621	Aug. 6	636	165	48	602
Hotchkiss Ordnance Company. (See Dudley, Dana, assignor.)						
Hotchkiss Ordnance Company. (See Koerner, Alfred C., assignor.)						
Hotz, Christoph. (See Conrad and Hotz.)	410,972	Sept. 10	1283	347	48	1526
Houck, Jacob, Anita, Iowa. Horseshoe-anvil	409,402	Aug. 20	1835	483	48	1047
Hough, John D., Lowville, N. Y. Seat-back for road-carts	411,032	Sept. 17	1369	367	48	1552
Houghton, Charles C., Worcester, Mass. Boot	409,356	Aug. 20	1767	465, 466	48	1034
House, Henry A. and H. A., Jr., Bridgeport, Conn. Leveling attachment for tripod-heads	410,099	Aug. 27	2876	754	48	1250
House, Hiram K., Norwalk, Ohio. Sewing-machine treadle	406,839	July 9	1231	326	48	247
House, James A., *et al.* (See Wenger, Julius, assignor.)						
House, Joseph L. Minneapolis, Minn. Axle-lubricator	410,100	Aug. 27	2876	755	48	1251
Houtz, Edward, Blunt, Dak. Ter., assignor of two-thirds to S. Rimer, Salesville, Ohio, and A. Brown, Blunt, Dak. Ter. Harvester attachment	410,418	Sept. 3	441	116	48	1355
Hovey, Charles F., Springfield, Mass. Gas and air mixer and governor						
Hovey, Theodore F. (See Locke, Warren E., assignor.)	410,101	Aug. 27	2877	755	48	1251
How, Woodbury S., Philadelphia, Pa. Toy	406,649	July 9	946	256	48	193
Howard, Ellis T., Chicago, Ill. Neckscarf						
Howard, Frank. (See Smith and Howard.)						
Howard, Henry G. M., and R. J. Healy, Kalamazoo, Mich. Two-wheeled vehicle	409,588	Aug. 20	2096	552	48	1099
Howard, Willie J., Mariposa, assignor of one-half to J. W. Farmer, San Francisco, Cal. Squirrel-poisoning machine	406,909	July 16	1337	350	48	277

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Howe, Hezekiah, Cortland, N. Y. Shipping-pail	408,108	July 30	3142	821	48	642
Howell, Jacob B., Veteran, N. Y. Whiffletree	410,520	Sept. 3	590	158	48	1384
Howell, Samuel E., Sheffield, county of York, England. Tube for boilers, &c	406,140	July 2	164	47	48	34
Howell, Silas J., assignor to American Ballot Box Association, Boston, Mass. Canceling ballots	408,022	Aug. 6	637	165	48	802
Howes, Alvin C., Middleborough, Mass. Fruit-gatherer	406,097	July 2	164	30	48	23
Howorth, James, Farnworth, county of Lancaster, England. Apparatus for cooling, warming, moistening, or saturating air	406,216	July 2	266	73	48	53
Hubbard, Charles F., Toronto, Ontario, Canada. Baking-oven	406,910	July 16	1338	{350 351}	48	277
Hubbard, Charles F., Toronto, Ontario, Canada. Cooking-oven	406,911	July 16	1340	351	48	278
Hubbard, Fredrick, Berlin, assignor of one-half to F. L. Hungerford, New Britain, Conn. Fishing-snood	408,347	Aug. 6	211	53	48	720
Hubbard, Moses G., Philadelphia, Pa. Car-truck	407,402	July 23	2001	541	48	431
Hubbard, Norman. (See Packard, James W., assignor.)						
Hubbard, Richard W., Ashtabula, Ohio. Corn-husking implement	409,788	Aug. 27	2419	633	48	1163
Huber, Joseph. (See Wolf, Max, assignor.)						
Huck, Francis E. (See McNeill, Charles D., assignor.)						
Huckabay, George W., Garfield, La. Wash-basin	407,663	July 23	2466	638	48	506
Huckabay, George W., Garfield, La. Saw-mill set-works	407,664	July 23	2467	638	48	507
Huckins, Daniel J., assignor of one-half to F. D. Brievogle, East Boston, Mass. Fork	406,735	July 9	1044	293	48	214
Hudler, Charles S., Hermitage, Mo. Gate	407,010	July 16	1484	387	48	305
Huebner, Louis, and R. Bunse, Schweidnitz, Germany. Electric lock	408,484	Aug. 6	423	111	48	762
Huestis, Fred. W., Newton, Mass. Receptacle for secondary batteries	411,124	Sept. 17	1523	407	48	1582
Huffman, William W., Houston, Ohio. Shock or bundle tyer	411,033	Sept. 17	1370	367	48	1552
Hughes, Alexander E., Washington, D. C., assignor to Hughes Cotton Harvester Company of Baltimore City. Cotton-harvester	409,040	Aug. 13	1279	{337 338}	48	933
Hughes, Charles H., *et al.* (See Morrison, Horatio B., assignor.)						
Hughes Cotton Harvester Company of Baltimore City. (See Hughes, Alexander E., assignor.)						
Hughes, Edmund, and B. F. Williams, Cookport, Pa. Fence-machine	406,912	July 16	1341	352	48	278
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Brake-beam	408,021	July 30	3011	785	48	616
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Truck for railway-carriages	408,022	July 30	3011	{785 786}	48	616
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company Chicago, Ill. Bolster-beam for cars	408,023	July 30	3012	786	48	617
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company, Chicago Ill. Truck-frame	408,024	July 30	3013	786	48	617
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company Chicago, Ill. Brake-beam	408,025	July 30	3014	787	48	617
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company Chicago, Ill. Smoke-box front door	408,026	July 30	3014	787	48	617
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Truck	408,027	July 30	3015	787	48	618
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Combined stake and pocket for cars	408,028	July 30	3016	788	48	618
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Pedestal for railway-cars	408,029	July 30	3016	788	48	618
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Truck-end plate	408,030	July 30	3017	788	48	618
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Pressed-steel truck	408,031	July 30	3017	789	48	618
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Center plate for railway-cars	408,032	July 30	3018	789	48	619
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Truck for rolling vehicles	408,033	July 30	3018	789	48	619
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Truck.	408,034	July 30	3019	790	48	619
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company Chicago, Ill. Pressed-steel truck	408,119	July 30	3171	829	48	646
Hughes, Edward W. M., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Truck	410,164	Sept. 3	42	11	48	1277
Hughes, William, Liverpool, county of Lancaster, England. Apparatus for scoring billiards	410,973	Sept. 10	1283	347	48	1526
Huguenin, Daniel E., assignor to Société L. Durand, Huguenin & Compagnie, Basle, Switzerland. Blue dye	411,149	Sept. 17	1556		48	1588
Huguley, George E., and J. T. Chambers, Jr., Barnesville, Ga. Cotton-chopping machine	411,102	Sept. 17	1467	395	48	1574
Huleti, Thaddeus W. (See Fickett, Albert, assignor.)						
Hull, Albert, West Winsted, Conn. Bating	411,034	Sept. 17	1371		48	1552
Hull, Hubert H., Jersey City, N. J. Polishing and waxing stand for sad-irons	411,523	Sept. 24	2004	538	48	1697
Hull, John S., Baltimore, Md. Soldering-iron heater	409,357	Aug. 20	1768	466	48	1034
Hull, John S., Baltimore, Md. Tinner's fire-pot	409,358	Aug. 20	1769	466	48	1034
Hull, John S., Baltimore, Md. Apparatus for burning hydrocarbon oils	411,103	Sept. 17	1488	393	48	1574
Hulme, Isaac, Yaquina, Oreg. Boiler	411,223	Sept. 17	1663	{444 445}	48	1610
Hulvei, Hans, Chicago, Ill. Snap-hook	411,442	Sept. 24	1983	526	48	1674
Humble, Stephen. (See King, John, assignor.)						
Humphreys, William P., San Francisco, Cal., assignor to C. Dodge, West Washington, D. C. Dredging-machine	410,759	Sept. 10	977	261	48	1462
Hungerford, F. L. (See Hubbard, Fredrick, assignor.)						
Hunt, Charles L., *et al.* (See Rossney, William C., assignor.)						
Hunt, Charles W., West New Brighton, assignor to C. W. Hunt Company, New York, N. Y. Valve-gear for steam-engines	410,709	Sept. 10	879	230	48	1446
Hunt Company, C. W. (See Hunt, Charles W., assignor.)						
Hunt, E. N. (See Nash, George W., assignor.)						
Hunt, Henry C., Newark, assignor of one-half to G. B. Adams, Irvington, N. J. Pocket-knife	407,863	July 30	2763	719	48	570
Hunt, Lewis E., Hiram, Ga. Car-coupling	407,073	July 16	1565	411	48	322
Hunt, Marshall E., assignor of one-half to H. P. Goodwin, Davenport, Iowa. Harrow	408,717	Aug. 13	799	211	48	639
Hunter & Comstock Arms Company. (See Comstock, Harry, assignor.)						
Hunter, George, Elgin, assignor to Elgin National Watch Company, Chicago, Ill. Watch-movement. (Reissue)	11,014	July 23	2607	672	48	536
Hunter, John W., Macon, Miss. Baling-press	406,046	July 2	34	10	48	9
Hunter, Joseph H., Pittsburg, Pa. Lighting system	407,210	July 16	1789	469	48	366
Huntington, Frank A., San Francisco, Cal. Vehicle	411,196	Sept. 17	1623	422	48	1602
Huntley, William H. (See Curtis and Huntley.)						
Huppmann, John P., assignor of one-half to K. A. Volk, Baltimore, Md. Oyster-opener	411,381	Sept. 17	1827	503	48	1651

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Hurd, Joseph A., *et al* (See Paine, George C., assignor.)	407,011	July 16	1485	{387 388}	48	305
Hurd, Lucius F., Lee, Mass. Holder for letter-files						
Huribut, Salmon W. (See Henshaw, Puterbaugh, Brower, and Huribut.)						
Hurrell, Henry. (See Hearn, George A., assignor.)						
Hurst, George, Canso, Nova Scotia, Canada, assignor of one-half to H. L. Forhan, Raymond, Me. Lobster-trap	411,748	Sept. 24	2125	642	48	1705
Hurst, James W., Hotchkiss, Colo. Car-brake	409,623	Aug. 27	2257	564	48	1134
Hussey, Charles A., New York, N. Y. Electric battery	406,168	July 2	201	56	48	41
Hussey, Charles A., New York, N. Y. Electric battery	406,169	July 2	202	56	48	41
Hussey, Levi, New York, N. Y. Air-heater	411,382	Sept. 17	1628	504	48	1652
Hutchins, George F., assignor to Knowles Loom Works, Worcester, Mass. Shedding mechanism for looms	410,734	Sept. 10	934	250	48	1453
Hutchins, George F., assignor to Knowles Loom Works, Worcester, Mass. Shuttle-box-locking device for looms	411,197	Sept. 17	1625	432	48	1602
Hutchinson, Alfred B., Brooklyn, and E. F. Actenreith, New York, assignors to Glen Cove Machine Company, (limited,) Brooklyn, N. Y. Planing-machine	406,563	July 9	832	{225 226}	48	172
Hyatt, John W., assignor to Newark Filtering Company, Newark, N. J. Filtration	409,970	Aug. 27	2671	701	48	1213
Hyde, Asa P., Oxford, N. Y. Guard for band-saws	407,211	July 16	1790	469	48	366
Hyde, Elwin R., and R. C. Horner, assignors to Springfield Glue and Emery Wheel Company, Springfield, Mass. Hanger for pulleys	407,954	July 30	2910	758	48	598
Hyde, John E. H. (See Stevens and Hyde.)	408,239	Aug. 6	61	14	48	690
Hydorn, George L., Lacona, N. Y. Trace-holder						
Hydraulic Elevator Company. (See Ongley, Charles E., assignor.)						
Hyland, David M., assignor of one-half to J. P. Barrett, Chicago, Ill. Underground conduit	411,595	Sept. 24	2208	{587 588}	48	1720
Hyman, David. (See Jones, Joshua W., assignor.)	411,443	Sept. 24	1984	{526 527}	48	1674
Hyman, David, assignor of one-half to J. W. Jones, Harrisburg, Pa. Globe-frame						
Hyndman, J. B. (See Parkinson, Thomas J., assignor.)	410,321	Sept. 3	293	76	48	1396
Hynes, Frank R., Rochester, N. Y. Belt-tightener	409,103	Aug. 13	1379	364	48	951
Hynes, Patrick W., Cedar Rapids, Iowa. Car-replacer	407,012	July 16	1487	388	48	306
Hynes, Thomas, Northbridge, Mass. Car-coupling						
Ide, Harry L. (See Johnson, Willis H., assignor.)	408,976	Aug. 13	1185	313	48	914
Iles, Henry J., assignor of one-half to E. A. Manville, Ansonia, Conn. Thill-coupling						
Ilgen, Paul C., assignor of one-half to P. E. Kürsten, Leipsic, Saxony, Germany. Testing device for counting mechanisms	407,932	July 30	2874	748	48	590
Immendorf, George H., Philadelphia, Pa. Grain-drier	409,287	Aug. 20	1669	{439 440}	48	1015
Ingersoll, Jonathan E. (See Nichols, Frederick W., assignor.)						
Ingersoll-Sergeant Rock Drill Company. (See Sergeant, Henry C., assignor.)						
Innis, Robert. (See Barber, Richard H., assignor.)	408,465	Aug. 6	424	111	48	763
Insinger, Alfred, Philadelphia, Pa. Dobby and Jacquard machine for looms						
International Boiler Company. (See Stirling, Allan, assignor.)						
International Fastening Company. (See Kraetzer, Edwin J., assignor.)						
International Gas and Fuel Company. (See Wright, Whiter B., assignor.)						
International Postal Supply Company of New York. (See Hey, George W., assignor.)						
Ionia Steam Hand Car Company. (See Morrissey and Doyle, assignors.) (Reissue.)	411,444	Sept. 24	1987	527	48	1675
Irmen, John M., Atlantic, Iowa. Micrometer-calipers	407,352	July 23	2008	{521 522 523}	48	416
Irish, Joseph, Bridgeport, Conn., assignor of two-thirds to J. McVickar, New York, N. Y. Embroidering-machine						
Irwin, Charles H. (See Achor and Hamilton, assignors.)	410,690	Sept. 10	851	{228 229}	48	1441
Irwin, Daniel H., Kansas City, Kans. Signal for railway-crossings						
Irwin, James S. (See Brown, Archie, assignor.)	407,330	July 23	2273	589	48	468
Irwin, Thomas W., Allegheny, Pa. Machine for shaping sheet metal	409,403	Aug. 20	1836	484	48	1047
Irwin, William W., Silver Lake, Oreg. Floor-jack						
Ish, James C. (See Coulter, George A., assignor.)						
Isley, Gideon, Jersey City, N. J., assignor to E. Terry, Brooklyn, and L. Wormser, New York, N. Y. Opera-glass holder	406,217	July 2	967	74	48	53
Ivers & Pond Piano Company. (See Ivers, William H., assignor.)						
Ivers, William H., Dedham, assignor to Ivers & Pond Piano Company, Boston, Mass. Touch-regulating device for musical instruments	406,913	July 16	1343	352	48	279
Ivey, Ibelle, Thomson, Ga. Land-marker	409,971	Aug. 27	2673	701	48	1213
Jackson, Christopher W. (See Whitehouse, Benjamin T., assignor.)						
Jackson & Co., William H. (See Peck, Homer P., assignor.)	411,722	Sept. 24	2390	634	48	1750
Jackson, George B., and S. P. Tasker, Birmingham, Conn. Bit-stock	409,288	Aug. 20	1670	440	48	1016
Jackson, George W., Philadelphia, Pa. Tap and bushing for barrels						
Jackson, Samuel P., assignor to H. Laughlin, East Liverpool, Ohio. Mold or outside ring for pottery	406,350	July 2	400	128	48	92
Jackson, Thaddeus A., New York, N. Y. Stone-sawing machine	410,419	Sept. 3	442	{116 117}	48	1356
Jackson, Thomas J., Matfield, Kans. Bosom-board	409,684	Aug. 27	2258	594	48	1134
Jackson, William B., Philadelphia, Pa. Music-leaf turner	408,977	Aug. 13	1186	313	48	914
Jacob, Alfred P., Philadelphia, Pa. Gas-burner	406,584	July 9	833	226	48	172
Jacobs, Arthur L., Hartford, Conn., assignor to Tilton Manufacturing Company, Portland, Me. Printing mechanism for type-writing machines	409,369	Aug. 20	1671	440	48	1016
Jacobs, Ernest E., Arcola, Ill. Sill-plate for railway-cars	409,404	Aug. 20	1837	484	48	1048
Jacobs, Gabriel A. (See Maloney and Robertson, assignors.)	410,165	Sept. 3	43	11	48	1277
Jacobs, John H., Marquette, Mich. Quarrying stone						
Jacobson, Andrew. (See Casper and Jacobson.)	409,589	Aug. 20	2097	553	48	1099
Jacobson, Christian F., San Francisco, Cal. Dry-ore concentrator						
Jacoby, Cornelia M., assignor of two-thirds to F. Tombridge and J. J. Saltz, St. Louis, Mo. Chair-rocker	406,400	July 2	538	150	48	107
Jaeger, Christian, New York, N. Y. Album	407,074	July 16	1567	412	48	322
Jaeger, Gustav L., New York, N. Y. Machine for applying fastening-strips to boxes	406,736	July 9	1065	{283 284 285}	48	214
Jaeger, Gustav L., New York, N. Y. Printing	410,521	Sept. 3	590	158	48	1384
Jaeger, Gustav L., New York, N. Y. Box-staying machine	410,522	Sept. 3	592	159	48	1384
Jagielky, Louis, New York, N. Y. Ornamenting gold surfaces	407,953	July 30	2910	758	48	598
James, David B., San Francisco, Cal. Miner's candlestick	410,166	Sept. 3	44	11	48	1277

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
James, John Y. (See Peter and James.)						
James, Thomas, Braddock, Pa. Furnace-tongs	409,843	Aug. 27	2497	{652 653}	48	1176
Jameson, James M., Los Angeles, Cal. Burning brick	410,345	Sept. 3	164	43	48	1300
Jamison, Joseph L. (See Taylor, Sharman, and Jamison.)						
Jaqua, Ernest P., Neosho, Mo. Baling-press	410,102	Aug. 27	2679	755	48	1251
Jaques, Francis M., New London, Conn. Cough-syrup	408,486	Aug. 6	426	.....	48	763
Jaquith, Gilman, Sailor Springs, Ill., assignor to G. Draper & Sons, Hopedale, Mass. Support for spinning-spindles	410,974	Sept. 10	1285	348	48	1527
Jardine, Andrew B., *et al.* (See Jardine, John and P., assignors.)						
Jardine, James, *et al.* (See Jardine, John and P., assignors.)						
Jardine, John and P., assignors to A. B., J., and P. Jardine, Hespeler, Ontario, Canada. Pipe-expander	410,282	Sept. 3	222	58	48	1313
Jardine, Peter. (See Jardine, John and P.)						
Jardine, Peter, *et al.* (See Jardine, John and P., assignors.)						
Jarecki Manufacturing Company. (See Leighton, Thomas R., assignor.)						
Jarecki Manufacturing Company. (See Williams, James C., assignor.)						
Jarrell, Edwin, Harper, Kans. Vehicle-spring	411,286	Sept. 17	1750	468	48	1627
Jauch, Joseph, assignor to Bradley & Hubbard Manufacturing Company, Meriden, Conn. Air-distributer for Argand lamps	409,466	Aug. 20	1924	509	48	1067
Jay, Orson W. (See Harris, Lafayette, assignor.)						
Jeffery, Thomas B., Ravenswood, Ill. Velocipede	406,445	July 9	608	172	48	131
Jeffery, Thomas B., Ravenswood, Ill. Velocipede	408,014	July 30	3000	{782 783}	48	614
Jeffery, Thomas B., Ravenswood, Ill. Velocipede	411,035	Sept. 17	1372	368	48	1552
Jeffery, Thomas B., Chicago, Ill. Velocipede-saddle	408,718	Aug. 13	801	211	48	839
Jeffrey, Harry, Ludlow, Ky., assignor of one-half to F. Hoeffle, Meridian, Miss. Device for preparing tubes for welding	409,641	Aug. 20	2179	574	48	1113
Jeffreys, Lemuel A. (See Williams, Henry B., assignor.)						
Jeglum, Holver O., and S. H. Leikvold, Waterville, Iowa. Adjustable fire-back	406,401	July 2	539	150	48	107
Jehle, John, St. Paul, Minn. Combined type-table and galley-rack	407,403	July 23	2093	541	48	432
Jencks, William H., Clinton, Iowa. Decoy	410,523	Sept. 3	593	159	48	1385
Jenkins, Charles, Boston, Mass. Automatic air-valve	409,685	Aug. 27	2259	594	48	1134
Jenkins, Charles E., Janesville, Wis. Nut-lock	409,204	Aug. 20	1534	406	48	989
Jenkins, James, Harrisburg, Pa. Ore-separator	407,531	July 23	2274	589	48	469
Jenkins, McGuire & Co. (See Jenkins, Simeon T., assignor.)						
Jenkins, Simeon T., assignor to Jenkins, McGuire & Co., Baltimore, Md. Car	407,212	July 16	1701	409	48	366
Jenkins, Stephen, New York, N. Y. Hair-spring stud for watches	409,789	Aug. 27	2420	633	48	1163
Jenkins, William D. (See Rigney, John T., assignor.)						
Jenkinson, Richard C., Newark, N. J. Catch for bags, satchels, &c.	411,445	Sept. 24	1967	527	48	1675
Jenkinson, Richard C., Newark, N. J. Spring-catch for bags, satchels, &c.	411,446	Sept. 24	1969	527	48	1675
Jenne, Charles H., assignor of one-half to N. S. Braden, Indianapolis, Ind. Station or street indicator	406,170	July 2	204	56, 57	48	41
Jenney, Charles D., Indianapolis, Ind., assignor to Thomson-Houston Electric Company, of Connecticut. Brush-holder for dynamo-electric machines	410,670	Sept. 10	818	219	48	1434
Jenney Electric Company. (See Adams, John S., assignor.)						
Jenney, Joseph R., Mattapoisett, Mass. Cranberry-picker	408,414	Aug. 6	323	83	48	741
Jennings, Byron, San José, Cal. Conduit electric railway	409,104	Aug. 13	1380	364	48	951
Jennings, Byron, assignor to C. W. Breyfogle and F. L. Voorhies, San José, Cal. Pruning-shears and fruit-picker	406,524	July 9	735	206	48	158
Jennings, Sidney, Stangate, county of Surrey, England. Device or bush for fixing the trunnions of basins used in tip-up lavatories, &c.	410,795	Sept. 10	1036	277	48	1476
Jensen, Hans P., New Hartford, Iowa. Hame-tug	407,013	July 16	1488	388	48	366
Jericka, Adolf G., Gottlieben, and A. Eggimann, Ermatingen, Switzerland. Fining beer, &c.	411,723	Sept. 24	2391	.....	48	1759
Jerome, Charles C., Chicago, Ill. Washer for vehicle-axles	409,290	Aug. 27	2421	633	48	1164
Jerome, Charles C., Chicago, Ill. Rod-packing	409,791	Aug. 27	2421	634	48	1164
Jessen, Henry. (See Jessen, John and H.)						
Jessen, John and H., Santa Ana, Cal. Mold for artificial-stone fences	408,623	Aug. 6	638	166	48	802
Jesson, John B., Camden, N. J., and J. K. Weed, assignors of one-third to L. E. Ladd, Philadelphia, Pa. Machine for slotting umbrella-sticks	410,975	Sept. 10	1286	348	48	1527
Jewell, Ira H., *et al.* (See Jewell, Omar H., assignor.)						
Jewell, John A., assignor of one-half to G. B. Starkweather, Washington, D. C. Brake-block	407,075	July 16	1567	412	48	322
Jewell, Major R., assignor to Office Specialty Manufacturing Company, Rochester, N. Y. File-box	408,978	Aug. 13	1187	313	48	915
Jewell, Major R., assignor to Office Specialty Manufacturing Company, Rochester, N. Y. File-box	408,979	Aug. 13	1189	314	48	915
Jewell, Omar H., assignor to W. M., and I. H. Jewell, Chicago, Ill. Strainer for suction pipes of pumps	408,467	Aug. 6	426	112	48	763
Jewell, William M., *et al.* (See Jewell, Omar H., assignor.)						
Jewett, Luther K., Boston, Mass. Bolster for car-trucks	409,686	Aug. 27	2260	594	48	1134
Jinkins, Thomas W., assignor of one-half to C. F. Davis, Sherman, Tex. Fence-wire tightener	410,283	Sept. 3	222	56	48	1313
Johansson, Carl A., assignor to Aktiebolaget Extraktor, Stockholm, Sweden. Centrifugal butter-extractor	406,171	July 2	205	57	48	42
Johns, Henry W., Jr., New York, N. Y. Insulated electric wire	406,284	July 2	357	97	48	72
Johns, Henry W., New York, N. Y. Manufacturing asbestus sheets	408,838	Aug. 13	974	.....	48	874
Johnson, Alfred E., assignor of one-half to M. M. Cohn, Carson City, Nev. Telegraph-key	411,198	Sept. 17	1626	433	48	1602
Johnson, Charles W., Holyoke, Mass. Three-way valve	406,141	July 2	165	47	48	34
Johnson Company. (See Colley, Frederick, assignor.)						
Johnson Company. (See O'Connell, Patrick, assignor.)						
Johnson Company. (See Wettergreen, John B., assignor.)						
Johnson, Daniel, Kansas City, Mo. Lawn-mower attachment	410,836	Sept. 10	1066	291	48	1487
Johnson, Daniel W., Philadelphia, Pa. Sealing-disk for jars, &c.	408,177	July 30	3245	847	48	600
Johnson, David G., Trenton, N. J. Merry-go-round	409,972	Aug. 27	2674	701	48	1213
Johnson, E. E. (See Ball, John, assignor.)						
Johnson, Edward C., Macon, Ga. Steam-pump	406,098	July 2	105	31, 32	48	23
Johnson, Edward C., Atlanta, Ga. Steam-pump	406,099	July 2	109	32	48	23
Johnson, Edward D., Flagstaff, Ariz. Ter. Molding-plane	409,405	Aug. 20	1838	484	48	1044
Johnson, Edward E. (See Ball, John, assignor.)						
Johnson, Ferdinand, New London, Pa. Water-motor	407,213	July 16	1794	470	48	366
Johnson, Ferdinand, New London, Pa. Device for propelling and ventilating ships	407,214	July 16	1796	470	48	367

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Johnson, George, Battersea, county of Surrey, England. Vehicle wheel and axle	408,240	Aug. 6	62	14	48	691
Johnson, George, St. John's Hill, Battersea, county of Surrey, England. Steadying device for vehicle-bodies	411,036	Sept. 17	1374	368	48	1553
Johnson, George F., Aurora, Ill. Stem winding and setting watch	406,513	July 9	736	202	48	154
Johnson, George W., assignor of one-half to W. B. Jones, Chicago, Ill. Heeling-machine	411,524	Sept. 24	2095	553	48	1697
Johnson, Gottfried, Chicago, Ill. Tricycle	408,624	Aug. 6	640	166	48	803
Johnson, Harley M., Chicago, Ill. Car axle-box	408,980	Aug. 13	1042	276	48	887
Johnson, Henry, Jersey City, N. J. Pipe-joint	408,719	Aug. 13	803	212	48	839
Johnson, Iver. (See Hanson and Fyrberg, assignors.)						
Johnson, Iver. (See Torkelson, Reinhard T., assignor.)						
Johnson, James. (See Appleyard and Johnson.)						
Johnson, James. (See Graff and Johnson.)						
Johnson, James P., Girard, Ill. Vehicle-tongue	407,864	July 30	2767	719	48	579
Johnson, John, Brooklyn, N. Y. Racking-off apparatus for beer, &c.	409,973	Aug. 27	2675	701	48	1213
Johnson, John A., Madison, Wis. Bob-sled	407,595	July 23	2373	615	48	490
Johnson, John A., Madison, Wis. Metallic wheel	407,596	July 23	2375	615	48	490
Johnson, John A., and N. O. Starks, assignors to Fuller & Johnson Manufacturing Company, Madison, Wis. Horse-rake	407,215	July 16	1798	471	48	367
Johnson, John B., Newton, Ill. Subsoil-hoe	406,737	July 9	1069	285	48	215
Johnson, John B., Newton, Ill. Drier	409,350	Aug. 20	1770	{466 467}	48	1084
Johnson, Jonathan, and E. H. Packer, Lowell, Mass. Gas-heater	408,980	Aug. 13	1190	314	48	915
Johnson, Jonathan, and E. H. Packer, Lowell, Mass. Gas-heater	411,447	Sept. 24	1991	528	48	1676
Johnson, Josef R., Yonkers, N. Y. Armature	410,592	Sept. 10	992	265	48	1410
Johnson, Joseph J., Dayton, Ohio, assignor to McIntire, Slaght & Johnson. Hammock and seat support	410,796	Sept. 10	1037	277	48	1476
Johnson, Louis K., and A. A. Low, Brooklyn, assignors to Alden Type Machine Company, New York, N. Y. Type-distributing apparatus	409,748	Aug. 27	2248	617	48	1151
Johnson, Robert W., Elizabeth, N. J. Package of surgeon's silk or catgut	408,625	Aug. 6	649	167	48	803
Johnson Steel Street Rail Company. (See Colley, Frederick, assignor.)						
Johnson, Wesley, East End, Pa. Vehicle	410,524	Sept. 3	594	159	48	1385
Johnson, William, Penn Yan, N. Y. Grip	407,441	July 23	2159	557	48	445
Johnson, William H., assignor of one-half to M. O. Landon, Delhi, N. Y. Neck-yoke ring	406,914	July 16	1344	353	48	279
Johnson, Willis H., assignor of one-half to H. L. Ide, Springfield, Ill. Clutch	408,881	Aug. 13	1044	276	48	887
Johnston, Alexander. (See Woods, James, assignor.)						
Johnston, Allen, Ottumwa, Iowa. Marking cutlery-handles	407,826	July 30	2712	704	48	560
Johnston, Allen, Ottumwa, Iowa. Manufacture of cutlery	408,307	Aug. 6	151	38	48	709
Johnston Harvester Company. (See Cooley and Pridmore, assignors.)						
Johnston Harvester Company. (See Cooley, Pridmore, and Johnston, assignors.)						
Johnston Harvester Company. (See Pridmore, Edward, assignor.)						
Johnston, Homer M. (See Cooley, Pridmore, and Johnston.)						
Johnston, Joseph W., *et al.* (See Olin, Edgar W., assignor.)						
Johnston, William, Pittsburg, Pa. Crusher	410,641	Sept. 10	773	209	48	1426
Johnston, William S., Newtownards, county of Down, Ireland. Rotary brake	407,665	July 23	2469	639	48	507
Jones, Charles, Woodford, assignor to J. Childs, London, England. Apparatus for maintaining a supply of boiling water or steam, or both	409,360	Aug. 20	1771	467	48	1035
Jones, Charles, Woodford, assignor to J. Childs, London, England. Apparatus for making infusions or solutions	411,637	Sept. 17	1375	{368 369}	48	1553
Jones, Charles W., London, Ontario, Canada. Spindle-driving mechanism for spinning-machines	408,804	Aug. 13	927	247	48	865
Jones, Evan S., Sykeston, Dak. Ter. Log-conveyer	409,361	Aug. 20	1772	467	48	1035
Jones, Evan W., Portland, Oreg. Furnace	409,792	Aug. 27	2423	634	48	1164
Jones, Francis W., near Perryville, Md. Stop for railway-cars	408,626	Aug. 6	643	167	48	803
Jones, George R. G., Louisville, Ky. Door-check	406,840	July 9	1232	327	48	247
Jones, Gilbert E. (See Waldron and Jones.)						
Jones, Isabella B., New York, N. Y. Folding soap-box	407,076	July 16	1569	412	48	322
Jones, James E. (See Taylor and Povey, assignors.)						
Jones, James H., assignor to Emerson, Talcott & Company, Rockford, Ill. Mower-frame	406,738	July 9	1069	285	48	215
Jones, James O., Mamaroneck, N. Y. Anchor	406,285	July 2	358	98	48	72
Jones, James S., Crutchfield, Ky. Bag-holder or bill-file	406,047	July 2	35	10	48	10
Jones, John R., Philadelphia, Pa. Rolling axles	408,720	Aug. 13	804	212	48	839
Jones, John T., Iron Mountain, Mich. Sharpener for nail or spike blanks	408,348	Aug. 6	211	54	48	721
Jones, Joseph L., assignor of one-half to Foster Brothers, Utica, N. Y. Clothes-drier	406,100	July 2	111	33	48	24
Jones, Joshua W. (See Hyman, David, assignor.)						
Jones, Joshua W., assignor of one-half to D. Hyman, Harrisburg, Pa. Globe-frame for electric-arc lights	411,448	Sept. 24	1993	528	48	1676
Jones, Kearney L., Pittsburg, Ontario, Canada. Paper-hanging machine	410,642	Sept. 10	774	210	48	1427
Jones, Owen H., Hartford, Conn. Mowing-machine-knife grinder	411,245	Sept. 17	1692	452	48	1616
Jones, Robert H. (See Beeson, Thomas B., assignor.)						
Jones, Thomas B., Radnor, Ohio. Bagging apparatus	406,218	July 2	268	74	48	53
Jones, Walter F., Parish, assignor of one-half to C. W. Bardeen, Syracuse, N. Y. Blackboard-eraser	408,650	July 9	947	256	48	193
Jones, William B. (See Johnson, George W., assignor.)						
Jones, William B., administrator. (See Parker, George C.)						
Jones, William E., Trenton, Tenn. Machine for hulling peas	408,627	Aug. 6	644	167	48	803
Jones, Willis E., Alba, Mich. Steam-engine	410,525	Sept. 3	595	160	48	1385
Jönsson, Sven, Copenhagen, Denmark. Centrifugal cream-separator	411,638	Sept. 17	1377	369	48	1553
Jopp, Franz, Milwaukee, Wis. Teaseling-machine	409,975	Aug. 27	2677	702	48	1214
Joransson, Magnus. (See Holm, Joransson, and Andersson.)						
Jordan, Henry W., Hoboken, G. W. Mills, Elizabeth, N. J., and L. Jordan, New York, N. Y. Sand-box for railway-cars	408,178	July 30	3246	848	48	660
Jordan, Louis. (See Jordan, Mills, and Jordan.)						
Jordan, Peter J., Wakefield, Kans. Machine for cutting corn-fodder	407,827	July 30	2714	704	48	560
Jorres, Ralph W., Thomaston, Conn. Machine for forming ornamental spiral grooves	406,219	July 2	269	74, 75	48	54
Jorres, Ralph W., Thomaston, Conn. Shutter-worker	409,406	Aug. 20	1839	{484 485}	48	1048
Josepha, Gustavus, and E. I. O'Neill, Philadelphia, Pa. Umbrella-runner	407,216	July 16	1800	471	48	367
Jowitt, Richard, South Pittsburg, Tenn. Mold for casting sash-weights	407,732	July 23	2556	662	48	525
Joy, Thaddeus C., Titusville, Pa. Steam and hot-water radiator	410,691	Sept. 10	853	229	48	1441
Joyce, Frank L., Dayton, Ohio. Hydraulic jack	407,217	July 16	1801	471	48	368
Joyce, Thomas C., Berlin, Wis. Commode	409,590	Aug. 20	2099	553	48	1099

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Judd, James L. (See Wiard and Judd.)						
Judell, Moritz W. (See Singer and Judell.)						
Judson Pneumatic Railway Company. (See Judson, Whitcomb L., assignor.)						
Judson, Whitcomb L., assignor to Judson Pneumatic Railway Company, Minneapolis, Minn. Switch for pneumatic street-railways	406,915	July 16	1345	353	48	279
Judson, Whitcomb L., assignor to Judson Pneumatic Railway Company, Minneapolis, Minn. Pneumatic railway	409,205	Aug. 20	1535	406 407 489 490	48	989
Judy, William F., Indianapolis, Ind. Type-writing machine	411,339	Sept. 17	1831	490	48	1641
Juette, Amy E. (See Juette, Herman F., assignor.)						
Juette, Herman F., assignor, by mesne assignments, to A. E. Juette, Palmyra, Mo. Tree-protector	407,532	July 23	2276	590	48	469
Justi, Henry D. (See Welrich, George M., assignor.)						
Kable, Hermann A. L. C., and F. W. Kirchhoff, New Orleans, La. Umbrella or parasol	408,721	Aug. 13	805	212	48	840
Kahler, Clarence H., Wilmington, Ill. Cash indicator and register	409,206	Aug. 20	1540	407 408	48	990
Kaiser, Alexander, assignor to L. Marckwald, Berlin, Germany. Mechanism for converting motion	409,149	Aug. 13	1450	381 382	48	966
Kaiser, Alexander, assignor to L. Marckwald, Berlin, Germany. Time-piece escapement	409,150	Aug. 13	1451	382 383 384	48	966
Kaiser, Joseph. (See Elseman and Kaiser.)						
Kaldenberg, Frederick R., New York, N. Y. Combined tobacco and pipe box	406,286	July 2	358	98	48	73
Kallaher, Michael J., and J. Mulrooney, Memphis, Tenn. Extension box and key for street gas or water plugs	407,955	July 30	2913	750	48	599
Kallen, Peter, Fort Wayne, Ind. Churn	410,103	Aug. 27	2880	755	48	1251
Kamsler, Julius. (See Wobito, Christian, assignor.)						
Kaplinger, William. (See Nickerson and Holman, assignors.)						
Karrer, Benj. J. (See Meier, John B., assignor.)						
Karrmann, George, Unionville, assignor to Upson Nut Company, Farmington, Conn. Bench-plane	410,710	Sept. 10	880	230	48	1446
Kartowitz, Herman F., Donaldson, Minn. Vehicle-axle	406,101	July 2	112	33	48	24
Kaselowsky, Emil, K. Gramm, and G. Kürbitz, assignors to F. K. Glaser, Berlin, Germany. Valve-gear for multiple-cylinder engines	408,915	Aug. 13	1095	289	48	897
Kasten, Erich, Mannheim, Baden, Germany. Pneumatic malting apparatus	409,151	Aug. 13	1454	383 384	48	966
Kattentidt, Marcus, Hameln, Prussia, Germany. Machine for casting photographic dry-plates	410,898	Sept. 10	1178	311 314	48	1504
Katzenberg, Jacob, New York, N. Y. Garter	408,179	July 30	3248	846	48	661
Kauffman, Solomon, Union Grove, Ill. Wagon-brake	406,015	July 30	3004	765	48	615
Kay, William V., Chicago, Ill. Hame	406,351	July 2	402	129	48	92
Kay, William V., Houston, Tex. Press	409,976	Aug. 27	2678	709	48	1214
Keaney, James B., Milford, Mass. Sole-cutting die	410,284	Sept. 3	224	58	48	1313
Keast, William, Central City, Colo. Automatic breaking and coupling mechanism for railway-cars	410,322	Sept. 3	294	76 77 78	48	1326
Keator, Charles E., Brooklyn, N. Y. Machine for finishing hat-bodies	411,662	Sept. 24	2307	612	48	1741
Keator, Charles E., Brooklyn, N. Y. Finishing hat-bodies	411,663	Sept. 24	2309	612	48	1742
Keavy, Thomas E., assignor to Medina Engine Company, Medina, Ohio. Rotary engine	409,591	Aug. 20	2100	553	48	1099
Keen & Hagerty. (See Wagandt, Charles L., assignor.)						
Keene, Philip, Moline, Ill. Grate for refuse-burners	410,104	Aug. 27	2881	756	48	1251
Kehler, Amos, assignor of one-half to W. F. Maish, Warsaw, Ind. Split band-pulley	406,287	July 2	350	98	48	73
Kehm, William F., Mason City, Iowa. Grain-separator	407,956	July 30	2914	750	48	599
Keith, George. (See Mann and Keith.)						
Keith, James, London, England. Sectional water-boiler	409,041	Aug. 13	1281	338	48	933
Keith, James, London, England. Sectional water-boiler	409,042	Aug. 13	1283	339	48	933
Keith, James, London, England. Sectional water-boiler	409,043	Aug. 13	1285	339	48	933
Keith, James, London, England. Sectional water-boiler	406,352	July 2	402	129	48	93
Keith, Robert L., Brazil, Ind. Wagon-body lifter	409,793	Aug. 27	2424	635	48	1164
Kelcher, John C., New Richland, Minn. Self-loading cart						
Keller, Adam, New York, N. Y., assignor to himself and J. C. Downing, Newark, N. J. Clasp for necklaces	406,308	Aug. 6	151	39	48	709
Keller, Charles, and J. Conly, Springdale, Pa. Apparatus for cutting glue	407,065	July 30	2768	730	48	570
Keller, Franklin P., Savannah, assignor of one-half to S. F. Champlin, Chicago, Ill. Combined truck and carrier	407,218	July 16	1802	472	48	368
Keller, Henry, Sauk Centre, Minn. Motor	410,105	Aug. 27	2882	756	48	1252
Keller, Josiah O., and D. D. Weisell, Fort Wayne, Ind. Dental vulcanizer	411,449	Sept. 24	1994	522	48	1676
Keller, Louis, New York, N. Y. Sleeping-car	407,353	July 23	2092	533 534	48	418
Kellerman, Joseph N., Blair, Nebr. Horse-collar fastener	409,044	Aug. 13	1287	340	48	934
Kelley, Andrew. (See Womack, Alexander, assignor.)						
Kelley, Burwell J., Laurel, Miss. Saw-mill dog	411,563	Sept. 24	2063	546	48	1691
Kelley, Harry E., Niagara Falls, assignor to Oneida Community, (limited,) Community, N. Y. Animal-trap	409,467	Aug. 20	1925	510	48	1067
Kelley, Harry E., Niagara Falls, assignor to Oneida Community, (limited, Community, N. Y. Animal-trap	409,468	Aug. 20	1927	510	48	1067
Kelley, Harry E., Niagara Falls, assignor to Oneida Community, (limited,) Community, N. Y. Animal-trap	411,039	Sept. 17	1378	360	48	1554
Kelley, Harry E., Niagara Falls, assignor to Oneida Community, (limited,) Community, N. Y. Animal-trap	411,246	Sept. 17	1693	452	48	1616
Kelley, Harry E., Niagara Falls, assignor to Oneida Community, (limited,) Community, N. Y. Animal-trap	411,247	Sept. 17	1694	453	48	1616
Kelley, William. (See Kranwenkal and Kelley.)						
Kellogg, Benjamin, Peoria, Ill. Car-brake	410,760	Sept. 10	979	263	48	1463
Kellogg, Clement A., East Carmel, Ohio. Mowing-machine-knife grinder	406,739	July 9	1071	285	48	216
Kellogg, Fortunatus G., assignor to himself and F. Bell, Brainerd, Minn. Piston-rod packing	407,533	July 23	2277	590	48	469
Kellogg, Luke L., Leon, N. Y. Washing-machine	410,362	Sept. 3	351	93	48	1338
Kellogg Newspaper Company, A. N. (See Partridge, Charles S., assignor.)						
Kellogg, Norman S. (See Morehouse and Kellogg.)						
Kellogg, Warren T., Cohoes, N. Y. Top drawing-roll for spinning-machines	406,740	July 9	1073	286	48	216
Kelly, George B. (See Given and Kelly.)						
Kelly, John F., New York, N. Y., and P. H. Brangs, Newark, N. J., assignors to United States Electric Lighting Company, New York, N. Y. Regulator for electric motors	407,014	July 16	1489	388 389	48	306

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Kelly, Robert M., *et al.* (See Gathright, John R., assignor.)						
Kelly, Thomas (See Spear, Arthur, assignor.)						
Kelsey, Edwin, Calvert, Kans. Gate	408,628	Aug. 6	646	168	48	804
Kelsey, Frederick E., New York, and G. D. Woodworth, Brooklyn, N. Y. Machine for bunching cigars	407,733	July 23	2557	662	48	585
Kelsey, Henry O., and D. H. Gibson, West Salamanca, N. Y. Washing-machine	409,794	Aug. 27	2496	635	48	1165
Kemp, Clarence M. (See Reder, Louis, assignor.)						
Kemp, Howard R., Gloucester City, N. J., and H. E. Marsden, assignors of one-third to C. T. Schoen, Philadelphia, Pa. Joint for umbrella ribs and stretchers	408,722	Aug. 13	806	213	48	840
Kempster, Daniel E. (See Blount, Kempster, Currier, and Dore.)						
Kennedy, Burr A., and J. F. Steward, Chicago, Ill. Machine for folding and stitching the edges of canvas	410,246	Sept. 3	165	43, 44	48	1300
Kennedy, Charles W., *et al.* (See Groswith, Henry, assignor.)						
Kennedy, David, Jr., assignor of one-half to E. B. Lipton, Erie, Pa. Clay-grinding machine	407,219	July 16	1804	472	48	366
Kennedy, David, Jr., assignor of one-half to E. B. Lipton, Erie, Pa. Pipe-coupling	410,538	Sept. 3	628	168	48	1392
Kennedy, Guy L., assignor, by mesne assignments, to Merchants Roll Paper Supply Company, Chicago, Ill. Paper-roll holder and printer	410,593	Sept. 10	694	186	48	1410
Kennedy, Guy L., assignor, by mesne assignments, to Merchants Roll Paper Supply Company, Chicago, Ill. Roll wrapping-paper holder, printer, and cutter	410,594	Sept. 10	695	186	48	1410
Kennedy, Guy L., assignor, by mesne assignments, to Merchants Roll Paper Supply Company, Chicago, Ill. Printing-holder for roll wrapping-paper	410,595	Sept. 10	696	186	48	1411
Kennedy, Henry J., Bristol, Pa. Horse-detacher	410,797	Sept. 10	1037	278	48	1477
Kennedy, John, Birmingham, assignor to Osborne & Cheesman Company, Ansonia, Conn. Buckle	410,699	Sept. 10	1180	318	48	1504
Kennedy, John C., Detroit, Mich. Administering aeriform fluids	408,723	Aug. 13	807	213	48	840
Kennedy, John C., Detroit, Mich. Air-pump	409,244	Aug. 27	2499	633	48	1177
Kennedy, Julian, Latrobe, and H. Aiken, Homestead, Pa. Mill for rolling flanged beams	410,106	Aug. 27	2883	756 757	48	1252
Kennedy, Julian, Latrobe, and H. Aiken, Homestead, Pa. Rolling flanged beams	410,107	Aug. 27	2885	757 758	48	1252
Kennedy, Julian, and S. Forter, Latrobe, Pa. Mill appliance	410,108	Aug. 27	2887	758 759	48	1253
Kennedy, Oliver S. (See Rogers and Kennedy.)						
Kennedy, Patrick, Jr., assignor to himself and C. J. Diss, Brooklyn, N. Y. Pneumatic switch for pneumatic dispatch-tubes	406,446	July 9	612	172	48	132
Kennedy, Patrick, Jr., assignor to himself and C. J. Diss, Brooklyn, N. Y. Switch for pneumatic dispatch-tubes	406,447	July 9	613	173	48	132
Kennedy, Patrick J., Detroit, Mich. Radiator	406,741	July 9	1074	286	48	216
Kennedy, Rankin, Glasgow, county of Lanark, Scotland, assignor, by mesne assignments, to Westinghouse Electric Company, Pittsburg, Pa. Electrical distribution by secondary generators	407,294	July 16	1916	499	48	390
Kennedy, Rankin, Glasgow, county of Lanark, Scotland, assignor, by mesne assignments, to Westinghouse Electric Company, Pittsburg, Pa. System of electrical distribution. (Reissue)	11,031	Sept. 24	2400	651	48	1774
Kennedy, Robert C., New York, N. Y. Eyeglasses	408,109	July 30	3143	828	48	642
Kennett, John R., Syracuse, N. Y. Harness-D	408,661	Aug. 6	702	182	48	813
Kenney, Henry S., Philadelphia, Pa. Game apparatus	409,977	Aug. 27	2679	703	48	1214
Kent, Frederick G., Wadsworth, Ill. Curry-comb	410,167	Sept. 3	44	12	48	1277
Kent, George H., Cambridge, Mass. Pencil-clasp	411,450	Sept. 24	1996	529	48	1677
Kent, Nelson, and N. C. Vought, Savannah, N. Y. Bridgeway	408,805	Aug. 13	929	247	48	865
Kent, Robert, Brooklyn, N. Y. Grinding-mill	406,651	July 9	948	256 257	48	194
Kenyon, Jacob G., Port Kenyon, Cal. Vehicle-axle	409,362	Aug. 20	1773	467	48	1035
Kenyon, Lowell H., Allegheny, Pa. Cross-head	409,290	Aug. 20	1673	441	48	1016
Kern, Ferdinand, Newark, N. J., assignor of three-fourths to Heilner & Strauss, New York, N. Y. Multiple sewing-machine	411,104	Sept. 17	1490	395	48	1575
Kerner, Georg, Frankfort-on-the-Main, and J. Marx, Ulm-on-the-Danube, Würtemberg, Germany. Diaphragm for electrolytic apparatus	410,976	Sept. 10	1288	348 349	48	1527
Kerr, David B., Frankford, Pa. Woven fabric	411,040	Sept. 17	1378	370	48	1554
Kerr, Robert C. (See Forbes and Kerr.)	411,451	Sept. 24	1996	529	48	1677
Kershner, William A., Lincoln, Nebr. Listing-cultivator	406,142	July 2	166	48	48	34
Kershaw, Henry, and T. Sutcliffe, Rochdale, county of Lancaster, England. Passenger-register	407,015	July 16	1490	389	48	307
Kershaw, John. (See Worrall and Kershaw.)	408,724	Aug. 13	809	213	48	840
Kessler, August, New York, N. Y. Handle for canes, umbrellas, or parasols	407,933	July 30	2875	748 749	48	590
Ketcham, William, Gladewater, Tex. Dry-kiln furnace	407,759	July 23	2605	674	48	535
Ketchum, Landon, Saugatuck, Conn. Gas-stove	406,514	July 9	737	202	48	154
Key, James S., New York, N. Y. Counter for facilitating the transfer of money	410,977	Sept. 10	1290	349	48	1508
Keyes, Frank E., assignor of one-half to Amoskeag Indurated Fibre Ware Company, Peterborough, N. H. Turning-machine	410,566	Sept. 3	652	173	48	1396
Keyes, Frank E., Peterborough, assignor of one-half to P. C. Cheney Company, Manchester, N. H. Machine for molding pulp						
Keyless Lock Company. (See Craig, James D., assignor.)						
Keyling, Ludwig. (See Köhler, Franz S., assignor.)						
Keyser, John H., New York, N. Y. Gas-burner for lighting, cooking, and heating purposes						
Keystone Car Coupler Company. (See Lorraine, Madison J., assignor.)						
Keystone Watch Case Company. (See Ewing, James D., assignor.)						
Keystone Watch Case Company. (See Gaul, Harry R., assignor.)						
Keystone Watch Case Company.	409,687	Aug. 27	2961	595	48	1135
Kidd, William, Fishermen's Bay, Cal. Ox-yoke	409,592	Aug. 20	2102	554	48	1099
Kidder, Zenas B., Harp City, Kans. Animal-trap	411,664	Sept. 24	2310	613	48	1742
Kidney, Dan, and A. Verboort, De Pere, Wis. Ratchet-drill						
Kiefer, Charles F. (See Willing and Kiefer.)	408,385	Aug. 6	267	66, 67	48	731
Kiefer, Jacob, Bridgeport, Conn. Type-writer cabinet	408,349	Aug. 6	212	54	48	723
Kiefer, John, Cleveland, Ohio. Tire-heating furnace	406,220	July 2	270	75	48	54
Kieley, Timothy J., New York, N. Y. Automatic return steam-heating system	411,596	Sept. 24	2209	588	48	1721
Kienth, Hans, Milwaukee, Wis. Percolator	408,110	July 30	3144	822 823	48	642
Kilbourn, Edward E., New Brunswick, N. J. Circular-knitting machine	408,111	July 30	3150	823 824 825	48	643
Kilbourn, Edward E., New Brunswick, N. J. Circular-knitting machine	408,161	July 30	3262	851 852 853	48	668

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Kilbourn, Edward E., assignor to Kilbourn Knitting Machine Company, New Brunswick, N. J. Circular-knitting machine	408,180	July 30	3248	848, 849, 850, 851	48	661
Kilbourn Knitting Machine Company. (See Kilbourn, Edward E., assignor.)						
Kilmer Manufacturing Company. (See Kilmer, Melvin D., assignor.)						
Kilmer, Melvin D., New Windsor, assignor to Kilmer Manufacturing Company, Newburg, N. Y. Wire fence	406,221	July 2	271	75	48	54
Kimball, James L., and H. C. Wirt, Boston, Mass. Electric cut-out	407,077	July 16	1570	412	48	323
Kimball, Jesse. (See Parks and Kimball.)						
Kimball, John H., Montreal, Quebec, Canada. Railway stock-car	411,340	Sept. 17	1835	490	48	1641
Kimball, Madison C., assignor of one-half to C. L. Pattison, Elkland, Pa. Device for tying bags	410,978	Sept. 10	1293	349	48	1528
Kimble, Smith W., assignor of two-thirds to C. H. Abbott and S. McClanathan, Denver, Colo. Apparatus for atomizing solid substances	410,247	Sept. 3	167	44	48	1301
Kimmell, Theodore A., Kansas City, Mo. False bottom for boiling kettles, pans, &c	410,248	Sept. 3	169	44	48	1301
Kinder, Julius, Brooklyn, N. Y. Making solid-link chains	410,711	Sept. 10	881	236, 237, 238, 239	48	1446
Kinder, Julius, Brooklyn, N. Y. Apparatus for making solid-link chains	410,712	Sept. 10	887	239, 240, 241	48	1446
King, Charles, New London, Ohio. Bridge-gate	409,407	Aug. 20	1840	485	48	1048
King, Edward P. (See Dougans, Matthew, assignor.)						
King, Henry T., assignor of one-half to J. F. Antes, Sedalia, Mo. Fruit or ice cutter	410,900	Sept. 10	1181	318, 319	48	1504
King, Hezekiah O., Greenville, S. C. Distributer	406,449	July 9	615	173	48	133
King, J. W., *et al.* (See Dellenbaugh, Charles R., assignor.)						
King, John, deceased, Pinxton, county of Derby, England; J. A. Straley, Brooklyn, N.Y., ancillary executor, and assignor to S. Humble, Westminster, England. Detaching-hook for colliery-hoists	406,243	July 2	301	83	48	60
King, John M., Reading, Pa. Cigar-cutter	407,220	July 16	1505	473	48	308
King, John W., Kincaid, Kans. Truck	407,354	July 23	2024	524	48	419
King, Jose B., West Brighton, N. Y. Material for the treatment of walls, &c	406,585	July 9	835	.....	48	173
King, Joseph H. (See Dunn, Petticord, and King.)						
King, Molesworth, assignor of one-half to L. E. Lallin, Chicago, Ill. Blower	407,404	July 23	2095	541	48	432
King, Orlando S., and H. H. Sweney, McKeesport, Pa. Regulator and cut-off	411,041	Sept. 17	1380	370	48	1554
King, William S. (See Paine, Seth W., assignor.)						
Kingsland & Douglas Manufacturing Company. (See Reeder, William S., assignor.)						
Kingsland, Hugh A., Belleville, N. J. Car-starter	411,341	Sept. 17	1837	490, 491	48	1642
Kingsland, Joseph, Jr., Nutley, N. J. Paper-machine	407,534	July 23	2277	586	48	469
Kingsley, Brainard, assignor of one-half to J. H. Swisher, Danville, Ill. Washing-machine	409,105	Aug. 13	1382	361, 362	48	952
Kingsley, John F., Athens, Pa. Die for making eye-bars. (Reissue)	11,025	Aug. 20	2202	579	48	1117
Kingwill, John F., assignor to T. J. Holmes, C. W. Beck, and C. L. Wakefield, Chicago, Ill. Coin-controlled blow-beating machine	411,769	Sept. 24	2455	650, 651	48	1772
Kinne, Theodore Y. (See Watson, William C., assignor.)						
Kinnear, William R., Columbus, Ohio. Metallic ceiling	406,048	July 2	36	1	48	10
Kinnear, William R., Columbus, Ohio. Metallic ceiling	406,049	July 2	38	1	48	10
Kinney, Francis S., Pequanac, N. J. Cigarette-case	406,652	July 9	920	257	48	194
Kinney, Robert, Weatherly, Pa., assignor of one-half to G. Marsh and E. C. Hall, St. Anthony Park, Minn. Broom-supporter	409,152	Aug. 13	1458	393	48	967
Kineman, Frank E., Plainfield, N. J. Electric-lighting system	407,895	July 30	2815	733	48	580
Kineman, Frank E., New York, N. Y. Electric-arc lamp	411,287	Sept. 17	1751	469	48	1627
Kintz, Joseph, assignor to himself and Craighead & Kintz Company, Ballardvale, Mass. Mirror-stand	409,153	Aug. 13	1459	393	48	967
Kintz, Joseph, assignor to himself and Craighead & Kintz Company, Ballardvale, Mass. Revolving-stand lamp	409,154	Aug. 13	1459	393	48	967
Kinzer, Jacob, assignor, by mesne assignments, to Kinzer Manufacturing Company, Pittsburg, Pa. Mold for tubular articles	410,285	Sept. 3	224	59	48	1313
Kinzer Manufacturing Company. (See Kinzer, Jacob, assignor.)						
Kious, Jasper D., Oxford, Ind. Flat-iron heater	407,355	July 23	2025	524	48	419
Kipp, Henry D., assignor to L. C. Lull & Co., Kalamazoo, Mich. Cultivator	410,596	Sept. 10	697	186	48	1410
Kirby, John L., Cambridge, assignor to Dover Stamping Company, Boston, Mass. Egg-beater	406,653	July 9	951	257	48	194
Kirchhoff, Frederick W. (See Kahle and Kirchhoff.)						
Kirk, John P., Austin, Tex. Plow	408,241	Aug. 6	63	14	48	691
Kirk, Robert, assignor of one-half to O. J. Bailey, Hartwell, Ohio. Grindstone-frame	408,602	Aug. 6	703	192	48	814
Kirk, Thomas, and C. H. Horton, assignors to Bennett Brothers & Company, Wellington, Ohio. Brick-machine	409,593	Aug. 20	2103	534, 535	48	1100
Kirker, Milton B., McKee's Rocks, Pa. Valve-gear for steam-hammers	409,845	Aug. 27	2501	633	48	1177
Kirkham, Hulett & Chandler. (See Chandler, Samuel, Sr., S., Jr., and J., assignors.)						
Kirkland, Remer Y., Benton, Fla. Cotton-gin roller	407,016	July 16	1491	389	48	307
Kirkpatrick, Elliot C., *et al.* (See Gibbs, James E., assignor.)						
Kirkwood, Jay W., assignor to himself and E. Bartsch, Silver Mountain, Idaho Ter. Syringe	407,934	July 30	2876	749	48	590
Kirkwood, Thomas B., assignor of one-half to H. Stokes, Milton, Ind. Grain-adjuster	410,979	Sept. 10	1294	350	48	1528
Kisinger, William S., Bellevue, Ky., assignor to H. G. Stiebel, Cincinnati, Ohio. Water-sprinkler	409,978	Aug. 27	2660	703	48	1214
Kissell, Abraham S., deceased; M. A. Kissell, Chicago, Ill., administratrix. Electro-motor	411,150	Sept. 17	1557	415	48	1588
Kissell, Martin L., assignor to P. P. Mast & Company, Springfield, Ohio. Shovel-standard for cultivators	407,780	July 30	2636	683	48	547
Kissell, Mary A., administratrix. (See Kissell, Abraham S.)						
Kitsee, Isidor, Cincinnati, Ohio, assignor to M. Sulzberger, trustee, Philadelphia, Pa. Secondary battery	406,916	July 16	1347	353	48	280
Kitson, Arthur, Philadelphia, Pa. Apparatus for manufacturing non-luminous heating-gas	410,286	Sept. 3	225	59	48	1313
Kitson Machine Company. (See Davis and Perham, assignors.)						
Kitson Machine Company. (See Kitson, Richard, assignor.)						
Kitson, Richard, assignor to Kitson Machine Company, Lowell, Mass. Machine for opening cotton	406,650	July 2	40	12	48	11
Kitten, Florens, Ferdinand, Ind. Steam-boiler	409,594	Aug. 20	2106	535	48	1100
Kittredge, Anson O., Slate Hill, N. Y., assignor to J. A. and R. B. Miller, Chicago, Ill. Sheet-metal elbow	407,356	July 23	2027	525	48	419

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Klahr, William, Myerstown, Pa. Steam-washer	411,234	Sept. 17	1665	445	48	1611
Klander & Brother. (See Polster, Henry, assignor.)						
Klander, Charles L., Philadelphia, Pa. Dyeing or scouring machine	411,504	Sept. 24	2065	546	48	1691
Klee, Josef, New York, N. Y. Molded facing for walls	406,448	July 9	615	173	48	133
Kleemann, Fritz, Schöningen, Brunswick, Germany. Filter-press	407,221	July 16	1506	472, 473	48	309
Klehe, Hermann, Baden-Baden, Germany, assignor to J. Klehe, Mauch Chunk, Pa. Metallic roofing	407,535	July 23	2279	590	48	469
Klehe, Julius. (See Klehe, Hermann, assignor.)						
Klein, Henry E. (See Klein, Henry S. and H. E.)						
Klein, Henry S. and H. E., Milwaukee, Wis. Sash-fastener	410,837	Sept. 10	1068	291	48	1487
Klein, John M., Altoona, Pa. Lathe-carrier	407,666	July 23	2470	639	48	507
Klein, Philip H., Jr., assignor to Bergmann & Company, New York, N. Y. Incandescent electric-light fixture	411,452	Sept. 24	1997	529	48	1677
Kleinbeck, Carl H. (See Frye and Kleinbeck.)						
Kleinhans, Jacob, *et al.* (See Weidig, Henry P., assignor.)						
Kleitz, Oscar A., Sigourney, Iowa. Stump-puller	407,667	July 23	2471	640	48	508
Kleman, Henry, Pittsburg, Pa. Nut-lock	411,125	Sept. 17	1524	407	48	1583
Kleman, Henry, assignor of one-half to R. Morgan and J. Evans, Pittsburg, Pa. Shaft cooling-box	408,663	Aug. 6	704	182	48	814
Klepper, John D. (See Gray and Klepper.)						
Kline, John B., Sherman, Tex. Fence-building machine	410,363	Sept. 3	353	93, 94	48	1338
Kline, John P., Texarkana, Ark. Safety pole or shafts for vehicles	408,242	Aug. 6	64	15	48	691
Kline, Winfield S. (See Tinker, George L., assignor.)						
Kling, Isaac, Louisville, Ky. Car-coupling	409,045	Aug. 13	1287	340	48	934
Klingensmith, Joseph, Springfield, Ill. Center-rest for lathes	410,901	Sept. 10	1182	319	48	1505
Klipstein, James H., Buchanan, Va. Tire for wheels	406,742	July 9	1075	286	48	217
Kloeppinger, George F. C., Toledo, Ohio. Device for steaming food for stock	411,595	Sept. 24	2097	553	48	1697
Klotz, Joseph, and F. Kuschel, Pittston, Pa. Carriage-pole coupling	407,017	July 16	1491	389	48	307
Knapp, Augustus S., *et al.* (See Albert, Aaron B., assignor.)						
Knapp, William H., Galesburg, Mich. Grain-carrier	410,526	Sept. 3	597	160	48	1385
Knapp, William H., Galesburg, Mich. Elevator for harvesters	410,527	Sept. 3	597	160	48	1386
Knapp, William H., Galesburg, Mich. Elevator for harvesters	411,151	Sept. 17	1558	415	48	1589
Kneeland, Joseph C., Northampton, Mass. Paper-folding machine	407,465	July 23	2097	542	48	433
Kneen, William, Barrow-in-Furness, county of Lancaster, England. Latch						
Knickerbocker Company. (See Holt, Noah W., assignor.)						
Knickerbocker Company. (See Morse, Orville M., assignor.)						
Knickerbocker, Millis, Lawtey, Fla. Refrigerator	411,665	Sept. 24	2310	613	48	1742
Knight, Edgar, Saybrook, Conn., assignor to Stoddard Lock and Manufacturing Company, New York, N. Y. Hasp-lock	411,382	Sept. 17	1690	505	48	1632
Knight, Edwin L., Springfield, Mass. Water-closet valve. (Reissue)	11,029	Sept. 3	659	175	48	1396
Knight, Henry, Ryde, Isle of Wight, England. Coin-freed weighing-machine	407,483	July 23	2214	571, 572	48	456
Knight, Henry W., Columbus, Ohio. Rain-water cut-off	410,597	Sept. 10	696	187	48	1412
Knight, Octavius, administrator. (See Buchholz, Gustav A.)						
Knight, Walter H., New York, N. Y. Electric railway	406,743	July 9	1076	287	48	217
Knight, Walter H., New York, N. Y. Electric track-sweeper	406,917	July 16	1349	354	48	280
Knight, Walter H., New York, N. Y. Electric track-sweeper	410,364	Sept. 3	355	94	48	1339
Knight, Walter N., assignor of one-half to W. H. Smith, Boardman, Fla. Railway-switch	410,103	Aug. 27	2690	750	48	1253
Knisley, James P., Adrian, Mo. Washing-machine	410,902	Sept. 10	1183	319	48	1505
Knoble, John, Wilmot, Ohio. Washing-machine						
Knode, Oliver T. (See Clark, Alvin R., assignor.)						
Knode, Zachariah U. (See Young and Knode.)						
Knoll, Jonas L., Lebanon, Pa. Washing-machine	406,918	July 16	1350	354	48	280
Knorpp, Phillip, and G. A. Mayer, Stapleton, N. Y. Machine for making confectionery	407,935	July 30	2877	749	48	591
Knothe, Adolph C., *et al.* (See Mann, Charles A., assignor.)						
Knothe, Frank, *et al.* (See Mann, Charles A., assignor.)						
Knouff, James, and S. Pope, assignors of one-third to T. Beatty, Philadelphia, Pa. Heel-burnishing machine	410,838	Sept. 10	1069	292	48	1487
Knowles, Edward R., Brooklyn, N. Y. Electrical indicator	408,018	July 30	3007	784	48	616
Knowles, Edward R., Brooklyn, N. Y. Electrical indicator	409,207	Aug. 20	1543	408	48	991
Knowles, Edward R., Brooklyn, N. Y., assignor, by mesne assignments, to Mutual Electric Manufacturing Company, of New York. Electric meter	408,016	July 30	3004	783	48	615
Knowles, Edward R., Brooklyn, N. Y., assignor, by mesne assignments, to Mutual Electric Manufacturing Company, of New York. Electric meter	408,017	July 30	3006	784	48	615
Knowles, Edward R., Brooklyn, N. Y., assignor, by mesne assignments, to Mutual Electric Manufacturing Company, of New York. Alloy for secondary-battery plates	408,182	July 30	3070	854	48	663
Knowles, Hugh A., administrator. (See Knowles, Lewis G.)						
Knowles, John H., and J. K. Proctor, assignors to Philadelphia Textile Machine Company, Philadelphia, Pa. Drying-machine	410,110	Aug. 27	2692	759	48	1253
Knowles, Lewis G., deceased, New York, N. Y.; H. A. Knowles administrator. Vertically-swinging gate	411,505	Sept. 24	2068	547	48	1692
Knowles Loom Works. (See Hutchins, George F., assignor.)						
Knowles Loom Works. (See Loyd, Richard B., assignor.)						
Knowlton, Charles H., and B. F. Meyer, assignors to M. A. Furbish & Son Machine Company, Camden, N. J. Loom	407,597	July 23	2376	615, 616	48	490
Knox, Andrew, Pewamo, Mich. Tire-tightener	407,828	July 30	2713	704	48	560
Knox, Harvey, Rixford, Pa. Sucker-rod elevator	408,415	Aug. 6	324	83	48	741
Knox, Washington L., Terrell, Tex. Stalk cutter and mower	409,979	Aug. 27	2661	703	48	1214
Knüpfer, August, Dorndorf, near Dornburg, Germany. Drill-machine	410,692	Sept. 10	854	229, 230	48	1441
Knuth, Julius F. (See Smith, Knuth, Thompson, and Ewald.)						
Koehler, Albert, Freeport, Ill. Wagon-tongue attaching device	406,515	July 9	739	202	48	155
Koehler, Frank G., St. Louis, Mo. Tuyere-iron	410,903	Sept. 10	1184	319	48	1505
Koepke, William. (See Carter and Koepke.)						
Koerner, Alfred C., Paris, France, assignor, by mesne assignments, to Hotchkiss Ordnance Company, (limited,) London, England. Operating ordnance	407,018	July 16	1492	390	48	307
Koerner, Alfred C., Paris, France, assignor to Hotchkiss Ordnance Company, (limited,) London, England. Training mechanism for ordnance	408,882	Aug. 13	1046	276, 277	48	868
Koffler, Friedrich W., Unter St. Veit, near Vienna, assignor of one-half to A. Breden, Vienna, Austria-Hungary. Apparatus for coating metals with zinc or other metals	407,222	July 16	1509	473, 474	48	309
Köhler, Franz S., Smichow, near Prague, Austria-Hungary, assignor of one-half to L. Keyling, Berlin, Germany. Apparatus for producing shot	406,353	July 2	463	129, 130	48	93
Kohn, Herman, San Francisco, Cal. Double-acting bellows	409,960	Aug. 27	2662	703	48	1215
Kohnen & Co. (See Brab, August, assignor.)						
Kohns, Lazarus, New York, N. Y. Cup for receiving condensed milk or marmalade packages	406,841	July 9	1234	327	48	247

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Kohnz, Peter, Avon, Ohio. Hand force-pump	408,183	July 30	3270	854	48	663
Kolb, Louis. (See Norwood, George, assignor.)						
Kolle, Harold W., London, county of Surrey, England. Electric meter	411,042	Sept. 17	1382	370, 371	48	1545
Konrad, Nicholas. (See Peirce, Andrew J., assignor.)						
Kookogey Electric Company. (See Kookogey, William P., assignor.)						
Kookogey, William P., Brooklyn, N. Y. Means for measuring and regulating the charge and discharge of secondary batteries	408,112	July 30	3155	825	48	643
Kookogey, William P., Brooklyn, N. Y., assignor to Kookogey Electric Company. System for charging and discharging storage-batteries	406,354	July 2	464	130	48	93
Kookogey William P., Brooklyn, N. Y., assignor to Kookogey Electric Company. Shipping-case	407,957	July 30	2914	750	48	509
Kookogey, William P., Brooklyn, N. Y., assignor to Kookogey Electric Company. Making solution compounds for galvanic batteries	409,291	Aug. 20	1674	.....	48	1016
Kookogey, William P., Brooklyn, assignor to Kookogey Electric Company, New York, N. Y. Galvanic battery	407,781	July 30	2637	663	48	547
Kookogey, William P., Brooklyn, assignor to Kookogey Electric Company, New York, N. Y. Producing battery solutions	408,629	Aug. 6	647	.....	48	804
Kookogey, William P., Brooklyn, assignor to Kookogey Electric Company, New York, N. Y. Electrode for secondary batteries	409,106	Aug. 13	1383	363	48	952
Kookogey, William P., Brooklyn, assignor to Kookogey Electric Company, New York, N. Y. Apparatus for charging secondary batteries	410,111	Aug. 27	2694	700	48	1254
Koopman, Bearard W., Terre Haute, Ind. Last	410,528	Sept. 3	599	166	48	1386
Kopp, Henry S. (See Dixon and Kopp.)						
Kornblum, Joseph, J. A. Brashear, and P. Painter, Allegheny, Pa. Astigmatic eye-piece for optical instruments	408,725	Aug. 13	810	215	48	840
Köthner, Paul, Berlin, Germany. Atomizer	406,268	July 2	360	98	48	73
Koyl, Charles H., Philadelphia, Pa. Semaphore-signal for railways	410,509	Sept. 10	701	187	48	1411
Koyl, Charles H., Philadelphia, assignor to National Switch and Signal Company, Bethlehem, Pa. Semaphore-signal for railways	410,508	Sept. 10	699	187	48	1411
Kraetzer, Edwin J., Gloversville, N. Y., assignor to International Fastening Company, Portland, Me. Glove-fastener	407,295	July 16	1917	490	48	390
Kranich, Hellmuth, and J. Bach, New York, N. Y. Piano-action	411,246	Sept. 17	1605	453	48	1617
Kranwenkal, Ferdenand, and W. Kelley, Aurora, Ill. Railway-car heater	408,113	July 30	3158	825	48	643
Kranz, Fredrich, Sandusky, Ohio. Limekiln	407,406	July 23	2098	548	48	431
Kratz, Peter A. (See Lindenmayer, Jacob, assignor.)						
Krauser, John L., Leeper, Pa. Bucket or tub	407,019	July 16	1494	390	48	307
Krausse, Carl R., administrator. (See Krausse, Karl L.)						
Krausse, Karl L., deceased; C. R. Krausse, Philadelphia, Pa., administrator and assignor to Decker Machine Company, of Pennsylvania. Card-cylinder	411,105	Sept. 17	1483	394	48	1575
Krebs, George L. (See Solter, John, assignor.)						
Krekel, Henry G. (See Bauer, Robert A., assignor.)						
Kremmler, Richard. (See Schubert, Carl, assignor.)						
Krengel, Ernst E. (See Washburn and Krengel.)						
Krick, Irwin S., Conneautville, Pa. Device for catching animals	408,309	Aug. 6	158	39	48	709
Krick, William C., Brooklyn, N. Y. Floral letter or design	408,416	Aug. 6	325	83	48	742
Kriete, Henry W., assignor to L. F. Kriete, Charleston, S. C. Washing-machine	410,980	Sept. 10	1295	350	48	1523
Kriete, Laura F. (See Kriete, Henry W., assignor.)						
Kriner, Jeremiah, Carlisle Springs, Pa. Fruit-gatherer	406,744	July 9	1081	287	48	219
Krogmann, Charles H. E., Cincinnati, Ohio. Photographic lens	409,981	Aug. 27	2683	704	48	1215
Kron, Charles A., New York, N. Y. Holder for finger-rings	407,668	July 23	2473	640	48	508
Kroncke, Peter H., Santa Rosa, Cal. Counter-shaft and belt-tightener	408,417	Aug. 6	325	84	48	742
Krug & Son, G. (See Krug, Theodore F., assignor.)						
Krug, Theodore F., assignor to G. Krug & Son, Baltimore, Md. Machine for bending metal bars	410,112	Aug. 27	2697	700	48	1254
Krumbein, Charles J., Chicago, Ill. Artist's field and material case	409,982	Aug. 27	2683	704	48	1215
Kruse, Charles C. (See Boefer and Kruse.)						
Krutsch, Willis W., assignor of one-half to S. Van Buskirk, Fort Scott, Kans. Wood embossing, filling, and backing out machine	407,223	July 16	1813	473, 475	48	370
Kuehne, Oscar R., Topeka, Kans. Ventilator smoke-stack	410,113	Aug. 27	2698	703	48	1254
Kuess, Victor J., assignor to F. Bapterosses & Company, Paris, France. Ornamenting china, porcelain, &c	406,745	July 9	1083	288	48	219
Kugler, Ephraim R., Kingwood, N. J. Hay-binder	409,983	Aug. 27	2685	704	48	1215
Kuhl, Charles, Cincinnati, Ohio. Flagstone and cement pavement	406,289	July 2	361	99	48	73
Kuhn, David C., Albany, N. Y. Pin for hinges of stove-doors	411,152	Sept. 17	1562	415	48	1589
Kuhn, Williams, Clermont-Ferrand, France. Apparatus for the pasteurization of beer	410,287	Sept. 3	227	59, 60	48	1314
Kunkle, Allen A. (See Kunkle, Kenton C. and A. A.)						
Kunkle, Kenton C. and A. A., Lebanon, Ohio; said A. A. Kunkle assignor to said Kenton C. Kunkle. Knotting device for grain-binders	407,734	July 23	2559	662, 663	48	525
Künzler, Conrad, Toledo, Ohio. Car-coupling	407,020	July 16	1495	391	48	308
Kürbitz, Gustav. (See Kaselowski, Gramm, and Kürbitz.						
Kürsten, Paul E. (See Illgen, Paul C., assignor.)						
Kurtz, Harry H., assignor of one-half to J. H. Bair, Salisbury, Pa. Nut-lock	406,842	July 9	1235	317	48	247
Kuschel, Ferdinand. (See Klotz and Kuschel.)						
Kntsche, Oswald, Chicago, Ill., assignor to Chicago Exhaust and Blow Pipe Company, of Illinois. Dust-collector	407,598	July 23	2378	616	48	490
Kynoch, George, and H. A. Schlund, Birmingham, county of Warwick, England. Manufacturing projectiles	407,536	July 23	2290	591	48	470
L'Esperance, Raoul T., *et al.* (See Virnoche, Maxime, assignor.)						
La Casse, Henry, Syracuse, and S. Wile, Rochester, N. Y.; said La Casse assignor to said Wile. Machine for corking bottles and wiring the corks thereto	406,450	July 9	617	173, 174, 175, 176	48	133
La Dow Charles, Albany, N. Y. Harrow	411,199	Sept. 17	1627	433, 434	48	1603
La Roe, Albert E., Cincinnati, Ohio. Paper-perforating machine	410,643	Sept. 10	776	210	48	1427
La Rue, Henry. (See Aymond and La Rue.)						
Laasa, Emil, *et al.* (See Dewey, Mark W., assignor.)						
Lacavalerie, Sébastien, and C. Doriot, assignors to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental plugger	408,8-3	Aug. 13	1048	277	48	888
Lackawanna Mills. (See Bean, Charles E., assignor.)						
Laconia Car Company. (See Sargent, Arthur G., assignor.)						
Lacroix, Charles. (See Ostermann and Lacroix.)						
Lacroix, Léonide, Fils, Masères sur Salat, France. Machinery for cutting and winding stripe of paper for cigarettes or other purposes	409,408	Aug. 20	1840	485, 486	48	1049

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Lacy, Benjamin T. (See Behr, Hans C., assignor.)						
Ladd, Calvin P., Cambridge, Mass., and W. Muir, New York, N. Y., assignors, by mesne assignments, to National Loom Harness Company, of Maine. Heddle-frame for looms	407,078	July 16	1572	413	48	323
Ladd, Lafayette, Adrian, Mich. Machine for separating seed from pulp	408,243	Aug. 6	65	15	48	692
Ladd, Leonard E. (See Jesson and Weed, assignors.)						
Lafferty, John. (See Garcia, Leon P., assignor.)						
Lafferty, Samuel C., assignor to Western Electric Company, Chicago, Ill. Terminal plug attachment for flexible electric cords	411,153	Sept. 17	1563	416	48	1589
Laflin, Louis E. (See King, Molesworth, assignor.)						
Laidlaw, John, Glasgow, counties of Lanark and Renfrew, Scotland. Gearing for driving centrifugal machines	409,984	Aug. 27	2685	704, 705	48	1215
Laidlaw, William A., Cherokee, Kans. Wire-bale-tie machine	406,114	July 30	3159	826	48	644
Laidlaw, William A., Cherokee, Kans. Baling-press	406,115	July 30	3163	826, 827	48	644
Lairesse, Edouard, San Francisco, Cal. Safety device for elevators	406,843	July 9	1236	327	48	247
Lake Shore Manufacturing Company. (See Becker, Albert C., assignor.)						
Lakiu, Thomas W., administrator. (See Snowden, Charles S.)	410,365	Sept. 3	335	94, 95	48	1339
Lamar, James S., Valdosta, Ga. Hand-propeller for boats	410,520	Sept. 10	1092	292	48	1488
Lamb, Elijah, Camden, N. J. Elastic webbing	406,051	July 2	42	12	48	11
Lamb, William, Downey, Cal. Cooking-stove	406,355	July 2	466	130	48	94
Lamberton, Andrew, Coatbridge, county of Lanark, Scotland. Grinding-mill						
Lambinet, Edouard, Marseilles, France, assignor to J. G. Alison & Co., Birkenhead, England. Indicator of motion and speed of steam and like motors	406,222	July 2	272	75, 76	48	54
Lamson Consolidated Store Service Company. (See Goodfellow, John H., assignor.)						
Lamson, Warren H., Bridgeport, Conn. Pencil-sharpener	411,526	Sept. 24	2098	553	48	1697
Landis, Abraham B., Waynesborough, Pa. Screw-cutting head	409,806	Aug. 20	1544	408	48	991
Landis, Israel L., Lancaster, Pa. Pavement-curb	409,469	Aug. 20	1528	392	48	1067
Landmann, Gustavus, Hartford, Conn. Machine for making screws	407,537	July 22	2282	592, 593	48	470
Landon, Marcus O. (See Johnson, William H., assignor.)						
Lane, Edward. (See Agee and Lane.)	411,453	Sept. 24	1998	530	48	1677
Lane, John, Massillon, Ohio. Stop-action for reed-organs	407,357	July 23	2028	525	48	419
Lane, John G., Poughkeepsie, N. Y. Door-hanger track						
Lane, John H. (See Pratt and Lane.)						
Lane, Nathan C. (See Tebbs, Lane, and Coombe.)						
Lang, Fred N., assignor to National Automatic Device Company, Minneapolis, Minn. Automatic race-course	410,961	Sept. 10	1297	350	48	1529
Lang, Frederick C., Hoboken, N. J. Steam-steering apparatus	409,749	Aug. 27	2350	618	48	1151
Lang, George, *et al* (See Horn, Ferdinand, assignor.)						
Lang, William F., Allegheny, assignor to Union American Cigar Company, (limited,) Pittsburg, Pa. Packing cigars	410,553	Sept. 3	630	168	48	1392
Langau, Hugh, *et al.* (See Norton, James A., assignor.)						
Langbein, George, Omaha, Nebr. Carriage-spring	409,668	Aug. 27	2263	595	48	1135
Lange, Arthur, Dresden, Saxony, Germany. Apparatus for cleaning windows	411,154	Sept. 17	1563	416	48	1589
Lange, Diego, La Crosse, Wis. Carpet binding and fastener	406,451	July 9	998	176	48	136
Lange, Frederick G., St. Acheul-les-Amiens, France. Machine for combing wool, &c	410,429	Sept. 3	444	117, 118	48	1356
Lange, Lars G., Cannon River Falls, Minn. Injector	409,046	Aug. 13	1290	340	48	934
Langenhagen, Gustav, Leipsic, Saxony, Germany. Leather-polish	406,102	July 2	113	.....	48	24
Langer, Carl. (See Mond and Langer.)						
Langer, Carl, London, England. Apparatus for treating solids with gases	409,409	Aug. 20	1842	486, 487	48	1049
Langevin, Dominick L., *et al.* (See Dumais, Jean B. Z., assignor.)						
Langlais, Alonzo, assignor of one-half to A. Ramsay & Son, Montreal, Quebec, Canada. Glass-beveling machine	408,726	Aug. 13	812	214	48	841
Lannert, John A., Cleveland, Ohio. Electric registering apparatus	406,172	July 2	208	57, 58	48	42
Lansberg Brake Company. (See Lansberg, Frank, assignor.)						
Lansberg, Frank, St. Louis, Mo., assignor to Lansberg Brake Company, East St. Louis, Ill. Brake for locomotives	406,844	July 9	1237	328	48	247
Lanum, David. (See Blume and Armstrong, assignors.)						
Lapp, John, Honeoye Falls, N. Y. Boiler	411,249	Sept. 17	1696	453, 454	48	1617
Larkin, David, assignor to himself, J. B. and F. D. Larkin, Pittsburg, Pa. Making strap or hoop iron	409,047	Aug. 13	1291	341	48	935
Larkin, David, assignor to himself, J. B. and F. D. Larkin, Pittsburg, Pa. Rolling-mill for hoop or scrap iron	409,048	Aug. 13	1293	341	48	935
Larkin, Frank D., *et al.* (See Larkin, David, assignor.)						
Larkin, John B., *et al.* (See Larkin, David, assignor.)	408,418	Aug. 6	326	84	48	742
Larkin, John F., Manchester, N. H. Self-closing stop-cock	408,488	Aug. 6	427	.....	48	763
Larkin, John F., Manchester, N. H. Remedy for corns						
Larochelle, Amelie, Hoboken, N. J. Remedy for corns						
Larrabee, C. S., trustee. (See Fischer, Benno, assignor.)						
Larrabee, Henry L., and D. Putnam, Peabody, Mass. Manufacture of wigwam shoes or slippers	411,454	Sept. 24	1999	530	48	1677
Larrabee, Philip J. (See Loring, George A., assignor.)						
Larsen, Christian F., Copenhagen, Denmark. Centrifugal machine for creaming milk	406,746	July 9	1084	288	48	220
Lash, Horace W. (See Slocum and Lash.)						
Laskey, Lewis B., Dover, N. H. Ladder platform-bracket	407,079	July 16	1574	413	48	323
Latch, Arthur. (See Batchelor and Latch.)						
Latham, Ernest. (See Carey and Latham.)						
Lathe, James E. (See Van Horn and Lathe.)						
Latimer, John W., assignor to Milwaukee Harvester Company, Milwaukee, Wis. Raising and lowering device for harvesters	407,599	July 23	2379	616	48	491
Latimer, John W., assignor to Milwaukee Harvester Company, Milwaukee, Wis. Harvester	406,244	Aug. 6	66	15	48	692
Latimer, William, Wilmington, N. C. Pine fiber	409,608	Aug. 20	2128	.....	48	1104
Latimer, William G., assignor to Universal Automatic Cashier Company, Detroit, Mich. Cash register and indicator	409,107	Aug. 13	1385	365, 366	48	952
Lattan, Louis, and H. Tripp, Chicago, Ill. Cigar-perforator	407,358	July 23	2028	525	48	419
Lattan, Louis, H. Tripp, Chicago, and J. Faulkner, Austin, Ill. Water-closet	411,455	Sept. 24	2001	531	48	1678
Lanbe, Godfried, Huron, Dak. Ter. Straw-burning cook-stove	409,909	Aug. 20	1547	409	48	991
Laudenslager, Charles. (See Swanson, Charles A., assignor.)						
Lauferty, Joseph, New York, N. Y. Suspender-buckle	407,407	July 23	2099	542	48	433
Laughlin, Homer. (See Jackson, Samuel P., assignor.)						
Laughlin, Patrick, Mount Sterling, Ky. Filter	409,210	Aug. 20	1548	409	48	992

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Laundry, Andrew. (See Warren, Henry H., assignor.)						
Laureau, Louis G., and F. W. Gordon, assignors to Gordon, Strobel & Laureau, (limited,) Philadelphia, Pa. Steel-furnace	407,600	July 23	2380	617	48	491
Lauria, Warren, Kalamazoo, Mich. Two-wheeled vehicle	406,919	July 16	1351	354	48	280
Lautermilch, Frederick, assignor of one-half to E. Wilmas, Kirkwood, Mo. Split chuck for watch-makers' lathes	406,356	July 2	467	131	48	94
Lavigne, Joseph P., New Haven, Conn. Making cannon	406,438	July 9	639	176	48	136
Lawitzka, Julius, Peoria, Ill. Car-brake	408,916	Aug. 13	1096	269	48	698
Lawrence, Charles F., Lithium, and M. Rueckert, St. Mary's, Mo. Grain-drill	407,359	July 23	2029	525 526	48	490
Lawrence, Georgina M., London, England. Apparatus for treating animals by electricity	409,470	Aug. 20	1929	510 511	48	1068
Lawrence, Leroy P. (See Brennan, Nicholas, assignor.)						
Lawrence, Louis P., Passaic, N. J., assignor to Lawrence Railway Brake Company, New York, N. Y. Packing for pistons	408,981	Aug. 13	1191	314	48	916
Lawrence, Louis P., Passaic, N. J., assignor to Lawrence Railway Brake Company, New York, N. Y. Car-brake	408,982	Aug. 13	1192	314	48	916
Lawrence Railway Brake Company. (See Lawrence, Louis P., assignor.)						
Lawrence, Victor V., Waterford, Vt., assignor of one-half to I. F. Paul, Boston, Mass., and A. H. Carpenter, West Waterford, Vt. Rotary planing-machine	406,587	July 9	838	226	48	173
Lawson, Daniel T., Wellsville, Ohio. Steam-boiler	407,538	July 23	2299	593	48	474
Lawson Manufacturing Company. (See Lawson, Thomas W., assignor.)						
Lawson, P. V., and W. L. Field, Menasha, Wis. Pulley	407,866	July 30	2770	720	48	571
Lawson, Thomas W., Cambridge, assignor to Lawson Manufacturing Company, Boston, Mass. Manifold sales-book	406,845	July 9	1228	328	48	248
Layman, Hiram D., Little Rock, Ark. Car-coupling	408,906	Aug. 13	929	247 248	48	865
Layng, George, Worcester, Mass. Condensing mechanism for carding-engines	409,211	Aug. 20	1549	409 410	48	992
Layng, George, assignor of one-half to S. W. Goddard, Worcester, Mass. Apparatus for reversing rotary motion	406,586	July 9	836	226	48	173
Le Beau, John M. V., assignor of one-half to E. J. Gueringer, New Orleans, La. Corset-clasp	409,410	Aug. 20	1843	487	48	1050
Leach, Frank H. (See McCulla, Frank M., assignor.)						
Leach, Henry, Bristol, assignor to P. & F. Corbin, New Britain, Conn. Door-bell	410,713	Sept. 10	894	241	48	1447
Leach, Joseph B., Roberts, Ill. Stove-pipe attachment	408,884	Aug. 13	1049	277	48	698
Leach, William, Accrington, county of Lancaster, England. Mechanical stoker	410,735	Sept. 10	935	250	48	1454
Leadbeater, Frederick, Detroit, Mich. Oil-burning apparatus for steam-boilers	409,846	Aug. 27	2502	654	48	1177
Leas, James W., Angoria, Tex. Plow	411,342	Sept. 17	1838	491	48	1642
Leavitt, John E., Boston, Mass. Waistband for trousers	411,250	Sept. 17	1698	454	48	1617
Leblanc, Alfredo, Havana, Cuba. Sugar-cane mill	408,630	Aug. 6	648	168	48	804
Lechner, Francis M., Columbus, Ohio. Mining-machine and apparatus for operating the same	411,200	Sept. 17	1630	434	48	1603
Leckron, Benjamin E., assignor of one-half to A. Castanien, Glenford, Ohio. Spring-bed	411,343	Sept. 17	1840	491	48	1643
Ledig, Ernst, Chemnitz, Saxony, Germany, assignor of one-half to B. Terne, Philadelphia, Pa. Gas-washing apparatus	407,996	July 30	2879	750	48	591
Leduc, Ambrose. (See Leduc, Frank and A.)						
Leduc, Frank and A., Detroit, Mich. Window-screen	407,669	July 23	2473	640	48	508
Lee, Charles T., *et al.* (See McCarthy, Louis, assignor.)						
Lee, Charles T., assignor of one-half to Gould & Watson Company, Boston, Mass. Composition of matter	409,985	Aug. 27	2687	.....	48	1215
Lee, Charles T., assignor of one-half to Gould & Watson Company, Boston, Mass. Attaching composition of matter to metal	409,986	Aug. 27	2687	.....	48	1216
Lee, Charles T., Boston, Mass., assignor of one-half to Gould & Watson Company, of Massachusetts. Packing for steam-pipes	411,384	Sept. 17	1891	505	48	1652
Lee Company, J. Ellwood. (See Lee, John E., assignor.)						
Lee, John, Jr., Sterling, Ohio. Washing-machine	407,484	July 23	2217	572	48	457
Lee, John E., assignor to J. E. Lee Company, Conshohocken, Pa. Galvanic battery	406,223	July 2	276	76	48	55
Lee, John M., Douglas, Ark. Cart-seat	411,597	Sept. 24	2210	588	48	1721
Leeder, Frederick G., Dalmuir, county of Dumbarton, Scotland. Sand-molding machine	409,471	Aug. 20	1931	511	48	1068
Leeds-Barratt Supply Company. (See Doane, Azadore M., assignor.)						
Leedy, Byram B., West Independence, Ohio. Corn-harvester	409,987	Aug. 27	2688	705	48	1216
Lees, James, Lucknow, Ontario, Canada, assignor to G. Draper & Sons, Hopedale, Mass. Compound spinning-spindle	410,982	Sept. 10	1299	350	48	1329
Lefevre, E. L. (See Cahoon, William, Jr., assignor.)						
Leforestier, Alexandre, Philadelphia, Pa. Bottle-stopper fastening	408,419	Aug. 6	327	84	48	742
Leggett, Jasper N. (See Leggett, John and J. N.)						
Leggett, John and J. N., Hagerstown, Md. Family or invalid bedstead	408,350	Aug. 6	214	54	48	721
Lehman, Simon S., Marticville, and C. K. Herr, West Lampeter, Pa. Car-coupling	406,103	July 2	113	33	48	24
Leibe, Hugo, Baltimore, Md. Harness-stuffing machine	408,489	Aug. 6	428	112	48	763
Leighton, Arthur M., assignor of one-half to J. H. Livermore, Port Townsend, Wash. Ter. Adjustable last	407,080	July 16	1574	413	48	323
Leighton, Arthur M., assignor of one-half to J. H. Livermore, Port Townsend, Wash. Ter. Boot or shoe last	407,081	July 16	1576	413	48	324
Leighton, Thomas R., assignor to Jarecki Manufacturing Company, (limited,) Erie, Pa. Nipple-holding chuck	409,108	Aug. 13	1389	366	48	953
Leikvold, Sander H. (See Jeglum and Leikvold.)						
Leimke, Herman H. (See Rabich, William, assignor.)						
Leinard, Edgar A., and G. W. Sheets, Karle, Ohio. Branding-chute	406,920	July 16	1351	354	48	280
Leinbach, Felix W., *et al.* (See Lorenz, William A., assignor.)						
Leinbach, Felix W., *et al.* (See Lorenz and Claussen, assignors.)						
Leinbach, Felix W., *et al.* (See Lorenz and Honiss, assignors.)						
Leith, Alexander J., *et al.* (See Barnes, David L., assignor.)						
Leland, Edwin A., New York, assignor to L. Richardson, Brooklyn, N. Y. Elastic-faced type	407,670	July 23	2474	640	48	508
Leland, Edwin A., assignor to L. Richardson, Brooklyn, N. Y. Coupling for steam-pipes for railway-car-heating apparatus	407,671	July 23	2476	641	48	508
Leland, Edwin A., assignor to L. Richardson, Brooklyn, N. Y. Brake-hose coupling	408,116	July 30	3166	827	48	645
Leland, Hiram F., Lockport, N. Y. Steam or water trap	407,324	July 16	1815	475	48	371
Lemberger, Edward, Toledo, Ohio. Attachment for writing-desks	411,456	Sept. 24	2002	531	48	1678
Lemen, Austin H., assignor of one-half to W. W. Millard, Fenton, Mich. Buckle	411,457	Sept. 24	2003	532	48	1678
Lemmon, Frank. (See Carroll and Lemmon.)						
Lemonde, Louis, *et al.* (See Virnoche, Maxime, assignor.)						
Lemp, Hermann, Lynn, Mass. Lightning-arrester	409,689	Aug. 27	2964	585	48	1135
Lemp, Hermann, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Joint for carbon filaments	410,168	Sept. 3	45	12	48	1277
Lempert, Leon H. (See Lerman and Thomas, assignors.)						
Leng, Charles. (See Leng, Christian F. and C.)						
Leng, Christian F. and C., Pittsburg, Pa. Forming the necks of fruit-jars	411,043	Sept. 17	1383	371	48	1545
Lennier, Alexander W., Jamestown, N. Y. Fire-escape	411,106	Sept. 17	1494	396	48	1576
Lennon, Watson S., Hardinsburg, Ky. Wire-splicing tool	407,782	July 30	2038	693	48	547
Lentz, August, assignor to Lentz Iron Smelting Company, Chicago, Ill. Hydrocarbon-burner for furnaces	411,385	Sept. 17	1891	505	48	1652
Lentz Iron Smelting Company. (See Lentz, August, assignor.)						
Leonard, Charles L. (See Manning, Thomas J., assignor.)						
Leonhardt, John H. (See Leonhardt, William and J. H.)						
Leonhardt Wagon Manufacturing Company. (See Leonhardt, William and J. H., assignors.)						
Leonhardt, William and J. H., assignors to Leonhardt Wagon Manufacturing Company, Baltimore, Md. Lumber-wagon	409,411	Aug. 20	1845	487	48	1050
Leruth, Michel, assignor to himself, L. Sewell, and W. Blake, New Orleans, La. Decorticator for ramie, &c	409,647	Aug. 27	2503	654	48	1178
Leslie, Arthur M., Chicago, Ill. Sewing-machine	408,019	July 30	3008	784	48	616
Lester, George, *et al.* (See Day and Spofford, assignors.)						
Leuener, John E., Nashville, Tenn. Removable horseshoe-calk	408,983	Aug. 13	1193	315	48	916
Letot, Clement, Letot Station, Tex. Cotton and corn planter	410,904	Sept. 10	1185	320	48	1505
Leuchs, Georg, and F. Meiser, Nuremberg, Germany. Bottle or similar article	411,157	Sept. 17	1570	418	48	1591
Levarn, Daniel, New Haven, Vt. Potato-digger	409,472	Aug. 20	1932	511	48	1068
Levi, Ernst, *et al.* (See Clorer, Wilhelm, assignor.)						
Levy, Dreyfus & Co. (See Clements, Abner B., assignor.)						
Levy, Dreyfus & Co. (See Meyrowitz, Emil B., assignor.)						
Levy, Leon, Nashville, Tenn. Bottle-cooler	409,292	Aug. 20	1675	441	48	1016
Lewis, Abram W., Asbury Park, N. J. Cocoanut-parer	411,598	Sept. 24	2211	588 589	48	1721
Lewis, Douglas P., Cincinnati, Ohio. Attachment for open fire-places	410,169	Sept. 3	46	12	48	1277
Lewis, Ellsworth J., Warrenton, Ohio. Releasing attachment for automatic air-brakes	410,288	Sept. 3	230	60	48	1314
Lewis, Enoch P., Gastonia, N. C. Fertilizer-distributer	408,885	Aug. 13	1050	277 278	48	886
Lewis, Frank W., Brooklyn, N. Y. Detachable hat sweat and lining	411,155	Sept. 17	1564	416	48	1589
Lewis, G. W. (See Mellon, John S., assignor.)						
Lewis, George W., assignor of one-half to C. Brunner, La Salle, Ill. Steam-engine	408,490	Aug. 6	429	112 113	48	764
Lewis, George W., assignor of two-thirds to A. P. Grice and L. C. Godwin, Portsmouth, Va. Seal-lock	408,886	Aug. 13	1052	278	48	889
Lewis, James A., Hassall, near Sandbach, assignor to Powell Brothers & Whitaker, Wrexham, England. Potato-digger	409,293	Aug. 20	1676	441	48	1017
Lewis, John F. (See Mattes and Lewis.)						
Lewis, Robert B., assignor of two-thirds to H. V. Snead, New York, N. Y., and W. B. Fonda, Morristown, N. J. Attachment for mail-boxes	410,905	Sept. 10	1186	320	48	1506
Lewis, William, Sauk Centre, Minn. Draft-equalizer	408,727	Aug. 13	814	214	48	841
Lewis, William F., assignor to Plume & Atwood Manufacturing Company, Waterbury, Conn. Machine for forming screw-threads on articles of sheet metal	411,156	Sept. 17	1565	416 417	48	1590
Lewis, William J., Pittsburg, Pa. Rolling metal	409,049	Aug. 13	1205	343	48	935
Lewis, William J., Pittsburg, Pa. Rolled metal plate	409,050	Aug. 13	1206	342	48	935
Lewis, William W., Cheyenne, Wyo. Ter. Connecting-bar for riding-saddles	409,848	Aug. 27	2504	655	48	1178
Leyson, Sackville G., and E. Thomas, Rome, assignors of fifty-one one-hundredths to L. H. Lempert, Rochester, N. Y. Brick-machine	409,988	Aug. 27	2689	705 706	48	1216
Libbey, Hosea W., Boston, Mass. Car-wheel	406,104	July 2	115	31	48	24
Libbey, Hosea W., Boston, Mass. Car-wheel	406,105	July 2	116	34	48	25
Libbey, Hosea W., Boston, Mass. Railway-rail	411,344	Sept. 17	1841	492	48	1643
Libby, Charles L., assignor to E. P. Bullard, Bridgeport, Conn. Turret lathe	406,413	July 2	553	154 155 156	48	111
Liberty Manufacturing Company. (See Waldron and Jones, assignors.)						
Liddell, Mark J., Mount Pleasant, Mich. Pipe-damper	407,662	July 16	1577	414	48	324
Liddell, Robert, Blakeman, Kans. Roofing-tile	411,666	Sept. 24	2311	613	48	1742
Liedke, Edward L., Sandusky, Ohio. Check-punch	407,867	July 30	2772	720	48	571
Liedl, Joseph, Fergus Falls, Minn. Radiator	408,420	Aug. 6	328	84	48	742
Lighthall, John A., Syracuse, N. Y. Fertilizer	408,491	Aug. 6	431	113	48	764
Lighthipe, James A., Wilmington, Del., assignor to himself, G. W. Bratton, Philadelphia, Pa., and H. Nunez, New York, N. Y. Multiple-wire system of electrical distribution	407,485	July 23	2218	573	48	457
Lighthipe, James A., assignor to himself and G. W. Bratton, Philadelphia, Pa., and H. Nunez, New York, N. Y. Arc lamp	408,987	Aug. 13	1053	278	48	889
Lightwardt, Henry, Jr., and C. F. Bachler, Philadelphia, Pa. Bottle-stopper	410,421	Sept. 3	447	119	48	1356
Likes, William, Osceola, Iowa. Neck-yoke	411,458	Sept. 24	2004	532	48	1678
Lilley, Henry, assignor to Lilley & Hillsley, Philadelphia, Pa. Machine for making plumbers' hooks	408,184	July 30	3271	854	48	663
Lilley & Hillsley. (See Lilley, Henry, assignor.)						
Lilly, Francis G., Jamestown, N. Y. Petroleum-burner	408,245	Aug. 6	67	16	48	692
Limont, Alexander H., Waterbury, Conn., assignor to Holmes, Booth & Haydens, New York, N. Y. Tubing	408,728	Aug. 13	815	215	48	841
Limont, Alexander H., Waterbury, Conn., assignor to Holmes, Booth & Haydens, New York, N. Y. Making duplex tubing	408,729	Aug. 13	816	215	48	841
Lincoln, George E., New York, N. Y., assignor, by mesne assignments, of one-half to J. R. Conner, Brooklyn, N. Y. Galley	407,539	July 23	2300	593	48	474
Lindenmayer, Jacob, assignor of one-half to P. A. Kratz, Syracuse, N. Y. Stove-pipe fastener	408,020	July 30	3010	781	48	616
Lindley, Leonard, Nottingham, England. Machine for finishing lace or other fabrics	408,492	Aug. 6	432	113 114	48	764
Lindrum, Friederick, Chicago, Ill. Boiler-setting	406,357	July 2	469	131	48	94
Lindrum, Friederick, Chicago, Ill. Boiler-cleaner	406,358	July 2	470	132	48	94
Lindrum, Friederick, Chicago, Ill. Tube for steam-boilers	406,359	July 2	471	132	48	95
Lindsay, John R. (See Hoke, Quinton J., assignor.)						
Lindsey, William E., Arcata, Cal. Cartridge-shell	408,246	Aug. 6	67	16	48	692
Lindsley, William D., Hunkerville, Kans. Seeding attachment for plows	406,360	July 2	472	132	48	95
Lingle, John M., assignor of one-half to P. F. Brashear, Sedalia, Mo. Vehicle-hub	408,730	Aug. 13	817	215	48	842
Linsley, Florence, executrix. (See Linsley, Newton.)						
Linsley, Newton, deceased, Freeport, Ill.; F. Linsley executrix. Tool-handle	409,989	Aug. 27	2691	706	48	1216
Lipe, Charles E., Syracuse, N. Y., assignor to Hand Stitch Broom Sewing Machine Company, Pittsburg, Pa. Broom-corn-sizing machine	410,840	Sept. 10	1093	292	48	1468

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Lipe, Willard C., Syracuse, N. Y. Box-catch	406,173	July 2	212	58	48	42
Lippold, Henry, Jr., Corry, Pa. Corn-sheller	407,829	July 30	2716	703	48	561
Lippy, David, Mansfield, Ohio. Pipe-coupling	409,473	Aug. 20	1933	512	48	1068
Lipton, Erastus B. (See Kennedy, David, Jr., assignor.)						
Lister, George. (See Brining, Thomas, assignor.)						
Litchfield, Pliny T., Southbridge, Mass. Loom-shuttle	407,958	July 30	2915	700	48	599
Little, Addison M. (See Little, Orton C. and A. M.)						
Little, E. Knox, *et al.* (See Wray, Robert, assignor.)						
Little, George E. (See Little, William H., assignor.)						
Little, James R., assignor, by mesne assignments, to Quincy Metal Wheel Company, Quincy, Ill. Manufacture of metal wheels	406,747	July 9	1086	280	48	220
Little, James R., assignor to Quincy Metal Wheel Company, Quincy, Ill. Manufacturing metal wheels	409,474	Aug. 20	1934	513	48	1069
Little, James R., assignor to Quincy Metal Wheel Company, Quincy, Ill. Metal wheel	409,475	Aug. 20	1935	513	48	1069
Little, John E., Princeton, Ind. Gate	406,117	July 30	3168	820	48	645
Little, Orton C. and A. M.; said Orton C. Little assignor to D. T. H. MacKinnon, Menasha, Wis. Key-seat-cutting machine	406,525	July 9	756	200	48	158
Little, William F., Jonesborough, Ark. Churn	411,667	Sept. 24	2313	613	48	1743
Little, William H., Picture Rocks, Pa., assignor of one-half to G. E. Little, Washington, D. C. Clothes-drier	409,642	Aug. 20	2180	574	48	1113
Littlefield, Landan M., Valdosta, Ga. Churn-dasher	407,672	July 23	2477	641	48	509
Littman, Selig. (See Schneekloth, Hans A., assignor.)						
Lively, Louis P. (See Lively, Robert M. and L. P.)						
Lively, Robert M. and L. P., Canton, Tex. Gate	410,644	Sept. 10	777	210	48	1427
Livermore, James H. (See Leighton, Arthur M., assignor.)						
Livingston, Andrew W., and G. Wilcox, San Francisco, Cal. Soldering-machine	410,761	Sept. 10	980	265	48	1463
Livingston, Thomas P., *et al.* (See Phillips, Edwin G., assignor.)						
Livingstone, William, Jersey City, N. J. Sash-fastener	406,493	Aug. 6	437	115	48	765
Livingstone, William, Jersey City, assignor of one-half to J. Toler, trustee, Newark, N. J. Caster	411,747	Sept. 24	2496	643	48	1766
	407,021	July 16	1496	391	48	308
Lloyd, James C., Chicago, Ill. Planter	406,453	July 9	629	177	48	136
Lloyd, John U., Cincinnati, Ohio. Device for evaporating liquids	407,408	July 23	2100	{542 543	{48	433
Lloyd, Seth, West New Brighton, N. Y., assignor to Old Bangor Slate Company, Bethlehem, Pa. Machinery for grinding the edges of a series of slabs of slate, &c.						
Lobdell, Henry, Troy, N. Y. Water-power vessel-propelling mechanism	408,310	Aug. 6	154	39	48	709
Locke, Warren E., West Somerville, assignor of one-third to T. F. Hovey, Boston, Mass. Pie-turner	406,654	July 9	952	257	48	194
Lockwood, Frederick J., Bridgeport, Conn. Check-punch	409,294	Aug. 20	1677	422	48	1017
Lockwood, George E. (See Van Kannel and Lockwood.)						
Loe, Silver, assignor of one-half to M. Anderson, La Crosse, Wis. Car-coupling	407,296	July 16	1918	499	48	391
Loetscher, Christian, Dubuque, Iowa. Screen and storm door	409,750	Aug. 27	2352	619	48	1152
Loewer, Henry, and B. L. Blair, assignors of one-fourth to A. S. McNab, Rochester, N. Y. Sole-cutting machine	407,735	July 23	2561	653	48	526
	407,083	July 16	1578	404	48	324
Lofer, Solomon, Maitland, Mo. Hog-trap						
Löffler, Andrew. (See Ford, Edward C., assignor.)						
Lofts, Ezra, Cambridge, England. Stove	411,459	Sept. 24	2004	525	48	1679
Loftus, John, assignor of one-half to E. W. Smith, Albany, N. Y. Detachable coupler for connecting supply-pipes of steam-heating apparatus for railway-cars	409,109	Aug. 13	1390	356	48	953
Logan, John, Waltham, Mass. Apparatus for testing watch-balances and hair-springs	406,655	July 9	953	256	48	194
Logan, John F. (See Campbell, John W., assignor.)						
Logan, John H. (See Culmer, John W., assignor.)						
Logan, Thomas H., Lowell, Mass. Support for spinning-spindles	408,185	July 30	3272	854	48	663
Lohagen, John A., Milwaukee, Wis. Knockdown music-rack	406,921	July 16	1354	355	48	221
Lomont, Francis T., deceased; M. P. Lomont, Fort Wayne, Ind., administratrix. Road-scraper	410,249	Sept. 3	169	44.45	48	1301
Lomont, Mary P., administratrix. (See Lomont, Francis T.)						
Long & Allstatter Company. (See Allstatter, Robert, assignor.)						
Long, Benjamin, Boulder, Colo. Gun-sight	410,422	Sept. 3	448	119	48	1356
Long, Charles, Toronto, Ontario, Canada. Heating attachment for gas-burners	411,126	Sept. 17	1525	407	48	1583
Long, Charles R., Louisville, Ky. Spectacle-case	410,798	Sept. 10	1038	278	48	1477
Long, Henry C., and I. B. Walker, Salem, Mo. Combined hay rake and loader	408,494	Aug. 6	439	115	48	766
Long, William A. N., Boston, Mass. Carving-machine	407,736	July 23	2564	664	48	597
Longacre, Matthias R., Philadelphia, Pa. Cash register and indicator	406,748	July 9	1086	{289 290	{48	220
Longacre, Matthias R., Philadelphia, Pa. Cash register and indicator	406,749	July 9	1092	{290 291	{48	221
Loomis, Alvah, assignor of one-half to J. W. Brough, St. Albans, Vt. Piston-valve	410,906	Sept. 10	1187	321	48	1506
Loomis Electric Manufacturing Company. (See Loomis, Osborn P., assignor.)						
Loomis, Justin H., Vail's Gate, N. Y. Butter-cutter	411,509	Sept. 24	2213	569	48	1722
Loomis, Lysander N., Wauwatosa, Wis. Animal-trap	409,212	Aug. 20	1551	410	48	992
Loomis, Osborn P., Somerville, Mass., assignor to Loomis Electric Manufacturing Company, of New York. Commutator brush and holder	407,225	July 16	1816	475	48	371
Loomis, Osborn P., assignor to Loomis Electric Manufacturing Company, New York, N. Y. Regulation of coupled dynamos	410,170	Sept. 3	47	12	48	1278
	406,750	July 9	1096	291	48	222
Loppentien, Johan D., Pittsburg, Pa. Violin	408,118	July 30	3169	{828 829	{48	646
Lord, George E., Utica, N. Y. Chair	406,664	Aug. 6	765	192	48	814
Loree, James K., assignor of one-half to J. M. Bradley, Iosco, Mich. Buggy-boot	406,526	July 9	759	206	48	159
Lorenz, Wilhelm, Carlsruhe, Baden, Germany. Tubular lance	410,843	Sept. 10	1093	{295 296	{48	1489
Lorenz, William A., Hartford, Conn., assignor to F. W. Leinbach and C. A. Wolle, Bethlehem, Pa. Paper-bag machine						
Lorenz, William A., assignor of one-half to E. E. Clanssen, Hartford, Conn. Making paper bags	411,288	Sept. 17	1752	469	48	1628
Lorenz, William A., and E. E. Clanssen, Hartford, Conn., assignors to F. W. Leinbach and C. A. Wolle, Bethlehem, Pa. Paper-bag machine	410,841	Sept. 10	1094	{292 293 294	{48	1488
Lorenz, William A., and W. H. Honiss, Hartford, Conn., assignors to F. W Leinbach and C. A. Wolle, Bethlehem, Pa. Paper-bag machine	410,842	Sept. 10	1097	{294 295	{48	1488
Loretz, Arthur J. L., Brooklyn, N. Y. Water regulator and accumulator for house purposes	407,890	July 30	2718	705	48	561
Loreta, Arthur J. L., Brooklyn, N. Y. High-service pumping-engine	411,724	Sept. 24	2392	634	48	1759
Lorey, William, assignor of two-thirds to C Geta Philadelphia and F. S. Dickensbied, Hosensack, Pa. Vise	407,486	July 23	2219	573	48	457
Lorimer, John H., Philadelphia, Pa. Apparatus for treating textile fabrics	406,143	July 2	168	48	48	35
Loring, George A., assignor to P. J. Larrabee, Portland, Me. Bench-clamp	409,295	Aug. 20	1677	442	48	1017

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Lorraine, Madison J., St. Louis, Mo., assignor, by mesne assignments to Keystone Car Coupler Company, of Illinois. Car-coupling	411,289	Sept. 17	1753	469	48	1628
Loso, John H., assignor of one-half to W. S. Maxwell, Los Angeles, Cal. Combined wrench and oil-can	409,476	Aug. 20	1936	512	48	1069
Lottridge, William. (See Pettit and Lottridge.)						
Lotz, Friedrich, assignor to J. A. Amundson, New York, N. Y. Galvanic battery	406,656	July 9	955	258	48	195
Loud, Waldo A., Springfield, Mass. Lawn-mower	410,366	Sept. 3	358	95	48	1339
Lough, John A., Chetopa, Kans. Belt-gearing	410,367	Sept. 3	360	96	48	1340
Loughary, La Fayette W., Monmouth, Oreg. Gate	408,351	Aug. 6	215	55	48	721
Loughry, William A., Odessa, Nebr. Combined lister and drill	407,084	July 16	1579	414	48	324
Love, Harry H., Sacramento, Cal. Posting or copying guide for book-keepers	409,363	Aug. 20	1775	468	48	1036
Love, John C., Philadelphia, Pa. Contact-carrier for electric railways	408,994	Aug. 13	1194	315	48	916
Love, Joseph W., assignor of one-half to A. Beck, Baltimore, Md. Ash-sifter	406,224	July 2	277	77	48	55
Love, Matthew S. (See Moore and Love.)						
Lovejoy, Fred. E. (See Bachelder and Lovejoy.)						
Loveless, Charles B., Worthington, Minn. Chimney-cowl and ventilator	409,990	Aug. 27	2891	706	48	1216
Lovibond, Joseph W., Salisbury, county of Wilts, England. Kaleidoscope	407,937	July 30	2881	750	48	592
Low, Abbott A. (See Johnson and Low.)						
Low, Abbott A., Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Type-distributing apparatus	409,690	Aug. 27	2986	{595 596 597	{48	1135
Low, Hamilton F. (See Bacon and Low.)						
Low, Hamilton F., assignor to Triumph Self-Wringing Mop Company, Manchester, N. H. Mop-head	408,495	Aug. 6	443	116	48	766
Low, John G., Chelsea, Mass. Soda-fountain	408,868	Aug. 13	1055	278	48	990
Lowden, James J., Boston, Mass. Steam-pressure or damper regulator	408,869	Aug. 13	1057	279	48	990
Lowden, Leonidas C., Indianapolis, Ind. Wire-fence machine	409,477	Aug. 20	1937	513	48	1069
Lowe, Frank W., Boston, Mass. Gage-knife	409,849	Aug. 27	2505	655	48	1178
Lowe, James, Philadelphia, Pa. Spinning-mule	407,783	July 30	2939	{683 684	{48	547
Lowell, Charles H., trustee. (See Patterson, William D. C., assignor.)	409,213	Aug. 20	1552	410	48	992
Lowry, Charles A., Knoxville, Tenn. Paper-bag and twine holder	410,323	Sept. 3	300	78	48	1327
Loynd, Richard B., assignor of one-half to Knowles Loom Works, Worcester, Mass. Pile-fabric loom	407,400	July 23	2101	543	48	433
Lucas, Harry, Birmingham, county of Warwick, England. Lamp for velocipedes	407,601	July 23	2381	{617 618	{48	491
Lucas, William M., Uhrichsville, Ohio. Flour-bolt	410,171	Sept. 3	48	13	48	1278
Lucigen Light Company. (See Grimston, George S., assignor.)	408,478	Aug. 20	1938	513	48	1069
Luckenbach, Frederic A., New York, N. Y. Preventing the flouring of mercury						
Lucky, Simon K., Long Bottom, Ohio. Hay-fork	406,361	July 2	474	133	48	95
Ludington, Frank J. (See Pollard and Ludington.)	411,158	Sept. 17	1571	418	48	1591
Ludwig, Heinrich E., Berne, Switzerland. Pulley	409,110	Aug. 13	1391	{366 367	{48	953
Luebben, Melchior L., Sutton, Nebr. Hand-stamp	409,214	Aug. 20	1553	411	48	993
Luebra, Michel D., and D. S. Coe, assignors to Acme Machinery Company, Cleveland, Ohio. Bolt heading and forging machine						
Luetke, Oscar, Brooklyn, N. Y. Standard for lamps						
Lull & Co., L. C. (See Kipp, Henry D., assignor.)						
Lund, Joseph. (See Smith and Lund.)						
Lunkenheimer Brass Manufacturing Company. (See Lunkenheimer, Edmund, assignor.)						
Lunkenheimer, Edmund, assignor to Lunkenheimer Brass Manufacturing Company, Cincinnati, Ohio. Oil-cup	409,215	Aug. 20	1554	411	48	993
Lunkenheimer, Edmund, assignor to Lunkenheimer Brass Manufacturing Company, Cincinnati, Ohio. Grease-cup	410,423	Sept. 3	450	119	48	1357
Lunn, David H., Ferndale, Cal. Wire-stretcher	411,600	Sept. 24	2214	589	48	1722
Luscomb, Frederick W., and D. A. Corey, New Bedford, Mass. Drilling-machine	410,762	Sept. 10	982	263	48	1463
Lutticke, George F., London, England. Toy locomotive	409,991	Aug. 27	2883	707	48	1216
Lutticke, George F., London, England. Mechanism for operating dancing, acrobatic, and other toy figures	410,907	Sept. 10	1188	321	48	1506
	408,247	Aug. 6	60	.....	48	692
Lyall, James, New York, N. Y. Manufacturing binder-twine	410,903	Sept. 10	1300	351	48	1529
Lyles, John H., and E. C. Ward, Parsons, Kans. Hub-attaching device						
Lyman, Moses. (See Crandall, Charles M., assignor.)	406,454	July 9	630	177	48	136
Lynch, Charles D., Detroit, Mich. Steam-whistle	407,410	July 23	2103	543	48	434
Lynch, Matthew, Malta Bend, Mo. Stock-watering tank						
Lynch, Peter. (See Wendlick and Lynch.)						
Lyne, Thomas B. (See Russell, Charles M., assignor.)	410,799	Sept. 10	1039	278	48	1477
Lynn, Robert, Sr., Brighton, Iowa. Wagon-tongue support						
Lynne, James H. (See Yarborough, Cora M., assignor.)						
Lyon, Benjamin, Bridgeport, assignor, by mesne assignments, to G. S. Smith, Norwich, Conn. Belt-fastener	406,106	July 2	117	34	48	25
	409,111	Aug. 13	1394	{367 368	{48	954
Lyon, Samuel, Pultneyville, N. Y. Paring and coring machine	406,362	July 2	476	133	48	95
Lytle, Murdick, Duke Centre, Pa. Operating oil-wells						
Mabie, George W., *et al.* (See Sageman and Seibold, assignors.)						
MacArthur, John S., Pollokshields, county of Renfrew, Scotland. Extracting precious metals from their ores	411,047	Sept. 17	1388	.....	48	1556
MacKinnon, Duncan T. H. (See Little, Orton C. and A. M., assignors.)	408,922	Aug. 13	1103	291	48	899
MacKnight, John W., New York, N. Y. Fire-proof ceiling	407,299	July 16	1922	500	48	391
Macdonald, Thomas J. A., Detroit, Mich. Sale-slip						
Mackenzie, John. (See Perry and Mackenzie.)	408,496	Aug. 6	444	116	48	766
Macker, Dean W., Grafton, Mass. Threshold-measuring gage	411,159	Sept. 17	1574	418	48	1592
Mackey, John C., Detroit, Mich. Portable steam-radiator						
Macklin Adjustable Car Seat Company. (See Macklin, Athol B., assignor.)						
Macklin, Athol B., Toronto, Ontario, Canada, assignor to Macklin Adjustable Car Seat Company, Chicago, Ill. Car-seat	407,022	July 16	1497	392	48	308
Macomber, Clarence R., assignor to Worcester Fire Appliance Company, Worcester, Mass. Chemical fire-extinguishing apparatus	411,552	Sept. 24	2138	{566 567	{48	1706
Macres, Henry E., Hudson, N. Y. Fence	406,657	July 9	956	258	48	195
Maddin, Mary, *et al.* (See Maddin, Samuel D., assignor.)						
Maddin, Samuel D., assignor to M. Maddin and A. Tetrault, Miamisburg, Ohio. Grain-binder	409,795	Aug. 27	2498	{636 637	{48	1165
Maddin, Samuel D., Miamisburg, Ohio, assignor to M. Maddin, Sarnia, Ontario, Canada. Grain-binder	410,424	Sept. 3	450	{119 120 121 122	48	1357
Madigan, Patrick T., Troy, N. Y. Car-coupling	411,460	Sept. 24	2006	533	48	1679

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Maeriens, Emile, Providence, R. I. Tension-regulating device for driving-bands of spinning-machines	409,412	Aug. 20	1847	468	48	1051
Maenrer, Henry, Brooklyn, N. Y. Clothes-line attachment	409,327	Aug. 20	1723	453	48	1026
Maffett, Albert, Hayesville, Ohio. Bag-tie	410,172	Sept. 3	49	13	48	1278
Magaldi, Michele, New York, N. Y. Fire-extinguisher	409,796	Aug. 27	2432	637	48	1166
Magee, Daniel W., New York, N. Y. Flexible pipe-joint	409,216	Aug. 20	1555	411	48	993
Magnus, Edwin R., New Britain, Conn. Dentist's bench-block	411,461	Sept. 24	2007	533	48	1679
Magnusson, Howard C., Chicago, Ill. Horseshoe-bar	409,850	Aug. 27	2506	655	48	1178
Maher, Michael R., Zanesville, Ohio. Self-sealing bung for ice-cream freezers	410,400	Sept. 10	1040	278	48	1477
Mahle, Clemence A., Corry, Pa. Machine for making wooden curry-combs	411,345	Sept. 17	1641	492	48	1643
Mahle, Clemence A., Corry, Pa. Brush-block-boring machine	411,346	Sept. 17	1643	492	48	1643
Mahlmann, George W., Chicago, Ill. Faucet	409,691	Aug. 27	2270	597	48	1136
Mahoney, William P., Newburyport, Mass., assignor of one-half to C. H. Folsom, Brooklyn, N. Y. Machine for starting hat-bodies	406,658	July 9	957	258	48	195
Maierhoefer, Frederick. (See Schubert and Maierhoefer.)						
Main, William, Brooklyn, N. Y. Power-transmitting device	407,085	July 16	1579	414 415	48	324
Main, William, Brooklyn, N. Y. Power-transmitting connection for vehicles	407,086	July 16	1583	415 416	48	325
Main, William, Brooklyn, N. Y. Power-transmitting device	407,087	July 16	1589	417 418	48	326
Main, William, Brooklyn, N. Y. Power-transmitting device	407,088	July 16	1595	419	48	328
Main, William, Brooklyn, N. Y. Transmitting power	407,089	July 16	1598	419	48	328
Main, William, Brooklyn, N. Y. Power-transmitting device	407,090	July 16	1600	420	48	329
Main, William, Brooklyn, N. Y. Power-transmitting device	407,091	July 16	1603	420	48	330
Main, William, Brooklyn, N. Y. Power-transmitting device	407,092	July 16	1607	420	48	331
Main, William, Brooklyn, N. Y. Vehicle-propulsion by electric motors	407,093	July 16	1609	421 422	48	332
Main, William, Brooklyn, N. Y. Car-propelling apparatus	407,094	July 16	1612	422 423	48	332
Main, William, Brooklyn, N. Y. Vehicle-propulsion	407,095	July 16	1618	423 424	48	333
Mair, Charles R., *et al.* (See Dunlap, John W., Sr., assignor.)						
Maish, Wilbur F. (See Kohler, Amos, assignor.)						
Maitland, Thomas, Williamsport, Pa. Clothes-pounder	406,311	Aug. 6	155	39	48	710
Major, Emanuel, assignor of one-fourth to J. H. Stedman, Rochester, N. Y. Regulator for hot-water heating apparatus	407,784	July 30	2641	684	48	548
Makepeace, Abel D., *et al.* (See Bee, Benjamin F., assignor.)						
Malandin, Léon P. C. (See Debouttéville and Malandin.)						
Maley, Thomas H., Andover, Dak. Ter. Carpet-stretcher	407,540	July 23	2301	594	48	474
Mallary, D. D. (See Brooks, William D., assignor.)						
Mallory, Charles H., Springborough, Pa. Tool for grinding reaper-cutters	407,023	July 16	1499	392	48	309
Malone, Micajah C., assignor of one-half to F. B. Spooner, Palmyra, Ill. Combined metal shears and tire-upsetter	411,386	Sept. 17	1693	506	48	1652
Maloney, James A., assignor to M. J. Colbert, trustee, Washington, D. C. Specnlum	411,160	Sept. 17	1575	419	48	1592
Maloney, Patrick, and G. Robertson, assignors of one-third to G. A. Jacobs, Red Creek, N. Y. Spout for vessels	410,908	Sept. 10	1189	321	48	1506
Maloy, James W., Marietta, Ga. Implement for reducing stone, &c.	409,051	Aug. 13	1297	342	48	935
Maloy, James W., Marietta, Ga. Implement for reducing stone, &c.	409,052	Aug. 13	1297	342	48	936
Malquist, John, Salt Lake City, Utah Ter. Forge-tuyere	408,120	July 30	3172	829	48	646
Manahan, Margaret E. (See Manahan, Thomas, assignor.)						
Manahan, Thomas, assignor to M. E. Manahan, New York, N. Y. Waterproofing compound	409,479	Aug. 20	1939	.....	48	1069
Maubes, Pierre, Lyons, France. Refining nickel	409,992	Aug. 27	2694	.....	48	1217
Mani, John, French Gulch, Cal. Vehicle-brake	408,421	Aug. 6	329	85	48	743
Manier, Benjamin F., Troy, N. Y. Car-truck	409,993	Aug. 27	2695	707 708	48	1217
Mann, Charles A., Buffalo, assignor of one-half to A. C. and F. Knothe, New York, N. Y. Snap-hook	407,096	July 16	1622	424	48	333
Mann, Charles A., assignor to W. B. Mann, Buffalo, N. Y. Buckle	408,635	July 30	3019	790	48	619
Mann, Franklin W., and C. H. Farrington, Milford, Mass.; said Farrington assignor to said Mann. Machine for grinding bone	409,480	Aug. 20	1939	513	48	1070
Mann, Henry F., Allegheny, Pa. Car-wheel	408,890	Aug. 13	1058	279	48	890
Mann, Henry F., Allegheny, Pa. Car-wheel	408,891	Aug. 13	1060	279	48	890
Mann, Henry F., Allegheny, Pa. Car-wheel	410,324	Sept. 3	302	78	48	1327
Mann, Thomas S. (See Claflin, Frank O., assignor.)						
Mann, William B. (See Mann, Charles A., assignor.)						
Mann, William E., Bangor, Me. Reciprocating gang-saw mill	408,807	Aug. 13	931	248	48	866
Mann, William R., and G. Keith, Earlville, Ill. Hay-rake	406,363	July 2	479	133	48	96
Mannie, George A., *et al.* (See Del Grande, Antonio, assignor.)						
Manning, Samuel D. T., Portsmouth, Va. Cotton-harvester	407,360	July 23	2031	526 527	48	420
Manning, Thomas J., assignor of one-half to C. L. Leonard, Grafton, Mass. Hat and coat holder	411,387	Sept. 17	1694	506	48	1653
Manning, Thomas S., Vandalia, Mo. School-desk	411,553	Sept. 24	2140	567	48	1706
Manny, Engéne S., Montreal, Quebec, Canada. Hot-water radiator	407,765	July 30	2644	684	48	548
Manny, John P., Rockford, Ill. Lemon-juice extractor	408,121	July 30	3173	830	48	646
Mansfield, George W., Cleveland, Ohio, assignor to M. H. Robinson and O. A. Foster, Boston, Mass. Electric motor	406,922	July 16	1356	355	48	282
Mansfield, Henry A., Bridgeport, assignor of one-half to S. Babcock, Middletown, Conn. Fire-extinguisher	406,174	July 2	214	58	48	42
Mantion, John D., G. H. Millen, and A. Decurion, Hull, Quebec, Canada. Slide match-box-filling machine	409,481	Aug. 20	1941	513 514	48	1070
Manton, Frank S., Providence, R. I. Ship-windlass	406,144	July 2	170	49	48	35
Manville, E. A. (See Iles, Henry J., assignor.)						
Manville, Frank B., assignor to Blake & Johnson, Waterbury, Conn. Wire-forming machine	409,643	Aug. 20	2181	574 575	48	1114
Marcil, Michel, assignor to Hills Company, Amherst, Mass. Straw-braid-sewing machine	407,297	July 16	1919	499 500	48	391
Marcil, Michel, assignor to Hills Company, Amherst, Mass. Feeding device for sewing machines	407,298	July 16	1921	500	48	391
Marckwald, Ludwig. (See Kaiser, Alexander, assignor.)						
Marcus, Solms, assignor to H. N. Hart, Chicago, Ill. Woolen shirt	410,984	Sept. 10	1302	351	48	1529
Marks, R. H. (See McKensie and Miller, assignors.)						
Marquard, Frank, New York, N. Y. Insulating composition	407,896	July 30	2817	.....	48	580

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Marquard, Frank, New York, N. Y. Insulating composition	407,938	July 30	2882	.....	48	592
Marr, John. (See Wagner, Louis, assignor.)						
Marsden, Herbert E. (See Kemp and Marsden.)						
Marsden, John H., assignor of one-half to J. G. Smith, Jr., Utica, N. Y. Device for cleaning yarn, &c.	406,846	July 9	1942	339	48	
Marsell, John A., Brimfield, assignor to Snell Manufacturing Company, Fiskdale, Mass. Die for the manufacture of augers	408,497	Aug. 6	445	116	48	767
Marsh, Daniel E., Bridgeport, Conn. Raceway for rotary sewing-machine shuttles	411,290	Sept. 17	1754	499	48	1628
Marsh, Elon A., Battle Creek, Mich. Steam-actuated valve	409,651	Aug. 27	2506	655	48	1178
Marsh, George, *et al.* (See Kinney, Robert, assignor.)						
Marsh, Horace C., Rockford, Ill. Combined miter-box and picture-frame clamp	408,948	Aug. 6	60	16	48	692
Marsh, William A., Foster, La. Rack-band buckle	411,291	Sept. 17	1755	499	48	1628
Marshall, Edward R., assignor to Marshall Engine Company, Turner's Falls, Mass. Pulp-beating engine	411,251	Sept. 17	1700	454 455	48	1618
Marshall Engine Company. (See Marshall, Edward R., assignor.)						
Marshall, John B., Sunny Side, N. J. Fruit-picker	409,296	Aug. 20	1679	442	48	1017
Marshall, Robert, Hamilton, Ontario, Canada. Crimping-machine	406,175	July 2	215	59	48	43
Marshall, William H., Chelsea, Mass. Ornamenting surfaces with molten metal	406,923	July 16	1357	355	48	282
Marsters, George C., Brooklyn, N. Y. Dulcetina	411,554	Sept. 24	2141	567	48	1706
Marston, John B. (See Feeny, John W., assignor.)						
Martenot, François, Paris, France. Electrical apparatus for regulating steam-boilers, &c.	406,751	July 9	1097	291	48	222
Marthaler, John, Jersey City, N. J. Car-roof	408,731	Aug. 13	818	215	48	842
Martin, Abraham, 177 Aston Lane, Witton, near Birmingham, county of Warwick, England. Metallic cartridge	408,917	Aug. 13	1097	289	48	898
Martin, Archer N., Somuk, N. J. Heating apparatus	410,844	Sept. 10	1100	296	48	1490
Martin, Charles M. (See Smith, Israel S., Sr., assignor.)						
Martin, David J., Covington, Ohio. Hame attachment	410,909	Sept. 10	1190	321	48	1507
Martin, Edouard, Paris, France. Manufacture of wire	410,368	Sept. 3	361	96	48	1340
Martin, Elizabeth J., *et al.* (See Coburn, Joseph L., assignor.)						
Martin, Frank F., assignor of one-fourth to R. T. Mountain, Gloucester, Mass. Last	407,737	July 23	2566	664	48	527
Martin, Henry. (See Davies, Joseph D., assignor.)						
Martin, Herman W. (See Smith and Martin.)						
Martin, John, *et al.* (See Anderson, Lee, assignor.)						
Martin, Stephen, Peoria, Ill. Doubletree attachment	410,840	Sept. 10	1190	322	48	1507
Martin, Washington A., assignor of one-fourth to H. Reuter, Chicago, Ill. Lock	407,738	July 23	2567	664	48	527
Martinez, Augustin, Philadelphia, Pa. Curve and crossing device for cable railways	406,752	July 9	1099	291 292	48	222
Martyn, Edward, Detroit, Mich. Device for slitting the ends of cigar-bunches	407,097	July 16	1623	425	48	333
Marvin, Charles B., Hartland, Mich. Car-coupling	407,361	July 23	2034	527	48	421
Marx, Julius. (See Kerner and Marx.)						
Maschinenfabrik Oerlikon. (See Hoffman, Rudolf, assignor.)						
Maschmeyer, Charles, assignor to E. Miller & Company, Meriden, Conn. Lamp-standard	406,107	July 2	119	34	48	25
Mason, Allan. (See Wilson and Mason.)						
Mason, Allan, Brooklyn, assignor to H. H. Sanderson, trustee, New York, N. Y. Apparatus for burning culm or pulverized coal	406,659	July 9	958	259	48	195
Mason, Allan, Brooklyn, assignor to H. H. Sanderson, trustee, New York, N. Y. Apparatus for burning culm	406,753	July 9	1100	292	48	222
Mason, Allan, Brooklyn, assignor to H. H. Sanderson, trustee, New York, N. Y. Apparatus for burning coal and hydrocarbon fuel in combination	411,555	Sept. 24	2142	567	48	1701
Mason, Burr T., Phœnix, N. Y. Combination tooth-pick	407,362	July 23	2035	527	48	421
Mason, Charles T., Sumter, S. C., assignor to American Waltham Watch Company, of Massachusetts. Anti-magnetic watch	406,364	July 2	480	133	48	96
Mason, George A., Washington, D. C., assignor to J. Sellers & Sons, New York, N. Y. Engraver's tool	408,498	Aug. 6	446	117	48	767
Mason, Luther T. (See Furman, Oliver P., assignor.)						
Mason Machine Works. (See Meats, John T., assignor.)						
Mason, Robert H., Woodhull, N. Y. Water tank or cistern	409,609	Aug. 20	2130	539	48	1104
Mason, Samuel J., Mead, Nebr. End-gate for wagons	409,413	Aug. 20	1849	468	48	1051
Mason, Washington M., Warwick Cross Roads, Tenn. Wagon-brake	409,692	Aug. 27	2271	597	48	1136
Massey, Albert P., Watertown, N. Y. Car-brake	409,328	Aug. 20	1725	453	48	1026
Massoletti, Vincent A., Simpsonville, Tex. Hobble for animals	406,052	July 2	43	12	48	11
Mast & Company, P. P. (See Kissell, Martin L., assignor.)						
Mast & Company, P. P. (See Mast, Phineas P., assignor.)						
Mast, Foos & Company. (See Mast and Croft, assignors.)						
Mast, Phineas P., assignor to P. P. Mast & Company, Springfield, Ohio. Grain-drill	410,325	Sept. 3	303	79	48	1327
Mast, Phineas P., and H. Croft, Jr., assignors to Mast, Foos & Company, Springfield, Ohio. Windmill	408,422	Aug. 6	332	85	48	743
Mather, Alonzo C., Chicago, Ill. Stock-car	411,462	Sept. 24	2008	533	48	1679
Mather Electric Company. (See Anthony, William A., assignor.)						
Matheson, George, Brooklyn, N. Y. Machine for expanding the ends of pipes	409,994	Aug. 27	2697	706	48	1217
Matheson, George, Brooklyn, N. Y. Machine for expanding the ends of pipes	410,000	Aug. 27	2707	711	48	1219
Mathewson, Jeremiah E., Sheffield, county of York, England. Sand-blast apparatus	409,751	Aug. 27	2353	619	48	1152
Mathey Brothers, Mathes & Co. (See Meylan, Charles H., assignor.)						
Mathiessen and Wiechers Sugar Refining Company, F. O. (See Niese, Henry E., assignor.)						
Matte, Napoleon, and C. Montminy, Quebec, Quebec, Canada. Apparatus for moistening and sealing envelopes	411,601	Sept. 24	2215	590	48	1722
Mattes, William F., trustee. (See Mattes and Lewis, assignors.)						
Mattes, William F., and J. F. Lewis, assignors to W. F. Mattes, trustee, Scranton, Pa. Grease-cup	407,296	July 16	1617	475	48	371
Matthews, George E., Buffalo, N. Y. Combined memorandum-book, calendar, &c.	407,363	July 23	2036	528	48	421
Matthews, John. (See Waldo, Francis S., assignor.)						
Matthews, Robert S., assignor of one-half to J. Shellington, Rochester, N. Y. Compensating-gearing	410,425	Sept. 3	456	122	48	1357
Matthies, Julius, Berlin, Germany. Gas-engine	411,668	Sept. 24	2314	614	48	1743
Mattingly, B. D., *et al.* (See Zoeller, Theodore J., assignor.)						
Mattison, Christen, Minneapolis, Minn. Chamfer-cutter	411,506	Sept. 24	2070	547	48	1692
Matzow, Frantz. (See Helland and Matzow.)						
Maurer, Frank X., East St. Louis, Ill. Automatic hay-press	406,455	July 9	631	177 178 179	48	136
Mauser, Paul, assignor to Waffenfabrik Mauser, Oberndorf-on-the-Neckar, Würtemberg, Germany. Breech-loading fire-arm	406,924	July 16	1358	356	48	282

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Maxim, Hiram S., London, England. Apparatus for adjusting, pointing, or training canon	407,487	July 23	2220	573, 574	48	457
Maxim, Hudson, Pittsfield, Mass. Producing high explosives	411,127	Sept. 17	1526	.....	48	1563
Maxwell, Walter S. (See Loso, John H., assignor.)						
May, Philip, Terre Haute, Ind. Latch	407,227	July 16	1819	476	48	371
Mayer, Anton, and H. G. Stiebel, Cincinnati, Ohio; said Mayer assignor to said Stiebel. Sprinkling apparatus	408,631	Aug. 6	649	189	48	804
Mayer, Christoph, Butler, N. J. Machine for cleaning refuse rubber	409,693	Aug. 27	2272	597, 598	48	1137
Mayer, Gustav A. (See Knorpp and Mayer.)						
Mayer, Oscar, New York, N. Y. Ale or beer measure	406,176	July 2	217	59	48	43
Mayer, Oscar, New York, N. Y. Ale or beer measure	406,925	July 16	1361	356	48	292
Mayhew, James T., Vista, Cal. Fence	411,161	Sept. 17	1576	419	48	1592
Maynard, Edward, Brooklyn, N. Y. Floating life-line	408,312	Aug. 6	156	40	48	710
Mayne, William W., Huron, Dak. Ter. Tongue-support for vehicles	410,326	Sept. 3	305	.....	48	1328
Mayr, Charles, Springfield, Mass. Fire-extinguishing composition	410,175	Sept. 3	53	14	48	1279
McAllister, Wilson-Ella P., Kansas City, Mo. Revoluble spool-stand	406,936	July 16	1378	361	48	286
McAllister, James R., Rossie, N. Y. Holdback for vehicles						
McAlpine, Charles. (See McAlpine, Robert and C.)						
McAlpine, Robert and C., Trenton, N. J. Saw for plumbers' use	407,941	July 30	2887	751	48	593
McAnulty, John A., Minneapolis, Minn. Feed-regulator	409,329	Aug. 20	1796	454	48	1026
McBride, Charles B. (See Moosbrugger, Joseph, assignor.) (Reissue.)						
McCartey, John R., Kendall Creek, Pa. Railway-tie	410,176	Sept. 3	54	14	48	1279
McCarthy, Louis, Boston, Mass., assignor to Gould & Watson Company, of Massachusetts, and C. T. Lee, Boston, Mass. Electric insulator	411,749	Sept. 24	2428	643	48	1766
McCarty, Peter F., and R. Seyter, Corning, N. Y.; said Seyter assignor to said McCarty. Bottle-washer	409,113	Aug. 13	1399	369	48	955
McCarty, William F. M., Hagerstown, Md., assignor of part to S. C. Ashton and H. D. Walbridge, Washington, D. C. Making steel direct from the ore by the use of natural gas	410,430	Sept. 3	467	.....	48	1359
McCaskey, John, and C. P. Shaw, New Castle, Pa. Rotary engine	410,431	Sept. 3	468	125	48	1359
McCaslin, George W., New York, assignor to McCaslin Machine Company, West New Brighton, N. Y. Conveyer	409,330	Aug. 20	1728	454	48	1026
McCaslin, George W., New York, assignor to McCaslin Machine Company, West New Brighton, N. Y. Conveyer	409,612	Aug. 20	2133	560, 561	48	1105
McCaslin Machine Company. (See McCaslin, George W., assignor.)						
McCaughey, Bernard, Pawtucket, R. I. Drip-pan	411,670	Sept. 24	2320	615	48	1744
McCauley, Patrick, Braddock, Pa. Pipe-holder	406,849	July 9	1246	330	48	249
McClanathan, Sidney, *et al.* (See Kimble, Smith W., assignor.)						
McClellan, James M., assignor to G. H. Finn and J. E. Munson, St. Paul, Minn. Brush-holder for dynamos	409,646	Aug. 20	2185	575	48	1114
McClellan, John A., Hico, Tex. Flour bin and sifter	411,671	Sept. 24	2321	615	48	1744
McClellan, Oscar D., assignor, by mesne assignments, to Sanitary and Fertilizer Company of the United States, Philadelphia, Pa. Feculent receiver	408,506	Aug. 6	459	120, 121	48	769
McClelland, George B., Cleveland, Ohio. Vapor-burner stove	409,221	Aug. 20	1585	413	48	995
McClure, Albert H., and H. Holland, McGovern, Pa. Automatic safety-lock for gas	410,001	Aug. 27	2709	712	48	1219
McCollum, Alexander, Raymond, Iowa. Hay-distributer	409,858	Aug. 27	2514	658	48	1180
McCollum, Joseph C., Bloomfield, Mo. Cotton-chopper	406,589	July 9	840	227	48	174
McComas, Arthur W., and H. A. Fitzhugh, Austin, Tex. Fan attachment	406,055	July 2	45	13	48	12
McComas, Arthur W., and H. A. Fitzhugh, Austin, Tex. Fan for rocking furniture	408,188	July 30	3276	855	48	664
McCombs, George F., Allegheny, assignor to Hand Stitch Broom Sewing Machine Company, Pittsburg, Pa. Broom-sewing machine	407,741	July 23	2569	665, 666	48	528
McConnell, Edward, Cape Girardeau, Mo. Safety-pin	406,367	July 2	482	134	48	96
McConnell, Virgil H., Buffalo, N. Y. Heating and purifying feed water for steam-boilers	407,104	July 16	1635	428	48	335
McCord, Luther A., Laurens County, S. C. Combined paper holder, cutter, and printing device	407,489	July 23	2225	574	48	458
McCormick Harvesting Machine Company. (See Pridmore, Henry E., assignor.)						
McCormick, John H., New Orleans, La. Machine for delinting cotton-seed	411,294	Sept. 17	1758	470	48	1629
McCornack, Herbert, McQueen, Ill. Carpet-stretcher	409,647	Aug. 20	2185	576	48	1114
McCoy, Charles S. (See Miesenhelder and McCoy.)						
McCoy, Owen. (See Fogarty, Patrick, assignor.)						
McCracken, Thomas E. (See Hinman and McCracken.)						
McCraw, James M. (See Sprague and McCraw.)						
McCulla, Frank M., assignor to F. H. Leach, Philadelphia, Pa. Paper-bag machine	407,300	July 16	1923	501	48	391
McCulla, Mills, Milford, Iowa. Anchor for portable hay-presses	404,924	Aug. 13	1105	291	48	899
McCulloch, Gilbert, Altoona, Pa. Machine for lining railway-car bearings	410,092	Aug. 27	2710	712	48	1220
McCullough, Oscar, assignor to C. F. Schroth, Winona, Minn. Tenoning-machine	408,352	Aug. 6	217	55, 56	48	722
McDaniel, Charles W., Lake Village, N. H. Drilling-machine	410,803	Sept. 10	1043	279, 280	48	1478
McDermott, Hugh F., Jersey City, N. J. Seal for envelopes	406,056	July 2	47	13	48	12
McDermott, James C., Chicago, Ill. Pulley-molding machine	411,390	Sept. 17	1898	507	48	1653
McDonald, Alexander J., Chicago, Ill. Danger-signal for railway-crossings	406,937	July 16	1380	361	48	286
McDonald, Alexander J., and R. B. Brent, assignors to Pneumatic Power and Railroad Gate Company, Chicago, Ill. Railway-gate	406,938	July 16	1381	362	48	287
McDonald, Allen E., *et al.* (See Dickson, John G., assignor.)						
McDonald, Arthur, Scotland, Conn. Tension-regulating device for spindle-driving bands	408,189	July 30	3278	855	48	664
McDonald, David F., Lake Butler, Fla. Wrapping-machine	407,544	July 23	2308	595, 596	48	476
McDonald, J. S. (See Devereaux, Robert M., assignor.)						
McDonald, John M. (See Studley and Berry, assignors.)						
McDonald, John W., *et al.* (See Dickson, John G., assignor.)						
McDonald, Peter E., Detroit, Mich. Receptacle for merchandise	409,485	Aug. 20	1950	516	48	1072
McDonald, Samuel A. (See Miller and McDonald.)						
McDougall, Henry, and R. Potter, New York, N. Y. Machine for forming beam-straps	410,373	Sept. 3	367	97, 98	48	1341
McDougall, John, assignor of one-half to W. W. Aldrich, Earnest, Kans. Wire-tightening device	410,557	Sept. 3	638	170	48	1394
McDowell, Gordon, Evanston, Ill. Smoke-consumer	408,757	July 9	1106	223, 224	48	223
McDowell, Jonas P., Foote, Iowa. Car-coupling	410,374	Sept. 3	369	98	48	1342
McDowell, Thomas, assignor to Carter & Company, (limited,) Niagara Falls, N. Y. Blank-leaf check-book	410,003	Aug. 27	2713	719	48	1220
McDuffee, Henry C. (See Cummings and McDuffee.)						
McElroy, James F., Lansing, Mich. System for heating cars	410,177	Sept. 3	55	14	48	1279
McElroy, James F., Lansing, Mich. Pressure-regulator	410,178	Sept. 3	56	14	48	1280
McElroy, William J., Pittsburg, Pa. System of electrical distribution for railways	409,752	Aug. 27	2355	622	48	1152

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
McEnerney, John, assignor of one-third to M. Rodh, New York, N. Y. Machine for grinding and polishing stone	409,419	Aug. 20	1856	490	48	1052
McEwen, James H., Ridgeway, Pa. Eccentric-connection	408,738	Aug. 13	896	218	48	813
McFadden, Thomas, and D. Rosser, Youngstown, Ohio. Pipe-thread-cutting machine	407,412	July 23	2106	544, 545	48	434
McFarland, Charles N., Minneapolis, Minn. Automatic feeder	409,331	Aug. 20	1730	455	48	1027
McFarlane, John, assignor of two-thirds to G. J. Bessler and H. Wex Washington, D. C. Steam and vacuum pump	406,590	July 9	841	227	48	174
McGee, Robert D., Owensborough, Ky. Trunk	406,758	July 9	1106	294	48	224
McGill, George W., Riverdale, N. Y. Paper-fastener	406,759	July 9	1109	294	48	224
McGlennen, Michael, *et al.* (See Finley, James R., assignor.)						
McGlinchey, Charles E., assignor of one-half to J. W. Dillon, Chicago, Ill. Bicycle	408,845	Aug. 13	984	261	48	875
McGovern, Thomas, New York, N. Y. Burial-casket	407,897	July 30	2818	733, 734	48	589
McGrann, Bernard J., *et al.* (See Rote, Charles V., assignor.)						
McGraw, Charles E., *et al.* (See McGraw, George W., assignor.) (Reissue.)						
McGraw, George W., deceased, assignor to J. A., H. L., G. W., Jr., and C. E. McGraw, Allegheny, Pa. Machine for the manufacture of roofing. (Reissue)	11,017	July 30	3318	866, 867	48	675
McGraw, Henry L., *et al.* (See McGraw, George W., assignor.) (Reissue.)						
McGraw, John A., *et al.* (See McGraw, George W., assignor.) (Reissue.)						
McGregor, Robert, Leigh, county of Lancaster, England. Apparatus for sharpening the cutters and fingers of reaping and mowing machines	411,048	Sept. 17	1389	372, 373	48	1556
McGuire, James. (See Reynolds, Charles, assignor.)						
McHenry, Thomas, St. Louis, Mo. Hose-elevator over railway-tracks	411,725	Sept. 24	2394	634	48	1759
McHugh, Dennis, Malvern, Iowa. Harrow	410,004	Aug. 27	2714	713	48	1220
McHugh, Timothy, Wakefield, assignor of one-half to Smith & Anthony Stove Company, Boston, Mass. Coupling for water-closet bowls	410,848	Sept. 10	1106	297	48	1491
McIlhenny, George A., Washington, D. C. Coke-chute	410,005	Aug. 27	2716	713, 714	48	1221
McIlhenny, George A., Washington, D. C. Coke-chute	410,006	Aug. 27	2717	714	48	1221
McIntire, Slaght & Johnson. (See Johnson, Joseph J., assignor.)						
McIntosh, George, Stonington, Conn. Electric signal	407,490	July 23	2226	575	48	459
McIntyre, Innes T., Carrollton, Miss. Whiffletree	409,057	Aug. 13	1305	344	48	937
McIntyre, John H., Rutland, Vt. Car-door	410,766	Sept. 10	986	265	48	1464
McIver, James W. and J. N., Houston, Tex. Gangway for loading or unloading stock-cars	409,222	Aug. 20	1566	413	48	995
McIver, John N. (See McIver, James W. and J. N.)						
McKaig, Eddy T., Racine, Wis. Steam-engine	410,432	Sept. 3	470	126	48	1360
McKaig, Merwin. (See Muncaster, Walter J., assignor.)						
McKay, Andrew, Philadelphia, Pa. Horse-boot	411,049	Sept. 17	1391	373	48	1556
McKay, Hugh, *et al.* (See Critchlow, John M., assignor.)						
McKenney, J. Freeman, Baltimore, Md. Shuttle for sewing-machines	406,308	July 2	483	134	48	96
McKenzie, George W., Van Port, and W. I. Miller, assignors of one-third to R. H. Marks, Beaver, Pa. Advertising and street-announcing apparatus	411,050	Sept. 17	1392	373	48	1556
McKenzie, Joseph H., Tyler, assignor of one-half to L. A. Seymour, Eureka, Tex. Hame-tug	406,529	July 9	763	207	48	100
McKinney, Henry D., Janesville, Wis. Cast-off device for hopples	408,040	July 30	3030	792	48	621
McKinney, James D., Mossy Creek, Ga. Gardener's and cotton-picker's brace	406,663	July 9	964	260	48	196
McKinney, James D., Mossy Creek, Ga. Gardener's and cotton-picker's brace	407,414	July 23	2106	545	48	435
McKinney, William, Schuylkill Falls, Pa. Electric meter	406,760	July 9	1110	294	48	224
McKinney, William J., Rising Sun, Md. Shoe	409,798	Aug. 27	2434	638	48	1167
McKinnon, Murdock M., Laurinburg, N. C. Whiffletree						
McKinnon, Reuben. (See Eldridge, James R., assignor.)						
McLane, Hiram H., San Antonio, Tex. Tool for drilling wells	407,028	July 16	1504	393	48	310
McLane, John. (See Talbott, Sylvanus J., assignor.)						
McLaren, John, New York, N. Y. Valve-gear for engines	409,058	Aug. 13	1306	344	48	937
McLaren, John R., Jr., Montreal, Quebec, Canada, assignor to C. H. Emerson & Co., Burlington, Vt. Toboggan	406,939	July 16	1382	362	48	287
McLaughlin, James F., Philadelphia, Pa. Electrical type-writing machine	406,291	July 2	363	99	48	74
McLaughlin, James F., Philadelphia, Pa. Type-writing machine	406,292	July 2	365	100	48	74
McLaughlin, James F., Philadelphia, Pa. Combined electric bell and annunciator	406,293	July 2	370	101	48	75
McLaughlin, James F., Philadelphia, Pa. Electric trembler-bell	406,294	July 2	371	101	48	75
McLaughlin, James F., Philadelphia, Pa. Secondary battery	408,666	Aug. 6	707	183	48	814
McLaughlin, James F., Philadelphia, Pa. Ink-ribbon mechanism for type-writing machines	409,613	Aug. 20	2136	561	48	1105
McLaughlin, James F., Philadelphia, Pa. Secondary-battery electrode	410,007	Aug. 27	2718	714	48	1222
McLaughlin, John, Lee, Mass. Paper-calendering machine	411,651	Sept. 17	1393	374	48	1557
McLean, Joseph, Rockville, Conn. Clip-mold	406,295	July 2	373	101	48	75
McLendon, Lucian M. (See Todd, Welch, and McLendon.)						
McLewee, William S., New York, N. Y. Hanging lamp	406,530	July 9	764	207	48	100
McMakin, Rodolph, assignor to himself and E. T. Ogle, New Albany, Ind. Baby-carriage	410,804	Sept. 10	1046	280	48	1479
McManus, William N., New York, N. Y. Toy race-track	407,874	July 30	2784	724	48	573
McMaster, Rufus W., New Salem, Kans. Attachment for neck-yokes	409,332	Aug. 20	1731	455	48	1027
McMillan, Benjamin F., McMillan, Wis. Tally-sheet	409,223	Aug. 20	1567	413	48	995
McMurran, Charles W., Hightstown, N. J. Ticket-holder for railway-cars	406,591	July 9	842	227	48	174
McNab, Anson S. (See Loewer and Blair, assignors.)						
McNab, William, Holyoke, Mass. Paper-ruling machine	406,940	July 16	1383	362	48	287
McNaughton, Peter, assignor to C. H. Bird and E. W. Crane, Kalamazoo, Mich. Pulley	407,367	July 23	2040	529	48	422
McNeil, Murdock, assignor of one-half to T. Haley, Boston, Mass. Pop safety-valve	411,254	Sept. 17	1767	456	48	1619
McNeill, Charles D., Goliad, assignor of one-half to F. E. Huck, Victoria, Tex. Hay-press	410,329	Sept. 3	307	79, 80	48	1328
McNeill, Ralph, New York, N. Y. Support for photographic films	406,460	July 9	647	182	48	139
McNett, Lyman F., Yonkers, assignor to American Motor Company, New York, N. Y. Combined gas-engine and carburetor	407,961	July 30	2920	761	48	600
McNutt, John F., and H. F. Grimmesey, Warren, Ohio. Tube-bending machine	407,675	July 23	2480	642	48	509
McNutt, Samuel H., *et al.* (See Oldham, Carrick P., assignor.)	407,545	July 23	2311	597	48	477
McPherson, Henry, assignor to J. W Clark, Troy, N. Y. Snap-hook	411,467	Sept. 24	2020	535	48	1082
McPherson, John P., Boston, Mass. Copying-press						
McRae, Charles J., and H. C. Baker, Kansas City, Mo. Paper holder and cutter with printing attachment	407,105	July 16	1636	428	48	336
McRae, William D. (See Roberts, Dugald H., assignor.)						
McSweeney, Terrence, Allegheny, Pa. Gas-burner for stoves or fire-places	406,229	July 2	284	79	48	57
McTighe, James J., Pittsburg, Pa. Transforming heat energy into motive power	411,605	Sept. 24	2221	591	48	1724
McTighe, Thomas J., *et al.*, trustees. (See Slocum and Lash, assignors.)						
McTyeire, William C., Hatchechubbee, Ala. Cultivator and planter	407,029	July 16	1505	394	48	310
McVickar, James. (See Irish, Joseph, assignor.)						
McVicker, Andrew V., *et al.* (See Conkle, Andrew, Jr., assignor.)						
McVicker, Emery M., Madison, Wis. Clevis	406,761	July 9	1111	295	48	224

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
McVicker, James H., *et al.* (See Conkle, Andrew, Jr., assignor.)						
Mead, Charles E., Oneida, N. Y. Lathe-chuck	408,085	Aug. 13	1195	315	48	916
Mead, Henry W., Quincy, Ill. Brick-machine	406,754	July 9	1101	292	48	222
Mead, Lyell T. (See Caine, William H., assignor.)						
Mead, Samuel C., Grove, Mich. Vehicle-wheel	410,645	Sept. 10	778	210	48	1427
Meady, Albert C., Somerville, and C. P. Bosworth, Everett; assignors to Crosby Steam Gage and Valve Company, Boston, Mass. Apparatus for graduating and testing pressure-gages	408,808	Aug. 13	933	248 / 249	48	866
Mesher, Dennis A. (See Hamlin, Arthur D., assignor.)						
Mears, Frank, Cleveland, Ohio. Safety-valve attachment for gage-cocks	409,217	Aug. 20	1556	411	48	993
Meats, John T., assignor to Mason Machine Works, Taunton, Mass. Guide for top-roll clearers	411,328	Sept. 17	1895	506	48	1653
Mechanical Manufacturing Company. (See Wells, Thomas F., assignor.)						
Mecklem, Archibald, Colfax, Wash. Ter. Grain-separator	407,542	July 23	2303	594 / 595	48	475
Medina Engine Company. (See Keavy, Thomas E., assignor.)						
Medynski, Frod V., Des Moines, Iowa. Feed-water purifier	407,364	July 23	2036	528	48	421
Meehan, David C., Columbus, Ohio. Pigeon-hole case	407,098	July 16	1624	425	48	334
Meek, Alphonzo E., Dallas, Tex. Combined bevel, protractor, gage, center-square, &c	409,414	Aug. 20	1850	488 / 489	48	1051
Megill, Edward L., Brooklyn, N. Y. Feed-gage for printing-presses	408,122	July 30	3174	830	48	647
Meier, John B., Port Huron, Mich., assignor of one-half to B. J. Karrer. Nut-wrench	410,985	Sept. 10	1303	351	48	1529
Meigs, Arthur, *et al.* (See Tracy, William P., assignor.)						
Meikle, Hugh F. (See Meikle, Thomas, assignor.)						
Meikle, Thomas, assignor of one-half to H. F. Meikle, Louisville, Ky. Fagot	411,748	Sept. 24	2427	643	48	1766
Meiser, Franz. (See Leuchs and Meiser.)						
Meister, David A. (See Oulton and Meister.)						
Melchior, Ludwig, and G. Haas, Wilmington, Del. Spring-motor	407,939	July 30	2883	750	48	592
Melendy, Hervey D., Nashua, N. H. Spool	408,732	Aug. 13	818	216	48	842
Melhouse, Andrew B., Villard, Dak. Ter. Distance-instrument	407,786	July 30	2644	685	48	549
Mellino, William, *et al.* (See Card, William J., assignor.)						
Mellon, John S., assignor of six-tenths to G. W. Lewis, St. Louis, Mo. Galvanic shoe	407,673	July 23	2478	641	48	509
Melrose, Thomas H., San Francisco, Cal. Speed-controlling device for elevators	409,995	Aug. 27	2699	709	48	1218
Menger, Ottomar. (See Ewig, John, assignor.)						
Mercer, James D., Ottawa, Ohio. Cornstalk-cutter	410,369	Sept. 3	362	96	48	1340
Mercer, Thomas M. (See Vail, Joseph C., assignor.)						
Merchants Roll Paper Supply Company. (See Kennedy, Guy L., assignor.)						
Meriam, Benjamin, Boston, Mass. Drain-tester	408,527	July 9	759	206	48	159
Meriden Bronze Company. (See Miller, John C., assignor.)						
Meriden Bronze Company. (See Peck, Eugene H., assignor.)						
Merrell, Gains L., Syracuse, N. Y. Can-filling machine	406,926	July 16	1361	357	48	282
Merrill, John S., Columbus, Ohio. Bracket for electric lamps	409,852	Aug. 27	2508	656	48	1179
Merriman, John, Saugerties, N. Y. Constructing lead-lined converters	406,927	July 16	1365	357	48	283
Merritt, Charles H., Danbury, Conn. Hat sizing or shrinking machine	406,456	July 9	638	179	48	137
Merritt, James C., Highland Falls, N. Y. Stereotype block	410,714	Sept. 10	896	242	48	1447
Meriwether, William A., *et al.* (See Gathright, John R., assignor.)						
Merrow, Oscar L. (See Sanborn and Merrow.)						
Mersman, James B., La Grange, Ind. Folding wash-bench	408,123	July 30	3175	830	48	647
Mertz, Nathaniel D., Plum River, Ill. Refrigerator	410,911	Sept. 10	1191	322	48	1507
Meserole, Abraham V., New York, N. Y., assignor of one-half to H. A. Wilson, Ridgefield, N. J. Electrode for secondary batteries	408,809	Aug. 13	934	249	48	867
Messer, George E., Boston, Mass. Lamp-wick holder	408,313	Aug. 6	158	40	48	710
Messer, Gerry C. (See Messer, Leverett, assignor.)						
Messer, Horace W., Berlin, Ontario, Canada. Swinging chair or hammock	407,099	July 16	1626	425	48	334
Messer, Leverett, Haverhill, Mass., assignor of one-half to G. C. Messer, Brattleborough, Vt. Adjustable picture-hanger	409,644	Aug. 20	2183	575	48	1114
Messimer, Henry E., Williamsport, Pa. Attaching device for suspender straps	409,694	Aug. 27	2273	598	48	1137
Metcalf, Foster M., assignor of one-half to W. Andrus, Battle Creek, Mich. Constructing spring packing-rings	410,426	Sept. 3	457	122	48	1338
Metford, William E. (See Halford and Metford.)						
Metz, Frank, assignor of one-half to J. Corbus, New Brighton, Pa. Cork-machine	406,225	July 2	278	77	48	56
Metzger, Gustav, Newark, N. J. Compound compressor	411,252	Sept. 17	1703	455	48	1618
Metzler, Paul G., and R. S. Davis, Leadville, Colo. Liquid-blacking box	409,415	Aug. 20	1852	489	48	1052
Metzner, William C., Chicago, Ill. Stove-grate	407,767	July 30	2646	685	48	549
Metzner, William C., Chicago, Ill. Stove-damper	410,646	Sept. 10	779	211	48	1428
Mey, Fredrick H. C., Buffalo, N. Y. Conveyer	408,733	Aug. 13	819	216	48	842
Meyer, Benjamin F. (See Knowlton and Meyer.)						
Meyer, Emil, Berlin, Germany. Obtaining methyl alcohol from wood-pulp lyes	407,442	July 23	2160		48	446
Meyer, Henry H., Atkinson, Nebr. Sash-fastener	411,128	Sept. 17	1536	407	48	1582
Meyer, Leopold, Ahnapee, Wis. Siphon	408,918	Aug. 13	1099	290	48	898
Meyer, Max, assignor to R. B. Ayres, New York, N. Y. Thermometric indicator	409,196	Aug. 27	2702	709	48	1218
Meyer, Philip, and W. Schrage, Sheboygan, Wis. Fodder-cutter	406,660	July 9	950	259	48	196
Meyer-Sniffen Company. (See Bunting, William, Jr., assignor.)						
Meylan, Charles H., assignor to Mathey Brothers, Mathez & Co., New York, N. Y. Watch-barrel	410,327	Sept. 3	305	79	48	1328
Meyrose, Ferdinand. (See Stempel, Omar A., assignor.)						
Meyrowitz, Emil B., Ridgefield, N. J., assignor to Levy, Dreyfus & Co., New York, N. Y. Opera-glass holder	411,527	Sept. 24	2009	554	48	1697
Michaels, Eli, Sweetser's, Ind. Churn	409,997	Aug. 27	2703	710	48	1218
Michaels, Herman, Denver, Colo. Exhibitor for wall-paper or other goods	409,218	Aug. 20	1557	412	48	993
Michales, Moses A., Allegheny, assignor of one-half to J. T. Moore, Pittsburg, Pa. Traction-gripper for cable railways	406,928	July 16	1366	357	48	283
Michaud, Gilbert, New York, N. Y. Flushing-valve	408,124	July 30	3176	830	48	647
Michaud, Onesime E., St. Louis, Mo. Car or other chair	410,845	Sept. 10	1100	296 / 297	48	1490
Michell, Lucius E., Palestine, Tex. Blow-off cock and fire-extinguisher	408,919	Aug. 13	1099	290	48	898
Mickleborough, M., *et al.* (See Condon, Samuel E., assignor.)						
Middleton, Arthur R. (See White and Middleton.)						
Middleton, Joseph C., Norristown, Pa. Boring-bit	407,668	July 30	2773	721	48	572
Midgley, Thomas, assignor of one-half to J. E. Emerson, Beaver Falls, Pa. Wire belting	410,250	Sept. 3	172	45	48	1302
Midgley, Thomas, assignor of one-half to J. E. Emerson, Beaver Falls, Pa. Wire belting	410,251	Sept. 3	173	46	48	1302
Midgley, Thomas, and W. B. Nye, Beaver Falls, Pa. Galvanizing metals	406,365	July 2	480	131	48	96
Miesenhelder, Benjamin F., and C. S. McCoy, Cincinnati, Ohio. Dust-collector	411,602	Sept. 24	2216	590	48	1722
Milburn, Charles F., Toledo, Ohio. Vehicle-axle	407,541	July 23	2302	594	48	475
Mildren, Edward J., Black Lick, Pa. Scoop for clay or ore mills	411,463	Sept. 24	2010	553	48	1679

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Miles, Frederick B., *et al.* (See Caldwell, James C., assignor.)						
Miles, Harmon A., Boston, Mass. Cash indicator and register	408,036	July 30	3020	780 / 791	48	619
Miles, James E., East Saginaw, Mich. Device for jointing the teeth of band-saws	410,647	Sept. 10	780	211	48	1428
Miles, Orrin D., and E. F. Scollay, Templeton, Mass. Bureau	409,853	Aug. 27	2509	656	48	1179
Miles, W. J. (See Crowner, States R., assignor.)						
Mill, Anton, assignor of one-half to H. Brockman, Cincinnati, Ohio. Carrying-sheave	410,986	Sept. 10	1303	351	48	1530
Millard, Walter W. (See Lemon, Austin H., assignor.)						
Millemann, Daniel G. (See Millemann, Daniel J. and D. G.)						
Millemann, Daniel J. and D. G., Jefferson, Ill. Latch	406,588	July 9	639	227	48	174
Millen, George H. (See Mantion, Millen, and Decurion.)						
Miller, Alexander, assignor of one-half to R. Deeley, New York, N. Y. Evaporating apparatus	410,715	Sept. 10	896	242 / 243	48	1447
Miller, Arthur J., Sweden, Pa. Canceling and registering device	407,543	July 23	2306	595	48	475
Miller, Asa R., Atlanta, Ga. Vehicle-wheel	409,610	Aug. 20	2130	560	48	1104
Miller, Charles H., and S. A. McDonald, Decatur, Tex. Sash-fastener	408,920	Aug. 13	1101	290	48	899
Miller, Charles W., assignor of one-half to O. Royce, Clifton, Ariz. Ter. Mail-pouch	406,582	July 9	761	207	48	139
Miller & Company, Edward. (See Homan, William C., assignor.)						
Miller & Company, Edward. (See Maschmeyer, Charles, assignor.)						
Miller, Cornelius, assignor of one-fourth to G. W. Pettis, Providence, R. I. Anti-freezing device for water-pipes	410,693	Sept. 10	855	230	48	1442
Miller, David R., Logansport, Ind. Tire-setting machine	407,739	July 23	2568	665	48	527
Miller, Edward E., Avenue City, Mo. Car-coupling	406,930	July 16	1369	359	48	284
Miller, Francis J., Carrollton, Ky. Thill-coupling	411,044	Sept. 17	1384	371	48	1553
Miller, Frederick W., Brooklyn, N. Y. Means for sinking tube-wells	406,457	July 9	629	160	48	138
Miller, George E., St. Louis, Mo. Kitchen-cabinet	408,125	July 30	3177	831	48	647
Miller, George M., York, Pa. Washing-machine	407,228	July 16	1890	476	48	371
Miller, Grant C., Mount Vernon, Iowa. Grass-catching attachment for lawn-mowers	409,053	Aug. 13	1299	343	48	936
Miller, Harry G., Winona, Minn. Clothes-reel	411,102	Sept. 17	1576	419	48	1592
Miller, Harry G., Winona, Minn. Fire-curtain	411,163	Sept. 17	1577	419	48	1592
Miller, Henry C., Soldiers' Home, Leavenworth County, Kans. Car-coupling link-holder	410,554	Sept. 3	631	169	48	1392
Miller, Henry J., Racine, Wis. Pocket for rubber coats	407,024	July 16	1500	392	48	309
Miller, Ignatius J., and H. A. Drake; said Drake assignor to I. L. Nelson, De Smet, Dak. Ter. Straw-burning stove	407,602	July 23	2384	618	48	491
Miller, James A., *et al.* (See Kittredge, Anson O., assignor.)						
Miller, James M., Washington, D. C. Hydraulic dredging apparatus	410,801	Sept. 10	1041	279	48	1478
Miller, James T., Atlanta, Ga. Vehicle-axle	408,639	Aug. 13	975	250	48	874
Miller, John A., Cairo, Ill. Watch-maker's tweezers	408,637	July 30	3038	792	48	620
Miller, John B. (See Thomson, Alexander, assignor.) (Reissue.)						
Miller, John C., assignor to Meriden Bronze Company, Meriden, Conn. Standard lamp	407,100	July 16	1627	426	48	334
Miller, John D., Ottoville, Ohio. Fence	410,912	Sept. 10	1192	322	48	1507
Miller, John D., assignor of one-half to J. A. Baker, Washington, D. C. Draft attachment for vehicles	406,755	July 9	1103	293	48	223
Miller, John H., Lewistown, Pa. Thill-coupling jack	408,921	Aug. 13	1102	291	48	899
Miller, John H., Newark, Ohio. Baking-oven	410,913	Sept. 10	1193	322 / 323	48	1507
Miller, Joseph, assignor to J. Miller and H. Snow, Greenfield, Ind. Automatic cut-off	406,847	July 9	1243	329	48	248
Miller, Joseph F., Hamburg, Iowa. Reel-carriage	408,499	Aug. 6	447	117	48	767
Miller, Joseph M., Chicago, Ill. Discharge-cock for fire-extinguishers	408,423	Aug. 6	331	86	48	744
Miller, Lewis. (See Davis, Charles D., assignor.)						
Miller, Lewis, Akron, Ohio. Lifting-jack	407,788	July 30	2647	685 / 686	48	549
Miller, Lewis, Akron, Ohio. Grain-binder	410,427	Sept. 3	459	123 / 124	48	1358
Miller, Ludvic M., Winneconne, Wis. Vehicle-hub	409,054	Aug. 13	1300	343	48	936
Miller, Luther L. (See Shoudy and Miller.)						
Miller, Michael M. (See Grant, Alexander, assignor.)						
Miller, Peter J., Upper Lehigh, Pa. Fastener for envelopes, boxes, &c	411,045	Sept. 17	1385	371	48	1555
Miller, Robert B., *et al.* (See Kittredge, Anson O., assignor.)						
Miller, Robert C., Channahon, Ill. Weather-strip	407,443	July 23	2161	558	48	446
Miller, Samuel J., Cambridge City, Ind. Fence-post	407,365	July 23	2037	528	48	421
Miller, Simon, Philadelphia, Pa. Shirt	410,328	Sept. 3	307	79	48	1328
Miller, Thomas T. (See Steiner, Henry W., assignor.)						
Miller, Uriah E., Heilig's Mill, N. C. Running-gear	406,226	July 2	281	78	48	57
Miller, Uriah E., Heilig's Mill, N. C. Quilting-frame	406,929	July 16	1367	358 / 359	48	284
Miller, William I. (See McKenzie and Miller.)						
Miller, William J., Mamaroneck, N. Y., assignor to E. & T. Fairbanks & Company, St. Johnsbury, Vt. Weighing-scales for suspension-tramways	411,507	Sept. 24	2070	548	48	1692
Milliken, Charles H. (See Milliken and D'Amour.)						
Milliken, George F., Boston, assignor of one-half to A. P. Sawyer, Newburyport, Mass. Signaling apparatus	407,101	July 16	1028	426	48	335
Milliken, John A., New York, C. H. Milliken and E. D'Amour, assignors of one-fourth to C. F. Smith, Brooklyn, N. Y. Ticket-printing machine	410,555	Sept. 3	632	169 / 170	48	1392
Mills, Daniel, Philadelphia, Pa. Button-hole attachment for sewing-machines	408,500	Aug. 6	448	117 / 118	48	767
Mills, Dwight P., Naugatuck, Conn. Bobbin	407,831	July 30	2719	706	48	561
Mills, Dwight P., Naugatuck, Conn. Making blanks for knitted drawers	410,600	Sept. 10	701	187	48	1412
Mills, George W. (See Jordan, Mills, and Jordan.)						
Mills, Mortimer B., Chicago, Ill. Derailing mechanism for railway-crossings	408,840	Aug. 13	977	259	48	874
Mills, William F. (See Flint, Samuel E., assignor.)						
Milwaukee Harvester Company. (See Crandall, Henry F., assignor.)						
Milwaukee Harvester Company. (See Graham, James A., assignor.)						
Milwaukee Harvester Company. (See Latimer, John W., assignor.)						
Milwaukee Harvester Company. (See Riley, Edward, assignor.)						
Minor, Henry C. (See Ghirardi, Etienne, assignor.)						
Mishler, Phares M., Hagerstown, Md. Portable fence	406,053	July 2	44	13	48	11
Mishler, Phares M., Hagerstown, Md. Hedge	410,914	Sept. 10	1194	323	48	1507
Mishler, Phares M., Hagerstown, Md. Hedge	411,464	Sept. 24	2012	534	48	1680
Misic, Michael, and E. Schweizer, Brooklyn, N. Y. Valve-gear for pumping-engines	409,654	Aug. 27	2510	656 / 657	48	1179
Missud, John A., New Orleans, La. Sewer-pipe	407,102	July 16	1031	426	48	335
Mitchell, Andrew W., Detroit, Mich. Shot-proof cage for railway-cars	407,832	July 30	2720	706	48	561
Mitchell, Charles C., Ann Arbor, Mich. Transom-lifter	411,465	Sept. 24	2013	534	48	1680

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Mitchell, Charles P., Boston, Mass. Twine package	408,841	Aug. 13	979	259	48	875
Mitchell, Charles P., Boston, Mass. Twine ball	408,842	Aug. 13	980	260	48	875
Mitchell, James G., assignor to Atlantic Refining Company, Philadelphia, Pa. Sectional roof for stills	409,998	Aug. 27	2704	710	48	1218
Mitchell, Joseph T., assignor of two-thirds to J. N. Sullivan and J. R. Wallace, trustee, Shelbyville, Tenn. Pulley	408,632	Aug. 6	651	169	48	805
Mitchell, Kerr M., St. Joseph, Mo. Apparatus for scrubbing and washing gas	407,025	July 16	1500	{392 / 393}	48	309
Mitchell, Nathaniel C., Philadelphia, Pa. Apparatus for washing and separating rubber	408,424	Aug. 6	335	86	48	744
Mitchell, Nathaniel C., Philadelphia, Pa. Mill for grinding and sheeting rubber	408,734	Aug. 13	821	216	48	842
Mitchell, Wickliff B., Owensburg, Ind. Match-safe	409,055	Aug. 13	1301	343	48	936
Mitchell, William P. (See Stump, Christian H., assignor.)						
Mitchum, Bettie, Hammonsville, Ky. Churn	408,126	July 30	3178	831	48	647
Mix, Frank W., New Britain, Conn. Hinge	407,366	July 23	2030	{528 / 529}	48	421
Mixter, Henry M., assignor of one-half to A. A. Elge, Empire, Mont. Ter. Miner's candlestick	410,892	Sept. 10	1042	279	48	1479
Mixter, Jason W., Plymouth, Mass. Saw-swage	406,227	July 2	282	78	48	57
Mixter, Jason W., Plymouth, Mass. Saw-gummer	406,228	July 2	283	78	48	57
Moeckel, Albert C. (See Moeckel, Gustave A. and A. C.)						
Moeckel, Gustave A. and A. C., Allegheny, assignors of one-half to A. H. Heisey, Pittsburg, Pa. Watch-movement box	410,370	Sept. 3	364	97	48	1341
Moffat, George D., assignor to R. P. Pattison, Chicago, Ill. Water-closet	408,038	July 30	3027	792	48	621
Mohan, Michael J., Covington, Ky. Side-saddle tree	406,108	July 2	120	35	48	25
Mohn, John G., and A. Yelles, Reading, Pa. Smoke-consuming apparatus	407,026	July 16	1502	393	48	309
Mohrig, Edwin, San Francisco, Cal. Bicycle	406,681	July 9	961	250	48	196
Mohrmann, Albert M., Port Townsend, Wash. Ter. Stove or furnace damper	411,603	Sept. 24	2218	500	48	1723
Molitor, John P., Vallejo, Cal. Nose-pad for eyeglasses	411,164	Sept. 17	1578	420	48	1592
Molyneux, Barton S., Minneapolis, Minn., assignor to National Water Supply Company, of Minnesota. Automatic electrical fluid-releaser	409,364	Aug. 20	1776	468	48	1036
Mond, Ludwig, Northwich, county of Chester, and C. Langer, London, county of Middlesex, England. Gas-battery	409,365	Aug. 20	1777	{468 / 469}	48	1037
Mond, Ludwig, Northwich, county of Chester, and C. Langer, London, county of Middlesex, England. Obtaining electricity from gas-batteries	409,366	Aug. 20	1781	469	48	1037
Monfort, Charles E., Utica, Mich. Watch-pivot	410,173	Sept. 3	50	13	48	1278
Monk, John, Preston, county of Lancaster, England. Picking-motion for looms	408,501	Aug. 6	451	114	48	768
Monk, Luther S., Bridgeton, Me., assignor of one-half to D. J. Head, Hanover, Mass. Carriage-jack	407,869	July 30	2774	721	48	572
Montelius, Frederick M., West Perry, Pa. Railway-gate	410,915	Sept. 10	1195	322	48	1508
Montgomery, Georgo V., Amsterdam, N. Y., assignor of one-half to A. S. Bridgess. Carriage-bow	407,959	July 30	2916	760	48	599
Montgomery, James H., Denver, Colo. Hoisting apparatus	409,656	Aug. 20	2198	{570 / 571}	48	1116
Montgomery, John, Jarvis, Ontario, Canada. Freight-car door	410,694	Sept. 10	857	230	48	1442
Montmiuy, Charles. (See Matte and Montminy.)						
Moody, Henry T., assignor to Victor Manufacturing Company, Newburyport, Mass. Rail-support	408,892	Aug. 13	1060	280	48	891
Moody, William K., Boston, Mass. Apparatus for holding and washing photographic negatives	411,253	Sept. 17	1704	{455 / 456}	48	1618
Moomy, Joseph G., Erie, Pa. Belt-pulley	410,763	Sept. 10	982	264	48	1464
Moomy, Joseph G., Erie, Pa. Friction-clutch	410,764	Sept. 10	983	264	48	1464
Moomy, Joseph G., assignor to Taper Sleeve Pulley Works, Erie, Pa. Wooden pulley	406,402	July 2	540	151	48	109
Moore, Arthur, Toronto, Ontario, Canada. Grain-scourer	406,931	July 16	1371	359	48	284
Moore, Benjamin F., Ivanhoe, Kans. Corn-cutter	410,371	Sept. 3	365	97	48	1341
Moore, C. D., *et al.* (See Paine, George C., assignor.)						
Moore, Calvin L., Lebanon, Pa. Valve-head for blowing-engines	410,372	Sept. 3	366	97	48	1341
Moore, Commodore D., Pursley, W. Va. Car-coupling	409,855	Aug. 27	2511	658	48	1179
Moore, Daily S., assignor of two-thirds to A. and A. Price, Chicago, Ill. Railway-track layer	408,186	July 30	3274	835	48	663
Moore, Edward Y., and H. B. Tefft, Milwaukee, Wis. Hoisting-machine	411,604	Sept. 24	2219	{500 / 501}	48	1723
Moore, Everett D. (See Applegarth and Moore.)						
Moore, Everett D., assignor of one-half to R. W. Applegarth, Baltimore, Md. Water coil boiler	409,056	Aug. 13	1302	{343 / 344}	48	936
Moore, Everett D., and T. C. Chappell, Baltimore, Md., said Moore assignor to said Chappell. Letter-box	407,870	July 30	2775	721	48	572
Moore, Frank S., Brooklyn, N. Y. Feeder for stoves or lamps for burning oil	406,932	July 16	1373	360	48	285
Moore, Frederic H., Boston, Mass. Apparatus for purifying water	411,292	Sept. 17	1756	470	48	1638
Moore, George C., assignor to J. W. Green, Jr., and Glendale Elastic Fabric Company, Easthampton, Mass. Tension-regulating device for loom-shuttles	407,411	July 23	2104	543	48	434
Moore, George C., assignor to J. W. Green, Jr., and Glendale Elastic Fabric Company, Easthampton, Mass. Loom-shuttle	407,671	July 30	2776	731	48	572
Moore, George C., assignor to J. W. Green, Jr., and Glendale Elastic Fabric Company, Easthampton, Mass. Narrow-ware loom	407,872	July 30	2778	{732 / 733}	48	572
Moore, John T. (See Michalea, Moses A., assignor.)	408,610	Aug. 13	936	249	48	867
Moore, Lindley M., Rochester, N. Y. Truck-basket	411,347	Sept. 17	1644	402	48	1643
Moore, Linn B. and M. S. Love, Morley, Mo. Plant-protector	408,386	Aug. 6	270	67	48	731
Moore, Matthew R., Indianapolis, Ind. Sand-molding machine	409,797	Aug. 27	2433	638	48	1166
Moore, Melville M., Springfield, Mo. Gate-latch	408,314	Aug. 6	158	40	48	710
Moore, Samuel, Providence, R. I. Machine for making bead chains	408,039	July 30	3029	792	48	621
Moore, Seth M., Harper, Kans. Mail-bag fastening	409,695	Aug. 27	2274	598	48	1137
Moore, Stephen F., Milwaukee, Wis. Carving-machine	408,735	Aug. 13	822	217	48	843
Moore, Theophilus W., Fruit Cove, Fla. Device for preserving cut flowers						
Moorhead, Robert J., *et al.* (See Gifford and Allen, assignors.)	406,145	July 2	171	49	48	35
Moos, Henry A., Seguin, Tex. Packing-case						
Moosbrugger, Joseph, assignor of one-third to C. B. McBride, St. Paul, Minn. Cover for barrels. (Reissue)	11,027	Aug. 27	2940	772	48	1202
Moran, John D., New York, N. Y. Chain-wrench	406,662	July 9	962	250	48	196
Morand, Paul J. (See Taft and Morand.)						
Morant, Robert, assignor to J. K. Welch, London, England. Glass or porcelain lined metal T-piece or elbow for pipes	409,112	Aug. 13	1308	368	48	955
Morehouse, Melvin W., and N. S. Kellogg, Brooklyn, N. Y. Pipe-wrench	406,177	July 2	218	59	48	43
Morgan Envelope Company. (See Gibbons, Watson E., assignor.)						
Morgan Envelope Company. (See Hicks, Oliver H., assignor.)						
Morgan, John S., and E. M. Beanblossom, Emporia, Kans. Car-coupling	406,933	July 16	1375	360	48	285

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Morgan, Richard, *et al.* (See Kleman, Henry, assignor.)						
Morgan, Waltman M., Kansas City, Mo. Car-wheel	409,219	Aug. 20	1558	412	48	994
Morian, Carlos C., assignor of one-half to J. V. D. Coon and M. C. Follett, Olean, N. Y. Hot-soda apparatus	411,293	Sept. 17	1757	470	48	1639
Morley, James H., Florence, assignor of one-half to G. Nightingale, Holyoke, Mass. Sliding door	408,502	Aug. 6	452	119	48	768
Morley, James H., Florence, assignor of one-half to G. Nightingale, Holyoke, Mass. Trolley-track	408,503	Aug. 6	455	119	48	769
Morley, Joseph D., Philadelphia, Pa. Trimming for the edges of fabrics	410,498	Sept. 3	464	125	48	1359
Morley, Joseph D., assignor to Scott, Morley & Co., Philadelphia, Pa. Trimming for fabrics	409,416	Aug. 20	1653	439	48	1052
Moriot, George, Paterson, N. J. Bougie	408,425	Aug. 6	336	87	48	745
Morrin, Thomas F., Jersey City, N. J. Steam-generator	407,940	July 30	2985	751	48	592
Morris Box Lid Company. (See Freidel, Leonard, assignor.)						
Morris, Edward E. (See Norton, Henry M., assignor.)						
Morris, Henry G., and P. G. Salem, Philadelphia, Pa. Apparatus for filling secondary-battery plates	408,986	Aug. 13	1197	{315 / 316}	48	916
Morris, Joseph, London, England. Fountain-pen	407,412	July 23	2105	544	48	434
Morrison, Horatio B., Britt, assignor of three-fourths to F. M. Rogers, C. H. Hughes, and W. H. Cottrell, Mason City, Iowa. Wrench	407,740	July 23	2569	665	48	538
Morrison, John H., Pawtucket, R. I. Feeder for braid-rolls and small spools	408,187	July 30	3275	855	48	664
Morrison, William, Toronto, Ontario, Canada. Boiler	407,229	July 16	1823	476	48	372
Morrissey, Timothy, and J. Doyle, assignors to Ionia Steam Hand Car Company, Ionia, Mich. Steam hand-car. (Reissue)	11,021	Aug. 13	1473	388	48	970
Morrow, Horace G., Bradford, Pa. Head-protector	411,348	Sept. 17	1645	403	48	1643
Morse, John H., *et al.* (See Connett, Martin L., assignor.)						
Morse, Marcellus A., Chicago, Ill. Cupola gas-generating furnace	410,846	Sept. 10	1102	297	48	1490
Morse, Marcellus A., Chicago, Ill., and T. G. Springer, New York, N. Y. Process of and apparatus for manufacturing gas	411,329	Sept. 17	1696	506	48	1653
Morse, Orville M., assignor to Knickerbocker Company, Jackson, Mich. Dust-collector	408,987	Aug. 13	1198	316	48	917
Morse, Orville M., assignor to Knickerbocker Company, Jackson, Mich. Dust-collector	409,482	Aug. 20	1945	515	48	1071
Morse, Charles A. (See Oulton and Meister, assignors.)						
Morton, Joseph C., Hamilton, Mo. Vehicle-brake	408,736	Aug. 13	823	217	48	843
Morton, William S., Edinburgh, county of Mid-Lothian, Scotland. Making decorative embossed work	407,603	July 23	2383	619	48	492
Morton, William S., Edinburgh, county of Mid-Lothian, Scotland. Wall-decorating materials	407,604	July 23	2386	619	48	492
Mortson, George. (See Claussen and Mortson.)						
Moses, Frank D., Zanesville, Ohio. Apparatus for the manufacture of gas	410,174	Sept. 3	51	13	48	1278
Mosher, Charles, South Bend, Ind. Package for dress-stays	407,674	July 23	2479	641	48	509
Mosher, Silas H., assignor to Mosher Tubular Metallic Packing and Manufacturing Company, Chicago, Ill. Glue-heater	410,765	Sept. 10	984	264	48	1464
Mosher Tubular Metallic Packing and Manufacturing Company. (See Mosher, Silas H., assignor.)						
Moskovits, Maximilian H., Kansas City, Mo. Furnace-grate	407,873	July 30	2782	723	48	573
Mosler, Moses, and M. S. Goldsmith, assignors to Mosler Safe and Lock Company, Cincinnati, Ohio. Fire-proof safe	406,848	July 9	1244	329	48	248
Mosler Safe and Lock Company. (See Mosler and Goldsmith, assignors.)						
Mosman, Charles F., assignor to Foster, Merriam & Company, Meriden, Conn. Drawer-pull	407,027	July 16	1503	393	48	310
Motherwell, David M., Logan, Ohio. Bolt	409,696	Aug. 27	2276	599	48	1138
Mott Iron Works, J. L. (See Hammann, Edward, assignor.)						
Mott, Joseph T., Brooklyn, N. Y. Transporting-package for fruit	410,429	Sept. 3	466	125	48	1359
Motter, Jerome B., Mannington, W. Va., and E. B. Todd, assignors of one-eighth to C. L. Schaum, Pittsburg, Pa. Car-coupling	411,466	Sept. 24	2014	{534 / 535}	48	1680
Munat, Thomas G. G., Detroit, Mich. Water-heater	408,249	Aug. 6	70	17	48	692
Mouat, Thomas G. G., and L. Burt, Detroit, Mich. Water-heater	408,893	Aug. 13	1062	280	48	891
Moulton, Edward M. and M., Rochester, N. Y.; said M. Moulton assignor to Edward M. Moulton. Clock	408,605	Aug. 6	706	183	48	814
Moulton, Mark. (See Moulton, Edward M. and M.)						
Mountain, Robert T. (See Martin, Frank F., assignor.)						
Moxham, Arthur J., Johnstown, Pa. Rolling steel or iron	408,843	Aug. 13	981	260	48	875
Moxham, Arthur J., Johnstown, Pa. Rolling iron or steel	408,844	Aug. 13	982	{260 / 261}	48	875
Moyer, Harvey A., Syracuse, N. Y. Spring-vehicle	410,847	Sept. 10	1104	297	48	1490
Moyer, Jesse H., Temple, Tex. Padded hat	409,417	Aug. 20	1654	490	48	1052
Moyer, Jesse H., and J. P. Stansell, Temple, Tex. Dental-drill attachment	408,923	Aug. 13	1101	291	48	899
Moyle, Edward, Grass Valley, Cal. Drill-chuck	410,601	Sept. 10	702	183	48	1412
Mozingo, Lewis W., Kansas City, Mo. Combined water cooler and filter	406,054	July 2	45	13	48	12
Muir, George, Brooklyn, N. Y. Copy-holder	410,602	Sept. 10	703	188	48	1412
Muir, William. (See Ladd and Muir.)						
Muir, William E. (See Childs and Muir.)						
Mullan, John. (See Frazer, William H., assignor.)						
Mullen, Francis M. (See Mullen, Winfield W. and F. M.)						
Mullen, Winfield W. and F. M., Bunker Hill, Ind. Grain-drill	411,528	Sept. 24	2100	554	48	1696
Muller, Ernst J. (See Cunningham and Muller.)						
Muller, Ernst J., Milwaukee, Wis. Gang-edger	406,458	July 9	641	{130 / 131}	48	138
Müller, Fritz, assignor to A. Dolge, New York, N. Y. Tool-holder	407,230	July 16	1824	477	48	373
Müller, John P., Brooklyn, N. Y. Measuring-vessel for liquids	406,366	July 2	481	134	48	96
Mulrooney, John. (See Kallaher and Mulrooney.)						
Mulvey, John F. (See Greenhalgh, James, assignor.)						
Muman, L. D. (See Decker, John, assignor.)						
Mumma, Jacob S. (See Nissley, Mumma, Hostetter, and Harris.)						
Muncaster, Walter J., assignor of one-half to M. McKaig, Cumberland, Md. Work-holder	409,267	Aug. 20	1784	470	48	1038
Muncaster, Walter J., assignor of one-half to M. McKaig, Cumberland, Md. Pulley-chuck	409,483	Aug. 20	1947	{515 / 516}	48	1071
Munger, Lyman F., Rochester, N. Y. Time-lock	409,220	Aug. 20	1561	412	48	994
Munger, Orlo L., assignor of one-half to W. C. Powers, Gresham, Nebr. Camera attachment	406,934	July 16	1376	360	48	285
Municipal Signal Company. (See Wilson, John C., assignor.)						
Munnell, Thomas, Mount Sterling, Ky. Cash indicator and register	410,603	Sept. 10	705	{189 / 190 / 191 / 192}	48	1412
Munro, Stuart C., London, county of Middlesex, England. Permutation-lock	406,459	July 9	646	{131 / 132}	48	139

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'gs.	Official Gazette. Vol.	Official Gazette. Page.
Munsing, George D., Minneapolis, Minn. Crocheting-machine	411,046	Sept. 17	1386	372	48	1355
Munson, Andrew M., Lee, Ill. Automatic stop for barbing-machines	408,737	Aug. 13	893	217, 218	48	843
Munson, Fred W., *et al.* (See Seifried, Samuel J., assignor.)						
Munson, John E., *et al.* (See McClellan, James M., assignor.)						
Munson, Louis L., *et al.* (See Seifried, Samuel J., assignor.)						
Munton, James, Maywood, assignor to himself and C. H. Ferry, Chicago, Ill. Manufacturing rolled rings or tires	410,604	Sept. 10	714	192	48	1414
Murby, Edward, Detroit, Mich. Knitting-machine	407,960	July 30	2917	760	48	599
Murby, Edward, Detroit, Mich. Looping attachment for knitting-machines	409,856	Aug. 27	2512	657	48	1180
Murdock, Charles F., Detroit, Mich. Safety-valve for car-heaters	406,290	July 2	302	99	48	73
Murdock, Charles F., Detroit, Mich. Car-heating apparatus	406,756	July 9	1104	293	48	223
Murdock, Charles F., assignor to Automatic Car Coupler Heating Company, Detroit, Mich. Pipe-coupler	409,607	Aug. 27	2277	599	48	1138
Murdock, William C., Washington, D. C., assignor to National Vulcanite Company, New York, N. Y. Vulcanite pavement	408,250	Aug. 6	71		48	603
Murdy, William L., Albia, Kans. Stack-fastener	409,857	Aug. 27	2514	658	48	1180
Murphy, Albert R., Philadelphia, Pa. Blacksmith's device for finishing horseshoes	406,504	Aug. 6	457	120	48	769
Murphy, Edward H., St. Paul, Minn. Grease and oil separator	409,698	Aug. 27	2279	599	48	1138
Murphy, James B. (See Beynon, John R., assignor.)						
Murphy, Jeremiah, Jr., Berkley, assignor to B. F. Handy, Springfield, Mass. Safety-crank for hand-cars	406,935	July 16	1377	361	48	286
Murphy, John J., New York, N. Y. Filter system	409,611	Aug. 20	2132	560	48	1105
Murphy, Peter H., East St. Louis, Ill. Door-hanger	409,099	Aug. 27	2706	710	48	1219
Murr, William, Fountain City, Wis. Horse-collar	409,418	Aug. 20	1855	490	48	1052
Murray, Charles T., Kansas City, Mo. Exhaust-ventilator	407,488	July 23	2224	574	48	458
Musick, John U. (See Andrews, Willard J., assignor.)						
Mussey, Norman S., New York, N. Y. Safety-pilot for railway-trains	407,103	July 16	1631	426, 427, 428	48	33
Mutual Electric Manufacturing Company. (See Knowles, Edward R., assignor.)						
Myers, Addison D., Geneva, Ohio. Scythe-snath fastening	408,505	Aug. 6	457	120	48	769
Myers, Edward. (See Smith and Myers.)						
Myers, George W., assignor of one-half to A. Overhalt, Philadelphia, Pa. Attachment seat for bath-tubs	409,645	Aug. 20	2184	575	48	1114
Myers, Jacob H., Rochester, N. Y. Vault or safe	411,669	Sept. 24	2316	614	48	1743
Myers, John A., Louisville, Ky. Tool-post for lathes	409,464	Aug. 20	1949	516	48	1071
Myers, William J., assignor to G. P. Bissell & Co., Hartford, Conn. Door-mat	410,556	Sept. 3	637	170	48	1394
Nadorff, Henry, Louisville, Ky. Washing-machine	411,349	Sept. 17	1846	493	48	1644
Nafis, George R., Brooklyn, N. Y. Walking-stilt	407,546	July 23	2312	597	48	477
Nagle, Augustus F., Chicago, Ill. Double-seated valve	407,676	July 23	2482	642	48	509
Nagle, William. (See Doughty, William H., assignor.)						
Nash, George W., Chelsea, assignor of one-half to E. N. Hunt, Reading, Mass. Toy cannon	410,433	Sept. 3	471	126	48	1360
Nash, George W., Chelsea, assignor of one-half to E. N. Hunt, Reading, Mass. Toy gun	410,434	Sept. 3	471	126	48	1360
Nash, Lewis H., Brooklyn, assignor to National Meter Company, New York, N. Y. Case for rotary water-meters	408,507	Aug. 6	462	121	48	770
Nash, Lewis H., Brooklyn, assignor to National Meter Company, New York, N. Y. Apparatus for constructing water-meters	408,508	Aug. 6	463	121, 122	48	770
National Automatic Device Company. (See Lang, Fred N., assignor.)						
National Cash Register Company. (See Craig, William S., assignor.)						
National Cash Register Company. (See Patterson, John H., assignor.)						
National Loom Harness Company. (See Ladd and Muir, assignors.)						
National Meter Company. (See Nash, Lewis H., assignor.)						
National Refrigerating Company. (See Graf, Robert R., assignor.)						
National Switch and Signal Company. (See Koyl, Charles H., assignor.)						
National Vulcanite Company. (See Murdock, William C., assignor.)						
National Water Supply Company. (See Molyneux, Barton S., assignor.)						
Neal, Adam S., Richmond, Tex. Car-coupling	407,231	July 16	1895	477	48	373
Neave, John H., Rainow, near Macclesfield, county of Chester, England. Treating hats made from felted materials	408,925	Aug. 13	1106	292	48	900
Nees, Charles, *et al.* (See Dellenbaugh, Charles R., assignor.)	407,106	July 16	1638	425	48	336
Nehf, Leonard J. M., Sutton, Nebr. Anchor attachment for windmill-posts	409,859	Aug. 27	2516	658	48	1180
Nellenatey'n, Gysbert D., Amsterdam, Holland. Enfleurage	406,109	July 2	121	35, 36	48	25
Nelson, Anthony, assignor to J. B. Forsyth, Boston, Mass. Friction-clutch	407,107	July 16	1639	429	48	337
Nelson, Charles R., Portland, Me. Heater						
Nelson, I. L. (See Miller and Drake, assignors.)						
Nelson, Thomas F., Denver, Colo. Adjustable package-binder	407,308	July 23	2042	529	48	422
Nesler, Charles L., Clinton, N. J. Tobacco-pouch	406,941	July 16	1385	359	48	287
Netherwood, Abraham, New Brunswick, N. J. Tension-regulating device for spindle-driving bands	409,799	Aug. 27	2435	636	48	1167
Netsell, Hans, Stromsburg, Nebr. Washing-machine	406,230	July 2	226	79	48	57
Neubrand, Gabriel, St. Louis, Mo. Lock	407,547	July 23	2313	597	48	477
Neuhäuser, Otto, Pforzheim, Baden, Germany. Velocipede	410,179	Sept. 3	58	15	48	1280
Neuss, Joseph, Sr., Berlin, Germany. Removable calk for horseshoes	410,008	Aug. 27	2730	715	48	1222
Nevens, Frank W., Minneapolis, Minn., assignor to Electric Cutting Machine Company, Chicago, Ill. Cloth-cutting machine. (Reissue)	11,019	Aug. 6	732	190	48	819
Neville, Asa G., Lazearville, W. Va. Glass-melting pot	409,368	Aug. 20	1786	470	48	1038
New Departure Bell Company. (See Rockwell, Albert F., assignor.)						
New England Fibre Company. (See Crocker, William O. and W. P., assignors.)						
New Haven Wire Goods Company. (See Perkins, William C., assignor.)						
New York Atmospheric Conduit Electric Light and Power Company. (See Wallace, Thomas, assignor.)						
New York Glass Enameling Company. (See Brock, William E., assignor.)						
New York School Book Clearing House. (See Giroud, Peter G., assignor.)						
Newark District Telegraph Company (See Speicher, John, assignor.)						
Newark Filtering Company. (See Hyatt, John W., assignor.)						
Newburg, John P., Rock Island, Ill. Coaster	411,255	Sept. 17	1708	466, 467	48	1619
Newcomb, Evander B., Parsons, Kans. Motor	407,942	July 30	2888	732	48	593
Newell, H. L. (See Tyrrel, Alvin D., assignor.)						
Newell, Joshua B., Georgiaville, R. I. Loom-temple	409,369	Aug. 20	1767	470	48	1038
Newikuf, Michael, Vienna, Austria-Hungary. Postal packet	411,508	Sept. 24	2073	543	48	1693
Newman, Edwin A., Washington, D. C., assignor of one-half to D. L. Snediker, Emporia, Kans. Drawing-board	408,315	Aug. 6	162	41	48	711

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'gs.	Official Gazette. Vol.	Official Gazette. Page.
Newman, Edwin A., Washington, D. C., assignor of one-half to D. L. Snediker, Emporia, Kans. Hat-holder	411,672	Sept. 24	2322	615	48	1744
Newman, Edwin A., Washington, D. C., assignor of one-half to D. L. Snediker, Emporia, Kans. Vehicle-shaft coupling	411,673	Sept. 24	2323	615	48	1745
Newman, Nelson, Springfield, Ill. Tack-driver	407,444	July 23	2162	558	48	446
Newman, Nelson, assignor of two-thirds to G. A. Sanders and S. J. Willett, Springfield, Ill. Store-service apparatus	406,942	July 16	1386	363	48	287
Newman, Nelson, assignor of two-thirds to G. A. Sanders and S. J. Willett, Springfield, Ill. Car-coupling	409,490	Aug. 20	1857	490	48	1053
Newman, Samuel T., assignor of one-half to E. Tweedy, Danbury, Conn. Hat-stay	407,108	July 16	1640	430	48	337
Newman, Samuel T., assignor of one-half to E. Tweedy, Danbury, Conn. Hat-stay	407,109	July 16	1642	430	48	337
Newman, William D., Pataska, Ill. Music-book holder	411,395	Sept. 17	1759	471	48	1620
Newton, Albert H., Cohoes, N. Y. Brick-mold-sanding machine	407,630	July 16	1507	394	48	311
Newton, Charles C., Philadelphia, Pa. Machine for sawing metal	410,009	Aug. 27	2780	715	48	1222
Ney, Valentine L. (See Stansbaugh and Ney.)						
Niagara Hydraulic Electric Company. (See Hamilton, Silas H., assignor.)						
Nichols, Francis M., Chillicothe, Ohio. Can-filling machine	407,943	July 30	2890	752, 753	48	594
Nichols, Frederick W., assignor of one-half to J. E. Ingersoll, Adrian, Mich. Means for preventing the slipping of belts	410,805	Sept. 10	1047	280	48	1479
Nichols, John, Baldwinsville, Mass. Chair	410,567	Sept. 3	653	173	48	1397
Nichols, John P., Marion, Ind. Exercising-machine	408,251	Aug. 6	73	17	48	603
Nichols, John T., Decatur, Ill. Farrier's anvil	407,833	July 30	2722	706, 707	48	502
Nicholson, Andrew B., Denver, Colo., assignor to Western Opera Glass Supply and Manufacturing Company. Coin-controlled locking and registering mechanism	408,811	Aug. 13	937	250	48	867
Nick, Henry L., New Orleans, La. Tucking-guide for sewing-machines	408,190	July 30	3279	856	48	964
Nickerson, Sparrow M., and C. J. Holman; said Holman assignor of one-half to W. Kaplinger, Chicago, Ill. Sad-iron	406,943	July 16	1386	363	48	287
Nickerson, William E., Cambridge, Mass. Controlling device for elevators	406,296	July 2	374	101, 102	48	75
Nickerson, William E., Cambridge, Mass. Device for operating doors for elevator-wells	407,110	July 16	1644	430, 431	48	338
Nickerson, William E., Cambridge, Mass. Fluid speed-regulator for elevators	407,677	July 23	2484	642, 643	48	510
Nickerson, William E., Cambridge, Mass. Device for operating elevator-doors	408,509	Aug. 6	465	122, 123	48	770
Nickerson, William E., Cambridge, Mass. Safety-cushion for elevators	409,486	Aug. 20	1951	516	48	1072
Nickerson, William E., Cambridge, Mass. Safety-cushion for elevators	409,487	Aug. 20	1952	517	48	1072
Nickley, Alden C., assignor of one-half to W. W. Whitaker, Gloversville, N. Y. Railway-tie	409,860	Aug. 27	2518	659	48	1181
Nicolaus, Edmond B., deceased, Cleveland, Ohio; P. Schneider administrator. Device for automatically manipulating the valves of high-vacuum pumps	406,231	July 2	288	79	48	58
Nielsen, Valdemar, Odense, Denmark. Brick-kiln	411,726	Sept. 24	2396	634	48	1760
Niese, Henry E., assignor to F. O. Matthiessen and Wiechers Sugar Refining Company, Jersey City, N. J. Refining sugar	409,333	Aug. 20	1732	455, 456	48	1027
Nightingale, George. (See Morley, James H., assignor.)						
Nightingale, Josiah E., Danvers, Mass. Music-leaf turner	411,052	Sept. 17	1395	374	48	1557
Nightingale, William, Valley, Nebr. Hay-stacker	406,531	July 9	765	208	48	160
Niles, Milton C., Chicago, Ill. Rail-joint	407,301	July 16	1925	501	48	392
Niles, Milton C., Chicago, Ill. Rail-joint	407,302	July 16	1927	502	48	392
Niles, William F., Jersey City, N. J., assignor to Vulcanite Manufacturing Company, New York, N. Y. Machine for molding buttons	410,929	Sept. 3	233	60, 61	48	1314
Nissley, Jacob K., J. S. Mumma, J. Hostetter, Florin, Pa., and J. W. Harris, Staunton, Va. Transplanter	411,225	Sept. 17	1606	445	48	1611
Nist, Joseph W., Allegheny, Pa. Device for setting the tool-carriers of planers	410,280	Sept. 3	235	61	48	1315
Nosek, O. H. Hugo, Stamford, Conn. Hoisting-gear	411,165	Sept. 17	1579	420	48	1582
Nobbs, Edward F., assignor to American Ring Company, Waterbury, Conn. Handle	407,898	July 30	2890	734	48	581
Noble, Eric M. (See Raborg, William A., assignor.)						
Noble, Eric M., assignor of one-half to W. A. Raborg, Washington, D. C. Letter-box	407,303	July 16	1929	502	48	393
Noble, James, Jr. (See Ring, Elkanah, assignor.)						
Noecker, Frank, St. Louis, Mo. Automatic toy	409,488	Aug. 20	1953	517	48	1072
Norman, John. (See Shaw, William H., assignor.)						
Nolley, David D., assignor of two-thirds to G. D. Green & Co., Wilson, N. C. Back-band hook	410,806	Sept. 10	1048	280	48	1479
Nolte, Fred W., St. Louis, Mo. Self-adjusting eyeglass-frame	407,789	July 30	2650	686	48	556
Nonantum Worsted Company. (See Parker, Edwin W., assignor.)						
Nonotuck Silk Company. (See Sheara, Joseph H., assignor.)						
Noppel, Emil. (See Dorn and Noppel.)						
Northland, Andrew, Menominee, Mich. Machine for manufacturing curtain-rollers	406,592	July 9	843	228	48	174
Norrell, James H., Augusta, Ga. Scissors attachment	410,375	Sept. 3	370	99	48	1342
Norris, David P., Lawrence, Mass. Wool-combing machine	411,053	Sept. 17	1396	374	48	1557
Norris, Henry D. (See Thompson and Wilson, assignors.)						
Norris, Samuel, Kinsale, Va. Can-filling machine	408,353	Aug. 6	218	56	48	722
North, Charles H. (See Drumheller and North.)						
North, Loyal C., Grimes, Iowa. Metal-shears	411,727	Sept. 24	2397	635	48	1760
Northcott, Theodore C., *et al.* (See Clark, Jasper, assignor.)						
Northup, H. Davis, Fort Edward, N. Y. Automatic ale tap and faucet	409,659	Aug. 13	1306	345	48	937
Norton, Dennis, *et al.* (See Barry, Henry, assignor.)						
Norton, Edwin. (See Hodgson and Norton.)						
Norton, Edwin, *et al.* (See Hodgson, John G., assignor.)						
Norton, Edwin, Maywood, assignor to himself, and O. W. Norton, Chicago, Ill. Apparatus for rolling sheet metal from fluid metal	406,947	July 16	1394	366	48	289
Norton, Edwin, Maywood, assignor to himself and O. W. Norton, Chicago, Ill. Can-cap-soldering machine	408,252	Aug. 6	75	17	48	603
Norton, Edwin, Maywood, assignor to himself and O. W. Norton, Chicago, Ill. Machine for soldering vent-holes	408,253	Aug. 6	77	17	48	604
Norton, Edwin, Maywood, assignor to himself and O. W. Norton, Chicago, Ill. Can ending and crimping machine	408,254	Aug. 6	78	18	48	604
Norton, Edwin, and J. G. Hodgson, Maywood, assignors to said Norton, and O. W. Norton, Chicago, Ill. Apparatus for manufacturing railway-rails	406,944	July 16	1388	363, 364	48	288
Norton, Edwin, and J. G. Hodgson, Maywood, assignors to said Norton, and O. W. Norton, Chicago, Ill. Apparatus for making sheet metal	406,945	July 16	1390	364, 365	48	288
Norton, Edwin, and J. G. Hodgson, Maywood, assignors to said Norton, and O. W. Norton, Chicago, Ill. Manufacture of metal bars or rails	406,946	July 16	1391	365, 366	48	288

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Norton, Edwin, and J. G. Hodgson, Maywood, assignors to said E. Norton and O. W. Norton, Chicago, Ill. Can-cap-soldering machine	408,316	Aug. 6	163	41	48	711
Norton, Henry M., assignor of one-half to E. E. Morris, Louisville, Ky. Mechanism for operating three-throw switches	410,916	Sept. 10	1196	324	48	1508
Norton, James A., assignor of one-half to J. A. Stone, Vail, Iowa, and B. Langan, Centreville, Dak. Ter. Corn-harvesting machine	411,728	Sept. 24	2398	635	48	1760
Norton, Oliver W. (See Hodgson and Norton, assignors.)						
Norton, Oliver W. (See Norton, Edwin, assignor.)						
Norton, Oliver W. (See Norton and Hodgson, assignors.)						
Norton, Oliver W., *et al.* (See Hodgson, John G., assignor.)						
Norton, Thomas, Fall River, Mass. Loom-temple	408,354	Aug. 6	220	56	48	722
Norton, Thomas, Fall River, Mass. Picker-check for looms	411,556	Sept. 24	2143	568	48	1707
Norwalk Lock Company. (See Hoffman, Henry, Jr., assignor.)						
Norwalk Lock Company. (See Taylor, Thomas, assignor.)						
Norwood, George, Boston, Mass., assignor of one-half to L. Kolb, Cincinnati, Ohio. Vehicle-spring	410,716	Sept. 10	901	243	48	1448
Norwood, Richard W., assignor of one-half to J. C. Grant, Courtland, Ala. Railway-signal	409,648	Aug. 20	2186	576	48	1115
Notley, William, London, county of Middlesex, England. Lamp-extinguisher	407,232	July 16	1825	477	48	373
Notley, William, Peckham, county of Surrey, England. Lamp-burner	409,614	Aug. 20	2139	561 562	48	1106
Nunes, Henry, *et al.* (See Lighthipe, James A., assignor.)						
Nungesser, Philip P., Cleveland, Ohio. Kiln for the manufacture of carbons	409,489	Aug. 20	1954	517	48	1072
Nungesser, Philip P., Cleveland, Ohio. Manufacturing carbons	409,490	Aug. 20	1956	518	48	1073
Nusbaum, George W., Lehighton, Pa. Toy	409,421	Aug. 20	1950	491	48	1053
Nussbeck, Richard. (See Barret and Nussbeck.)						
Nutting, Granville, assignor to United States Watch Company, Waltham, Mass. Pinion-holder for pinion-polishing machines	410,558	Sept. 3	610	170	48	1394
Nyblin, Anders G., Stockholm, Sweden. Dental forceps	408,739	Aug. 13	827	218	48	844
Nye, Walter B. (See Midgley and Nye.)						
Nygaard, Christian, Oshkosh, Wis. Cant-hook	406,297	July 2	376	102	48	76
O'Beirne, William H., New Orleans, La., assignor to Star Iron Tower Company, Fort Wayne, Ind. Mast-arm	410,556	Sept. 3	642	171	48	1394
O'Brian, Leonard W., assignor to Fremont Cultivator Company, Bellevue, Ohio. Clip or saddle rake-tooth holder	408,128	July 30	3179	831	48	648
O'Brian, Leonard W., assignor to Fremont Cultivator Company, Bellevue, Ohio. Right-angle tooth-holder	410,435	Sept. 3	473	127	48	1360
O'Brien, Dennis, Oswayo, Pa. Astronomical mirror	408,511	Aug. 6	468	123	48	771
O'Brien, James P. (See Cooper and O'Brien.)						
O'Brien, Joseph S., Springfield, Mass. Toy	410,010	Aug. 27	2722	716	48	1222
O'Connell, Patrick, assignor to Johnson Company, Johnstown, Pa. Interlocking brace-chair for railway-rails	409,114	Aug. 13	1400	369	48	955
O'Connor, Stephen, Bridgeport, Conn. Sewing-machine	410,011	Aug. 27	2723	716	48	1222
O'Donnell, Bryan, Vail, Iowa. Marking and dropping attachment for corn-planters	410,605	Sept. 10	715	192	48	1414
O'Hearne, John E. (See Riesenberg and O'Hearne.)						
O'Kelly, James M., New York, N. Y., assignor to Automatic Vending Box Company, of New York. Selling-machine	406,593	July 9	844	228	48	175
O'Neil, James C., Cleveland, Ohio. Electric signaling device	406,057	July 2	48	14	48	12
O'Neill, Ellis I. (See Josephs and O'Neill.)						
O'Shea, Dennis, *et al.* (See Sanborn and Merrow, assignors.)						
O'Shea, John, Jr., *et al.* (See Sanborn and Merrow, assignors.)						
Oakes, Lucien R., Valparaiso, Ind. Lamp-burner	408,510	Aug. 6	467	123	48	770
Ober, William Y., Lynn, Mass., assignor to Standard Mining and Ventilating Company, Portland, Me. Ventilator	409,224	Aug. 20	1569	414	48	995
Obrist, Andrew J., Toledo, Ohio. Thill-coupling	410,849	Sept. 10	1106	296	48	1491
Odell, Jabez T., Richmond, Va., and T. J. De Lamere, St. Paul, Minn. Railway-train indicator	407,548	July 23	2315	507 508	48	477
Oehmigen, Richard. (See Werner and Oehmigen.)						
Oestreicher, Daniel, *et al.* (See Clorer, Wilhelm, assignor.)						
Oestreicher, Leopold, *et al.* (See Clorer, Wilhelm, assignor.)						
Office Specialty Manufacturing Company. (See Jewell, Major R., assignor.)						
Offutt, William N., assignor of one-half to J. R. Portness, Keyser, W. Va. Nut-lock	411,674	Sept. 24	2324	616	48	1745
Ogilvie, William M. (See Cook, Sidney, assignor.)						
Ogle, Eli T. (See McMakin, Rodolph, assignor.)						
Ohio Rake Company. (See Bell, John T., assignor.)						
Ohm, Charles H., San Francisco, Cal. Safety-guard for cars	409,861	Aug. 27	2518	656	48	1181
Olcott, Charles A., North Vernon, Ind. Lawn-mower	408,426	Aug. 6	337	87	48	745
Old Bangor Slate Company. (See Lloyd, Seth, assignor.)						
Oldham, Carrick P., assignor of one-half to S. H. McNutt and E. S. Shepard, Knoxville, Tenn. Machine for stamping and molding soap	407,233	July 16	1826	477 478	48	373
Oldham, Joseph and O., Denton, county of Lancaster, England. Machine for settling and planking felt hat-bodies	406,948	July 16	1395	366 367	48	289
Oldham, Oriando. (See Oldham, Joseph and O.)						
Olds, Henry G. (See Andersen, Peter, assignor.)						
Olin, Edgar W., assignor of two thirds to A. E. Burnam and J. W. Johnston, Pueblo, Colo. Heating apparatus	410,736	Sept. 10	936	253	48	1454
Oliver, William G., Waupun, Wis. Street-lamp	408,988	Aug. 13	1199	318	48	917
Olmstead, Homer E., Decatur, Mich. Running-gear for vehicles	406,296	July 2	377	102	48	76
Olney, Charles D., *et al.* (See Cowell, Julius J., assignor.)						
Olp, Robert, Manitowoc, Wis. Flour-sifter	409,491	Aug. 20	1958	519	48	1073
Olson, Jacob, Muchachinock, assignor of one-half to J. E. Buxton, Oskaloosa, Iowa. Coal-hoist	411,166	Sept. 17	1580	429	48	1593
Oneida Community. (See Kelley, Harry E., assignor.)						
Ongley, Charles E., New York, N. Y., assignor to Hydraulic Elevator Company, of Illinois. Electrically-controlled elevator	410,180	Sept. 3	58	15, 16	48	1220
Ongley, Charles E., New York, N. Y. assignor to Hydraulic Elevator Company, of Illinois. Elevator	410,181	Sept. 3	63	16	48	1221
Ongley, Charles E., New York, N. Y., assignor to Hydraulic Elevator Company, of Illinois. Electrically-controlled elevator	410,182	Sept. 3	65	16, 17	48	1221
Ongley, Charles E., New York, N. Y., assignor to Hydraulic Elevator Company, of Illinois. Electrically-controlled elevator	410,183	Sept. 3	69	17	48	1222
Ongley, Charles E., Yonkers, N. Y., assignor to Hydraulic Elevator Company, of Illinois. Electrically-controlled elevator	410,184	Sept. 3	72	18	48	1222
Opal, Jonas E., Lake Linden, Mich. Padlock	411,054	Sept. 17	1398	375	48	1557

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Oppenheim, Eli, Baltimore, Md. Shirt	410,376	Sept. 3	371	99	48	1342
Oppermann, Adolf F., Chicago, Ill. Filament for incandescent electric lamps	408,740	Aug. 13	828	218 219	48	844
Ordner, John L., Thompson, Ohio. Car-coupling	407,605	July 23	2383	619	48	492
Ore Reduction Company. (See Geetz, George W., assignor.)						
Oriel Cabinet Company. (See Davis, George P., assignor.)						
Orr, Jesse, assignor to Orr, Painter & Co., Reading, Pa. Door for stove-ovens	408,191	July 30	3280	856	48	665
Orr, Louis H., Springfield, Mass. Calendar	408,041	July 30	3031	793	48	621
Orr, Painter & Co. (See Orr, Jesse, assignor.)						
Orr, Walker P. (See Gaines and Orr.)						
Orr, William, and P. S. Brown, Glasgow, county of Lanark, Scotland. Sheet-metal structure	407,111	July 16	1646	431	48	338
Orrell, Ephraim E., Ware, Mass. Shuttle-box-operating device for looms	410,850	Sept. 10	1107	298	48	1491
Orrett, John. (See Powter, Nathaniel B., assignor.)						
Orser, Levi, Galveston, Tex. Feeder for power printing-presses	406,058	July 2	50	14, 15 16	48	12
Orser, Levi, Galveston, Tex. Feeder for treadle printing-presses	406,059	July 2	54	17 18	48	13
Ortell, Otto, and W. Rottman, Union, N. J. Frame for ruling slates	408,367	Aug. 6	273	67	48	732
Osborne & Cheesman Company. (See Kennedy, John, assignor.)						
Osborne, John H., Auburn, N. Y. Waste-basket	408,129	July 30	3180	832	48	648
Osgood, George W. (See Arnold, Eliphas W., assignor.)						
Ostermann, Heinrich, and C. Lacroix, assignors to Usine Genevoise de Dégrossissage d'Or, Geneva, Switzerland. Non-magnetic alloy	408,130	July 30	3181	.....	48	648
Ostheimer, Alfred J. (See Seyberth, Johann, assignor.)						
Otis Brothers & Company. (See Smith, Rudolph C., assignor.)						
Otis, James. (See Cope, Oliver, assignor.)						
Otis, Phillip A., Leeds, Mass. Button-making machine	409,225	Aug. 20	1570	414	48	996
Otis, William F., Norwalk, Ohio. Sewing-machine treadle	408,131	July 30	3181	832	48	648
Otte, Adrian, Grand Rapids, Mich. Laundry-press	408,132	July 30	3183	832	48	649
Ottignon, Augustus W., Boston, Mass. Adjustable broom band or clasp	406,850	July 9	1247	330	48	249
Otto, Nicolaus A., Cologne, assignor to Gas-Motoren-Fabrik-Deutz, Deutz-on-the-Rhine, Germany. Igniting apparatus for gas or oil motor-engines	406,762	July 9	1112	295	48	225
Otto, Nicolaus A., Cologne, Prussia, assignor to Gas-Motoren-Fabrik-Deutz, Deutz-on-the-Rhine, Germany. Motor-engine worked by the combustion of spray of petroleum	407,234	July 16	1830	478	48	374
Otto, Nicolaus A., Cologne, Prussia, assignor to Gas-Motoren-Fabrik-Deutz, Deutz, Germany. Reversing mechanism	410,012	Aug. 27	2725	716	48	1223
Otto, Richard, Plauen, Saxony, Germany. Sewing-machine	408,427	Aug. 6	339	87	48	745
Oulton, James W., Cambridge, and D. A. Meister, assignors of one-half to C. A. Morse, Boston, Mass. Camp-stool	408,741	Aug. 13	829	219	48	844
Overhalt, Abraham. (See Myers, George W., assignor.)						
Overlack, Bernard, Boston, Mass. Non-conductive and elastic water-proof composition for pipe-joints, &c.	406,949	July 16	1397	.....	48	289
Overman, Albert H., Newton, assignor to Overman Wheel Company, Boston, Mass. Velocipede	406,461	July 9	648	182	48	140
Overman, Albert H., Newton, assignor to Overman Wheel Company, Boston, Mass. Brake for velocipedes	406,462	July 9	650	183	48	140
Overman Wheel Company. (See Overman, Albert H., assignor.)						
Overpeck, Lucien C., Hamilton, Ohio. Photographic light apparatus	406,299	July 2	378	103	48	76
Owen, Frederick D., Washington, D. C. Rotary engine	409,800	Aug. 27	2436	638 639	48	1167
Owen, John M., and J. R. Roberts, Youngstown, Ohio. Hat and coat rack	406,532	July 9	767	208	48	160
Owen, Silas R., St. Joseph, Mo. Street-car door	409,492	Aug. 20	1959	518	48	1073
Owens, William J., Utica, N. Y. Grate	411,391	Sept. 17	1901	507	48	1454
Pace, Jeff. D., Gibsland, La. Folding ironing-table	407,790	July 30	2652	686	48	550
Packard, James W., assignor of one-half to N. Hubbard, Brooklyn, N. Y. Vacuum-pump	406,110	July 2	122	30	48	25
Packer, Edmund H. (See Johnson and Packer.)						
Packer, George W., Rock Falls, Ill. Hoop-driving machine	409,297	Aug. 20	1680	442	48	1017
Packham, Frank R. (See Patric and Packham.)						
Packham, Frank R., assignor to Superior Drill Company, Springfield, Ohio. Grain-drill	410,436	Sept. 3	474	127	48	1361
Page, Albert A., assignor to Sargent & Company, New Haven, Conn. Spring-hinge	407,606	July 23	2389	620	49	492
Page, Clark D., assignor to Page's Patent Brick Kiln Company, Rochester, N. Y. Brick-kiln	406,463	July 9	651	183 184	48	140
Page, Samuel. (See Brown and Page.)						
Page, William N., Powellton, W. Va. Coal-conveyer	410,185	Sept. 3	75	18, 19	48	1282
Page's Patent Brick Kiln Company. (See Page, Clark D., assignor.)						
Paine, George C., Boston, assignor to J. A. Hurd, Salem, A. E. Towne, Boston, and C. D. Moore, Chelsea, Mass. Buckle	406,403	July 2	541	151	48	108
Paine, Robert A., Richmond, Va. Pool-table	409,060	Aug. 13	1306	345	48	937
Paine, Seth W., Rochester, N. Y., assignor to W. S. King, Minneapolis, Minn. Lasting-machine	406,763	July 9	1114	295	48	225
Paine, William H., New York, N. Y. Tension device for the cables of cable railways	411,675	Sept. 24	2325	616	48	1745
Painter, Park. (See Kornblum, Brashear, and Painter.)						
Pajeau, Joseph, Chicago, Ill. Apparatus for laying tile arches for flooring	411,468	Sept. 24	2021	535	48	1682
Palmer, Lansing A., Kansas City, Mo. Separator	407,235	July 16	1832	478	48	374
Palmer, Charles E., New Haven, Conn. Dental file	408,926	Aug. 13	1108	292	48	900
Palmer, Corydon B., Detroit, Mich. Railway-tie	406,255	Aug. 6	81	19	48	695
Palmer, Don A., Englewood, assignor of one-half to B. E. Sunny, Chicago, Ill. Electric signal-box	408,042	July 30	3032	793	48	621
Palmer, Henry H. and S. D., Rockford, Ill. Washing-machine	409,226	Aug. 20	1571	414	48	996
Palmer, Henry L., Brooklyn, N. Y. Non-heat-conducting handle	410,671	Sept. 10	819	220	48	1434
Palmer, Henry L., Brooklyn, N. Y. Handle	410,672	Sept. 10	820	220	48	1434
Palmer, Isaac E., Middletown, Conn. Mosquito-canopy	406,178	July 2	220	60	48	44
Palmer, Isaac E., Middletown, Conn. Apparatus for dyeing	408,388	Aug. 6	274	67	48	732
Palmer, Isaac E., Middletown, Conn. Hitching device for ropes	409,227	Aug. 20	1572	415	48	996
Palmer, Isaac E., Middletown, Conn. Machine for drying fabrics	409,615	Aug. 20	2140	562 563	48	1106
Palmer, John H., Philadelphia, Pa. Car-starter	407,369	July 23	2042	529	48	422
Palmer, Lee E., Imlay City, Mich. Washing-machine	406,764	July 9	1115	296	48	225
Palmer, Samuel D. (See Palmer, Henry H. and S. D.)						
Palmer, Thomas J., Lancaster, England. Manufacture of material for covering walls or other surfaces	408,464	July 9	655	184	48	141
Palmer, William A., Plymouth, Mich. Cistern-cleaner	409,802	Aug. 27	2521	650	48	1162

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Pape, Otto, Washington, D. C. Button for billiard-counters	411,469	Sept. 24	2923	535	48	1682
Parcelle, Albert L., New York, N. Y. Electric pendulum clock	410,013	Aug. 27	2726	716 717	48	1223
Pardee, Frank B. (See Bishop, Walter S., assignor.)						
Parent, Charles, Boston, assignor of one-half to C. R. Sawyer, Braintree, Mass. Hose-coupling	408,256	Aug. 6	82	19	48	695
Park, Harvey S., Chicago, Ill. Air-brake	407,445	July 23	2163	558 559	48	442
Parke, Kate, Chicago, Ill. Eraser-holder	407,607	July 23	2390	620	48	493
Parke & Lacey. (See Dodge, Miles B., assignor.)						
Parke & Lacey. (See Steck, Paul, assignor.)						
Parker, Charles F., Lowell, Mass. Trap	411,606	Sept. 24	2225	591	48	1724
Parker, Edwin W., Waltham, Mass., assignor of one-half to Nonantum Worsted Company, of Massachusetts. Advertising device or coin-protector	411,392	Sept. 17	1902	507	48	1654
Parker, Frank B., St. Joseph, Mo. Running-gear for vehicles	409,296	Aug. 20	1681	443	48	1016
Parker, Gardner R., assignor to Richardson Manufacturing Company, Worcester, Mass. Mowing-machine	408,133	July 30	3184	632	48	649
Parker, George C., deceased, Paris, Tenn.; W. B. Jones administrator. Plaiting-machine	409,974	Aug. 27	3676	702	48	1213
Parker, Howard. (See Fairbanks and Parker.)						
Parker, Onesiphorus B., and G. T. Eaton, Pawtucket, R. I. Step for spinning-spindles	410,014	Aug. 27	2727	717	48	1224
Parkinson, John. (See Pooley and Parkinson.)						
Parkinson, Morris B., New York, N. Y. Artificial-light reflector	410,186	Sept. 3	77	19	48	1283
Parkinson, Thomas J., assignor of one-fourth to J. B. Hyndman, Pittsburg, Pa. Leaf-turner	409,370	Aug. 20	1789	471	48	1038
Parks, Charles E., Watertown, Wis. Box or crate	409,699	Aug. 27	2281	600	48	1139
Parks, James R., and J. Kimball, New Madrid, Mo. Two-wheeled vehicle	409,422	Aug. 20	1860	491	48	1053
Parmenter, Charles H., and G. V. Blackman, Oakland, Cal. Filter	407,112	July 16	1648	431 432	48	338
Parmentier, Johann E., Elberfeld, Germany. Scythe-sharpening apparatus	409,753	Aug. 27	2357	620	48	1153
Parrish, George W., Salem, Va. Barrel-hoop	409,228	Aug. 20	1572	415	48	996
Parrish, John W., Milton, W. Va. Churn	410,437	Sept. 3	476	127	48	1361
Parrott, John R. (See Robinson, Alfred A., assignor.)						
Parry, David M. and T. H., Indianapolis, Ind. Vehicle attachment	406,851	July 9	1249	330	48	249
Parry, John B., Liverpool, county of Lancaster, England. Extensible ladder	406,765	July 9	1116	296	48	225
Parry, Thomas H. (See Parry, David M. and T. H.)						
Parshall, Charles H., Sr., assignor of one-half to E. Grace, Detroit, Mich. Lubricator	408,318	Aug. 6	168	42	48	712
Parsons, Frank G., *et al.* (See Smith, Zalmon W., assignor.)						
Parsons, Henry, Marlborough, Mass. Steam-heating apparatus	406,950	July 16	1397	367	48	290
Parsons, Samuel W., Ypsilanti, Mich. Swing	408,742	Aug. 13	831	219	48	845
Partington, Charles. (See Weir and Partington.)						
Partington, Charles, assignor to Weir Frog Company, Cincinnati, Ohio. Combined crossing and switch	410,560	Sept. 3	642	171	48	1395
Partington, Michael, Fall River, Mass. Atomizer for dampening fabrics	410,187	Sept. 3	78	19	48	1283
Partington, Michael, Fall River, Mass. Atomizer for dampening fabrics	410,188	Sept. 3	80	20	48	1283
Patric, Charles E., and F. R. Packham, assignors to Superior Drill Company, Springfield, Ohio. Grain-drill	410,438	Sept. 3	477	128	48	1361
Partrick, Hawley, Danbury, Conn. Making hats	408,512	Aug. 6	469	124	48	771
Partridge, Charles S., assignor to A. N. Kellogg Newspaper Company, Chicago, Ill. Matrix-making machine	407,608	July 23	2391	620 621	48	493
Patch, Ashahel H., Clarksville, Tenn. Corn-sheller	407,549	July 23	2317	598	48	478
Pate, Andrew J., *et al.* (See Hinman and McCracken, assignors.)						
Paterson, James, and T. Brook, Huddersfield, county of York, England. Weft-stop mechanism for looms	407,236	July 16	1833	479	48	374
Patnoe, George W., Crawford, Ill., assignor of one-half to Dolese & Shepard. Dumping apparatus	406,404	July 2	542	151 152	48	108
Pattee, Albert C., Brookville, Kans. Device for holding cattle while being dehorned	408,257	Aug. 6	83	19, 20	48	696
Patten, Francis J., New York, N. Y. Dynamo-electric machine or motor	410,987	Sept. 10	1304	352	48	1530
Patten, Francis J., New York, N. Y. Operating electric motors	410,988	Sept. 10	1307	352	48	1530
Patten, Frank D., Montrose, Iowa. Balanced slide-valve	406,232	July 2	290	80	48	58
Patterson, John H., assignor to National Cash Register Company, Dayton, Ohio. Cash indicator and register	406,533	July 9	767	209	48	160
Patterson, William, and E. Groat, San Francisco, Cal., assignors to California Bituminous Block Manufacturing Company, of California. Bituminous sand-rock for paving, roofing, and building purposes	409,493	Aug. 20	1960	.....	48	1074
Pattison, Charles L. (See Kimball, Madison C., assignor.)						
Pattison, R. P. (See Moffat, George D., assignor.)						
Patton, Alexander S., Creighton, Pa. Metal-forming tool	410,606	Sept. 10	716	193	48	1415
Patton Motor Company. (See Patton, William H., assignor.)						
Patton, William H., Englewood, Ill., assignor to Patton Motor Company, Pueblo, Colo. Motor for street-cars	409,115	Aug. 13	1401	369 370	48	955
Patton, William H., Englewood, Ill., assignor to Patton Motor Company, Pueblo, Colo. Motor for street-cars	409,116	Aug. 13	1403	370	48	956
Pattyson, William D. C., assignor to C. H. Lowell, trustee, Boston, Mass. Coat-holder	410,439	Sept. 3	479	128	48	1362
Paul, Albert, assignor of two-thirds to S. Ehrenwerth, Berlin, Germany. Car-coupling	409,229	Aug. 20	1573	415	48	997
Paul, Isaac F., *et al.* (See Lawrence, Victor V., assignor.)						
Paulding, William H., Peekskill, N. Y. Device for operating window-blinds, &c.	410,440	Sept. 3	480	128	48	1362
Paull, Archibald W., Wheeling, W. Va. Central-draft lamp	409,863	Aug. 27	2521	660	48	1182
Paull, Archibald W., Wheeling, W. Va. Jug-top	409,864	Aug. 27	2522	660	48	1182
Paull, Archibald W., Wheeling, W. Va., assignor to J. H. Raymond, trustee, Chicago, Ill. Lantern-guard frame	411,676	Sept. 24	2327	616	48	1745
Paxson, Jonathan, Pottsville, Pa. Hand-rake	409,494	Aug. 20	1961	518	48	1074
Payer, Jacob, St. Paul, Minn. Grain-separator	411,256	Sept. 17	1709	457	48	1619
Payne, Cornelius B., Nebo, Ky. Hoisting apparatus	408,989	Aug. 13	1200	316 317	48	917
Payne, David W., assignor to B. W. Payne & Sons, Elmira, N. Y. Valve-gear	407,631	July 16	1509	398 399	48	311
Payne & Sons, B. W. (See Payne, David W., assignor.)						
Payne, Walter S., Fostoria, Ohio. Gas-mixer	407,237	July 16	1835	479	48	375
Peacock, Edward F., Philadelphia, Pa. Piston-packing	407,370	July 23	2046	536	48	423
Pearce, John. (See De La Chapelle and Pearce.) (Reissue.)						
Pearce, Thomas A. (See Fefel, Henry H., assignor.)						
Pearce, Thomas A. (See Frederick and Egley, assignors.)						
Pearce, Thomas A. (See Rightmire, Harry C., assignor.)						
Peard, John, Brooklyn, N. Y. School-furniture	408,134	July 30	3185	833	48	649

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Pearsall, George W. (See Rockwell and Pearsall.)	408,258	Aug. 6	84	20	48	696
Pearsall, Lucy J., Fort Edward, N. Y. Tuck-folder for sewing-machines	406,664	July 9	964	260	48	196
Pearson, George S., Waterbury, Conn. Drawer-pull	409,801	Aug. 27	2438	630	48	1169
Pearson, James B., *et al.* (See Sperle, Valentine, assignor.)	407,760	July 23	2606	674	48	536
Pease, John W., Portland, Me. Window-screen	408,355	Aug. 6	220	57	48	723
Pease, Robert R., and H. Roberts, Hartford, Conn. Woven-wire mat	409,220	Aug. 20	1574	.....	48	997
Peck, Arthur R., Cortland, N. Y. Combination-lock	406,111	July 2	123	36	48	26
Peck, Cassius C., New York, N. Y. Making fertilizers						
Peck, Charles F., *et al.* (See Tesla, Nikola, assignor.)						
Peck, Cola S., and E. S. Davis, Danbury, Conn. Hat-packing support	408,135	July 30	3186	833	48	649
Peck, Eugene H., assignor to Meriden Bronze Company, Meriden, Conn. Central-draft lamp	411,393	Sept. 17	1903	508	48	1656
Peck, Homer P. K., Rye, assignor to W. H. Jackson & Co., New York, N. Y. Ventilating fire-place and open grate	408,667	Aug. 6	709	183	48	815
Peck, Ira F., Providence, assignor to W. F. & F. C. Sayles, Pawtucket, R. I. Hollow spindle for dyeing yarn in cops	409,231	Aug. 20	1576	416	48	997
Peck, Joseph R., and M. Konzelle, Breckenridge, Mo. Motor						
Peck, Ogle R., *et al.* (See Greening, Frederick, assignor.)						
Peck, Walter L., Providence, assignor to W. F. & F. C. Sayles, Pawtucket, R. I. Hollow spindle for dyeing yarn in cops	408,668	Aug. 6	709	184	48	815
Peck, William H. (See Cleveland, Charles R., assignor.)						
Peck, William H. H., *et al.* (See Snow, James, assignor.)						
Pecord, Levi. (See Pecord, Suplear and L.)	406,766	July 9	1118	296	48	226
Pecord, Suplear and L., Concordia, Kans. Kitchen-cabinet	409,495	Aug. 20	1961	519	48	1074
Pederson, Ole, Joliet, Ill. Caster	409,700	Aug. 27	2283	600	48	1139
Peebles, John. (See Woolf and Peebles.)	411,226	Sept. 17	1667	446	48	1611
Pegram, George H., Wilmington, Del. Bridge	407,678	July 23	2485	643	48	511
Pelfer, Christ, Allegheny, Pa. Metallurgical furnace	410,252	Sept. 3	174	46	48	1302
Peirce, Andrew J., assignor of one-half to N. Konrad, Jr., Madison, Wis. Clothes-drier	410,015	Aug. 27	2722	717	48	1224
Peirce, Parker I., assignor of one-half to R. P. M. Greeley, Oakland, Cal. Cuspidor	409,299	Aug. 20	1692	443	48	1018
Pelissier, Charles, Concord, N. H. Harness-loop press						
Pelton, Josiah J., assignor of one-half to F. Spaulding, Miles Grove, Pa. Truss	409,865	Aug. 27	2323	660	48	1182
Pelton, Lester A., Nevada City, assignor to A. P. Brayton, Jr., San Francisco, Cal. Water-wheel	407,446	July 23	2169	559	48	417
Pemberton, James W., Providence, R. I. Car-coupling						
Pemberton, Robert. (See Steinbergh and Pemberton.)						
Penberthy Injector Company. (See Sweency, Thomas J., assignor.)	406,301	July 2	383	104 105	48	77
Pendleton, John H., Brooklyn, and A. Bryson, Jr., assignors to Rapid Transit Cable Company, New York, N. Y. Cable-railway grip	406,302	July 2	388	105 106	48	78
Pendleton, John H., Brooklyn, and A. Bryson, Jr., assignors to Rapid Transit Cable Company, New York, N. Y. Cable-railway structure	406,303	July 2	390	107	48	79
Pendleton, John H., Brooklyn, and A. Bryson, Jr., assignors to Rapid Transit Cable Company, New York, N. Y. Cable railway	406,300	July 2	380	103 104	48	76
Pendleton, John H., Brooklyn, A. Bryson, Jr., and C. Tiers, assignors to Rapid Transit Cable Company, New York, N. Y. Cable-grip	411,296	Sept. 17	1760	471	48	1629
Penfield, James W. and R. C., Willoughby, Ohio. Brick-machine						
Penfield, Raymond C. (See Penfield, James W. and R. C.)	410,695	Sept. 10	858	230 231	48	1442
Penley, Julia, Portland, Me. Dress-chart	407,834	July 30	2722	707	48	502
Penner, Peter, McCook, Nebr. Hame-clip	409,866	Aug. 27	2325	660	48	1182
Penrose, William H., U. S. Army. Saw-filing machine	408,259	Aug. 6	86	20 21 22	48	696
Penta, Albert D., Elizabeth, N. J., assignor of one-half to A. Vanderbeek, New York, N. Y. Boring-machine						
Peoria Pulley and Wheel Company. (See Hill, James W., assignor.)	406,465	July 9	656	184	48	141
Pepper, John, Rome, N. Y. Fishing-rod	409,061	Aug. 13	1310	345 346	48	936
Percy, Robert N., Battle Creek, Mich. Valve-gear for engines	407,679	July 23	2486	643	48	511
Perdue, James A., Belfield, Va. Car-coupling						
Perham, Haven C. (See Davis and Perham.)	406,665	July 9	965	260	48	197
Perine, David M., Baltimore, Md. Lubricator						
Peristalt Machine Company. (See Hopkins, Harvey L., assignor.)	411,107	Sept. 17	1495	396	48	1576
Perkins, Charles G., Hartford, Conn. Lamp-shade holder	406,951	July 16	1398	367	48	290
Perkins, George H., Philadelphia, Pa. Can-opener	406,534	July 9	770	209	48	161
Perkins, John R., Milford, N. H. Adjustable support for mirrors or similar objects						
Perkins, Morgan W. (See Seat, Perkins, and Tooloose.)	408,428	Aug. 6	340	88	48	745
Perkins, Susan M., Lansing, Kans. Book or music holder	408,136	July 30	3188	833	48	649
Perkins, William C., assignor to New Haven Wire Goods Company, New Haven, Conn. Gridiron	410,441	Sept. 3	481	128	48	1362
Perkins, William N., Cleveland, Ohio. Window blind or shutter	411,729	Sept. 24	2401	635 636	48	1761
Perkins, Willis J., Grand Rapids, Mich. Saw-grinding machine	406,953	July 16	1400	367	48	290
Perry, Alexander J., U. S. Army. Nut-lock						
Perry, Charles H., Oneida, assignor of one-half to T. R. Proctor, Utica, N. Y. Manufacture of type-plates	407,962	July 30	2921	761	48	600
Perry, Frank L., Chicago, Ill. System of electrical distribution	408,513	Aug. 6	470	124	48	771
Perry, Frank W., assignor to Hero Fruit Jar Company, Philadelphia, Pa. Machinery for polishing sheet-metal articles	410,851	Sept. 10	1111	299	48	1491
Perry, James B., Toronto, and J. Mackenzie, Presqu'ile, Ontario, Canada; said Mackenzie assignor to said Perry. Aerial cable railway	407,835	July 30	2723	707	48	502
Perry, Samuel R., Wilkes-Barré, Pa. Piano-action	406,405	July 2	544	152	48	109
Peter, Joseph L., and J. Y. James, Holly Grove, Ark. Cotton-scraper	411,297	Sept. 17	1761	471	48	1629
Peters, John R., Georgetown, Pa. Fuel-gas generator	409,062	Aug. 13	1311	346	48	936
Peterson, Albert E. (See Whiting, Henry W., assignor.)						
Peterson, Bernat C. W., *et al.* (See Boardman, Frederick R., assignor.)						
Petit, Marie V. B. (See Bardy, Charles, assignor.)	407,238	July 16	1836	479 480	48	375
Petry, Franz J., assignor of one-half to J. Buchmüller, Vienna, Austria-Hungary. Magazine or repeating fire-arm						
Pettee Machine Works. (See Whitten, Charles H., assignor.)	410,852	Sept. 10	1112	299	48	1492
Petterson, John, New York, N. Y. Steam-kettle						
Petticord, Alfonza. (See Dunn, Petticord, and King.)						
Pettis, George W. (See Miller, Cornelius, assignor.)						
Pettit, Samuel, and W. Lottridge, assignors to Craver, Steele & Austin, Grinnell, Iowa. Horse hay-rake	411,607	Sept. 24	2226	591	48	1725

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Petzold, Charles G., assignor to Arlington Mills, Lawrence, Mass. Loom-shuttle	409,232	Aug. 20	1576	416	48	997
Peyton, Robert S., Pinckneyville, Ill. Can for distributing insect-destroyers	408,514	Aug. 6	473	124	48	771
Pfaff, Rudolf H., assignor to Ashtabula Carriage Bow Company, Ashtabula, Ohio. Carriage-bow socket	410,561	Sept. 3	644	171	48	1395
Pfannkuche, Gustav, assignor to Brush Electric Company, Cleveland, Ohio. Alternating-current dynamo	407,875	July 30	2786	724	48	574
Pfautz, Daniel M. (See Gordon, Gilbert, and Pfautz.)						
Pfeffer, John F., Cincinnati, Ohio. Cash register and indicator	410,917	Sept. 10	1199	324	48	1508
Pfeifer, John, Philadelphia, Pa. Shovel	411,257	Sept. 17	1710	457	48	1620
Pfeifer, Peter, Durhamville, N. Y. Axle-box	408,633	Aug. 6	653	169, 170	48	805
Pferdner, Adolph, Chicago, Ill. Automatic signal for cable railways	408,043	July 30	3033	794	48	622
Pfingst, Louis. (See Bemis and Pfingst.)						
Pfitzinger, William, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Prussia, Germany. Thioparatoluidine	406,952	July 16	1400	......	48	290
Pflaum, John M., Cleveland, Ohio. Permutation-lock	409,496	Aug. 20	1962	519	48	1074
Pforzheimer, Isaac, assignor of one-half to C. Zallnd, New York, N. Y. Ticket and cash registering machine	409,649	Aug. 20	2188	576, 577	48	1115
Phalan, James H., assignor to Electrical Supply Company, Ansonia, Conn. Electric gong	410,189	Sept. 3	83	20	48	1284
Phelps, Charles H., Cuyahoga Falls, Ohio, assignor to E. L. and E. F. Brown, Chicago, Ill. Seat for bicycles	408,743	Aug. 13	831	219	48	845
Phelps, Charles H., Cleveland, and E. A. Edwards, Toledo, Ohio. Hydrocarbon-burner	407,680	July 23	2488	643	48	511
Phelps, Charles W., Mygatts Corners, Wis. Draft-equalizer	409,497	Aug. 20	1965	520	48	1074
Phelps, George L., Chicago, Ill. Weighing-scales	408,319	Aug. 6	169	42, 43	48	712
Phelps, John, Dulwich, county of Surrey, England. Eaves-gutter for roofs	406,233	July 2	291	80	48	58
Phelps, Lucius B., Eagleville, Ohio. Harrow and clod-crusher	407,791	July 30	2652	687	48	550
Phelps, Lyman, and D. P. Burdon, Sanford, Fla. Fruit-cleaning machine	409,754	Aug. 27	2359	620	48	1153
Phelps, Napoleon B., New York, N. Y. Vehicle-spring	407,899	July 30	2821	734	48	581
Philadelphia Locomotive Vehicle and Stationary Motor Company. (See Gordon, Gilbert, and Pfautz, assignors.)						
Philadelphia Textile Machine Company. (See Knowles and Proctor, assignors.)						
Philadelphia Textile Machinery Company. (See Proctor, Josiah K., assignor.)						
Phillips, Calvin C., Philadelphia, Pa. Mill for crushing bones, minerals, &c	408,515	Aug. 6	474	125	48	772
Phillips, Edwin G., assignor of two-thirds to S. Weiskoff and T. P. Livingston, Charleston, S. C. Pencil-sharpener	409,802	Aug. 27	2440	639	48	1168
Phillips, Henry L., New York, N. Y. Toy	409,701	Aug. 27	2286	600	48	1139
Phillips, James J., Norfolk, Va. Machine for washing nuts	410,016	Aug. 27	2730	717	48	1224
Phillips, James J., Norfolk, Va. Apparatus for drying nuts, grain, &c	410,017	Aug. 27	2731	718	48	1224
Phillips, James J., Norfolk, Va. Means for cleaning and drying nuts, &c	410,018	Aug. 27	2732	718	48	1224
Phillips, John, London, England. Apparatus for the consecutive numbering of checks, tickets, &c	410,673	Sept. 10	821	220, 221	48	1434
Phillips, Walter, and R. W. Smith, Coventry, county of Warwick, England. Velocipede	408,516	Aug. 6	475	125	48	772
Philper, Harry H., St. Louis, Mo. Piston-rod packing	410,918	Sept. 10	1202	325	48	1509
Philpott, James H., Rising City, Nebr. Halter	409,867	Aug. 27	2526	661	48	1183
Phipps, Edward H., New Haven, Conn. Underground electric conduit	407,447	July 23	2170	559	48	417
Phipps, Edward L., assignor of two-thirds to S. H. Wilhelm and A. D. Webb, Milford, Mich. Car-door	411,298	Sept. 17	1763	472	48	1630
Phipps, Edward L., assignor of two-thirds to S. H. Wilhelm and A. D. Webb, Milford, Mich. Car-door	411,677	Sept. 24	2328	616	48	1746
Phono-Multiplex Telegraph Company. (See Van Rysselberghe, François, assignor.)						
Piat, Albert. (See Delaloe and Piat.)						
Pierce, Arthur M., Brooklyn, N. Y. Coin-operated automaton	411,108	Sept. 17	1496	397	48	1576
Pierce, Jesse W., Belton, Tex. Spring-hinge	409,371	Aug. 20	1791	471	48	1038
Pierce, Orestes, San Francisco Cal. Filter	410,767	Sept. 10	987	265	48	1465
Pierce, Thomas J., Philadelphia, Pa. Combined gas and electric light fixture	409,498	Aug. 20	1966	520	48	1075
Pierce, William G. (See Pluche, James F., assignor.)						
Pierce, William J. (See Tatro, William B., assignor.)						
Pierpont, Wallace J., Galesburg, Ill. Strap for packing-boxes	409,499	Aug. 20	1967	520	48	1075
Pierson, Caleb C., Elizabeth, N. J. Sectional ladder	411,730	Sept. 24	2403	636	48	1761
Pierson, Lizzie S. (See Rappe, Leon, assignor.)						
Pietsch, Hermann, Milwaukee, Wis. Device for mashing malt	410,019	Aug. 27	2733	718	48	1225
Pifferling, Emanuel, Washington, D. C., assignor to H. F. Samstag, F. L. Rosenthal, New York, N. Y., and E. Pifferling, Washington, D. C. Cabinet show-case	408,517	Aug. 6	477	126	48	772
Pike, Charles P., Boston, Mass. Ear-ring	411,509	Sept. 24	2075	548	48	1693
Piland, David W., Waelder, Tex. Cotton chopping, planting, and cultivating machine	411,470	Sept. 24	2024	536	48	1682
Pinckney, Cyrus A. (See Hamilton, Clarence J., assignor.)						
Pindar, Henry, New York, assignor of one-half to E. Kutzler, Brooklyn, N. Y. Apparatus for extracting grease from water	410,291	Sept. 3	237	61	48	1315
Pine, John T., New York, N. Y. Pump-governor	409,500	Aug. 20	1968	520	48	1075
Pitkin, Julian H., Lake View, and J. F. Steward, Chicago, Ill.; said Pitkin assignor to W. Deering, Chicago, Ill. Supporting-frame for self-binding harvesters	409,063	Aug. 13	1314	347	48	939
Pitt, William A., Glenbrook, Conn. Steam-engine	410,190	Sept. 3	84	20	48	1284
Pitt, William H., assignor to Apex Refining Company, Buffalo, N. Y. Apparatus for distilling crude petroleum	411,394	Sept. 17	1905	508	48	1654
Pittsburg Tubular Steel Whiffletree Company. (See Reiter, George, assignor.)						
Place, Chauncey C. (See Giles, Julian A., assignor.)						
Place, William B., assignor to American Buckle and Cartridge Company, West Haven, Conn. Machine for capping cartridges	406,466	July 9	658	184, 185	48	141
Platt, Arthur E., Ottumwa, Iowa. Hay-stacker	408,429	Aug. 6	341	88	48	745
Playter, Edward, Ottawa, Ontario, Canada. Ice-pitcher	409,423	Aug. 20	1861	491	48	1053
Plimpton, Arthur L., and E. Harrington, Boston, Mass. Stationary switch for horse-railways	408,744	Aug. 13	832	220	48	845
Pluche, James F., assignor of one-half to W. G. Pierce, Watertown, N. Y. Easel	410,191	Sept. 3	85	21	48	1284
Plume & Atwood Manufacturing Company. (See Atwood and Tobey, assignors.)						
Plume & Atwood Manufacturing Company. (See Lewis, William F., assignor.)						
Pneumatic Power and Railroad Gate Company. (See Douglass, Robert C., assignor.)						
Pneumatic Power and Railroad Gate Company. (See McDonald and Brent, assignors.)						
Poggendorff, August, C. and F. Brede, Rochester, N. Y. Generating steam	406,467	July 9	660	185	48	141
Pohlman, William J. (See Gittings, Pohlman, and Yakel.)						
Pollard, Edward T., Richmond, Va., and F. J. Ludington, Waterbury, Conn. Corkscrew	406,304	July 2	392	107	48	79
Polleycutt, James, Stoughton, Mass. Circular-knitting machine	410,854	Sept. 10	1114	300	48	1492
Pollock, Joseph, assignor of one-third to E. G. Gregory, Selma, Ala. Brake-shoe	410,989	Sept. 10	1310	353	48	1531
Pombas, Eugene, Rheims, France. Paddle hydro-motor	411,167	Sept. 17	1581	421	48	1593

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Pond, Albert C., trustee. (See Campbell, Henry F., assignor.)						
Pond, Chester H., Chicago, Ill., assignor to Self Winding Clock Company, New York, N. Y. Automatic signaling device for time-service	408,846	Aug. 13	986	261	48	876
Pond, Chester H., Chicago, Ill., assignor to Self Winding Clock Company, New York, N. Y. Gong-striking mechanism for synchronized clocks	411,168	Sept. 17	1583	421	48	1593
Pont, Eduardo, Barcelona, Spain. Shedding mechanism for looms	410,442	Sept. 3	482	129	48	1362
Pool, Francis W., St. Paul, Minn. Tricycle	408,745	Aug. 13	833	220	48	845
Poole, Benjamin. (See Foster, Lucian M., assignor.)						
Poole, Edward, Fordyce, Ark. Cultivator	410,648	Sept. 10	780	211	48	1428
Pooley, Edward F. (See Pooley, Frank D. and E. F.)						
Pooley, Frank D. and E. F., Philadelphia, Pa. Device for actuating the slides or rests of desks	407,415	July 23	2108	545	48	435
Pooley, Henry, and J. Parkinson, assignors to H. Pooley & Son, Liverpool, county of Lancaster, England. Grain-weighing machine	409,702	Aug. 27	2287	601, 602	48	1140
Pooley & Son, Henry. (See Pooley and Parkinson, assignors.)						
Pope, Benjamin, Merrill, Wis. Ice-creeper	407,448	July 23	2171	559	48	447
Pope, Charles E. (See Pope, Edward J. and C. E.)						
Pope, Edward J. and C. E., Eau Claire, Wis. Paper-reel	411,608	Sept. 24	2227	592	48	1725
Pope, Ralph W., Elizabeth, N. J. Pen-cleaner	410,919	Sept. 10	1203	325	48	1509
Pope, Samuel. (See Knouff and Pope.)						
Portable Fan Company. (See Curtice, William H., assignor.)						
Porteous, William, Elmwood Place, Ohio. Straight-way valve	406,179	July 2	221	60	48	44
Porter, Alexander P., Marengo, Ohio. Horse-collar fastener	406,369	July 2	484	135	48	96
Porter, Alvin D. (See Porter, C. Oscar and A. D.)						
Porter, C. Oscar and A. D., Grand Rapids, Mich. Saw-tooth swage	411,055	Sept. 17	1399	373	48	1557
Porter, Charles L., Philadelphia, Pa. Ash-sifter	411,529	Sept. 24	2102	554	48	1698
Porter, Frank J., Willink, N. Y. Device to assist in the insertion of vehicle-thills into couplings	409,300	Aug. 20	1683	443	48	1018
Porter, Joseph M., Marietta, Ohio. Stilt	408,518	Aug. 6	479	126	48	773
Porter, Major D., Brooklyn, N. Y., assignor to Porter Teletype Company, of New York. Station and want printer	407,416	July 23	2110	545, 546, 547	48	435
Porter, Mortimer G., New Britain, Conn. Box-pull	409,064	Aug. 13	1318	347	48	939
Porter, Samuel, Denver, Colo. Ore-concentrator	411,609	Sept. 24	2229	593	48	1725
Porter Teletype Company. (See Porter, Major D., assignor.)						
Porter, W. Clayton, *et al.* (See Hires, Phillip, assignor.)						
Porterfield, William A., and J. B. Shannofelt, Jr., Bellaire, Ohio. Tool for applying sealing-wax	410,330	Sept. 3	310	80	48	1328
Portness, J. Robert. (See Offutt, William N., assignor.)						
Post, Walter A., Newport News, Va. Car-coupling	406,305	July 2	394	107	48	79
Postage Stamp Service Machine Company. (See De Redon, Constant F., assignor.)						
Potter, Albert G., Lynn, Mass. Box-covering machine	410,920	Sept. 10	1204	325	48	1510
Potter, Charles J., Heaton Hall, Newcastle, England. Millstone	406,954	July 16	1401	368	48	290
Potter, Henry H., Kingwood, W. Va. Copy-holder	407,239	July 16	1839	481	48	374
Potter, Herman I., Leonardsburg, Ohio. Tile-ditcher	409,424	Aug. 20	1862	492	48	1054
Potter, Hiram B., Canton, Kans. Rail-joint	410,696	Sept. 10	850	231	48	1443
Potter, James C., Pawtucket, R. I. Trunk for cotton-cleaning apparatus and the like	410,443	Sept. 3	484	129	48	1363
Potter, James C., Pawtucket, R. I. Evening mechanism for cotton-openers, &c	411,350	Sept. 17	1847	493	48	1614
Potter, Jonas, Johnstown, Pa. Motor for vehicles	408,430	Aug. 6	342	89	48	746
Potter, Roger. (See McDougall and Potter.)						
Potts, Isaac B., Columbus, Ohio. Detachable pipe-coupling	406,060	July 2	58	18	48	14
Potts, Isaac B., Columbus, Ohio. Detachable pipe-joint	407,681	July 23	2489	644	48	511
Potts, Isaac B., Columbus, Ohio. Combined detachable pipe coupling and branch	407,682	July 23	2490	644	48	511
Potts, Isaac B., Columbus, Ohio. Combined detachable pipe coupling and branch	407,683	July 23	2491	644	48	511
Potts, Joseph S. (See Freeman, Potts, and Cowan.)						
Potts, Thomas W. T., *et al.* (See Greening, Frederick, assignor.)						
Pottstown Iron Company. (See Bertrand, Ernst, assignor.)						
Povey, Charles. (See Taylor and Povey.)						
Powell Brothers & Whitaker. (See Lewis, James A., assignor.)						
Powell, Charles F., Minneapolis, Minn. Device to prevent interference of horses' feet	407,113	July 16	1649	432	48	339
Powell, Columbus L., Centre Town, Mo. Harrow	409,233	Aug. 20	1577	417	48	997
Powell, James, Cincinnati, Ohio. Cock or valve	408,320	Aug. 6	172	43	48	713
Powell, James, Cincinnati, Ohio. Wasteway-valve	408,321	Aug. 6	173	43	48	713
Powell, James, Cincinnati, Ohio. Die for compressing valve-seat blanks	408,322	Aug. 6	171	43	48	713
Powell, James, Cincinnati, Ohio. Lubricator	408,927	Aug. 13	1109	292	48	900
Powell, James, Cincinnati, Ohio. Cock or valve	409,334	Aug. 20	1734	456	48	1027
Powell, John S., Marshall, Tex. Rope attachment	408,894	Aug. 13	1064	280	48	891
Powers, James J., Brooklyn, N. Y. Automatic ratchet-cock	408,431	Aug. 6	343	89	48	746
Powers, James J., Brooklyn, N. Y. Automatic disinfecting-tank	408,432	Aug. 6	344	89, 90	48	746
Powers, Joseph A., Lansingburg, N. Y. Electrical switch	406,468	July 9	661	185	48	142
Powers, Joseph A., Lansingburg, N. Y. Connection-box	406,469	July 9	662	186	48	142
Powers, Noel E., Lansingburg, assignor to Wilbur, Miller & Wilbur, Troy, N. Y. Cape-collar	408,847	Aug. 13	988	261, 262	48	877
Powers, Noel E., Lansingburg, assignor to Wilbur, Miller & Wilbur, Troy, N. Y. Cape-collar	408,848	Aug. 13	989	262	48	877
Powers, Noel E., Lansingburg, assignor to Wilbur, Miller & Wilbur, Troy, N. Y. Cape-collar	408,849	Aug. 13	991	262, 263	48	877
Powers, Noel E., Lansingburg, assignor to Wilbur, Miller & Wilbur, Troy, N. Y. Making cape-collars	408,850	Aug. 13	993	263	48	877
Powers, W. C. (See Munger, Orlo L., assignor.)						
Powers, William E., Hastings, Mich. Vehicle-spring	408,519	Aug. 6	480	126	48	773
Powers, William P., La Crosse, Wis. Automatic draft-regulator for hot-water boilers	410,717	Sept. 10	902	243	48	1448
Powter, Nathaniel B., New York, N. Y., assignor to J. Orrett, Kingston, Jamaica, West Indies. Phosphatic fertilizer	407,240	July 16	1841	......	48	376
Powter, Nathaniel B., New York, N. Y., assignor to J. Orrett, Kingston, Jamaica, West Indies. Phosphatic fertilizer	407,241	July 16	1842	......	48	376
Pracy, Joseph. (See Day, Jeremiah E., assignor.)						
Prangey, Louis E. A., Paris, France. Apparatus for separating liquids at different boiling-points	407,114	July 16	1650	432	48	339
Prasch, Josef, Vienna, Austria-Hungary. Machine for coating paper	410,921	Sept. 10	1205	325, 326	48	1510
Pratt, Albert H., Chicago, Ill. Treating nuts	407,684	July 23	2492	644	48	511
Pratt, Charles A., Boston, Mass. Moistener-pad	408,520	Aug. 6	480	126	48	773
Pratt, Clesson A., Fitchburg, Mass. Spinning-spindle and support therefor	408,812	Aug. 13	940	250	48	868

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Pratt, Daniel, *et al.* (See Ellis, Washington L., assignor.)						
Pratt, Fred J. and J. H. Lane, Jackson, Miss. Combination-wrench	406,666	July 9	966	261	48	197
Pratt, George W., *et al.* (See Bowser, John, assignor.)						
Pratt, Harry P., Chicago, Ill. Electrode for therapeutic body-wear	406,306	July 2	395	108	48	79
Pratt, Harry P., Chicago, Ill. Electric brush	407,115	July 16	1653	432	48	339
Pratt, Harry P., Chicago, Ill. Electro-therapeutic device	407,116	July 16	1654	433	48	339
Pratt, Henry E., Lambertville, N. J. Combined book and index	408,360	Aug. 6	89	22	48	697
Pratt, James F., Chicago, Ill. Sole-protector	407,609	July 23	2393	621	48	493
Pratt & Letchworth. (See Samson, Adolph, assignor.)						
Pratt, Merrill E., *et al.* (See Ellis, Washington L., assignor.)						
Pratt, N. W., *et al.* (See Condon, Samuel E., assignor.)						
Pratt & Whitney Company. (See Cooley, Charles H., assignor.)						
Pratt & Whitney Company. (See Richards, Francis H., assignor.)						
Pray, O. A., *et al.* (See White, Clarence O., assignor.)						
Prendergast, Frank A., *et al.* (See Wallace, John S., assignor.)						
Prescott, George W., Eau Claire, Wis. Saw	408,669	Aug. 6	710	184	48	815
Presler, William M., Adrian, Ohio. Metallic fence-post	410,020	Aug. 27	2734	718	48	1225
Presley, Frank E. (See Brown, Joseph N., assignor.)						
Prest, John E., Northbridge, Mass. Loom-temple	407,032	July 16	1511	395	48	311
Preston, Almon E., Battle Creek, Mich. Pulley	408,261	Aug. 6	90	22	48	697
Preston, Edward F. (See Preston, William W. and E. F.)						
Preston, Elijah J., Dayton, Ohio. Folding umbrella	410,114	Aug. 27	2899	761	48	1255
Preston Ice Creeper Company. (See Preston, William W. and E. F., assignors.)						
Preston, William A., Fort Branch, Ind. Refrigerator	407,685	July 23	2493	645	48	513
Preston, William A., Fort Branch, Ind. Nut-lock	407,686	July 23	2495	645	48	512
Preston, William W. and E. F., Bismarck, Mich., assignors to Preston Ice Creeper Company, Chicago, Ills. Fastening for ice-creepers	410,331	Sept. 3	310	80	48	1329
Prevost, August P., Kawkawlin, Mich. Car-coupling	410,649	Sept. 10	781	211 / 212	48	1428
Prevost, Thomas L., Racine, Wis. Sand-paper holder	408,433	Aug. 6	345	90	48	746
Price, Abner, *et al.* (See Moore, Daily S., assignor.)						
Price, Alexander, *et al.* (See Moore, Daily S., assignor.)						
Price, Charles S., Johnstown, Pa. Nozzle for steel ladles	410,192	Sept. 3	86	21	48	1285
Price, David R., Cambria, Wis. Veterinary operating-table	407,610	July 23	2394	621	48	493
Price, Jacob, San Leandro, Cal. Baling-press	409,335	Aug. 20	1735	456	48	1028
Price, Lewis T., Endicott, Wash. Ter. Sod-cutter	409,868	Aug. 27	2528	661	48	1181
Prickett, Alfred S., Red Lion, N. J. Cranberry-sorter	408,323	Aug. 6	175	44	48	713
Pridmore, Edward. (See Cooley and Pridmore.)						
Pridmore, Edward. (See Cooley, Pridmore, and Johnston.)						
Pridmore, Edward, assignor to Johnston Harvester Company, Batavia, N. Y. Bundle-dropper	406,535	July 9	772	210	48	162
Pridmore, Henry E., assignor to McCormick Harvesting Machine Company, Chicago, Ill., Harvester	407,742	July 23	2574	666 / 667	48	529
Pringle, James, assignor of one-half to R. Bowen, Silver King, Ariz. Ter. Hose-coupling	408,434	Aug. 6	346	90	48	747
Pritchard Brake Company. (See Pritchard, Nathaniel J., assignor.)						
Pritchard, Nathaniel J., assignor to Pritchard Brake Company, Roanoke, Va. Air-brake	410,922	Sept. 10	1206	326	48	1510
Pritchard, Willard B. (See Cady, Orrin, assignor.)						
Procter, Edwin R., Washington Court-House, Ohio. Box for neck-wear	409,703	Aug. 27	2291	602	48	1140
Proctor, David R., assignor of one-half to F. P. Smith, Chicago, Ill. Label-holder for freight-cars	411,471	Sept. 24	2025	536	48	1663
Proctor, Josiah K. (See Knowles and Proctor.)						
Proctor, Josiah K., assignor to Philadelphia Textile Machinery Company, Philadelphia, Pa. Carding-machine	407,743	July 23	2578	668	48	530
Proctor, Thomas R. (See Perry, Charles H., assignor.)						
Proehl, H., *et al.* (See Bishop, Edward A., assignor.)						
Pruitt, Elias C., Twiggs, S. C. Sash-holder	406,234	July 2	292	80	48	58
Ptorney, William J., McCracken, Kans. Blacksmith's forge	406,767	July 9	1119	295	48	226
Pugh, Jesse R., Brainerd, Minn. Pillow-sham adjuster	411,351	Sept. 17	1849	494	48	1644
Pullman's Palace Car Company. (See Rapp, August, assignor.)						
Pullman's Palace Car Company. (See Twyman, Aaron, assignor.)						
Pulster, Henry, assignor to Klander & Brother, Philadelphia, Pa. Knitted fabric	409,425	Aug. 20	1865	492	48	1054
Pupke, Eberhard L., New York, N. Y. Lock for fire-arms	409,704	Aug. 27	2293	602	48	1140
Purchas, Arthur G., and J. E. Friend, Auckland, New Zealand. Hydrocarbon-motor	410,193	Sept. 3	89	21	48	1285
Purington, Andrew B., Westborough, assignor of one-half to J. W. Horne, Hopedale, Mass. Combined cane and camp-stool	410,021	Aug. 27	2735	719	48	1225
Purnell, John J., Lambeth, county of Surrey, England. Gas-motor engine	408,137	July 30	3128	833 / 834	48	649
Puterbaugh, John W. (See Henshaw, Puterbaugh, Brower, and Hurlbut.)						
Putnam, Charles B., Marion, Iowa. Windmill-tower	406,470	July 9	663	186	48	142
Putnam, David. (See Larrabee and Putnam.)						
Pyott, William H., Philadelphia, Pa. Automatic stop mechanism for steam-engines	411,530	Sept. 24	2103	555	48	1698
Quackenbush, Henry M., Herkimer, N. Y. Machine for finishing and ornamenting metal	408,521	Aug. 6	482	127	48	773
Quast, Stephan, Chicago, Ill. Governor	411,056	Sept. 17	1400	375	48	1558
Queen & Co., James W. (See Voss, Robert, assignor.)						
Quidort, Alfred E., Montpelier, Ohio. Whiffletree	407,491	July 23	2227	575	48	459
Quincey, Thomas S., Chicago, Ill. Stub-identification receipt-blank	411,057	Sept. 17	1402	375	48	1558
Quincy Metal Wheel Company. (See Little, James R., assignor.)						
Quinn, Bartholomew B., Cleveland, Ohio. Apparatus for making and filtering brine	409,234	Aug. 20	1578	417	48	998
Quinn, John E., Toledo, Ohio. Punch	407,342	July 16	1843	481	48	376
Raatha, Emil A., Plier, Wis. Sulky-plow	410,022	Aug. 27	2737	719	48	1226
Rabich, William, assignor of one-half to H. H. Lemke, St. Louis, Mo. Fastening for the tips of billiard-cues	406,852	July 9	1250	331	48	249
Raborg, William A. (See Noble, Eric M., assignor.)						
Raborg, William A., assignor of one-half to E. M. Noble, Washington, D. C. Stub envelope-book	408,324	Aug. 6	175	44	48	713
Rabun, Hugh M., Brooklyn, Ala. Fruit-picker	406,768	July 9	1120	297	48	226
Racine Malleable and Wrought Iron Company. (See Campbell and Davies, assignors.)						
Radant, August F., Wausau, Wis. Saw-sharpening machine	410,444	Sept. 3	486	130	48	1363
Radcliffe, Jacob H., Oldham, county of Lancaster, England. Apparatus for extinguishing fires, giving alarms, &c	408,325	Aug. 6	176	44, 45	48	714
Radford, Cass M., Concord, N. H., assignor to himself, F. L. Blood, Groton, and F. Emmons, Wakefield, Mass. Mechanical telephone	411,058	Sept. 17	1404	376	48	1559
Radford, Samuel H. (See Warren and Radford.)						
Ragland, Thomas E., Atlanta, Ga. Barrel-cover	409,803	Aug. 27	2440	640	48	1168

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Railway Electric Car Lighting and Signal Company. (See Barrett, Sidney H., assignor.)						
Ramey, Alfred H., Aurora, Ill. Liver and kidney remedy	407,667	July 23	2496	.....	48	512
Rammoser, Albert, Berlin, Germany. Washing-machine	409,501	Aug. 20	1970	521	48	1076
Ramsay, Henry A., Baltimore, Md. Gun-carriage	408,746	Aug. 13	834	220 / 221	48	846
Ramsay, Robert L., Van Cleave, Miss. Device for overcoming dead-centers	411,678	Sept. 24	2329	617	48	1746
Ramsay & Son, A. (See Langlais, Alonzo, assignor.)						
Ramsey, John W., assignor of one-half to M. M. George, Beaver Falls, Pa. Fire-hydrant	407,417	July 23	2121	547	48	437
Ranch, Jerry. (See Rutherford and Ranch.)						
Ranck, John H. (See Cramberg, George G., assignor.)						
Rand Drill Company. (See Githens, Joseph C., assignor.)						
Randall, George J., Marbrier, Longley Road, county of Surrey, England. Preparing and hardening limestone	410,607	Sept. 10	717	.....	48	1415
Randall, Timothy P., Adrian, Mich. Car-brake	407,033	July 16	1513	396	48	311
Randolph & Clowes. (See White, Lyman, assignor.)						
Randolph, Isham, Englewood, Ill. Railway-switch appliance	410,332	Sept. 3	311	80	48	1329
Rankin, John R., Indianapolis, Ind. Printing-machine	407,034	July 16	1514	396	48	312
Rankin, Ransom F., *et al.* (See Growwith, Henry, assignor.)						
Rankin, William W., Pittsburg, Pa. Vehicle-shaft coupling	406,536	July 9	773	210	48	162
Ransome, Ernest L., San Francisco, Cal. Concrete-mixing machine	410,292	Sept. 3	238	62	48	1315
Rapid Transit Cable Company. (See Pendleton and Bryson, assignors.)						
Rapid Transit Cable Company. (See Pendleton, Bryson, and Tiers, assignors.)						
Rapp, August, Pullman, assignor to Pullman's Palace Car Company, Chicago, Ill. Car-vestibule lamp	407,611	July 23	2395	622	48	494
Rapp, Joseph, Akron, Ohio. Roofing-tile	411,299	Sept. 17	1764	472	48	1630
Rappe, Leon, Newark, N. J., assignor, by mesne assignments, to L. S. Pierson, Wilmington, Del. Chrome-tanned leather and preparing the same	409,336	Aug. 20	1736	.....	48	1028
Rath, John, Chicago, Ill. Barrel-heater	409,301	Aug. 20	1685	443	48	1018
Rathbun, Stephen W., Marion, Iowa. Printer's stand	408,747	Aug. 13	836	221	48	846
Rauf, Martin, New York, N. Y. Cabinet folding bedstead	409,065	Aug. 13	1319	346	48	940
Rauhe, Carl, Dusseldorf, Germany. Dentist's chair	410,674	Sept. 10	823	221	48	1435
Ravenel, Samuel W., Boonville, Mo. Hose-coupling	409,066	Aug. 13	1320	348	48	940
Rawson, David, assignor of one-half to A. J. Wilkinson, Pittsburg, Pa. Wire-working apparatus	407,612	July 23	2397	622	48	494
Rawson, Frederick L. and W. S., London, England. Production of incandescent mantels	407,963	July 30	2922	.....	48	666
Rawson, William S. (See Rawson, Frederick L. and W. S.)						
Raymond, Freeborn F., 2d, Newton, Mass. Machine for feeding and attaching rands to boots or shoes	408,895	Aug. 13	1064	281	48	891
Raymond, Freeborn F., 2d, Newton, Mass. Heel-nailing machine	409,372	Aug. 20	1791	471 / 472	48	1039
Raymond, Freeborn F., 2d, Newton, Mass. Heel-nailing machine	410,194	Sept. 3	91	22 / 23 / 24	48	1286
Raymond, Freeborn F., 2d, Newton, Mass. Heel-nailing machine	410,195	Sept. 3	94	24 / 25 / 26	48	1286
Raymond, Freeborn F., 2d, Newton, Mass. Heel-nailing machine	410,196	Sept. 3	99	26	48	1286
Raymond, Freeborn F., 2d, Newton, Mass. Heel-nail	410,675	Sept. 10	824	221	48	1435
Raymond, Freeborn F., 2d, Newton, Mass. Heel-nailing machine	410,676	Sept. 10	825	222	48	1435
Raymond, Freeborn F., 2d, Newton, Mass. Heel-nailing machine	410,677	Sept. 10	829	223	48	1436
Raymond, Freeborn F., 2d, Newton, Mass. Heel-nailing machine	410,990	Sept. 10	1311	353	48	1531
Raymond, George E., Chicago, Ill. Merchandise-box	406,061	July 2	59	18	48	14
Raymond, James H., trustee. (See Paull, Archibald W., assignor.)						
Rea, Edmund K., Cowgill, Mo. Nose-ring for cattle	411,610	Sept. 24	2231	593	48	1736
Read, Albert J. (See Hayes and Read.)						
Read, Charles H., Pittsburg, Pa. Juice-extractor	407,900	July 30	2892	734 / 735	48	581
Read, James A., Arlington, N. J., assignor to Rubber and Celluloid Harness Trimming Company, of New Jersey. Manufacture of brushes	411,611	Sept. 24	2231	593	48	1736
Read, Robert H., Washington, D. C. System for synchronizing electric motors	411,612	Sept. 24	2236	594	48	1736
Read, Robert H., Washington, D. C. System for synchronizing electric motors	406,370	July 2	485	135	48	97
Ream, John L., Greeley Center, Nebr. Hame staple and clip	406,769	July 9	1121	297 / 298	48	236
Reams, Andrew J., El Dorado, Kans. Signal or alarm transmitter and time-indicator	406,667	July 9	966	261	48	197
Reams, Joseph M., and W. L. Horne, Meriden, Conn. Magazine fire-arm	411,679	Sept. 24	2330	617	48	1746
Reamy, Samuel T., Tappahannock, Va., assignor to T. J. & F. A. Reamy, Nashville, Tenn. Saw-mill feed	407,304	July 16	1930	502	48	393
Reamy, T. J. & F. A. (See Reamy, Samuel T., assignor.)	406,112	July 2	123	36	48	96
Reaser, Warren T., Fairmont, Nebr., assignor to Round Valve Company, Chicago, Ill. Balanced valve						
Reder, Louis, assignor to C. M. Kemp, Baltimore, Md. Drill-chuck	408,435	Aug. 6	347	90	48	747
Redfield, Lewis H. (See Christman, John H., assignor.)						
Redington, John T., assignor of one-half to T. Redington, Jr., Ambler, Pa. Toothed wheel						
Redington, Thomas, Jr. (See Redington, John T., assignor.)						
Redman, John. (See Byram and Redman.)	410,650	Sept. 10	783	212	48	1428
Redmond, Edward, Perry, Mich. Picket-fence machine	410,445	Sept. 3	488	130	48	1363
Reed, Andrew, Lawrence, Kans. Nut-lock	410,115	Aug. 27	2900	761	48	1255
Reed, Eden, assignor of one-half to I. Simon, St. Louis, Mo. Sash-fastener	408,748	Aug. 13	837	221 / 222 / 223 / 224	48	846
Reed, Edward J., London, England. Buoyant subaqueous tunnel for railways, &c	409,705	Aug. 27	2294	603	48	1141
Reed, George P., Melrose, Mass. Clock-pendulum	408,522	Aug. 6	483	127	48	774
Reed, James H., Lynn, Mass. Circular-knitting machine	408,523	Aug. 6	485	128	48	774
Reed, James H., Lynn, Mass. Circular-knitting machine	409,235	Aug. 20	1560	417	48	998
Reed, Lemon M., Cleveland, Ohio. Crozing-machine	411,300	Sept. 17	1764	472 / 473	48	1630
Reed, Lemon M., Cleveland, Ohio. Barrel-making machine	409,067	Aug. 13	1322	349	48	940
Reed, William H., Council Grove, Kans. Gate	410,853	Sept. 10	1113	300	48	1492
Reeder, William S., assignor to Kingsland & Douglas Manufacturing Company, St. Louis, Mo. King-bolt socket	409,426	Aug. 20	1867	492	48	1055
Reeme, Effie B. (See Crandal and Reeme.)	409,427	Aug. 20	1868	493	48	1055
Reeves, Milton O., assignor to Reeves Pulley Company, Columbus, Ind. Wooden pulley	406,356	Aug. 6	223	57	48	723
Reeves, Milton O., assignor to Reeves Pulley Company, Columbus, Ind. Split pulley						
Reeves Pulley Company. (See Reeves, Milton O., assignor.)						
Regan, Daniel S., San Francisco, Cal. Gas-engine						

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Reid, David, Melbourne, Victoria. Means for securing stereotype-plates	410,923	Sept. 10	1211	327	48	1511
Reid, Oliver P. (See Stukes and Reid.)						
Reid, Robert M., Ann Arbor, Mich. Safety-harness for vicious horses	408,436	Aug. 6	348	91	48	747
Reid, Thomas J., Gananoque, Ontario, Canada. Vehicle-hub	406,770	July 9	1136	299	48	227
Reid, Thomas J., Gananoque, Ontario, Canada. Tire-truing machine	408,044	July 30	3035	794	48	622
Reiffel, William, assignor to A. Van Bibber, Cincinnati, Ohio. Paper-jogger	411,750	Sept. 24	2429	643	48	1767
Reilly, James, Brooklyn, N. Y. Apparatus for heating hot-houses	411,531	Sept. 24	2104	555	48	1698
Reiner, Philipp, Cologne, Prussia, Germany, assignor to J. H. Volkmann, New York, N. Y. Vending apparatus	408,851	Aug. 13	994	263	48	877
Reiter, George, Allegheny, assignor to Pittsburg Tubular Steel Whiffletree Company, Pittsburg, Pa. Whiffletree	407,836	July 30	2724	707	48	562
Reiter, George, Allegheny, assignor to Pittsburg Tubular Steel Whiffletree Company, Pittsburg, Pa. Manufacture of whiffletrees and draft-bars	407,837	July 30	2725	708	48	562
Reitz, Jacob, New York, N. Y. Picture-exhibitor	406,471	July 9	664	186	48	142
Remington, Horatio A., River Point, R. I. Cloth-roll support for looms	406,472	July 9	665	186	48	143
Remington, Horatio A., River Point, R. I. Braking mechanism for looms	406,473	July 9	666	187	48	143
Rempe, Henry, Hontzdale, Pa. Stem winding and setting watch	407,943	July 16	1844	481	48	376
Remus, Theodor, assignor to Actien-Gesellschaft für Cartonnagen Industrie, Dresden, Saxony, Germany. Blank for pasteboard boxes	407,493	July 23	2230	576	48	429
Renetzky, Augustus, Lincoln, Ill. Drill	407,688	July 23	2406	645	48	512
Renn, George B., *et al.* (See Rockwell, Warren C., assignor.)						
Rennie, Frank. (See Rennie, John and F.)						
Rennie, John and F., Dayton, Ohio. Shoe-wiper	411,532	Sept. 24	2106	555	48	1699
Rensselaer Manufacturing Company. (See Rowe, Ellis L., assignor.)						
Repetti, Joseph, Buena Vista, assignor of one-half to L. Costa, Camden, N. J. Brush	410,991	Sept. 10	1312	353	48	1531
Resor & Co., William. (See Truesdale, Charles, assignor.)						
Rethey, Benjamin N., Anna, Ill. Flour-chest	408,928	Aug. 13	1111	292	48	901
Reussenzehn, Charles, Dayton, Ohio. Printing-press hand-protector	411,258	Sept. 17	1711	458	48	1620
Reuter, Henry. (See Martin, Washington A., assignor.)						
Rew, Madison, Grinnell, Iowa. Side-delivery hay-rake	410,608	Sept. 10	718	193	48	1415
Reynolds, Alva L., Elsinore, Cal. Solar water-lifting apparatus	408,929	Aug. 13	1112	293	48	901
Reynolds, Charles, assignor of one-half to J. McGuire, Chicago, Ill. Stone-setting machine	408,326	Aug. 6	178	45, 46	48	714
Reynolds, Frank G., *et al.* (See Emerson, Edward W., assignor.)						
Reynolds, George A., Utica, N. Y. Last for boots or shoes	408,524	Aug. 6	486	128	48	774
Reynolds, George F., Myersburg, Pa. Potato-bug catcher	410,197	Sept. 3	102	27	48	1288
Reynolds, Stephen D., Nevada, Mo. Check-row corn-planter	409,502	Aug. 20	1972	521	48	1076
Reynolds, Thomas. (See Schnarrenberger, Jacob H., assignor.)						
Reynolds, Walter S., Clayton, Del. Window-shade supporter	406,474	July 9	667	187	48	143
Reynolds, Walter S., Clayton, Del. Measuring-vessel	410,333	Sept. 3	313	81	48	1329
Rheubottom, Frank C. (See Wilson and Rheubottom.)						
Rhind, Frank, Meriden, Conn., assignor of one-half to C. S. Upton, New York, N. Y. Argand lamp-burner	407,492	July 23	2229	575	48	459
Rhind, Frank, Brooklyn, assignor of one-half to C. S. Upton, New York, N. Y. Lamp	409,706	Aug. 27	2296	603	48	1141
Rice, Charles E., Jonesburg, Mo. Bed-spring	406,475	July 9	668	187	48	143
Rice, Edwin W., Jr. (See Thomson and Rice.)						
Rice, Fred. (See Clark and Rice.)						
Rice, Jesse T., Grand Rapids, Mich. Time and wage indicator	409,503	Aug. 20	1973	521, 522	48	1076
Rice, John H., Kansas City, Mo. Combined sink and kitchen-cabinet	411,352	Sept. 17	1850	494	48	1644
Rich, Elisha B., Boston, Mass. Scarfing-machine	409,337	Aug. 20	1740	457	48	1023
Rich, George H., Geneva, Ill. Grain-grader	410,377	Sept. 3	372	99	48	1342
Rich, John F., Summertown, assignor of two-thirds to L. L. Frierson, Mount Pleasant, Tenn. Flat wooden hoop	410,446	Sept. 3	488	130	48	1364
Rich, John F., Summertown, assignor of two-thirds to L. L. Frierson, Mount Pleasant, Tenn. Flat wooden hoop	410,447	Sept. 3	490	131	48	1364
Rich, Richard, Washington, D. C. Ice transportation and storage vessel	411,201	Sept. 17	1633	134	48	1604
Rich, Robert S., Kaufman, Tex. Document-file	409,236	Aug. 20	1581	418	48	998
Richard, Felix, assignor to Société Richard Frères, Paris, France. Speed-recorder	410,023	Aug. 27	2738	719, 720	48	1226
Richards, Alonzo V. (See Wilcox, Stephen C., assignor.)						
Richards, Augustus, Sr., Willis, Tex. Padlock	410,024	Aug. 27	2741	721	48	1226
Richards, Charles M., Fort Scott, Kans. Shifting piano-action	407,035	July 16	1516	396	48	312
Richards, Francis H., Hartford, Conn. Regulator for grain-scales	410,117	Aug. 27	2904	762	48	1255
Richards, Francis H., assignor to Pratt & Whitney Company, Hartford, Conn. Stop-motion register for grain-scales	408,192	July 30	3280	856, 857	48	665
Richards, Francis H., assignor to Pratt & Whitney Company, Hartford, Conn. Regulator for grain-scales	410,116	Aug. 27	2902	761, 762	48	1255
Richards, Howard S., Hatfield, Pa. Buffer-brake for railway-cars. (Reissue)	11,026	Aug. 20	1204	580	48	1118
Richards, James E., Cedar Keys, Fla. Station-box for watchmen's electric time-detectors	409,755	Aug. 27	2361	620, 621	48	1153
Richards, John, San Francisco, Cal. Pumping-machine	411,680	Sept. 24	2332	617	48	1747
Richards, Joseph L., Buchanan, Mich. Harness-saddle	410,253	Sept. 3	176	46	48	1303
Richardson, Clifford, assignor of one-half to H. L. Cranford, Washington, D. C. Paving composition	409,504	Aug. 20	1975	.....	48	1076
Richardson, Esra. (See Hand and Richardson.)						
Richardson, George R., Earlville, Ill. Combined step-ladder and clothes-rack	411,472	Sept. 24	2027	536	48	1683
Richardson, George W., *et al.* (See Bowser, John, assignor.)						
Richardson, John, New York, N. Y. Egg-beater	409,616	Aug. 20	2145	563	48	1107
Richardson, John W., *et al.* (See Bowser, John, assignor.)						
Richardson, Joseph N., Jersey City, N. J. Mirror	410,924	Sept. 10	1212	327	48	1512
Richardson, Leonard. (See Leland, Edwin A., assignor.)						
Richardson Manufacturing Company. (See Parker, Gardner R., assignor.)						
Richardson, Mark F., and C. A. Woodbury, Rutland, Vt. Magazine fire-arm	410,609	Sept. 10	719	193, 194	48	1415
Richardson, Tottenham L. (See Dixon, Robert, assignor.)						
Richet, Thomas E., Portland, Oreg. Fireman's mask	409,428	Aug. 20	1869	493	48	1055
Richmond City Mill Works. (See Walters and Gartside, assignors.)						
Richmond, Frank L., Central Village, Conn. Card-grinding machine	406,537	July 9	774	210, 211	48	162
Richter, Adolph, New York, N. Y. Upright-piano action	408,852	Aug. 13	997	264	48	878
Richter, Aug. F. (See Dittmann, Robert W. A., assignor.)						
Rickenbacher, Rudolf, Paterson, N. J. Take-up mechanism for looms	408,262	Aug. 6	92	23	48	697
Rickolson, Ommund, Lee, Ill. Staple or nail extractor	406,538	July 9	775	211	48	162
Riddell, Beriah, Rugby, Tenn. Hand-truck	411,353	Sept. 17	1850	494	48	1644
Riddelsberger, Daniel F. (See Blocher, John, assignor.)						
Riddle, Wilbur H. (See Chappell, Florance J. D., assignor.)						
Ridenour, John F., Hector, Ohio. Signal-light	406,539	July 9	776	211	48	162
Rider, Adam E., York, Pa. Hitching-post	410,925	Aug. 27	2743	721	48	1227
Rider, Ebenezer W., Racine, Wis. Heating-stove	406,955	July 16	1402	368	48	200
Ridgely, Charles T., assignor of one-half to M. A. Smith, Springfield, Ohio. Tool for cutting paper, trimming shades, &c.	408,193	July 30	3284	858	48	665
Ridgeway, Frank. (See Burtch and Gurnee, assignors.)						
Ridgway, William H., Coatesville, Pa. Crane	411,681	Sept. 24	2335	618	48	1747
Riedinger, Michael, Cincinnati, Ohio. Lock	410,610	Sept. 10	721	194	48	1416
Riehlé, Frederick A., *et al.* (See Busby, Charles E., assignor.)						
Riehlé, Henry B., *et al.* (See Buzby, Charles E., assignor.)						
Riera, Ricardo G., Barcelona, Spain. Safety attachment for railway-cars	409,707	Aug. 27	2296	603	48	1141
Ries, Elias E., assignor to Ries & Henderson, Baltimore, Md. Electrical-railway system	409,237	Aug. 20	1582	418, 419	48	998
Ries, Elias E., assignor to Ries & Henderson, Baltimore, Md. Electric-railway crossing	409,756	Aug. 27	2363	621	48	1154
Ries, Elias E., assignor to Ries & Henderson, Baltimore, Md. Underground conduit for electric railways	409,757	Aug. 27	2365	621	48	1154
Ries, Elias E., assignor to Ries & Henderson, Baltimore, Md. System of electric generation and distribution for railway-cars	411,301	Sept. 17	1767	473, 474	48	1631
Ries & Henderson. (See Ries, Elias E., assignor.)						
Ries, Henry J., Iowa City, Iowa. Book-binding	406,476	July 9	669	187	48	144
Rieseck, George, Allegheny, Pa. Shaft-support	408,680	Aug. 6	730	189, 190	48	818
Rieseck, George, Allegheny, Pa. Mash-machine and grain-remover	410,196	Sept. 3	103	27	48	1289
Riesenberg, Frank W., and J. E. O'Hearne, Omaha, Nebr. Automatic bell-ringer	411,129	Sept. 17	1527	408	48	1563
Riess, Frederick W., assignor to himself and J. R. Elfreth, Philadelphia, Pa. Brake for controlling rotary motion	407,550	July 23	2318	590	48	478
Rigby, Artemas, Old Town, Me. Potato-digger	408,670	Aug. 6	711	184	48	815
Rigby Car Wheel Company. (See Rigby, James, assignor.)						
Rigby, James, Minneapolis, Minn. Filtering system and plant	407,036	July 16	1517	397	48	312
Rigby, James, Minneapolis, Minn. Constructing car-wheels	409,708	Aug. 27	2297	603, 604	48	1141
Rigby, James, Minneapolis, Minn. Car-wheel	411,354	Sept. 17	1851	495	48	1645
Rigby, James, Minneapolis, assignor to Rigby Car Wheel Company, St. Paul, Minn. Car-wheel	406,853	July 9	1251	331	48	249
Rigby, James, Minneapolis, assignor to Rigby Car Wheel Company, St. Paul, Minn. Metallic mold for casting car-wheel bodies	406,854	July 9	1253	331	48	250
Riggin, Henry H., Wilmington, Del. Drip-cock for locomotive-cylinders	410,448	Sept. 3	491	131	48	1364
Riggs, Alvin S. (See Riggs, Harry T., assignor.)						
Riggs Electric Traveling Danger Signal Company. (See Riggs, Joseph W., assignor.)						
Riggs, Harry T., assignor of one-half to A. S. Rigge, Farmington, Me. Electric switch	408,194	July 30	3285	858	48	666
Riggs, Joseph W., St. Paul, assignor to Riggs Electric Traveling Danger Signal Company, Minneapolis, Minn. Railway-signal	408,671	Aug. 6	712	184, 185, 762, 763, 764	48	815
Rightmire, Harry C., assignor of one-half to T. A. Pearce, Philadelphia, Pa. Circular-knitting machine	410,118	Aug. 27	2906	763, 764	48	1255
Rigney, John T., assignor of one-fifth to W. D. Jenkins, Baltimore, Md. Railway-switch	410,992	Sept. 10	1313	353, 354	48	1531
Riker, Andrew L., New York, N. Y. Secondary-battery electrode	406,771	July 9	1127	299	48	227
Riker, Andrew L., New York, N. Y. Charging system for secondary batteries	407,689	July 23	2493	646	48	512
Riker, Andrew L., New York, N. Y. Protecting-case for armatures	408,045	July 30	3036	794	48	622
Riker, Andrew L., New York, N. Y. Trolley for electric-railway systems	411,613	Sept. 24	2238	594	48	1727
Riley, Charles H., Southport, Conn. Steam-gage	411,510	Sept. 24	2076	548	48	1693
Riley, Edward, assignor of one-half to Milwaukee Harvester Company, Milwaukee, Wis. Molding sheaves	409,117	Aug. 13	1404	370	48	956
Riley, Lesley P., Ettle, Mo. Snap-hook	408,813	Aug. 13	942	250	48	868
Rimanoczy, Adolph, assignor to Strobridge Lithographing Company, Cincinnati, Ohio. Rendering paper inimitable	411,050	Sept. 17	1405	.....	48	1539
Rimer, Solomon, *et al.*, (See Hontz, Edward, assignor.)						
Rimpan, Arnold, Brunswick, Germany. Composition for kindling fires	410,925	Sept. 10	1213	.....	48	1512
Rinehart, Martin L., Richmond, Ohio. Plow	409,709	Aug. 27	2299	604	48	1141
Ring, Elkanah, assignor to J. Noble, Jr., Westfield, Mass. Whip-rolling machine	407,690	July 23	2500	646, 647	48	513
Ring, Elkanah, assignor of one-half to J. Noble, Jr., Westfield, Mass. Whip-rolling machine	407,691	July 23	2502	647	48	514
Ringen, John, Coronado, Cal. Device for utilizing tide-power	408,525	Aug. 6	487	128, 129	48	774
Ripley, Daniel C., Pittsburg, Pa. Box for tobacco, &c	409,804	Aug. 27	2441	640	48	1168
Rippetor, Richard W. (See Hawkins, Dayton C., assignor.)						
Ripple, Joseph F. (See Hillman and Ripple.)						
Ripson, John D., assignor of three-fourths to M. J. Hoenig and W. A. Frazer, Suspension-Bridge, N. Y. Burial-casket	407,792	July 30	2654	687	48	550
Rittersbach, George W., assignor of two-thirds to R. B. Rittersbach, Philadelphia, Pa. Railway-chair	411,259	Sept. 17	1712	458	48	1620
Rittersbach, Robert B. (See Rittersbach, George W., assignor.)						
Ritty, Sebastian, Dayton, Ohio. Wheel	407,613	July 23	2398	622	48	494
Ritty, Sebastian, Dayton, Ohio. Attachment for disk harrows	409,238	Aug. 20	1589	419	48	999
Rix, Edward A., San Francisco, Cal. Rock-drill	410,334	Sept. 3	314	81	48	1329
Roan, William H., Williamsburg, Ky. Log-boom	408,046	July 30	3037	794	48	622
Robbins, Prince H., Farwell, Mich. Fence	410,926	Sept. 10	1214	327	48	1512
Robbins, Richard B., Adrian, Mich. Corn and cane harvester	407,244	July 16	1845	492	48	377
Robbins, Rowland A., *et al.* (See Goodspeed, Charles P., assignor.)						
Robert, Gustave L., Stenay, France, assignor, by mesne assignments, to Bookwalter Steel and Iron Company, Jersey City, N. J. Converting crude iron into malleable iron or steel	407,117	July 16	1656	433	48	340
Roberts, Dugald H., assignor of one-half to W. D. McRae, Wallaceburg, Ontario, Canada. Gage-cock	406,956	July 16	1403	369	48	200
Roberts, Erastus T., *et al.* (See Critchlow, John M., assignor.)						
Roberts, Henry. (See Bracken, Frank., assignor.)						
Roberts, Henry. (See Hopkins, Benjamin G., assignor.)						
Roberts, Henry. (See Pease and Roberts.)						
Roberts, Isaiah L., and H. L. Brevoort, Brooklyn, N. Y. Disinfectant	406,092	July 2	60	.....	48	16
Roberts, John R. (See Owen and Roberts.)						
Roberts, John W., Watford, Ontario, Canada. Car-coupling	411,227	Sept. 17	1668	446	48	1611

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Name, residence, and invention.	No.	Date.	Monthly volume		Official Gazette.	
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Roberts, Thomas, Springfield, Ohio. Crusher for grinding-mills	409,869	Aug. 27	2529	662	48	1163
Robertson, George. (See Maloney and Robertson.)						
Robertson, James, Glasgow, county of Lanark, Scotland. Coupling tubes or pipes	407,037	July 16	1519	398	48	313
Robertson, James, Glasgow, county of Lanark, Scotland. Apparatus for the manufacture of metal tubes	411,060	Sept. 17	1405	376	48	1559
Robertson, James, Glasgow, county of Lanark, Scotland. Mechanism for the manufacture of tubes	411,109	Sept. 17	1498	397 / 398	48	1577
Robertson, James, Birmingham, county of Warwick, England. Preparing pipes or tubes for coupling	407,038	July 16	1523	398 / 399	48	313
Robertson, James C., Morrisdale Mines, assignor of one-half to A. Hood, Philipsburg, Pa. Coal-cutting machine	409,870	Aug. 27	2531	662	48	1164
Robertson, James H., Rutherford, N. J., assignor to Writing Telegraph Company, of New York. Autographic telegraph	407,692	July 23	2504	647	48	514
Robertson, James U. (See Buchholz, Gustav A., assignor.)						
Robertson, John E., Concord N. H. Ice-scraper	408,853	Aug. 13	998	264	48	678
Robie, Frederic H. (See Dean and Robie.)						
Robinson, Alfred A., assignor of two-thirds to J. R. Parrott, Lynchburg, Va. Signal for railway-cars	408,672	Aug. 6	714	186	48	816
Robinson, Almon, Lewiston, Me. Frictional gearing	406,477	July 9	669	188	48	144
Robinson, Alpheus A., Cambridgeport, Mass. Making lead traps	406,146	July 2	172	49	48	35
Robinson, Andrew J., Bathgate, Dak. Ter. Stove-pipe coupling	411,130	Sept. 17	1529	408	48	1584
Robinson, Andrew J., Boston, Mass. Detachable cover for umbrellas or parasols	411,682	Sept. 24	2337	618	48	1748
Robinson, Charles H., St. Paul, Minn. Vise	406,957	July 16	1404	369	48	291
Robinson, Cyrus K., East Concord, N. H. Fire-hose rest or support	407,118	July 16	1657	433	48	340
Robinson, Henry S., Andover, Mass. Apparatus for utilizing waste heat from steam-engines and similar apparatus	407,838	July 30	2726	708	48	562
Robinson, Joseph E., Oil City, Pa. Ice-velocipede	407,876	July 30	2789	723	48	574
Robinson, Matthew H., *et al.* (See Mansfield, George W., assignor.)						
Robinson, Rachel A., Boston, Mass. Calendar	411,061	Sept. 17	1408	376	48	1559
Robinson, Stillman W., and S. P. Watt, Columbus, Ohio, assignors to Wire Grip Fastening Company, Boston, Mass. Machine for uniting soles and uppers of boots or shoes	410,927	Sept. 10	1215	327 / 328	48	1512
Robinson, Walstein E., Bellport, N. Y. Spinning-top	408,749	Aug. 13	841	224	48	848
Robinson, William G. (See Rogers, Thomas B., assignor.)						
Robson, James A., New York, N. Y. Draft-spring for vehicles	408,437	Aug. 6	349	91	48	747
Roche, Emile, Rhéims, France. Weighing-machine	409,302	Aug. 20	1685	444	48	1018
Rockett, Thomas T., Philadelphia, Pa. Cover for radiators	406,772	July 9	1129	299	48	227
Rockett, Thomas T., Philadelphia, Pa. Grate	408,526	Aug. 6	488	129	48	775
Rockford Watch Company. (See Troller, Albert, assignor.)						
Rockwell, Albert F., Jacksonville, Fla. Door-bell	410,449	Sept. 3	493	131	48	1364
Rockwell, Albert F., assignor, by mesne assignments, to New Departure Bell Company, Bristol, Conn. Door-bell mechanism	411,395	Sept. 17	1906	504 / 505	48	1654
Rockwell, Frederick C. (See Furlong, Lawrence F., assignor.)						
Rockwell, Frederick C., Hartford, Conn. Pipe-coupling	410,293	Sept. 3	240	61	48	1316
Rockwell, Morgan F., and G. W. Pearsall, Chattanooga, Tenn. Timber-coupling for framed structures	408,750	Aug. 13	842	224	48	848
Rockwell, Walter S. (See Belmore and Rockwell.)						
Rockwell, Warren C., assignor to I. Goldschmidt and G. B. Renn, Mount Carmel, Pa. Attachment for miners' lamps	410,562	Sept. 3	645	173	48	1395
Rodecker, Peter W., Sidney, Ohio. Washing-machine	408,527	Aug. 6	489	129 / 130	48	775
Rodeheaver, Jared H., Terra Alta, W. Va. Device for locking a series of drawers	410,378	Sept. 3	373	96	48	1343
Rodh, Moses. (See McEnerney, John, assignor.)						
Rodham, William, Shullsburg, Wis. Hay-elevator	409,303	Aug. 20	1688	444	48	1019
Rodie, Robert S., Jersey City, N. J. Steam-boiler	406,235	July 2	292	80, 81	48	58
Roe, Alpheus E., assignor to H. L. Tatum and J. J. Bowen, San Francisco, Cal. Crushing-mill	411,614	Sept. 24	2239	594	48	1727
Roeder, Jonas E., Philadelphia, Pa. Powder-box	407,449	July 23	2171	560	48	447
Roeder, Jonas E., Philadelphia, Pa. Window	411,615	Sept. 24	2240	593	48	1727
Roemer, William, Newark, N. J. Bag or satchel frame	406,594	July 9	846	220	48	175
Roemer, William, Newark, N. J. Trunk stay or brace	406,595	July 9	847	220	48	175
Roensch, Hugo, Habelschwert, Germany, assignor to A. Schilling, San Francisco, Cal. Paper box	407,964	July 30	2923	761	48	600
Roepert, Frederic. (See Hansen and Roepert.)						
Roeske, Henry, Philadelphia, Pa. Apparatus for purifying water	407,250	July 16	1855	483	48	378
Roessler, Franz, Perth Amboy, N. J. Decorating base metals, glass, &c., with precious metals	407,305	July 16	1931	.....	48	393
Rogers, Andrew W., assignor to S. W. Winslow, trustee, Beverly, Mass. Abrading-covering for buffers	407,245	July 16	1847	482	48	377
Rogers, Andrew W., assignor to S. W. Winslow, trustee, Beverly, Mass. Buffer	407,246	July 16	1849	482	48	377
Rogers, Andrew W., assignor to S. W. Winslow, trustee, Beverly, Mass. Abrading-covering for buffers	407,247	July 16	1852	483	48	377
Rogers, Andrew W., assignor to S. W. Winslow, trustee, Beverly, Mass. Abrading-covering for buffers	407,248	July 16	1853	483	48	378
Rogers, Andrew W., assignor to S. W. Winslow, trustee, Beverly, Mass. Abrading-covering for buffers	407,249	July 16	1851	483	48	378
Rogers, Charles D., assignor to American Screw Company, Providence, R. I. Die for rolling drive-screws	408,528	Aug. 6	490	130	48	775
Rogers, Charles D., assignor to American Screw Company, Providence, R. I. Screw-swaging machine	408,529	Aug. 6	492	130 / 131	48	775
Rogers, Charles D., assignor to American Screw Company, Providence, R. I. Forming screw-threads upon screws	408,530	Aug. 6	495	131 / 132	48	776
Rogers, Charles D., assignor to American Screw Company, Providence, R. I. Wood-screw	408,531	Aug. 6	497	132	48	776
Rogers, Charles D., assignor to American Screw Company, Providence, R. I. Screw-swaging machine	408,673	Aug. 6	716	186 / 187	48	816
Rogers, Charles D., assignor to American Screw Company, Providence, R. I. Wood-screw	410,697	Sept. 10	860	223 / 224	48	1443
Rogers, Charles D., assignor to American Screw Company, Providence, R. I. Drive-screw	410,698	Sept. 10	862	224	48	1443
Rogers, Edmund D., Church End, Finchley, county of Middlesex, England, assignor to P. Wilcox, New York, N. Y. Means for securing stereotype-plates which are cast separately from their beds	406,371	July 2	486	126	48	97
Rogers, Francis M., *et al.* (See Morrison, Horatio B., assignor.)						
Rogers, Jonathan J., and O. S. Kennedy, Fort Worth, Tex. Seeding attachment for disk-harrows	406,147	July 2	174	50	48	35
Rogers, Junius, Fremont, Nebr. Account-book	406,478	July 9	671	182	48	144

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Rogers, Newton, and J. A. Wharry, Terre Haute, Ind. Apparatus for vaporizing oil and water and superheating and burning the same	407,901	July 30	2294	735	48	581
Rogers, Seymour, assignor to H. W. Hartman, Beaver Falls, Pa. Wire mat	408,047	July 30	3038	795	48	623
Rogers, Thomas B., Brooklyn, assignor of one-half to W. G. Robinson, New York, N. Y. Railway chock or stop-block	406,855	July 9	1255	331	48	250
Rogers, Winfield S., assignor to Universal Radial Drill Company, Cincinnati, Ohio. Drilling-machine	411,616	Sept. 24	2242	596	48	1728
Rogers, Winfield S., assignor to Universal Radial Drill Company, Cincinnati, Ohio. Shafting-chuck	411,731	Sept. 24	2404	637	48	1762
Rohan, Philip, St. Louis, Mo., assignor of one-half to E. L. Babcock, Cuyahoga Falls, Ohio. Steam-boiler	407,251	July 16	1856	484	48	378
Rolled Steel Carriage Wheel Company. (See Everson, George H., assignor.)						
Roller, Louis F., Rutledge, Pa. Suspension-hook	409,239	Aug. 20	1590	419	48	999
Rollins, George L., Bridgewater, Mass. Friction-clutch pulley	406,063	July 2	61	16	48	15
Romain, Aristide, New Orleans, La. Car-coupling	410,928	Sept. 10	1217	328	48	1510
Romaine, Charles N., *et al.* (See Del Grande, Antonio, assignor.)						
Romig, Darwin S., *et al.* (See Banks, George L., assignor.)						
Rondinella, Lino F., Philadelphia, Pa. Drawing-instrument	411,617	Sept. 24	2343	596	48	1728
Roney, William R., Chicago, Ill. Furnace	409,650	Aug. 20	2190	577	48	1115
Roney, William R., assignor to Westinghouse, Church, Kerr & Company, of New Jersey. Steam-boiler furnace or other furnace	409,304	Aug. 20	1689	444 / 445	48	1019
Roney, William R., Chicago, Ill., assignor to Westinghouse, Church, Kerr & Company, of New Jersey. Furnace-grate	409,305	Aug. 20	1693	445	48	1020
Rood, Amos D., assignor to N. G. Rood and T. B. Bryan, Chicago, Ill. Type	407,195	July 30	3286	856	48	666
Rood, Amos D., assignor to N. G. Rood and T. B. Bryan, Chicago, Ill. Type						
Rood, Netta G., *et al.* (See Rood, Amos D., assignor.)						
Rooke, Henry A., Liverpool, county of Lancaster, England. Roller-bearing for pulley-blocks	407,693	July 23	2508	647	48	515
Roop, Jacob W. (See Duffins, Joseph H., assignor.)						
Roosevelt, James A., Hempstead, Tex. Mail-bag fastening	410,450	Sept. 3	494	132	48	1365
Root, Roswell L. (See Hamilton, Clarence J., assignor.)						
Roovers, Alfred W., Brooklyn, N. Y. Coin-operated machine	407,639	July 16	1524	399	48	313
Roper, Robert G., Needham, assignor to G. W. Simmons & Co., Boston, Mass. Bicycle-tights	408,472	Aug. 6	350	91	48	748
Roper, Sylvester H., Boston, Mass. Magazine-gun	409,429	Aug. 20	1870	493	48	1056
Roquemore, Peter G., assignor of one-half to J. H. Thompson, Marshall, Tex. Automatic air-brake coupling	407,839	July 30	2728	709	48	563
Rosasco, John, Healdsburg, assignor of one-half to J. Cuneo, San Francisco, Cal. Fruit-pitting machine	407,965	July 30	2924	761	48	601
Rose, George P., Fenton, Mich. Lag-screw	408,731	Aug. 13	843	224	48	848
Rose, George P., Fenton, Mich. Screw	411,902	Sept. 17	1634	435	48	1604
Rose, James M., Allegheny, Pa. Manufacturing gas	408,532	Aug. 6	497	132	48	776
Rose, James M., Allegheny, Pa. Apparatus for the manufacture of gas	408,533	Aug. 6	501	133	48	776
Rose, James M., Allegheny, Pa. Manufacturing gas	408,534	Aug. 6	505	133	48	777
Rose, James M., Allegheny, Pa. Manufacture of gas	408,535	Aug. 6	508	133 / 134	48	777
Rose, James M., Allegheny, Pa. Apparatus for the manufacture of gas	408,536	Aug. 6	512	134	48	777
Rose, James M., Allegheny, Pa. Apparatus for the manufacture of gas	408,674	Aug. 6	719	187	48	816
Rose, Robert, Calliope, Iowa. Grate-bar for fire-engines	410,929	Sept. 10	1217	328	48	1512
Rosenberger, Abraham, Chicago, Ill. Nail-extractor	407,371	July 23	2048	530	48	423
Rosenthal, David, Hudson, N. Y. Letter-box	410,379	Sept. 3	375	100	48	1343
Rosenthal, Felix L., *et al.* (See Pifferling, Emanuel, assignor.)						
Rosewater, Andrew, Omaha, Nebr. Flushing-tank	410,930	Sept. 10	1218	328 / 329	48	1513
Rosier, Thomas R., Sioux Falls, Dak. Ter. Fire-extinguisher	410,931	Sept. 10	1221	329	48	1513
Ross, Abbott Q., Cincinnati, Ohio. Roll-paper holder and cutter	408,752	Aug. 13	844	225	48	848
Ross, Christian H., assignor to Daschy Iron Works, Chicago, Ill. Vault-light	410,380	Sept. 3	376	100	48	1343
Ross, Josiah, Buffalo, N. Y. Automatic balancing device for swing-saws	410,199	Sept. 3	107	28	48	1290
Ross, Simon, Jr., Linwood, Ohio. Shoe-beading machine	408,537	Aug. 6	516	135	48	778
Ross, Simon, Jr., Linwood, Ohio. Shoe-burnishing machine	409,240	Aug. 20	1591	419	48	999
Ross, Simon, Jr., Linwood, Ohio. Heel-burnishing machine	410,932	Sept. 10	1222	329	48	1513
Ross, Simon, Jr., Linwood, Ohio. Apparatus for loading or unloading freight	410,737	Sept. 10	938	251	48	1455
Ross, William E., Sparta, N. J. Anti-friction bearing	409,430	Aug. 20	1872	493 / 494	48	1056
Rosser, David. (See McFaddon and Rosser.)						
Rossney, William C., Hyde Park, assignor of two-thirds to W. Threlkeld and C. L. Hunt, Boston, Mass. Gas-regulator	411,062	Sept. 17	1409	377	48	1560
Rossney, William C., Hyde Park, assignor of two-thirds to W. Threlkeld and C. L. Hunt, Boston, Mass. Gas-regulator	411,063	Sept. 17	1410	377	48	1560
Rost, Ernst, Dayton, Ohio. Hydrocarbon-burner	411,260	Sept. 17	1713	438	48	1630
Rote, Charles V., assignor of part to B. J. McGraun, E. G. Smith, and E. E. Snyder, Lancaster, Pa. Car-brake	406,958	July 16	1406	369 / 370	48	291
Roth, Lawrence, Cincinnati, Ohio. Truss-hoop	409,241	Aug. 20	1592	420	48	1000
Rothchild, Samuel, Pendleton, Oreg. Harrow	408,930	Aug. 13	1115	293	48	901
Rottman, William. (See Ortell and Rottman.)						
Round Valve Company. (See Reasor, Warren T., assignor.)						
Roundtree, John T., New Hampton, Mo., assignor of one-half to J. W. Coulter and E. H. Grantham. Horse-collar fastener	411,110	Sept. 17	1502	396	48	1577
Rousel, Theodore C., Chelsea, county of Middlesex, England, assignor to B. Rouxel, Légué, France. Artist's drawing-board	408,675	Aug. 6	722	188	48	817
Roux, Ernest J., assignor to Ancienne Fabrique Vacheron and Constantin, (limited,) Geneva, Switzerland. Hand-setting mechanism for watches	406,307	July 2	397	108	48	60
Rouxel, Benjamin. (See Rousel, Theodore C., assignor.)						
Rowbotham, John and W., Merchantville, N. J.; said W. Rowbotham assignor to said John Rowbotham. Sectional steam-boiler	407,744	July 23	2580	668 / 669	48	530
Rowbotham, William. (See Rowbotham, John and W.)						
Rowe, Edward, Indiana, Pa. Revolving jail	407,677	July 30	2790	725 / 726	48	575
Rowe, Ellis L., assignor to Rensselear Manufacturing Company, Lansingburg, N. Y. Hydrant	410,026	Aug. 27	2744	721	48	1227
Rowe, Willis H., *et al.* (See Dunlap, John W., Sr., assignor.)						
Rowell, Almon B., assignor to Bartlett & Rowell, Sunapee, N. H. Hame attachment	409,505	Aug. 20	1976	522	48	1077
Rowell American Switch Company. (See Rowell, Benton C., assignor.)						
Rowell, Benton C., assignor to Rowell American Switch Company, Boston, Mass. Automatic railway-switch	410,200	Sept. 3	109	28	48	1290

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Rowell, John S., Beaver Dam, Wis. Cultivator and seeder	410,768	Sept. 10	989	266	48	1465
Rowell, John S., Beaver Dam, Wis. Spring cultivator-tooth	410,769	Sept. 10	990	266	48	1466
Rowland, Thad. H., *et al.* (See Hopkins, Edwin F., assignor.)						
Royce, Charles. (See Miller, Charles W., assignor.)						
Royce, Charles F., and G. E. Gies, Allegheny, Pa. Wrecking-frog	406,236	July 2	294	81	48	59
Royer, David H., Millmont, Pa. Shutter-worker	407,119	July 16	1658	433, 434	48	340
Royle, Vernon, Paterson, N. J. Shedding mechanism for looms	410,718	Sept. 10	905	243, 244	48	1449
Rozzelle, Marion. (See Peck and Rozzelle.)						
Ru Ton, Hiram W., and H. A. Gore, Goshen, Ind. Broadcast seed-sower	409,373	Aug. 20	1793	472	48	1039
Rubber and Celluloid Harness Trimming Company. (See Read, James A., assignor.)						
Rubin, Mayer, Chicago, Ill. Suspenders	410,855	Sept. 10	1116	300	48	1492
Ruddock, Andrew, *et al.* (See Arnold and Yergin, assignors.)						
Rudy, William H., Hagerstown, Md. Velocipede	408,634	Aug. 6	654	170	48	805
Rueckert, Michael. (See Lawrence and Rueckert.)						
Rueckert, Michael, St. Mary's, Mo. Padlock	410,027	Aug. 27	2747	722	48	1228
Ruef, Charles S., assignor to Grand Detour Plow Company, Dixon, Ill. Disk harrow	408,196	July 30	3287	858	48	666
Ruffhead, Thomas G., Renovo, Pa. Car-door fastener	410,807	Sept. 10	1049	281	48	1179
Rullmann, John D., and G. Eckenroth, San Antonio, Tex.; said Rullmann assignor to said Eckenroth. Velocipede	406,148	July 2	175	50	48	36
Rumberg, Samuel S., Denver, Colo. Winding mechanism	410,254	Sept. 3	177	46	48	1303
Rummel, Joseph P., Mansfield, Ohio. Suspender attachment	408,538	Aug. 6	516	135	48	778
Rumsey, William D., Detroit, Mich. Sleigh	407,120	July 16	1660	434	48	341
Rundquist, William, Elgin, Ill. Holdback-snap	408,990	Aug. 13	1201	317	48	917
Rung, Henry, assignor of one-half to F. S. Upton, Rochester, N. Y. Chuck for rods or tubes	410,738	Sept. 10	940	232	48	1455
Runyon, Edwin E., Mountain Spring, Tex. Bent for suspension-bridges	410,201	Sept. 3	110	28	48	1290
Rusden, Ethelbert A., Manchester, county of Lancaster, England. Bleachery-keir	408,991	Aug. 13	1202	317, 318	48	918
Rush, Madison, Philadelphia, Pa. Stair-rod securer	406,959	July 16	1407	370	48	291
Rushton, Thomas I., Centre Valley, Ind. Wire fence	409,242	Aug. 20	1592	400	48	1000
Russel, Edward B. (See Hicks, William, assignor.)						
Russell, Calvin P. (See Dillard, Robert M., assignor.)						
Russell, Charles M., assignor of one-third to T. B. Lyne, Bowling Green, Ky. Telegraph-pole	406,406	July 2	545	158	48	108
Russell, Edward S., Worcester, Mass. Whistle	408,539	Aug. 6	517	135	48	778
Russell & Erwin Manufacturing Company. (See Burgess, Charles M., assignor.)						
Russell, William O., *et al.* (See Hinman and McCracken, assignors.)						
Russell, William V., Greenville, Ohio. Fence	409,243	Aug. 20	1595	421	48	1000
Rutherford, Adam, and J. Ranch, Basil, Ohio. Hay-rack	407,614	July 23	2399	622	48	494
Ruttan, William, Picton, Ontario, Canada. Device for sharpening saws	408,357	Aug. 6	224	57	48	723
Rutter, Allen E., assignor of one-half to J. A. Gamble, Salem, Ohio. Rail-joint	410,028	Aug. 27	2748	722	48	1228
Ruttmann, Ferdinand S., Plainfield, N. J. Steam-engine	410,451	Sept. 3	495	132	48	1365
Rutzler, Enoch. (See Pindar, Henry, assignor.)						
Ryan, Daniel W. (See Fletsch, Herman, Jr., assignor.)						
Ryan, James B., New York, N. Y. Wire mattress bed-bottom	411,302	Sept. 17	1774	474	48	1631
Ryan, Patrick, New York, N. Y. Saw-set	409,805	Aug. 27	2442	640	48	1168
Rylands, Dan. (See Wilson, John A., assignor.)						
Sabin, Ira A., Kalvesta, Kans. Churn-dasher	406,308	July 2	398	108	48	80
Sachs, Gustav A., Valley City, Dak. Ter. Ornamenting gun-barrels	410,678	Sept. 10	831	223	48	1437
Safety Hatch Door Company. (See Herman, Emile J., assignor.)						
Sageman, Ann M., *et al.* (See Sageman and Seibold, assignors.)						
Sageman, Henry C., and J. Seibold, assignors to A. M. Sageman, Mount Vernon, and G. W. Mabie, Brooklyn, N. Y. Fastening for carriage-curtains	406,773	July 9	1129	299	48	228
Sagendorph, Longley L., Cincinnati, Ohio. Metallic roofing, siding, &c	410,294	Sept. 3	241	62	48	1316
Sagendorph, Longley L., Cincinnati, Ohio. Metallic roofing	411,683	Sept. 24	2138	608	48	1748
Sagendorph, Longley L., Cincinnati, Ohio, assignor of one-half to C. N. Harder, Philmont, N. Y. Metallic finishing for buildings	406,668	July 9	971	262	48	198
Sagendorph, Longley L., Cincinnati, Ohio, assignor of one-half to C. N. Harder, Philmont, N. Y. Metallic molding-strip	407,694	July 23	2509	648	48	515
Sagendorph, Longley L., Cincinnati, Ohio, assignor of one-half to C. N. Harder, Philmont, N. Y. Metallic roofing-sheet	407,966	July 30	2925	762	48	601
Sagendorph, Longley L., Cincinnati, Ohio, assignor of one-half to C. N. Harder, Philmont, N. Y. Metallic ceiling and sheeting strip	410,856	Sept. 10	1117	300	48	1493
Sagle, Joseph R., Baltimore, Md. Coal-cart	407,121	July 16	1662	434	48	341
Sague, James E., Buffalo, N. Y. Apparatus for heating cars	409,306	Aug. 20	1695	446	48	1020
Saltz, Julius J., *et al.* (See Jacoby, Cornelia M., assignor.)						
Saladee, Cyrus W., Cleveland, Ohio. Running-gear for road-wagons	411,473	Sept. 24	2027	537	48	1683
Saladee, Cyrus W., Cleveland, Ohio. Spring-platform for road-wagons	411,732	Sept. 24	2405	637	48	1762
Salisbury, Wilber S., Chicago, Ill. Electric motor for street-cars	408,753	Aug. 13	845	225	48	848
Salisbury, Wilber S., Chicago, Ill. Motor for street-cars	408,754	Aug. 13	847	225, 226	48	849
Sallandrouze, Andre C. H., assignor to Société Sallandrouze Frères, Paris, France. Loom for weaving tufted fabrics	410,096	Aug. 27	2868	752	48	1249
Salmon, Ira A., Boston, Mass. Type-writing machine	406,064	July 2	62	19	48	15
Salom, Pedro G. (See Morris and Salom.)						
Samson, Adolph, assignor to Pratt & Letchworth, Buffalo, N. Y. Machine for attaching tongues to buckles	410,770	Sept. 10	991	286, 287	48	1466
Samson, Adolph, assignor to Pratt & Letchworth, Buffalo, N. Y. Machine for attaching eyebolts to hame-rings	410,771	Sept. 10	994	287	48	1466
Samstag, Henry F., *et al.* (See Pifferling, Emanuel, assignor.)						
Samuel, Edward, Philadelphia, Pa. Railway cross-tie	410,933	Sept. 10	1223	330	48	1514
Samuel, Edward, assignor to W. Wharton, Jr., and Company, (incorporated,) Philadelphia, Pa. Street-railway crossing	406,309	July 2	399	108, 109	48	80
Samuel, Edward, assignor to W. Wharton, Jr., and Company, (incorporated,) Philadelphia, Pa. Driving-gear for cars	408,931	Aug. 13	1116	293	48	902
Samuel, Edward, assignor to W. Wharton, Jr., and Company, (incorporated,) Philadelphia, Pa. Rail-chair	410,452	Sept. 3	497	133	48	1365
Samuel, Edward, assignor to W. Wharton, Jr., and Company, (incorporated,) Philadelphia, Pa. Making railway-rail chairs	410,993	Sept. 10	1314	334	48	1532
Sanborn, Albert E., and O. L. Merrow, assignors of one-half to D. and J. O'Shea, Jr., Laconia, N. H. Knitting-machine	411,303	Sept. 17	1775	474, 475	48	1631
Sanborn, William E., Boston, Mass. Steering attachment for bicycles	410,335	Sept. 3	316	82	48	1330
Sanders, Calvin M. and J. H., Woodland Mills, Tenn. Gate-latch	410,934	Sept. 10	1224	330	48	1514

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Sanders, George A., *et al.* (See Newman, Nelson, assignor.)						
Sanders, Halleck O., Madison, Wis. Wheel-cultivator	411,733	Sept. 24	2407	638	48	1762
Sanders, J. E., *et al.* (See Gardner, John H., assignor.)						
Sanders, Johnston H. (See Sanders, Calvin M. and J. H.)						
Sanderson, Herbert H., trustee. (See Mason, Allan, assignor.)						
Sanderson, Herbert H., trustee. (See Wilson and Mason, assignors.)						
Sandford, William B., assignor to Haxtun Steam Heater Company, Kewanee, Ill. Rolls for the manufacture of square pipe	410,202	Sept. 3	111	29	48	1291
Sandford, William B., assignor to Haxtun Steam Heater Company, Kewanee, Ill. Making square metal pipe	410,203	Sept. 3	113	29	48	1291
Sandford, William P., *et al.* (See Spofford, Charles, assignor.)						
Sandmeyer, Traugott, Basle, Switzerland, assignor, by mesne assignments, to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Prussia, and Actien-Gesellschaft für Anilin Fabrikation, Berlin, Germany. Red color	406,669	July 9	972	......	48	198
Sandmeyer, Traugott, Basle, Switzerland, assignor, by mesne assignments, to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Prussia, and Actien-Gesellschaft für Anilin Fabrikation, Berlin, Germany. Yellow color	406,670	July 9	973	......	48	198
Sandmeyer, Traugott, assignor to J. R. Geigy & Co., Basle, Switzerland. Making aurin derivatives	410,739	Sept. 10	942	......	48	1456
Sandoz, Henri, Locle, Switzerland, assignor to A. Schwob, New York, N. Y. Box for repeating-watches	407,040	July 16	1525	399	48	313
Sands, Josias J., Merton, Wis. Bottle-stopper	409,374	Aug. 20	1794	472	48	1039
Sandwich Enterprise Company. (See Bash, David W., assignor.)						
Sanford, Albert, Oshkosh, Wis. Cant-hook	408,755	Aug. 13	850	226	48	850
Sanford, Lazarus B., and T. Grisenthwaite, Fall River, Mass. Lubricator for spinning machinery	407,122	July 16	1663	435	48	341
Sanger, John N., Brooklyn, assignor to F. Adee & Co., New York, N. Y. Device for heating soldering-irons, lead-melting pots, &c	406,310	July 2	400	109	48	80
Sanitary and Fertilizer Company of the United States. (See McClellan, Oscar D., assignor.)						
Santy, Louis P., Clements, Kans. Water-motor	407,123	July 16	1664	435	48	341
Sargent, Allan C. (See Sargent, Frederick G. and A. C.)						
Sargent, Arthur G., Tilton, assignor of one-half to Laconia Car Company, Laconia, N. H. Automatic oil-feeder for oil-stoves	410,453	Sept. 3	498	133	48	1365
Sargent & Company. (See Page, Albert A., assignor.)						
Sargent, Frederick G. and A. C., Graniteville, Mass. Wool-washing machine	411,533	Sept. 24	2107	556	48	1699
Sargent, Frederick G. and A. C., Graniteville, Mass. Feeding mechanism for wool-washing machines	411,534	Sept. 24	2108	556	48	1699
Sarratt, James F. (See Bleich and Sarratt.)						
Sater, Hans H., Dubuque, Iowa. Attachment for plows	407,450	July 23	2172	560	48	447
Sattley, Archibald. (See Sattley, Marshall, assignor.)						
Sattley, Marshall, assignor of one-half to A. Sattley, Taylorville, Ill. Cultivator	406,856	July 9	1257	332	48	250
Saulnier, Jules L. F. (See Siret, Antoine, assignor.)						
Sauls, Edward C., Columbus, Ga. Can-filler	407,252	July 16	1859	485	48	379
Saunders, Alexander, assignor to D. Saunders' Sons, Yonkers, N. Y. Screw-cutting die	406,857	July 9	1258	332	48	251
Saunders, Benjamin, deceased; L. A. Saunders, Nashua, N. H., executrix. Machine for winding thread or yarn upon bobbins	407,124	July 16	1665	435	48	342
Saunders, Henry, Perry, Mo. Gage for saws	406,774	July 9	1130	300	48	228
Saunders, Louisa A., executrix. (See Saunders, Benjamin.)						
Saunders' Sons, D. (See Saunders, Alexander, assignor.)						
Saunders, Theodore, Danbury, Conn. Car-seal	406,113	July 2	125	37	48	26
Saunders, Theodore, Danbury, Conn. Press for car-seals	406,114	July 2	126	37	48	26
Sautter, Charles F., Brooklyn, N. Y. Thermostatic-valve regulator	406,775	July 9	1132	300	48	228
Sautter, Charles F., Brooklyn, N. Y. Funnel	407,253	July 16	1860	485	48	379
Sautter, Charles F., Brooklyn, N. Y. Lifter for jars, bottles, or other articles	407,254	July 16	1861	485	48	379
Savage, David, Bloomsburg, Pa. Washing-machine	407,453	July 23	2177	562	48	448
Savoral, Edvard, New York, N. Y. Friction-clutch	409,871	Aug. 27	2532	662, 663	48	1184
Sawhill, Frank C. (See Dosch and Sawhill.)						
Sawin, Charles A., assignor of one-half to H. A. Bacon, Waltham, Mass. Heating apparatus	408,263	Aug. 6	93	23	48	697
Sawyer, Albert P. (See Milliken, George F., assignor.)						
Sawyer, Andrew W., Providence, R. I. Spool-holder	410,699	Sept. 10	863	232	48	1443
Sawyer, Charles H., assignor of one-half to H. A. Smith, Minneapolis, Minn. Wheeled scraper or self-loading cart	407,451	July 23	2173	560, 561	48	448
Sawyer, Charles H., assignor of one-half to H. A. Smith, Minneapolis, Minn. Wheeled scraper	407,452	July 23	2176	561, 562	48	448
Sawyer, Charles R. (See Parent, Charles, assignor.)						
Sawyer, Harry H., Ridley Park, assignor of one-half to Thackara Manufacturing Company, Philadelphia, Pa. Holder for electric-light shades	411,396	Sept. 17	1908	509	48	1655
Sawyer Spindle Company. (See Draper, William F., assignor.)						
Sawyer Spindle Company. (See Goodale, Benjamin N., assignor.)						
Sawyer, William H., Providence, R. I. Wire-drawing die	406,671	July 9	973	262	48	198
Saxton, Lionel D., Kansas City, Mo. Harness attachment	410,029	Aug. 27	2749	722	48	1228
Sayles, Fred. L. (See Allison, George A., assignor.)						
Sayles, W. F. & F. C. (See Peck, Ira F., assignor.)						
Sayles, W. F. & F. C. (See Peck, Walter L., assignor.)						
Scanlon, John, Ironton, Mich. Blast-heater	411,618	Sept. 24	2244	596	48	1729
Scarborough, William D., Pennington, Tex. Door-check	411,557	Sept. 24	2141	568	48	1707
Schaaf, Ferdinand, Frankfort-on-the-Main, Germany. Piano	407,695	July 23	2510	648	48	515
Schade, John, Brooklyn, N. Y., assignor to Hopkins & Dickinson Manufacturing Company, of New York. Knob attachment	407,902	July 30	2826	735	48	582
Schaefer, John, Hyde Park, assignor to himself, and H. H. Windsor, Chicago, Ill. Automatic feeder for printing-presses	407,840	July 30	2731	709, 710	48	563
Schaper, Kasper H., Linn's Mills, Mo. Automatic grain-scale	410,857	Sept. 10	1118	301	48	1493
Schaum, Charles L. (See Motter and Todd, assignors.)						
Schaum, Otto W., Philadelphia, Pa. Brake mechanism	407,615	July 23	2400	623	48	495
Scheele, August H. (See Scheele, Henry W. and A. H.)						
Scheele, Henry W. and A. H., Cross Plains, Wis. Rail-joint	411,064	Sept. 17	1412	377	48	1560
Scheen, Sophus M., Christiania, Norway. Letter file and binder combined with a perforating device	406,396	July 9	848	229	48	175
Schelker, Gaspard, assignor of one-half to H. Goll, Brooklyn, N. Y. Picture-holder attachment for watch-cases	410,808	Sept. 10	1050	281	48	1180
Schembeck, Louis, New York, N. Y. Wind-instrument	410,740	Sept. 10	943	252	48	1456

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Schenck, Charles S., New York, N. Y. Apparatus for discharging and conveying coal	409,872	Aug. 27	2533	663	48	1184
Schenck, John C. F., Moline, Ill. Car step and platform safety-bar	406,960	July 16	1409	370	48	291
Scherer, Joseph, Buffalo, N. Y. Hand loom	410,772	Sept. 10	926	267	48	1467
Scherffius, Jacob, Winona, Minn. Charcoal apparatus	409,873	Aug. 27	2535	664	48	1185
Schilling, August. (See Roensch, Hugo, assignor.)						
Schilling, August M., Chicago, Ill. Lantern	409,506	Aug. 20	1977	522	48	1077
Schilling, August M., Chicago, Ill. Flooring-strip	411,684	Sept. 24	2339	619	48	1748
Schiltz, Mathias V., Cologne, Prussia, Germany. Hydrocarbon-engine	406,540	July 9	778	211	48	163
Schimansky, Otto, assignor to Barney & Kilby and D. J. Brown Manufacturing Company, Sandusky, Ohio. Machine for cutting hoops	407,841	July 30	2734	710 711	48	564
Schimmel, Oscar, Chemnitz, Saxony, Germany. Spinning-mule	408,540	Aug. 6	518	135 136	48	778
Schimper, Rudolph J., Jersey City, N. J., assignor to G. Frank, New York, N. Y. Artificial fuel	408,854	Aug. 13	999	.....	48	879
Schlatter, Friederich, Madretsch, Switzerland. Micrometer-gage	407,903	July 30	2827	736	48	582
Schlesinger, William M., Philadelphia, Pa. Regulating device for electric-railway cars	406,961	July 16	1410	370	48	292
Schlesinger, William M., Philadelphia, Pa. Electric railway	408,855	Aug. 13	999	264 265	48	879
Schlesser, Nickolas, Chicago, Ill. Safety-gate for swing-bridges	407,967	July 30	2926	762	48	601
Schloemer, Gottfried, and E. Hausknecht, Milwaukee, Wis. Velocipede	409,758	Aug. 27	2368	621	48	1154
Schlund, Henry A. (See Kynoch, George, assignor.)						
Schmalz Cigar Machine Company. (See Schmalz, John E., assignor.)						
Schmalz, François, New York, N. Y., assignor to American Waltham Watch Company, Waltham, Mass. Stripped negative	409,507	Aug. 20	1980	523	48	1077
Schmalz, John E., New York, N. Y., assignor to Schmalz Cigar Machine Company, of New York. Cigar-bunch-wrapping machine	411,304	Sept. 17	1777	475 476	48	1632
Schmasen, Henry. (See Doren, Lewis W., assignor.)						
Schmid, Albert, Allegheny, assignor to Westinghouse Electric Company, Pittsburg, Pa. Laminated core for electrical apparatus	406,776	July 9	1133	300	48	228
Schmid, Albert, Allegheny, assignor to Westinghouse Electric Company, Pittsburg, Pa. Forming laminated cores for electrical apparatus	406,858	July 9	1260	332	48	251
Schmid, Albert, Allegheny, assignor to Westinghouse Electric Company, Pittsburg, Pa. Forming cores for electrical apparatus	406,859	July 9	1262	333	48	251
Schmid, Albert, assignor to Westinghouse Electric Company, Pittsburg, Pa. Armature for electric machines	406,777	July 9	1135	301	48	228
Schmid, Wolfgang, Munich, Bavaria, Germany. Brake	408,756	Aug. 13	851	226	48	850
Schmidlapp, Jacob, New York, N. Y. Hook-and-ladder truck	409,759	Aug. 27	2369	622	48	1154
Schmidt, Ferdinand, Demmin, Prussia, Germany. Dental plugger	410,935	Sept. 10	1226	330	48	1514
Schmidt, Friedrich H., Schindlerswerk, near Bockau, Saxony, Germany. Apparatus for grinding wood	411,734	Sept. 24	2408	638	48	1763
Schmidt, Gottlieb, Philadelphia, Pa. Heel	410,030	Aug. 27	2750	723	48	1228
Schmidt, Johann F. E. W., Dresden, Saxony, Germany. Regenerative lamp	408,197	July 30	2989	859	48	666
Schmidt, John G., Philadelphia, Pa. Rotary meat-tenderer	411,169	Sept. 17	1584	421	48	1594
Schmidt, John M., Saginaw, Mich. Alarm	408,992	Aug. 13	1205	317 318	48	918
Schmidt, Oscar W., assignor of one-half to I. S. Cohen, San Francisco, Cal. Driving or stop mechanism	409,068	Aug. 13	1323	349	48	940
Schmidt, Wilhelm, Halberstadt, Prussia, Germany. Utilizing exhaust-steam	406,372	July 2	486	135 136	48	97
Schmitt, Joseph. (See Schrader and Schmitt.)						
Schmitt, Rudolf, Dresden, assignor to F. von Heyden, Nachfolger, Radebeul, Saxony, Germany. Making beta naphthol carbon acid	410,295	Sept. 3	241	.....	48	1316
Schmucker, John P., Franklin Grove, Ill. Motive power	411,065	Sept. 17	1413	377	48	1560
Schnarrenberger, Jacob H., assignor to himself and T. Reynolds, Springfield, Ohio. Adding-machine	409,710	Aug. 27	2300	604 605	48	1141
Schneekloth, Hans A., assignor to S. Littman, New York, N. Y. Barber's chair	410,296	Sept. 3	242	63	48	1316
Schneider, Edward F., Racine, Wis. Split pulley	406,237	July 2	206	81	48	59
Schneider, Henri, Paris, France. Gun-mounting having a disappearing action	407,418	July 23	2123	545	48	437
Schneider, Paul, administrator. (See Nicolaus, Edmund B.)						
Schneider, Peter, Brooklyn, N. Y. Automatic cigar-selling machine	408,932	Aug. 13	1117	291 292	48	902
Schnur, Charles. (See Blosfeld and Schnur.)						
Schoellig, Eduard. (See Endres and Schoellig.)						
Schoen, Charles T. (See Kemp and Marsden, assignors.)						
Schoen, Charles T., Philadelphia, Pa. Center-bearing plate for railway-cars	408,757	Aug. 13	852	227	48	850
Schofield, Richard, Paris, Ontario, Canada. Circular-rib-knitting machine	411,685	Sept. 24	2341	619	48	1748
Scholder, Edward F., Fort Scott, Kans. Cornstalk cutter or harvester	407,419	July 23	2124	548	48	438
Scholder, Edward F., Fort Scott, Kans. Truck. (Reissue)	11,022	Aug. 13	1475	390 391	48	971
Scholfield, Joseph J., Providence, R. I. Device for guiding the edges of fabrics	408,758	Aug. 13	853	227	48	850
Scholl, William, and T. G. Wolf, Scranton, Pa. Machine for reducing rails	408,993	Aug. 13	1121	297 298	48	903
Schoop, Paul, Zurich, Switzerland. Gelatinizing electrolytes for galvanic batteries	408,138	July 30	3189	.....	48	650
Schrack, James S., Jesup, Iowa. Liniment	407,551	July 23	2319	.....	48	478
Schrader, George, New York, and J. Schmitt, Brooklyn, N. Y. Forming screw-caps	406,479	July 9	673	180	48	144
Schrage, William. (See Meyer and Schrage.)						
Schrankel, John, assignor to L. Schrankel, Lancaster, N. Y. Double-acting force-pump	411,261	Sept. 17	1713	456	48	1620
Schrankel, Louisa. (See Schrankel, John, assignor.)						
Schroeder, Carl A. J. H., London, England. Carbon for electric lighting	408,358	Aug. 6	225	.....	48	723
Schroeder, Gottlieb W., Huntington, Ind. Poultry-house	406,778	July 9	1136	301	48	229
Schroeder, Max. (See Hänisch and Schroeder.)						
Schroth, C. F. (See McCullough, Oscar, assignor.)						
Schubert, Carl, assignor to himself and R. Kremmler, Dresden, Saxony, Germany. System of laying out patterns for garments	411,686	Sept. 24	2343	619 620	48	1749
Schubert, Louis L., and F. Malerhoefer, Chicago, Ill. Hod	407,968	July 30	2928	760	48	601
Schuermann, Anton, Decatur, Ill. Tool-driver	407,842	July 30	2735	711	48	564
Schuett, Henry J. H., Detroit, Mich. Envelope-damping machine	411,355	Sept. 17	1853	490 491	48	1645
Schultze, Charles, New York, N. Y. Kite-cord stick	406,672	July 9	974	252	48	198
Schulz, Theodore, and F. A. Cody, Rochester, N. Y. Hydrocarbon-lighting device	411,170	Sept. 17	1585	422	48	1594
Schulze-Berge, Hermann, Rochester, Pa. Furnace for heating glassware	411,131	Sept. 17	1530	400	48	1584
Schulze-Berge, Hermann, Rochester, Pa. Apparatus for reheating glassware	411,132	Sept. 17	1532	400	48	1584
Schüpphaus, Charles R., Adams, Mass., assignor to American Zylonite Company, New York, N. Y. Pyroxyline compound	410,204	Sept. 3	114	.....	48	1221

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Schüpphaus, Charles R., Zylonite, Mass., assignor to American Zylonite Company, New York, N. Y. Pyroxyline varnish	410,205	Sept. 3	114	.....	48	1221
Schüpphaus, Charles R., Zylonite, Mass., assignor to American Zylonite Company, New York, N. Y. Pyroxyline varnish	410,206	Sept. 3	115	.....	48	1221
Schüpphaus, Charles R., Zylonite, Mass., assignor to American Zylonite Company, New York, N. Y. Pyroxyline compound	410,207	Sept. 3	116	.....	48	1221
Schüpphaus, Charles R., Zylonite, Mass., assignor to American Zylonite Company, New York, N. Y. Pyroxyline varnish	410,208	Sept. 3	116	.....	48	1221
Schüpphaus, Charles R., Zylonite, Mass., assignor to American Zylonite Company, New York, N. Y. Pyroxyline compound	410,209	Sept. 3	117	.....	48	1221
Schupphaus, Robert C., Adams, Mass., and M. T. White, Newark, N. J. Apparatus for the manufacture of pyroxyline	406,597	July 9	832	229	48	176
Schureman, Howard B., Newark, N. J. Motor for toys	409,806	Aug. 27	2443	640	48	1168
Schuster, Jacob, St. Clair, Pa. Hydrant	406,149	July 2	176	51	48	36
Schutz, Frederick A., Brooklyn, N. Y. Cigar-bunching machine	409,607	Aug. 27	2445	641 642	48	1169
Schwab, Charles M., Homestead, Pa. Apparatus for hot-sawing beams	410,119	Aug. 27	2214	765	48	1256
Schwab, Charles M., Munhall, Pa. Making metal rolls	410,651	Sept. 10	784	212	48	1429
Schwarts, Charles, Brooklyn, N. Y. Paper box	407,494	July 23	2230	576	48	459
Schwars, Herman, New York, N. Y. Cap	408,934	Aug. 13	1122	296	48	903
Schweickhardt, William, St. Louis, Mo. Leather-working machine	408,896	Aug. 13	1069	281	48	892
Schweitzer, Joseph, Paris, France. Grinding-mill	406,779	July 9	1138	302	48	229
Schweizer, Edward. (See Misle and Schweizer.)						
Schwenke, Paul, Zerbst, Anhalt, Germany. Electrical lock	409,508	Aug. 20	1980	523	48	1077
Schwerin, C. Morris. (See Spielman, William, assignor.)						
Schwinn, George W., Philadelphia, Pa. Damper for hot-air flues	408,856	Aug. 13	1005	265	48	880
Schwob, Adolphe. (See Sandos, Henri, assignor.)						
Scofield, Frank M., *et al.* (See Tripp, James, assignor.)						
Scofield, Frank R., Cleveland, Ohio. Bolt-pointing machine	409,244	Aug. 20	1596	421	48	1001
Scofield, Gerrit S., *et al.* (See Tripp, James, assignor.)						
Scofield, Levi, Grand Haven, Mich. Planter	411,203	Sept. 17	1635	435	48	1604
Scollay, Edward F. (See Miles and Scollay.)						
Scotford, Louis K., Chicago, Ill. Apparatus for vulcanizing rubber	407,255	July 16	1392	485 486	48	379
Scott, George A., New York, N. Y. Magnetic body-wear	410,652	Sept. 10	785	213	48	1429
Scott, George L. (See Chorlton and Scott.)						
Scott, Morley & Co. (See Morley, Joseph D., assignor.)						
Scott, Nelson T., New York, N. Y. Nut-lock	406,150	July 2	177	51	48	36
Scott, Robert W., assignor of one-half to L. N. D. Williams, Philadelphia, Pa. Needle-picking tool for knitting-machines	407,125	July 16	1666	433	48	342
Scott, Robert W., assignor of one-half to L. N. D. Williams, Philadelphia, Pa. Needle-picking tool for knitting-machines	407,126	July 16	1667	436	48	342
Scott, Robert W., assignor of one-half to L. N. D. Williams, Philadelphia, Pa. Knitting-machine and needle therefor	407,616	July 23	2401	623	48	495
Scott, Robert W., assignor of one-half to L. N. D. Williams, Philadelphia, Pa. Narrowed knitted web	410,631	Aug. 27	2751	723	48	1228
Scott, Robert W., assignor of one-half to L. N. D. Williams, Philadelphia, Pa. Narrowing knitted webs	410,858	Sept. 10	1119	301	48	1493
Scott, Robert W., assignor of one-half to L. N. D. Williams, Philadelphia, Pa. Knitting-machine	410,859	Sept. 10	1121	301 302	48	1493
Scott, Samuel J., Cincinnati, Ohio. Jug-cover	406,238	July 2	227	82	48	59
Scott, Samuel P., assignor to Star Manufacturing Company, Hillsborough, Ohio. Carriage-curtain fastening	409,009	Aug. 13	1324	349	48	940
Scott Spring Company, Charles (See Bell, Thomas M., assignor.)						
Scott, Walter, Plainfield, N. J. Dampening and feeding mechanism for printing-machines	411,535	Sept. 24	2109	556 557	48	1699
Scott, Walter A., St. Paul, Minn. Six-wheeled car-truck	408,993	Aug. 13	1206	318 319	48	918
Scott, William, Medford, Mass. Water-closet bowl	406,780	July 9	1141	302	48	230
Scott, William, Medford, Mass. Water-closet	407,041	July 16	1526	399	48	313
Scott, William, Medford, Mass. Set wash-basin	407,793	July 30	2954	687	48	550
Scott, William, Medford, Mass. Waste-pipe connection	408,897	Aug. 13	1071	282	48	892
Scovill Manufacturing Company. (See Fuller, Willard H., assignor.)						
Scoville, Elijah U., Manlius, N. Y. Pipe-coupling	410,032	Aug. 27	2751	723	48	1228
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Electric polarized annunciator	411,133	Sept. 17	1534	409	48	1584
Sealy, Amanda. (See Sealy, Thomas, assignor.)						
Sealy, Thomas, assignor to A. Sealy, Newark, N. J. Treating fur or wool felt for hats, &c.	409,651	Aug. 20	2192	.....	48	1116
Seaman, Joseph B., South Lynne, Ill. Drying or evaporating apparatus	411,397	Sept. 17	1909	509 510	48	1655
Seaman, Sherman C., Clinton, Iowa. Crate	409,118	Aug. 13	1405	371	48	956
Seaman, William. (See Eynon and Seaman.)						
Searle, Harry F., Brooklyn, N. Y. Phonogram-receiving box	407,127	July 16	1669	436	48	342
Searls, Anson, assignor to Searls-Randall Company, Newark, N. J. Top-prop nut	407,904	July 30	2928	736	48	582
Searls, Anson, assignor to Searls-Randall Company, Newark, N. J. Arm-rail for sleighs	407,905	July 30	2929	736	48	582
Searls-Randall Company. (See Searls, Anson, assignor.)						
Seat, Samuel A., M. W. Perkins, and J. T. Tooloose, Hematite, Mo. Work-bench	411,511	Sept. 24	2077	549	48	1694
Seaver, Frederic A., Hartford, Conn. Centering device	407,617	July 23	2402	624	48	495
See, James W., Hamilton, Ohio. Lightning-arrester	407,454	July 23	2178	502	48	449
Seebass, Oscar. (See Haenichen, Friedrich and O., assignors.)						
Seeley, Marquis F., Chicago, Ill. Grain dump and elevator	410,336	Sept. 3	317	82 83	48	1330
Sefton, William E., Canton, Ohio. Plow-clevis	406,857	Aug. 13	1006	265	48	880
Segar, Charles T., Utica, N. Y. Pulley-block	408,814	Aug. 13	943	251	48	868
Seibert, Edward H., and A. M. Eckstrom, St. Louis, Mo. Combined folding bedstead, settee, &c.	411,687	Sept. 24	2345	620	48	1749
Seibold, John. (See Sageman and Seibold.)						
Seifert, Bruno R., assignor to F. von Heyden Nachfolger, Radebeul, near Dresden, Saxony, Germany. Making paraoxybenzoic acid	407,906	July 30	2930	.....	48	582
Seifert, John J., Gilmore City, Iowa. Baking-pan	410,936	Sept. 10	1227	330	48	1514
Seifried, Samuel J., Chicago, Ill., assignor of two-thirds to F. W. Munson, Logansport, Ind., and L. L. Munson, Chicago, Ill. Type-writing machine	411,066	Sept. 17	1415	378 379	48	1561
Selander, Frans T. Gothenburg, Sweden. Adjustable school-desk	406,160	July 2	222	60, 61	48	44

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Selby, Jeremiah B. (See Doney, Asa, assignor.)						
Seldner, Joseph J. (See Barnes, Joshua B., assignor.)						
Self Attaching Cuff Holder Company. (See Williams, Harry B., assignor.)						
Self, John W., Bowling Green, Ky. Combined seed-sower and clod-crusher	409,070	Aug. 13	1325	349, 350	48	941
Self Winding Clock Company. (See Pond, Chester H., assignor.)						
Selle, Ferdinand, Akron, Ohio. Spring bearing-block for vehicles	409,245	Aug. 20	1597	421	48	1001
Sellers & Sons, John. (See Mason, George A., assignor.)						
Sellon, John S., Hatton Gardens, county of Middlesex, England. Manufacture of carbons for incandescent electric lamps	411,474	Sept. 24	2029	537	48	1684
Sellstrom, Gustaf F., Jamestown, N. Y. Saw	411,475	Sept. 24	2030	537	48	1684
Semon, Jacob S., assignor of one-half to C. Dodge, Buffalo, N. Y. Hydrocarbon-oil vaporizer and burner	408,198	July 30	3290	859	48	667
Sergeant, Henry C., assignor to Ingersoll-Sergeant Rock Drill Company, New York, N. Y. Rock-drill support	407,257	July 16	1865	487	48	380
Sergeant, Henry C., assignor to Ingersoll-Sergeant Rock Drill Company, New York, N. Y. Direct-acting engine	407,258	July 16	1866	487	48	380
Sergeant, Henry C., New York, N. Y., assignor to Ingersoll-Sergeant Rock Drill Company, of New York. Coal-mining machine	411,305	Sept. 17	1780	476, 477	48	1632
Serrell, Edward W., Jr., New York, N. Y. Silk-reeling machinery	406,598	July 9	854	230	48	176
Settles, Benjamin F. (See Settles, Edward P., B. F., and W. H., Jr.)						
Settles, Edward P., B. F., and W. H., Jr., Mount Sterling, Ky. Two-wheeled vehicle	410,454	Sept. 3	500	133	48	1366
Settles, William H., Jr. (See Settles, Edward P., B. F., and W. H., Jr.)						
Settles, William P., La Due, Mo. Car-roof attachment	408,139	July 30	3190	834	48	650
Severance, Alvin A., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Rose for locks	409,246	Aug. 20	1598	421	48	1001
Seward, Henry C., Mount Olive, N. J. Feed-trough	410,563	Sept. 3	646	172	48	1395
Seward & Son, M. (See Cooper, William H., assignor.)						
Sewell, Leonard, *et al.* (See Leruth, Michel J., assignor.)						
Sexton, Samuel B., Jr. (See Fleechearty, John T., assignor.)						
Sexton, William L., Scranton City, assignor of one-half to D. Barrow, Greene County, Iowa. Shovel for plows	410,381	Sept. 3	377	100	48	1343
Seyberth, Johann, Vienna, Austria-Hungary, assignor to A. J. Ostheimer, Philadelphia, Pa. Automatic pneumatic instructor	407,128	July 16	1670	436	48	342
Seyller, George. (See Smith, Walton D., assignor.)						
Seymour, Francis. (See Heywood, John J., assignor.)						
Seymour, Francis, Paterson, N. J., assignor of one-half to J. J. Heywood, Fall River, Mass. Support for spinning-spindles	408,264	Aug. 6	95	23	48	698
Seymour, Frederick J., Findlay, Ohio, assignor to Automatic Lubricating Tubular Axle Company, Chicago, Ill. Self-lubricating car-axle	407,256	July 16	1864	486	48	380
Seymour, Henry J., Niagara, Ontario, Canada. Animal-trap	407,129	July 16	1671	436	48	343
Seymour, James M., assignor to Seymour Stove Attachment Company, Cleveland, Ohio. Front for grates or fire-places	411,262	Sept. 17	1715	459	48	1621
Seymour, James W., Brooklyn, assignor of one-half to Triest & Co., New York, N. Y. Rest for packing hats	406,673	July 9	975	262	48	198
Seymour, Joseph L., Brooklyn, N. Y. Bias cloth bag	408,258	Aug. 13	1007	266	48	880
Seymour, Leslie A. (See McKenzie, Joseph H., assignor.)						
Seymour Stove Attachment Company. (See Seymour, James M., assignor.)						
Seymour, William S., assignor of one-half to E. H. Grey, Philadelphia, Pa. Woven-wire mattress	410,937	Sept. 10	1228	331	48	1514
Seyter, Robert. (See McCarty and Seyter.)						
Shaeffer, Barbara. (See Shaeffer, Milton, assignor.)						
Shaeffer, Milton, assignor to B. Shaeffer, Canton, Ohio. Cake-griddle	411,619	Sept. 24	2245	597	48	1729
Shaffer, Henry E., Rochester, N. Y. Lamp	407,969	July 30	2929	763	48	602
Shaffer, Henry E., Rochester, N. Y. Wick-raiser	407,970	July 30	2930	763	48	602
Shank, Charles A., assignor to W. Smith and J. R. Allen, Philadelphia, Pa. Car starter and brake	411,668	Sept. 24	2347	620, 621	48	1750
Shauk, Freeman E., Trotwood, Ohio. Automatic damper for boiler-furnaces	409,247	Aug. 20	1598	422	48	1001
Shannofelt, John B., Jr. (See Porterfield and Shannofelt.)						
Shannon, Cyrus N., St. Cloud, Minn. Ice-creeper	411,512	Sept. 24	2078	549	48	1694
Shannon, David D., Ovid, Mich. Washing-machine	407,130	July 16	1673	437	48	343
Shannon, Lewis, Jackson, Mich. Attachment for dresses	406,239	July 2	297	82	48	59
Sharples, Philip M., West Chester, Pa. Centrifugal lubricator	408,859	Aug. 13	1008	266	48	880
Sharples, William E., Fall River, Mass. Thread-separator for spinning-frames	407,420	July 23	2125	548, 549	48	438
Sharples, William E., Fall River, Mass. Ring-spinning frame	410,255	Sept. 3	179	47	48	1303
Sharman, William T. (See Taylor, Sharman, and Jamison.)						
Sharpneck, William S., Chicago, Ill. Anti-friction journal-box	409,307	Aug. 20	1698	446	48	1020
Sharpneck, William S., Chicago, Ill. Cage for journal-boxes	409,308	Aug. 20	1699	446	48	1021
Shartle, Charles W., Middletown, Ohio. Lathe-dog	411,620	Sept. 24	2246	597	48	1729
Sharts, Theodore, New York, N. Y. Grating for illuminating-tiles	411,134	Sept. 17	1535	409	48	1584
Shaw, Ai B., Boston, Mass. Oil-can	410,938	Sept. 10	1229	331	48	1515
Shaw, Charles P. (See McCaskey and Shaw.)						
Shaw, Henry F., Boston, Mass. Flexible support for rings of ring-spinning machines	410,256	Sept. 3	181	47	48	1304
Shaw, James E., assignor of one-half to R. W. Spann, Bishopville, S. C. Axle-lubricator	410,719	Sept. 10	909	244	48	1449
Shaw, Robert J., *et al.* (See Dunlap, John W., Sr., assignor.)						
Shaw, William H., assignor to himself and J. Noerman, Brooklyn, N. Y. Faucet	407,485	July 23	2231	576	48	459
Shaw, William T., London, England. Ink or mucilage vessel	411,356	Sept. 17	1854	496	48	1645
Shay, Jeremiah M. (See Evans and Shay.)						
Shearburn, Arthur P., Mendota, Ill. Veterinary parturition-instrument	411,021	Sept. 24	2247	597	48	1729
Shearn, Joseph H., Leeds, assignor to himself, and Nonotuck Silk Company, Florence, Mass. Doubling-machine	408,140	July 30	3191	834	48	650
Shedd, William G., Leadville, Colo. Sash-cord guide	410,741	Sept. 10	944	252, 253	48	1456
Sheets, George W. (See Leinard and Sheets.)						
Sheets, Laranee W., and J. M. Walker, Holden, Mo. Running-gear for vehicles	406,373	July 2	488	136	48	97
Sheffield, Lucius T., New York, N. Y. Dental engine	408,439	Aug. 6	351	91	48	748
Sheldon, Irving L., and G. F. Bailey, Danbury, Conn. Machine for making paper boxes	410,083	Aug. 27	2752	724	48	1228
Sheldon, John, Birmingham, county of Warwick, England. Machine for rolling the threads on screws	408,048	July 30	3040	795, 796	48	623
Sheldon, Samuel. (See Trowbridge and Sheldon.)						
Shellaberger, Michael M., Beaver Falls, Pa. Die-bearing disk	409,309	Aug. 20	1700	447	48	1021
Shellaberger, Michael M., Beaver Falls, Pa. Fence-picket-crimping machine	410,611	Sept. 10	723	195, 196	48	1416

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Shelley, George. (See Chadd, William, assignor.)						
Shelley, Mortimer M., Brooklyn, N. Y. Animal-releasing device	406,674	July 9	977	263	48	199
Shellington, James. (See Matthews, Robert S., assignor.)						
Shelly, David B. (See Gibbons and Shelly.)						
Shepard, Charles G., and P. Adams; said Adams assignor to W. J. Shepard, Buffalo, N. Y. Ice-cream freezer	410,773	Sept. 10	998	268	48	1467
Shepard, Edward S., *et al.* (See Oldham, Carrick P., assignor.)						
Shepard, Walter J. (See Shepard and Adams, assignors.)						
Shepherd, James W., W. Ayrton, and R. Clegg, Longsight, near Manchester, county of Lancaster, England. Twisting and doubling machine	410,297	Sept. 3	943	63, 64, 65	48	1316
Sheppard, Kate E., Saratoga Springs, N. Y. Ash-sifter and coal-scuttle	408,815	Aug. 13	943	231	48	868
Sherman, Ira E., and W. T. Crouch, Sidney, N. Y. Plant-protector	410,653	Sept. 10	786	213	48	1429
Sherman, Ralph L., Monmouth, Ill. Double-acting pump	411,363	Sept. 17	1717	459	48	1631
Sherman, Willis D., assignor to Union Hydraulic Drain Tile Company, Omaha, Nebr. Tile-machine	410,455	Sept. 3	501	134	48	1366
Sherman, Willis S., Marinette, Wis. Hame-fastener	406,541	July 9	760	212	48	163
Sherwood, James H. (See Briggs, James E., assignor.)						
Shiffiette, William R. (See Bradley, William F., assignor.)						
Shinn, John, assignor of one-half to A. F. Fuller, Philadelphia, Pa. Curtain-fixture	409,760	Aug. 27	2371	622	48	1155
Shirk, Sylvester W., Byhalia, Ohio. Harness-loop	411,357	Sept. 17	1856	496	48	1645
Shoemaker, Frank A. (See Dennis and Shoemaker.)						
Shorkley, George, New York, N. Y. Photographic camera	409,874	Aug. 27	2537	664, 665	48	1185
Short, John. (See Hall, Theodore F., assignor.)						
Short, Sidney H., Denver, Colo. Electrical railway	407,745	July 23	2584	669	48	531
Short, Sidney H., Columbus, Ohio. Commutator for electric machines	408,965	Aug. 6	98	24	48	698
Short, Sidney H., Columbus, Ohio. Pole for supporting electric conductors	411,204	Sept. 17	1638	435	48	1605
Short, Sidney H., assignor to United States Electric Company, Denver, Col. Electrical railway	407,496	July 23	2229	576	48	460
Shoudy, Israel, Jr., Paw Paw, Ill. Agricultural boiler	407,498	July 23	2235	577	48	460
Shoudy, Israel, Jr., and L. L. Miller, Paw Paw, Ill. Agricultural boiler	407,497	July 23	2234	577	48	460
Shoup, Sexton C. (See Van Buren and Shoup.)						
Shoup, Simon, Fish Lake, Ind. Saw-set	408,759	Aug. 13	856	227	48	851
Shrock, Jerome A., Goshen, Ind. Hand garden-cultivator	410,774	Sept. 10	1000	288	48	1468
Shula, Frederic W., Galion, Ohio. Pump	410,456	Sept. 3	505	135	48	1367
Shulta, George J., Avoca, N. Y. Spring and bracket connection for platform-rockers	409,509	Aug. 20	1981	523	48	1078
Shunk, Benjamin, Fernandina, Fla. Head for fruit-boxes	410,034	Aug. 27	2758	724	48	1229
Sibley, Augustine W., assignor of one-half to J. H. Christie, Stamford, Conn. Music-stand	411,111	Sept. 17	1503	398	48	1577
Sickles, William G., Stuyvesant, N. Y. Ladder	409,711	Aug. 27	2302	605	48	1142
Siebert, Alfred, New York, N. Y. Pump	410,457	Sept. 3	506	135	48	1367
Siebert, Alfred, New York, N. Y. Pump	410,458	Sept. 3	507	135	48	1367
Siebert, Carl A. A. H., Leipsic, Saxony, Germany. Substitute for gutta-percha	411,171	Sept. 17	1586	.....	48	1584
Siebert, Henry and W., Bayonne, N. J. Clip for silverware-cases	408,935	Aug. 13	1123	296	48	903
Siebert, William. (See Siebert, Henry and W.)						
Sieg, Henry C., and J. T. Wiley, Lisconb, Iowa. Machine for making wire cables for fences, &c	409,248	Aug. 20	1600	422	48	1002
Siegrist, Henry A. (See Siegrist, John H., Jr., assignor.)						
Siegrist, John H., Jr., assignor of one-half to H. A. Siegrist, St. Louis, Mo. Automatic lubricator for steam-engines	410,035	Aug. 27	2759	725	48	1229
Siemens & Halske. (See Heller, Friedrich G. A., assignor.)						
Sierdorfer, Michael, Louisville, Ky. Siphon	407,971	July 30	2931	763	48	602
Sights, James J., and E. R. Walker, Robard, Ky. Furnace	407,372	July 23	2049	530	48	423
Sigle, Charles A., Youngstown, Ohio. Window	409,310	Aug. 20	1701	447	48	1021
Silliman, Frank, Jr., Springfield, Mass., and W. H. Cowdery; said Silliman assignor to S. R. Harris, Ashtabula, Ohio. Fork-blank	406,480	July 9	674	189	48	144
Silva, James A., Sandusky, Ohio. Cover for crocks and jars	406,542	July 9	781	212	48	163
Silvey, William L., Lima, Ohio. Dynamo-electric machine	406,569	July 9	859	231	48	177
Simmons & Co., George W. (See Roper, Robert G., assignor.)						
Simmons, George W., Conyers, Ga. Cotton-seed crusher	407,373	July 23	2050	530, 531	48	424
Simmons, William W. (See Glankler and Simmons.)						
Simms, Henry W., Bay City, Mich. Shade-roller fixture	406,481	July 9	676	189	48	145
Simon, H., *et al.* (See Herzig, Eduard, assignor.)						
Simon, Isidore. (See Reed, Eden, assignor.)						
Simon, R., *et al.* (See Herzig, Eduard, assignor.)						
Simonds, George F., Fitchburg, Mass., assignor to Simonds Rolling Machine Company, of Massachusetts. Machine for straightening, rounding, and condensing shafts	407,843	July 30	2736	711	48	565
Simonds Rolling Machine Company. (See Simonds, George F., assignor.)						
Simons, Edwin S., *et al.* (See Browning, Joseph, assignor.)						
Simons, Frederick M., *et al.* (See Browning, Joseph, assignor.)						
Simons, John F., *et al.* (See Browning, Joseph, assignor.)						
Simons, Ole, Arkdale, Wis. Potato-digger	410,210	Sept. 3	118	30	48	1291
Simons, Richard L., Lima, Ohio. Gas-pressure indicator	409,375	Aug. 20	1796	472, 473	48	1039
Simonson, Flavel, Batesville, Ark. Log lifting and turning machine	408,760	Aug. 13	857	228	48	851
Simpson, Harry C., Brooklyn, N. Y., and A. Waggoner Columbus, Ohio. Cable sheave and hanger for cable tramways	410,709	Sept. 10	864	233	48	1443
Simpson, James A., McKeesport, Pa. Apparatus for skelping or tube-welding	407,306	July 16	1932	503	48	393
Simpson, James H., assignor to Carnegie, Phipps & Co., (limited,) Pittsburg, Pa. Making turn-buckles	410,130	Aug. 27	2916	765	48	1257
Simpson, Mansfield R. (See Simpson, Thomas G. and M. R.)						
Simpson, Thomas G. and M. R., York, Nebr. Fence-machine	410,654	Sept. 10	787	214	48	1429
Sims, William T., Yazoo City, Miss. Car-coupling	408,875	Aug. 27	2538	665	48	1186
Singer, Ignatius, and M. W. Judell, Adelaide, South Australia. Cleaning wool	406,781	July 9	1142	302, 303	48	230
Singley, Joseph J., El Dorado, Kans. Corn or sorghum harvester	407,944	July 30	2892	753	48	594
Siret, Antoine, assignor of one-half to J. L. F. Saulnier, Roubaix, France. Loom for weaving tufted fabrics	411,067	Sept. 17	1423	379, 380	48	1502
Sisson, Harry W., Monmouth, Ill. Device for preventing horses from kicking	411,513	Sept. 24	2079	549	48	1694
Sisum, William H. H., Brooklyn, N. Y. Car-truck	411,066	Sept. 17	1431	381	48	1583
Sjoberg, Carl J. A., Rockaway, N. J. Lock	409,119	Aug. 13	1406	371	48	956

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sjoberg, Carl J. A., assignor to Smith & Egge Manufacturing Company, Bridgeport, Conn. Button-hole attachment for sewing-machines	406,115	July 2	127	37, 38	48	37
Skaggs, Newton J., Montgomery, Ala. Sash-balance	409,376	Aug. 20	1799	473	48	1040
Skinner, John, and C. B. Wallace, Flint, Mich. Car-mover	406,240	July 2	298	82	48	60
Skipper, James M., Granbury, Tex. Kitchen-cabinet	406,543	July 9	782	212	48	163
Slack, Graham S. (See Collins and Slack.)						
Slack, John R. (See Bergman, Edward F., assignor.)						
Slater, William W., Oakland, Cal. Automatic bell-ringer	408,440	Aug. 6	351	92	48	748
Slattery, Marmaduke M. M., Fort Wayne, Ind. Electric meter	410,860	Sept. 10	1124	302	48	1494
Slattery, Marmaduke M. M., assignor to Fort Wayne Electric Light Company, Fort Wayne, Ind. Core for converters	407,618	July 23	2403	624	48	495
Slattery, Marmaduke M. M., assignor to Fort Wayne Electric Light Company, Fort Wayne, Ind. Electric meter	407,619	July 23	2404	624, 625	48	495
Slawson, George W., Davenport, Nebr. Guard for stoves	411,735	Sept. 24	2409	639	48	1763
Slayton, Leonard K. (See Dean, Albert H., assignor.)						
Slevin, Thomas, St. Louis, Mo. Siphon-filter	409,071	Aug. 13	1327	350	48	941
Slocombe, Sidney, Marcellus, N. Y. Sheet-metal roofing	409,510	Aug. 20	1963	523	48	1078
Slocum, Frank L., and H. W. Lash, Pittsburg, Pa., assignors to T. J. McTighe, New York, N. Y., and said F. L. Slocum, trustees. Treating molten metal with natural gas	411,205	Sept. 17	1639	.....	48	1605
Slough, Louis, Wellsville, N. Y. Fire-escape	409,511	Aug. 20	1964	524	48	1078
Small, Dexter M., Providence, R. I. Apparatus for allaying the sensibility of a tooth	408,998	Aug. 13	1072	282	48	893
Small, Dexter M., Providence, R. I. Steam-conduit for dental surgery	408,999	Aug. 13	1073	282	48	893
Small, Emulous, *et al.* (See Bee, Benjamin F., assignor.)						
Smalley, Clarence C., Manitowoc, Wis. Plow	407,259	July 16	1867	487	48	381
Smallwood, Edward, Elyria, Ohio. Stone-planing machine	409,249	Aug. 20	1604	423	48	1003
Smaltig, Fredrick C., Allegheny, Pa. Cigar-bunching machine	411,736	Sept. 24	2410	639	48	1763
Smith, Abby C. (See Young, Annie M., assignor.)						
Smith, Adolph T., New York, N. Y. Electric cut-out	407,455	July 23	2181	562, 563	48	449
Smith, Albert C., Sardinia, Ind. Seed-planter	406,962	July 16	1413	371	48	293
Smith, Alonzo F., Milwaukee, Wis. Spelling-stick	407,374	July 23	2052	531	48	494
Smith & Anthony Stove Company. (See McHugh, Timothy, assignor.)						
Smith & Anthony Stove Company. (See West, Augustine C., assignor.)						
Smith, Benjamin, Mechanicsburg, Ohio. Wagon-spring	410,211	Sept. 3	119	30	48	1291
Smith, Benjamin C., Brooklyn, assignor to F. Adee & Co., New York, N. Y. Needle-bath water-supply valve	408,761	Aug. 13	858	228	48	851
Smith Brothers Manufacturing Company. (See Smith and Grasser, assignors.)						
Smith, Byrd, and F. Howard, Devine, Tex. Insecticide	410,036	Aug. 27	2761	.....	48	1230
Smith, Charles C., Mohawk, and H. W. Martin, Ilion, assignors to Electrical Spectacle and Eye Glass Manufacturing Company, (limited,) Mohawk, N. Y. Electric attachment for eyeglasses	411,689	Sept. 24	2348	621	48	1750
Smith, Charles F. (See Milliken and D'Amour, assignors.)						
Smith, Charles G., Detroit, Mich. Excelsior-machine	410,564	Sept. 3	648	172	48	1396
Smith, Charles L., Cleveland, Ohio. Hose-coupling	409,512	Aug. 20	1965	524	48	1078
Smith, Chester W. M., San Francisco, Cal. Railway-car. (Reissue)	11,023	Aug. 13	1476	389	48	971
Smith, Comly S., Philadelphia, Pa. Ferrule for umbrellas, canes, &c	407,375	July 23	2053	531	48	494
Smith, Daniel A., Boston, Mass. Holder for letters, papers, cards, &c	408,541	Aug. 6	520	136	48	778
Smith, Daniel W., assignor of one-half to J. C. Addington, St. Louis, Mo. Electric water-heater	411,737	Sept. 24	2412	639	48	1764
Smith, David. (See Wilson, Malcolm, assignor.)						
Smith, Edward, Plymouth, Pa. Fastening for mining-drill stocks	406,782	July 9	1146	303	48	230
Smith, Edward C., Brooklyn, N. Y., assignor to Smith Portable Rail Saw Company, of New Jersey. Rail-sawing machine	410,298	Sept. 3	249	65	48	1317
Smith, Edward F., Corry, Pa. Leaching tan-bark	409,876	Aug. 27	2539	665	48	1186
Smith, Edward S., Waterbury, Conn. Last	411,622	Sept. 24	2248	597	48	1729
Smith & Egge Manufacturing Company. (See Sjoberg, Carl J. A., assignor.)						
Smith, Emor E., assignor of one-half to J. A. Weed, Dayton, Ohio. Fodder-binder	406,407	July 2	546	153	48	109
Smith, Eugene G., *et al.* (See Rote, Charles V., assignor.)						
Smith Exhaust Pipe Company. (See Smith, John Y., assignor.)						
Smith, Ezra W. (See Loftus, John, assignor.)						
Smith, Frank L., Sioux City, Iowa. Sirup for soda-water	406,783	July 9	1147	.....	48	231
Smith, Frank P. (See Proctor, David R., assignor.)						
Smith, Frederick H., Baltimore, Md. Electrode for secondary batteries	410,037	Aug. 27	2762	725	48	1230
Smith, Friend W., Bridgeport, Conn., assignor to Beasley Supply Company, New York, N. Y. Registering-wheel	406,312	July 2	405	110	48	81
Smith, George, Glasgow, county of Lanark, Scotland. Primer-tube for dynamite cartridges	411,206	Sept. 17	1641	436	48	1605
Smith, George D., New York, N. Y. Service, cash, and pass check	409,877	Aug. 27	2541	665	48	1186
Smith, George E., Kingston, N. Y. Brick-mold-sanding machine	411,228	Sept. 17	1669	446, 447	48	1612
Smith, George S. (See Lyon, Benjamin, assignor.)						
Smith, H. A. (See Sawyer, Charles H., assignor.)						
Smith, Hamilton E., New York, N. Y. Reversing belt-gear	408,049	July 30	3045	797	48	624
Smith, Hamilton E., New York, N. Y. Reversing belt-gear	411,738	Sept. 24	2413	640	48	1764
Smith, Henry W., Boston, Mass. Piano-case	409,513	Aug. 20	1965	524	48	1078
Smith, Hiram. (See Smith, William H. and H.)						
Smith, Israel S., Sr., assignor of one-half to C. M. Martin, Washington, D. C. File-box	410,257	Sept. 3	162	47	48	1304
Smith, James G., Jr. (See Marsden, John H., assignor.)						
Smith, James M., Greenwich, Conn. Thill-coupling jack	407,131	July 16	1674	437	48	343
Smith, Jesper, Washington, N. J. Water-motor	409,514	Aug. 20	1966	524	48	1078
Smith, Job, assignor to G. C. Hetzel & Co., Philadelphia, Pa. Apparatus for dyeing	406,784	July 9	1148	303	48	231
Smith, John. (See Willis and Smith.)						
Smith, John, Kansas City, Mo. Fire and water proof ceiling	407,376	July 23	2054	531	48	494
Smith, John G., St. Louis, Mo. Folding cot	408,141	July 30	3196	835	48	651.
Smith, John H., J. F. Knuth, G. Thompson, and J. Ewald, Fairchild, Wis. Car-coupling	409,431	Aug. 20	1873	494	48	1056
Smith, John J. C., and C. Grasser, assignor to Smith Brothers Manufacturing Company, Passaic, N. J. Apparatus for casting metals under pressure	407,696	July 23	2511	648, 649	48	516
Smith, John R., assignor of three-eighths to L. A. Young and H. J. Cartice, Neosho, Mo. Telephone system	408,387	Aug. 6	180	46	48	714
Smith, John Y., Doylestown, Pa., assignor to Smith Exhaust Pipe Company, of New Jersey. Blast or exhaust apparatus	406,482	July 9	677	180	48	145
Smith, John Y., Doylestown, Pa., assignor to Smith Exhaust Pipe Company, of New Jersey. Triple-expansion blast or exhaust apparatus for locomotives	406,483	July 9	680	180	48	145

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Smith, John Y., Doylestown, Pa., assignor to Smith Exhaust Pipe Company, of New Jersey. Exhaust apparatus for locomotives	406,484	July 9	686	191	48	147
Smith, Joseph D., Rising City, Nebr. Ironing-board	409,516	Aug. 20	1967	525	48	1079
Smith, Joseph R., Waterbury, Conn., assignor to S. S. Stafford, New York, N. Y. Pad for indelible marking	411,264	Sept. 17	1718	459	48	1621
Smith, Levi F., Philadelphia, Pa. Steam-boiler attachment	409,617	Aug. 20	2146	564	48	1107
Smith, Levi W., East Troy, Wis. Whiffletree	410,861	Sept. 10	1125	302	48	1494
Smith, Lewis, Green Top, Mo. Harrow	408,816	Aug. 13	945	251	48	869
Smith, Loring M. (See Brabb and Smith.)						
Smith, Mark. (See Buxton, Braithwaite, and Smith.)						
Smith, Mark A. (See Ridgely, Charles T., assignor.)						
Smith, Martin V., Pittsburg, Pa., assignor of one-half to Calumet Fire Clay Company, Calumet, Ohio. Pot-furnace	410,742	Sept. 10	945	253, 254	48	1456
Smith, Myers & Schnier. (See Smith, Samuel R., assignor.)						
Smith, Myers & Schnier. (See Smith and Myers, assignors.)						
Smith, Nathaniel P., Memphis, Tenn. Pulley	409,878	Aug. 27	2543	666	48	1186
Smith, Orren M., assignor to W. Grange, Philadelphia, Pa. Tubular lantern	410,459	Sept. 3	508	136	48	1368
Smith, Orren M., assignor to W. Grange, Philadelphia, Pa. Tubular lantern	410,460	Sept. 3	509	136	48	1368
Smith Portable Rail Saw Company. (See Smith, Edward C., assignor.)						
Smith, Prince, Jr., and J. Lund, Keighley, county of York, England. Spinning-machine	408,900	Aug. 13	1074	282, 283	48	893
Smith, Rensselaer J., Albany, N. Y. Ticket-casing for car-seats	409,870	Aug. 27	2544	666	48	1187
Smith, Robert W. (See Phillips and Smith.)						
Smith, Roswell T., assignor to himself, N. W. Goddard, Nashua, N. H., and G. H. Dunham, New York, N. Y. Machine for trimming the edges of fabrics	410,655	Sept. 10	788	214	48	1429
Smith, Rudolph C., assignor to Otis Brothers & Company, Yonkers, N. Y. Elevator	410,212	Sept. 3	120	30, 31	48	1292
Smith, Rufus W. (See Drake, Edwin L., assignor.)						
Smith, Samuel R., assignor to Smith, Myers & Schnier, Cincinnati, Ohio. Dogging device for saw-mill head-blocks	409,516	Aug. 20	1968	525	48	1079
Smith, Samuel R., and E. Myers, assignors to Smith, Myers & Schnier, Cincinnati, Ohio. Saw-mill head-block	409,517	Aug. 20	1969	525, 526	48	1079
Smith, Thomas, 74 Cyprus Road, Bootle-Cum-Linacre, county of Lancaster, England. Nautical-signaling apparatus	409,250	Aug. 20	1606	423	48	1003
Smith, Tliomas J., Brooklyn, N. Y., assignor to E. S. Greeley & Company, of New York. Electric call-bell	408,676	Aug. 6	724	188	48	817
Smith, Walter, *et al.* (See Shank, Charles A., assignor.)						
Smith, Walton D., assignor of one-half to G. Seyller, Prophetstown, Ill. Tag	408,359	Aug. 6	226	58	48	723
Smith, Wesley. (See Hawk, Smith, and Fox.)						
Smith, Wheeler E., Little Rock, Ark. Car-wheel	408,266	Aug. 6	97	24	48	668
Smith, William, Baltimore, Md. Invalid-chair	406,313	July 2	406	110, 111	48	81
Smith, William A., *et al.* (See Dubrow, John H., assignor.)						
Smith, William H. (See Knight, Walter N., assignor.)						
Smith, William H. (See Willis and Smith.)						
Smith, William H. and H., Dickson, Pa.; said H. Smith assignor to said William H. Smith. Plow	410,121	Aug. 27	2917	766	48	1257
Smith, Zalmon W., assignor to F. G. Parsons and J. V. Graham, Addison, N. Y. Stanchion	406,785	July 9	1149	304	48	231
Smithley, John, assignor to Fuel Gas and Electric Engineering Company, (limited,) Pittsburg, Pa. Gas-burner for stoves or fire-places	406,860	July 9	1263	333	48	252
Smoker, Samuel, Goshen, Ind. Broadcast seed-sower	408,542	Aug. 6	522	136	48	779
Snead, Harry V., *et al.* (See Lewis, Robert B., assignor.)						
Snedekor, Charles T., St. Louis, Mo. Insulation for electric conductors	408,901	Aug. 13	1075	283	48	893
Sneden, Moses B., Binghamton, N. Y. Carpet-stretcher	407,377	July 23	2055	532	48	495
Snediker, David L. (See Newman, Edwin A., assignor.)						
Snediker, William E., Trenton, N. J. Mold for making steel castings	406,181	July 2	224	61	48	44
Snell, Anthony, Rochester, N. Y. Steam-boiler furnace	408,267	Aug. 6	98	24	48	668
Snell, Joshua, Little Falls, N. Y. Game-board	409,251	Aug. 20	1607	424	48	1003
Snell Manufacturing Company. (See Marsell, John A., assignor.)						
Snow, Charles E. (See Snow, Robert F., assignor.)						
Snow, Henry. (See Miller, Joseph, assignor.)						
Snow, James, assignor to W. H. H. Peck and S. E. Snow, Cleveland, Ohio. Belt-fastener	409,252	Aug. 20	1608	424	48	1004
Snow, Robert F., Detroit, Mich., assignor of one-half to C. E. Snow, Rochester, N. Y. Metal fabric	406,786	July 9	1150	304	48	231
Snow, Sarah E., *et al.* (See Snow, James, assignor.)						
Snowden, Charles S., deceased, Macclenny, Fla.; T. W. Lakin administrator. Rasping-plane	410,609	Sept. 10	1051	291	48	1490
Snyder, Chastain M., Mount Pleasant, Iowa. Burning clay for ballast	411,009	Sept. 17	1433	381	48	1564
Snyder, Elmer E., *et al.* (See Rote, Charles V., assignor.)						
Snyder, Peter. (See Dickson and Snyder.)						
Snyder, William L., Denver, Colo. Artificial leg	409,311	Aug. 20	1702	447	48	1021
Société L. Durand, Huguenin & Compagnie. (See Huguenin, Daniel E., assignor.)						
Société Richard Frères. (See Richard, Felix, assignor.)						
Société Sallandrouze Frères. (See Sallandrouze, André C. H., assignor.)						
Sohn, Jacob A., Wichita, Kans. Foot-rest for steam-radiators	410,213	Sept. 3	123	31	48	1292
Sollers, Ernst G., Dülmen, Prussia, Germany. Stirrup	410,939	Sept. 10	1230	332	48	1515
Solter, John, assignor of one-half to G. L. Krebs, Baltimore, Md. Can-soldering machine	411,070	Sept. 17	1434	381, 382	48	1564
Solter, John, assignor of one-half to G. L. Krebs, Baltimore, Md. Metal-seaming machine	411,071	Sept. 17	1436	382	48	1564
Soltmann, Edward G., New York, N. Y. Tape-measure	406,065	July 2	64	19	48	15
Somborn, Meyer C., Brooklyn, N. Y. Fastening device	410,038	Aug. 27	2762	726	48	1230
Somerville, Thomas, Jr., Washington, D. C. Tile-cutting machine	411,690	Sept. 24	2349	621	48	1750
Sommer, Adolph, Berkeley, Cal. Water-proof leather and making the same	408,360	Aug. 6	228	.....	48	724
Sommer, Adolph, Berkeley, Cal. Solution of benzoic sulphoimide in oils, &c	410,940	Sept. 10	1230	.....	48	1515
Sommer, Charles, Sloans Valley, Ky. Stave-dressing machine	410,994	Sept. 10	1315	354	48	1532
Sommer, Felix A., Hammersmith, county of Middlesex, England. Swing-figure musical toy	407,697	July 23	2513	649	48	516
Sommer, Felix A., Hammersmith, county of Middlesex, England. Musical toy	408,635	Aug. 6	655	170	48	805
Sonora Mining and Dry Concentrator Company. (See Chaudefosse, Gustave T., assignor.)						
Sooy, Ephraim C., Kansas City, Mo. Baling-press	410,679	Sept. 10	832	224	48	1437
Soper, Philo O., New York, N. Y. Paper box	411,398	Sept. 17	1312	510	48	1655
Soper, William, Sibley, Mich. Extension step-ladder	410,612	Sept. 10	727	196	48	1417
Sörensen, Charles F. L., Copenhagen, Denmark. Lubricator	406,675	July 9	979	263	48	199
Souder, Leamon G., Norristown, Pa. Stairway	406,314	July 2	407	111	48	82
Soule, John W., Everett, Mass. Wind-gage sight for guns	410,030	Aug. 27	2763	726	48	1230
Soule, Richard H., Pittsburg, Pa. Rail-joint	406,543	Aug. 6	523	136	48	779

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Soule, Richard H., assignor to Standard Car Heating and Ventilating Company, Pittsburg, Pa. Pipe-connection for cars	409,129	Aug. 13	1407	371	48	976
Southwick, Charles A., Peabody Mass. Balance-valve	406,116	July 2	133	38, 39	48	28
Spalding & Bros., A. G. (See Hirshfeld, Jacob, assignor.)						
Spangler, Lee J., York, Pa. Combined cover and pump for oil-barrels	411,358	Sept. 17	1856	496	48	1646
Spann, Robert W. (See Shaw, James E., assignor.)						
Sparks, Edward G., Brooklyn, assignor to Sparks Manufacturing Company, New York, N. Y. Manufacture of waxed paper	410,810	Sept. 10	1052	282	48	1460
Sparks Manufacturing Company. (See Sparks, Edward G., assignor.)						
Spaulding, Frank. (See Pelton, Josiah J., assignor.)						
Spaulding, Nathan W. (See Gilmore, Elijah S., assignor.)						
Spaulding, Oliver L., Jr., St. Johns, Mich. Axle-bearing for bicycles	408,902	Aug. 13	1076	283	48	694
Spear, Arthur, assignor of one-half to T. Kelly, Chicago, Ill. Nut-lock	411,265	Sept. 17	1719	460	48	1621
Speed, Joseph J., Waltham Cross, England. Magazine fire-arm	406,787	July 9	1152	304, 305	48	231
Speed, Joseph J., Waltham Cross, England. Magazine-gun	407,552	July 23	2319	599, 600	48	478
Speer, Alfred, Passaic, N. J. Electric clock for use in exposed places	407,945	July 30	2894	754	48	595
Speicher, John, Jersey City, assignor to Newark District Telegraph Company, Newark, N. J. Fire-alarm box	408,762	Aug. 13	859	228	48	851
	409,432	Aug. 20	1874	494	48	1056
Spelman, Irwin H., Cortland, Ohio. Basket						
Spencer, Thomas. (See Andrews and Spencer.)						
Sperle, Valentine, assignor to J. B. Pearson and F. E. Youngs, Pittsburg, Pa. Composing-stick	409,518	Aug. 20	1992	526	48	1080
Spery, Charles F., Hermann, Mo. Gage-knife	409,433	Aug. 20	1875	495	48	1057
Spiegel, William G., New York, N. Y., assignor of one-half to G. H. Clarkson, Philadelphia, Pa. Type-writing machine	410,941	Sept. 10	1232	332	48	1515
Spielman, William, assignor to C. M. Schwerin, Newark, N. J. Railway-switch	406,066	July 2	64	19	48	15
Spiro, Charles, New York, N. Y. Photographic developing-bath	409,018	Aug. 20	2142	.....	48	1107
Spiro, Charles, New York, N. Y. Aligner for type-writing machines	410,143	Sept. 10	947	255	48	1456
Splittstoser, Ferdinand, North Branch, Minn. Hook	410,461	Sept. 3	510	137	48	1368
Spofford, Charles. (See Day and Spofford.)						
Spofford, Charles, assignor to W. J. Hiss and W. P. Sandford, New York, N. Y. Machine for cutting out concavo-convex shells or dishes	410,299	Sept. 3	250	65	48	1317
Spofford, Jason, Jr. (See Wells and Spofford.)						
Spooner, Paul B. (See Malone, Micajah C., assignor.)						
Sporton, Henry H., and E. White, Enfield, county of Middlesex, England. Apparatus for recording automatically the flow of water, &c	410,214	Sept. 3	124	31	48	1292
Spradley, Napoleon B., Ashville, Ala. Wheeled agricultural implement	406,963	July 16	1415	371	48	292
Spradlin, Louis W., Garnett, Kans. Bee-house	408,763	Aug. 13	860	229	48	852
Sprague, Albert A., Uxbridge, Mass. Apparatus for dyeing	410,744	Sept. 10	949	255	48	1457
Sprague Electric Railway and Motor Company. (See Sprague, Frank J., assignor.)						
Sprague, Frank J., assignor to Sprague Electric Railway and Motor Company, New York, N. Y. Electric-railway motor	406,600	July 9	859	231, 232	48	177
Sprague, Frank J., New York, N. Y., assignor to Sprague Electric Railway and Motor Company. Electric-railway system	408,544	Aug. 6	524	137, 138	48	779
Sprague, James H., Norwalk, Ohio. Lawn lantern or illuminator	410,613	Sept. 10	728	196	48	1417
Sprague, Pearley J., Adrian, Mo. Straw-stacker	406,788	July 9	1154	305	48	232
Sprague, Pearley J., and J. M. McCraw, Adrian, Mo. Grain retarder and regulator for harvesters	406,789	July 9	1156	306	48	232
Sprague, William H., Horwich, county of Lancaster, England. Apparatus for drawing off and mixing the grain from elevators	407,907	July 30	2880	737	48	592
Sprangers, John, Kaukauna, Wis. Musical clock	408,903	Aug. 13	1077	282	48	894
Spratts Patent, (America.) (See Crurt, Charles A., assignor.)						
Spring, Charles A., *et al.* (See Steel, Robert, assignor.)						
Spring, Henry T., *et al.* (See Steel, Robert, assignor.)						
Springer, Louis S., Baltimore, Md. Tool holder and rest for lathes	407,972	July 30	2932	762	48	602
Springer, Theodore G. (See Morse and Springer.)						
Springfield Glue and Emery Wheel Company. (See Hyde and Horner, assignors.)						
Sprinkle, David A., Pennsborough, W. Va. Wood split pulley	406,067	July 2	66	19	48	15
Spurgin, William F., West Point, N. Y. Holding bracket	407,132	July 16	1675	427	48	343
Spurgin, William F., West Point, N. Y. Dust-pan	407,133	July 16	1676	430	48	344
St. John, Garland B. Kalamazoo, Mich. Plow	410,650	Sept. 10	798	213	48	1431
St. John, William W., Brooklyn, N. Y. Portable folding bed	408,144	July 30	3199	835	48	651
St. John, William W., Brooklyn, N. Y. Throttle-valve	408,145	July 30	3200	836	48	651
Stafford, George W., assignor to G. W. Stafford Manufacturing Company, Providence, R. I. Shedding mechanism for looms	406,790	July 9	1157	306	48	233
Stafford, George W., assignor to G. W. Stafford Manufacturing Company, Providence, R. I. Heddle for Jacquard looms	407,620	July 23	2405	625	48	496
Stafford, George W., assignor to G. W. Stafford Manufacturing Company, Providence, R. I. Pin for pattern-chains for looms	407,621	July 23	2406	625	48	496
Stafford, George W., and S. D. Barrett, assignors to G. W. Stafford Manufacturing Company, Providence, R. I. Jacquard attachment for looms	410,215	Sept. 3	125	31	48	1293
Stafford, John, Lower Cove, Nova Scotia, Canada. Reed and flue pipe for organs	411,135	Sept. 17	1536	410	48	1585
Stafford Manufacturing Company, George W. (See Stafford, George W., assignor.)						
Stafford Manufacturing Company, George W. (See Stafford and Barrett, assignors.)						
Stafford, S. S. (See Smith, Joseph R., assignor.)						
Staggs, Harrison, Valencia, Kans. Sash-fastener	410,382	Sept. 3	378	100	48	1344
Stahl, Edward, Prescott, Ariz. Ter. Producing garment patterns and models	410,383	Sept. 3	379	101	48	1344
Stairs, John F., Halifax, Nova Scotia, Canada. Machine for spinning hemp, &c	406,601	July 9	863	229, 230	48	177
Stambaugh, Charles W., and V. L. Ney, Canton, Ohio. Wheelbarrow	406,994	Aug. 13	1207	319	48	918
Stambaugh, Martin B., Carthage, Dak. Ter. Elevator attachment for harvesters	409,377	Aug. 20	1800	473	48	1040
Standard Car Heating and Ventilating Company. (See Soule, Richard H., assignor.)						
Standard Car Heating and Ventilating Company. (See Taggart, William T., assignor.)						
Standard Mining and Ventilating Company. (See Ober, William Y., assignor.)	409,519	Aug. 20	1992	526	48	1060
Standiford, Emmet C., Chicago, Ill. Mold for casting						
Stanley, Henry, *et al.* (See Cornelius, Nicholas, assignor.)						
Stanley, James D., Eastover, S. C. Mill for treating fiber-yielding materials	408,142	July 30	3197	835	48	651
Stanley, Oramel C., Boston, assignor to C. F. Brown, Reading, Mass. Pipe-wrench	411,266	Sept. 17	1720	460	48	1621
Stansell, Jesse P. (See Moyer and Stansell.)						
Star Brass Manufacturing Company. (See Winther, Charles, assignor.)						
Star Iron Tower Company. (See O'Beirne, William H., assignor.)						
Star Manufacturing Company. (See Scott, Samuel P., assignor.)						
Stark, Charles A., Corry, Pa. Multiple boring-machine	411,359	Sept. 17	1857	497	48	1646

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Stark, John F., New Haven, Pa. Gas-leak detector	406,241	July 2	299	82	48	60
Starks, Nils O. (See Johnson and Starks.)						
Starkweather, George B. (See Jewell, John A., assignor.)						
Starr Bros. Bell Company. (See Starr, Wilbur F., assignor.)						
Starr, Ferdinand W., Springfield, Ohio. Fastener or binding-strap	406,544	July 9	763	213	48	164
Starr, Ferdinand W., Springfield, Ohio. Double-pointed corrugated fastener	406,545	July 9	764	213	48	164
Starr, Ferdinand W., Springfield, Ohio.						
Starr, Wilbur F., assignor to Starr Bros. Bell Company, East Hampton, Mass. Gong-bell	411,267	Sept. 17	1721	460	48	1622
Starrett, Laroy S., Athol, Mass. Calipers or dividers	411,537	Sept. 24	2112	557	48	1700
Starrett, Laroy S., and C. P. Fay, Athol, Mass.; said Fay assignor to said Starrett. Micrometer-gage	411,536	Sept. 24	2111	557	48	1700
Start, William, Nottingham, England. Circular warp knitting machine	410,040	Aug. 27	2765	726, 727, 728	48	1231
Staton, Andrew T. (See Birmingham, John P., assignor.)						
Statter, John G., London, county of Middlesex, England. Determining the shape of pole-pieces for dynamos	410,656	Sept. 10	791	214, 215	48	1430
Staunton, Gray. (See Boumarius and Staunton.)						
Steam Gauge and Lantern Company. (See Wright, Frederick K., assignor.)						
Steane & Co., I. J. (See Hobson, Arthur E., assignor.)						
Stebbins, Mary A., Chelsea, Mass. Lawn-weeder	409,619	Aug. 20	2150	564	48	1107
Steck, Paul, Oakland, assignor to Parke & Lacy, San Francisco, Cal. Ammonia-condenser for ice-machines	409,072	Aug. 13	1328	350	48	941
Stedman, David R. (See Stedman, George A. and D. R.)						
Stedman, George A., New York, N. Y., and D. R. Stedman, Elizabeth, N. J. Coupling for hose, pipes, &c	406,964	July 16	1417	372	48	293
Stedman, John H. (See Major, Emanuel, assignor.)						
Stedman, John J., La Porte, Ind. Dental plate	411,538	Sept. 24	2113	557	48	1700
Steegmüller, Richard, New York, N. Y. Machine for testing tin cans	410,300	Sept. 3	253	66	48	1317
Steel, Robert, Philadelphia, assignor of two-thirds to C. A. and H. T. Spring, Royer's Ford, Pa. Scourer and cleaner	409,652	Aug. 20	2193	577	48	1116
Steel, Van Rossum & Co. (See Augustine, Charles C., assignor.)						
Steele & Johnson Manufacturing Company. (See Coe, Benjamin L., assignor.)						
Steffen, Carl, Vienna, Austria-Hungary. Centrifugal machine	410,942	Sept. 10	1233	332	48	1516
Steiger, Andrew W., New York, N. Y., assignor to Yost Writing Machine Company. Type-writing machine	411,023	Sept. 24	2249	596	48	1730
Steiner, Christian, New York, N. Y. Machine tap and drill	410,614	Sept. 10	730	197	48	1418
Steiner, David, Adamsburg, Pa. Nut-lock	411,306	Sept. 17	1763	477	48	1633
Steiner, Henry W., assignor of one-half to G. W. Eschenbach, Easton, Pa. Spool-holder	408,398	Aug. 6	194	46	48	715
Steiner, Henry W., assignor of one-half to T. T. Miller, Easton, Pa. Lock-hinge	408,441	Aug. 6	353	92	48	748
Steinert, Theodor, Chicago, Ill. Clamping-frame	407,698	July 23	2513	649	48	516
Steinmann, Frank, St. Louis, Mo. Pump	410,402	Sept. 3	511	137	48	1368
Steller, Charles E., Milwaukee, Wis. Door-knob attachment	410,216	Sept. 3	127	32	48	1293
Stempel, Omar A., assignor of one-half to F. Meyrose, St. Louis, Mo. Post, rail-tie, beam, &c	411,360	Sept. 17	1858	497	48	1646
Stengel, George F., Newark, N. J. Stretching-frame	410,745	Sept. 10	951	256	48	1457
Stephens, David, Rushville, Ill. Churn	406,791	July 9	1159	306	48	233
Stephens, James S., St. Paul, Minn. Feed-water heater and purifier	407,378	July 23	2056	532	48	425
Stephens, Richard M., assignor to J. M. Wilson, Denver, Colo. Insecticide	408,904	Aug. 13	1078	.....	48	894
Stephenson, Harvey A., Allegheny, Pa. Index	408,361	Aug. 6	230	58	48	724
Sternbergh, James H., and R. Pemberton, Reading, Pa. Screw-cutting die-stock	409,253	Aug. 20	1609	424	48	1004
Stetson, Joseph B., Lincoln, Me. Tubular lantern	409,712	Aug. 27	2303	605	48	1142
Stettiner Chamottefabrik Actien-Gesellschaft. (See Hasse and Vacherot, assignors.)						
Stevens, Benjamin A., Toledo, Ohio. Base-frame for engines	410,811	Sept. 10	1054	282	48	1460
Stevens, John, Neenah, Wis. Pump	407,699	July 23	2514	650	48	516
Stevens, John H., Newark, N. J., and J. E. H. Hyde, New York, N. Y. Cigar	408,442	Aug. 6	354	.....	48	749
Stevens, John W., St. Paul, Minn. Water-closet flushing-valve	407,746	July 23	2585	669	48	531
Stevens, Sidney M., and G. A. Harvey, De Kalb, Ill. Corn-harvester	411,268	Sept. 17	1722	460, 461	48	1622
Stevens, William X., Washington, D. C. Ink-grinding slab	408,143	July 30	3198	835	48	651
Stevenson, Charles, Philadelphia, Pa. Ratchet mechanism	408,545	Aug. 6	529	138	48	780
Stevenson, James P., Allegheny, Pa. Stand for carboys	411,229	Sept. 17	1672	447	48	1612
Stevenson, Thomas F., Brooklyn, N. Y. Making shovels, scoops, &c	408,817	Aug. 13	946	252	48	869
Stevenson, William C. (See Hall, Frank C., assignor.)						
Stevenson, Charles, *et al.* (See Albert, Aaron B., assignor.)						
Steward, John F. (See Kennedy and Steward.)						
Steward, John F. (See Pitkin and Steward.)						
Steward, John F., Chicago, Ill. Grain-binder	406,374	July 2	489	137	48	98
Steward, John F., Chicago, Ill. Canvas-stretcher for harvesting-machines	406,792	July 9	1160	307	48	233
Steward, John F., Chicago, Ill. Mowing-machine	408,050	July 30	3046	797, 798	48	624
Stewart, Burton, South Bend, Ind. Hoof-expander	410,041	Aug. 27	2768	728	48	1231
Stewart, John, Chicago, Ill. Street-lamp sign	408,199	July 30	3291	850	48	667
Stewart, John A., assignor of one-half to R. B. Bolton, Whitesborough, Tex. Clothes-pin	409,880	Aug. 27	2545	666	48	1187
Stewart, John H., Reidsville, N. C. Washing-fluid	410,657	Sept. 10	796	.....	48	1431
Stewart, John H., Reidsville, N. C. Combined milking stool and bucket	410,658	Sept. 10	797	215	48	1431
Stewart, John L., Philadelphia, Pa., assignor, by mesne assignments, to Welsbach Incandescent Gas Light Company, Gloucester, N. J. Incandescent gas-burner	408,051	July 30	3049	798	48	625
Stewart, John L., Philadelphia, Pa., assignor, by mesne assignments, to Welsbach Incandescent Gas Light Company, of New Jersey. Incandescent gas-burner	409,520	Aug. 20	1994	526, 527	48	1060
Stewart, John L., and J. L. Hastings, Philadelphia, Pa., assignors, by mesne assignments, to Welsbach Incandescent Gas Light Company, of New Jersey. Producing refractory compounds	410,042	Aug. 27	2769	.....	48	1231
Stewart, Major A., assignor of one-half to W. K. Stewart, Kingston, Ind. Lifting-jack	410,995	Sept. 10	1316	355	48	1532
Stewart, Samuel, Newark, N. J. Heating gas-burner	407,134	July 16	1677	438	48	344
Stewart, Sylvester N., Philadelphia, Pa. Ponton-bridge	407,421	July 23	2128	540	48	439
Stewart, Sylvester N., Philadelphia, Pa. Ponton-bridge	407,422	July 23	2129	540	48	439
Stewart, Sylvester N., Philadelphia, Pa. Floating draw for bridges	407,700	July 23	2515	650	48	517
Stewart, William C., and J. A. Blankley, Bellaire, Ohio. Lantern	410,943	Sept. 10	1234	333	48	1516
Stewart, William H., assignor of one-half to W. S. Whittaker, Kansas City, Kans. Weighing-scales	407,747	July 23	2586	670	48	531
Stewart, William K. (See Stewart, Major A., assignor.)						
Stewart, William T., assignor of three-fourths to W. H. Denniston, Pittsburg, Pa. Apparatus for the manufacture of gas	409,761	Aug. 27	2371	623	48	1155

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Stibgen, Simon R., Marietta, Pa. Eyeglass-holder	408,268	Aug. 6	99	25	48	699
Stickney, Henry R., Portland, Me. Corn-husking machine	407,423	July 23	2130	549, 550	48	439
Stickney, Henry R. and G. W. Way, Portland, Me. Door-knob alarm	409,762	Aug. 27	2373	623	48	1155
Stiebel, Henry G. (See Kisinger, William S., assignor.)						
Stiebel, Henry G. (See Mayer and Stiebel.)						
Stifel, Herman C., St. Louis, Mo. Machine for grinding sheaves, &c	409,254	Aug. 20	1610	425, 426	48	1004
Stiles, James P., New York, N. Y. Mechanical movement	408,546	Aug. 6	530	138	48	780
Stiles, Norman C., Middletown, Conn. Die-press	410,746	Sept. 10	952	256	48	1457
Stiles, Sidney L., Wateska, Ill. Hinge	406,242	July 2	300	83	48	60
Stillson, Daniel C., Somerville, Mass. Automatic fire-extinguisher	407,701	July 23	2517	650	48	517
Stilwell, Charles B., assignor to Union Paper Bag Machine Company, Philadelphia, Pa. Paper-bag machinery	407,794	July 30	2656	688, 689, 690, 691, 692, 693	48	551
Stilwell, Charles B., assignor to Union Paper Bag Machine Company, Philadelphia, Pa. Paper-bag machinery	410,122	Aug. 27	2919	766	48	1257
Stilwell, Charles B., assignor to Union Paper Bag Machine Company, Philadelphia, Pa. Paper-bag machinery	410,123	Aug. 27	2920	766	48	1258
Stilwell, Charles B., assignor to Union Paper Bag Machine Company, Philadelphia, Pa. Paper-bag machinery	410,124	Aug. 27	2921	767	48	1258
Stilwell, Charles B., assignor to Union Paper Bag Machine Company, Philadelphia, Pa. Paper-bag machinery	410,125	Aug. 27	2922	767	48	1258
Stilwell, Charles B., assignor to Union Paper Bag Machine Company, Philadelphia, Pa. Paper-bag machine	410,126	Aug. 27	2923	767	48	1259
Stimpson, Edwin B., Brooklyn, N. Y. Suspender-end	409,338	Aug. 20	1741	457	48	1029
Stimson, David S., Kittery, Me. Car-axle box	406,151	July 2	178	51	48	36
Stirling, Allan, assignor to International Boiler Company, (limited,) New York, N. Y. Steam-boiler	407,260	July 16	1868	487	48	391
Stirling, William R., *et al.* (See Barnes, David L., assignor.)						
Stirn, Leo. (See Stirn, Max, assignor.)						
Stirn, Max, assignor of one-half to L. Stirn, New York, N. Y. Machine for grinding and finishing the edges of buttons	411,691	Sept. 24	2352	622	48	1750
Stoate, Joseph, Oxford, Miss. Cultivator and harrow	410,615	Sept. 10	731	197	48	1418
Stobaeus, John B., *et al.* (See Weidig, Henry P., assignor.)						
Stobaugh, John D., Grayson, assignor of one-half to G. R. Arnold, Dearborn, Mo. Combined cultivator and planter	410,996	Sept. 10	1317	355	48	1532
Stockdale, Richard. (See Helme, Stockdale, and Helme.)						
Stockman, Lawrence, Philadelphia, Pa. Table	407,908	July 30	2333	737	48	583
Stockmann, Christopher, Brooklyn, N. Y. Fountain-pen	406,375	July 2	492	132	48	98
Stoddard Lock and Manufacturing Company. (See Knight, Edgar, assignor.)						
Stoddard Manufacturing Company. (See Brown, Arthur F., assignor.)						
Stokes, Henry. (See Kirkwood, Thomas B., assignor.)						
Stokes, Philip S., Freehold, N. J. Forming teeth of rasps	408,936	Aug. 13	1124	226, 227	48	903
Stoll, John J., Brooklyn, N. Y. Finger-nail guard or protector	408,052	July 30	3051	799	48	695
Stoll, John T., Sacramento, Cal. Terret	410,812	Sept. 10	1056	283	48	1491
Stone, Draper, Pittsford, N. Y. Window-screen	410,217	Sept. 3	128	32	48	1293
Stone, John A., *et al.* (See Norton, James A., assignor.)						
Stone, John B., Providence, R. I. Dress-form	410,862	Sept. 10	1126	303	48	1494
Stopple, John J., and E. Harigel, Bellville, Tex. Gunpowder-canister	410,463	Sept. 3	512	137	48	1369
Storey Electric Drill and Power Company. (See Storey, Imle E., assignor.)						
Storey, Imle E., Boulder, Colo., assignor to Storey Electric Drill and Power Company, of Colorado. Electric drill	408,269	Aug. 6	100	25	48	699
Storms, Adelia H., Barnegat, N. J. Steamer and boiler	406,793	July 9	1161	307	48	233
Story, Charles T., Boston, Mass. Carpet-beating machine	406,485	July 9	689	191	48	147
Story, John T., *et al.* (See Hill, George J., assignor.)						
Story, Judge B., Bloomington, Ill. Clothes-drier	408,362	Aug. 6	232	59	48	724
Stout, Albert L., Armistead, Kans., Churn	408,818	Aug. 13	947	252	48	869
Stovel, Joseph, and J. W. Corley, Toronto, Ontario, Canada. Card or ticket box	406,965	July 16	1419	372	48	293
Stover, Daniel C., Freeport, Ill. Type-writing machine	409,073	Aug. 13	1329	351	48	942
Stover, Daniel C., Freeport, Ill. Hand-stamp	410,464	Sept. 3	513	136	48	1369
Stover, Daniel C., Freeport. Ill. Hand-stamp	410,465	Sept. 3	515	136	48	1369
Stowell, John W., Putney, Vt. Earth-closet commode	410,813	Sept. 10	1056	283	48	1491
Strain, Robert, Jr., New York, N. Y. Automatic grain or oil weighing apparatus	409,808	Aug. 27	2448	642	48	1169
Stralt, Marcus D., St. Louis, Mo. Shaft-gearing for vehicles	408,219	Aug. 13	948	252	48	869
Straley, John A., executor. (See King, John.)						
Strange, Stephen, Los Angeles, Cal. Mail-bag rack and distributing-table	406,966	July 16	1420	372, 373	48	293
Strasburger, Frank C. H., Chicago, Ill. Refrigerator	408,905	Aug. 13	1079	284	48	894
Strattan, George W., Altoona, Pa. Traveling-bag	407,042	July 16	1527	400	48	313
Straub, Carl, Syracuse, N. Y. Composition of matter for cement, &c	407,135	July 16	1678	[illegible]	48	344
Straub, Frederick C., Syracuse, N. Y. Seat for vehicles	406,182	July 2	227	61	48	45
Strawson, George F., Newbury, county of Berks, England. Seeder and fertilizer-distributer	411,692	Sept. 24	2353	622	48	1751
Streeper, Daniel H., Norristown, Pa. Electrical high and low water alarm	411,230	Sept. 17	1672	447	48	1612
Street, Joseph G., Dallas, Tex. Gas generator and burner	410,944	Sept. 10	1235	333	48	1516
Streeter, Nelson R., Groton, N. Y. Handle	411,693	Sept. 24	2354	622	48	1751
Strobridge Lithographing Company. (See Rimanoczy, Adolph, assignor.)						
Stromberg, William, *et al.* (See Hodgins, John T., assignor.)						
Strong, Horatio B., Wilkesville, Ohio. Mechanism for governing the feed of saw-mills	410,337	Sept. 3	321	83	48	1330
Strong, Hugo A., New York, N. Y. Water-motor	406,676	July 9	980	253, 254	48	199
Strong, Pitt W., Brockville, assignor of one-half to O. Carse, Smith's Falls, Ontario, Canada. Milk-aerator	411,694	Sept. 24	2355	623	48	1751
Strong, Sylvester L., Geneva, Nebr. Ironing-table and step-ladder	409,521	Aug. 20	1996	527	48	1089
Stubbs, Charles E. (See Stubbs, Jesse, assignor.)						
Stubbs, Jesse, Mount Pleasant, assignor to C. E. Stubbs, Fairfield, Iowa. Burning clay for ballast	408,860	Aug. 13	1009	266	48	881
Stuckey, Loring C. (See Chadbourne and Stuckey.)						
Studley, James E., and R. C. Berry, Oshkosh, Wis., assignors of one-third to J. M. McDonald, Lafayette, Ind. Rotary engine	410,043	Aug. 27	2770	729	48	1231

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Studley, Lena R., Rockland, Me. Clothes-drier	409,809	Aug. 27	2449	642	48	1170
Stuebner, Gustavus L., Long Island City, N. Y. Coal-bucket	407,553	July 23	2221	600	48	479
Stukes, John M., and O. P. Reid, Laredo, Tex. Combined bucket-bail and lid-fastener	410,044	Aug. 27	2775	730	48	1232
Stump, Christian H., assignor of one-half to W. P. Mitchell, Sevierville, Tenn. Bee-hive	410,701	Sept. 10	865	233	48	1443
Sturgeon, John C., assignor of one-fourth to S. A. Davenport, Erie, Pa. Pipe-coupling	409,121	Aug. 13	1408	372	48	957
Sturgeon, John C., assignor of one-fourth to S. A. Davenport, Erie, Pa. Pipe-coupling	409,122	Aug. 13	1411	372	48	958
Sturgeon, John C., assignor of one-fourth to S. A. Davenport, Erie, Pa. Pipe or hose coupling	409,123	Aug. 13	1413	372	48	958
Sturgeon, John C., assignor of one-fourth to S. A. Davenport, Erie, Pa. Ball-and-socket pipe-joint	409,124	Aug. 13	1414	373	48	958
Sturtevant, Benjamin F., Jamaica Plain, Mass. Radiator	411,476	Sept. 24	2031	537, 538	48	1624
Sturtevant, Thomas J. (See Sturtevant, Thomas L. and T. J.)						
Sturtevant, Thomas L., Framingham, Mass. Metallic thermometer	406,152	July 2	179	51	48	37
Sturtevant, Thomas L., Framingham, Mass. Steam-boiler	408,996	Aug. 13	1210	319	48	919
Sturtevant, Thomas L., Framingham, Mass. Steam-generator	408,995	Aug. 13	1209	319	48	919
Sturtevant, Thomas L. and T. J., Framingham, Mass. Steam-generator	408,443	Aug. 6	335	92, 93	48	749
Stut, John C. H., San Francisco, Cal. Cable-railway turn-table	409,339	Aug. 20	1742	458	48	1029
Stuyvesant, William S., St. Louis, Mo. Indicator to prevent overflow of liquids in closed vessels	406,244	July 2	303	83, 84	48	60
Suffern, James B., Hillburn, N. Y. Railway-switch	407,622	July 23	2407	625, 626	48	496
Sugg, David W., Westminster, England. Inverted gas-lamp	407,702	July 23	2519	650, 651	48	517
Sugga, Thomas J., Lafayette, Ala. Fire-place	410,127	Aug. 27	2924	767	48	1259
Sullivan, Jeremiah J., Ludlow, Ky. Packing-ring						
Sullivan, John. (See Higgins and Sullivan.)						
Sullivan, John N., *et al.* (See Mitchell, Joseph T., assignor.)						
Sullivan, John S., Jefferson City, Mo. Riding-saddle	411,072	Sept. 17	1438	383	48	1565
Sullivan, Lawrence, Stillwater, Minn. Machine for twisting straw, &c., for fuel	406,153	July 2	180	52	48	37
Sullivan, Timothy J. (See Williams, David F., assignor.)						
Sultzer, Frederick, Yonkers, N. Y. Checking and recording device	410,814	Sept. 10	1058	283, 284	48	1491
Sulzberger, Mayer, trustee. (See Kitsee, Isidor, assignor.)						
Summers, Jacob. (See Cutbirth and Summers.)						
Sunday, William H., Scranton, Pa. Bung	406,602	July 9	864	233	48	178
Sunday, William H., Scranton, Pa. Barrel-bung	409,713	Aug. 27	2305	605	48	1142
Sunderlin, Martin J., Watkins, N. Y. Hat brush and pad	407,261	July 16	1870	488	48	381
Sunny, Bernard E. (See Palmer, Don A., assignor.)						
Superior Drill Company. (See Packham, Frank R., assignor.)						
Superior Drill Company. (See Patrie and Packham, assignors.)						
Superior Machine Company. (See Winger, John M., assignor.)						
Susemihl, Fritz, Davenport, Iowa. Steeping-tub for steeping barley or other grains	406,486	July 9	690	191	48	147
Sutcliffe, Thomas. (See Kershaw and Sutcliffe.)						
Sutcliffe, William W., New Orleans, La. Bagasse-furnace	407,703	July 23	2520	651, 652	48	518
Sutherland, William A. (See Cowley, Covel R. and L. H., assignors.)						
Sutton, Frederick D., New York, N. Y. Artist's wet-canvas carrier	408,937	Aug. 13	1125	297	48	904
Sutton, John, Islip, N. Y. Continuous filter	406,603	July 9	865	223, 224	48	178
Swan, James, Seymour, Conn. Bung-borer	410,863	Sept. 10	1128	303	48	1495
Swaney, Homer H. (See King and Swaney.)						
Swanger, David, deceased, (L. Swanger administratrix,) assignor of two-thirds to W. Betz and A. Hammerly, Canton, Ohio. Fodder-cutter. (Reissue)	11,010	July 2	556	156	48	112
Swanger, Lizzie, administratrix. (See Swanger, David.) (Reissue.)						
Swanson, Charles A., assignor to himself and C. Landenslager, Marshall, Minn. Wrench	410,384	Sept. 3	382	101	48	1344
Sweeney, Frank. (See Eastman, David, assignor.)						
Sweeney, Thomas J., assignor to Penberthy Injector Company, Detroit, Mich. Steam-injector	407,499	July 23	2236	577	48	461
Sweet, Ira C. N., Sandwich, Ill. Pump	406,547	Aug. 6	530	138	48	780
Sweet, Miles, Troy, N. Y. Machine for riveting curry-combs	409,522	Aug. 20	1998	527	48	1061
Sweetland, Cornelius S. (See Catlin, Charles A., assignor.)						
Swem, Earl, Cedar Rapids, Iowa. Needle	411,136	Sept. 17	1537	410	48	1585
Swenson, John, New York, N. Y. Device for cutting damper-felts for pianos	409,810	Aug. 27	2450	642, 643	48	1170
Swenson, Magnus, Fort Scott, Kans. Defecating-pan	411,112	Sept. 17	1504	398	48	1578
Swezey, Moses C., assignor to Acme Cash Railway Corporation, New Haven, Conn. Store-service apparatus	409,125	Aug. 13	1416	373	48	959
Swezey, Moses C., assignor to Acme Cash Railway Corporation, New Haven, Conn. Store-service apparatus	409,126	Aug. 13	1417	373	48	959
Swift, Joseph H., Brooklyn, N. Y. Box-nailing machine	408,764	Aug. 13	861	229, 230	48	852
Swift, Joseph H., Brooklyn, N. Y. Box-nailing machine	408,765	Aug. 13	863	231	48	852
Swinborne, Frederick W. P. and L. P., London, England. Preparing gelatinous matter from hides or skins	408,548	Aug. 6	532	139	48	781
Swinborne, Frederick W. P. and L. P., London, England. Making gelatine	408,549	Aug. 6	534	139	48	781
Swinborne, Frederick W. P. and L. P., London, England. Gelatinous product	408,636	Aug. 6	656	171	48	906
Swinborne, Latimer P. (See Swinborne, Frederick W. P. and L. P.)						
Swindell, William, Allegheny, Pa. Gas-stove	409,763	Aug. 27	2375	623	48	1156
Swisher, John H. (See Kingsley, Brainard, assignor.)						
Sykes, John T., Lamar, assignor to W. L. Delony, Little Rock, Ark. Artificial leg	406,861	July 9	1265	333	48	252
Sylven, Walfrid T., Washington, D. C. Bulk-head	408,146	July 30	3201	836	48	652
Sylvester, Ira W., Palmetto, La. Plow	410,218	Sept. 3	129	32	48	1293
Symons, Charles and F., Lafayette, Pa. Paper-making machine	411,207	Sept. 17	1641	436	48	1605
Symons, Frederick. (See Symons, Charles and F.)						
Sypher, Abraham J., Iron Mountain, Mo. Tripod-support for rock-drills	407,704	July 23	2522	652	48	518
Taber, William, assignor of two-thirds to C. H. Griffen, Clinton Corners, N. Y. Fish-spear	406,546	July 9	786	213	48	164
Tabor, Harris, assignor to Tabor Manufacturing Company, New York, N. Y. Making metal-founders' patterns	408,677	Aug. 6	725	189	48	817
Tabor Manufacturing Company. (See Tabor, Harris, assignor.)						
Tabour, Anatole, Paris, France. Apparatus for delivering cards, circulars, or other like matter	410,045	Aug. 27	2776	730	48	1232
Tadder, Joel P., Henrietta, Wis. Sled-brake	410,466	Sept. 3	516	139	48	1369

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Taft, Cyrus A., *et al.*, executors. (See Taft, Gustavus E.)						
Taft, Gustavus E., deceased; C. A. Taft, Whitinsville, Mass., and E. S. Clark, Providence, R. I., executors. Carding-machine	410,864	Sept. 10	1129	303, 304	48	1495
Taft, Stephen, Millbury, Mass. Device for stretching wires	408,997	Aug. 13	1211	320	48	919
Taft, William C., and P. J. Morand, Chicago, Ill.; said Morand assignor to said Taft. Watch-case	410,945	Sept. 10	1237	333	48	1516
Taggart, William T., assignor to Standard Car Heating and Ventilating Company, Pittsburg, Pa. Pipe-coupling	409,127	Aug. 13	1419	373	48	959
Takamine, Jokichi, Tokio, Japan. Manufacture of alcoholic liquids	411,231	Sept. 17	1673	.....	48	1613
Talbott, Sylvanus J., assignor of one-half to J. McLane, Milford, N. H. Velocipede-sled	407,623	July 23	2410	626	48	496
Talley, William S., Mountain Home, Ark. Water elevator and carrier	406,967	July 16	1423	373	48	294
Tallmadge, Hiram P., Boston, Mass. Grate	407,379	July 23	2058	532, 533	48	425
Tallmadge, Lewis C., *et al.* (See Graham, Alvaro B., assignor.)						
Tallman, Stephen P., Dunellen, N. J. Stock-car	411,208	Sept. 17	1642	436, 437	48	1605
Tamplin, John W., and B. F. Holt, Hanna City, Ill. Felly-boiler	410,467	Sept. 3	517	139	48	1370
Tanner Anti-Friction Wheel Company. (See Tanner, Samuel W., assignor.)						
Tanner, Samuel W., assignor to Tanner Anti-Friction Wheel Company, Chicago, Ill. Thrust-receiving plate for car-wheels	411,399	Sept. 17	1913	511	48	1655
Tanner, Samuel W., assignor to Tanner Anti-Friction Wheel Company, Chicago, Ill. Car-truck	411,751	Sept. 24	2431	644	48	1767
Taper Sleeve Pulley Works. (See Mooney, Joseph G., assignor.)						
Tarbell, Wendell P., Milford, N. H. Cabinet-clamp	410,815	Sept. 10	1059	284	48	1481
Tarpenning, Charles T., Los Angeles, Cal. Toaster or broiler	406,547	July 9	787	213	48	164
Tarring, Lida A., Baltimore, Md. Extension joint or splice	407,795	July 30	2669	693	48	553
Tasker, Stillmon P. (See Jackson and Tasker.)						
Tata, Khursedji M., Navsari, near Bombay, India. Apparatus for recording the respirations of the body	408,988	Aug. 13	1126	297	48	904
Tatro, William B., assignor to W. J. Pierce, Hartford, Conn. Friction-clutch	407,748	July 23	2548	676	48	532
Tattershall, Wilmer B., Springfield, Ohio. Phonogram-cylinder	408,998	Aug. 13	1213	320	48	920
Tatom, Henry L., *et al.* (See Roe, Alpheus E., assignor.)						
Taucke, Wilhelm C., Centreville, R. I. Let-off and take-up mechanism for looms	411,172	Sept. 17	1567	422	48	1594
Taylor, Andrew, Bootle, county of Lancaster, assignor of one-half to G. Beynon, Kirkdale, England. Marine signaling apparatus	409,074	Aug. 13	1333	351, 352	48	942
Taylor & Boggis Foundry Company. (See Clemes, William H., assignor.)						
Taylor & Boggis Foundry Company. (See De Mooy, John, Jr., assignor.)						
Taylor, Brownlee W. (See Turnbull, Brisbane M., assignor.)						
Taylor, Charles and G. B., Birmingham, England. Drill-chuck	407,554	July 23	2322	606	48	479
Taylor, Charles M., Princeville, Ill. Device for heating buildings	408,444	Aug. 6	350	93, 94	48	750
Taylor, Frederick. (See White, Albert, assignor.)						
Taylor, George B. (See Taylor, Charles and G. B.)						
Taylor, James. (See Clark, Taylor, and Henshaw.)						
Taylor, James G., Brasher Falls, N. Y. Means for securing pump-spouts	406,794	July 9	1162	307	48	234
Taylor, James H., and C. Povey, Attleborough, Mass., assignors of one-third to J. E. Jones, Cumberland, R. I. Horseshoe-machine	408,329	Aug. 6	184	47	48	715
Taylor, John, Troy, N. Y. Water-tube boiler	406,376	July 2	493	130	48	98
Taylor, Melvin A. (See Belden and Taylor.)						
Taylor, Shapley P. R., W. T. Sharman, and J. L. Jamison, Denison, Tex. Wire tightener and splicer	409,434	Aug. 20	1676	495	48	1057
Taylor, Thomas, assignor to Norwalk Lock Company, South Norwalk, Conn. Lock	408,147	July 30	3203	820	48	652
Taylor, Thomas M., Atlanta, Ga. Weighing-car for testing railway-track scales	411,269	Sept. 17	1726	461	48	1622
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Lock	406,487	July 9	692	193	48	147
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Pigeon-hole	408,053	July 30	3052	799	48	625
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Rod-handle for locks	408,550	Aug. 6	534	139, 140	48	781
Tebbe, Harry S., N. C. Lane, and V. Coombs, Washington, D. C. Telegraph-key	411,770	Sept. 24	2458	651	48	1773
Tebow, Theodore, Nicholasville, Ky. Baling-press	410,046	Aug. 27	2777	730, 731	48	1233
Teepe, John C., New York, N. Y. Frame for drying curtains	407,909	July 30	2834	737	48	583
Tefft, Henry B. (See Moore and Tefft.)						
Templeman, George, Nottingham, England. Straight-knitting machine	411,113	Sept. 17	1505	399, 400	48	1578
Tenney, Lewis F. (See Webster, Harold A., assignor.)						
Tennison, William, Mount Vernon, Ind. Mosquito-net frame and sham-pillow holder	411,073	Sept. 17	1438	380	48	1565
Terne, Bruno. (See Ledig, Ernst, assignor.)						
Ternes, Peter J. (See Brodeseer and Ternes.)						
Terrell, Henry D., Conyers, Ga. Making heel scrapers for plows	406,677	July 9	982	264	48	200
Terrell, Henry D., Conyers, Ga. Spoke and felly fastening	409,821	Aug. 27	2546	665	48	1187
Terrill, Delancy E., assignor of one-half to J. F. Hadcock, Copenhagen, N. Y. Bill-of-fare and advertising caster	406,548	July 9	788	214	48	164
Terry, Edwin, *et al.* (See Isley, Gideon, assignor.)						
Terry, Jacob H., Phillipsburg, Mo. Stump-extractor	406,795	July 9	1163	307, 308	48	234
Terry, William E., and E. K. Hanley, Elmira, N. Y. Cuff-holder	407,705	July 23	2523	652	48	519
Tesla, Nikola, New York, N. Y., assignor of two-thirds to C. F. Peck, Englewood, N. J., and A. S. Brown, New York, N. Y. Dynamo-electric machine	406,968	July 16	1424	374	48	294
Tetrault, Amadee, *et al.* (See Maddin, Samuel D., assignor.)						
Teufel, Charles. (See Burr and Teufel.)						
Teuscher, Emil C., *et al.* (See Cornelius, Nicholas, assignor.)						
Thacher, William A. (See Gearhart, Joel H., assignor.)						
Thackara Manufacturing Company. (See Sawyer, Harry H., assignor.)						
Thain, Richard S., Oak Park, Ill. Inkstand	410,219	Sept. 3	130	33	48	1293
Thayer, Albert F., Maple Hill, Kans. Removing buttermilk from butter	411,624	Sept. 24	2250	582	48	1730
Thayer, Clifford P., Holbrook, assignor of one-half to C. S. Bates, Braintree, Mass. Lamp	411,771	Sept. 24	2459	651	48	1773
Thayer, Jullen H., Mount Pleasant, N. C. Flower-pot	411,739	Sept. 24	2414	640	48	1764
Thayer, Winthrop. (See Erickson, Erick, assignor.)						
Thiele, Felix, assignor of one-half to W. C. Conrad, New York, N. Y. Making zirconium nitrate	410,865	Sept. 10	1130	.....	48	1495
Thielmann, Ludwig H., Brunswick, Germany. Feed-water purifier for boilers	409,882	Aug. 27	2547	667	48	1187
Thiéry, Albert, Paris, France. Pump	411,625	Sept. 24	2251	568	48	1730

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Thies, John B., Dayton, Ohio. Autographic registering apparatus	410,616	Sept. 10	732	197	48	1416
Thissell, Arthur P., and G. S. Bradstreet, Beverly, Mass. Wash-boiler	408,766	Aug 13	865	232	48	853
Thomas, Abner D., Little Rock, Ark. Baling-press	411,558	Sept. 24	2144	568, 569	48	1707
Thomas, Charles, and J. W. Haviland, Elmira, N. Y. Rotary shears	411,674	Sept. 17	1440	383	48	1566
Thomas, George W., Ogallala, Nebr. Mechanical movement	407,136	July 16	1679	438	48	344
Thomas, Howell. (See Leyson and Thomas.)						
Thomas, John D., assignor of one-half to A. H. Tyler, Petoskey, Mich. Sled-propeller	410,220	Sept. 3	131	33	48	1294
Thomas, John R. (See Woods and Thomas.)						
Thomas, Thomas C., Salt Lake City, Utah Ter. Mechanism for converting and reversing motion	407,555	July 23	2383	600, 601	48	479
Thomason, Frank D., Englewood, assignor to American Press Association, Chicago, Ill. Stereotype-plate and base	406,862	July 9	1266	333	48	258
Thompson, Albert T., assignor to A. T. Thompson & Co., Boston, Mass. Electric-lamp support	407,973	July 30	2933	764	48	603
Thompson, Casslus C., East Liverpool, Ohio. Pottery-dipping tub	409,075	Aug. 13	1331	352	48	943
Thompson, Charles F., Norwood, Ohio. Power-feed mechanism for log-carriages of saw-mills	409,863	Aug. 27	2548	667	48	1187
Thompson, Charles H., assignor to Woodward Electrical Company, Detroit, Mich. Secondary battery	406,969	July 16	1426	374	48	294
Thompson & Co., Albert T. (See Thompson, Albert T., assignor.)						
Thompson, Crozier T., Paxton, Ill. Car-coupling	406,970	July 16	1427	374	48	294
Thompson, Erwin W., Columbia, S. C., and L. W. Haskell, Savannah, Ga. Gin-saw gummer	406,315	July 2	409	111, 112	48	82
Thompson, Evert M., Evansville, Ind. Shipping-case	407,137	July 16	1680	439	48	344
Thompson, Frank E. (See Young and Thompson.)						
Thompson, George. (See Smith, Knuth, Thompson, and Ewald.)						
Thompson, George W., Sag Harbor, N. Y. Oyster-opening implement	408,939	Aug. 13	1128	297	48	906
Thompson, Henry B., assignor to I. Townsend, Philadelphia, Pa. Swivel for flag-halyards	410,221	Sept. 3	132	33	48	1294
Thompson, Isaac F., San Francisco, Cal. Cut-off-valve gear for engines	410,775	Sept. 10	1001	268	48	1466
Thompson, J. H. (See Roquemore, Peter G., assignor.)						
Thompson, James F., Chicago, Ill. Combination-lock	407,262	July 16	1671	488	48	381
Thompson, Jesse C. and W. L., Ormanville, Iowa. Folding box or crate	409,523	Aug. 20	1999	528	48	1061
Thompson, John, assignor to Bucyrus Foundry and Manufacturing Company, Bucyrus, Ohio. Derrick	410,997	Sept. 10	1319	355	48	1533
Thompson, Robert H., and S. H. Wilson, said Wilson assignor to H. D. Norris, Brooklyn, N. Y. Machine for manufacturing wrappers for bottles, &c	406,971	July 16	1428	374, 375	48	295
Thompson, Walter, Orange, N. J. Electric switch	408,678	Aug. 6	728	189	48	818
Thompson, William C., Minneapolis, Minn. Galvanic battery	411,400	Sept. 17	1914	511	48	1656
Thompson, William L. (See Thompson, Jesse C. and W. L.)						
Thomson, Alexander, Caintown, assignor to J. B. Miller, Parry Sound, Ontario, Canada. Milk-strainer. (Reissue)	11,015	July 23	2609	675	48	536
Thomson & Co., Judson L. (See Unbehend, Jacob J., assignor.)						
Thomson, Elihu, Lynn, Mass. Alternating-current electric motor	407,844	July 30	2737	712	48	565
Thomson, Elihu, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Induction-coil	409,714	Aug. 27	2305	606	48	1142
Thomson, Elihu and E. W. Rice, Jr., Lynn, Mass. Reactive and induction coil	410,468	Sept. 3	518	139	48	1370
Thomson-Houston Electric Company. (See Jenney, Charles D., assignor.)						
Thomson-Houston Electric Company. (See Lemp, Hermann, assignor.)						
Thomson-Houston Electric Company. (See Thomson, Elihu, assignor.)						
Thorp, John O. (See Brown and Thorp.)						
Thorn, Theodore, St. Clare, Pa. Shutter-fastener	407,845	July 30	2741	712	48	565
Thorne, George S. (See Candee, William N., assignor.)						
Thornton, Henry W. (See Bruckner and Thornton.)						
Thornton, J. L., *et al.* (See Bowser, John, assignor.)						
Thornycroft, John I., Chiswick, county of Middlesex, England. Speed-measurer	409,524	Aug. 20	2001	528	48	1061
Thorp, Elliott G., Boston, Mass. Machine for folding leaves for books	409,076	Aug. 13	1335	352, 353	48	943
Thrasher, Henry, Fitchburg, Mass. Support for spinning-spindles	408,330	Aug. 6	189	47, 48	48	716
Threlkeld, William, *et al.* (See Rosaney, William C., assignor.)						
Thrift, David V., Nevada, Iowa. Sheet-metal vessel	410,617	Sept. 10	733	198	48	1418
Thronsen, Harald T. J., Finspong, Sweden, assignor to Aktiebolaget Finspongs Stycke-bruk. Breech-loading ordnance	408,637	Aug. 6	657	171, 172	48	806
Throop, George E., New York, N. Y. Toy	406,148	July 30	3205	836	48	652
Thum, Otto, Grand Rapids, Mich. Clamp for sticky fly-paper	407,706	July 23	2524	652	48	519
Thurber, Alfred, San Francisco, Cal. Combined pencil-sharpener and paper-weight	411,173	Sept. 17	1568	422	48	1595
Thurber, William E., Cleveland, Ohio. Card-holder for cars	408,054	July 30	3053	799	48	626
Thurston, Charles H., Boston, Mass. Hook	407,797	July 30	2669	693	48	553
Thyng, Culver G. (See Geddes, George, assignor.)						
Tibbits, John B. (See Bottome, Turner D., assignor.)						
Tice, Charles A. (See Clemins and Tice.)						
Tiers, Cornelius. (See Pendleton, Bryson, and Tiers.)						
Tiffany, Eli, Bennington, Vt. Sinker-supporting device for straight-knitting machines	408,270	Aug. 6	101	25	48	699
Tiffany, Eli, Bennington, Vt. Straight-knitting machine for making figured knit goods	408,271	Aug. 6	102	25, 26	48	699
Tiffany, Eli, Bennington, Vt. Welt or hem forming device for straight-knitting machines	408,272	Aug. 6	103	26	48	700
Tiffany, Eli, Bennington, Vt. Falling bar for straight-knitting machines	408,363	Aug. 6	233	59	48	724
Tigner, James O., and B. O. Hill, Greenville, Ga. Plow	410,469	Sept. 3	519	139	48	1370
Tilden, Burt E., Cleveland, Ohio. Railway rolling-stock reralling device and bridge-guard for safety	410,222	Sept. 3	133	33, 34	48	1294
Tilton, Charles E., Worcester, Mass., assignor, by mesne assignments, to Tilton Manufacturing Company, Portland, Me. Type-writing machine	409,128	Aug. 13	1420	374	48	952
Tilton Manufacturing Company. (See Jacobs, Arthur I., assignor.)						
Tilton Manufacturing Company. (See Tilton, Charles E., assignor.)						
Tilton, Mary P. R., New York, N. Y. Compound for settling coffee	411,675	Sept. 17	1441	.....	48	1596
Timm, Charles, Washington Heights, assignor to Union Special Sewing Machine Company, Chicago, Ill. Presser-foot for sewing-machines	408,767	Aug. 13	866	232	48	853
Timmons, John F., assignor of one-half to W. A. Feurt, Maryville, Mo. Composition for coating eggs	406,549	July 9	789	.....	48	165
Timmons, Samuel H., Evansville, Ind. Fire-extinguisher	409,312	Aug. 20	1703	447	48	1022
Tinker, George L., New Philadelphia, assignor of one-half to W. S. Kline, Bolivar, Ohio. Queen-rearing chamber	406,972	July 16	1431	375	48	295
Tittmann, Harold H., St. Louis, Mo. Portable seat for water-closets	406,604	July 9	909	234	48	178
Titus, Herman P., Linbon, N. H. Sleigh-knee	409,378	Aug. 20	1600	474	48	1040
Tivy, William H., and L. Ehrlich, assignors to American Roll Paper Company, St. Louis, Mo. Roll-paper holder and cutter	408,551	Aug. 6	536	140	48	781

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Tobey, Fred W., Waterbury, Conn. Door-spring	410,047	Aug. 27	2779	731	48	1233
Tobey, Frederick W. (See Atwood and Tobey.)						
Todd, Cora A., *et al.* (See Brown, Lauriston S., assignor.)						
Todd, Erastus B. (See Motter and Todd.)						
Todd, James P., J. S. Welch, and L. M. McLendon, Chatfield, Tex. Blasting-cartridge	406,154	July 2	181	52	48	38
Tode, Adolph, Monroe, N. Y. Sled	407,798	July 30	2670	694	48	553
Toler, John, trustee. (See Livingstone, William, assignor.)						
Tolkadorff, Emil, Cambridge, Mass. Sofa-bed	406,973	July 16	1432	375	48	295
Tombridge, Frank, *et al.* (See Jacoby, Cornelia M., assignor.)						
Tompkins, George S., and C. Whittingham, Detroit, Mich.; said Whittingham assignor to said Tompkins. Combined bracket and clamp for pillow-sham holders	407,307	July 16	1933	503	48	394
Tonks, Alfred. (See Draper and Tonks.)						
Toof, Edwin J., New Haven, Conn. Cording attachment for sewing-machines	410,618	Sept. 10	734	198	48	1418
Toof, Edwin J., New Haven, Conn. Ruffler for sewing-machines	410,619	Sept. 10	735	198	48	1418
Tooloose, John T. (See Seat, Perkins, and Tooloose.)						
Toomey, Samuel, Canal Dover, Ohio. Skeleton wagon	407,380	July 23	2060	533	48	426
Toothaker, William F., San Francisco, Cal. Hydraulic elevator	408,149	July 30	3206	837	48	652
Torkelson, Reinhard T., assignor to I. Johnson, Worcester, Mass. Carpenter's plane	406,605	July 9	670	214	48	178
Torrey, Joseph R., Worcester, Mass. Razor-strop	409,715	Aug. 27	2307	606	48	1143
Torsell, Martha. (See Fine, William O., assignor.)						
Totten, Francis E., assignor of one-half to J. S. Cooke, Newark, N. J. Faucet	407,381	July 23	2061	533	48	426
Toulmin, Morton, assignor of two-thirds to F. C. Fenhagen, Baltimore, and P. G. Zouck, Glen Morris, Md. Coal-cart	409,620	Aug. 20	2150	564 565	48	1108
	409,884	Aug. 27	2350	667 668	48	1188
Towle, Charles B., Vallejo, Cal. School-desk	408,445	Aug. 6	360	94	48	750
Towne, A. E., *et al.* (See Paine, George C., assignor.)						
Towne, Charles D., Galesburg, Mich. Harvester-reel	408,999	Aug. 13	1214	320	48	920
Towne, Henry R., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Rod-handle for locks	408,552	Aug. 6	537	140 141 142	48	782
Townsend, Eli C., assignor of one-half to S. J. Cox, New York, N. Y. Key-fastener	411,076	Sept. 17	1442	383	48	1566
Townsend, Isaac. (See Thompson, Henry B., assignor.)						
Tracy, William P., assignor of two-thirds to G. N. Davis and A. Meigs, Grand Rapids, Mich. Mop-wringer	406,550	July 9	790	214	48	165
	411,626	Sept. 24	2253	598 599	48	1130
Tragethon, Arne S., Brookfield, Iowa. Planter						
Trans-Continental Car Lock and Seal Company. (See Davis, Charles E., assignor.) (Reissue.)						
Trask, Charles H., Lynn, Mass., assignor to Duplex Shoe Trimmer Company, Portland, Me. Sole and heel trimmer	406,974	July 16	1433	375 376	48	295
Trask, Charles H., Lynn, Mass., assignor to Duplex Shoe Trimmer Company, Portland, Me. Sole and heel trimmer	407,963	July 16	1876	489	48	352
Trask, Harry, Brooklyn, and W. N. Carmichael, New York, N. Y. Valved pipe-coupling	408,273	Aug. 6	105	26	48	700
Traut, Justus A., New Britain, Conn. Bottle-stopper	408,364	Aug. 6	235	59	48	724
Traver, Adelbert L., Philmont, N. Y. Trimming attachment for machines for sewing looped fabrics	410,720	Sept. 10	910	245	48	1449
Travers, George W., Hoboken, N. J. Parasol for baby-carriages	409,435	Aug. 20	1877	495	48	1057
Travis, Charles L., *et al.* (See White, Clarence O., assignor.)						
Tricycle Manufacturing Company. (See Bean, Roscoe, assignor.)						
Trier, Conrad, Chicago, Ill. Car-door	409,077	Aug. 13	1336	353	48	943
Triest & Co. (See Seymour, James W., assignor.)						
Triplett, Hezekiah O., Orland, Cal. Grain-separator	410,776	Sept. 10	1003	269	48	1468
Tripold, Ambrose A. and C. H., Brooklyn, N. Y. Valve for steam-pumps	406,606	July 9	672	213	48	179
Tripold, Charles H. (See Tripold, Ambrose A. and C. H.)						
Tripp, Elphalet A., New Bedford, assignor to J. W. Brooks, trustee, Cambridge, Mass. Top-lift holder	406,183	July 2	227	63	48	45
Tripp, Elphalet A., New Bedford, assignor to J. W. Brooks, trustee, Cambridge, Mass. Top-lift holder	406,184	July 2	228	62	48	45
Tripp, Herman. (See Lattan and Tripp.)						
Tripp, Herman. (See Lattan, Tripp, and Faulkner.)						
Tripp, James, New York, N. Y., assignor to G. S. and F. M. Scofield, Greenwich, Conn. Feed-operating mechanism for sewing-machines	409,129	Aug. 13	1424	375	48	960
Triumph Compound Engine Company. (See Eickershoff, John H., assignor.)						
Triumph Self-Wringing Mop Company. (See Low, Hamilton F., assignor.)						
Troller, Albert, assignor to Rockford Watch Company, Rockford, Ill. Stem winding and setting watch	408,274	Aug. 6	106	27	48	700
Troupe, Samuel L., Philadelphia, Pa. Combined carpet-stretcher and tack-driver	411,270	Sept. 17	1727	460	48	1623
Trowbridge, John, and S. Sheldon, Cambridge, Mass. Telephone	407,199	July 30	2671	694	48	553
Truesdale, Charles, assignor to W. Resor & Co., Cincinnati, Ohio. Stove-lining	410,128	Aug. 27	2925	769	48	1259
Truesdell, Lucius E., Bristol, N. H. Railway snow-plow	406,117	July 2	135	39	48	28
Trufant, Walter E., New Haven, Conn. Copying-press	411,559	Sept. 24	2147	560	48	1707
	409,078	Aug. 13	1338	353 354	48	943
Truslow, Edward, Summit, N. J. Fence	408,445	Aug. 6	360	94	48	750
Tryon, Philo. N., San Francisco, Cal. Veil-fastener	408,389	Aug. 6	275	68, 69	48	732
Tucker, L. M. (See Cook, Thomas P., assignor.)						
Tucker, Stephen D., New York, N. Y. Delivery apparatus for web-printing machines	408,390	Aug. 6	277	69	48	733
Tucker, Stephen D., New York, N. Y. Delivery mechanism for printing-machines	408,391	Aug. 6	279	70	48	733
Tucker, Stephen D., New York, N. Y. Sheet-counting mechanism for printing-machines	408,392	Aug. 6	281	70	48	733
Tucker, Stephen D., New York, N. Y. Inking mechanism for printing-machines	408,393	Aug. 6	282	70	48	733
Tucker, Stephen D., New York, N. Y. Imposing forms upon printing-cylinders	408,394	Aug. 6	283	71	48	733
Tucker, Stephen D., New York, N. Y. Web printing and delivery mechanism	406,068	July 2	67	20	48	16
Tufts, David, Pittsburg, Pa. Wire cable	408,395	Aug. 6	285	71	48	734
Tunstead, George S., Newark, N. J. Tanning apparatus	411,077	Sept. 17	1443	.....	48	1566
Turley, Hugh G., Dorchester, Ontario, Canada. Ointment	409,525	Aug. 20	2002	502	48	1062
Turnbull, Brisbane M., Scranton, Miss., assignor of one-third to B. W. Taylor, New Orleans, La. Ventilator	410,600	Sept. 10	799	201	48	1431
Turner, Isaac J., Princeton, N. J. Chimney-cowl	411,307	Sept. 17	1783	447	48	1633
Turner, Isaac J., Princeton, N. J. Wire hook or hanger	411,477	Sept. 24	2032	508	48	1684
Turner, John, Detroit, Mich. Drawbar attachment	407,974	July 30	2934	764	48	603
Turner, Joseph S., Rockland, Mass., assignor to Campbell Machine Company, Pawtucket, R. I. Shoe-welt-sewing machine						
Turner Manufacturing Company. (See Turner, Melzar G., assignor.)						
Turner, Melzar G., Westborough, Mass., assignor to Turner Manufacturing Company, Concord, N. H. Separator-plate for sewing-machines	406,316	July 2	410	112 113	48	82

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Turner, Vaughn & Taylor. (See Camp, Horace B., assignor.)						
Turner, William B., and J. Asbery, Coventry, county of Warwick, England. Saddle for velocipedes	408,881	Aug. 13	1012	267	48	881
Tweedale, Edmund, Accrington, county of Lancaster, England. Support for the rollers of spinning-frames, &c	406,275	Aug. 6	106	27	48	700
Tweedale, Edmund, Accrington, county of Lancaster, England. Means for fastening card-clothing to the top-flats of carding-engines	410,048	Aug. 27	2780	731	48	1233
Tweedy, Edmund. (See Newman, Samuel T., assignor.)						
Tweedy, Thomas A., Knightstown, Ind. Farm-gate	409,716	Aug. 27	2307	606	48	1143
Twiss, Freeman L., assignor to Crandall Type-Writer Company, Groton, N. Y. Cam-motion for type-writing machines	406,150	July 30	2307	837	48	653
Twyman, Aaron, Pullman, assignor to Pullman's Palace Car Company, Chicago, Ill. Transom-lifter	407,024	July 23	2411	636	48	496
Tyler, Amos H. (See Thomas, John D., assignor.)						
Tyler, Charles C., Cheshire, Conn. Making milling-cutters	406,446	Aug. 6	360	95	48	750
Tyler, Charles H., St. Louis, Mo. Type-writer desk	406,553	Aug. 6	539	142	48	782
Tyler, Charles H., St. Louis, Mo. Type-writer cabinet	410,470	Sept. 3	530	440	48	1370
Tyler, Walker C., San Francisco, Cal. Merry-go-round	410,301	Sept. 3	256	67	48	1318
Tynan, Joseph E., Paterson, N. J. Winding-spindle	408,396	Aug. 6	267	71	48	734
Tynan, Joseph E., Paterson, N. J. Spindle for spinning	408,892	Aug. 13	1012	268	48	881
Type-Writer Improvement Company. (See Allen, Daniel, Jr., assignor.)						
Tyrrel, Alvin D., South Hadley Falls, assignor of one-half to H. L. Newell, Springfield, Mass. Envelope-machine	408,200	July 30	3292	860 861 511	48	667
				512	48	1656
Uhlinger, William P., Philadelphia, Pa. Card-stamping machine for Jacquard machines	411,401	Sept. 17	1915	512		
Ulber, Julius E., Detroit, Mich. Drafting apparatus for enlarging and reducing pictures	406,796	July 9	1165	308	48	234
Umbdenstock, Michael, Chicago, Ill. Printing-machine	409,985	Aug. 27	2553	668	48	1188
Umland, Wilhelm, New York, N. Y. Dividible upright piano	410,223	Sept. 3	134	34	48	1294
Unbehend, Jacob J., assignor to J. L. Thomson & Co., Syracuse, N. Y. Rivet	411,174	Sept. 17	1500	422	48	1565
Underhill, Charles B., Lancaster, N. Y. Oil-can nozzle	409,611	Aug. 27	2452	643	48	1170
Underhill, Francis M., Brooklyn, assignor to Whitall, Tatum & Co., New York, N. Y. Calendar	409,526	Aug. 20	2003	589	48	1082
Underwood, Thomas J., Decatur, Ill. Automatic grain-weigher	411,763	Sept. 24	2448	649	48	1770
Union American Cigar Company. (See Lang, William F., assignor.)						
Union Fence Manufacturing Company. (See Armstrong, Clark, and Cottrell, assignors.)						
Union Hydraulic Drain Tile Company. (See Sherman, Willis D., assignor.)						
Union Paper Bag Machine Company. (See Stilwell, Charles B., assignor.)						
Union Special Sewing Machine Company. (See Timm, Charles, assignor.)						
Union Switch and Signal Company. (See Hambay, James T., assignor.)						
Union Water Meter Company. (See Conroy, James C., assignor.)						
United Electric Improvement Company. (See Currie, Stanley C. C., assignor.)						
United States Electric Company. (See Short, Sidney H., assignor.)						
United States Electric Lighting Company. (See Kelly and Brangs, assignors.)						
United States Pipe Bending and Coiling Company. (See Fowler, Herbert E., assignor.)						
United States Watch Company. (See Nutting, Granville, assignor.)						
Universal Automatic Cashier Company. (See Latimer, William G., assignor.)						
Universal Plow Company. (See Belding, Thomas C., assignor.)						
Universal Radial Drill Company. (See Rogers, Winfield S., assignor.)	409,340	Aug. 20	1743	458	48	1029
Uns, Henry H., Philadelphia, Pa. Combined stand and pad or tablet						
Updegraff, W. B., *et al.* (See Grassler, William F., assignor.)						
Upham, George B. (See Barry and Upham.)						
Upson Nut Company. (See Karrmann, George, assignor.)						
Upton, Charles S. (See Rhind, Frank, assignor.)						
Upton, Frank S. (See Rung, Henry, assignor.)						
Urann, Frederick W., Cleveland, Ohio. Toaster	410,338	Sept. 3	322	84	48	1331
Urbanek, Johann, Vienne, Austria-Hungary. Glazier's diamond	408,055	July 30	3055	800	48	636
Usine Genevoise de Dégrossissage d'Or. (See Ostermann and Lacroix, assignors.)						
Usery, William J., Norwich, Ontario, Canada. Spark-arrester	406,468	July 9	693	192	48	148
Utter, Horace B., Rockford, Ill. Rock-drilling machine	411,078	Sept. 17	1443	384	48	1566
Utter, Samuel S., Brooklyn, N. Y. Adjustable pipe-opening in stoves, &c	407,707	July 23	2594	653	48	519
Vacherot, Hermann M. (See Hasse and Vacherot.)						
Vail, Joseph C., Maples Mill, assignor to himself, and T. M. Mercer, Lewistown, Ill. Cover for milk-cans	407,975	July 30	2937	764	48	603
Vaile, John H., Dayton, Ohio. Compound engine	408,317	July 2	412	113	48	82
Valdivielso, Salvador M. y, Paris, France. Life-preserving buoyant bag	407,625	July 23	2412	636	48	496
Valley, John N., Jersey City, N. J. Fish plate and joint	406,940	Aug. 13	1129	298	48	904
Valley, John N., Jersey City, N. J. Elevated railway	408,941	Aug. 13	1131	298	48	905
Valley, John N., Jersey City, N. J. Brake for wheeled vehicles	408,942	Aug. 13	1132	298	48	905
Van Alstyne, Lawrence, Sharon, Conn. Centering-awl	409,130	Aug. 13	1426	375	48	960
Van Asadall, John, and B. A. Dolan, Keokuk, Iowa. Rubber-shoe attachment	409,717	Aug. 27	2309	606	48	1143
Van Bibber, Andrew. (See Reiffel, William, assignor.)						
Van Bibber, Andrew D., Zeta, W. Va. Nut-lock	406,345	July 9	305	84	48	61
Van Brocklin, Charles C., Ellis, Ill. Latch	408,554	Aug. 6	541	142	48	783
Van Brunt & Davis Company. (See Davis, Spencer E., assignor.)						
Van Buren, Saxton C., and S. C. Shoup, Carey, Ohio. Corn-harvester	409,079	Aug. 13	1339	354	48	944
Van Buskirk, Samuel. (See Krutsch, Willis W., assignor.)						
Van Depoele, Charles J., Lynn, Mass. Closed slotted conduit for electric railways	406,797	July 9	1166	308	48	234
Van Depoele, Charles J., Lynn, Mass. Mechanism for controlling electric-railway motors	406,798	July 9	1169	309	48	235
Van Depoele, Charles J., Lynn, Mass. Extensible upward-pressure contact-arm	407,749	July 23	2500	670 671	48	532
Van Depoele, Charles J., Lynn, Mass. Contact-arm for electric-railway motor-cars	408,638	Aug. 6	660	172	48	806
Van Depoele, Charles J., Lynn, Mass. Underground conduit for electric railways	408,639	Aug. 6	663	172 173	48	807
Van Depoele, Charles J., Lynn, Mass. Multiple-motor electric locomotive	408,640	Aug. 6	666	173	48	807
Van Depoele, Charles J., Lynn, Mass. Alternating-current motor	408,641	Aug. 6	668	174	48	808
Van Depoele, Charles J., Lynn, Mass. Inductional electric motor	408,642	Aug. 6	672	175	48	808
Van Depoele, Charles J., Lynn, Mass. Double suspended conductor system for electric railways	409,156	Aug. 13	1402	386 387	48	968
Van Deventer, Gustavus, Matawan, N. J. Brick-machine	411,239	Sept. 17	1674	448	48	1613
Van Geetel, Jean T., New York, N. Y. Motive apparatus and time-indicator for use with secondary batteries	406,975	July 16	1434	376	48	296
Van Geetel, Jean T., New York, N. Y. Dynamo-electric machine	408,768	Aug. 13	867	232	48	653
Van Geetel, Jean T., New York, N. Y. Dummy or motor engine	410,049	Aug. 27	2781	732	48	1233

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Van Gestel, Jean T., New York, N. Y. Secondary battery	410,680	Sept. 10	836	224	48	1438
Van Hoorebeke, Gustavus, and T. E. Ford, Carlyle, Ill. Folding bed	409,527	Aug. 20	2004	329	48	1062
Van Horn, Bert, Oneida, and J. E. Lathe, Vernon, N. Y. Coffin-fastener	409,436	Aug. 20	1878	495	48	1057
Van Houten, Frank H., Matteawan, N. Y. Blind-slat-planing machine	408,863	Aug. 13	1014	268 / 269	48	882
Van Kannel, Theophilus, and G. E. Lockwood, assignors to G. H. Colket, Philadelphia, Pa. Can-capping machine	411,695	Sept. 24	2356	623	48	1751
Van Lyer, Bernard. (See Cooper and O'Brien, assignors.)						
Van Norman, Charles E., Waltham, Mass. Key-holder	409,255	Aug. 20	1613	427	48	1005
Van Nostrand, Charles. (See White, Arthur, assignor.)						
Van Patten, Frederick, Auburn, N. Y. Harrow-tooth	407,138	July 16	1681	439	48	344
Van Rysselberghe, François, Brussels, Belgium, assignor to Phono-Multiplex Telegraph Company, Baltimore County, Md. Harmonic telegraphy	409,157	Aug. 13	1469	387	48	909
Van Slyke, Arvil T., Hermitage, N. Y. Harrow	407,846	July 30	2741	712	48	508
Van Vliet, Warren R., East Stroudsburg, Pa. Combination-tool	411,079	Sept. 17	1444	384	48	1568
Van Wagenen, Garrett, Monroe, Wis. Breast-collar iron	406,069	July 2	68	30	48	16
Van Wie, Avery, Indianapolis, Ind. Shutter-fastener	407,308	July 16	1934	503	48	394
Van Wie, Peter G., Cleveland, Ohio. Hot-water generator	407,878	July 30	2791	726	48	575
Van Wyck, Frederick, Scarsdale, N. Y. Printing-press	410,302	Sept. 3	257	67	48	1318
Vanderbeck, Abraham. (See Peuts, Albert D., assignor.)						
Vanderpool, Albion A., Newark, N. J. Annunciator	406,377	July 2	497	139	48	99
Varley, John, London, county of Middlesex, England. Perspective-ruler	410,050	Aug. 27	2784	733	48	1234
Vassar, George, Jr., New York, N. Y. Railway-gate	406,551	July 9	700	214	48	165
Vauclain, Samuel M., Philadelphia, Pa. Making wrought-iron car-wheels	408,056	July 30	3055	800	48	626
Vauclain, Samuel M., Philadelphia, Pa. Machine for turning tapered bolts	410,051	Aug. 27	2786	733	48	1234
Vaughan, Eleazar S., Flatbush, N. Y. Cellar-bottom	407,500	July 23	2237	576	48	461
Vaughn, John W., Jersey City, N. J. Automatic selling-machine	407,946	July 30	2896	754 / 755	48	595
Vavasseur, John H., Uxbridge, county of Middlesex, England. Machine for cutting cocoa-nut-shells	410,385	Sept. 3	383	101	48	1344
Veerkamp, Florens L., Philadelphia, Pa. Boiler-feeder	407,043	July 16	1528	400	48	314
Ventzki, August J., Graudenz, Prussia, Germany. Plow	408,331	Aug. 6	191	48, 49	48	717
Verboort, Albert. (See Kidney and Verboort.)						
Vereker, Amos M., and S. M. Yeates, Dublin, Ireland. Car brake and starter	410,386	Sept. 3	384	102	48	1344
Vernette, Fred, Hannibal, Mo. Electric dental instrument	409,437	Aug. 20	1879	496	48	1057
Verpillier, Emile, assignor of two-thirds to L. Dumont, Newark, N. J., and B. Bernigole, New York, N. Y. Station-indicator for railway-cars	409,812	Aug. 27	2453	643	48	1170
Vibert, Francis C., Hockanum, Conn. Spacing or marking wheel	409,718	Aug. 27	2310	607	48	1143
Victor Manufacturing Company. (See Moody, Henry T., assignor.)						
Vinyard, Nicholas J., Vinton, Va. Grain and seed separator	409,256	Aug. 20	1614	427	48	1005
Virnoche, Maxime. (See Chagnon and Virnoche.)						
Virnoche, Maxime, assignor of three-fourths to L. Lemonde, J. Bouino, and F. Crepeau, Woonsocket, R. I. Game apparatus	411,402	Sept. 17	1918	512	48	1657
Virnoche, Maxime, assignor of three-fourths to E. C. Chagnon, F. Crepeau, and R. T. L'Esperance, Woonsocket, R. I. Self-threading shuttle for looms	411,403	Sept. 17	1919	513	48	1657
Voelkerding, August B. and T. A., Augusta, Mo. Gang-plow	410,946	Sept. 10	1238	334	48	1517
Voelkerding, Theodore A. (See Voelkerding, August B. and T. A.)						
Vogelgesang, Max, assignor of one-half to J. H. Bonn, Hoboken, N. J. Screw-propeller	408,864	Aug. 13	1017	269	48	882
Vogl, George, and J. Hess, Newark, assignors of one-third to A. H. Fisher, Jersey City, N. J. Handle	406,670	July 2	69	30	48	16
Vogler, William, Somerville, Mass. Dress-form	408,769	Aug. 13	868	233	48	853
Vogler, William, Somerville, Mass. Dress-form	408,770	Aug. 13	870	233	48	854
Vogler, William, Somerville, Mass. Dress-form	408,771	Aug. 13	871	233	48	854
Vogt, Axel S., Altoona, Pa. Exhaust-muffler for locomotives	407,139	July 16	16-2	430	48	345
Vogt, Edward A., Friedheim, Mo. Hair dye and tonic	406,071	July 2	70	....	48	16
Voice, Morris, Lapeer, Mich. Feed-cutter	406,976	July 16	1437	377	48	296
Volk, Kilian A. (See Huppmann, John P., assignor.)						
Volkerts, Oluf, Sac City, Iowa. Lock	408,447	Aug. 6	361	93	48	751
Volkmann, John H. (See Bergmann, Theodor, assignor.)						
Volkmann, John H. (See Reiner, Philipp, assignor.)						
Von Bayer, Hector, Washington, D. C. Air or vapor pump	410,052	Aug. 27	2787	734	48	1234
Von Heyden, F., Nachfolger. (See Schmitt, Rudolf, assignor.)						
Von Heyden, F., Nachfolger. (See Seifert, Bruno R., assignor.)						
Von Pein, Emil C. G., New York, N. Y. Window-guard	411,308	Sept. 17	1784	478	48	1633
Von Pein, Emil C. G., New York, N. Y. Window-guard	411,309	Sept. 17	1786	479	48	1633
Von Schmidt, Julius H., San Francisco, Cal. Hydraulic dredging-machine	407,044	July 16	1529	400 / 401	48	314
Von Simon, Alexis, Vienna, Austria-Hungary. Cryptographic apparatus	407,425	July 23	2132	550	48	439
Von Welsbach, Carl A., Vienna, Austria-Hungary. Obtaining zirconium nitrate	409,653	Aug. 20	2194	.....	48	1116
Von Welsbach, Carl A., Vienna, Austria-Hungary, assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Gas-incandescent	409,528	Aug. 20	2005	.....	48	1062
Von Welsbach, Carl A., Vienna, Austria-Hungary, assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Regenerating mantles for incandescent uses	409,529	Aug. 20	2006	.....	48	1062
Von Welsbach, Carl A., Vienna, Austria-Hungary, assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Incandescent gas-lamp	409,530	Aug. 20	2008	530	48	1062
Von Welsbach, Carl A., Vienna, Austria-Hungary, assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Manufacture of gas-incandescents	409,531	Aug. 20	2009	.....	48	1063
Voorhies, F. L., *et al.* (See Jennings, Byron, assignor.)						
Vorwick, Joseph W., Monmouth, Ill. Road-cart	411,114	Sept. 17	1506	409	48	1578
Vosburgh, Jacob, St. Louis, Mo. Boiler-stand	410,947	Sept. 10	1242	334	48	1517
Voss, Robert, Berlin, Germany, assignor to J. W. Queen & Co., Philadelphia, Pa. Influence-machine	410,053	Aug. 27	2788	734	48	1234
Votey, Edwin S., Detroit, Mich. Reed-organ	407,800	July 30	2673	694	48	554
Votey, Edwin S., Detroit, Mich. Mechanical organ	407,801	July 30	2676	695	48	554
Votey, Edwin S., Detroit, Mich. Driving and governing mechanism for organs	407,802	July 30	2677	695	48	554
Vought, Nicholas C. (See Kent and Vought.)						
Vreeland, William A., Chicago, Ill. Steam-engine	406,607	July 9	874	225	48	179
Vulcanite Manufacturing Company. (See Niles, William F., assignor.)						
Wacker, John, Detroit, Mich. Beer-cask	406,246	July 2	306	84	48	61
Wade, James J., Chicago, Ill. Soil or sewer pipe flushing device	406,977	July 16	1438	377	48	296
Wade, William G. (See Hart, Isaac C., assignor.)						
Waffenfabrik Mauser. (See Mauser, Paul, assignor.)						
Wagandt, Charles L., assignor of one-half to Keen & Hagerty, Baltimore, Md. Soldering-iron	408,772	Aug. 13	873	224	48	854

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Waggaman, John F. (See Harrison, Arthur W., assignor.)						
Waggoner, Albert. (See Simpson and Waggoner.)						
Waggoner, Albert, Columbus, Ohio, assignor of one-half to C. H. Allen, St. Louis, Mo. Vehicle-spring	406,408	July 2	547	153	48	109
Wagner, Daniel. (See Eversman and Wagner.)						
Wagner, Frans X., New York, N. Y. Type-writing machine	411,361	Sept. 17	1660	497	48	1646
Wagner, John W., Darien, Wis. Device for cooling milk	408,943	Aug. 13	1133	299	48	905
Wagner, Louis, assignor of one-half to J. Marr, Baltimore, Md. Safety device for grain-mills	411,404	Sept. 17	1990	513	48	1657
Wakefield, Charles L., *et al.* (See Kingwill, John F., assignor.)						
Walbridge, Herman D., *et al.* (See McCarty, William F. M., assignor.)						
Waldeck, Charles E., Paterson, N. J. Appliance for rotary fans	408,555	Aug. 6	542	143	48	783
Waldo, Francis S., assignor to J. Matthews, New York, N. Y. Apparatus for charging soda-water fountains	408,276	Aug. 6	109	27	48	700
Waldo, Henry A., Reno, Nev. Telegraph-key	406,489	July 9	694	192	48	148
Waldron, Charles F., Boston, Mass. Containing-cell for secondary batteries	410,054	Aug. 27	2789	734	48	1235
Waldron, Charles W., Lewiston, Me., and G. E. Jones, New York, N. Y., assignors to Liberty Manufacturing Company, Lewiston, Me., and New York, N. Y. Galley	407,382	July 23	2062	533	48	496
Waldstein, Martin E., New York, N. Y. Solvent for gas-pipe deposits	411,478	Sept. 24	2033	.....	48	1684
Walen, Frank A., Chicago, Ill. Refrigerating apparatus	408,773	Aug. 13	874	234	48	854
Walker, Albert H., Hartford, Conn. Sea-oiling cartridge	409,846	Aug. 27	2354	608	48	1189
Walker, Albert H., Hartford, Conn. Sea-oiling rocket	411,479	Sept. 24	2034	536	48	1684
Walker, Catharine S., Galveston, Tex. Lamp attachment	409,887	Aug. 27	2355	669	48	1189
Walker, Edwin R. (See Sights and Walker.)						
Walker, George W., New York, N. Y. Recording apparatus for electric meters	406,678	July 9	983	264 / 265	48	200
Walker, Irvin B. (See Long and Walker.)						
Walker, James H., Sewickley, assignor to Fuel Gas and Electric Engineering Company, (limited,) Pittsburg, Pa. Retort-charging device	406,409	July 2	547	153	48	109
Walker, James M. (See Sheets and Walker.)						
Walker, Levi, Delhi, Ontario, Canada. Plow-colter	410,055	Aug. 27	2791	735	48	1235
Walker, Nathan, Harwich, Mass. Safety device for elevators	410,339	Sept. 3	323	84	48	1331
Walker, Robert J., Philadelphia, Pa. Elevator	407,096	July 21	2413	627	48	497
Walker, William, and J. B. Davis, Lackawanna, Pa. Pipe-clamp	410,216	Sept. 10	1060	284	48	1482
Wall & Co., A. T. (See Crook, Joseph E., assignor.)						
Wall, Joseph, Seaforth, Liverpool, county of Lancaster, England. Signal-lantern	409,532	Aug. 20	2011	530	48	1063
Wallace, Charles B. (See Skinner and Wallace.)						
Wallace, John R., *et al.* (See Mitchell, Joseph T., assignor.)						
Wallace, John S., assignor to himself, W. B. Brooks, Jr., and F. A. Prendergast, Nelsonville, Ohio. Refuse-ejector	408,901	July 30	3297	861	48	668
Wallace Manufacturing Company. (See Cunningham, William R., assignor.)						
Wallace & Sons. (See Bryant, Edson L., assignor.)						
Wallace, Thomas, New York, N. Y., assignor to New York Atmospheric Conduit Electric Light and Power Company, of West Virginia. Underground conduit	406,978	July 16	1439	377	48	297
Wallace, W. F., *et al.* (See Cooper, Charles B., assignor.)						
Wallace, William, assignor to himself and R. C. Brann, San Francisco, Cal. Sewer-gas trap and sink	406,979	July 16	1440	377	48	297
Wallenbeck, George, Ithaca, N. Y. Windmill-tower	406,679	July 9	967	265	48	200
Waller, Arthur R., Kingsland, N. J., assignor to Burger & Lee, New York, N. Y. Utility package	407,910	July 30	2835	738	48	583
Wallick, Washington, Philadelphia, Pa. Button-hole attachment for sewing-machines	406,799	July 9	1171	309 / 310	48	235
Wallick, Washington, Philadelphia, Pa. Button-hole attachment for sewing-machines	406,800	July 9	1174	310 / 311	48	236
Wallis, William T. (See Ellis, John, assignor.)						
Wallwork, Roughsedge, Manchester, county of Lancaster, England. Regenerative burner	407,750	July 23	2593	671	48	533
Walters, Charles F., and W. N. Gartside, assignors to Richmond City Mill Works, Richmond, Ind. Mill	408,774	Aug. 13	876	234 / 235	48	855
Walton, Benjamin, Crompton, Cal. Fowl or stock feeder	410,661	Sept. 10	801	216	48	1432
Walton, William R., assignor to Ansonia Brass and Copper Company, Ansonia, Conn. Manufacturing brass kettles	410,387	Sept. 3	386	102 / 103	48	1345
Walworth, Caleb C. (See Babbitt, Artemas B., assignor.)						
Walworth, Merritt H., Hilladale, Mich. Road-grader	406,680	July 9	988	265 / 266	48	201
Wands, Lucius L., West Shokan, assignor to H. Boice, Kingston, N. Y. Price-indicating attachment for weighing-scales	409,533	Aug. 20	2014	530	48	1063
Wanner, Julius, Chicago, Ill. Raising sunken vessels	407,751	July 23	2597	672	48	533
Wanner, Martin, Robinson, assignor of one-half to J. A. Hall, Axial, and A. H. Weber, Denver, Colo. Producing aluminium	411,627	Sept. 24	2255	509	48	1731
Wanzer, Frank L. (See Fricker, Henry, assignor.)						
Ward, Charles L., Cavendish, Vt. Door-fastener	407,501	July 23	2238	.....	48	461
Ward, Edward C. (See Lyles and Ward.)						
Ward, Edwin F., New York, N. Y. Powder-separator	410,388	Sept. 3	387	103	48	1345
Ward, George C., Boston, Mass., assignor to Advance Electric Company, Saco, Me. Galvanic battery	410,389	Sept. 3	388	103	48	1345
Ward, John D., Rochester, N. Y. Thermometer	409,257	Aug. 20	1615	427	48	1005
Ward, Whitfield, New York, N. Y. Cooking utensil	410,568	Sept. 3	654	174	48	1397
Ward, William E., Port Chester, N. Y. Machine for forming bolt-blanks. (Reissue)	407,140	July 16	1684	440	48	345
Ward, William E., Port Chester, N. Y. Machine for dressing bolts or bolt-blanks	409,258	Aug. 20	1616	428	48	1005
Ware Automatic Heat Generator and Regulator Company. (See Ware, Edmund R., assignor.)	409,259	Aug. 20	1617	428	48	1005
Ware, Edmund R., Worcester, Mass., assignor to Ware Automatic Heat Generator and Regulator Company. Heating apparatus	409,379	Aug. 20	1801	474	48	1004
Ware, Edmund R., Worcester, Mass., assignor to Ware Automatic Heat Generator and Regulator Company. Thermostatic fuel-controller	410,620	Sept. 10	736	199	48	1419
	11,030	Sept. 17	1936	516	48	1660
	411,271	Sept. 17	1729	462 / 463	48	1623
	411,310	Sept. 17	1786	478 / 479	48	1633
	411,311	Sept. 17	1789	479	48	1633

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Ware, John H., Eureka, Cal. Mop-grip	406,410	July 2	550	154	48	110
Warner, Edward N., Rocky Hill, Conn. Door-fastening	406,960	July 16	1441	378	48	297
Warner, James T., Mendon, Mass. Steam-engine	410,866	Sept. 10	1130	304	48	1495
Warner Manufacturing Company. (See Hoefer, Frederick W., assignor.)						
Warren, Andrew. (See Crecelius, Louis J., assignor.)						
Warren, Charles P. (See Cooke, Ernest W., assignor.)						
Warren, Edward K., Three Oaks, Mich. Whip	411,628	Sept. 24	2256	599	48	1731
Warren, Edward K., and J. H. Ames, Three Oaks, Mich. Button-strip	409,888	Aug. 27	2556	669	48	1189
Warren, Henry H., Massena, N. Y., assignor of one-half to A. Laundry, Montreal, Canada. Apparatus for swaging and rolling	411,480	Sept. 24	2036	538	48	1685
Warren, Ira B., Waucoma, Iowa. Washing-machine	411,233	Sept. 17	1675	448	48	1613
Warren, John K., *et al.* (See Hartley, Charles J., assignor.)						
Warren, John W., Mineola, Tex., and S. H. Radford, Hartsville, Ala.; said Radford assignor to A. C. Cunningham, Mineola, Tex. Revolving signal	409,534	Aug. 20	2015	531	48	1084
Warren, Marion, Rochester, N. Y. Safety check-valve	407,911	July 30	2836	738	48	583
Warsop, Arthur S. (See Warsop, Thomas and A. S.)						
Warsop, Thomas and A. S., assignors to G. Wigley, Nottingham, county of Nottingham, England. Machine for cleaning and purifying carpets or other fabrics	407,309	July 16	1934	503, 504	48	304
Wash, Nathan R. H. (See Wash, Thomas H. and N. R. H.)						
Wash, Thomas H. and N. R. H., Medina County, Tex. Car-coupling	406,072	July 2	70	21	48	16
Washburn, Alfred F., and E. E. Krengel, Independence, Oreg. Railway-gage and tie-grip	406,801	July 9	1176	311	48	236
Wassell, Ann I. (See Wassell, Edwin D., assignor.)						
Wassell, Edwin D., assignor to A. I. Wassell, Pittsburg, Pa. Rolls for rolling bars into sheets	410,258	Sept. 3	183	48	48	1304
Wassmund, Adolf, Cologne, Minn. Grain-heater	408,556	Aug. 6	543	143	48	783
Waszkiewicz, Adam, New York, N. Y. Apparatus for steaming cloth	406,775	Aug. 13	881	235	48	856
Waterhous, George C., New Albany, Ind. Fire-escape	407,752	July 23	2598	672	48	534
Waterhouse, Gilbert A., Quincy, Mass. Hand-screw clamp	410,303	Sept. 3	258	68	48	1318
Waterhouse, John, New York, N. Y. Guard-rail for railways	408,906	Aug. 13	1060	284	48	895
Waterman, George, assignor to W. W. Ellis, C. J. West, J. Waterman, and W. S. Ellis, Villisca, Iowa. Combination railway-bracket	406,863	July 9	1267	334	48	253
Waterman, John, *et al.* (See Waterman, George, assignor.)						
Waterman, Sarah, Milwaukee, Wis. Sad-iron	406,608	July 9	875	236	48	179
Waters Wrapping and Mailing Machine Company. (See Woodward, Erastus, assignor.)						
Watkins, Frank M., Cincinnati, Ohio. Washing and starching machine	409,535	Aug. 20	2016	531	48	1084
Watkins, James L., London, county of Middlesex, England. Velocipede	410,681	Sept. 10	837	225	48	1438
Watriss, George C. (See Clement and Watriss.)						
Watson, Alexander, San Francisco, Cal. Brake for railways	409,536	Aug. 20	2016	532	48	1084
Watson, George H., St. Louis, Mo. Feed-water heater and purifier	408,865	Aug. 13	1018	269, 270	48	882
Watson, William, Fairfield, Nebr. Double-lister corn-planter	411,696	Sept. 24	2350	621	48	1752
Watson, William C., assignor of one-half to T. Y. Kinne, Paterson, N. J. Car-coupling	411,175	Sept. 17	1591	423	48	1595
Watson, William C., assignor of one-half to T. Y. Kinne, Paterson, N. J. Car-coupling	411,176	Sept. 17	1594	423, 424	48	1595
Watt, Sern P. (See Robinson and Watt.)						
Watt, William R., Somerville, Tenn. Medicine or postal scales	409,080	Aug. 13	1340	354	48	944
Watters, John, Springfield, Ohio. Vehicle-curtain fastener	410,304	Sept. 3	259	68	48	1319
Wattles, Joseph W., Canton, Mass. Bearing for spinning-spindles	408,866	Aug. 13	1020	270	48	888
Watts, John H. C., Baltimore, Md. Lightning-rod	406,681	July 9	989	266	48	201
Watts, Joseph, McKee's Rocks, Pa. Device for handling coke	407,556	July 23	2325	601	48	480
Watts, Louis A. (See Young and Watts.)						
Way, George W. (See Stickney and Way.)						
Wayne, William J., Decatur, Ill. Two-wheeled vehicle	410,224	Sept. 3	135	34	48	1294
Weatherby, Charles P. N., New York, N. Y. Magazine fire-arm	409,889	Aug. 27	2557	668	48	1189
Weatherby, Charles P. N., New York, N. Y. Magazine fire-arm	410,621	Sept. 10	737	195, 206	48	1419
Weatherly, Joseph T., Flint, Ala. Lifting-jack	410,702	Sept. 10	868	234	48	1444
Weaver, Henry B., Burlington, N. J. Poison-guard	410,390	Sept. 3	390	104	48	1345
Weaver, Henry M. (See Barr, Weaver, and Barr.)						
Weaver, Vinton A., Moundsville, W. Va. Fastening-stripe	407,708	July 23	2326	653	48	519
Webb, Almon D., *et al.* (See Phipps, Edward L., assignor.)						
Webb, George B., assignor to Wyckoff, Seamans & Benedict, New York, N. Y. Hinge	406,247	July 2	307	81	48	61
Webb, James H., Clinton, Ark. Monument	408,776	Aug. 13	881	235	48	856
Webb, Samuel J., Minden, La. Bale-tie buckle	410,340	Sept. 3	324	84	48	1331
Weber, Adam, New York, N. Y. Coke-oven	407,879	July 30	2793	736, 737, 738	48	575
Weber, Adam, New York, N. Y. Furnace for burning bone-black	407,912	July 30	2839	736, 739	48	584
Weber, Adam, New York, N. Y. Kiln for burning bone-black	407,976	July 30	2937	765	48	603
Weber, Adam, New York, N. Y. Coke-furnace	409,081	Aug. 13	1341	354, 355, 356	48	944
Weber, Albert H., *et al.* (See Wanner, Martin, assignor.)						
Weber, John J., Grand Rapids, Mich. Laundry-iron attachment	407,557	July 23	2326	601	48	480
Webster & Comstock Manufacturing Company. (See Chivill, John, assignor.)						
Webster, Edward A., and L. O. Gibbs, Chicago, Ill. Apparatus for comminuting and corroding lead	406,378	July 2	499	130	48	99
Webster, Harold A., Haverhill, assignor of one-half to L. F. Tenney, Boston, Mass. Leather-cleaning machine	407,310	July 16	1936	504	48	395
Webster, William R., Philadelphia, Pa. Apparatus for upsetting eye-bars	406,552	July 9	792	215	48	165
Weed, Jacob K. (See Jesson and Weed.)						
Weed, James A. (See Smith, Emor E., assignor.)						
Weeden, Henry C., Boston, Mass., assignor to Weeden Sanitary Manufacturing Company, of Rhode Island. Siphon-closet	409,341	Aug. 20	1744	452	48	1029
Weeden Sanitary Manufacturing Company. (See Weeden, Henry C., assignor.)						
Weeks, Jacob W. and L. A., Detroit, Mich.; said Jacob W. Weeks assignor to said L. A. Weeks. Folding dress-extender	406,155	July 2	185	53	48	38
Weeks, Luis A. (See Weeks, Jacob W. and L. A.)						
Weeks, Nelson, Jr., Long Island City, N. Y. Carrying apparatus	410,617	Sept. 10	1061	286, 287	48	1482
Weems, David G., assignor to Electro-Automatic Transit Company, Baltimore, Md. Railway	406,802	July 9	1177	311	48	236

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Weems, David G., assignor to Electro-Automatic Transit Company, Baltimore, Md. Carrier for electric-railway systems	406,803	July 9	1178	311	48	236
Weems, David G., assignor to Electro-Automatic Transit Company, Baltimore, Md. Electric railway	406,804	July 9	1179	312, 313	48	237
Weems, David G., assignor to Electro-Automatic Transit Company, Baltimore, Md. Electric railway	406,805	July 9	1180	313, 314	48	237
Weems, David G., assignor to Electro-Automatic Transit Company, Baltimore, Md. Electric railway	406,806	July 9	1182	314	48	238
Wehrie, Robert, St. Louis, Mo. Mechanical movement	409,082	Aug. 13	1344	356	48	944
Weidig, Henry P., assignor to J. Kleinhans and J. B. Stobaeus, Newark, N. J. Sulphur fabric	407,311	July 16	1937	.....	48	395
Weidman, Richard A., Geneva, N. Y. Automatic cut-off for water-gages	406,777	Aug. 13	882	236	48	856
Weir, Fredric C., Cincinnati, Ohio. Filling for railway frogs and crossings	407,754	July 23	2600	672	48	534
Weir, Fredric C., Cincinnati, Ohio. Combined crossing and switch	409,537	Aug. 20	2018	532	48	1084
Weir, Fredric C., Cincinnati, Ohio. Combined crossing and switch	409,538	Aug. 20	2021	533	48	1085
Weir, Fredric C., Cincinnati, Ohio. Combined crossing and switch	409,539	Aug. 20	2022	533	48	1085
Weir, Fredric C., Cincinnati, Ohio. Spring-frog	411,362	Sept. 17	1861	498	48	1647
Weir, Fredric C., Cincinnati, Ohio. Expansion rail-joint	407,755	July 23	2601	673	48	534
Weir, Fredric C., and N. O. Goldsmith, assignors to Weir Frog Company, Cincinnati, Ohio. Switch-stand	407,753	July 23	2599	672	48	534
Weir, Fredric C., and C. Partington, assignors to Weir Frog Company, Cincinnati, Ohio. Rail-brace	410,056	Aug. 27	2792	735	48	1295
Weir, Fredric C., and C. Partington, assignors to Weir Frog Company, Cincinnati, Ohio. Bracket for connecting tie-bars and switch-rails						
Weir Frog Company. (See Goldsmith, Nathaniel O., assignor.)						
Weir Frog Company. (See Partington, Charles, assignor.)						
Weir Frog Company. (See Weir and Goldsmith, assignors.)						
Weir Frog Company. (See Weir and Partington, assignors.)	406,156	July 2	186	53	48	38
Weir, James C., San Francisco, Cal. Metal corner-piece for boxes	406,185	July 2	229	62	48	45
Weir, James C., San Francisco, Cal. Ball-caster	411,272	Sept. 17	1733	463	48	1624
Weirich, George M., assignor to H. D. Justi, Philadelphia, Pa. Fastening artificial teeth						
Weisell, David D. (See Keller and Weisell.)						
Weiskoff, Samuel, *et al.* (See Phillips, Edwin G., assignor.)						
Weissenburger, Hermann. (See Elsas and Weissenburger.)						
Weisz, Albert E., Brooklyn, assignor to Budde & Westermann, New York, N. Y. Cork-branding device	408,557	Aug. 6	544	143	48	783
Welch, Edward, Hallsville, Ill. Rein-holder	410,225	Sept. 3	135	34	48	1295
Welch, Henry T., San José, Cal. Inhaler	406,118	July 2	137	40	48	29
Welch, Howard F., Richfield Springs, assignor to M. H. Chase, New York, N. Y. Shaft-supporter for vehicles	409,621	Aug. 20	2152	565	48	1108
Welch, James E. (See Morant, Robert, assignor.)						
Welch, John S. (See Todd, Welch, and McClendon.)	409,063	Aug. 13	1347	356	48	945
Welch, William E., Bushton, Ill. Dumping-wagon	406,151	July 30	2209	537	48	653
Welch, William T. (See Atkinson, Henry C., assignor.)	408,914	Aug. 13	1134	299	48	906
Welcker, Hermann, Berlin, Germany. Electric eyeglasses	409,084	Aug. 13	1348	356	48	945
Welcome, Jacob C., Burns, Oreg. Reversible safety-stirrup	407,558	July 23	2327	602	48	481
Weldon, Richard E. (See Duclos, John C., assignor.)						
Weller, Giles W., Baker City, Oreg. Ore-crusher	408,778	Aug. 13	883	236	48	856
Wellington, Darius, Boston, Mass. Water-closet, &c.	408,152	July 30	2209	537, 538	48	653
Wellman, Francis L. (See De Reden, Constant F., assignor.)	407,977	July 30	2939	705, 706	48	603
Wellman, Harlan P., Catlettsburg, Ky. Electro-magnetic mooring	407,559	July 23	2329	602	48	481
Wellman, Samuel T., Cleveland, Ohio. Apparatus for charging and drawing furnaces	410,867	Sept. 10	1132	304	48	1495
Wells, Albert F., deceased; H. F. Wells, Friendship, N. Y., administrator. Calendar-clock	406,186	July 2	230	62	48	46
Wells, Asa R., San Francisco, Cal. Hoop-clamp	407,383	July 23	2063	534	48	496
Wells, Burton H., assignor of one-half to E. B. French, Oneida, N. Y. Pump-piston	411,060	Sept. 17	1445	384	48	1567
Wells, Charles S., assignor of three-fifths to H. W. Garland, Bay City, Mich. Conveyer-chain						
Wells, Edgar L., Marseilles, Ill. Automatic grain-weighing machine	410,129	Aug. 27	2926	768	48	1259
Wells, Harlan P., and J. Spofford, Jr., Amesbury, Mass. Vehicle-seat						
Wells, Harris F., administrator. (See Wells, Albert F.)						
Wells, Thomas F., Winchester, Mass., assignor to Mechanical Manufacturing Company, Nashua, N. H. Power-wrench						
Welsbach Incandescent Gas Light Company. (See Bell, Harold J., assignor.)						
Welsbach Incandescent Gas Light Company. (See Hastings, James L., assignor.)						
Welsbach Incandescent Gas Light Company. (See Stewart, John L., assignor.)						
Welsbach Incandescent Gas Light Company. (See Stewart and Hastings, assignors.)						
Welsbach Incandescent Gas Light Company. (See Von Welsbach, Carl A., assignor.)						
Welti, Jacob, assignor of one-half to S. S. Hirschler, New York, N. Y. Composition for waterproofing textile materials	407,264	July 16	1878	.....	48	383
Welti, Jacob, assignor of one-half to S. S. Hirschler, New York, N. Y. Composition for waterproofing textile materials	407,265	July 16	1878	.....	48	383
Wendell, Isaac P., Philadelphia, Pa. Pipe-covering	411,115	Sept. 17	1507	400	48	1519
Wendlick, John A., and P. Lynch, St. Paul, Minn. Locomotive-spring	410,868	Sept. 10	1133	304	48	1495
Wenger, Julius, assignor to J. A. House, Bridgeport, Conn., and F. S. M. Blum, New York, N. Y. Clasp	408,332	Aug. 6	193	49	48	717
Wennega, Louis, Preston, Minn. Lawn-mower	408,558	Aug. 6	545	143	48	784
Werner, Charles W., Canton, Ohio. Glass-cutting apparatus	411,764	Sept. 24	2449	649	48	1770
Werner, Frank, and R. Ochmigen, Minneapolis, Minn. Sand-band	406,073	July 2	71	21	48	16
Wertz, George. (See Werts, William H. and G.)						
Werts, William H. and G., Elmwood, Ill. Check-row wire-reel attachment	411,699	Sept. 24	2360	621	48	1752
Wescott, Levi E., Cumberland Mills, Me. Horseshoe-anvil	411,405	Sept. 17	1922	513	48	1650
West, Augustine C., Cambridge, assignor to Smith & Anthony Stove Company, Boston, Mass. Oil-stove	411,406	Sept. 17	1923	513	48	1650
West, Charles J., *et al.* (See Waterman, George, assignor.)						
West, De Witt, Tampico, Ill. Band-cutter and feeder	407,803	July 30	2679	695, 696	48	554
West, Derrick S., Great Falls, Mont. Ter. Wheel for vehicles	407,266	July 16	1878	389	48	383
West, Robert S., *et al.* (See Dubrow, John H., assignor.)	410,391	Sept. 3	301	104	48	1346
West, Simeon L., Wilmington, Del. Stove or furnace door	407,978	July 30	2943	766, 767	48	604
Westerman, Frederick, Chicago, Ill. Machine for forming loaves of dough						

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Western Electric Company. (See Lafferty, Samuel C., assignor.)						
Western Electric Company. (See Scribner, Charles E., assignor.)						
Western Opera Glass Supply and Manufacturing Company. (See Nicholson, Andrew B., assignor.)						
Westinghouse, Church, Kerr & Company. (See Roney, William R., assignor.)						
Westinghouse Electric Company. (See Kennedy, Rankin, assignor.)						
Westinghouse Electric Company. (See Kennedy, Rankin, assignor.) (Reissue.)						
Westinghouse Electric Company. (See Schmid, Albert, assignor.)						
Weston, Edward B., Dayton, Ohio. Combined wrapping-paper holder and printer	406,318	July 2	413	113	48	83
Weston, Edward B., Dayton, Ohio. Printing device for wrapping-paper rolls	406,319	July 2	415	114	48	83
Weston, Edwin J., San Francisco, Cal. Machine for cutting off piles	409,342	Aug. 20	1746	459	48	1029
Weston, George H., St. Louis, Mont. Ter. Toy gun	409,085	Aug. 13	1349	357	48	945
Westwood, John T., assignor of one-third to B. Fisher, Wheeling, W. Va. Car-seat	409,654	Aug. 20	2195	577	48	1116
Wethered, Edwin R., Woolwich, county of Kent, England. Latch	407,268	July 16	1281	490	48	383
Wettergreen, John B., assignor to Johnson Company, Johnstown, Pa. Brace-chair for railway-rails	409,131	Aug. 13	1426	375	48	960
Wex, Henry, *et al.* (See McFarlane, John, assignor.)						
Weyer, August, Tallapoosa, Ga. Apparatus for generating gas from petroleum-oil	407,267	July 16	1279	490	48	383
Whaler, Ira, Canton, Ohio. Carriage-brake	410,721	Sept. 10	912	245	48	1450
Wharry, James A. (See Rogers and Wharry.)						
Wharton and Company, William, Jr. (See Angerer, Victor, assignor.)						
Wharton and Company, William, Jr. (See Samuel, Edward, assignor.)						
Wheatley, Jacob W., Pocomoke City, Md. Barrel	408,277	Aug. 6	110	28	48	701
Wheeler, Charles E., Farmington, Me. Dip-net frame	407,979	July 30	2947	767	48	604
Wheeler, Frederick M., Montclair, N. J. Expansion-engine	410,722	Sept. 10	913	245	48	1450
Wheeler, Frederick M., Montclair, N. J. Pumping-engine	411,177	Sept. 17	1506	424	48	1596
Wheeler, George A., New York, assignor of one-fourth to S. P. Denison, Brooklyn, N. Y. Underground conduit for electric wires	411,539	Sept. 24	2115	558	48	1701
Wheeler, Milton C., and A. M. Clark, Marshalltown, Iowa. Electric valve	409,170	Aug. 20	1494	396	48	982
Wheeler & Wilson Manufacturing Company. (See Campbell, Andrew C., assignor.)						
Wheless, Malone, Nashville, Tenn., assignor to World Telegraphone Company, of West Virginia. Telegraphophone	410,305	Sept. 3	261	68	48	1319
Whipple, John D., Excelsior Springs, Mo. Buggy-spring	410,471	Sept. 3	522	140	48	1371
Whitaker, William W. (See Nickloy, Alden C., assignor.)						
Whitall, Tatum & Co. (See Underhill, Francis M., assignor.)						
Whitcomb, Frederick R., Minneapolis, Minn. Collar for woolen shirts	411,178	Sept. 17	1507	425	48	1596
White, Albert, assignor to F. Taylor, Lowell, Mass. Staple-driver	406,075	July 2	73	21, 22	48	17
White, Alice, Detroit, assignor of one-half to M. G. Wood, Hillsdale, Mich. Bustle	406,553	July 9	794	215	48	166
White, Arthur, assignor of one-half to C. Van Nostrand, Sheboygan, Wis. Knockdown furniture	408,278	Aug. 6	111	28	48	701
White, Bruce C., assignor to Chisholm, Boyd & White, Chicago, Ill. Brick-machine	406,682	July 9	990	266	48	201
				267		
				268		
White, Charles, Washington, D. C. Railway-rail and wheel therefor	410,472	Sept. 3	522	140	48	1371
White, Charles, and A. R. Middleton, Baltimore, Md. Gas-engine	406,807	July 9	1184	314	48	238
				315		
White, Charles E., Syracuse, N. Y. Fish-landing net	407,709	July 23	2597	653	48	519
White, Clarence O., assignor of part to C. L. Travis, O. A. Pray, and C. R. Chute, Minneapolis, Minn. Coin-controlled measuring-faucet	410,948	Sept. 10	1943	335	48	1518
White Dental Manufacturing Company, S. S. (See Carrick, Thomas J., assignor.)						
White Dental Manufacturing Company, S. S. (See Lecavalerie and Doriot, assignors.)						
White, Ernest. (See Sporton and White.)						
White, Henry F., Detroit, Mich. Stapling implement	409,540	Aug. 20	2023	533	48	1085
White, Hiram W., Yankton, Dak. Ter. Metallic curbing-section	408,057	July 30	3056	800	48	696
White, James H., assignor of one-half to W. C. Bull, Bennington, Vt. Easel	410,236	Sept. 3	136	35	48	1295
White, John C., Mount Vernon, Tex. Cotton scraper and chopper	408,779	Aug. 13	885	236	48	857
White, John H., Greene County, Ill. Embroidery-frame	406,119	July 2	137	40	48	29
White, John H., Washington, D. C. Match-machine	410,622	Sept. 10	739	200	48	1419
				201		
				202		
White, Lewis B., New York, N. Y. Gas and air mixing machine	409,719	Aug. 27	2310	607	48	1143
White, Lyman, assignor to Randolph & Clowes, Waterbury, Conn. Joint for hollow shells, &c.	406,683	July 9	998	268	48	202
White, Merritt T. (See Schupphaus and White.)						
White, Samuel T., Brooklyn, N. Y. Stop for pedals	407,269	July 16	1282	491	48	384
White, William, Westfield, Pa. Washing-machine	407,681	July 30	2706	728	48	576
White, William M. (See Gray and White.)						
Whitehouse, Benjamin T., Dover, assignor of one-half to C. W. Jackson, Portsmouth, N. H. Pencil-sharpener	409,389	Aug. 20	1802	474	48	1041
Whitehouse, Lewis, Easton, Md. Shutter-fastener	409,438	Aug. 20	1680	496	48	1058
Whitford, James L. (See Baughman, James A., assignor.)						
Whiting, Henry W., assignor of one-half to A. E. Peterson, Philadelphia, Pa. Refuse-furnace	408,559	Aug. 6	548	144	48	784
Whiting, Louis R., Dallas, Tex. Corn husker and sheller	407,710	July 23	2528	654	48	519
Whitlock, Daniel, Newark, N. J. Attachment for blades of rotary fans	411,312	Sept. 17	1792	480	48	1634
Whitlock Machine Company. (See Whitlock, Sturges, assignor.)						
Whitlock, Sturges, assignor to Whitlock Machine Company, Birmingham, Conn. Bed-operating mechanism for cylinder printing-machines	406,320	July 2	416	114	48	83
Whitlow, Eliza J., Houstonia, Mo. Wash-bench	406,808	July 9	1188	315	48	239
Whitman, Henry L., St. Louis, Mo. Baling-press	410,473	Sept. 3	523	141	48	1371
Whitney Coupling Company. (See Whitney, Daniel D., assignor.)						
Whitney, Daniel D., Cornwall, N. Y.; assignor to Whitney Coupling Company, Whitinsville, Mass. Wagon-seat lock	407,627	July 23	2414	627	48	497
Whitney Glass Works. (See Ferrari, Andrew, assignor.)						
Whitney, James H., Brooklyn, N. Y. Treadle	407,804	July 30	2681	696	48	554
Whitney, Solomon, Manhattan, Kans. Churn	410,949	Sept. 10	1945	335	48	1518
Whitney, Willie O., Glens Falls, N. Y. Combined table and chair	409,439	Aug. 20	1681	496	48	1058
Whittaker, William S. (See Stewart, William H., assignor.)						
Whitten, Charles H., Lawrence, assignor to Pettee Machine Works, Newton, Mass. Top-flat cleaner for carding-machines	407,312	July 16	1938	504	48	395
Whittingham, Charles. (See Tompkins and Whittingham.)						
Whittingham, George H., Baltimore, Md. Governor for electric motors	408,333	Aug. 6	194	49	48	717
Whitus, Charles, Chester, assignor of one-half to J. W. Wilkes, Wilkesburg, S. C. Bed-lock	410,130	Aug. 27	2027	768	48	1250

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Whitworth & Co., Joseph. (See Canet, Jean B. G. A., assignor.)						
Wiard, Harry, and J. L. Judd, Syracuse, N. Y. Cultivator	407,628	July 23	2415	627	48	497
Wickes, Giles W., New Market, Va. Machine for making picket fences	407,711	July 23	2589	654	48	520
Wickes, Henry D., East Saginaw, Mich. Saw-mill	410,474	Sept. 3	525	141	48	1371
Wicks, George W., Brooklyn, N. Y. Machine for making curved lead pipe	407,364	July 23	2064	534	48	496
Wickwire, Chester F., Cortland, N. Y. Loom for weaving wire	409,813	Aug. 27	2454	644	48	1171
Widger, Frank, A., Lynn, Mass. Striking apparatus	410,475	Sept. 3	527	141	48	1372
Wiedersheim, John A., Philadelphia, Pa. Beverage-shaker	406,321	July 2	418	114	48	84
Wiegand, Edwin B. (See Chantrell, John, assignor.)						
Wiesing, Charles H., Lime Rock, Conn. Device for slotting tubes	410,723	Sept. 10	915	246	48	1450
Wiggers, John H., Cincinnati, Ohio. Cradle	409,360	Aug. 20	1618	428	48	1006
Wightman, Merle J., Lynn, Mass. Overhead frog for electric railways	411,313	Sept. 17	1793	480	48	1634
Wightman, Merle J., Lynn, Mass Overhead frog for electric railways	411,314	Sept. 17	1795	480	48	1634
Wigley, George. (See Warsop, Thomas and A. S., assignors.)						
Wigzell, Eustace E. (See Cooper and Wigzell.)	407,980	July 30	2948	767	48	605
Wilbur, George E., Taunton, Mass. Furnace or other door						
Wilbur, Miller & Wilbur. (See Powers, Noel E., assignor.)						
Wilcomb, Frank, Providence, R. I., assignor to Wilcomb Knitting Machine Company, Jersey City, N. J. Straight-knitting machine	408,560	Aug. 6	549	144	48	784
Wilcomb, Frank, Providence, R. I., assignor to Wilcomb Knitting Machine Company, Jersey City, N. J. Straight-knitting machine	408,561	Aug. 6	551	145	48	785
Wilcomb, Frank, Providence, R. I., assignor to Wilcomb Knitting Machine Company, Jersey City, N. J. Straight-knitting machine	408,562	Aug. 6	553	145	48	785
Wilcomb Knitting Machine Company. (See Wilcomb, Frank, assignor.)						
Wilcox, George. (See Livingston and Wilcox.)						
Wilcox, Paul. (See Rogers, Edmund D., assignor.)	406,490	July 9	995	193	48	148
Wilcox, Reuben F., Kansas City, Mo. Device for attaching pickets to wire fences						
Wilcox, Stephen C., Dubuque, Iowa, assignor of one-half to A. V. Richards. Button or badge	409,132	Aug. 13	1427	375	48	961
Wilcox, William and W. A., Grand Rapids, Mich. Coupling	407,046	July 16	1333	402	48	315
Wilcox, William and W. A., Grand Rapids, Mich. Valve	407,047	July 16	1334	402	48	315
Wilcox, William and W. A., Grand Rapids, Mich. Evaporator	407,048	July 16	1335	402	48	315
Wilcox, William and W. A., Garrettsville, Ohio. Evaporator	408,305	Aug. 6	236	60	48	725
Wilcox, William A. (See Wilcox, William and W. A.)						
Wilde, Daniel, Washington, Iowa. Grain-weighing machine	411,514	Sept. 24	2080	549	48	1694
				550		
Wilder, Frederick W., Chicago, Ill. Sausage-stuffer	408,945	Aug. 13	1134	299	48	906
				300		
Wilder, Harlan P. (See Wilder, William H. and H. P.)						
Wilder, William H., Gardner, Mass. Oil-stove range	407,882	July 30	2797	728	48	576
				729		
Wilder, William H., Gardner, Mass. Lamp	409,086	Aug. 13	1350	357	48	946
Wilder, William H., Gardner, Mass. Lamp-stove	411,309	Sept. 17	1644	477	48	1606
Wilder, William H. and H. P., Gardner, Mass. Lighting device	407,883	July 30	2799	729	48	577
Wile, Sol. (See La Casse and Wile.)						
Wiley, Edgar C., Independence, Va. Circular-saw mill	409,581	Aug. 20	1619	428	48	1006
				429		
Wiley, Jonas T. (See Sieg and Wiley.)						
Wiley, Peter B. (See Goodwin, Charles Q., assignor.)						
Wiley, Thomas F., Rawdon, near Leeds, England. Apparatus for waterproofing textile fabrics	411,081	Sept. 17	1447	384	48	1567
Wilhelm, Solon H., *et al.* (See Phippe, Edward L., assignor.)						
Wilkes-Barré Molding Machine Company. (See Carr, Joseph J., assignor.)						
Wilkes, John W. (See Whitus, Charles, assignor.)	410,623	Sept. 10	745	202	48	1421
Wilkin, Theodore S., Milwaukee, Wis. Gang-saw mill	406,322	July 2	418	115	48	84
Wilkin, William M., Erie, Pa. Band-saw mill	406,323	July 2	421	115	48	84
Wilkin, William M., Erie, Pa. Band-saw mill	406,324	July 2	422	116	48	85
Wilkin, William M., Erie, Pa. Gang-saw mill						
Wilkinson, Arthur J. (See Rawson, David, assignor.)	407,141	July 16	1085	440	48	345
Willenbrink, John, New Richmond, Ohio. Feed-water heater and condenser	406,379	July 2	501	140	48	100
Willett, Samuel J., *et al.* (See Newman, Nelson, assignor.)						
Willey, George W., Athol, Mass. Manufacture of sewed boots and shoes						
William, Walter R. (See Dienzet, Theodore J., assignor.)						
Williams, Benjamin F. (See Hughes and Williams.)						
Williams, Charles A., *et al.* (See Hastings, Michael, assignor.)						
Williams, Charles M. (See Christie, John J., assignor.)	409,890	Aug. 27	2559	669	48	1190
Williams, David F., Plattsburg, assignor of one-third to T. J. Sullivan, Albany, N. Y. Machine for forging horseshoe-nails	408,153	July 30	3212	670	48	654
				838		
				839		
Williams, Edwin F., Chicago, Ill. Steam-engine governor	407,456	July 23	2183	563	48	419
Williams, George B., La Crosse, Wis. Hose-coupling	409,087	Aug. 13	1352	357	48	946
				358		
Williams, Gwilym M., Wilkes-Barré, Pa. Pressure-gage	409,088	Aug. 13	1355	358	48	946
Williams, Gwilym M., Wilkes-Barré, Pa. Alarm	408,679	Aug. 6	729	189	48	818
Williams, Harry B., Brooklyn, assignor to Self Attaching Cuff Holder Company, New York, N. Y. Cuff-holder	407,756	July 23	2602	673	48	535
Williams, Henry B., assignor of one-half to L. A. Jeffreys, Rochester, N. Y. Flexible rule	407,961	July 30	2950	767	48	605
Williams, Henry B., assignor of five-eighths to L. A. Jeffreys, Rochester, N. Y. Water-pressure regulator	408,279	Aug. 6	113	28	48	701
Williams, James B., Oakland, Cal. Zinc electrode for galvanic batteries	406,411	July 2	350	154	48	110
Williams, James C., assignor to Jarecki Manufacturing Company, (limited,) Erie, Pa. Nipple-holder	409,730	Aug. 27	2312	607	48	1144
Williams, John H., Urbana, Ohio. Steam-engine valve	409,541	Aug. 20	2021	534	48	1086
Williams, John J., San Francisco, Cal. Smelting-furnace	408,867	Aug. 13	1022	271	48	693
Williams, John L. and T. Ll., Shenandoah, Pa. Coal or rock drill	409,622	Aug. 20	2152	565	48	1108
				566		
Williams, Joseph, Jr., Pittsburg, Pa. Apparatus for operating cable cars	409,721	Aug. 27	2313	608	48	1144
Williams, Joseph, Jr., Pittsburg, Pa. Fibrous lubricator	407,913	July 30	2942	740	48	584
Williams, Louis N. D. (See Scott, Robert W., assignor.)	406,411	July 9	997	193	48	148
Williams, Marquis D. L., Poughkeepsie, N. Y. Machine for making side-bar springs	409,623	Aug. 20	2154	566	48	1109
Williams, Mary A., Kansas City, Mo. Combined corset and breast-pad	411,315	Sept. 17	1796	481	48	1635
Williams, Norman W., assignor of one-half to C. H. Gale, Detroit, Mich. Plow-beam						
Williams, Richard R., Brooklyn, N. Y. Index-circular						

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Williams, Robert W. (See Fitch and Williams.)						
Williams, Silas S., East Randolph, N. Y. Steam-engine	408,154	July 30	3214	839	48	654
Williams, Thaddeus E., Carmel, Tenn. Scaffold	411,363	Sept. 17	1862	498	48	1647
Williams, Thomas H. (See Williams, John L. and T. H.)						
Williams, Thomas W., *et al.* (See Hastings, Michael, assignor.)						
Williams, William C., Olean, N. Y. Poultry-fattening machine	403,248	July 2	308	85	48	62
Williams, William L. G., Jermyn, Pa. Steam-actuated valve	411,234	Sept. 17	1675	448, 449	48	1613
Williamson, Charles R., Kansas City, assignor to American Roll Paper Company, St. Louis, Mo. Combined roll-paper holder, cutter, stamper, and measurer	408,563	Aug. 6	555	146	48	786
Williamson, Frank E., Smith Centre, Kans. Car-coupling	407,712	July 23	2531	655	48	520
Williamson, John, Brooklyn, N. Y. Feathering paddle-wheel	409,440	Aug. 20	1882	497	48	1058
Williamson, Samuel S., Bridgeport, Conn. Corset-fastening	410,131	Aug. 27	2928	769	48	1260
Willing, Louis P., and C. F. Kiefer, Erie, Pa.; said Kiefer assignor to said Willing. Cock for self-lighting gas-fuel burners	407,884	July 30	2799	729	48	577
Willis, William, Bromley, J. and W. H. Smith, Penge, England. Rotary meter	411,700	Sept. 24	2361	624, 625, 626	48	1753
Willits, Warren C., Denver, Colo. Hose-holder	408,058	July 30	3057	800	48	626
Wills, Harry A., Brighton Park, Ill. Manufacturing horseshoe-nails	410,624	Sept. 10	747	203	48	1421
Wills, Joseph, Nashville, Tenn. Electric recording-gage	409,891	Aug. 27	2562	671	48	1191
Willson, William H., and S. Conover, Byron, Wis. Rope-trace cockeye	411,481	Sept. 24	2037	539	48	1685
Wilmas, Edward. (See Lautermilch, Frederick, assignor.)						
Wilmot & Hobbs Manufacturing Company. (See Wilmot, Samuel R., assignor.)						
Wilmot, Samuel R., assignor to Wilmot & Hobbs Manufacturing Company, Bridgeport, Conn. Attaching plates to tubes	407,982	July 30	2951	768	48	605
Wilmot, Samuel R., assignor to Wilmot & Hobbs Manufacturing Company, Bridgeport, Conn. Making flattened tubes	408,059	July 30	3058	801	48	627
Wilsey, Eben B. (See Wilsey, George W. and E. B.)						
Wilsey, Eben B., Aurora, Ill. Combined flour chest and sifter	408,780	Aug. 13	886	236	48	857
Wilsey, George W. and E. B., Aurora, Ill. Power-converter	407,385	July 23	2066	534	48	427
Wilson, Alice J., Abilene, Tex. Dish-drier	410,818	Sept. 10	1064	285	48	1483
Wilson, Daniel T., and F. C. Rheubottom, Union City, Mich. Whip-rack	407,560	July 23	2330	602	48	481
Wilson, Emerson K., Cherryfield, Me. Bag-holder	411,701	Sept. 24	2365	626	48	1753
Wilson, Frank. (See Wilson, James E., assignor)						
Wilson, Frank, assignor of two-thirds to J. L. and J. E. Wilson, Easton, Pa. Water-heater	407,561	July 23	2331	602, 603	48	481
Wilson, George H., Utica, N. Y. Folding-cot frame	407,757	July 23	2603	673	48	535
Wilson, George H., Utica, N. Y. Folding cot-bed	409,262	Aug. 20	1621	429	48	1006
Wilson, George P., Monroe, Wis. Steam-boiler	408,280	Aug. 6	114	28, 29	48	70[illegible]
Wilson, Henry A. (See Meserole, Abraham V., assignor.)						
Wilson, James E., *et al.* (See Wilson, Frank, assignor.)						
Wilson, James E., assignor of one-half to F. Wilson, Easton, Pa. Steam-boiler	410,227	Sept. 3	138	35	48	1295
Wilson, James H. (See Hamilton, Cornelius J., assignor.)						
Wilson, John, New York, and A. Mason, Brooklyn, assignors to H. H. Sanderson, trustee, New York, N. Y. Apparatus for maintaining combustion in secondary chambers of boiler or other furnaces	406,684	July 9	999	268	48	202
Wilson, John, New York, and A. Mason, Brooklyn, assignor to H. H. Sanderson, trustee, New York, N. Y. Apparatus for burning petroleum	408,643	Aug. 6	674	173	48	808
Wilson, John, New York, and A. Mason, Brooklyn, assignors to H. H. Sanderson, trustee, New York, N. Y. Apparatus for vaporizing and burning petroleum and other hydrocarbons	408,644	Aug. 6	676	175	48	808
Wilson, John A., Dundee, Scotland, assignor to D. Rylands, Barnsley, England. Carriage-axle lubricator	408,155	July 30	3215	839, 840	48	654
Wilson, John C., Boston, Mass. Message and time recorder	406,809	July 9	1189	315	48	239
Wilson, John C., Boston, Mass., assignor to Municipal Signal Company, Portsmouth, N. H. Municipal signal apparatus	411,407	Sept. 17	1925	513	48	1658
Wilson, John L., *et al.* (See Wilson, Frank, assignor.)						
Wilson, John M. (See Stephens, Richard M., assignor.)						
Wilson, Joseph W., Brookville, Kans. Feed-regulator for roller-mills	408,156	July 30	3216	840	48	655
Wilson, Loren M., Venice Centre, N. Y. Shoe attachment for thrashing-machines	409,089	Aug. 13	1356	358	48	947
Wilson, Malcolm, assignor to D. Smith, London, Ontario, Canada. Plow	407,629	July 23	2418	628	48	497
Wilson, Silas H. (See Thompson and Wilson.)						
Wilson, Vincent W., assignor to R. Bliss Manufacturing Company, Pawtucket, R. I. Game apparatus	407,713	July 23	2532	655	48	520
Wilzin, Louis, assignor of one-half to M. Adler, New Haven, Conn. Corset-clasp	407,630	July 23	2421	628	48	498
Winans, Orange S., Chicago, Ill. Seal-lock	406,810	July 9	1190	316	48	239
Winant, Frederick, New York, N. Y. Blind-stop	406,325	July 2	423	116	48	85
Winchell, Alvin T., Albion, Mich. Windmill	407,457	July 23	2184	563	48	449
Winchell, James F., assignor to Foos Manufacturing Company, Springfield, Ohio. Feeding-crusher for crushing and grinding mills	407,885	July 30	2800	730	48	577
Winchell, James F., assignor to Foos Manufacturing Company, Springfield, Ohio. Crushing and grinding mill	408,448	Aug. 6	363	95, 96	48	751
Winchell, James F., assignor to Foos Manufacturing Company, Springfield, Ohio. Grinding and crushing mill	408,781	Aug. 13	887	237	48	857
Windsor, Henry H. (See Schaefer, John, assignor.)						
Winger, John M., Springfield, assignor to Superior Machine Company, New Carlisle, Ohio. Force-pump	408,564	Aug. 6	557	146	48	786
Winkler, Charles F., Hoosick Falls, N. Y. Armature	411,629	Sept. 24	2257	600	48	1731
Winkler, Joseph, Kiesenbach, near Waldshut, Germany. Stamping-machine for molding artificial stone	409,542	Aug. 20	2027	534	48	1086
Winkler, Oscar, Namslau, Prussia, Germany. Bung-extractor	411,179	Sept. 17	1598	425	48	1596
Winkless, William, Newport, Ky. Fire-ladder	409,722	Aug. 27	2314	608	48	1144
Winnek, Frederick G., Leavenworth, Kans. Copy-holder	406,380	July 2	502	140	48	100
Winslow, Freeman, deceased; S. W. and F. H. Winslow administrators and assignors to S. W. Winslow, trustee, Beverly, Mass. Buffer	407,270	July 16	1883	491	48	384
Winslow, Freeman H., *et al.*, administrators. (See Winslow, Freeman.)						
Winslow, Sidney W., trustee. (See Rogers, Andrew W., assignor.)						
Winslow, Sidney W., trustee. (See Winslow, Freeman, assignor.)						
Winslow, Sidney W., *et al.*, administrators. (See Winslow, Freeman.)						
Winsor, Samuel, W. G. Holt, and P. B. Gilbert, Cassville, Wis. Nut-lock	406,074	July 2	72	21	48	16
Winston, Edward H. (See Foizey, James W., assignor.)						
Winterhoff, Frederick, London, county of Middlesex, England. Etching or engraving on glass, &c	411,560	Sept. 24	2148	......	48	1708

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Winther, Charles, assignor to Star Brass Manufacturing Company, Boston, Mass. Steam-gage	407,983	July 30	2953	768	48	605
Winzenburg, Robert A. W., St. Louis, Mo. Blank-book	407,886	July 30	2802	730	48	577
Wire Grip Fastening Company. (See Robinson and Watt, assignors.)						
Wirt, Herbert C. (See Kimball and Wirt.)						
Wirth, Philip O., Hoboken, N. J. Hatchway	410,950	Sept. 10	1246	335	48	1518
Wisdon, Clayton, Flat Rock, Mich. Device for catching animals	407,426	July 23	2133	550	48	439
Wiswell, Jacob C., Medford, assignor to Electric Gold and Silver Chlorination Company, Boston, Mass. Bath or solution for separating metals from their ores	407,386	July 23	2067	535	48	427
Wiswell, Jacob C., Medford, Mass., assignor to Electric Gold and Silver Chlorination Company, Kittery, Me. Solution for use in separating metals from their ores	410,228	Sept. 3	140	36	48	1296
Witherell, George E. (See Fairfield and Witherell.)						
Witherell, George E., assignor to Hartford Machine Screw Company, Hartford, Conn. Machine for dressing the ends of screw-blanks	409,441	Aug. 20	1883	497, 498	48	1059
Witherell, Loren R., assignor of three-fourths to E. W., O. W., and A. B. Brady, Davenport, Iowa. Water-motor	410,132	Aug. 27	2929	769	48	1260
Witting, George. (See Elliott, James W., assignor.)						
Wobito, Christian, assignor of one-half to J. Kamsler, New York, N. Y. Toy	407,142	July 16	1686	440	48	346
Woelfel, Christian, assignor of one-half to H. W. Harley and J. Brenner, Philadelphia, Pa. Gigging-machine	406,326	July 2	424	116, 117	48	85
Wogan, Thomas D. (See Gruber and Wogan.)						
Wolf, Julius J., assignor of one-half to L. Hammerslough, Kansas City, Mo. Adjustable elbow-rest for telephones	410,059	Aug. 27	2794	735	48	1235
Wolf, Louis. (See Hainkel, Sigel, assignor.)						
Wolf, Max, assignor of one-half to J. Huber, Cincinnati, Ohio. Barrel-brander	411,561	Sept. 24	2149	569	48	1708
Wolf, Theodore G. (See Scholl and Wolf.)						
Wolff, Charles. (See Binns and Wolff.)						
Wolle, Clarence A., *et al.* (See Lorenz, William A., assignor.)						
Wolle, Clarence A., *et al.* (See Lorenz and Claussen, assignors.)						
Wolle, Clarence A., *et al.* (See Lorenz and Honiss, assignors.)						
Womack, Alexander, assignor of one-half to A. Kelley, Emmett, Idaho Ter. Finger-bar for reapers, mowers, &c	407,387	July 23	2068	535	48	427
Wood, Albert J., Kansas City, Mo. Tongs for handling merchandise	406,554	July 9	794	215	48	166
Wood, Emery M., Chicago, Ill. Folding bed	410,565	Sept. 3	619	173	48	1396
Wood, James J., Brooklyn, N. Y. Armature-winding for dynamos	406,492	July 9	698	193	48	148
Wood, James J., Brooklyn, N. Y. Self-regulating dynamo	406,493	July 9	700	193, 194	48	149
Wood, James J., Brooklyn, N. Y. Regulator for dynamo-electric machines	406,494	July 9	704	194, 195	48	149
Wood, James J., Brooklyn, N. Y. Electric projector	407,914	July 30	2842	740, 741	48	584
Wood, James J., Brooklyn, N. Y. Focusing arc lamp	407,915	July 30	2846	741, 742	48	585
Wood, James P., Faribault, Minn. Corn-cutting knife	409,723	Aug. 27	2315	609	48	1144
Wood, John, Jr., Conshohocken, Pa. Water-tube boiler	408,060	July 30	3060	801	48	627
Wood, Myron G. (See White, Alice, assignor.)						
Woodall, George, Denver, Colo. Self-closing faucet	410,306	Sept. 3	263	69	48	1319
Woodard, Bridget M., Manchester, N. H. Combined crumb-brush and scraper	410,476	Sept. 3	529	142	48	1372
Woodard, Lyman E., Owosso, Mich. Coffin-lid fastener	410,060	Aug. 27	2794	735	48	1235
Woodbury, Crayton A. (See Richardson and Woodbury.)						
Woodbury, Edward F. (See Woodbury, James A. and E. F.)						
Woodbury, James A., Winchester, and E. F. Woodbury, Boston, Mass. Dust-collector	408,907	Aug. 13	1081	284	48	896
Woodcock, Henery, Perth Amboy, N. J. Clay-washing machine	410,819	Sept. 10	1064	285, 286	48	1483
Woodcock, Leonard M., Auburn, N. Y. Water-heating apparatus	406,685	July 9	1000	268, 269	48	202
Woodhouse, John S., Amberley, Canterbury, New Zealand. Knotter for grain-harvesting machines	408,645	Aug. 6	678	175	48	809
Woodbull, Frederick W., Lincoln University, Pa. Wall-paper protector	407,143	July 16	1686	440	48	346
Woodman, Reuel W., Saccarappa, Me. Machine for rabbeting table-leaves	406,686	July 9	1002	269	48	203
Woodruff, Oliver D., Southington, Conn. Tubular lantern	408,782	Aug. 13	889	237	48	857
Woodruff, Oliver D., Southington, Conn. Lantern	408,783	Aug. 13	891	237	48	858
Woodruff, Oliver D., Southington, Conn. Car-coupling tool	410,061	Aug. 27	2795	736	48	1236
Woods, James, assignor of one-half to A. Johnston, Strathroy, county of Middlesex, Ontario, Canada. Fifth-wheel for vehicles	407,984	July 30	2953	768	48	605
Woods, John T., Superior Nebr. Hay-frame, stock-frame, and spring-seat combined	409,764	Aug. 27	2376	623, 624	48	1156
Woods Machine Company, S. A. (See Woods and Thomas, assignors.)						
Woods, Solomon A., and J. R. Thomas, Boston, Mass., assignors to S. A. Woods Machine Company, of Massachusetts. Planing-machine	411,540	Sept. 24	2115	558	48	1701
Woodward, Abner, Shelburne Falls, Mass. Child's carriage	407,916	July 30	2852	742	48	586
Woodward, Arthur T., New York, N. Y. Plastic compound	407,271	July 16	1884	......	48	384
Woodward, Charles J., Brooklyn, N. Y. Thread-slackening device for sewing-machines	411,702	Sept. 24	2366	627	48	1753
Woodward, Charles J., Brooklyn, N. Y. Button-hole clamp for sewing-machines	411,703	Sept. 24	2369	628, 629	48	1754
Woodward Electrical Company. (See Thompson, Charles H., assignor.)						
Woodward, Erastus, Somerville, Mass., assignor to Waters Wrapping and Mailing Machine Company, Portland, Me. Mechanism for feeding paper or other sheets from a pile	407,985	July 30	2954	768	48	606
Woodward, Erastus, Somerville, Mass., assignor to Waters Wrapping and Mailing Machine Company, Portland, Me. Mailing-machine	408,202	July 30	3299	862, 863, 864, 865	48	668
Woodward Manufacturing Company. (See Woodward, William A., assignor.)						
Woodward, William, Chicago, Ill. Sight-feed lubricator	407,805	July 30	2683	696	48	555
Woodward, William A., Lowell, assignor to Woodward Manufacturing Company, Hudson, Mass. Pulley	407,328	July 23	2069	535	48	427
Woodworth, George D. (See Kelsey and Woodworth.)						
Woodworth, George D., Brooklyn, N. Y. Cigar-box opener	408,565	Aug. 6	558	146	48	787
Woodworth, Henry O. (See Woodworth, Oliver and H. O.)						
Woodworth, Oliver and H. O., New London, Conn. Machine for coating continuous strips of paper	409,892	Aug. 27	2563	671	48	1191
Woolf, Ellis J., and J. Peebles, assignors, by mesne assignments, to Woolf Valve Gear Company, Minneapolis, Minn. Valve-gear for engines	407,806	July 30	2685	697	48	555

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Woolf Valve Gear Company. (See Woolf and Peebles, assignors.)						
Woolley, Leonidas G., Grand Rapids, Mich. Electric motor	407,272	July 16	1285	491	48	384
Woolridge, John, Rockefeller, Ill. Clothes-pounder	407,607	July 30	2689	697	48	556
Wootton, William R., Chicago, Ill. Display-stand	411,482	Sept. 24	2037	539	48	1685
Worcester Fire Appliance Company. (See Macomber, Clarence R., assignor.)						
Worden, Alexander, Petoskey, Mich. Animal-trap	409,381	Aug. 20	1803	474	48	1041
World Telegraphone Company. (See Wheless, Malone, assignor.)						
Wormser, Leo, *et al.* (See Isley, Gideon, assignor.)						
Worrall, James, Ordsall, Salford, county of Lancaster, and J. Kershaw, Hebden Bridge, county of York, England. Machine for brushing and napping fabrics	406,187	July 2	232	62	48	46
Worsley, Hollin, Newark, Ill. Windmill	408,946	Aug. 13	1135	300	48	906
Worthington, Amasa, Brooklyn, N. Y. Gage-cock	409,263	Aug. 20	1622	432	48	1007
Wray, Robert, assignor to himself, W. S. Hamilton, and E. K. Little, New York, N. Y. Lock-joint for beams	409,893	Aug. 27	2565	671	48	1191
Wrede, Henry M., San Francisco, Cal. Cable-gripper	411,630	Sept. 24	2258	600	48	1731
Wright, Benjamin F., Lovingston, Va. Compressed-air engine	408,784	Aug. 13	893	234 235 240	48	858
Wright, Chester, Fairfield, Nebr. Potato or seed planter	406,811	July 9	1191	316	48	240
Wright, Edward, Worcester, assignor to Davis & Furber Machine Company, North Andover, Mass. Spinning-mule	411,082	Sept. 17	1448	383 384 387	48	1567
Wright, Frederick K., assignor to Steam Gauge and Lantern Company, Rochester, N. Y. Take-up mechanism for looms	406,327	July 2	425	117	48	86
Wright, George H., San Francisco, Cal. Automatic signal for crossings of cable railways	407,389	July 23	2070	533 534	48	428
Wright, George H., San Francisco, Cal. Device for depressing cables at the street-crossings of cable railways	410,062	Aug. 27	2796	734	48	1236
Wright, George L., Kansas City, Mo. Extension-ladder	408,281	Aug. 6	115	28	48	702
Wright, Henry E., Boston, Mass. Can	409,264	Aug. 20	1624	432	48	1007
Wright, Henry M., Queen City, Mo. Wheel	411,364	Sept. 17	1864	494	48	1647
Wright, John J., Bremen, Ind. Gate-latch	406,495	July 9	708	194	48	149
Wright, Joseph. (See Hebblethwaite, John H., assignor.)						
Wright, Luther S., Groton, N. Y. Tea or coffee pot	411,483	Sept. 24	2039	539	48	1685
Wright, Morris S., Worcester, Mass. Reed-organ	409,814	Aug. 27	2457	645	48	1171
Wright, Parvin. (See Berlin and Wright.)						
Wright, Phin B. (See Ensign and Wright.)						
Wright, Walter B., assignor to International Gas and Fuel Company, Chicago, Ill. Device for feeding fluid fuel	409,724	Aug. 27	2316	609	48	1145
Wright, William J., San Francisco, Cal. Ruler	407,144	July 16	1687	441	48	346
Writing Telegraph Company. (See Robertson, James H., assignor.)						
Wurts, Theodore F., Bridgeton, N. J. Construction of breakwaters, sea-walls, jetties, &c	411,704	Sept. 24	2371	622	48	1754
Wyckoff, Arcalous and E. L., Elmira, N. Y. Pipe casing or conduit	409,265	Aug. 20	1625	434	48	1007
Wyckoff, Ernest L. (See Wyckoff, Arcalous and E. L.)						
Wyckoff, Seamans & Benedict. (See Webb, George B., assignor.)						
Wyman, Horace, assignor to Crompton Loom Works, Worcester, Mass. Shuttle-box mechanism for looms	411,408	Sept. 17	1928	514	48	1650
Wyman, Horace, assignor to Crompton Loom Works, Worcester, Mass. Jacquard mechanism for looms	411,409	Sept. 17	1933	515	48	1659
Wyman, Horace, assignor of one-half to Crompton Loom Works, Worcester, Mass. Shuttle-box mechanism for looms	411,752	Sept. 24	2432	644	48	1767
Wyman, Horace, assignor to Crompton Loom Works, Worcester, Mass. Shedding mechanism for looms	411,753	Sept. 24	2435	645	48	1768
Wyman, Horace, and J. G. Gale, assignors to Crompton Loom Works, Worcester, Mass. Loom for weaving tufted fabrics	411,410	Sept. 17	1934	515	48	1660
Yager, Eugene, Ann Arbor, Mich. Book-case	406,496	July 9	709	195	48	150
Yagn, Nicholas, St. Petersburg, Russia. Apparatus to facilitate walking and running	406,328	July 2	427	117 118	48	86
Yakel, George. (See Gittings, Pohlman, and Yakel.)						
Yale & Towne Manufacturing Company. (See Dunn, Isaac L., assignor.)						
Yale & Towne Manufacturing Company. (See Severance, Alvin A., assignor.)						
Yale & Towne Manufacturing Company. (See Taylor, Warren H., assignor.)						
Yale & Towne Manufacturing Company. (See Towne, Henry R., assignor.)						
Yarborough, Cora M., assignor to J. H. Lynne, Durham, N. C. Plant-protector	409,133	Aug. 13	1428	378	48	961
Yawman & Erbe. (See Goulding, George P., assignor.)						
Yeadon, John, Idle, near Bradford, England. Heald or heddle for looms	409,725	Aug. 27	2317	609	48	1145
Yeates, Stephen M. (See Vereker and Yeates.)						
Yelles, Aaron. (See Mohn and Yelles.)						
Yelton, Albert R. (See France and Yelton.)						
Yergin, William L. (See Arnold and Yergin.)						
York, James E. (See York, Levi D., assignor.)						
York, Levi D., Portsmouth, Ohio, assignor of one-half to J. E. York, Ashland, Wis. Rolling apparatus	410,724	Sept. 10	917	240 241	48	1451
York, Standish M. (See Drumheller and North, assignors.)						
Yost, Francis A., Paducah, Ky. Back-band hook	410,998	Sept. 10	1320	336	48	1533
Yost, George T., Caseyville, Ill. Car for the transmission of specie	409,694	Aug. 27	2566	672	48	1191
Yost, George W. N., New York, N. Y., assignor by mesne assignments, to American Writing Machine Company, of New York. Type-writing machine	408,061	July 30	3062	801	48	627
Yost Writing Machine Company. (See Curtis, Henry E., assignor.)						
Yost Writing Machine Company. (See Steiger, Andrew W., assignor.)						
Young, Annie M., Providence, R. I., assignor of one-half to A. C. Smith, Boston, Mass. Glove	410,999	Sept. 10	1320	336	48	1534
Young, Charles M., Corry, Pa. Rotary pump	410,747	Sept. 10	955	257	48	1457
Young, Cornelius, Selma, Ala. Cotton-gin	408,566	Aug. 6	559	146	48	787
Young, David. (See Hall and Young.)						
Young, Doris B., East Douglas, Mass. Starching-machine	407,502	July 23	2239	573	48	461
Young, Freeman N., and F. E. Thompson, Lowell, Mass. Carriage-body	410,477	Sept. 3	529	142	48	1372
Young, Jefferson, Chelsea, Mass. Exhaust-fan	408,397	Aug. 6	268	72	48	734
Young, John H., Concord, N. H. Skate	406,609	July 9	876	226	48	179
Young, Luther A., *et al.* (See Smith, John R., assignor.)						
Young, Moses J., and L. A. Watts, Hartley, Iowa. Fence-machine	411,365	Sept. 17	1864	490	48	1647
Young, Robert, Allegheny, Pa. Fire-place for burning gaseous fuel	409,765	Aug. 27	2377	624	48	1156

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Young, Shaffer H. (See Young and Knode.)						
Young, Stephen E., *et al.* (See Carley, Oliver F., assignor.)						
Young, William P., Bear Wallow, Ky. Rein-guard	411,484	Sept. 24	2040	539	48	1685
Young, Willis J., and S. H. and Z. U. Knode, Hebron, Nebr. Stove-pipe shelf	411,485	Sept. 24	2041	540	48	1686
Youngs, Fred E., *et al.* (See Sparie, Valentine, assignor.)						
Yount, William H. H., Troy, Ohio. Twisting device for fence-wires	410,951	Sept. 10	1247	336	48	1519
Zallud, Carl. (See Pforzheimer, Isaac, assignor.)						
Zeigler, George W., Philadelphia, Pa. Tent-frame	407,427	July 23	2134	551	48	440
Zeigler, George W., Philadelphia, Pa. Swing	408,545	Aug. 20	2030	535	48	1067
Zeigler, George W., Philadelphia, Pa. Clamping-plate for timber structures	408,546	Aug. 20	2032	535	48	1067
Zeigler, George W., Philadelphia, Pa. Clamping-plate for timber structures	408,547	Aug. 20	2033	536	48	1067
Zeigler, George W., Philadelphia, Pa. Clamping-plate for timber structures	408,548	Aug. 20	2033	536	48	1067
Zeigler, George W., Philadelphia, Pa. Staging	411,273	Sept. 17	1734	463	48	1624
Zeigler, George W., Washington, D. C. Brace for trestles	408,543	Aug. 20	2028	534	48	1066
Zeigler, George W., Washington, D. C. Trestle	408,544	Aug. 20	2029	535	48	1067
Zeigler, George W., Washington, D. C. Trestle	408,966	Aug. 20	1696	430	48	1007
Zeigler, William R., assignor of one-half to M. S. Hoadley, Waverly, N. Y. Car-brake	408,313	Aug. 20	1704	448	48	1022
Zell, Robert R., assignor to J. V. Campbell, Baltimore, Md. Steam-boiler	408,090	Aug. 13	1357	350	48	947
Zellweger, John, Chicago, Ill. Gas-furnace	406,949	July 2	309	85	48	62
Zeltmacher, George E., Brooklyn, N. Y. Belt-clasp	406,555	July 9	795	213	48	166
Zettler, John B., Canton, Ohio. Revolving book-case	410,685	Sept. 10	748	203	48	1421
Ziedler, William, De Lassus, Mo. Horseshoe	408,868	Aug. 13	1094	271	48	883
Ziegler, Henry, New York, N. Y. Music-rack attachment for upright pianos	409,895	Aug. 27	2568	.....	48	1198
Ziegler, John B. and J. F., Air Line Junction, Ohio. Water-filtering medium						
Ziegler, John F. (See Ziegler, John B. and J. F.)						
Zill, Carl F. M., Chicago, Ill. Game apparatus	408,889	Aug. 13	1095	271 272	48	883
Zimmer, Otto, Jersey City, N. J. Frame for traveling-bags	410,478	Sept. 3	531	142	48	1372
Zimmerling, August F., assignor of one-half to J. A. and P. E. Dutcher, Milwaukee, Wis. Oil-stove for heating purposes	407,390	July 23	2072	536	48	428
Zimmerman, Arthur, St. Louis, Mo. Carriage-jack	406,381	July 2	504	140	48	100
Zimmerman, Byron L., Belle Centre, Ohio. Farm-gate	411,063	Sept. 17	1456	367	48	1569
Zimmerman, John, assignor to Zimmerman Machine Company, Cincinnati, Ohio. Car-heater	408,190	July 2	138	40, 41	48	29
Zimmerman Machine Company. (See Zimmerman, John, assignor.)						
Zimmern, Henry. (See Heidenreich, Heinrich, assignor.)						
Zitzewitz, Hermann, Chicago, Ill. Machine for coating and embossing moldings	407,847	July 30	2742	713	48	586
Zoeller, Theodore J., assignor to himself, D. E. Doherty, B. D. Mattingly, and C. J. Doherty, Louisville, Ky. Electric gas-lighter	408,765	Aug. 13	898	240	48	859
Zoueck, Peter G., *et al.* (See Toulmin, Morton, assignor.)						
Zurbrick, John, Cheektowaga, N. Y. Device for sharpening calks	407,458	July 23	2185	564	48	450

ALPHABETICAL LIST OF PATENTEES OF DESIGNS.

Name, residence, and design.	No.	Date.	Official Gazette. Volume.	Page.
Argyll, John H., assignor to Towle Manufacturing Company, Newburyport, Mass. Spoon, fork, &c.	19,201	Sept. 10	48	1404
Atterbury, Thomas B., Pittsburg, Pa. Dish-cover	19,247 to 19,250	Aug. 6	48	678
Atterbury, Thomas B., Pittsburg, Pa. Dish-cover	19,282 19,283	Aug. 27	48	1194
Atwood, Lewis J., and F. W. Tobey, assignors to Plume & Atwood Manufacturing Company, Waterbury, Conn. Lamp-burner	19,307	Sept. 10	48	1404
Bacheler, Thomas H., Chicago, Ill. Badge	19,319	Sept. 24	48	1066
Balch, George H., assignor to the Towle Manufacturing Company, Newburyport, Mass. Spoon, fork, &c	19,284 19,285	Aug. 27	48	1194
Barnes & Beyer. (See Hartley, Riley, assignor.)				
Bartlett, Charles H., Arlington, Mass. Hassock	19,186	July 2	48	2
Bawden, John, *et al.* (See Calely, Edward L., assignor.)				
Bawden, John H., *et al.* (See Calely, Edward L., assignor.)				
Bean, George W., A. M. and S. A. Vail, Philadelphia, Pa. Perfumery-holder, &c	19,292	Sept. 3	48	1268
Beiermeister, Frederick, Jr., Troy, N. Y. Apparel-collar	19,314	Sept. 17	48	1542
Berry, Henry, Shelton, Conn. Back for brushes, &c	19,223	July 23	48	403
Berry, Henry, Shelton, Conn. Back for brushes, &c	19,261	Aug. 13	48	826
Betz, Henry M., Philadelphia, Pa. Badge	19,228	July 30	48	542
Bidwell, George W., New Haven, Conn. Clock-case	19,269 19,270	Aug. 20	48	978
Birge & Sons, M. H. (See Booze, Charles, assignor.)				
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	19,251 19,252	Aug. 6	48	678
Botts, Margaret V., Philadelphia, Pa. Combination under-garment for ladies	19,167	July 2	48	2
Brogan, Anthony D., and A. M. Malloch, Firhill, Glasgow, county of Lanark, Scotland. Surface ornamentation of sheet-glass	19,206 19,224	July 16 July 23	48 48	264 403
Brown, George F., Brooklyn, N. Y. Wedding-card				
Calely, Edward L., Philadelphia, Pa., assignor to G. Combs, J. and J. H. Bawden, Freehold, N. J. Fire-place grate	19,253	Aug. 6	48	678
Christensen, Rodolphe W. E., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Lock-case	19,168 19,293 19,294	July 2 Sept. 3	48 48	2 1268
Coffin, Francis A., Indianapolis, Ind. Writing-table				
Colebrookdale Iron Company. (See Schneider, Henry W., assignor.)				
Combs, Gilbert, *et al.* (See Calely, Edward L., assignor.)	19,213	July 23	48	403
Creteau, Stephen M., Providence, R. I. Stick-handle for canes, &c	19,262 19,263	Aug. 13	48	826
Danbek, Josef, Vienna, Austria-Hungary, assignor to Mills & Gibb, New York, N. Y. Curtain and cover	19,169	July 2	48	2
Davison, Joseph K., Philadelphia, Pa. Badge	19,271	Aug. 20	48	978
Davison, Joseph K., Philadelphia, Pa. Badge	19,264	Aug. 13	48	826
Dowling, John W., Evanston, Ill. Memorial tablet				
Dunham, Buckley & Co. (See Tappen, James M., assignor.)	19,195	July 9	48	120
Ettenheimer, Emanuel, New York, N. Y. Fine stopper or collar	19,254	Aug. 6	48	678
Fowler, John W., Brooklyn, N. Y. Street-car dash	19,295	Sept. 3	48	1268
Gardner, George W., La Prairie Centre, Ill. Ceiling				
Gilliuder & Sons (See Mellor, Thomas W., assignor.)	19,286	Aug. 27	48	1194
Glass, Alfred W., Detroit, Mich Burial-case	19,315	Sept. 17	48	1542
Gleason, Warren C., and J. C. Ryan, Chicago, Ill. Hose-carriage body	19,196	July 9	48	120
Graham, George W., New York, N. Y. Gimp	19,234 to 19,240	July 30	48	542
Griswold, Catharine A., New York, N. Y. Ornamentation of corsets				
Hansen, Christian H., Trenton, N. J., assignor to H. Huber, New York, N. Y. Surface ornamentation of water-closet bowls	19,197	July 9	48	120
Harbeter, John E., assignor to Reading Hardware Company, Reading, Pa. Ornamentation of hardware	19,272 19,255	Aug. 20 Aug. 6	48 48	978 678
Harding, Silas H., Jr., New Castle, N. H. Mariner's clock-dial				
Hartley, Riley, assignor to Barnes & Beyer, Philadelphia, Pa. Curtain	19,214 to 19,218	July 23	48	403
Haviland, Charles E., Limoges, France. Dish	19,273 19,274	Aug. 20	48	978
Herman, Reinhold, Crafton, Pa. Bracket for electric wires	19,190	July 2	48	2
Herman, Reinhold, Crafton, Pa. Bracket for electric wires	19,241 19,242	July 30	48	542
Higdon, John C. (See Wilson, Hiram G., assignor.)				
Higgins, Werter C., Norwich, Conn. Heating-stove	19,219	July 23	48	403
Holmes & Edwards Silver Company. (See Klingel, Robert H., assignor.)				
Horton, Louis R., assignor to J. B. and S. M. Knowles, Providence, R. I. Handle for spoons, &c	19,287 19,275	Aug. 27 Aug. 20	48 48	1194 978
Howard, Andrew, Wilkinsburg, Pa. Electric-light shade				
Huber, Henry. (See Hansen, Christian H., assignor.)				
Hupp, Charles T., New Market, Va. Wire-fence-twisting disk	19,308 19,191	Sept. 10 July 2	48 48	1404 2
Irons, Charles F., Providence, R. I. Badge				
Jefferies, Daniel P., and J. G. Rodgers, assignors to Tricycle Manufacturing Company, Springfield, Ohio. Baby-carriage body	19,231 19,256 19,316	July 23 Aug. 6 Sept. 17	48 48 48	404 678 1542
Jeffords, John E., Philadelphia, Pa. Tea-pot				
Jenks, Henry F., Pawtucket, R. I. Grave-marker				
Johnson & Brandon. (See Johnson, Thomas, assignor.)	19,198	July 9	48	120
Johnson, Thomas, assignor to Johnson & Brandon, St. Louis, Mo. Vapor-stove				
Jordan, George F., assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of printing-type	19,257 19,199	Aug. 6 July 9	48 48	678 120
Karpen, Adolph, Chicago, Ill. Lounge	19,288	Aug. 27	48	1194
Kelsay, Newton, Evansville, Ind. Hames				
Klingel, Robert H., assignor to Holmes & Edwards Silver Company, Bridgeport, Conn. Handle for table-ware	19,276	Aug. 20	48	978

Alphabetical list of patentees of designs, July to September, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Knowles, Joseph B., *et al.* (See Horton, Louis R., assignor.)				
Knowles, Stephen M., *et al.* (See Horton, Louis R., assignor.)				
Koster, Charles H., New York, N. Y. Decorative fabric	19,243	July 30	48	542
Kundtz, Theodor, Cleveland, Ohio. Sewing-machine cover	19,200	July 9	48	120
La Dow, Charles, Albany, N. Y. Harrow	19,320 to 19,321	Sept. 24	48	1666
Lacroix, Antoine, Jr., Brooklyn, N. Y. Exterior of a country house	19,207	July 16	48	264
Lamond, John S., and C. T. Robertson, Paterson, N. J. Carpet	19,208	July 16	48	264
Libbey & Son Company, W. L. (See Locke, Joseph, assignor.)				
Locke, Joseph, assignor to W. L. Libbey & Son Company, Toledo, Ohio. Celery-dish	19,313	Sept. 10	48	1404
Lowell Manufacturing Company. (See Sauer, Emil G., assignor.)				
Lyon, George W., Chicago, Ill. Upright piano having supplemental top	19,302	Sept. 10	48	1404
MacKellar, Smiths & Jordan Company. (See Jordan, George F., assignor.)				
Maddock, Henry. (See Maddock, Thomas, assignor.)				
Maddock, Thomas, New York, assignor to H. Maddock, Brooklyn, N. Y. Dish	19,201	July 9	48	120
Malloch, Andrew M. (See Brogan and Malloch.)				
Martin, Oskar, New York, N. Y. Drawer	19,244	July 30	48	542
McClure, Samuel C., Dayton, Ohio. Advertising-card	19,297	Sept. 3	48	1268
McGill, George W., New York, N. Y. Fastener for papers	19,220	July 23	48	403
McMullen, Roger B., Chicago, Ill. Fence-gate	19,258	Aug. 6	48	678
Mellor, Thomas W., assignor to Gillinder & Sons, Philadelphia, Pa. Glassware	19,209	July 16	48	264
Merklen, Martin, New York, N. Y. Bracket	19,296	Sept. 3	48	1268
Merklen, Martin, New York, N. Y. Bracket	19,303	Sept. 10	48	1404
Meyer, Charles T. and V. E., Bergen, N. J., assignors to E. C. Sampson, New York, N. Y. Oil-cloth	19,225 to 19,229	July 23	48	403
Meyer, Charles T. and V. E., Bergen, N. J., assignors to E. C. Sampson, New York, N. Y. Oil-cloth	19,232	July 23	48	404
Meyer, Victor E. (See Meyer, Charles T. and V. E.)				
Miller, Metcalf & Parkin. (See Ryer, William H., assignor.)				
Mills & Gibb. (See Dubek, Josef, assignor.)				
Moore, Edward C., Yonkers, assignor to Tiffany & Company, New York, N. Y. Spoon, fork, or other table utensil	19,210 to 19,211	July 16	48	264
Palmer, Noyes F., Brooklyn, N. Y. Fountain-pen nozzle	19,265	Aug. 13	48	826
Palmer, Stephen, Lansingburg, N. Y. Sash-cord-guide face-plate	19,245	July 30	48	542
Pearce, Thomas A., Philadelphia, Pa. Ornamentation of knitted shirts	19 266	Aug. 13	48	826
Pearce, Thomas A., Philadelphia, Pa. Ornamentation of knitted shirts	19,298	Sept. 3	48	1268
Perkins, Floyd N., Cleveland, Ohio. Ornamentation of sash-lifts or other articles of builders' hardware	19,202	July 9	48	120
Plaut, Hugo H., New York, N. Y. Artificial feather	19,317	Sept. 17	48	1542
Plume & Atwood Manufacturing Company. (See Atwood and Tobey, assignors.)				
Poirier, Gregoire, Garfield, Clay county, Kans. Chimney-cap	19,304	Sept. 10	48	1404
Potter, Thomas O., Boston, Mass. Back-plate for suspenders	19,289	Aug. 27	48	1124
Prahar, Louis B., Brooklyn, N. Y. Ornamentation of chatelaine-bag frames	19,305 to 19,306	Sept. 10	48	1404
Read, Charles H., Pittsburg, Pa. Pocket-flask	19,230	July 23	48	404
Reading Hardware Company. (See Harbster, John E., assignor.)				
Robertson, Colin T. (See Lamond and Robertson.)				
Rodgers, James C. (See Jefferies and Rodgers.)				
Rogers, William, Hartford, Conn. Spoon or fork handle	19,212	July 16	48	264
Roovers, Alfred W., Brooklyn, N. Y. Strength or power testing machine case	19,221	July 23	48	403
Russell & Erwin Manufacturing Company. (See Christsen, Rodolphe W. E., assignor.)				
Ryan, James C. (See Gleason and Ryan.)				
Ryer, William H., Salt Lake City, Utah Ter., assignor to Miller, Metcalf & Parkin, Pittsburg, Pa. Paper-weight	19,222	July 23	48	403
Sampson, Edward C. (See Meyer, Charles T. and V. E., assignors.)				
Sauer, Emil G., Brooklyn, N. Y., assignor to Lowell Manufacturing Company, Lowell, Mass. Carpet	19,246	July 30	48	542
Schmidt, Frederick, assignor to F. M. Whitney & Co., North Attleborough, Mass. Handle for spoons, forks, &c	19,203	July 9	48	120
Schneider, Henry W., Little Oley, assignor to Colebrookdale Iron Company, Douglas, Pa. Sad-iron handle	19,204	July 9	48	120
Silis, William H., Chicago, Ill. Tea-pot, &c	19,192	July 2	48	2
Smith, William T., Philadelphia, Pa. Curtain	19,318	Sept. 17	48	1542
Stein, Leo, Rochester, N. Y. Coffin	19,309	Sept. 10	48	1404
Stein, Leo, Rochester, N. Y. Burial-casket lid	19,310	Sept. 10	48	1404
Stephenson, John, New York, N. Y. Car-truck frame	19,299	Sept. 3	48	1268
Stimpson, Edwin B., Brooklyn, N. Y. Strap	19,290 to 19,291	Aug. 27	48	1124
Stoddard, Edward C., Plymouth, Conn. Clock-case	19,267	Aug. 13	48	826
Tappen, James M., assignor to Dunham, Buckley & Co., New York, N. Y. Trimming	19,300	Sept. 3	48	1268
Tiffany & Company. (See Moore, Edward C., assignor.)				
Tilton, George P., assignor to Towle Manufacturing Company, Newburyport, Mass. Spoon, &c	19,205	July 9	48	120
Tobey, Frederick W. (See Atwood and Tobey.)				
Todd & Co., Edward. (See Todd, Edward, Jr., assignor.)				
Todd, Edward, Jr., assignor to E. Todd & Co., New York, N. Y. Fountain-pen or pencil holder	19,277 to 19,278	Aug. 20	48	978
Tompkins, Samuel D. (See Williams, Thomas H., assignor.)				
Towle Manufacturing Company. (See Argyll, John H., assignor.)				
Towle Manufacturing Company. (See Balch, George H., assignor.)				
Towle Manufacturing Company. (See Tilton, George P., assignor.)				
Tricycle Manufacturing Company. (See Jefferies and Rodgers, assignors.)				
Underwood, John C., Columbus, Ohio. Badge	19,194	July 2	48	2
Vail, Arauna M. (See Bean and Vail.)				
Vail, Stephen A. (See Bean and Vail.)				
Waldeck, Charles E., Paterson, N. J. Rotary-fan appliance	19,259	Aug. 6	48	678
Walter, William G., Pittsburg, Pa. Druggist's sign	19,260	Aug. 6	48	678
Webb, Joseph, Beaver, Pa. Electric-light shade	19,279	Aug. 20	48	978
Weinberg, Charles, assignor to C. Weinberg & Co., New York, N. Y. Gimp	19,193	July 2	48	2
Weinberg & Co., C. (See Weinberg, Charles, assignor.)				
Whildin, John G., Philadelphia, Pa. Flower-pot	19,280	Aug. 20	48	978
Whitney & Co., F. M. (See Schmidt, Frederick, assignor.)				
Whittaker, Edward W., New York, N. Y. Suspender-end	19,268	Aug. 13	48	826
Williams, Thomas H., assignor to himself and S. D. Tompkins, Jersey City, N. J. Radiator	19,311 to 19,312	Sept. 10	48	1404
Wilson, Hiram G., Minneapolis, Minn., assignor to J. C. Higdon, Washington, D. C. Gas-stove	19,281	Aug. 20	48	978

ALPHABETICAL LIST OF REGISTRANTS OF TRADE-MARKS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
Achard, Julia A., Lodi, Cal. Liniment for man and beast	16,959	Aug. 27	48	1124
Aiken, William A., Norwich, Conn. Display-frames having adjustable joints for exhibiting wearing-apparel	16,787	July 9	48	120
Akron Sewer Pipe Company, Akron, Ohio. Sewer-pipe	17,047	Sept. 24	48	1666
American Gold Paint Co., East Boston, Mass. Gold paints and inks, copper fluids, furniture-polishes, and bronze powders	16,760	July 2	48	2
American Waltham Watch Company, Waltham, Mass. Watch-movements	16,936	Aug. 20	48	978
Apollinaris Company, (limited London, England. Natural mineral water, its salts, and compounds containing the same	16,674	July 30	48	542
Apollinaris Company, (limited,) London, England. Natural mineral water, its salts, and compounds containing the same	16,809	July 16	48	264
Apollinaris Company, (limited,) London, England. Natural mineral water, its salts, and compounds containing the same	16,810	July 16	48	264
Apollinaris Company, (limited,) London, England. Natural mineral water, its salts, and compounds containing the same	16,811	July 16	48	264
Apollinaris Company, (limited,) London, England. Mineral water	16,812	July 16	48	264
Armour & Co., Chicago, Ill. Meats and meat food products	16,813	July 16	48	264
Arnold, Carlton & McCord, Atlanta, Ga. Smoking-tobacco and plug-tobacco for chewing	16,990	Sept. 10	48	1404
Asthalter, Henry, Pittsburg, Pa. Stomach remedy	16,991	Sept. 10	48	1404
Avenarius Gebrüder, Ganalgesheim, Germany. Preserving-paint	16,810	Aug. 13	48	826
Ayres & Sons, Wm., Philadelphia, Pa. Horse-blankets	16,786	July 9	48	120
Ayres & Sons, Wm., Philadelphia, Pa. Horse-nets	16,937	Aug. 20	48	978
Baltz Brewing Company, J. & P., Philadelphia, Pa. Beer	16,938	Aug. 20	48	978
Bannerman, William, Chicago, Ill. Compound constituting a deodorizer, a disinfectant, and germicide	16,814	July 16	48	264
Banta, Frank J., Lima, Ohio. Chewing-gum	16,867	July 30	48	542
Barton et Fils, Joseph, Perpignan, France. Cigarette-paper	17,015	Sept. 17	48	1542
Barton, Edward S. (See Reed and Barton.)	16,992	Sept. 10	48	1404
Bass, Ratcliffe & Gretton, (limited,) Burton-on-Trent, county of Stafford, England. Beer of all descriptions	16,850	July 23	48	404
Bass, Ratcliffe & Gretton, (limited,) Burton-on-Trent, county of Stafford, England. Beer of all descriptions	16,851	July 23	48	404
Batten, George, New York, N. Y. Certain remedy for indigestion	16,911	Aug. 13	48	826
Baum & Co., Spokane Falls, Wash. Ter. Mixed paints and varnishes	16,815	July 16	48	264
Beckwith, Amos N., Providence, R. I. Bleached cotton sheetings	16,939	Aug. 20	48	978
Bemis & Fletcher, Worcester, Mass. Boots and shoes	16,907	Aug. 6	48	678
Bertelli & Cie. A., Milan, Italy. Pills of essence of tar	16,789	July 9	48	120
Bertelli & Co., A., Milan, Italy. Pills of essence of tar	17,016	Sept. 17	48	1542
Betterton & Co., Knoxville, Tenn. Whisky	16,790	July 9	48	120
Biloxi Canning Company, Biloxi, Miss. Hermetically-sealed canned goods	16,949	Sept. 3	48	1268
Bliting & Hay, Winston, N. C. Chewing-tobacco	16,940	Aug. 20	48	978
Block & Sons, Elias, Cincinnati, Ohio. Whisky	16,791	July 9	48	120
Bolick, Jerome, Conover, N. C. Vehicle-wheels	16,876	July 30	48	542
Bollinger, Joseph, Ay, France. Champagne wine	17,017	Sept. 17	48	1542
Booth Packing Company, A., Chicago, Ill.; Baltimore, Md.; St. Paul, Duluth, and Minneapolis, Minn.; St. Louis, Mo.; Louisville, Ky.; Omaha, Nebr.; Indianapolis, Ind.; Bayfield, Wis.; Escanaba and Manistique, Mich.; Astoria, Oreg., and Port Arthur, Canada. Canned fruits, vegetables, and fish	16,949	Sept. 3	48	1268
Boston Woven Hose Company, Boston, Mass. Mill or fire hose	16,868	July 30	48	542
Bradley & Company, Syracuse, N. Y. Vehicles	17,048	Sept. 24	48	1666
Brand & Bethel, Louisville, Ky. Leaf-tobacco	16,761	July 2	48	2
Brookes & Crookes, Sheffield, county of York, England. Cutlery and hardware	16,762	July 2	48	2
Brookmire & Co., James H., St. Louis, Mo. Canned vegetables, fruits, fish, oysters, and meats	16,895	Aug. 6	48	678
Brown, David W., Washington, D. C. Natural mineral-spring water	17,018	Sept. 17	48	1542
Butler, Richards & Co., New York, N. Y. Braids	16,875	July 30	48	542
Calvert & Co., F. C., Bradford, Manchester, county of Lancaster, England. Perfumery and perfumed toilet preparations and extracts	16,993	Sept. 10	48	1404
Candy, Thomas, Columbus, Ohio. Cough-medicine	16,836	July 23	48	404
Carroll & Son, John W., St. Louis, Mo. Liquid tonic preparation for the cure of rheumatism, gout, neuralgia, &c	17,049	Sept. 24	48	1666
Cartier-Bresson, Les Fils de, Paris, France. Cotton thread	17,019	Sept. 17	48	1542
Cartier-Bresson, Les Fils de, Paris, France. Cotton thread	17,020	Sept. 17	48	1542
Cartier-Bresson, Les Fils de, Paris, France. Cotton thread	17,021	Sept. 17	48	1542
Cartier-Bresson, Les Fils de, Paris, France. Cotton thread	17,022	Sept. 17	48	1542
Cartier-Bresson, Les Fils de, Paris, France. Cotton thread	17,023	Sept. 17	48	1542
Cartier-Bresson, Les Fils de, Paris, France. Cotton thread	17,024	Sept. 17	48	1542
Cartier-Bresson, Les Fils de, Paris, France. Cotton thread	17,025	Sept. 17	48	1542
Cartier-Bresson, Les Fils de, Paris, France. Cotton lace	17,026	Sept. 17	48	1542
Cartier-Bresson, Les Fils de, Paris, France. Cotton thread	17,027	Sept. 17	48	1542
Cartier-Bresson, Les Fils de, Paris, France. Cotton thread	17,028	Sept. 17	48	1542
Cartier-Bresson, Les Fils de, Paris, France. Cotton lace	17,029	Sept. 17	48	1542
Cartier-Bresson, Les Fils de, Paris, France. Cotton thread	17,030	Sept. 17	48	1542
Cartier-Bresson, Les Fils de, Paris, France. Cotton thread	17,031	Sept. 17	48	1542
Cazin & Co., M. E., New York, N. Y. Medical compounds for external application for producing epidermical heat	16,837	July 23	48	404
Charm Manufacturing Company, St. Louis, Mo. Dry yeast in powdered form	16,906	Aug. 27	48	1124
Chase & Co., L. C., Boston, Mass. Horse-blankets	17,050	Sept. 24	48	1666
Chelsea Jute Mills, New York, N. Y. Jute products, such as twine, bagging, carpetings, oil-cloth, and the like	16,948	Aug. 20	48	978
Chicago Yeast Company, Chicago, Ill. Dry hop yeast	16,896	Aug. 6	48	678

Alphabetical list of registrants of trade-marks, July to September, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Colby Wringer Company, Montpelier and Berlin, Vt., Chicago, Ill., and Boston, Mass. Clothes-wringers	16,909	Aug. 6	48	678
Conacher, Alexander, New York, N. Y. Ice-making machines	16,994	Sept. 10	48	1404
Condory, William, Baltimore, Md. Preparation for the cure of yellow fever	16,816	July 16	48	264
Crane, Z. & W. M., Dalton, Mass. Paper and envelopes	16,669	July 30	48	542
Crane, Z. & W. M., Dalton, Mass. Paper and envelopes	16,670	July 30	48	542
Crocker & Co., H. S., San Francisco, Cal. Commercial note writing-paper	17,032	Sept. 17	48	1542
Crosfield & Sons, Joseph, Warrington, county of Lancaster, England, Soap	16,913	Aug. 13	48	826
Crozer & Son, Samuel A., Upland, Pa. Cotton goods	16,838	July 23	48	404
Dalsimer, Eva, Philadelphia, Pa. Boots and shoes	16,839	July 23	48	404
Davidson & Co., Belfast, Ireland, and New York, N. Y. Tea	16,677	July 30	48	542
Davidson & Co., Belfast, Ireland, and New York, N. Y. Tea	16,678	July 30	48	542
Day Rubber Company, St. Louis, Mo. Rubber boots and shoes and all kinds of rubber and oil clothing, also rubber hose and tubing	16,941	Aug. 20	48	978
Deane, James A., Catskill, N. Y. Dyspepsia-pills	16,817	July 16	48	264
Denham, Frederic B., New York, N. Y. Game-board	16,763	July 2	48	2
Deuscher Company, H. P., Hamilton, Ohio. Check-row corn-planters	16,942	Aug. 20	48	978
Dickson's Sons, George H., New York, N. Y. Writing-paper and envelopes	16,943	Aug. 20	48	978
Dimitry, Charles P., New Orleans, La. Writing-ink	16,944	Aug. 20	48	978
Dirksen, Luise, Brooklyn, N. Y. Insect-exterminators	16,879	July 30	48	542
Doctor Thorpe Medicine Company, New York, N. Y. Chemicals and drugs to produce laxative effects	16,818	July 16	48	264
Dodge, Mary A., St. Paul, Minn. Hair-restorer	16,880	July 30	48	542
Dow, George Q., North Epping, N. H. Insecticide	16,971	Sept. 3	48	1208
Draper, Charlotte E., New York, N. Y. Tonic and stimulant, a cleanser and purifier, and a balm for the skin	16,819	July 16	48	264
Drury, Marshall P., Cincinnati, Ohio. White paint ground in linseed-oil	17,051	Sept. 24	48	1666
Dubonnet Frères, Paris, France. Liquor extracted from cherries	17,034	Sept. 17	48	1542
Dueber Watch Case Manufacturing Company, Cincinnati and Canton, Ohio; Newport, Ky.; Chicago, Ill.; New York, N. Y.; Boston, Mass., and San Francisco, Cal. Composition watch-cases	16,915	Aug. 13	48	826
Eagle Machine Works Company, Indianapolis, Ind. Thrashing-machines	17,052	Sept. 24	48	1666
Eastwood Wire Manufacturing Company, Belleville, N. J. Bronze, copper, and babbitt ingots and articles useful and ornamental made therefrom	16,793	July 9	48	120
Eaton, Hattie R., Springville, N. Y. Preparation for the complexion	16,897	Aug. 6	48	678
Edwards, M. L., Philadelphia, Pa. Soap	16,764	July 2	48	2
Egersdorff, Jennie G., Kansas City, Mo. Tape-worm remedy	16,916	Aug. 13	48	826
Elkin & Co., M., Philadelphia, Pa. Shoes	16,995	Sept. 10	48	1404
Ellis & Co., John, New York, N. Y. Lubricating and illuminating oils	16,881	July 30	48	542
Fairbanks & Co., New York, N. Y. Steam-valves and water-valves	16,898	Aug. 6	48	678
Fairbanks & Co., New York, N. Y. Steam-valves and water-valves	16,899	Aug. 6	48	678
Farnsworth, Drs. East Saginaw, Mich. Croup and cough sirup	16,765	July 2	48	2
Faulkner, James H., Gastonia, N. C. Water-proof compounds for pulley-belts	16,820	July 16	48	264
Fels, George W., Cincinnati, Ohio. Dental instruments, machinery, preparations, and furniture	16,794	July 9	48	120
Ferguson, Thomas N., Readville, Mass. Boots or shoes with rubber soles	16,840	July 23	48	404
Fessenden, Edward H. (See Jacobson and Fessenden.)				
Fleury & Faust, New Orleans, La. Liquid stain for furniture	16,996	Sept. 10	48	1404
Fournier, Eugène, Paris, France. Medicine against sea-sickness	17,033	Sept. 17	48	1542
Fournier & Knopf, Felix, New York, N. Y. Shoe-buttons	16,900	Aug. 6	48	678
France, Watson A., Columbus, Ohio. Medicinal preparation in the form of pastils for curing uterine diseases	16,821	July 16	48	264
French, Samuel, London, England, and New York, N. Y. Specifics for rheumatic, neuralgic, and scrofulous disorders and their related diseases	16,822	July 16	48	264
Freud, J. Richd., New York, N. Y. Corsets	16,945	Aug. 20	48	978
Gentry, Nancy K., Denver, Colo. Remedial and cosmetic cream	16,901	Aug. 6	48	678
Gerstendörfer Bros., New York, N. Y. Gold paint made of gold bronze	16,795	July 9	48	120
Gerstendörfer Bros., New York, N. Y. Gold paint made of gold bronze	16,796	July 9	48	120
Gillett, Simon E., San Antonio, Tex. Medical compound for destroying microbes	16,917	Aug. 13	48	826
Gousaux, François, Houma, La. Remedies for asthma	17,053	Sept. 24	48	1666
Gourdé, Louis J. E., Paris, France. Black shoe-buttons with metal loops or eyes	16,918	Aug. 13	48	826
Granite City Soap Company, Fall River, Mass. Toilet soap	16,997	Sept. 10	48	1404
Greene, Tweed & Co., New York, N. Y. Machinery packing	17,054	Sept. 24	48	1666
Grocers Supply and Storage Company, Pittsburg, Pa. Creamery butter	16,902	Aug. 6	48	678
Hall Medicine Co., Wm., St. Louis, Mo. Hog and poultry cure	16,960	Aug. 27	48	1124
Harmount, George A., Chicago, Ill. Electric batteries	16,797	July 9	48	120
Hartigan, James J., New York, N. Y. Mixed beverage composed of liquors, &c.	16,972	Sept. 3	48	1208
Hayssen, Henry H., New Holstein, Wis. Goiter and tumor ointment	16,919	Aug. 13	48	826
Hazelton, Frank L., Boston, Mass. Ginger-ale	16,841	July 23	48	404
Healy, Edward W., Chicago, Ill. Medical beverages from the soda-fountain and tonics for the stomach and for the nervous system	16,823	July 16	48	264
Hecker, George V., New York, N. Y. Flour	16,842	July 23	48	404
Hecker, George V., New York, N. Y. Flour	16,947	Aug. 20	48	978
Heim Brewing Company, Ferd., Kansas City, Mo. Lager-beer	16,843	July 23	48	404
Herbert & Rapp Company, Brockton and Boston, Mass. Shoe-elastic, boots, and shoes	17,036	Sept. 17	48	1542
Hermanos, Dies, Jeres de la Frontera, Spain. Sherry wine	17,055	Sept. 24	48	1666
Hermanos, Dies, Jeres de la Frontera, Spain. Sherry wine	17,056	Sept. 24	48	1666
Hessenbruch & Co., T., Philadelphia, Pa. Razors	16,973	Sept. 3	48	1208
Higgin & Co., Thomas, Liverpool, county of Lancaster, England. Salt	16,798	July 9	48	120
Hill, Thomas R., New York, N. Y. Mixed tea	16,974	Sept. 3	48	1208
Hillan, John M., Shenandoah, Pa. Liquid shoe-blacking	16,998	Sept. 10	48	1404
Hillard, F. Harwood, and S. S. Stewart, Verndale, Minn. Medicinal and toilet cream	16,920	Aug. 13	48	826
Horne, William L., Wallingford, Conn. Fermented cider or cider charged with carbonic-acid gas	16,799	July 9	48	120
Horning, Charles F., Pittsburg, Pa., and Minneapolis, Minn. Wheat-flour	16,882	July 30	48	542
Hostetter Company, Pittsburg, Pa. Stomach-bitters	16,921	Aug. 13	48	826
Hoyt's Sons, Stephen, New Canaan, Conn. Grape-vines, grape-vine slips, and grapes	16,961	Aug. 27	48	1124
Habbuck & Son, Thomas, London, England. Paints and pigments	16,766	July 2	48	2
Idaho Pear Co., Lewiston, Idaho Ter. Pear-trees	16,820	July 16	48	264
Indiana Coffee Company, Indianapolis, Ind. Roasted coffee	16,863	July 23	48	404
Jacobson, Kate E., and E. H. Fessenden, Brooklyn, N. Y. Lamps	16,962	Aug. 27	48	1124
Jenkins & Son, J. W., Kansas City, Mo. Guitars and mandolins	16,975	Sept. 3	48	1208
Jones & Co., S. L., San Francisco, Cal. Teas	16,844	July 23	48	404
Jones & Dudley, Jersey City, N. J. Silver-polish	16,976	Sept. 3	48	1208
Jordan, J. Eugene, Seattle, Wash. Ter. Medicines of histogenetic character	16,883	July 30	48	542
Kannmacher, George J., Minneapolis, Minn. Salves	16,824	July 16	48	264
Keefe, William J., Boston, Mass. Medicines for diseases of the air-passages of the head, throat, and lungs, and appliances used in connection with the same	16,871	July 30	48	542
	16,922	Aug. 13	48	826

Alphabetical list of registrants of trade-marks, July to September, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Kennedy Company, F. A., Cambridge, Mass. Crackers, biscuits, wafers, cakes, and kindred articles	16,845	July 23	48	404
King & Co., J. B., New York, N. Y. Wall-finishes, plastic compounds, and cement	16,825	July 16	48	264
Knapp & Sons, P. B., New York, N. Y. Extracts for beverages	16,923	Aug. 13	48	826
Knight, William R. J. G., Barbadoes, West Indies. Liquid preparation for use as an ingredient in beverages and bitters for indigestion	16,800	July 9	48	120
Koster & Bial, New York, N. Y. Beer, ale, mineral waters, and carbonated (aerated) drinks	16,884	July 30	48	542
Krug & Co., Rheims, France. Champagne	17,037	Sept. 17	48	1542
Laundrine Manufacturing Co., Rochester, N. Y. Detergents or washing compounds	16,924	Aug. 13	48	826
Lawson Valentine Company, New York and Hunter's Point, N. Y. Flatting-varnish	16,775	July 2	48	2
Lawson Valentine Company, New York and Hunter's Point, N. Y. Flatting-varnish	16,776	July 2	48	2
Lawson Valentine Company, New York and Hunter's Point, N. Y. Finishing-varnish	16,777	July 2	48	2
Lawson Valentine Company, New York and Hunter's Point, N. Y. Finishing-varnish	16,778	July 2	48	2
Lawson Valentine Company, New York and Hunter's Point, N. Y. Finishing-varnish	16,779	July 2	48	2
Lawson Valentine Company, New York and Hunter's Point, N. Y. Finishing-varnish	16,780	July 2	48	2
Le Gros Building and Car Roofing Company, Louisville, Ky. Paint	16,781	July 2	48	2
Leatheroid Manufacturing Company, Keanebunk, Me., and Boston, Mass. Parchmentized paper	17,038	Sept. 17	48	1542
Leighton, George F., Waterville, Me. Salve	16,925	Aug. 13	48	826
Lentz, John E., Allentown, Pa. Boots and shoes of all kinds	16,885	July 30	48	542
Leonardt & Co., D., Birmingham, county of Warwick, England. Pens	16,977	Sept. 3	48	1208
Lippman & Bro., M., Philadelphia, Pa. Sugar and other packed confectionery	16,926	Aug. 13	48	826
Lipps, Christopher, Baltimore, Md. Soap-powder	16,886	July 30	48	542
Lord & Co., S. W., Philadelphia, Pa. Boiler-cleaning material	16,999	Sept. 10	48	1404
Lorenz, George, Toledo, Ohio. Perfume for toilet uses in liquids, powders, and soaps	16,978	Sept. 3	48	1208
Lütters & Co., C., Solingen, Prussia, Germany. Pocket, pen, erasing, and table knives and surgical and other cutting instruments classed as cutlery	16,767	July 2	48	2
Mackenzie & Co., J. M., Wishaw, county of Lanark, Scotland. Whisky	16,801	July 9	48	120
Martin & Co., James, Philadelphia, Pa. Dyed cotton fabrics	16,979	Sept. 3	48	1208
Martinez, Alejandro M., Havana, Cuba. Coffee	16,840	July 23	48	404
Mason & Risch, Toronto, Ontario, Canada, and Worcester, Mass. Reed-organs	16,878	July 30	48	542
Maspero, Carlo, New York, N. Y. Olive-oil	16,802	July 9	48	120
Maurer, Conrad D., Philadelphia, Pa. Rat and roach exterminator	16,887	July 30	48	542
McClure & Ridpath, New Orleans, La. Tea	17,058	Sept. 24	48	1666
McConnell, Lon J., Carnesville, Ga. Cough-sirup	17,004	Sept. 10	48	1404
McCormick Harvesting Machine Company, Chicago, Ill. Binding-twine	16,980	Sept. 3	48	1208
McCulloch & Co., New York, N. Y. Olive-oil and japan, black, and green teas	16,928	Aug. 13	48	826
McIntosh, Annis C., Cambridgeport, Mass. Worm remedy	16,864	July 23	48	404
McKesson & Robbins, New York, N. Y. Floor and bath mats	17,005	Sept. 10	48	1404
McShane & Co., Henry, Baltimore, Md. Bells	16,889	July 30	48	542
McShane & Co., Henry, Baltimore, Md. Bells	16,990	July 30	48	542
McSwyny, Bryan G., New York, N. Y. Remedy for rheumatism and gout	16,927	July 16	48	264
Meier, John, St. Louis, Mo. Men's shoes	16,903	Aug. 6	48	678
Menier, Paris, France. Chocolate	17,039	Sept. 17	48	1542
Meyer & Co., J., New York, N. Y. Underwear	16,963	Aug. 27	48	1124
Meyer & Co., J., New York, N. Y. Underwear	17,040	Sept. 17	48	1542
Michigan Stove Company, Detroit, Mich., Buffalo, N. Y., and Chicago, Ill. Heating and cooking stoves	17,000	Sept. 10	48	1404
Miller, Reuben K., Pawtucket, R. I. Harness oil-soap	16,927	Aug. 13	48	826
Monroe, Victor H., Seymour, Ind. Nervine and general restorative	17,001	Sept. 10	48	1404
Moore & Kibler, New York, N. Y. Device for containing a poison solution for killing flies	16,888	July 30	48	542
Morgan, John, New York, N. Y. Mineral waters	17,002	Sept. 10	48	1404
Morgan, John, New York, N. Y. Ginger-ale	17,003	Sept. 10	48	1404
Morse & Kaley Manufacturing Company, Milford, N. H. Knitting and darning yarns	17,057	Sept. 24	48	1666
Mudge, Richard C., and E. M. Wasson, Detroit, Mich. Paper clothing	16,904	Aug. 6	48	678
Myers & Co., E., St. Louis, Mo. Powdered lye	16,949	Aug. 20	48	978
Myers, Thomas, Liverpool, county of Lancaster, England. Spiced food for cattle	16,826	July 16	48	264
National Distilling Company, Milwaukee, Wis. Compressed yeast	16,961	Sept. 3	48	1208
National Fly Paper Company, Cincinnati, Ohio. Sticky fly-paper	16,929	July 16	48	264
Natural Dam Pulp Company, New York and Gouverneur, N. Y. Pulp made of pulverized, powdered, and prepared minerals	16,929	Aug. 13	48	826
Noilly Prat & Cie., Marseilles, France. Vermouth	17,059	Sept. 24	48	1666
Noilly Prat & Cie., Marseilles, France. Vermouth	17,060	Sept. 24	48	1666
Nunn, Charles W., Salt Lake City, Utah Ter. Liniment	16,782	July 2	48	2
Obmeis & Co., P. M., New York, N. Y. Beer	17,006	Sept. 10	48	1404
Oneida Cigar Co., Oneida, N. Y. Cigars	17,007	Sept. 10	48	1404
Overton, London, England. Plate-powder	16,783	July 2	48	2
Owen, Tubal-Cain, Ypsilanti, Mich. Deodorized and charged mineral water	16,760	July 2	48	2
Palmer, Solon, New York, N. Y. Perfumes	16,964	Aug. 27	48	1124
Patrick, John W., Boston, Mass. Restorative specific	16,982	Sept. 3	48	1208
Paulus & Co., Albert B., Pittsfield, Mass. Corn cure	16,967	Aug. 27	48	1124
Pector & Ducout, Jr., Paris, France. Cognac brandy	17,008	Sept. 10	48	1404
Peltzer Gebrüder, Crefeld, Prussia, Germany. Velvets and plushes	16,946	Aug. 20	48	978
Peninsular Trading and Fishing Company, San Francisco, Cal. Hermetically-sealed salmon	17,061	Sept. 24	48	1666
Peninsular Trading and Fishing Company, San Francisco, Cal. Hermetically-sealed salmon	17,062	Sept. 24	48	1666
Perkins & Ernst, Covington, Ky. Chewing-tobacco, particularly plug	16,865	July 23	48	404
Peters & Miller Shoe Company, St. Louis, Mo. Shoes for men, women, and children	16,905	Aug. 6	48	678
Pinault, Marie J., Boston, Mass. Liquid antiseptic preparations	16,930	Aug. 13	48	826
Plainville Stock Company, Plainville and Wrentham, Mass. Pins, bracelets, chains, charms, sleeve and shirt buttons, and like articles	16,866	July 23	48	404
Plymouth Cordage Company, Plymouth, Mass. Ropes, yarns, twines, and cords	16,891	July 30	48	542
Potter Drug and Chemical Co., Boston, Mass. Medicinal plasters	16,906	Aug. 6	48	678
Potter, Florence, New York, N. Y. Medicines to prevent unnatural accumulation of flesh	16,829	July 16	48	264
Poure, O'Kelly & Co., Bordeaux, France. Metallic pens	17,041	Sept. 17	48	1542
Prowell, Elmer E., Portland, Oreg. Liniment	16,770	July 2	48	2
Radam, William, Austin, Tex. Medicinal preparation of a prophylactic character	16,848	July 23	48	404
Radam, William, Austin, Tex. Medicinal preparation of a prophylactic character	16,849	July 23	48	404
Rankin, Alfred J., Pittsburg, Pa. Medicines for stomach and bowel difficulties	16,830	July 16	48	264
Read, William F., Philadelphia, Pa. Dress-goods and umbrella-coverings	16,852	July 23	48	404
Reed & Carnrick, New York, N. Y. Milk food for infants and invalids	16,950	Aug. 20	48	978
Reed & Carnrick, New York, N. Y. Solvent for diphtheritic membrane	16,983	Sept. 3	48	1208
Reed, Waldo, and E. S. Barton, Taunton, Mass. Polish for jewelry, metals, mirrors, and the like	17,063	Sept. 24	48	1666
Revel Père et Fils, F., Lyons, France. Parasols and umbrellas	16,831	July 16	48	264
Revere Rubber Company, Boston, Mass. Rubber or cotton hose	16,892	July 30	48	542
Revere Rubber Company, Boston, Mass. Rubber or cotton hose	16,893	July 30	48	542

Alphabetical list of registrants of trade-marks, July to September, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Richter, Friedrich A., Nuremberg and Rudolstadt, Germany; Vienna, Austria-Hungary; Rotterdam, Holland, and New York, N. Y. Embrocation preparations or extracts of sarsaparilla, stomachic tinctures, bitters, lozenges, and pastils	16,853	July 23	48	404
Robert, Louis A. E., Méru, Oise, France. Brushes	16,908	July 16	48	264
Roberts, C. Wesley, Washington, D. C. Preparation for a medicinal bath	16,984	Sept. 3	48	1268
Robinson & Brandeo, New Orleans, La. Playing-cards	16,951	Aug. 20	48	978
Russian American Packing Company, San Francisco, Cal. Canned salmon	17,064	Sept. 24	48	1666
Ruth Pipe Company, St. Louis, Mo. Tobacco-pipes	16,952	Aug. 20	48	978
Sanford Whip Company, Westfield, Mass. Carriage or driving whips	17,065	Sept. 24	48	1666
Saxe, De Forest W., Omaha, Nebr. Medicine in the nature of a sirup for certain diseases named	16,832	July 16	48	264
Schiffmann, Rudolph, St. Paul, Minn. Medical compounds for the treatment of asthma	16,771	July 2	48	2
Schlichter Jute Cordage Company, Philadelphia, Pa. Cordage	17,009	Sept. 10	48	1404
Schubmehl, Nicholaus, Binghamton, N. Y. Cigars, cigarettes, and tobacco	17,010	Sept. 10	48	1404
Scott, David, Eastport, Me. Liniment	16,783	July 2	48	2
Sechler Carriage Company, D. M., Moline, Ill. Carts	16,968	Aug. 27	48	1124
Seeger, Charles L., New York, N. Y. Writing and printing paper	16,833	July 16	48	264
Shniedewend & Lee Company, Chicago, Ill. Paper-cutting machines	16,854	July 23	48	404
Shniedewend & Lee Company, Chicago, Ill. Paper-cutting machines	16,855	July 23	48	404
Shniedewend & Lee Company, Chicago, Ill. Printing-presses	16,856	July 23	48	404
Simon, Joseph, Paris, France. Glycerine-cream	17,042	Sept. 17	48	1542
Sinnock & Sherrill, New York, N. Y. Finger-rings	16,908	Aug. 6	48	678
Sleeman, Henry B., London, England. Catheters, bougies, stomach, rectum, and vagina tubes, specula and enema tubes	17,043	Sept. 17	48	1542
Sleeman, Henry B., Addiscombe, county of Surrey, England. Tooth-paste, cold cream, lip-salve, shaving-paste, and shaving-soap	17,066	Sept. 24	48	1666
Slosson, Rufus D., Chicago, Ill. Axle and shafting grease and oil	17,044	Sept. 17	48	1542
Smith, Benjamin H., Kansas City, Mo. Light bread, cakes, pies, and all bakery products	17,045	Sept. 17	48	1542
Smith, John A., South Bend, Ind. Remedy for rheumatism and like diseases	16,834	July 16	48	264
Smith & Washburn, Sing Sing, N. Y. Aerated non-alcoholic beverages	16,784	July 2	48	2
Snow, William H., High Point, N. C. Cured tobacco	16,953	Aug. 20	48	978
Sonnehill & Son, K. B., Baltimore, Md. Corsets	16,954	Aug. 20	48	978
Stapley & Smith, London, England. Ladies' and children's under-clothing, garments, corsets, and embroideries, laces, and trimmings for the same	17,011	Sept. 10	48	1404
Stapley & Smith, London, England. Ladies' and children's under-clothing, garments, corsets, and embroideries, laces, and trimmings for the same	17,012	Sept. 10	48	1404
Stapley & Smith, London, England. Ladies' and children's under-clothing, garments, corsets, and embroideries, laces, and trimmings for the same	17,013	Sept. 10	48	1404
Sterling Fast Black Glove Co., Boston, Mass. Gloves	16,857	July 23	48	404
Stern, Daniel, Chicago, Ill. Newspaper	16,858	July 23	48	404
Stewart, John H., Danville, Va. Plug and twist chewing-tobacco	16,985	Sept. 3	48	1268
Stewart, Silas S. (See Hillard and Stewart.)				
Stoops, Nesbitt D., Philadelphia, Pa. Oil for sewing-machines and light machinery	16,803	July 9	48	120
Sullivan, Patrick J., Sault Ste. Marie, Mich. Whisky	16,804	July 9	48	120
Suter, Hartmann & Rahtjens Composition Company, (limited,) London, England. Paints, compositions, anti-corrosives, and anti-foulers	17,035	Sept. 17	48	1542
Taylor & Sons, E. H., Jr., Frankfort, Ky. Hand-made sour-mash whisky	17,067	Sept. 24	48	1666
Thompson & Company, John H., Detroit, Mich. Coffee	16,894	July 30	48	542
Thompson, George W., New York, N. Y. Toilet-paper	16,859	July 23	48	404
Thomson, William S., London, England. Various toilet preparations	17,014	Sept. 10	48	1404
Thorne & Company, Henry, (limited,) Leeds and London, England. Cocoa	16,772	July 2	48	2
Tide Water Oil Company, New York, N. Y. Illuminating-oil	16,774	July 2	48	2
Tilden & Co., New Lebanon, N. Y. Medicinal preparation for curing dyspepsia and kindred disease	16,785	July 2	48	2
Tilden & Co., New Lebanon, N. Y. Deodorizers and disinfectants with styptic, antiseptic, and alterative qualities	16,786	July 2	48	2
Topaz Cinchona Cordial Company, Atlanta, Ga. Cordial, liver-pills, blood-specific, and ointment	16,860	July 23	48	404
Trinidad Asphaltum Block Company, Philadelphia, Pa. Asphaltum paving-blocks	16,805	July 9	48	120
Tyer Rubber Company, Andover and Boston, Mass. Druggists' rubber goods, as nipples, syringes, teething-rings, water-bottles, air-pillows, air-cushions, &c	16,806	July 9	48	120
Van Deventer & Co., Plainfield, N. J. Ingrain carpets and rugs	16,931	Aug. 13	48	826
Venner, John F., Portland, Oreg. Liquid remedy for internal and external use	17,046	Sept. 17	48	1542
Walden-Parcels-Jordan Shoe Company, St. Louis, Mo. Children's shoes	16,773	July 2	48	2
Wallwork, Roughsedge, and A. C. Wells, Manchester and London, England. Illuminating-oils	16,932	Aug. 13	48	826
Wallwork, Roughsedge, and A. C. Wells, Manchester and London, England. Oil lamps or stoves and burners therefor	16,965	Aug. 27	48	1124
Warnier, Maurice, New York, N. Y. Puzzles	16,955	Aug. 20	48	978
Wasson, Edgar M. (See Mudge and Wasson.)				
Watkins & Son, Charles, Hereford, county of Hereford, England. Fermented, malt, and distilled liquors	16,933	Aug. 13	48	826
Watts De Golyer Company, Chicago, Ill. Varnishes, stains, japans, surfacers, and kindred goods	16,914	Aug. 13	48	826
Weldless Steel Tube Co., Birmingham, county of Warwick, England. Metallic tubes of all descriptions	16,956	Aug. 20	48	978
Wells, Arthur C. (See Wallwork & Wells.)				
Wertheim, Carrie, New York, N. Y. Liquid medicine to cure rheumatism	16,835	July 16	48	264
Westcott Chuck Company, Oneida, N. Y. Lathe-chucks	17,068	Sept. 24	48	1666
Weston, Lizzie M., Amherst, N. H. Medicinal preparations for treating and beautifying the finger-nails	17,069	Sept. 24	48	1666
White Bros. & Co., Boston and Lowell, Mass. Leather, upholstery leather, and articles manufactured therefrom, such as foot-wear, hand-bags, pocket-books, and the like	16,934	Aug. 13	48	826
Whittall, Matthew J., Worcester, Mass. Brussels carpets	16,957	Aug. 20	48	978
Whitten, Charles O., Cambridge, Mass. Phosphated preparations of gelatine	16,935	Aug. 13	48	826
Williams, Charles F., Thomaston, Conn. Various specified medical preparations	16,987	Sept. 3	48	1268
Williams, William C., Olean, N. Y. Dressed poultry	17,070	Sept. 24	48	1666
Williamson, Drew D., New York, N. Y. Coffee-extract	16,873	July 30	48	542
Wilson Grocery Company, Peoria, Ill. Kerosene-oil	16,861	July 23	48	404
Woodbury, John H., New York, N. Y. Facial soap	16,958	Aug. 20	48	978
Wooldridge & Co., R. A., Baltimore, Md. Guano	16,988	Sept. 3	48	1268
Worcester Fire Appliance Company, Worcester, Mass. Chemical fire-extinguishing apparatus	16,807	July 9	48	120
Ziegler Company, George, Milwaukee, Wis. Confectionery	16,862	July 23	48	404

ALPHABETICAL LIST OF REGISTRANTS OF LABELS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
Ammon, Jacob S. (See Seeber and Ammon.)				
Austin & Co., E. J., Three Rivers, Mich. "This Fluid" (for Cleaning Fabrics)	5,955	July 2	48	2
Averbeck, Max J., Youngstown, Ohio. "Averbeck's Birch Beer"	5,966	July 16	48	264
Averbeck, Max J., Youngstown, Ohio. "Averbeck's Birch Beer"	5,967	July 16	48	264
Bliss, A. O., Richmond, Va. "Our Native Herbs." (For a medicine)	5,999	Aug. 20	48	978
Bolling Drug Company, Little Rock, Ark. "Ague Busters." (For medicines)	6,002	Aug. 27	48	1124
Carter, Dinsmore & Co., Boston, Mass. "Carter's Liquid Glue"	5,977 and 5,978	July 23	48	404
Croser & Son, Samuel A., Upland, Pa. "Warranted Fast Colors," (for Cotton Goods)	5,968	July 16	48	264
Dalsimer, Eva, Philadelphia, Pa. "Dalsimer Last." (for Boots and Shoes)	5,981	July 30	48	542
Detweiler, William C., Easton, Pa. "Dr. W. C. Detweiler's Marvelous Specifics"	5,979	July 23	48	404
Dickson, Myron, Martinsville, Ind. "Martinsville Mineral Water"	5,982	July 30	48	542
Dickson, Myron, Martinsville, Ind. "Martinsville Artesian Mineral Water"	5,983	July 30	48	542
Diehl, George H., Chicago, Ill. "Diehl's Sausage"	6,014	Sept. 17	48	1542
Dixon, A. H., Toronto, Canada. "Hospital Remedies"	5,958	July 9	48	120
Downs, James P., New York, N. Y. "Cycle-Chain Graphite," (For a Lubricant for Tricycle and Bicycle Chains)	5,985	Aug. 13	48	826
Draper, A. A., Blue Island, Ill. "Mrs. A. A. Draper's Corn Killer"	5,959	July 9	48	120
Frost & Co., George, Boston, Mass. "One (Baker's) Dozen." (For safety-pins)	6,001	Aug. 20	48	978
Genesee Salt Company, New York and Piffard, N. Y. "Packers' Factory Filled." (for Salt)	5,984	July 30	48	542
Getman & Lainson, Ida Grove, Iowa. "Dr. Getman's Pain Relief or Mountain Herb Liniment"	6,011	Sept. 10	48	1404
Glasgo Yarn Mills Company, Glasgo, Conn. "Glasgo Lace Thread Co"	5,994	Aug. 6	48	678
Gonaux, François, Houma, La. "Gonaux's Anti Asthmatic Powder"	6,021	Sept. 24	48	1666
Greff, Henry, New Orleans, La. "Greff's Ruatan Chewing Gum"	5,991	Aug. 6	48	678
Grocers Supply and Storage Company, Pittsburg, Pa. "Dundee Creamery Butter"	5,992	Aug. 6	48	678
Haas, Aaron. (See Marx and Haas.)				
Hamilton, Belle F., Chicago, Ill. "Sure Cure, (Never Fails)." (For a Medicine)	5,996	Aug. 13	48	826
Hancock, John H., Baltimore, Md. "Brome Celery Compound." (For a Medicinal Preparation)	5,997	Aug. 13	48	826
Hatch, James L., Rochester, N. Y. "The Hatch Rochester Leather Counter"	6,003	Aug. 27	48	1124
Heim Brewing Co., Ferd., Kansas City, Mo. "Hop Tea Tonic"	5,985	July 30	48	542
Holden, Isaac D., Stockton, Cal. "Holden's Cough Syrup"	5,976	July 23	48	404
Jencks, Sherwood R., Milwaukee, Wis. "Jencks' Pile Remedy"	5,986	July 30	48	542
Jungkind, John A., Little Rock, Ark. "Arnica Premium Salve"	6,022	Sept. 24	48	1666
Kelley, Austin, Brooklyn, N. Y. "Back." (For stays for ladies' dress waists)	6,010	Sept. 3	48	1268
Kelley, Austin, Brooklyn, N. Y. "Back." (For a dress-stay)	6,015	Sept. 17	48	1552
Kelley, Austin, Brooklyn, N. Y. "Dart." (For a dress-stay)	6,016	Sept. 17	48	1542
Kelley, Austin, Brooklyn, N. Y. "Under-Arm." (For a dress-stay)	6,017	Sept. 17	48	1542
Kelley, Austin, Brooklyn, N. Y. "Side-Back." (For a dress-stay)	6,004	Aug. 27	48	1124
Kincaid, S. J., Clay Center, Nebr. "Kincaid's Corn Cure"	5,960	July 9	48	120
Langlés, Justin J., New Orleans, La. "Langles" (for Biscuits)	5,987	July 30	48	542
Langlés, Justin J., New Orleans, La. "Langlés Biscuits"	6,012	Sept. 10	48	1404
Lauer, Frederick C., Minneapolis, Minn. "Mexican Filler." (For cigars)	6,007	Sept. 3	48	1268
Leibe, Daniel, Newark, N. J. "Leibe's Remedy for Piles"	5,973	July 23	48	404
Mack, Julius S., Kansas City, Mo. "The 'Luster' Furniture Polish"	5,974	July 23	48	404
Manahan, Margaret E., New York, N. Y. "Brand B" (for Sheathing Paper)	5,980	July 23	48	404
Manahan, Margaret E., New York, N. Y. "Japanese Brand," (for Moth Paper)	5,961	July 9	48	120
Marx, Harry N., and A. Haas, St. Louis, Mo. "The St. Louis Jeans Pants"	5,962	July 9	48	120
Maurer, Conrad D., Philadelphia, Pa. "D. Maurer & Son's Infallible Rat and Roach Exterminator"	6,000	Aug. 20	48	978
Merchant & Co., Philadelphia, Pa. "Merchant's Roofing"	5,963	July 9	48	120
Merriam, Dr. C. K., Ludington, Mich. "Dr. C. K. Merriam's Female Herbal Pastilettes"	5,993	Aug. 6	48	678
Miller, Mary, and E. Gundacker, Deer Lodge, Mont. "Golden Seal Catarrh Cure"	5,969	July 16	48	264
Mortimer, Lou, New York, N. Y. "1-7 Ball Puzzle"	6,023	Sept. 24	48	1666
Nemegyei, Felix, Irondale, W. Va. "Irondale Spring Water." (For natural mineral water)	5,956	July 2	48	2
Ohmart, Samuel, Covington, Ohio. "Ohmart's Liniment"	5,964	July 9	48	120
Parker, Charles, Stockton, Cal. "Hair Wash"	6,005	Aug. 27	48	1124
Pierce, H. H., Toledo, Ohio. "Pierce's Selected Calcined Plaster"				
Plymouth Cordage Company, Plymouth and Boston, Mass. "Plymouth Cordage Company" (for Ropes, Yarns, and Twines)	5,988	July 30	48	542
Pomeroy, Henry R., Indianapolis, Ind. "Pomeroy's Quintessence of Celery"	5,986	Aug. 13	48	826
Potter & Tillinghast, Providence, R. I. "Portland Boot"	5,957	July 2	48	2
Saxe, De Forest W., Omaha, Nebr. "Saxe's Phospho-Guarana With Celery"	5,989	July 30	48	542
Scott & Co., Toledo, Ohio. "Woodruff's Catarrh Snuff"	5,970	July 16	48	264
Seeber, Frank A., and J. S. Ammon, Reading, Pa. "Coin Gum." (For packages of chewing-gum with which coin is given away)	6,013	Sept. 10	48	1404
Smith, George, Little Cooley, Pa. "Smith's Iron Wood and Vegetable Specific Bitters"	6,024	Sept. 24	48	1666
Sommer, Adolph, Berkeley, Cal. "Viscol-Dressing" (for Leather)	5,965	July 9	48	120
Stahl, F. A. (See Thomas and Stahl.)				
Stovall & Co., L. P., Danville, Va. "One Solid Foot of Chewing Tobacco for 10 cts." (For tobacco)	6,018	Sept. 17	48	1542
Taylor, E. W., Jefferson, Tex. "Taylor's Compound Elixir of Blackberry"	6,008	Sept. 3	48	1268
Taylor, E. W., Jefferson, Tex. "Taylor's Extract of Ginger and Tolu with Mint"	6,009	Sept. 3	48	1268
Thomas, George, and F. A. Stahl, Effingham, Ill. "Hog Cholera Cured." (For a medical compound)	6,006	Aug. 27	48	1124
Union Print Works, New York, N. Y. "Bay Side," (for Printed Woolen Goods)	5,971	July 16	48	264
Union Print Works, New York, N. Y. "Riversdge" (for Printed Woolen Goods)	5,990	July 30	48	542
Voelcker, Jacob C. H., Louisville, Ky. "Voelcker's Prune Syrup Laxative"	6,019	Sept. 17	48	1542
Walt, Robert J., Greenwich, N. Y. "White Pine." (For a cough cure)	6,020	Sept. 17	48	1542
Wales, William R., Baltimore, Md. "Chemical and Vegetable Parlor Illuminator" (for Burning Fluid)	5,975	July 23	48	404
Young, Martin B., Philadelphia, Pa. "Young's Headache Tablets"	5,972	July 16	48	264

DISCLAIMERS.

Name, residence, and invention.	No.	Filed.	Official Gazette. Vol.	Page.
Deering, Mark L., Cleveland, Ohio; disclaimer filed by assignee. Manufacture of paper bags. (Reissue)	10,083	July 29, 1869	48	678
Ellis, James M., Bridgeport, Conn.; disclaimer filed by assignee. Coil-spring garters and belts	145,160	June 29, 1869	48	120
Hyatt, Isaac S., Morristown, N. J.; disclaimer filed by assignee. Purifying water	293,740	July 27, 1869	48	678
Short, Sidney H., Columbus, Ohio; disclaimer filed by patentee. Insulating support for electric conductors	398,661	July 15, 1869	48	404
Whysall, George, Toledo, Ohio, and John A. Lambing, Wilkinsburg, Pa.; disclaimer filed by patentees. Gas-furnace for steam-boilers	398,462	Sept. 4, 1869	48	1404

ALPHABETICAL LIST OF INVENTIONS.

Invention.	Name.	No.	Date.	Monthly volume. Specification.	Drawing.	Official Gazette. Volume.	Page.
Abdominal supporter	I. M. Ferris	407,341	July 23	1993	518	48	413
Abrasive surfaces. Tool for dressing	G. G. Crowell	410,581	Sept. 10	677	181	48	1408
Acid. Apparatus for extracting sulphurous	E. Hänisch and M. Schroeder	410,415	Sept. 3	437	115	48	1355
Acid. Making beta naphthol carbon	R. Schultz	410,395	Sept. 3	241	.....	48	1316
Acid. Making paraoxybenzoic	B. E. Seifert	407,906	July 30	2830	.....	48	562
Acids. Purifying fatty	C. Bardy	406,159	July 9	188	54	48	39
Adding-machine	J. H. Schnarrenberger	409,710	Aug. 27	2300	{604, 605}	48	1141
Advertising and street-announcing apparatus	G. W. McKenzie and W. I. Miller	411,050	Sept. 17	1392	373	48	1556
Advertising device	R. Freeland	408,009	Aug. 6	616	159	48	797
Advertising device or coin-protector	E. W. Parker	411,309	Sept. 17	1902	507	48	1654
Aerator. Milk	P. W. Strong	411,694	Sept. 24	2355	622	48	1751
Aeriform fluids. Administering	J. C. Kennedy	408,723	Aug. 13	807	213	48	840
Agitator and conveyer. Combined	V. D. Anderson	409,816	Aug. 27	2469	645	48	1173
Agricultural boiler	I. Shoudy, Jr.	407,498	July 23	2235	577	48	400
Agricultural boiler	I. Shoudy, Jr., and L. L. Miller	407,497	July 23	2234	577	48	400
Agricultural implement. Wheeled	N. B. Spradley	408,963	July 16	1415	371	48	292
Air. Apparatus for cooling, warming, moistening, or saturating	J. Howorth	408,216	July 2	966	73	48	55
Air-brake	H. S. Park	407,445	July 23	2163	{558, 559}	48	446
Air-brake	N. J. Pritchard	410,922	Sept. 10	1206	396	48	1510
Air-brakes. Releasing attachment for automatic	E. J. Lewis	410,288	Sept. 3	230	60	48	1314
Air-compressor	H. Davey	409,773	Aug. 27	2392	627	48	1159
Air engine. Compressed	B. F. Wright	408,784	Aug. 13	893	{238, 239, 240}	48	856
Air-heater	L. Hussey	411,382	Sept. 17	1888	504	48	1652
Alarm: *See* Burglar-alarm. Knob-alarm. High and low water alarm.							
Alarm	J. M. Schmidt	408,992	Aug. 13	1205	318	48	918
Alarm	G. M. Williams	409,068	Aug. 13	1355	358	48	946
Album	C. Jaeger	407,074	July 16	1567	412	48	322
Alcohol. Rectification of	A. T. Christoph	408,583	Aug. 6	581	.....	48	791
Alcoholic liquids. Manufacture of	J. Takamine	411,231	Sept. 17	1673	.....	48	1613
Alloy for secondary-battery plates	E. R. Knowles	408,182	July 30	3270	854	48	663
Alloy. Non-magnetic	H. Ostermann and C. Lacroix	408,130	July 30	3181	.....	48	648
Alloys. Making aluminium	W. A. Baldwin	406,343	July 2	500	.....	48	102
Aluminium chlorides. Purifying	H. Y. Castner	409,664	Aug. 27	2224	.....	48	1130
Aluminium. Obtaining alloys of	L. O. Brin	410,574	Sept. 10	668	178	48	1406
Aluminium. Producing	M. Wanner	410,568	Sept. 3	654	174	48	1397
Ammonia-soda apparatus	J. P. Barnum	409,382	Aug. 20	1804	475	48	1041
Anchor	J. O. Jones	406,285	July 2	358	98	48	72
Anchor-tripper	C. W. Delon	409,176	Aug. 20	1499	397	48	963
Andiron and fender. Combined	S. Dunn	406,508	July 9	729	200	48	153
Aniline-black	J. Bracewell	409,822	Aug. 27	2468	.....	48	1173
Aniline-black discharge	J. Bracewell	409,819	Aug. 27	2463	.....	48	1173
Animal-catching device	C. Wisdon	407,496	July 23	2133	550	48	430
Animal-releasing device	M. M. Shelley	406,674	July 9	977	263	48	199
Animal-shears	R. Dixon	410,352	Sept. 3	338	89	48	1335
Animal-trap	H. Barry	407,987	July 30	2803	730	48	578
Animal-trap	E. L. Dunlap	407,646	July 23	2446	633	48	503
Animal-trap	H. E. Kelley	409,467	Aug. 20	1925	510	48	1067
Animal-trap	H. E. Kelley	409,468	Aug. 20	1927	510	48	1067
Animal-trap	H. E. Kelley	411,089	Sept. 17	1378	370	48	1554
Animal-trap	H. E. Kelley	411,246	Sept. 17	1603	452	48	1616
Animal-trap	H. E. Kelley	411,247	Sept. 17	1604	453	48	1616
Animal-trap	Z. R. Kidder	409,592	Aug. 20	2102	554	48	1099
Animal-trap	L. N. Loomis	409,212	Aug. 20	1551	410	48	992
Animal-trap	H. J. Seymour	407,129	July 16	1071	436	48	343
Animal-trap	A. Worden	409,381	Aug. 20	1803	474	48	1041
Animals by electricity. Apparatus for treating	G. M. Lawrance	409,470	Aug. 20	1929	{510, 511}	48	1068
Animals. Device for catching	I. S. Krick	408,309	Aug. 6	153	38	48	709
Annunciator	A. A. Vanderpool	406,377	July 2	497	139	48	99
Annunciator. Electric polarized	C. E. Scribner	411,133	Sept. 17	1534	409	48	1584
Ant-trap	E. E. Davis	407,889	July 30	2806	731	48	578
Antimony. Double sulphate of	C. J. E. de Haën	407,925	July 30	2864	.....	48	586
Anvil. Farrier's	J. T. Nichols	407,833	July 30	2722	{706, 707}	48	562
Anvil. Horseshoe	J. Houck	410,972	Sept. 10	1283	347	48	1526
Anvil. Horseshoe	L. E. Wescott	411,405	Sept. 17	1922	513	48	1656
Arches. Construction of	J. Bogert	411,213	Sept. 17	1651	{439, 440}	48	1607
Arches for flooring. Apparatus for laying tile	J. Pajeau	411,468	Sept. 24	2021	535	48	1682
Armature	J. R. Johnson	410,592	Sept. 10	692	185	48	1410
Armature	C. F. Winkler	411,629	Sept. 24	2257	600	48	1731

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Armature-core for dynamos	D. Higham	409,463	Aug. 20	1920	508	48	1066
Armature. Dynamo-	S. C. C. Currie	406,429	July 9	582	164	48	126
Armature for electric machines	A. Schmid	406,777	July 9	1135	301	48	228
Armature-winding for dynamos	J. J. Wood	406,492	July 9	698	193	48	118
Armatures. Protecting-case for	A. L. Riker	408,045	July 30	3036	794	48	622
Armlets, &c. Making	G. H. Blakesley	411,416	Sept. 24	1946	518	48	1068
Armpit-shield	N. Bain	407,318	July 23	1948	508	48	405
Artist's drawing-board	T. C. Roussel	406,675	Aug. 6	722	188	48	817
Artist's field and material case	C. J. Krumbein	409,962	Aug. 27	2263	704	48	1215
Artist's wet-canvas carrier	F. D. Sutton	406,937	Aug. 13	1125	297	48	904
Asbestus sheets. Manufacturing	H. W. Johns	408,538	Aug. 13	974	.....	48	874
Astronomical mirror	D. O'Brien	408,511	Aug. 6	468	123	48	771
Atomizer	P. Köthner	406,288	July 2	360	98	48	73
Atomizer for dampening fabrics	M. Partington	410,187	Sept. 3	78	19	48	1283
Atomizer for dampening fabrics	M. Partington	410,188	Sept. 3	80	20	48	1283
Atomizing solid substances. Apparatus for	S. W. Kimble	410,247	Sept. 3	167	44	48	1301
Augers. Die for the manufacture of	J. A. Marsell	406,497	Aug. 6	445	116	48	767
Aurin derivatives. Making	T. Sandmeyer	410,739	Sept. 10	942	.....	48	1456
Automaton. Coin-operated	A. M. Pierce	411,106	Sept. 17	1496	397	48	1576
Awl. Centering	L. Van Alstyne	409,130	Aug. 13	1426	375	48	980
Ax-helve	H. Hall, Jr.	406,899	July 16	1324	347	48	274
Axes. Manufacture of	H. Hammond	407,591	July 23	2168	614	48	429
Axle-box	C. B. Hobron	410,590	Sept. 10	690	185	48	1410
Axle-box	P. Pfeifer	408,633	Aug. 6	653	{169 / 170	48	805
Axle box. Car-	H. M. Johnson	408,860	Aug. 13	1043	276	48	887
Axle box. Car-	D. S. Stimson	406,151	July 2	178	51	48	36
Axle-box lid. Car-	L. Freidel	406,721	July 9	1047	279	48	211
Axle boxes. Dust-guard for car-	C. W. Hayes	411,100	Sept. 17	1485	394	48	1574
Axle-lubricator	E. S. Coyle	409,018	Aug. 13	1248	330	48	926
Axle-lubricator	H. M. Goodman	409,573	Aug. 20	2071	546	48	1094
Axle-lubricator	A. A. Gregory	409,962	Aug. 27	2660	698	48	1210
Axle-lubricator	J. L. House	406,839	July 9	1231	326	48	247
Axle-lubricator	J. E. Shaw	410,719	Sept. 10	909	244	48	1449
Axle lubricator. Carriage-	J. A. Wilson	408,155	July 30	3215	{839 / 840	48	654
Axle nut. Carriage-	A. E. Herman	409,681	Aug. 27	2254	593	48	1133
Axle. Self-lubricating car-	F. J. Seymour	407,256	July 16	1864	486	48	360
Axle. Vehicle-	A. E. Herman	409,380	Aug. 27	2253	593	48	1133
Axle. Vehicle-	H. F. Kartowitz	406,101	July 2	112	33	48	24
Axle. Vehicle-	J. G. Kenyon	409,362	Aug. 20	1773	467	48	1035
Axle. Vehicle-	C. F. Milburn	407,541	July 23	2312	594	48	475
Axle. Vehicle-	J. T. Miller	408,839	Aug. 13	975	259	48	874
Axle washer. Vehicle-	C. C. Jerome	409,790	Aug. 27	2421	633	48	1164
Back-band hook	J. A. Elliott	410,081	Aug. 27	2839	745	48	1243
Back-band hook	D. D. Nolley	410,206	Sept. 10	1048	280	48	1479
Back-band hook	F. A. Yost	410,998	Sept. 10	1320	356	48	1583
Bag: *See* Cloth bag. Paper bag. Feed-bag. Traveling-bag. Life-preserving buoyant bag.							
Bag frame. Traveling-	O. Zimmer	410,478	Sept. 3	531	142	48	1372
Bag-holder	J. Feess	409,946	Aug. 27	2637	692	48	1206
Bag-holder	E. K. Wilson	411,701	Sept. 24	2365	626	48	1733
Bag-holder or bill-file	J. S. Jones	406,047	July 2	35	10	48	10
Bag or satchel frame	W. Roemer	406,594	July 9	846	228	48	175
Bag-string cutter	R. A. Bauer	407,567	July 23	2338	605	48	453
Bag-tie	A. Maffett	410,179	Sept. 3	49	13	48	1276
Bag-tying device	M. C. Kimball	410,978	Sept. 10	1293	349	48	1528
Bags, satchels, &c. Catch for	R. C. Jenkinson	411,445	Sept. 24	1987	527	48	1675
Bags, satchels, &c. Spring-catch for	R. C. Jenkinson	411,446	Sept. 24	1989	527	48	1675
Bagging apparatus	T. B. Jones	406,218	July 2	268	74	48	53
Bagasse-furnace	F. Cook	408,587	Aug. 6	586	153	48	792
Bagasse-furnace	F. Cook	408,588	Aug 6	588	153	48	792
Bagasse-furnace	W. W. Sutcliffe	407,703	July 23	2520	{651 / 652	48	518
Baking-pan	J. J. Seifert	410,936	Sept. 10	1227	330	48	1514
Balancing apparatus for wheels, &c.	T. A. Griffin	407,589	July 23	2366	613	48	488
Bale covering. Cotton-	R. M. Walsh	410,387	Sept. 3	386	{102 / 103	48	1345
Bale-tie machine. Wire-	W. A. Laidlaw	408,114	July 30	3159	826	48	644
Baling or bundling machine	D. D. Brown	411,422	Sept. 24	1956	520	48	1669
Baling-press	Z. J. Anderson	407,315	July 23	1945	507	48	405
Baling-press	W. M. Denman	408,069	July 30	3097	{811 / 812	48	634
Baling-press	L. S. Flatau	406,206	July 2	254	70	48	51
Baling-press	J. H. Gardner	407,290	July 16	1912	498	48	389
Baling-press	W. Hillman and J. F. Ripple	411,501	Sept. 24	2061	545	48	1690
Baling-press	J. W. Hunter	406,048	July 2	34	10	48	9
Baling-press	E. P. Jaqua	410,102	Aug. 27	2879	755	48	1251
Baling-press	W. A. Laidlaw	408,115	July 30	3163	{826 / 827	48	644
Baling-press	J. Price	409,335	Aug. 20	1735	456	48	1028
Baling-press	E. C. Sooy	410,679	Sept. 10	832	224	48	1437
Baling-press	T. Tebow	410,046	Aug. 27	2777	{730 / 731	48	1233
Baling-press	A. D. Thomas	411,558	Sept. 24	2144	{568 / 569	48	1707
Baling-press	W. E. Walter	406,680	July 9	988	{965 / 966	48	201
Baling-press	H. L. Whitman	410,473	Sept. 3	523	141	48	1371
Ball: *See* Twine ball.							
Ball-and-socket joint	W. Buchanan	406,561	July 9	802	{217 / 218	48	167

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Ball-and-socket joint for steam-pipe connections	T. Curley	409,277	Aug. 20	1650	435	48	1012
Ballot-box. Registering and canceling	L. M. Foster	406,093	July 30	3107	813	48	635
Ballot. Envelope-	J. R. Gathright	411,142	Sept. 17	1544	412	48	1586
Ballots. Canceling	S. J. Howell	406,922	Aug. 6	637	165	48	802
Band. Covered elastic endless	J. Ashworth	409,001	Aug. 13	1216	321	48	920
Band-cutter and feeder	L. Close	406,084	July 30	3090	810	48	632
Band-cutter and feeder	H. C. Cook	410,785	Sept. 10	1018	273	48	1473
Band-cutter and feeder	H. L. Earle	409,461	Aug. 20	1916	{507 / 508	48	1065
Band-cutter and feeder	D. West	407,803	July 30	2679	{695 / 696	48	551
Bar: *See* Clothes-bar. Grate-bar. Fire-engine grate-bar. Horseshoe-bar.							
Barber-shop indicator	B. R. Dudley and A. B. Cosby	411,281	Sept. 17	1745	466	48	1626
Barber's chair	F. Heine	408,236	Aug. 6	56	13	48	669
Barber's chair	H. A. Schneckloth	410,296	Sept. 3	242	63	48	1316
Barbing-machines. Automatic stop for	A. M. Munson	408,737	Aug. 13	893	{217 / 218	48	843
Barrel	J. W. Wheatley	408,277	Aug. 6	110	28	48	701
Barrel-brander	M. Wolf	411,561	Sept. 24	2149	569	48	1708
Barrel-cover	J. Moosbrugger. (Reissue)	11,027	Aug. 27	2940	773	48	1362
Barrel-cover	T. E. Ragland	409,803	Aug. 27	2440	640	48	1168
Barrel-cover	J. Rath	409,301	Aug. 20	1685	443	48	1018
Barrel-heater	G. T. Chester	406,992	July 2	325	90	48	65
Barrel-hoop	G. W. Parrish	409,228	Aug. 20	1572	415	48	996
Barrel-hoop	F. Glankler and W. W. Simmons	411,219	Sept. 17	1650	443	48	1609
Barrel-hooping machine	L. M. Reed	411,300	Sept. 17	1764	{472 / 473	48	1630
Barrel-making machine	C. J. Curtin	409,601	Aug. 20	2118	537	48	1103
Barrel. Metallic	L. J. Spangler	411,358	Sept. 17	1856	496	48	1646
Barrels. Combined cover and pump for oil	J. M. Chambers	407,720	July 23	2541	658	48	522
Barrels or casks. Apparatus for heating and drying	W. Scott	407,793	July 30	2954	687	48	550
Basin. Set wash-	G. W. Hucksbay	407,663	July 23	2466	638	48	506
Basin. Wash-	S. Jennings	410,795	Sept. 10	1036	277	48	1476
Basins used in tip-up lavatories, &c. Device or bush for fixing the trunnions of	I. H. Spelman	409,452	Aug. 20	1874	494	48	1056
Basket	L. M. Moore	408,810	Aug. 13	936	249	48	867
Basket. Truck-	J. H. Osborne	406,129	July 30	3180	832	48	648
Basket. Waste-							
Bath: *See* Photographic developing-bath. Solar bath. Sun and vapor bath.							
Bath-tub	H. F. Begiebing	410,344	Sept. 3	329	86	48	1332
Bath-tube. Attachment seat for	G. W. Myers	409,615	Aug. 20	2184	575	48	1114
Bating	A. Hull	411,034	Sept. 17	1371	.....	48	1532
Batteries. Apparatus for automatically charging secondary	S. C. C. Currie	410,153	Sept. 3	22	7	48	1273
Batteries. Apparatus for charging secondary	W. P. Kookogey	410,111	Aug. 27	2894	760	48	1254
Batteries. Automatic cut-off for secondary	A. and R. Amory	406,981	July 16	1442	378	48	298
Batteries. Charging system for secondary	A. L. Riker	407,669	July 23	2498	646	48	518
Batteries. Containing cell for secondary	C. F. Waldron	410,054	Aug. 27	2789	734	48	1235
Batteries. Gelatinizing electrolytes for galvanic	P. Schoop	408,138	July 30	2189	.....	48	650
Batteries. Making solution compounds for galvanic	W. P. Kookogey	409,291	Aug. 20	1674	.....	48	1016
Batteries. Means for measuring and regulating the charge and discharge of secondary	W. P. Kookogey	408,112	July 30	3155	825	48	643
Batteries. Motive apparatus and time-indicator for use with secondary	J. T. Van Gestel	406,975	July 16	1434	376	48	296
Batteries. System for charging and discharging storage-	W. P. Kookogey	406,354	July 2	464	130	48	93
Battery: *See* Electric battery. Gas-battery. Galvanic battery. Secondary battery.							
Battery connector. Secondary-	S. H. Barrett	411,370	Sept. 17	1873	500	48	1649
Battery receptacle. Secondary-	F. W. Huestis	411,124	Sept. 17	1523	407	48	1582
Battery solutions. Producing	W. P. Kookogey	408,029	Aug. 6	647	.....	48	804
Bead chains. Machine for making	S. Moore	408,314	Aug. 6	158	40	48	710
Beam-straps. Machine for forming	H. McDougall and R. Potter	410,373	Sept. 3	367	97, 98	48	1311
Bean-cutter	G. Bruemmer	411,235	Sept. 17	1677	449	48	1614
Bearing. Anti-friction	W. C. Burich and E. M. Gurnee	408,950	Aug. 13	1142	302	48	907
Bearing. Anti-friction	L. B. Gaylor	409,782	Aug. 27	2408	630	48	1161
Bearing. Anti-friction	W. E. Ross	409,430	Aug. 20	1872	{493 / 494	48	1056
Bearing for fifth-wheels. Perch-	W. H. Cooper	409,561	Aug. 20	2052	541	48	1091
Bearing. Roller-	R. W. Hent	408,237	Aug. 6	57	13	48	669
Bearing. Roller-	R. W. Hent	411,500	Sept. 24	2058	545	48	1669
Bed-bottom	E. E. Case	411,711	Sept. 24	2378	631	48	1756
Bed. Camp-	J. Dick	411,015	Sept. 17	1343	361	48	1547
Bed-covering retainer	D. Farrington	410,160	Sept. 3	33	10	48	1276
Bed. Folding	S. S. Burr and C. Teufel	408,814	July 9	1195	{317 / 318	48	240
Bed. Folding	C. L. Gill	408,171	July 30	3237	845	48	658
Bed. Folding	G. Van Hoorebeke and T. E. Ford	409,527	Aug. 20	2004	529	48	1082
Bed. Folding	E. M. Wood	410,565	Sept. 3	649	173	48	1396
Bed. Folding cot-	G. H. Wilson	409,202	Aug. 20	1621	429	48	1006
Bed-frame	I. Chorlton and G. L. Scott	407,165	July 16	1717	448	48	352
Bed-frame	B. G. Hopkins	407,208	July 16	1788	468	48	365
Bed-lock	C. Whitus	410,130	Aug. 27	2927	768	48	1250
Bed or cradle. Folding	C. A. Fenner	406,715	July 9	1039	272	48	210
Bed. Portable folding	W. W. St. John	408,144	July 30	3199	835	48	651
Bed. Sofa-	E. Tolkadorff	406,973	July 16	1432	375	48	295
Bed. Spring-	B. E. Leckron	411,343	Sept. 17	1840	491	48	1643
Bed-spring	C. E. Rice	406,475	July 9	868	187	48	143
Bedstead	C. Ethier	406,299	Aug. 6	140	36	48	707

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bedstead. Cabinet folding	M. Rauf	409,065	Aug. 13	1319	348	48	949
Bedstead. Family or invalid	J. and J. N. Leggett	408,350	Aug. 6	214	54	48	781
Bedstead. Folding	H. S. Hale	409,006	Aug. 20	2124	559	48	1104
Bedstead, settee, &c. Combined folding	E. H. Selbert and A. M. Eckstrom	411,687	Sept. 24	2345	620	48	1740
Bedstead. Wardrobe	H. C. Brown	411,641	Sept. 24	2273	604	48	1734
Bee-hive	C. H. Stump	410,701	Sept. 10	965	233	48	1443
Bee-house	L. W. Spradlin	408,763	Aug. 13	860	229	48	952
Beer. Apparatus for dissolving and supplying lupuline to	R. Allert	411,563	Sept. 24	2151	570	48	1708
Beer. Apparatus for the pasteurization of	W. Kuhn	410,287	Sept. 3	227	59, 60	48	1314
Beer-cask	J. Wacker	406,246	July 2	306	84	48	61
Beer extract. Making weiss	C. L. Boefer and C. C. Kruse	410,573	Sept. 10	1139		48	1407
Beer, &c. Fining	A. G. Jericka and A. Eggimann	411,721	Sept. 24	2391		48	1759
Beer. Means for boiling, cooling, &c	C. Hoffman and L. Ebert	411,337	Sept. 17	1827	488	48	1610
Beer, &c. Racking-off apparatus for	J. Johnson	409,973	Aug. 27	2675	701	48	1213
Bell and annunciator. Combined electric	J. F. McLaughlin	406,293	July 2	370	101	48	75
Bell. Door	H. Leach	410,713	Sept. 10	894	241	48	1447
Bell. Door	A. F. Rockwell	410,449	Sept. 3	493	131	48	1264
Bell. Electric call	T. J. Smith	408,676	Aug. 6	724	188	48	817
Bell. Electric trembler	J. F. McLaughlin	406,294	July 2	371	101	48	75
Bell. Gong	W. F. Starr	411,267	Sept. 17	1721	460	48	1622
Bell mechanism. Door	A. F. Rockwell	411,395	Sept. 17	1906	{508 / 509}	48	1654
Bell-ringer. Automatic	F. W. Riesenberg and J. E. O'Hearne	411,129	Sept. 17	1527	408	48	1583
Bell-ringer. Automatic	W. W. Slater	408,440	Aug. 6	351	92	48	748
Bell-striking machine. Electro-mechanical	T. R. Gaynor	408,968	Aug. 13	1169	{309 / 310}	48	912
Bellows. Double-acting	H. Kohn	409,960	Aug. 27	2662	703	48	1215
Belt-clasp	G. E. Zeltmacher	406,249	July 2	309	85	48	62
Belt. Electric	C. Everett	409,673	Aug. 27	2239	*589	48	1131
Belt. Electro-galvanic	A. Dow	407,473	July 23	2292	568	48	453
Belt-fastener	W. H. Bristol	408,161	July 30	3225	842	48	656
Belt-fastener	B. Lyon	406,106	July 2	117	34	48	25
Belt-fastener	J. Snow	409,252	Aug. 20	1608	424	48	1004
Belt-gear. Reversing	H. E. Smith	408,049	July 30	3045	797	48	624
Belt. Outing	J. Hirshfeld	407,401	July 23	2090	540	48	431
Belt-tightener	F. R. Hynes	410,321	Sept. 3	293	76	48	1326
Belts. Means for preventing the slipping of	F. W. Nichols	410,205	Sept. 10	1047	220	48	1479
Belting. Wire	T. Midgley	410,250	Sept. 3	172	45	48	1302
Belting. Wire	T. Midgley	410,251	Sept. 3	173	46	48	1302
Bench: *See* Knockdown bench. Work-bench. Wash-bench.							
Bench-clamp	G. A. Loring	409,295	Aug. 20	1677	442	48	1017
Bending metal bars. Machine for	T. F. Krug	410,112	Aug. 27	2897	760	48	1254
Bending-roll	C. A. Bertsch	408,685	Aug. 13	743	195	48	928
Benzoic sulphonide in oils, &c. Solution of	A. Sommer	410,940	Sept. 10	1230		48	1515
Bevel	W. G. Avery	408,368	Aug. 6	241	61	48	726
Bevel. Adjustable miter	M. Gates	406,724	July 9	1052	280	48	212
Bevel, protractor, gage, center-square, &c. Combined	A. E. Meek	409,414	Aug. 20	1850	{488 / 489}	48	1051
Beverage-shaker	J. A. Wiedersheim	406,321	July 2	418	114	48	84
Bicycle	C. T. Harrey	409,964	Aug. 27	2663	698	48	1211
Bicycle	L. A. Hill	407,930	July 30	2872	748	48	590
Bicycle	C. E. McGlinchey	408,815	Aug. 13	984	261	48	875
Bicycle	E. Mohrig	406,661	July 9	961	250	48	196
Bicycle-seat	C. H. Phelps	408,743	Aug. 13	831	219	48	845
Bicycles. Axle-bearing for	O. L. Spaulding, Jr	408,902	Aug. 13	1076	283	48	894
Bicycles. Steering attachment for	W. E. Sanborn	410,335	Sept. 3	316	82	48	1330
Bill or tariff holder	M. T. Freeman, J. S. Potts, and S. G. Cowan.	407,857	July 30	2757	717	48	569
Billiard and pool tables. Corner-block for	T. Clark	408,584	Aug. 6	583	151	48	791
Billiard-counter button	O. Pape	411,460	Sept. 24	2023	535	48	1682
Billiard-cues. Fastening for the tips of	W. Rabich	406,852	July 9	1250	331	48	949
Billiards. Apparatus for scoring	W. Hughes	410,973	Sept. 10	1288	347	48	1526
Bin: *See* Flour-bin.							
Binder. Adjustable package	T. F. Nelson	407,368	July 23	2042	529	48	422
Binder. Fodder	E. E. Smith	406,407	July 2	546	153	48	109
Binder. Temporary	G. A. Blackburn and D. J. Brimm	410,346	Sept. 3	331	87	48	1333
Binder. Temporary	W. H. Carroll and F. Lemmon	410,532	Sept. 3	602	162	48	1387
Binder. Temporary	A. G. Fisher	408,003	July 30	2963	777	48	611
Bird-cage	C. H. Comfield	410,401	Sept. 3	410	109	48	1349
Bit: *See* Bridle-bit. Boring-bit.							
Bit-stock	G. B. Jackson and S. P. Tasker	411,722	Sept. 24	2390	634	48	1759
Blacking box. Liquid	P. G. Metzler and R. S. Davis	409,415	Aug. 20	1832	489	48	1052
Blast-heater	J. Scanlon	411,618	Sept. 24	2244	596	48	1729
Blast or exhaust apparatus	J. Y. Smith	406,482	July 9	677	189	48	145
Bleachery-keir	E. A. Rusden	408,991	Aug. 13	1302	{317 / 318}	48	918
Blind. Awning	J. C. Gittings, W. J. Pohlman, and G. Yakel.	406,134	July 2	156	45, 46	48	33
Blind or shutter. Window	W. N. Perkins	410,441	Sept. 3	481	128	48	1362
Blind-stop	F. Wisant	406,325	July 2	423	116	48	85
Blinds, &c. Device for operating window	W. H. Paulding	410,440	Sept. 3	480	128	48	1362
Block: *See* Brake-block. Pulley-block. Dentist's bench-block. Saw-mill head-block. Stereotype-block. Muff-block. Tackle-block.							
Blow-pipe	L. Dorn	410,503	Sept. 3	566	153	48	1379
Blow-testing machine. Coin-operative	H. Cooper and J. P. O'Brien	410,402	Sept. 3	411	110	48	1349
Blower	M. King	407,404	July 23	2095	541	48	432

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Blower for furnaces	C. A. Geyne	410,091	Aug. 27	2862	750	48	1948
Board: *See* Artist's drawing-board. Bosom-board. Drafting-board. Game-board. Ironing-board.							
Boat: *See* Submarine boat.							
Boat raising and lowering apparatus	F. A. L. De Gruyter	407,891	July 30	2810	731	48	579
Boat raising and lowering apparatus	F. A. L. De Gruyter	407,892	July 30	2811	732	48	579
Boat raising and lowering apparatus	J. M. Dodge	410,883	Sept. 10	1150	311	48	1499
Boats. Apparatus for unloading	D. P. Mills	407,831	July 30	2719	706	48	561
Bobbin							
Boiler: *See* Agricultural boiler. Wash-boiler. Felly-boiler. Water-boiler. Sectional boiler. Water-coil boiler. Steam-boiler. Water-tube boiler. Steam and hot-water boiler.							
Boiler	W. H. Byram and J. Redman	406,624	July 9	904	244	48	185
Boiler	C. J. Davidson	410,351	Sept. 3	337	88	48	1334
Boiler	J. J. Hogan	410,162	Sept. 3	39	10	48	1276
Boiler	I. Hulme	411,223	Sept. 17	1663	{444 / 445}	48	1610
Boiler	J. Lapp	411,349	Sept. 17	1696	{453 / 454}	48	1617
Boiler	W. Morrison	407,229	July 16	1823	476	48	372
Boiler	L. F. Smith	409,617	Aug. 20	2146	564	48	1107
Boiler attachment. Steam	F. Lindrum	406,358	July 2	470	132	48	94
Boiler-cleaner	F. L. Veerkamp	407,043	July 16	1528	400	48	314
Boiler-feeder	W. R. Roney	409,304	Aug. 20	1689	{444 / 445 / 817}	48	1019
Boiler furnace or other furnace. Steam	J. L. Gill, Jr	408,098	July 30	3123	{818}	48	636
Boiler furnace. Steam	J. Good	409,784	Aug. 27	2411	631	48	1162
Boiler furnace. Steam	A. Snell	408,267	Aug. 6	88	24	48	696
Boiler furnaces. Arch-fender for steam	G. L. Allen	408,449	Aug. 6	365	96	48	751
Boiler-heads. Machine for flanging	I. B. Davis	409,021	Aug. 13	1252	331	48	927
Boiler house. Steam	J. L. Gill, Jr	408,172	July 30	3238	845	48	653
Boiler or other furnace. Steam	J. H. Annandale	411,084	Sept. 17	1459	387	48	1569
Boiler-setting	J. Balmore and W. S. Rockwell	409,552	Aug. 20	2037	537	48	1089
Boiler-setting	F. Lindrum	406,357	July 2	469	131	48	94
Boiler-setting	J. Vosburgh	410,947	Sept. 10	1242	334	48	1517
Boiler-stand	F. Lindrum	406,359	July 2	471	132	48	95
Boiler tube. Steam	F. Lindrum	408,162	July 30	3226	842	48	636
Boiler-tubes. Tool for cutting out	S. E. Condon	406,751	July 9	1097	291	48	222
Boilers, &c. Electrical apparatus for regulating steam	F. Martenot	409,189	Aug. 20	1516	402	48	986
Boilers. High and low water alarm for steam	A. W. Gilfillan	409,915	Aug. 27	2593	679	48	1197
Boilers. Means for utilizing radiated heat of	F. H. Butts	409,846	Aug. 27	2502	654	48	1177
Boilers. Oil-burning apparatus for steam	F. Leadbeater	406,140	July 2	164	47	48	34
Boilers, &c. Tube for	S. E. Howell	407,991	July 30	2964	774	48	607
Boilers. Water-regulator for	R. B. Brown						
Bolt: *See* Expansion-bolt. Rotary bolt. Flour-bolt.							
Bolt	E. Anderson	411,000	Sept. 17	1393	357	48	1543
Bolt	D. M. Motherwell	409,696	Aug. 27	2276	599	48	1138
Bolt-blank-forming machine	W. E. Ward. (Reissue)	11,030	Sept. 17	1936	516	48	1660
Bolt heading and forging machine	M. D. Luehrs and D. S. Coe	409,110	Aug. 13	1391	{364 / 367}	48	953
Bolt-heading machines. Tongs and guide for	J. H. Alker	409,595	Aug. 20	2107	555	48	1101
Bolt-pointing machine	F. R. Scofield	409,244	Aug. 20	1596	421	48	1001
Bolt-threading machine	J. A. Becher	411,062	Sept. 17	1325	357	48	1543
Bolts. Machine for turning tapered	S. M. Vauclain	410,051	Aug. 27	2786	733	48	1234
Bolts or bolt-blanks. Machine for dressing	W. E. Ward	411,271	Sept. 17	1729	{462 / 463}	48	1623
Bolting-reel	C. A. Barnard	406,384	July 2	510	141	48	102
Bolting-reel	C. T. Hanna	408,914	Aug. 13	1094	{288 / 289}	48	897
Bone-grinding machine	F. W. Mann and C. H. Farrington	409,480	Aug. 20	1939	513	48	1070
Book. Account	J. Rogers	406,478	July 9	671	188	48	144
Book and index. Combined	H. E. Pratt	406,260	Aug. 6	89	22	48	697
Book-binding	L. Brainard	409,624	Aug. 27	2472	646	48	1173
Book-binding	H. J. Ries	406,476	July 9	669	187	48	144
Book. Black-leaf check	T. McDowell	410,003	Aug. 27	2713	712	48	1220
Book. Blank	R. A. W. Winzenburg	407,886	July 30	2802	730	48	577
Book, calendar, &c. Combined memorandum	G. E. Matthews	407,363	July 23	2036	528	48	421
Book-case	E. Yager	406,496	July 9	709	195	48	150
Book-case. Revolving	J. B. Zettler	406,555	July 9	795	215	48	166
Book-keeper's. Posting or copying guide for	H. H. Love	409,363	Aug. 20	1775	468	48	1026
Book. Manifold memorandum	W. Bertsch	409,768	Aug. 27	2381	625	48	1157
Book. Manifold sales	T. W. Lawson	406,845	July 9	1238	328	48	240
Book or music holder	S. M. Perkins	408,498	Aug. 6	340	88	48	745
Book. Renewable memorandum	J. G. Bast	409,383	Aug. 20	1808	{475 / 476}	48	1041
Book rest and easel	J. Ducker	411,493	Sept. 24	2051	542	48	1687
Book. Stub envelope	W. A. Raborg	408,224	Aug. 6	175	44	48	713
Books. Machine for folding leaves for	E. G. Thorp	409,076	Aug. 13	1335	{352 / 353}	48	943
Boot	C. C. Houghton	411,032	Sept. 17	1389	367	48	1552
Boot. Felt	M. N. Drake	407,774	July 30	2625	681	48	545
Boot-jack	H. W. Farley	410,929	Sept. 10	1277	329	48	1485
Boot or shoe last	G. A. Reynolds	408,524	Aug. 6	486	128	48	774

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Boot or shoe nail	C. W. Glidden	408,173	July 30	3240	846	48	650
Boot or shoe riveting machine	T. Brining	409,347	Aug. 20	1753	460, 461	48	1031
Boot or shoe sole protector	J. G. Dickson	409,938	Aug. 27	2627	6-9	48	1204
Boots and shoes. Lasting	W. C. Cross	406,336	July 2	442	123	48	80
Boots and shoes. Manufacture of sewed	G. W. Willey	406,379	July 2	501	140	48	100
Boots or shoes. Machine for feeding and attaching rands to	F. F. Raymond, 2d	408,895	Aug. 13	1064	281	48	891
Boots or shoes. Machine for treating	W. C. Evans	406,296	July 9	1210	322	48	243
Boots or shoes. Machine for uniting soles and uppers of	S. W. Robinson and S. P. Watt	410,927	Sept. 10	1215	327, 328	48	1512
Boots or shoes. Making heels for	H. C. Hart	410,833	Sept. 10	1082	290	48	1496
Boots or shoes. Tacking-tool for	T. Brining	406,160	July 30	3223	843	48	656
Boring and trimming slats. Machine for	J. Colville	410,784	Sept. 10	1015	272, 273	48	1471
Boring-bit	J. C. Middleton	407,868	July 30	2773	721	48	572
Boring-machine	A. D. Pentz	408,259	Aug. 6	86	20, 21, 22	48	696
Boring-machine. Multiple	C. A. Stark	411,359	Sept. 17	1857	497	48	1646
Bosom-board	T. J. Jackson	409,684	Aug. 27	2258	594	48	1134
Bottle-cooler	L. Levy	409,293	Aug. 20	1675	441	48	1016
Bottle or similar article	G. Leuchs and F. Meiser	411,157	Sept. 17	1570	418	48	1591
Bottle-stopper	R. Bloeser	407,157	July 16	1704	445	48	349
Bottle-stopper	T. J. Cain	411,277	Sept. 17	1741	465	48	1625
Bottle-stopper	J. H. Christmann	409,922	Aug. 27	2601	681	48	1199
Bottle-stopper	F. Y. Clark	409,924	Aug. 27	2603	682	48	1200
Bottle-stopper	J. W. Collins	407,169	July 16	1723	450	48	353
Bottle-stopper	J. B. Cosgrave	408,872	Aug. 13	1031	273	48	885
Bottle-stopper	G. P. Goulding	406,832	July 9	1222	324	48	245
Bottle-stopper	B. F. Greene	410,668	Sept. 10	816	219	48	1434
Bottle-stopper	H. Lightwardt, Jr., and C. F. Bachler	410,421	Sept. 3	447	119	48	1356
Bottle-stopper	J. J. Sands	409,374	Aug. 20	1794	472	48	1039
Bottle-stopper	J. A. Traut	408,364	Aug. 6	235	59	48	724
Bottle-stopper. Alarm	R. M. Devereaux	410,730	Sept. 10	929	249	48	1453
Bottle-stopper fastening	A. Leforestier	408,419	Aug. 6	327	84	48	742
Bottle-trap	R. Clarke	408,215	Aug. 6	19	4	48	681
Bottle-washer	P. F. McCarty and R. Seyter	409,113	Aug. 13	1309	369	48	955
Bottle-wrapper	C. G. Biedinger	411,371	Sept. 17	1873	500	48	1649
Bottles. Label-holder for	J. H. Carmichael	408,212	Aug. 6	16	5	48	681
Bottles. Means for capping and sealing milk	H. P. and S. L. Barnhart	411,368	Sept. 17	1870	500	48	1648
Bottles. Packing case for	S. G. Curtice	410,496	Sept. 3	557	150	48	1377
Bottles. Sponge-holder for mucilage	J. W. Carter	409,770	Aug. 27	2267	626	48	1157
Bougie	G. Morlot	408,425	Aug. 6	336	87	48	745
Box: *See* Axle-box, Ballot-box, Blacking-box, Card and check box, Card or ticket box, Cigar-box, Cock-box, Connection-box, File-box, Fire-alarm box, Flower-box, Folding box, Journal-box, Letter-box, Mailing-box, Merchandise-box, Miter-box, Money-box, Neck-wear box, Paper box, Phonogram-receiving box, Powder-box, Shaft cooling-box, Signal-box, Soap-box, Stuffing-box, Tobacco-box, Tobacco and pipe box, Valve-stuffing box, Watch-movement box.							
Box	M. Benas	409,661	Aug. 27	2213	599	48	1126
Box-blocker	C. Gail	409,743	Aug. 27	2343	615, 616	48	1150
Box-catch	W. C. Lipe	406,173	July 2	212	59	48	42
Box-covering machine	A. G. Potter	410,920	Sept. 10	1204	325	48	1510
Box for tobacco, &c	D. C. Ripley	409,804	Aug. 27	2441	649	48	1168
Box-nailing machine	L. F. Grammes	409,145	Aug. 13	1444	379	48	965
Box-nailing machine	J. H. Swift	408,764	Aug. 13	861	229, 230	48	852
Box-nailing machine	J. H. Swift	408,765	Aug. 13	863	231	48	852
Box or canister	S. E. Cornell	408,954	Aug. 13	1149	304	48	908
Box or crate	C. E. Parks	409,699	Aug. 27	2281	609	48	1139
Box-pull	M. G. Porter	409,064	Aug. 13	1318	349	48	939
Box-staying machine	G. L. Jaeger	410,522	Sept. 3	592	159	48	1384
Boxes. Machine for applying fastening-strips to	G. L. Jaeger	406,736	July 9	1065	283, 285	48	214
Boxes. Metal corner-piece for	J. C. Weir	406,156	July 2	186	50	48	38
Boxes. Wire band for	C. W. Evans	406,893	July 16	1316	345	48	273
Brace: *See* Fence or gate post brace, Gardener's and cotton-picker's brace, Rail-brace, Trestle-brace.							
Bracelet	W. B. Ballou	407,566	July 23	2338	604	48	483
Bracket: *See* Desk-bracket, Fence-bracket, Holding-bracket, Ladder platform-bracket, Lamp-bracket, Plumber's adjustable bracket, Railway-bracket.							
Braid-roll and small-spool feeder	J. H. Morrison	408,187	July 30	3275	835	48	664

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Brake: *See* Air-brake, Baggy-brake, Car-brake, Carriage-brake, Hemp-brake, Lathe-spindle brake, Locomotive-brake, Railway-brake, Rotary brake, Sled-brake, Vehicle-brake, Velocipede-brake, Wagon-brake.							
Brake	W. Schmid	408,756	Aug. 13	851	226	48	859
Brake-adjuster. Automatic	E. D. Eames	410,079	Aug. 27	2637	745	48	1243
Brake-adjuster. Automatic	E. D. Eames	410,960	Sept. 10	1259	339	48	1521
Brake-beam	E. W. M. Hughes	406,021	July 30	3011	765	48	616
Brake-beam	E. W. M. Hughes	406,095	July 30	3014	767	48	617
Brake-block	J. A. Jewell	407,075	July 16	1567	412	48	322
Brake coupling. Automatic air	P. G. Roquemore	407,839	July 30	2728	709	48	563
Brake mechanism	O. W. Ischamm	407,615	July 23	2400	623	48	495
Brake-operating device	G. W. Cisco	407,576	July 23	2347	608	48	485
Brake-shoe	J. Pollock	410,989	Sept. 10	1310	353	48	1531
Brakes. Pipe-connection for pneumatic	L. Blatt	411,006	Sept. 17	1334	350	48	1545
Branding-chute	E. A. Leinard and G. W. Sheets	406,920	July 16	1351	354	48	290
Brass kettles. Manufacturing	W. R. Walton	407,501	July 23	2238	.....	48	461
Breech-loading small-arm	T. F. Wurts	411,704	Sept. 24	2271	699	48	1754
Brewing ale, beer, and porter	P. T. Godsal	411,145	Sept. 17	1548	413	48	1567
Brick. Burning	L. Frisch	411,242	Sept. 17	1686	451	48	1615
Brick-drying pallet	J. M. Jamerson	410,245	Sept. 3	164	43	48	1300
Brick-kiln	C. T. Fitch	409,948	Aug. 27	2639	692	48	1207
Brick-kiln	V. Nielsen	410,788	Sept. 10	1094	275	48	1474
Brick-kiln	C. D. Page	411,726	Sept. 24	2396	634	48	1760
Brick-machine	J. C. Anderson	406,463	July 9	651	183, 184	48	140
Brick-machine	W. Burkman	406,414	July 9	559	157	48	121
Brick-machine	W. R. Cunningham	406,562	July 9	805	218, 219	48	167
Brick-machine	T. Kirk and C. H. Horton	409,348	Aug. 20	1757	462	48	1032
Brick-machine	S. G. Leyson and H. Thomas	409,593	Aug. 20	2103	554, 555, 705, 706	48	1100
Brick-machine	H. W. Mead	409,988	Aug. 27	2689	706	48	1216
Brick-machine	J. W. and R. C. Penfield	406,754	July 9	1101	292	48	222
Brick-machine	G. Van Deventer	411,296	Sept. 17	1760	471	48	1629
Brick-machine	B. C. White	411,232	Sept. 17	1674	448	48	1613
Brick-machine	O. L. Dieckmann	406,682	July 9	990	266, 267, 268	48	201
Brick-machine. Reciprocating	E. B. Carter	411,645	Sept. 24	2220	606	48	1736
Brick-mold	A. H. Newton	408,213	Aug. 6	17	4	48	681
Brick-mold-sanding machine	G. E. Smith	407,030	July 16	1507	394	48	310
Brick-mold-sanding machine	W. R. Cunningham	411,228	Sept. 17	1669	446	48	1612
Brick or other clay products. Machine for cutting	J. C. Anderson	411,546	Sept 24	2127	562, 563, 564	48	1704
Brick. Ornamental	J. C. Anderson	407,145	July 16	1668	.....	48	346
Brick. Ornamental	J. C. Anderson	407,146	July 16	1669	.....	48	346
Brick. Ornamental	J. C. Anderson	407,147	July 16	1690	.....	48	346
Brick. Paving	H. B. Camp	411,010	Sept. 17	1339	360	48	1546
Bricks, &c. Enameling or incrusting	J. C. Anderson	406,688	July 9	1005	.....	48	204
Bricks. Manufacturing ornamental	J. C. Anderson	406,687	July 9	1004	269	48	203
Bridge	G. H. Pegram	409,700	Aug. 27	2283	600	48	1139
Bridge. Draw	C. R. Brothwell	408,370	Aug. 6	344	92	48	726
Bridge-gate	C. King	409,407	Aug. 20	1840	485	48	1048
Bridge guard	J. Ayres	406,064	July 30	3068	802	48	628
Bridge. Ponton	S. N. Stewart	407,421	July 23	2128	549	48	439
Bridge. Ponton	S. N. Stewart	407,422	July 23	2129	549	48	439
Bridge. Suspension	W. H. C. Greer	411,499	Sept. 24	2057	545	48	1689
Bridges. Beat for suspension	E. E. Runyon	410,201	Sept. 3	110	28	48	1290
Bridges. Floating draw for	S. N. Stewart	407,710	July 23	2515	654	48	517
Bridges. Safety-gate for swing	N. Schlesser	407,967	July 30	2926	762	48	601
Bridgeway	N. Kent and N. C. Vought	408,805	Aug. 13	920	247	48	885
Bridle-bit	A. F. Gerald	406,705	Aug. 13	784	206	48	836
Brine. Apparatus for making and filtering	B. B. Quinn	409,234	Aug. 20	1378	417	48	998
Broom band or clasp. Adjustable	A. W. Ottignon	406,850	July 9	1247	330	48	249
Broom-corn-sizing machine	C. E. Lipe	410,840	Sept. 10	1093	292	48	1488
Broom-supporter	R. Kinney	409,152	Aug. 13	1458	385	48	967
Brush	J. Repetti	410,991	Sept. 10	1312	353	48	1531
Brush and pad. Hat	M. J. Sanderlin	407,261	July 16	1810	488	48	381
Brush and scraper. Combined crumb	B. M. Woodard	410,476	Sept. 3	529	142	48	1373
Brush attachment. Shoe	H. Heine	406,279	July 2	350	96	48	71
Brush-block-boring machine	C. A. Mahle	411,346	Sept. 17	1643	492	48	1643
Brush. Electric	H. P. Pratt	407,115	July 16	1653	432	48	330
Brush for washing windows	H. and J. W. Dixon and H. S. Kopp	406,128	July 2	148	44	48	31
Brush-holding cabinet	S. Hall	407,524	July 23	2266	567	48	467
Brushes. Making metallic	D. J. Ahern	410,479	Sept. 3	531	142	48	1373
Brushes. Manufacture of	J. A. Read	407,900	July 30	2922	734, 735	48	581
Bucket-bail and lid-fastener. Combined	J. M. Stukes and O. P. Reid	410,044	Aug. 27	2775	730	48	1236
Bucket. Grab	A. E. Brown	407,102	July 16	1712	447	48	351
Bucket or tub	J. L. Krauser	407,019	July 16	1494	390	48	307
Buckle	W. Blum	407,919	July 30	2257	744	48	587
Buckle	J. Kennedy	410,892	Sept. 10	1150	318	48	1504
Buckle	A. H. Lemen	411,457	Sept. 24	2063	532	48	1678
Buckle	C. A. Mann	406,635	July 30	3019	790	48	619
Buckle	G. C. Paine	406,403	July 2	541	151	48	106
Buckle	W. A. Marsh	411,291	Sept. 17	1755	499	48	1626
Buckle. Back-band	S. J. Webb	410,340	Sept. 3	324	84	48	1331
Buckle. Bale-tie							

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Buckle. Suspender	W. T. Finney	408,834	Aug. 13	969	257	48	573
Buckle. Suspender	E. A. Hill	411,101	Sept. 17	1486	394	48	1574
Buckle. Suspender	J. Lauferty	407,407	July 23	2099	542	48	433
Buckles. Machine for attaching tongues to	A. Samson	410,770	Sept. 10	991	266 / 267	48	1466
Buffer	A. W. Rogers	407,246	July 16	1840	482	48	377
Buffer	F. Winslow	407,270	July 16	1883	491	48	384
Buffers. Abrading-covering for	A. W. Rogers	407,245	July 16	1847	482	48	377
Buffers. Abrading-covering for	A. W. Rogers	407,247	July 16	1859	483	48	377
Buffers. Abrading-covering for	A. W. Rogers	407,248	July 16	1853	483	48	378
Buffers. Abrading-covering for	A. W. Rogers	407,249	July 16	1854	483	48	378
Buggy-boot	J. K. Loreo	406,664	Aug. 6	705	182	48	814
Buggy-brake. Automatic	J. J. Christie	406,817	July 9	1200	319	48	241
Buggy-spring	J. D. Whipple	410,471	Sept. 3	522	140	48	1371
Buggy-top rest	H. H. Allen	407,049	July 16	1536	403	48	315
Building	P. W. Anderson	411,516	Sept. 24	2084	550	48	1695
Building-blocks. Machine for making	J. C. Anderson	411,413	Sept. 24	1941	517	48	1647
Buildings. Metallic finishing for	L. L. Sagendorph	406,668	July 9	971	262	48	198
Bulk-head	W. T. Sylven	408,146	July 30	3201	836	48	652
Bullets. Machine for forming	L. P. Garcin	407,343	July 23	1995	518 / 519	48	414
Bundle-dropper	E. Pridmore	406,535	July 9	772	210	48	162
Bung	M. Delker	411,239	Sept. 17	1682	450	48	1614
Bung	W. H. Sunday	406,602	July 9	864	233	48	178
Bung. Barrel	W. H. Sunday	409,713	Aug. 27	2305	605	48	1142
Bung-borer	J. Swan	410,863	Sept. 10	1128	303	48	1495
Bung-extractor	O. Winkler	411,179	Sept. 17	1598	425	48	1596
Bureau	O. D. Miles and E. F. Scollay	409,853	Aug. 27	2509	656	48	1179
Burglar-alarm	G. Arter	411,639	Sept. 24	2261	601	48	1732
Burglar-alarm	E. M. Carhart	410,653	Sept. 10	840	225	48	1439
Burglar-alarm	E. Carter	409,919	Aug. 27	2596	680	48	1198
Burglar-alarm	T. J. Gordon	408,010	July 30	2995	780 / 781	48	613
Burglar-alarm	G. C. Gruber and T. D. Wogan	407,654	July 23	2456	636	48	505
Burglar-alarm electric mat. Invisible	J. W. Dawson	406,709	July 9	1030	276	48	208
Burial-casket	T. McGovern	407,897	July 30	2818	733 / 734	48	581
Burial-casket	J. D. Ripson	407,792	July 30	2654	687	48	550
Burner: *See* Gas-burner. Oil-burner. Gas-heating burner. Petroleum-burner. Hay or straw burner. Regenerative burner. Hydrocarbon-burner. Sawdust-burner. Lamp-burner. Stove-burner. Vapor-burner.							
Burners. Shade for illuminating	J. C. Hollings	407,731	July 23	2555	661	48	525
Burning coal and hydrocarbon fuel in combination. Apparatus for	A. Mason	411,555	Sept. 24	2142	567	48	1707
Burning culm. Apparatus for	A. Mason	406,753	July 9	1100	296	48	222
Burning culm or pulverized coal. Apparatus for	A. Mason	406,659	July 9	958	256	48	195
Burnishing-machine	H. N. Carpenter	406,026	July 2	9	3, 4	48	5
Bustle	A. White	406,553	July 9	794	213	48	166
Butter-cutter	J. H. Loomis	411,509	Sept. 24	2213	589	48	1722
Butter-extractor. Centrifugal	C. A. Jöhansson	406,171	July 2	205	51	48	42
Butter-jars. Sinker for	L. S. Hendrix	410,893	Sept. 10	1172	313	48	1503
Butter. Making	J. Boyd	406,081	July 2	81	24	48	18
Butter-package	S. Crittenden	409,318	Aug. 20	1711	456	48	1023
Butter press or printer	J. M. Criley	409,734	Aug. 27	2331	615	48	1148
Butter. Removing buttermilk from	A. F. Thayer	411,624	Sept. 24	2250	598	48	1730
Button-edges. Machine for grinding and finishing	M. Stirn	411,691	Sept. 24	2352	623	48	1750
Button. Hinged	R. W. A. Dittmann	407,643	July 23	2441	631	48	502
Button-machine	W. E. Elliott	408,700	Aug. 13	775	203 / 204	48	634
Button-making machine	P. A. Otis	409,225	Aug. 20	1570	414	48	996
Button-molding machine	W. F. Niles	410,289	Sept. 3	233	60, 61	48	1314
Button or badge	S. C. Wilcox	409,132	Aug. 13	1437	378	48	961
Button-strip	E. K. Warren and J. H. Ames	409,888	Aug. 27	2556	669	48	1189
Cabinet-clamp	W. P. Tarbell	410,815	Sept. 10	1059	280	48	1481
Cable-grip	J. H. Pendleton, A. Bryson, Jr., and C. Tiers.	406,300	July 2	380	102 / 104	48	76
Cable-grip device	J. T. Hodgins	408,303	July 30	3316	866	48	671
Cable-gripper	H. M. Wrede	411,630	Sept. 24	2258	600	48	1731
Cable-sheave	J. D. Davies	411,761	Sept. 24	2444	647	48	1770
Cable sheave and hanger for cable tramways	H. C. Simpson and A. Waggoner	410,700	Sept. 10	864	233	48	1443
Cable. Wire	D. Tufts	406,068	July 2	67	20	48	16
Caisson	F. Girvin	409,190	Aug. 20	1518	402	48	986
Calculating device. Price	S. Hoadley	407,825	July 30	2711	703	48	560
Calelectric generator	E. G. Acheson	407,761	July 30	2611	677	48	543
Calelectric generator	E. G. Acheson	407,762	July 30	2612	677	48	543
Calelectric generator	E. G. Acheson	407,763	July 30	2613	677	48	543
Calendar	L. H. Orr	408,041	July 30	3031	792	48	621
Calendar	R. A. Robinson	411,061	Sept. 17	1408	376	48	1559
Calendar	F. M. Underhill	409,526	Aug. 20	2003	529	48	1082
Calipers and dividers	M. L. Connett	409,893	Aug. 27	2475	647	48	1173
Calipers and dividers	W. Glitsch	410,274	Sept. 3	212	55	48	1311
Calipers. Micrometer	J. M. Irmen	411,444	Sept. 24	1987	527	48	1675
Calipers or dividers	L. S. Starrett	411,537	Sept. 24	2112	537	48	1700
Calks. Device for sharpening	J. Zurbrick	407,458	July 23	2185	564	48	450
Camera. *See* Photographic camera.							
Camera	G. Eastman	408,596	Aug. 6	599	155 / 156	48	794
Camera attachment	O. L. Munger	406,934	July 16	1376	360	48	285
Cams. Device for adjusting and securing	H. S. Banta	411,275	Sept. 17	1736	464	48	1624

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Can: *See* Creaming-can. Oil-can. Measuring-can. Shipping-can. Milk delivery and shipping can. Spouted can.							
Can	H. E. Wright	409,264	Aug. 20	1694	439	48	1007
Can-capping machine	T. Van Kannel and G. E. Lockwood	411,695	Sept. 24	2356	612	48	1751
Can cover. Milk	J. C. Vail	407,975	July 30	2937	764	48	603
Can ending and crimping machine	E. Norton	406,354	Aug. 6	78	18	48	694
Can-filler	E. C. Seals	407,328	July 16	1859	483	48	379
Can-filling machine	G. L. Merrell	406,986	July 16	1361	357	48	292
Can-filling machine	F. M. Nichols	407,943	July 30	2890	752 / 753	48	594
Can-filling machine	S. Norris	408,353	Aug. 6	218	56	48	722
Can for coffee, grain, &c	S. A. French	408,657	Aug. 6	696	180	48	812
Can-heading mechanism	E. E. Angell	410,341	Sept. 3	325	85	48	1321
Can-holding device. Fruit	J. Haller	409,148	Aug. 13	1450	381	48	966
Can nozzle. Oil	C. B. Underhill	409,811	Aug. 27	2458	643	48	1170
Can-opener	G. H. Perkins	406,961	July 16	1396	367	48	290
Can or box	E. C. Chagnon and M. Virnoche	406,911	Aug. 13	1090	287	48	896
Cans. Machine for testing tin	R. Steegmuller	410,300	Sept. 3	253	66	48	1317
Canner. Steam fruit	T. P. Cordrey	409,374	Aug. 20	1641	434	48	1010
Canning food	J. H. J. Haines	411,436	Sept. 24	1975	524	48	1673
Canceling and registering device	A. J. Miller	407,543	July 23	2308	595	48	475
Candle	A. F. Baumer	407,051	July 16	1536	403	48	316
Candle-holder and cap-nipper. Combined	S. T. Harrington	406,441	July 9	603	160	48	130
Candlestick	J. Heller	408,973	Aug. 13	1182	313	48	914
Candlestick. Miner's	D. B. James	410,160	Sept. 3	44	11	48	1277
Candlestick. Miner's	H. M. Mixter	410,909	Sept. 10	1042	279	48	1478
Candlestick. Miner's	A. B. Purington	410,021	Aug. 27	2735	719	48	1295
Cane and camp-stool. Combined	A. Leblanc	406,630	Aug. 6	648	168	48	804
Cane mill. Sugar							
Canister: *See* Gunpowder-canister.							
Cannon. Apparatus for adjusting, pointing, or training	H. S. Maxim	407,457	July 23	2220	573 / 574	48	457
Cannon. Making	J. P. Lavigne	408,452	July 9	899	170	48	136
Cant-hook	C. Nygaard	408,227	July 2	376	103	48	76
Cant-hook	A. Sanford	408,755	Aug. 13	980	228	48	850
Canvas. Machine for folding and stitching the edges of	B. A. Kennedy and J. F. Steward	410,946	Sept. 3	165	43, 44	48	1300
Cap	H. Schwarz	408,934	Aug. 13	1122	296	48	908
Car	S. T. Jenkins	407,219	July 16	1791	469	48	366
Car bearings. Machine for lining railway	G. McCulloch	410,602	Aug. 27	2719	712	48	1289
Car berths. Step for sleeping	J. J. Greenough	410,788	Sept. 10	1035	277	48	1476
Car-brake	H. A. Butterfield	410,874	Sept. 10	1141	307	48	1497
Car-brake	G. W. Cisco	407,575	July 23	2346	607	48	485
Car-brake	J. H. Clark	406,794	Aug. 13	909	243	48	861
Car-brake	P. F. de Forests	410,881	Sept. 10	1146	310	48	1498
Car-brake	G. H. Fletcher	408,877	Aug. 13	1039	275	48	898
Car-brake	H. Gallager	410,513	Sept. 3	579	158	48	1382
Car-brake	J. W. Harvey	410,891	Sept. 10	1169	315	48	1502
Car-brake	J. W. Hurst	409,663	Aug. 27	2257	594	48	1134
Car-brake	B. Kellogg	410,780	Sept. 10	979	263	48	1463
Car-brake	J. Lawitzka	408,916	Aug. 13	1096	289	48	908
Car-brake	L. P. Lawrence	408,998	Aug. 13	1198	314	48	916
Car-brake	A. P. Massey	409,326	Aug. 20	1725	453	48	1026
Car-brake	T. P. Randall	407,033	July 16	1513	396	48	311
Car-brake	C. V. Rote	406,958	July 16	1406	369 / 370	48	291
Car-brake	W. R. Zeigler	409,396	Aug. 20	1636	430	48	1007
Car-brake	A. B. Arnold	406,362	July 2	504	141	48	101
Car brake and starter	A. M. Vereker and S. M. Yeates	410,326	Sept. 3	284	102	48	1344
Car brake and starter	C. L. Ames	408,567	Aug. 6	581	147	48	787
Car-brake. Automatic	J. F. Durkin	411,547	Sept. 24	2131	564	48	1704
Car-brake. Automatic	A. B. Allen	407,450	July 23	2186	564	48	450
Car-coupling	J. Allen and E. Hackett	409,343	Aug. 20	1748	459	48	1030
Car-coupling	D. L. Barnes	407,980	July 30	3090	808	48	636
Car-coupling	J. C. Biggerstaff	410,142	Sept. 3	3	1	48	1269
Car-coupling	W. J. Bonner	406,368	July 2	515	142	48	103
Car-coupling	J. Bielke	407,430	July 23	2140	558	48	441
Car-coupling	W. H. Burwell	407,164	July 16	1716	448	48	351
Car-coupling	D. Cooper	411,236	Sept. 17	1678	449	48	1614
Car-coupling	C. W. Courtney	410,579	Sept. 10	675	180	48	1407
Car-coupling	A. H. S. Davis	406,284	July 16	1300	341	48	270
Car-coupling	J. E. Davis, Jr.	408,588	Aug. 6	595	155	48	793
Car-coupling	J. A. Dean	407,996	July 30	2973	774 / 775	48	609
Car-coupling	R. H. Dowling	411,216	Sept. 17	1655	442	48	1606
Car-coupling	J. H. Duffins	410,542	Sept. 3	615	165	48	1389
Car-coupling	E. P. Eastwick, Jr	410,543	Sept. 3	616	165	48	1389
Car-coupling	D. P. Edgar	407,821	July 30	2706	702	48	550
Car-coupling	R. J Edwards	410,544	Sept. 3	617	166	48	1390
Car-coupling	P. J. Egan	410,060	Aug. 27	2738	745	48	1243
Car-coupling	J. V. D. Eldredge	406,203	July 2	250	69	48	59
Car-coupling	A. Elliott	406,699	Aug. 13	774	203	48	833
Car-coupling	H. H. Everett	406,630	July 9	934	259	48	191
Car-coupling	E. Ferren	410,667	Sept. 10	815	210	48	1423
Car-coupling	J. A. Fleming	406,344	July 2	448	124 / 125	48	90
Car-coupling	E. Ghirardi	408,606	Aug. 6	613	158	48	797
Car-coupling	E. Ghirardi	410,753	Sept. 10	964	250	48	1460
Car-coupling	E. Ghirardi	410,754	Sept. 10	965	250	48	1460
Car-coupling	E. Ghirardi	410,755	Sept. 10	966	250	48	1460
Car-coupling	A. J. Gunn	408,345	Aug. 6	208	53	48	720

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Car-coupling	A. R. Heath	408,481	Aug. 6	415	{108 109}	48	761
Car-coupling	Q. J. Hoke	409,967	Aug. 27	2666	{699 700}	48	1211
Car-coupling	L. E. Hunt	407,073	July 16	1565	411	48	322
Car-coupling	T. Hynes	407,012	July 16	1487	388	48	306
Car-coupling	I. Kling	409,045	Aug. 13	1287	340	48	934
Car-coupling	C. Künzler	407,020	July 16	1495	391	48	308
Car-coupling	H. D. Layman	408,806	Aug. 13	929	{247 248}	48	865
Car-coupling	S. S. Lehman and C. K. Herr	406,103	July 2	112	33	48	24
Car-coupling	S. Loe	407,296	July 16	1918	499	48	391
Car-coupling	M. J. Lorraine	411,289	Sept. 17	1753	469	48	1628
Car-coupling	P. T. Madigan	411,460	Sept. 24	2066	533	48	1679
Car-coupling	C. B. Marvin	407,361	July 23	2034	527	48	421
Car-coupling	J. P. McDowell	410,374	Sept. 3	369	98	48	1342
Car-coupling	E. E. Miller	406,930	July 16	1369	359	48	284
Car-coupling	C. D. Moore	409,855	Aug. 27	2511	657	48	1179
Car-coupling	J. S. Morgan and E. M. Beanblossom.	406,933	July 16	1375	360	48	285
Car-coupling	J. B. Motter and E. B. Todd	411,466	Sept. 24	2014	{534 535}	48	1680
Car-coupling	A. S. Neal	407,231	July 16	1825	477	48	373
Car-coupling	N. Newman	409,420	Aug. 20	1857	490	48	1053
Car-coupling	J. L. Ordner	407,605	July 23	2288	619	48	492
Car-coupling	A. Paul	409,229	Aug. 20	1573	415	48	997
Car-coupling	J. W. Pemberton	407,446	July 23	2169	559	48	447
Car-coupling	J. A. Perdue	407,679	July 23	2486	643	48	511
Car-coupling	W. A. Post	406,305	July 2	394	107	48	79
Car-coupling	A. P. Prevost	410,649	Sept. 10	781	{211 212}	48	1428
Car-coupling	J. W. Roberts	411,227	Sept. 17	1668	446	48	1611
Car-coupling	A. Romain	410,928	Sept. 10	1217	328	48	1512
Car-coupling	W. T. Sims	409,875	Aug. 27	2538	665	48	1186
Car-coupling	J. H. Smith, J. F. Knuth, G. Thompson, and J. Ewald.	409,431	Aug. 20	1873	494	48	1056
Car-coupling	C. T. Thompson	406,970	July 16	1427	374	48	294
Car-coupling	T. H. and N. R. H. Wash	406,072	July 2	70	21	48	16
Car-coupling	W. C. Watson	411,175	Sept. 17	1591	423	48	1595
Car-coupling	W. C. Watson	411,176	Sept. 17	1594	{423 424}	48	1595
Car-coupling	F. E. Williamson	407,712	July 23	2531	655	48	520
Car coupling and brake combined	J. S. Bashaw	411,567	Sept. 24	2159	{571 572}	48	1710
Car-coupling link	C. W. Ferguson	408,962	Aug. 13	1169	307	48	910
Car-coupling-link holder	H. C. Miller	410,554	Sept. 3	631	169	48	1392
Car-coupling pins. Device for operating	R. Gunn	407,070	July 16	1561	410	48	321
Car-coupling tool	O. D. Woodruff	410,061	Aug. 27	2795	736	48	1236
Car-door	J. H. McIntyre	410,766	Sept. 10	966	265	48	1464
Car-door	E. L. Phipps	411,298	Sept. 17	1763	474	48	1630
Car-door	E. L. Phipps	411,677	Sept. 24	2328	616	48	1746
Car-door	C. Trier	409,077	Aug. 13	1336	353	48	943
Car-door fastener	T. G. Ruffhead	410,807	Sept. 10	1049	281	48	1479
Car door. Freight-	J. Montgomery	410,694	Sept. 10	857	230	48	1442
Car door. Street-	S. E. Owen	409,492	Aug. 20	1950	518	48	1073
Car. Dumping-	J. Duff	409,394	Aug. 20	1822	{484 485}	48	1045
Car. Dumping-	J. Duff	409,395	Aug. 20	1825	{484 485}	48	1045
Car. Dumping-	J. H. Gearhart	408,954	Aug. 27	2645	694	48	1208
Car. Dumping-	F. J. Gibbs	411,718	Sept. 24	2386	630	48	1758
Car. Electric and cable railway	S. A. Bemis and L. Pfingst	410,671	Sept. 10	1136	300	48	1496
Car extension-step. Railway-	T. A. Fite	411,495	Sept. 24	2053	543	48	1688
Car for testing railway-track scales. Weighing-	S. M. Taylor	411,269	Sept. 17	1726	461	48	1622
Car for transmission of specie	G. T. Yost	409,894	Aug. 27	2566	671	48	1191
Car. Hand-	T. S. Barwis	406,696	July 2	1014	271	48	205
Car. Hand-	W. H. Engels	408,225	Aug. 6	35	8	48	684
Car-heater	J. Zimmerman	406,120	July 2	138	40, 41	48	29
Car heater. Railway-	F. Kranwenkal and W. Kelley	408,113	July 30	3158	835	48	643
Car-heating apparatus	I. T. Dyer	409,275	Aug. 20	1651	436	48	1012
Car-heating apparatus	C. F. Murdock	406,756	July 9	1104	292	48	223
Car-heating apparatus	J. E. Sague	409,306	Aug. 20	1685	446	48	1020
Car-heating apparatus. Coupling for steam-pipes for railway-	E. A. Leland	407,671	July 23	2476	641	48	508
Car label-holder. Freight-	D. R. Proctor	411,471	Sept. 24	2025	536	48	1683
Car motor. Street-	W. H. Patton	409,115	Aug. 13	1401	{369 370}	48	955
Car motor. Street-	W. H. Patton	409,116	Aug. 13	1403	370	48	956
Car motor. Street-	W. S. Salisbury	408,754	Aug. 13	847	{225 226}	48	848
Car-mover	J. Skinner and C. B. Wallace	406,240	July 2	298	69	48	60
Car-oiling apparatus. Mine-	J. F. Beattie	410,530	Sept. 3	600	161	48	1386
Car or other chair	O. E. Michaud	410,845	Sept. 10	1100	{294 295}	48	1490
Car-propelling apparatus	W. Main	407,094	July 16	1612	{422 423}	48	332
Car. Railway-	D. L. Barnes	409,002	Aug. 13	1217	{321 322}	48	930
Car. Railway-	M. A. Garrett	408,611	Aug. 6	618	160	48	798
Car. Railway-	C. W. M. Smith. (Reissue)	11,023	Aug. 13	1476	389	48	971
Car. Railway stock-	J. H. Kimball	411,340	Sept. 17	1635	466	48	1641
Car-replacer	P. W. Hynes	409,103	Aug. 13	1379	364	48	951
Car-roof	J. Marthaler	408,731	Aug. 13	818	215	48	842
Car-roof attachment	W. P. Settles	408,139	July 30	3190	834	48	650

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Car-seal	L. A. Foote	408,474	Aug. 6	408	106	48	750
Car-seal	T. Saunders	406,113	July 2	125	37	48	26
Car-seals. Press for	T. Saunders	406,114	July 2	126	37	48	26
Car-seat	A. R. Machlin	407,022	July 16	1497	392	48	308
Car-seat	J. T. Westwood	409,654	Aug. 20	2195	577	48	1116
Car-seats. Ticket-casing for	R. J. Smith	409,879	Aug. 27	2544	666	48	1187
Car signal. Railway-	M. E. Campany	407,278	July 16	1895	493	48	366
Car signal. Railway-	A. A. Robinson	408,672	Aug. 6	714	186	48	816
Car. Sleeping-	C. L. Arnold	407,563	July 23	2334	{603 604}	48	462
Car. Sleeping-	L. Keller	407,353	July 23	2022	{523 524}	48	418
Car-spring. Graduated	T. M. Bell	406,607	July 9	1014	272	48	205
Car-starter	H. A. Kingaland	411,341	Sept. 17	1637	{490 491}	48	1642
Car-starter	J. H. Palmer	407,369	July 23	2042	529	48	422
Car starter and brake	J. J. Hooker	411,594	Sept. 24	2305	{586 587}	48	1730
Car starter and brake	C. A. Shank	411,688	Sept. 24	2347	{620 621}	48	1750
Car. Steam hand-	T. Morrissey and J. Doyle. (Reissue.)	11,021	Aug. 13	1473	388	48	970
Car step and platform safety-bar	J. C. F. Schenck	406,960	July 16	1409	370	48	291
Car step. Railway-	F. W. Jones	406,626	Aug. 6	643	167	48	803
Car. Stock-	J. M. Burton	408,691	Aug. 13	756	198	48	830
Car. Stock-	A. C. Mather	411,462	Sept. 24	2008	533	48	1679
Car. Stock-	S. P. Tallman	411,908	Sept. 17	1642	{436 437}	48	1605
Car-wheel	H. W. Libbey	406,104	July 2	115	34	48	24
Car-wheel	H. W. Libbey	406,105	July 2	116	34	48	25
Car-wheel	H. F. Mann	408,890	Aug. 13	1058	279	48	890
Car-wheel	H. F. Mann	408,891	Aug. 13	1060	279	48	890
Car-wheel	H. F. Mann	410,334	Sept. 3	309	78	48	1327
Car-wheel	W. M. Morgan	409,210	Aug. 20	1558	412	48	994
Car-wheel	J. Rigby	406,553	July 9	1251	331	48	249
Car-wheel	J. Rigby	411,354	Sept. 17	1851	495	48	1645
Car-wheel	W. E. Smith	408,366	Aug. 6	97	24	48	696
Car-wheel chill	F. E. Canda	408,458	Aug. 6	382	100	48	754
Car-wheel grinder	P. H. Griffin	411,244	Sept. 17	1689	{451 452}	48	1615
Car-wheels. Constructing	J. Rigby	409,708	Aug. 27	2297	{603 604}	48	1141
Car-wheels. Making wrought-iron	S. M. Vanclain	408,056	July 30	3035	800	48	696
Car-wheels. Thrust-receiving plate for	S. W. Tanner	411,309	Sept. 17	1913	511	48	1655
Cars. Apparatus for operating cable	J. Williams, Jr	409,022	Aug. 20	2132	{565 566}	48	1109
Cars. Apparatus for transferring packages to moving	W. H. Elliot	406,343	July 2	447	124	48	90
Cars. Automatic braking and coupling mechanism for railway-	W. Keast	410,322	Sept. 3	294	{76 77 78}	48	1326
Cars. Automatic coupling and valve-controlling mechanism for the steam or air pipes of	J. D. Bagg	407,148	July 16	1690	441	48	346
Cars. Bolster-beam for	E. W. M. Hughes	408,023	July 30	3012	786	48	617
Cars. Buffer-brake for railway-	H. S. Richards. (Reissue)	11,026	Aug. 20	2204	580	48	1119
Cars. Card-holder for	W. E. Thurber	408,054	July 30	3053	799	48	696
Cars. Center-bearing plate for railway-	C. T. Schoen	408,757	Aug. 13	852	227	48	850
Cars. Center plate for railway-	E. W. M. Hughes	408,022	July 30	3018	789	48	619
Cars. Combined stake and pocket for	E. W. M. Hughes	408,028	July 30	3016	788	48	618
Cars. Coupling for steam-pipes of railway-	R. I. Hampton	410,869	Sept. 10	1166	314	48	1502
Cars. Coupling for the steam-pipes of railway-	R. I. Hampton	406,397	July 2	533	149	48	106
Cars. Detachable coupler for connecting supply-pipes of steam-heating apparatus for railway-	J. Loftus	409,109	Aug. 13	1390	366	48	953
Cars. Driving-gear for	E. Samuel	408,931	Aug. 13	1116	293	48	902
Cars. Electric lighting of railway-	T. M. Foote	410,586	Sept. 10	684	{183 184}	48	1409
Cars. Electric motor for street-	W. S. Salisbury	408,753	Aug. 13	845	225	48	848
Cars. Gangway for loading or unloading stock-	J. W. and J. N. McIver	409,222	Aug. 20	1566	413	48	995
Cars. Grain-door for	E. A. Hill	406,399	July 2	537	149	48	107
Cars. Grip and appliance for cable-road	A. Campbell	408,892	Aug. 13	758	{199 200}	48	830
Cars of inclined railways. Safety-catch for	W. C. D. Body	407,947	July 30	2900	755	48	596
Cars. Pedestal for railway-	E. W. M. Hughes	408,029	July 30	3016	788	48	618
Cars. Pilot or wheel guard for street-	G. H. Bahrs	409,901	Aug. 27	2575	675	48	1193
Cars. Pipe-connection for	R. H. Searle	409,130	Aug. 13	1407	371	48	956
Cars. Regulating device for electric-railway	W. M. Schlesinger	406,961	July 16	1410	370	48	292
Cars. Safety attachment for railway-	R. G. Riera	409,707	Aug. 27	2296	603	48	1141
Cars. Safety-crank for hand-	J. Murphy, Jr	406,935	July 16	1377	361	48	286
Cars. Safety-guard for	C. H. Ohm	409,861	Aug. 27	2518	659	48	1181
Cars. Safety-guard for street-	M. J. Goodwin	408,192	Aug. 20	1520	403	48	987
Cars. Safety-heater for railway-	E. H. Edson	407,726	July 23	2549	660	48	523
Cars. Sand-box for railway-	E. W. Davis	409,602	Aug. 20	2119	558	48	1103
Cars. Sand-box for railway-	H. W. Jordan, G. W. Mills, and L. Jordan.	408,178	July 30	3246	848	48	660
Cars. Shot-proof cage for railway-	A. W. Mitchell	407,832	July 30	2790	706	48	561
Cars. Sill-plate for railway-	E. E. Jacobs	409,404	Aug. 20	1837	484	48	1048
Cars. Station-indicator for railway-	E. Verpillier	409,812	Aug. 27	2453	643	48	1170
Cars. System for heating	J. F. McElroy	410,177	Sept. 3	55	14	48	1279
Cars. Ticket-holder for railway-	C. W. McMurran	406,591	July 9	842	227	48	174
Caramel-package	G. V. Frye and C. H. Kleinbeck	411,430	Sept. 24	1968	522	48	1672
Carbon filaments. Joint for	H. Lemp	410,168	Sept. 3	45	12	48	1277
Carbon filaments. Manufacture of	T. A. Edison	411,016	Sept. 17	1344	362	48	1547
Carbon filaments. Manufacture of	T. A. Edison	411,020	Sept. 17	1348	.....	48	1548
Carbons for incandescent electric lamps. Manufacture of	J. S. Sellon	411,474	Sept. 24	2029	537	48	1684
Carbons. Kiln for the manufacture of	P. P. Nungesser	409,469	Aug. 20	1954	517	48	1072

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Carbons. Manufacturing	P. P. Nungesser	409,490	Aug. 20	1956	518	48	1073
Carbonizing-flask	T. A. Edison	411,017	Sept. 17	1345	369	48	1548
Carboy-stand	J. F. Stevenson	411,229	Sept. 17	1672	447	48	1612
Carbureting air. Apparatus for	E. D. Debontteville and L. P. C. Malandin.	407,998	July 30	2975	775	48	609
Carburetor	J. Elder	409,570	Aug. 20	2064	544	48	1093
Card and check box	B. Dreyfuss	407,855	July 30	2755	716	48	568
Card-cylinder	K. L. Krausse	411,105	Sept. 17	1493	396	48	1575
Card-grinding machine	F. L. Richmond	406,537	July 9	774	210, 211	48	162
Card-holder	J. Clayton and J. Abraham	406,196	July 2	243	67	48	48
Card or ticket box	J. Stovel and J. W. Corley	406,965	July 16	1419	373	48	293
Card-stamping machine for Jacquard machines	W. P. Uhlinger	411,401	Sept. 17	1915	511, 512	48	1656
Cards, circulars, or other like matter. Apparatus for delivering	A. Tabour	410,045	Aug. 27	2776	730	48	1232
Carding-cylinder cleaner	C. H. Foss	407,189	July 16	1750	460	48	360
Carding-engine	G. and E. Ashworth	406,965	July 16	1449	380	48	299
Carding-engine flats. Apparatus for controlling the grinding of	J. M. Hetherington	409,462	Aug. 20	1918	508	48	1065
Carding-engines. Condensing mechanism for	G. Layng	409,211	Aug. 20	1549	409, 410	48	992
Carding-engines. Means for fastening card-clothing to the top-flats of	E. Tweedale	410,048	Aug. 27	2780	731	48	1233
Carding-machine	G. A. Allison	411,367	Sept. 17	1866	499	48	1648
Carding-machine	F. H. Carpenter	409,918	Aug. 27	2595	680	48	1198
Carding-machine	J. K. Proctor	407,743	July 23	2578	668	48	530
Carding-machine	G. E. Taft	410,864	Sept. 10	1129	303, 304	48	1495
Carding-machine feeding device	J. Batty	407,150	July 16	1694	441	48	347
Carding-machine for making mottled rovings	W. Denton	410,823	Sept. 10	1070	287	48	1484
Carding-machines. Top-flat cleaner for	C. H. Whitten	407,312	July 16	1938	504	48	395
Carpet-beating machine	C. T. Story	406,485	July 9	689	191	48	147
Carpet binding and fastener	D. Lange	406,451	July 9	628	176	48	136
Carpet-fastener	H. W. Atwater	406,866	July 16	1275	335	48	265
Carpet-stretcher	S. C. Harlan	407,823	July 30	2709	703	48	559
Carpet-stretcher	O. F. Henshaw, J. W. Puterbaugh, A. A. Brower, and S. W. Hurlbut.	409,966	Aug. 27	2665	699	48	1211
Carpet-stretcher	T. H. Maley	407,540	July 23	2301	594	48	474
Carpet-stretcher	H. McCornack	409,647	Aug. 20	2165	576	48	1114
Carpet-stretcher	M. B. Sneden	407,377	July 23	2055	532	48	425
Carpet-stretcher and tack-driver combined	S. L. Troupe	411,270	Sept. 17	1727	462	48	1622
Carpet tacking and stretching machine	J. Albin	411,543	Sept. 24	2121	559	48	1703
Carpets or other fabrics. Machine for cleaning and purifying	T. and A. S. Warsop	407,309	July 16	1934	503, 504	48	394
Carriage attachment. Child's	P. Austin	406,330	July 2	433	119	48	87
Carriage. Baby	R. McMakin	410,804	Sept. 10	1049	280	48	1479
Carriage-body	F. N. Young and F. E. Thompson	410,477	Sept. 3	529	142	48	1372
Carriage-bow	G. V. Montgomery	407,950	July 30	2916	760	48	599
Carriage-bow socket	R. H. Pfaff	410,561	Sept. 3	644	171	48	1395
Carriage-brake	I. Whaler	410,721	Sept. 10	912	245	48	1450
Carriage brake. Baby	E. T. Hawkins	406,167	July 2	200	56	48	41
Carriage. Child's	M. M. Bear	406,872	July 16	1286	337, 338	48	267
Carriage. Child's	T. K. Forman	409,677	Aug. 27	2250	592	48	1132
Carriage. Child's	A. Woodward	407,916	July 30	2852	748	48	586
Carriage-curtain fastening	H. C. Sageman and J. Seibold	406,773	July 9	1129	299	48	228
Carriage-curtain fastening	S. P. Scott	409,069	Aug. 13	1394	349	48	941
Carriage. Folding baby	J. Ellis	410,963	Sept. 10	1264	340, 341	48	1522
Carriage-jack	L. S. Monk	407,869	July 30	2774	724	48	572
Carriage-jack	A. Zimmerman	406,381	July 2	504	140	48	100
Carriage motor. Land	C. R. and L. H. Cowley	410,536	Sept. 3	607	163	48	1367
Carriage-spring	G. Langbein	409,688	Aug. 27	2263	595	48	1135
Carriages. Canopy-support for children's	F. J. D. Chappell	406,389	July 2	518	144	48	104
Carriages. Parasol for baby	G. W. Travers	409,435	Aug. 20	1877	493	48	1057
Carriages. Recoil-spring for baby	W. L. Fay	410,583	Sept. 10	679	185	48	1408
Carrier: *See* Artist's wet-canvas carrier. Cash-carrier. Cash and package carrier. Contact-carrier. Grain-carrier. Hay-carrier. Lathe-carrier. Perfume-carrier.							
Carrying apparatus	N. Weeks, Jr.	410,817	Sept. 10	1061	284, 285	48	1462
Cart. Coal	J. R. Sagle	407,121	July 16	1662	434	48	341
Cart. Coal	M. Toulmin	409,620	Aug. 20	2150	564, 565	48	1108
Cart. Road	G. W. Brabb and L. M. Smith	409,663	Aug. 27	2215	585	48	1126
Cart. Road	J. A. Dibley	407,725	July 23	2548	666	48	523
Cart. Road	W. B. Dodge	410,501	Sept. 3	563	150	48	1379
Cart. Road	E. W. Doolittle	410,353	Sept. 3	340	88	48	1305
Cart. Road	J. G. Gay	411,284	Sept. 17	1748	467	48	1627
Cart. Road	H. H. Gibbs	408,969	Aug. 13	1176	310	48	913
Cart. Road	J. W. Vorwick	411,114	Sept. 17	1506	400	48	1578
Cart-seat	J. M. Lee	411,597	Sept. 24	2210	582	48	1721
Cart. Self-loading	J. C. Keleher	409,793	Aug. 27	2424	638	48	1164
Carts. Seat-back for road	J. D. Hough	409,402	Aug. 20	1835	485	48	1047
Cartridge. Blasting	J. P. Todd, J. S. Welch, and L. M. McLendon.	406,154	July 2	184	50	48	38
Cartridge-capping machine	W. B. Place	406,466	July 9	658	184, 185	48	141
Cartridge-loader	E. G. Dorchester	411,590	Sept. 24	2196	580, 581	48	1718
Cartridge. Metallic	A. Martin	408,917	Aug. 13	1097	298	48	898

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cartridge-shell	W. R. Lindsey	406,246	Aug. 6	67	16	48	692
Carving-machine	W. A. N. Long	407,736	July 23	2564	664	48	527
Carving-machine	S. F. Moore	409,695	Aug. 27	2274	598	48	1137
Case: *See* Artist's field and material case. Book-case. Cigarette-case. Clock-case. Lock-case. Packing-case. Piano-case. Pigeon-hole case. Shipping-case. Show-case. Spectacle-case. Tobacco and match case. Watch-case.							
Case-hook	G. E. Dutton	408,380	Aug. 6	261	65	48	730
Case or wrapper for cards, photographs, books, &c.	G. A. Hearn	407,440	July 23	2158	537	48	445
Cash and package carrier	S. W. Barr, H. M. Weaver, and J. H. Barr.	411,636	Sept. 24	2266	602	48	1733
Cash-carrier	W. H. Albach	411,515	Sept. 24	2092	550	48	1694
Cash-carrier	M. C. Sweezey	409,125	Aug. 13	1416	373	48	959
Cash-carrier apparatus	D. W. Copeland	406,627	July 9	908	245	48	186
Cash-carrier apparatus	J. G. Davis	409,933	Aug. 27	2615	685	48	1202
Cash-carrier apparatus. Pneumatic	J. L. Given	411,334	Sept. 17	1821	467, 468, 573	48	1639
Cash-indicator and coin-counter combined	G. Boemermann	411,573	Sept. 24	2166	574, 575	48	1711
Cash indicator and register	T. Carney	407,815	July 30	2699	700	48	558
Cash indicator and register	W. S. Craig	406,428	July 9	580	163, 164	48	125
Cash indicator and register	J. E. Farrow and J. M. Carson	410,685	Sept. 10	844	226, 227	48	1439
Cash indicator and register	C. H. Kahler	409,206	Aug. 20	1540	407, 408	48	990
Cash indicator and register	H. A. Miles	408,036	July 30	3020	790, 791, 189	48	619
Cash indicator and register	T. Munnell	410,663	Sept. 10	705	190, 191, 192	48	1412
Cash indicator and register	J. H. Patterson	406,533	July 9	767	209	48	160
Cash register and indicator	W. G. Latimer	409,107	Aug. 13	1385	365, 366	48	952
Cash register and indicator	M. R. Longacre	406,748	July 9	1086	289, 290	48	220
Cash register and indicator	M. R. Longacre	406,749	July 9	1092	290, 291	48	221
Cash register and indicator	J. F. Pfeffer	410,917	Sept. 10	1199	324	48	1508
Casket-pedestal	H. B. Belden and M. A. Taylor	406,191	July 2	237	64	48	47
Caster	E. Barron	411,181	Sept. 17	1600	425	48	1597
Caster	L. O. Dion	408,595	Aug. 6	568	155	48	794
Caster	W. Livingstone	411,747	Sept. 24	2426	643	48	1766
Caster	O. Pederson	409,495	Aug. 20	1961	519	48	1074
Caster	J. C. Weir	406,185	July 2	229	62	48	45
Caster. Hall	D. E. Terrill	406,548	July 9	782	214	48	164
Caster. Bill-of-fare and advertising	W. H. Dicke	408,656	Aug. 6	606	160	48	813
Caster Furniture	J. Rigby	406,854	July 9	1233	331	48	250
Casting car-wheel bodies. Metallic mold for	J. C. Smith and C. Grasser	407,696	July 23	2511	648, 649	48	516
Casting metals under pressure. Apparatus for	E. C. Standiford	409,519	Aug. 20	1992	526	48	1080
Casting photographic dry-plates. Machine for	M. Kattentidt	410,898	Sept. 10	1178	317, 318	48	1504
Casting sash-weights. Mold for	R. Jowitt	407,732	July 23	2556	662	48	525
Casting wheels. Mold for	J. W. Hill	408,105	July 30	3132	820, 821	48	640
Castings. Mold for making steel	W. E. Snediker	406,181	July 2	234	61	48	44
Cattle-deborning implement	J. W. Fogate	406,398	July 2	356	71	48	51
Cattle-guard. Surface	E. M. and C. Clark	408,695	Aug. 13	767	201	48	632
Cattle. Implement for deborning	J. Z. Benson and A. Blanchard	410,345	Sept. 3	330	87	48	1332
Cattle while being dehorned. Device for holding	A. C. Pattee	408,257	Aug. 6	83	19, 20	48	696
Ceiling and sheeting strip. Metallic	L. L. Sagendorph	410,856	Sept. 10	1117	300	48	1493
Ceiling. Fire and water proof	J. Smith	407,370	July 23	2054	531	48	424
Ceiling. Fire-proof	J. W. MacKnight	408,922	Aug. 13	1103	291	48	899
Ceiling. Metal	F. G. Caldwell	409,916	Aug. 27	2594	679	48	1197
Ceiling. Metallic	W. R. Kinnear	406,048	July 2	36	11	48	10
Ceiling. Metallic	W. R. Kinnear	406,049	July 2	36	11	48	10
Cellar-bottom	E. S. Vaughan	407,500	July 23	2237	578	48	461
Cement, &c. Composition of matter for	C. Straub	407,135	July 16	1678	.....	48	344
Centering device	F. A. Seaver	407,617	July 23	2402	624	48	495
Centrifugal lubricator	P. M. Sharples	408,959	Aug. 13	1068	266	48	880
Centrifugal machine	J. P. Boettiger	408,822	Aug. 13	951	253	48	870
Centrifugal machine	C. Steffen	410,942	Sept. 10	1233	332	48	1516
Centrifugal machines. Gearing for driving	J. Laidlaw	409,964	Aug. 27	2685	704, 705	48	1215
Centrifugal separator	C. L. Cairns	408,791	Aug. 13	906	248	48	860
Cereals. Scouring and decorticating	W. Ager	408,043	July 30	3066	802	48	628
Cereals. Scouring and decorticating	W. Ager	411,316	Sept. 17	1788	481	48	1635
Chain	W. H. Brock	411,575	Sept. 24	2173	576	48	1713
Chain. Conveyer	C. S. Wells	406,186	July 2	230	62	48	46
Chain. Drive	T. F. Hall	407,655	July 23	2457	636	48	505
Chain-link	I. Brown	411,321	Sept. 17	1803	462	48	1636
Chain. Ornamental	J. E. Crook	407,723	July 23	2545	659	48	523
Chain-wrench	J. D. Moran	406,662	July 9	962	260	48	196
Chains. Apparatus for making solid-link	J. Kinder	410,712	Sept. 10	887	239, 240, 241	48	1446

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Chains. Making solid-link	J. Kinder	410,711	Sept. 10	881	236, 237, 238, 239	48	1446
Chair: *See* Barber's chair. Car or other chair. Child's adjustable chair. Dental chair. Dentist's chair. Folding chair. Invalid-chair. Rail-chair. Railway-chair. Swinging chair. Window-cleaning chair.							
Chair	G. E. Lord	408,118	July 30	3169	828, 829	48	646
Chair	J. Nichols	410,567	Sept. 3	653	173	48	1397
Chair-rocker	C. M. Jacoby	406,400	July 2	538	150	48	107
Chairs or analogous articles of furniture. Guard for rocking-	A. F. Baumann	409,444	Aug. 20	1890	500	48	1060
Chalk-holder	C. Duisd'cker	408,297	Aug. 6	138	35	48	706
Chamfer-cutter	C. Mattison	411,506	Sept. 24	2070	547	48	1692
Chandeliers. Folding joint for	M. F. Gale	406,094	July 2	101	30	48	22
Charcoal apparatus	J. Scherffius	409,873	Aug. 27	2535	664	48	1185
Chart. Dress-	J. Penley	410,695	Sept. 10	858	230, 231	48	1442
Chart for drafting garments	H. P. Fike	409,184	Aug. 20	1510	400	48	985
Check-row wire-reel attachment	W. H. and G. Wertz	411,699	Sept. 24	2360	624	48	1752
Check. Service, cash, and pass	G. D. Smith	409,877	Aug. 27	2541	665	48	1186
Checks, tickets, &c. Implement for separating	A. H. Cridge	406,199	July 2	246	68	48	49
Checking and recording device	F. Sultzer	410,814	Sept. 10	1058	283, 284	48	1481
Checkrein-hook	C. H. Dow	410,824	Sept. 10	1071	288	48	1484
Cheese. Device for turning	M. V. Carr	408,792	Aug. 13	907	242	48	861
Chemical reactions. Facilitating	H. Bower	410,067	Aug. 27	2801	738	48	1237
Chenille fabric	J. Crabtree	409,931	Aug. 27	2612	684	48	1201
Chest: *See* Flour-chest.							
Child's adjustable chair	C. P. Gifford and C. A. Allen	408,612	Aug. 6	620	160	48	799
Chill. Contracting-	J. N. Barr	411,369	Sept. 17	1871	500	48	1649
Chimney-cowl	I. J. Turner	410,660	Sept. 10	799	216	48	1431
Chimney-cowl and ventilator	C. B. Loveless	409,990	Aug. 27	2691	706	48	1216
China, porcelain, &c. Ornamenting	V. J. Kuess	406,745	July 9	1083	288	48	219
Chopper: *See* Cotton-chopper. Meat and vegetable chopper.							
Chuck. Drill-	E. Moyle	410,601	Sept. 10	702	188	48	1412
Chuck. Drill-	L. Reder	406,112	July 2	123	36	48	26
Chuck. Drill-	C. and G. B. Taylor	407,554	July 23	2322	600	48	479
Chuck for rods or tubes	H. Rung	410,738	Sept. 10	940	252	48	1455
Chuck. Lathe-	C. R. Mead	408,985	Aug. 13	1195	315	48	916
Chuck. Nipple-holding	T. R. Leighton	409,168	Aug. 13	1389	366	48	953
Chuck. Pulley-	W. J. Muncaster	409,483	Aug. 20	1947	515, 516	48	1071
Chuck. Shafting-	W. S. Rogers	411,731	Sept. 24	2404	637	48	1762
Churn	C. T. Carnes	411,322	Sept. 17	1804	482	48	1636
Churn	S. D. Cherry	410,492	Sept. 3	552	148	48	1376
Churn	J. M. Curtice	409,020	Aug. 13	1251	330, 331	48	927
Churn	M. J. Dow	411,328	Sept. 17	1811	484	48	1637
Churn	M. R. Fakes	410,356	Sept. 3	343	90	48	1336
Churn	J. P. Ferrenburg	410,884	Sept. 10	1153	311	48	1499
Churn	F. H. Haman	410,888	Sept. 10	1165	313, 314	48	1502
Churn	H. E. Hawk, W. Smith, and J. F. Fox	408,480	Aug. 6	413	108	48	761
Churn	P. Kallen	410,103	Aug. 27	2880	755	48	1251
Churn	W. F. Little	411,667	Sept. 24	2313	613	48	1743
Churn	E. Michaels	409,997	Aug. 27	2703	710	48	1218
Churn	B. Mitchum	408,126	July 30	3178	831	48	647
Churn	J. W. Parrish	410,437	Sept. 3	476	127	48	1361
Churn	D. Stephens	406,791	July 9	1159	306	48	233
Churn	A. L. Stout	408,818	Aug. 13	947	252	48	869
Churn	W. Walter	409,533	Aug. 20	2014	530	48	1083
Churn	S. Whitney	410,949	Sept. 10	1245	335	48	1518
Churn-dasher	J. E. Gibbs	406,395	July 2	529	147	48	106
Churn-dasher	L. M. Littlefield	407,672	July 23	2477	641	48	509
Churn-dasher	I. A. Sabin	406,308	July 2	398	108	48	80
Churn-motor	S. Giles	408,801	Aug. 13	924	246	48	864
Chute. Coke-	G. A. McIlhenny	410,005	Aug. 27	2716	713, 714	48	1221
Chute. Coke-	G. A. McIlhenny	410,006	Aug. 27	2717	714	48	1221
Cider mill and press	J. G. Harris	406,347	July 2	454	127	48	91
Cigar	J. H. Stevens and J. E. H. Hyde	408,442	Aug. 6	354	......	48	749
Cigar-box	J. H. Horwitz	407,009	July 16	1483	387	48	305
Cigar-box opener	G. D. Woodworth	408,565	Aug. 6	558	146	48	787
Cigar-bunch-wrapping machine	J. E. Schmalz	411,304	Sept. 17	1777	475, 476	48	1632
Cigar-bunches. Device for slitting the ends of	E. Martyn	407,097	July 16	1023	425	48	333
Cigar-bunching machine	J. H. Abraham	406,329	July 2	430	118, 119	48	87
Cigar-bunching machine	J. W. Coughtry	410,268	Sept. 3	108	53	48	1308
Cigar-bunching machine	J. De la Mar	410,959	Sept. 10	1255	338, 339	48	1520
Cigar-bunching machine	F. A. Grab	409,575	Aug. 20	2075	547, 548	48	1095
Cigar-bunching machine	F. E. Kelsey and G. D. Woodworth	407,733	July 23	2557	662	48	525

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Cigar-bunching machine	F. A. Schutz	409,807	Aug. 27	2415	641, 642	48	1169
Cigar-bunching machine	F. C. Smalstig	411,736	Sept. 24	2410	639	48	1763
Cigar-cutter	J. M. King	407,220	July 16	1805	472	48	368
Cigar-machine	M. Greensfelder	409,785	Aug. 27	2412	631	48	1162
Cigar-machines. Apron for	J. J. Becker	408,067	July 30	3072	803	48	629
Cigar-moistener	C. A. Allen	406,076	July 2	76	22	48	17
Cigar-perforator	L. Lattan and H. Tripp	407,358	July 23	2028	525	48	419
Cigar-selling machine. Automatic	P. Schneider	408,932	Aug. 13	1117	294, 295	48	902
Cigars. Packing	W. F. Lang	410,553	Sept. 3	630	168	48	1392
Cigarette-case	F. S. Kinney	406,652	July 9	950	257	48	194
Cigarette-machine	O. W. Allison	406,610	July 9	877	236, 237	48	180
Cigarette-machine	O. W. Allison	406,611	July 9	881	237, 238	48	180
Cigarette-machine	O. W. Allison	406,612	July 9	885	238, 239	48	181
Cigarette-machine	O. W. Allison	406,613	July 9	887	239	48	181
Cigarette-machine	A. B. Biggs	410,231	Sept. 3	143	37, 38	48	1296
Cistern-cleaner	J. H. Duncan and F. A. Hale	410,159	Sept. 3	33	9	48	1275
Cistern-cleaner	W. A. Palmer	409,862	Aug. 27	2521	659	48	1182
Clam-baker	T. C. Avery	410,703	Sept. 10	869	234	48	1444
Clamp: *See* Bench-clamp. Cabinet-clamp. Dental-bit clamp. Fly-paper clamp. Hoof-clamp. Hoop-clamp. Pipe-clamp. Screw-clamp. Sewing-machine button-hole clamp. Soldering-clamp.							
Clamping-frame	T. Steinert	407,698	July 23	2513	649	48	516
Clamping-plate for timber structures	G. W. Zeigler	409,546	Aug. 20	2032	535	48	1087
Clamping-plate for timber structures	G. W. Zeigler	409,547	Aug. 20	2032	536	48	1087
Clamping-plate for timber structures	G. W. Zeigler	409,548	Aug. 20	2033	536	48	1087
Clarionet	C. G. Conn	410,072	Aug. 27	2831	743	48	1241
Clasp: *See* Belt-clasp. Corset-clasp. Necklace-clasp. Pencil-clasp. Ribbon-roll clasp. Rope-clasp.							
Clasp	J. H. Bley	406,021	July 2	4	2	48	2
Clasp	S. B. Ferris	409,779	Aug. 27	2400	629	48	1160
Clasp	J. Wenger	408,332	Aug. 6	193	49	48	717
Clay for ballast. Burning	C. M. Snyder	411,069	Sept. 17	1433	381	48	1564
Clay for ballast. Burning	J. Stubbs	408,860	Aug. 13	1009	266	48	881
Clay-grinding machine	D. Kennedy, Jr.	407,219	July 16	1804	472	48	368
Clay. Machine for separating gravel from	S. Friend	409,186	Aug. 20	1513	401	48	985
Clay. Separating gravel from	S. Friend	409,187	Aug. 20	1514	401	48	985
Clay-washing machine	H. Woodcock	410,819	Sept. 10	1064	285, 286	48	1483
Clay-working machine	W. R. Cunningham	408,337	Aug. 6	199	51	48	718
Cleaner: *See* Boiler-cleaner. Carding-cylinder cleaner. Cistern-cleaner. Corn-cleaner. Flue-cleaner. Intestine-cleaner. Knife-cleaner. Pen-cleaner. Seed-cleaner. Type-writing-machine cleaner.							
Clevis	E. M. McVicker	406,761	July 9	1111	295	48	224
Clevis. Plow-	W. E. Sefton	408,857	Aug. 13	1006	265	48	880
Clip: *See* Hame-clip. Whiffletree-clip.							
Clip-mold	J. McLean	406,295	July 2	373	101	48	75
Clip or saddle rake-tooth holder	L. W. O'Brian	408,128	July 30	3179	831	48	648
Clock	E. M. and M. Moulton	408,665	Aug. 6	706	183	48	814
Clock. Calendar-	A. F. Wells	407,977	July 30	2939	765, 766	48	603
Clock-case	J. M. Durward	410,825	Sept. 10	1072	288	48	1484
Clock. Electric pendulum	A. L. Parcelle	410,013	Aug. 27	2726	716, 717	48	1223
Clock for use in exposed places. Electric	A. Speer	407,945	July 30	2894	754	48	595
Clock. Musical	J. Sprangers	408,903	Aug. 13	1077	283	48	894
Clock-pendulum	W. D. Davis	408,955	Aug. 13	1150	304	48	909
Clock-pendulum	G. P. Reed	409,705	Aug. 27	2294	603	48	1141
Clock. Recording thermometer-	W. F. Brewster	410,664	Sept. 10	809	218	48	1433
Clock system. Electric-	C. H. Carter	411,138	Sept. 17	1539	410, 411	48	1585
Clocks. Gong-striking mechanism for synchronized.	C. H. Pond	411,168	Sept. 17	1583	421	48	1593
Closet: *See* Dry closet. Siphon-closet. Water-closet.							
Cloth bag. Bias	J. L. Seymour	408,858	Aug. 13	1007	266	48	880
Cloth-calendering roll	W. S. Granger	407,818	July 30	2750	717	48	569
Cloth-cutting machine	F. W. Nevens. (Reissue)	11,019	Aug. 6	732	190	48	819
Cloth-pressing machine	D. Gessner	411,143	Sept. 17	1544	412	48	1586
Cloth-pressing machine	D. Gessner	411,144	Sept. 17	1545	413	48	1586
Cloth-steaming apparatus	A. Waszkiewicz	406,775	Aug. 13	881	235	48	856
Clothes-bar. Revolving	J. E. Armson	409,442	Aug. 20	1887	498, 499	48	1060
Clothes-drier	G. L. Gerard	408,342	Aug. 6	205	52	48	719
Clothes-drier	J. L. Jones	406,100	July 2	111	33	48	24
Clothes-drier	W. H. Little	409,642	Aug. 20	2180	574	48	1113
Clothes-drier	A. J. Peirce	407,678	July 23	2485	643	48	511
Clothes-drier	J. B. Story	408,362	Aug. 6	232	59	48	724
Clothes-drier	L. R. Studley	409,809	Aug. 27	2449	642	48	1170

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Clothes-hanger	H. Hennig	409,839	Aug. 27	2493	651	48	1176
Clothes-horse and ironing-board. Combined	L. Fairweather	408,471	Aug. 6	403	105	48	778
Clothes-line attachment	H. Maeurer	409,327	Aug. 20	1723	453	48	1026
Clothes-line holder for windows	H. A. Denman	410,787	Sept. 10	1024	275	48	1474
Clothes-line stretcher	S. Dobbs	408,339	Aug. 6	202	51	48	719
Clothes-line stretcher	H. Hennig	409,840	Aug. 27	2494	651	48	1176
Clothes-line support and holder	J. H. Garand	407,193	July 16	1763	402	48	361
Clothes-pin	J. A. Stewart	409,880	Aug. 27	2545	666	48	1167
Clothes-pounder	T. Maitland	408,311	Aug. 6	155	39	48	710
Clothes-pounder	J. Woolridge	407,807	July 30	2689	697	48	556
Clothes-reel	H. G. Miller	411,162	Sept. 17	1576	419	48	1592
Club. Policeman's	C. R. Adams	411,705	Sept. 24	2372	629	48	1735
Clutch	W. E. Clifford	411,237	Sept. 17	1679	449	48	1614
Clutch	W. H. Johnson	408,881	Aug. 13	1044	276	48	887
Clutch for rods	R. Hadfield	410,275	Sept. 3	213	56	48	1311
Clutch. Friction	W. D. Gray	408,012	July 30	2998	782	48	614
Clutch. Friction	H. W. Hill and L. J. Hirt	409,586	Aug. 20	2092	{551 552	48	1098
Clutch. Friction	J. G. Moomy	410,764	Sept. 10	983	264	48	1464
Clutch. Friction	A. Nelson	406,109	July 2	121	35, 36	48	25
Clutch. Friction	E. Savoral	409,871	Aug. 27	2532	{662 663	48	1184
Clutch. Friction	W. B. Tatro	407 748	July 23	2588	670	48	532
Coal and discharging the same in piles. Apparatus for conveying	J. M. Dodge	408,957	Aug. 13	1152	305	48	909
Coal-bucket	G. L. Stuebner	407,553	July 23	2321	600	48	479
Coal. Chain conveyer for forming and removing piles of	J. M. Dodge	408,958	Aug. 13	1155	{305 306	48	909
Coal-conveyer	W. N. Page	410,185	Sept. 3	75	18, 19	48	1282
Coal. Conveyer for piling	J. M. Dodge	409,604	Aug. 20	2120	558	48	1103
Coal-cutting machine	J. C. Robertson	409,870	Aug. 27	2531	662	48	1184
Coal discharging and conveying apparatus	C. S. Schenck	409,872	Aug. 27	2533	663	48	1184
Coal-drill	D. Giese	406,040	July 2	27	8	48	8
Coal or analogous material. Piling	J. M. Dodge	409,636	Aug. 20	2173	{572 573	48	1112
Coal or ore bins. Discharge apparatus for	W. Dunbar	407,432	July 23	2145	554	48	442
Coal or rock drill	J. L. and T. H. Williams	408,567	Aug. 13	1022	271	48	883
Coal. Removing piles of	J. M. Dodge	409,568	Aug. 20	2062	544	48	1092
Coal-screen. Revolving	W. O. Gunckel	410,515	Sept. 3	583	157	48	1383
Coal-tub	G. Focht	406,164	July 2	197	55	48	40
Coaster	J. P. Newburg	411 255	Sept. 17	1708	{456 457	48	1619
Coat-holder	W. D C. Pattyson	410,439	Sept. 3	479	128	48	1362
Cock and fire-extinguisher. Blow-off	L. E. Michell	408 919	Aug. 13	1099	290	48	898
Cock. Automatic ratchet	J. J. Powers	408 431	Aug. 6	343	89	48	746
Cock box. Stop	C. F. Bingham	406 253	July 2	313	86	48	63
Cock for self-lighting gas-fuel burners	L. P. Willing and C. F. Kiefer	407 884	July 30	2799	729	48	577
Cock. Gage	D. H. Roberts	406 956	July 16	1403	369	48	250
Cock. Gage	A. Worthington	408 263	Aug. 20	1622	429	48	1007
Cock or valve	J. Powell	408,330	Aug. 6	172	43	48	713
Cock or valve	J. Powell	409,334	Aug. 20	1734	456	48	1027
Cock. Self-closing stop	J. F. Larkin	408 418	Aug. 6	326	84	48	742
Cock. Supply and waste	C. Hay	408 617	Aug. 6	628	162	48	801
Cockeye. Rope-trace	W. H. Willson and S. Conover	411,481	Sept. 24	2037	539	48	1685
Cocoanut-shells. Machine for cutting	J. H. Vavasseur	410 385	Sept. 3	383	101	48	1344
Coffee. Apparatus for cooling, stoning, and bagging	R. Burns	411 710	Sept. 24	2377	631	48	1756
Coffee. Compound for settling	M. P. R. Tilton	411,075	Sept. 17	1441	.....	48	1566
Coffee-pot	H. Goodrich	408,707	Aug. 13	787	207	48	836
Coffee-pot. Automatic fountain	H. C. Green	411,656	Sept. 24	2298	610	48	1740
Coffee-pots. Percolator for	J. M. Chadwick	408,081	July 30	3067	809	48	632
Coffin	J. H. Dunn	408,109	July 30	3234	844	48	657
Coffin-fastener	B. Van Horn and J. E. Lathe	409,436	Aug. 20	1878	495	48	1057
Coffin-lid fastener	L. E. Woodard	410,009	Aug. 27	2794	735	48	1935
Coiling apparatus. Metal	F. Bracken	407,277	July 16	1894	493	48	385
Coin. Machine for disclosing articles in exchange for a	P. Everitt	411 549	Sept. 24	2133	565	48	1705
Coin-operated machine	A. W. Roovers	407 039	July 16	1524	399	48	313
Coke. Apparatus for the manufacture of	R. de Soldenhoff	409,567	Aug. 20	2060	543	48	1092
Coke-furnace	A. Weber	409.081	Aug. 13	1341	{354 355 356	48	944
Coke-handling device	J. Watts	407,556	July 23	2325	601	48	480
Coke-oven	T. Baner	406,986	July 16	1451	380	48	300
Coke-oven	A. Weber	407,879	July 30	2793	{726 727 728	48	575
Collar. Cape	N. E. Powers	408,847	Aug. 13	988	{261 262	48	877
Collar. Cape	N. E. Powers	408,848	Aug. 13	989	262	48	877
Collar. Cape	N. E. Powers	408,849	Aug. 13	991	{262 263	48	877
Collar fastener. Horse	J. F. Glidden	409,144	Aug. 13	1443	379	48	964
Collar fastener. Horse	J. N. Kellerman	409,044	Aug. 13	1287	340	48	934
Collar fastener. Horse	A. P. Porter	406,369	July 2	484	135	48	96
Collar fastener. Horse	J. T. Roundtree	411,110	Sept. 17	1502	398	48	1577
Collar fastening. Horse	P. T. Bradley	411,373	Sept. 17	1676	502	48	1650
Collar. Horse	J. B. Connolly	409,158	Aug. 13	1472	388	48	970
Collar. Horse	W. Murr	409,418	Aug. 20	1855	490	48	1032
Collar iron. Breast	G. Van Wagenen	406,069	July 2	68	20	48	16
Collar. Woolen-shirt	F. R. Whitcomb	411,178	Sept. 17	1597	425	48	1596
Collars. Making apparel	J. F. Fellows	409,179	Aug. 20	1502	398	48	983
Collars. Making cape	N. E. Powers	408,850	Aug. 13	993	263	48	877
Color. Red	T. Sandmeyer	406,669	July 9	972	.....	48	198
Color. Yellow	T. Sandmeyer	406,670	July 9	973	.....	48	198

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Colter-plow	L. Walker	410,055	Aug. 27	2791	735	48	1235
Colter. Roller	S. Cook	407,062	July 16	1552	407	48	319
Colter. Rolling	T. C. Belding	407,568	July 23	2339	605	48	483
Column. Compound fire-proof	W. H. Drake	409,852	Aug. 27	2484	649	48	1174
Comb: *See* Curry-comb.	J. D. Craig	408,795	Aug. 13	910	243	48	861
Combination-lock	A. R. Peck	408,355	Aug. 6	220	57	48	723
Combination-lock	J. F. Thompson	407,262	July 16	1871	488	48	391
Combination-lock	F. J. Pratt and J. H. Lane	406,666	July 9	966	261	48	197
Combination-wrench	D. P. Norris	411,053	Sept. 17	1396	374	48	1557
Combing machine. Wool	F. G. Lange	410,420	Sept. 3	444	{117 118	48	1356
Combing wool, &c. Machine for	M. H. Day	406,339	July 2	444	.....	48	89
Combustible substance	T. C. Joyce	409,590	Aug. 20	2099	533	48	1099
Commode	J. W. Stowell	410,813	Sept. 10	1036	293	48	1491
Commode. Earth-closet	F. O. Blackwell	410,265	Sept. 3	193	50	48	1307
Commutator-brush	O. P. Loomis	407,325	July 16	1816	475	48	371
Commutator-brush holder	V. Sperle	409,518	Aug. 20	1992	526	48	1080
Composing-stick	M. L. Deering	408,222	Aug. 6	29	.....	48	683
Composition of matter	C. T. Lee	409,985	Aug. 27	2687	.....	48	1215
Composition of matter	J. H. Valle	406,317	July 2	412	113	48	82
Compound engine	J. H. Eickershoff	407,184	July 16	1748	457	48	358
Compound engine. Single-acting	G. Metzger	411,252	Sept. 17	1703	155	48	1618
Compressor. Compound	G. O. Dickinson	406,535	July 9	925	{249 250	48	189
Concentrating and amalgamating machine	A. E. Carey and E. Latham	409,560	Aug. 20	2051	541	48	1090
Concrete, &c. Machine for making	E. L. Ransome	410,292	Sept. 3	238	62	48	1315
Concrete-mixing machine	D. M. Hyland	411,505	Sept. 24	2208	{5 7 588	48	1720
Conduit. Underground	T. Wallace	406,978	July 16	1439	377	48	297
Conduit. Underground	P. Knorpp and G. A. Mayer	407 935	July 30	2877	749	48	591
Confectionery. Machine for making	J. A. Powers	406,469	July 9	662	186	48	142
Connection-box	C. J. Van Depoele	407,749	July 23	2590	670	48	532
Contact-arm. Extensible upward-pressure	C. J. Van Depoele	408,638	Aug. 6	660	172	48	806
Contact-arm for electric-railway motor-cars	J. C. Love	408,984	Aug. 13	1194	315	48	916
Contact-carrier for electric railways	J. Merriman	406,937	July 16	1365	357	48	283
Converters. Constructing lead-lined	G. W. McCaslin	409,330	Aug. 20	1728	454	48	1036
Conveyer	G. W. McCaslin	409,612	Aug. 20	2133	{560 561	48	1105
Conveyer	F. H. C. Mey	408,733	Aug. 13	819	216	48	842
Conveyer. Sectional screw	W. H. Cornell	409,454	Aug. 20	1905	504	48	1063
Cooking edibles	H. Fricker	411,378	Sept. 17	1982	503	48	1651
Cooking utensil	W. Ward	410,920	Sept. 10	736	199	48	1419
Cooler: *See* Bottle-cooler. Water-cooler.	P. Fogarty	410,511	Sept. 3	577	155	48	1381
Coop. Folding	G. Muir	410,602	Sept. 10	703	188	48	1412
Copy-holder	H. H. Potter	407,239	July 16	1839	481	48	375
Copy-holder	F. G. Wiunek	406,340	July 2	502	140	48	100
Copy-holder	J. V. Berry	407,314	July 16	1940	505	48	396
Copy-holder and line-indicator. Automatic	A. Erdmann	406,576	July 9	827	224	48	171
Copying-press	J. P. McPherson	411,467	Sept. 24	2020	535	48	1682
Copying-press	W. E. Trufant	411,559	Sept. 24	2147	569	48	1707
Copying-press	H. W. Brown	409,926	Aug. 27	2473	.....	48	1173
Copying-sheet	M. M. M. Slattery	407,618	July 23	2403	624	48	495
Core for converters	A. R. Weisz	408,557	Aug. 6	541	143	48	583
Cork-branding device	F. Metz	406,225	July 2	278	77	48	56
Cork-machine	H. La Casse and S. Wile	406,450	July 9	617	{173 174 175 176	48	133
Corkscrew	E. T. Pollard and F. J. Ludington	406,304	July 2	392	107	48	79
Corn and fertilizer dropper	J. P. Birmingham	411,005	Sept. 17	1332	358	48	1545
Corn-cleaner	J. B. Cornwall	411,759	Sept. 24	2441	{646 647	48	1769
Corn-cutter	B. F. Moore	410,371	Sept. 3	365	97	48	1341
Corn-cutting knife	J. P. Wood	409,723	Aug. 27	2315	609	48	1144
Corn-husker and feed-cutter	F. L. Collis	406,090	July 2	97	24	48	21
Corn husker and sheller	L. R. Whiting	407,710	July 23	2528	654	48	519
Corn-husking implement	R. W. Hubbard	409,788	Aug. 27	2419	633	48	1163
Corn-husking machine	H. R. Stickney	407,423	July 23	2130	{549 550	48	439
Corn-sheller	H. Lippold, Jr.	407,929	July 30	2716	705	48	561
Corn-sheller	A. H. Patch	407,549	July 23	2317	598	48	478
Corn sheller and grinder	N. Brennan	410,399	Sept. 3	407	108	48	1348
Cornstalk-cutter	J. D. Mercer	410,369	Sept. 3	362	96	48	1340
Cornstalk cutter or harvester	E. F. Scholder	407,419	July 23	2124	548	48	438
Cornet	J. Heald	408,972	Aug. 13	1181	{311 312	48	914
Corns. Remedy for	A. Larochelle	408,488	Aug. 6	427	.....	48	763
Corset and breast-pad. Combined	M. A. Williams	406,491	July 9	697	193	48	148
Corset-clasp	W. F. Brooks	407,770	July 30	2621	679	48	544
Corset-clasp	A. H. Dean	407,983	July 16	1902	495	48	387
Corset-clasp	C. J. Van Depoele	408,410	Aug. 20	1843	487	48	1050
Corset-clasp	L. Wilzin	407,630	July 23	2421	628	48	498
Corset-clasp	S. S. Williamson	410,131	Aug. 27	2928	769	48	1260
Corset-fastening	J. G. Smith	408,141	July 30	3196	835	48	651
Cot. Folding	G. H. Wilson	407,757	July 23	2603	673	48	535
Cot frame. Folding	J. S. Angell	406,157	July 2	187	53	48	38
Cotton-chopper	A. Chambers	409 771	Aug. 27	2388	626	48	1158
Cotton-chopper	W. P. Clark	407,512	July 23	2251	581	48	463
Cotton-chopper	J. C. McCollum	406,589	July 9	840	227	48	174
Cotton-chopping machine	G. E. Hugnley and J. T. Chambers, Jr.	411,102	Sept. 17	1487	395	48	1574

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cotton chopping, planting, and cultivating machine	D. W. Piland	411,470	Sept. 24	2024	536	48	1682
Cotton cleaner and distributer. Seed	J. W. Elliott	410,962	Sept. 10	1262	340	48	1521
Cotton-cleaning apparatus, &c. Trunk for	J. C. Potter	410,443	Sept. 3	484	129	48	1363
Cotton-gin	C. Young	408,566	Aug. 6	559	146	48	767
Cotton-gin roller	R. Y. Kirkland	407,016	July 16	1491	389	48	307
Cotton-gins. Feeding mechanism for	V. Davis	406,889	July 16	1306	{342 343	48	271
Cotton. Machine for opening and cleaning	H. A. Davis and H. C. Perham	406,034	July 2	20	6.7	48	7
Cotton-openers, &c. Evening mechanism for	J. C. Potter	411,350	Sept. 17	1847	493	48	1644
Cotton-opening machine	R. Kitson	406,050	July 2	40	12	48	11
Cotton-scraper	J. L. Peter and J. Y. James	411,297	Sept. 17	1761	471	48	1629
Cotton-scraper and chopper	J. C. White	408,779	Aug. 13	885	236	48	857
Counter for facilitating the transfer of money	J. S. Key	407,759	July 23	2605	674	48	585
Counting mechanisms. Testing device for	P. C. Illgen	407,932	July 30	2674	748	48	590
Coupling: *See* Brake-coupling. Car-coupling. Electric coupling. Friction-coupling. Furniture-coupling. Hose-coupling. Hose or pipe coupling. Insulating-coupling. Pipe-coupling. Pipe and hose coupling. Pump-rod coupling. Railway-rail coupling. Shaft-coupling. Signal rod coupling. Sink-coupling. Stove-pipe coupling. Thill-coupling. Timber-coupling.							
Coupling	W. and W. A. Wilcox	407,046	July 16	1533	402	48	315
Coupling and uncoupling stick	F. W. Beall	408,158	July 30	3221	841	48	655
Cover for cooking-vessels	C. H. Crosby and H. W. Cook	411,185	Sept. 17	1607	427	48	1598
Cover for vessels. Self-adjusting	S. F. Green	409,354	Aug. 20	1765	465	48	1033
Cracker-cutting die	C. Herrmann	407,929	July 30	2871	747	48	589
Cradle	A. M. Christensen	406,125	July 2	144	43	48	30
Cradle	J. H. Wiggers	409,260	Aug. 20	1618	428	48	1006
Cranberry-picker	B. F. Bee	410,397	Sept. 3	400	106	48	1347
Cranberry-picker	J. R. Jenney	408,414	Aug. 6	323	83	48	741
Cranberry-sorter	A. S. Prickitt	408,323	Aug. 6	175	44	48	713
Crane	H. M. Barnhart	410,870	Sept. 10	1135	305	48	1496
Crane	W. H. Ridgway	411,681	Sept. 24	2335	618	48	1747
Crank-pin	H. D. Gordon	406,275	July 2	344	94	48	60
Crate	S. C. Seaman	409,118	Aug. 13	1405	371	48	956
Crate. Folding	J. W. Brook	409,366	Aug. 20	1812	{476 477	48	1042
Crate. Fruit or vegetable	T. B. Ashford	411,740	Sept. 24	2415	640	48	1764
Cream-separator. Centrifugal	S. Jönsson	411,038	Sept. 17	1377	369	48	1553
Creaming-can	P. S. Fowler	409,951	Aug. 27	2642	693	48	1207
Crib. Folding	F. Fay	411,653	Sept. 24	2291	609	48	1738
Crib or cradle	P. Agger	409,896	Aug. 27	2569	672	48	1192
Crimping-machine	R. Marshall	406,175	July 2	215	59	48	43
Crocheting-machine	G. D. Munsing	411,046	Sept. 17	1386	372	48	1555
Crocks and jars. Cover for	J. A. Silva	406,542	July 9	781	212	48	163
Cross-head	L. H. Kenyon	409,200	Aug. 20	1673	441	48	1016
Crossing and switch. Combined	C. Partington	410,560	Sept. 3	642	171	48	1395
Crossing and switch. Combined	F. C. Weir	409,537	Aug. 20	2018	532	48	1084
Crossing and switch. Combined	F. C. Weir	409,538	Aug. 20	2021	533	48	1085
Crozing-machine	L. M. Reed	409,235	Aug. 20	1580	417	48	998
Crupper	L. S. Ellis	406,340	Aug. 6	203	51	48	719
Crusher: *See* Grinding-mill crusher. Harrow and clod crusher. Ore-crusher. Seed-crusher.							
Crusher	W. Johnston	410,641	Sept. 10	773	209	48	1426
Crushing and grinding mill	J. F. Winchell	408,448	Aug. 6	363	95, 96	48	751
Crushing and grinding mills. Feeding-crusher for	J. F. Winchell	407,885	July 30	2800	730	48	577
Crushing bones, minerals, &c. Mill for	C. C. Phillips	408,515	Aug. 6	474	125	48	772
Crushing-mill	A. E. Roe	411,614	Sept. 24	2239	594	48	1737
Crushing-rolls. Adjustable gear for	H. C. Behr	409,095	Aug. 13	1368	{360 361	48	949
Cryptographic apparatus	A. Von Simon	407,425	July 23	2132	550	48	439
Cuff-holder	H. J. Dalo	410,750	Sept. 10	959	258	48	1459
Cuff-holder	M. Eiseman and J. Kaiser	409,833	Aug. 27	2485	649	48	1174
Cuff-holder	J. C. Emerson	406,435	July 9	396	107	48	128
Cuff-holder	W. E. Terry and E. K. Hanley	407,705	July 23	2523	652	48	519
Cuff-holder	H. B. Williams	408,679	Aug. 6	729	189	48	813
Culinary utensil	C. Bickerg	410,632	Sept. 10	762	206	48	1424
Culinary utensil	W. J. Burnett	410,489	Sept. 3	547	147	48	1375
Cultivator	R. Allstatter	407,273	July 16	1867	491	48	384
Cultivator	R. H. Avery	407,766	July 30	2617	678	48	543
Cultivator	D W. Bash	406,418	July 9	564	159	48	122
Cultivator	J. C. Bentholl	406,619	July 9	896	242	48	183
Cultivator	W. H. Bonwell	406,422	July 9	572	160	48	124
Cultivator	J. Clare	408,694	Aug. 13	765	200	48	832
Cultivator	F. P. Craig	408,589	Aug. 6	589	153	48	792
Cultivator	A. Ellis	409,605	Aug. 20	2122	558	48	1103
Cultivator	H D. Kipp	410,596	Sept. 10	697	186	48	1411
Cultivator	E. Poole	410,648	Sept. 10	780	211	48	1428
Cultivator	M. Sattley	406,856	July 9	1257	332	48	250
Cultivator	H. Wiard and J. L. Judd	407,628	July 23	2415	627	48	497
Cultivator and harrow	J. Stoate	410,615	Sept. 10	731	197	48	1418
Cultivator and planter	W. C. McTyeire	407,029	July 16	1505	394	48	310
Cultivator and planter. Combined	J. D. Stobaugh	410,996	Sept. 10	1317	355	48	1532
Cultivator and seeder	L. S. Flatan	406,205	July 2	252	70	48	50
Cultivator and seeder	J. S. Rowell	410,768	Sept. 10	989	266	48	1465
Cultivator. Hand garden	J. A. Shrock	410,774	Sept. 10	1000	268	48	1468
Cultivator. Listing	W. A. Kerschner	411,451	Sept. 24	1996	529	48	1677

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cultivator-tooth. Spring	J. S. Rowell	410,769	Sept. 10	990	266	48	1466
Cultivator. Wheel	H. O. Sanders	411,733	Sept. 24	2407	638	48	1762
Cultivators. Shovel-standard for	M. L. Kissell	407,580	July 30	2636	683	48	547
Cultivators. Spring-tooth fastener for	E. P Atherholt	409,817	Aug. 27	2461	645	48	1172
Cup. *See* Grease-cup. Oil-cup.							
Cup for receiving condensed milk or marmalade packages	L. Kohns	406,841	July 9	1234	327	48	247
Curb Pavement	I. L. Landis	409,469	Aug. 20	1923	510	48	1067
Curbing-section. Metallic	H. W. White	408,057	July 30	3056	800	48	626
Curling-iron	S. Hawkridge	407,439	July 23	2157	537	48	445
Current motor. Alternating	C. J. Van Depoele	408,641	Aug. 6	668	174	48	808
Curry-comb	L. M. Devore	409,458	Aug. 20	1913	506	48	1064
Curry-comb	J. Du Shane	407,313	July 16	1939	505	48	396
Curry-comb	F. W. Hoefer	410,971	Sept. 10	1282	347	48	1526
Curry comb	F. G. Kent	410,167	Sept. 3	44	12	48	1277
Curry-comb	C. A. Mable	411,345	Sept. 17	1841	492	48	1643
Curry-combs. Machine for making wooden	M. Sweet	409,522	Aug. 20	1998	527	48	1061
Curry-combs. Machine for riveting	J. C. Teepe	407,949	July 30	2834	737	48	583
Curtain-drying frame	F. H. Bassett	411,765	Sept. 24	2450	649	48	1771
Curtain-fixture	F. H. Bassett	411,766	Sept. 24	2451	649	48	1771
Curtain-fixture	J. Shinn	409,700	Aug. 27	2371	622	48	1155
Curtain-fixture	A. Nordlund	406,592	July 9	843	228	48	174
Curtain-rollers. Machine for manufacturing	L. B. Harkness	407,592	July 23	2370	614	48	489
Curtain supporter and adjuster	P. I. Peirce	410,252	Sept. 3	174	46	48	1302
Cuspidor	F. D. Clark and F. Rice	406,877	July 16	1293	339	48	269
Cut-off. Automatic	J. Miller	406,847	July 9	1243	329	48	248
Cut-off Automatic	R. A. Weidman	408,777	Aug. 13	862	236	48	856
Cut-off for water-gages. Automatic	H. W. Knight	410,597	Sept. 10	696	187	48	1411
Cut-off. Rain-water	S. C. C. Currie	406,268	July 2	234	99	48	67
Cut-out	L. F. Furlong	410,545	Sept. 3	618	166	48	1390
Cut-out	F. G. A. Heller	411,390	Sept. 17	1867	504	48	1651
Cut-out	A. Johnston	407,826	July 30	2712	704	48	560
Cutlery-handles. Making	H. C. Hart	410,634	Sept. 10	1083	291	48	1486
Cutlery. Manufacture of	A. Johnston	408,307	Aug. 6	151	38	48	709
Cutter: *See* Bag-string cutter. Band-cutter. Bean-cutter. Butter-cutter. Chamfer-cutter. Cigar-cutter. Corn-cutter. Cornstalk-cutter. Feed-cutter. Fodder-cutter. Fruit or ice cutter. Meat-cutter. Mining-machine cutter. Molding-cutter. Paper-cutter. Pipe-cutter. Sod-cutter. Stalk-cutter. Straw-cutter. Weed-cutter.							
Cutter, pulverizer, drag, and roller. Combined	A. J. Casey	409,391	Aug. 20	1819	479	48	1044
Cutting boards from logs. Machine for	T. S. Crane	410,403	Sept. 3	414	{110 111	48	1350
Cutting cloth and patterns. Machine for	D. H. Cunningham	406,821	July 9	1205	320	48	242
Cutting curved surfaces. Machine for	S. M. Dixon	409,024	Aug. 13	1257	332	48	989
Cutting out concavo-convex shells or dishes. Machine for	C. Spofford	410,209	Sept. 3	250	65	48	1317
Cutting paper, trimming shades, &c. Tool for	C. T. Ridgley	408,193	July 30	3284	858	48	665
Cutting webbing. Machine for	E. W. H. Rase	411,415	Sept. 24	1944	518	48	1668
Cutting wooden dishes. Machine for	D. H. Brenner	409,909	Aug. 27	2563	676	48	1195
Dado-guide	W. S. Comstock	410,348	Sept. 3	334	88	48	1333
Damper for boiler-furnaces. Automatic	F. E. Shank	409,247	Aug. 20	1598	422	48	1001
Damper for hot-air flues	G. W. Schwinn	408,856	Aug. 13	1005	265	48	880
Damper. Pipe	M. J. Liddell	407,062	July 16	1577	414	48	324
Damper Stove	W. C. Metzner	410,646	Sept. 10	779	211	48	1428
Damper. Stove or furnace	A. M. Mohrmann	411,003	Sept. 24	2218	590	48	1723
Damper. Stove-pipe	C. D. Bosworth and J. F. Foster	406,022	July 2	5	2	48	3
Damper. Stove-pipe	L. M. Devore	409,459	Aug. 20	1914	{506 507	48	1065
Dating and cutting machine. Combined	G. J. Hill	410,970	Sept. 10	1281	346	48	1525
Dead centers. Device for overcoming	R. L. Ramsay	411,678	Sept. 24	2329	617	48	1746
Decorating base metals, glass, &c., with precious metals	F. Roessler	407,305	July 16	1931	.....	48	393
Decorticator for ramie, &c	M. J. Lenth	409,847	Aug. 27	2503	654	48	1178
Decoy	W. H. Jencks	410,523	Sept. 3	593	159	48	1385
Defecating pan	M. Swenson	411,112	Sept. 17	1504	398	48	1578
Dental-bib clamp	J. D. Enues	410,063	Aug. 27	2642	746	48	1243
Dental chair	D. D. Hepburn and E. Gardner	406,349	July 2	457	{127 128	48	92
Dental-drill attachment	J. H. Moyer and J. P. Stansell	408,923	Aug. 13	1104	291	48	890
Dental engine	L. T. Sheffield	408,439	Aug. 6	351	91	48	748
Dental engines. Stop-motion for	A. R. Cooke	407,950	July 30	2906	757	48	597
Dental file	C. E. Palmer	408,926	Aug. 13	1108	292	48	900
Dental forceps	A. G. Nyblin	408,739	Aug. 13	827	218	48	844
Dental instrument	R. B. Donaldson	410,158	Sept. 3	32	9	48	1275
Dental instrument. Electric	F. Vernette	409,437	Aug. 20	1879	496	48	1057
Dental jaw-prop	R. H. Daintree	410,665	Sept. 10	812	218	48	1433
Dental plate	J. J. Stedman	411,538	Sept. 24	2113	557	48	1700
Dental plugger	S. Lacavalerie and C. Doroit	408,863	Aug. 13	1048	277	48	878
Dental plugger	F. Schmidt	410,935	Sept. 10	1226	330	48	1514
Dental plugger	D. M. Small	408,899	Aug. 13	1073	282	48	893
Dental surgery. Steam-conduit for	J. O Keller and D. D. Weisell	411,449	Sept. 24	1994	529	48	1676
Dental vulcanizer	E. R. Maguire	411,461	Sept. 24	2007	533	48	1679
Dentist's bench-block	C. Rauhe	410,674	Sept. 10	823	221	48	1435
Dentist's chair	H. M. Caldwell	406,700	July 9	1017	.....	48	206
Deodorant and disinfectant	W. E. Chapman	411,214	Sept. 17	1652	{440 441	48	1608
Derrick	L. S Deuling	411,585	Sept. 24	2186	580	48	1716

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol	Official Gazette. Page.
Derrick	J. Thompson	410,997	Sept. 10	1319	355	48	1533
Derrick. Portable	M. C. Bullock	407,993	July 30	2967	771 772	48	607
Desk. Adjustable school	F. T. Selander	406,120	July 2	222	60, 61	48	44
Desk attachment	H. E. Adams	406 121	July 2	140	41	48	29
Desk attachment. Writing	E. Lemberger	411 456	Sept. 24	2002	531	48	1678
Desk-bracket	G P. Davis	408,067	July 30	3095	811	48	633
Desk. School	T. S. Manning	411,533	Sept. 24	2140	567	48	1706
Desk. School	C. B. Towle	409,884	Aug 27	2550	667 668	48	1188
Desk. Writing	A. L. Gorham	407 589	July 23	2365	612	48	488
Desks. Device for actuating the slides or rests of	F. D and E. F. Pooley	407,415	July 23	2108	545	48	435
Dial. Teacher's	A. M. Edwards	407,163	July 16	1747	457	48	357
Die: *See* Cracker-cutting die. Sole-cutting die Screw-cutting die. Wire-drawing die.							
Die-bearing disk	M. M. Shellaberger	409,309	Aug. 20	1700	447	48	1021
Die-press	N. C. Stiles	410 746	Sept. 10	952	236	48	1457
Digester	W. O and W. P. Crocker	406,826	July 16	1302	341	48	270
Digger: *See* Post-hole digger. Potato-digger.							
Dip-net frame	C. E. Wheeler	407,979	July 30	2947	767	48	604
Direct-acting engine	H. C. Sergeant	407,258	July 16	1866	487	48	380
Dish-drier	A. J. Wilson	410,818	Sept. 10	1064	285	48	1463
Dishes to the tables of steamships. Means for securing	F. Ezell	407,477	July 23	2207	569	48	455
Disinfectant	C. F. Boud	408,454	Aug. 6	375	.....	48	753
Disinfectant	I. L. Roberts and H. L. Brevoort	406,062	July 2	60	.....	48	14
Disinfecting-tank. Automatic	J. J. Powers	408,432	Aug. 6	344	89, 90	48	746
Display-rack	R. Faries	406,163	July 2	196	55	48	40
Display-rack	R. Faries	407,340	July 23	1993	517	48	413
Display-stand	W R. Wootten	411,482	Sept. 24	2037	539	48	1685
Distance-instrument	W. Barton	407,767	July 30	2617	678	48	544
Distance-instrument	A. B Melhouse	407 786	July 30	2644	685	48	549
Distilling anhydrous ammonia. Apparatus for	J. E. Holmes	410,244	Sept. 3	161	42, 43	48	1300
Distilling-column	E. Bolton	410 634	Sept. 10	765	207	48	1425
Distilling crude petroleum. Apparatus for	W H. Pitt	411 394	Sept. 17	1905	508	48	1654
Distributer	H. O. King	406 449	July 9	615	173	48	133
Distributer for cards or other articles. Automatic	W. Fischer	409 571	Aug. 20	2065	545	48	1093
Ditcher. Tile	H. L. Potter	409,494	Aug. 20	1962	402	48	1054
Door-check	E. I. Blount	406 621	July 9	899	243	48	184
Door-check	C. H Dixson	409,735	Aug. 27	2332	613	48	1148
Door-check	W. H. Fouts	406,509	July 9	730	201	48	153
Door-check	L. W. Hardy	409,194	Aug. 20	1522	404	48	987
Door-check	G. R. G. Jones	406,840	July 9	1232	327	48	247
Door-check	W. D. Scarborough	411,557	Sept. 24	2144	568	48	1707
Door-check. Pneumatic	T. Goodenough	409 961	Aug. 27	2659	697	48	1210
Door-fastener	C. L. Ward	407 140	July 16	1684	440	48	345
Door-fastening	E N. Warner	406,980	July 16	1441	378	48	297
Door-hanger	P. H. Murphy	409,999	Aug 27	2766	710	48	1210
Door-hanger track	J. G. Lane	407,357	July 23	2028	525	48	410
Door-mat	W. J. Myers	410,556	Sept. 3	837	170	48	1304
Door-plate	C. R. Harris	406 729	July 9	1057	282	48	213
Door. Screen and storm	C. Loetscher	409 750	Aug 27	2352	619	48	1152
Door. Sliding	J. H. Morley	408 502	Aug. 6	452	119	48	708
Door-spring	E. A. Calahan	406 025	July 2	8	3	48	4
Door-spring	F. W. Hoefer	409,587	Aug. 20	2095	532	48	1098
Door-spring	F. W. Tobey	410,047	Aug. 27	2779	731	48	1233
Doubletree attachment	S. Martin	410,910	Sept. 10	1190	322	48	1507
Doubling-machine	J. H. Shearn	408 140	July 30	3191	834	48	650
Doubling-machines. Stop mechanism for	R. Dawson	408,574	Aug. 13	1033	273 274	48	885
Dough-machine	G. H. Cross	410 350	Sept. 3	336	88	48	1334
Dough. Machine for forming loaves of	F. Westerman	407,978	July 30	2943	766 767	48	604
Dough-raising tray	B. Z. Dampierre	411,279	Sept 17	1743	465	48	1626
Draft attachment for vehicles	J. D. Miller	406,755	July 9	1103	293	48	223
Draft attachment for vehicles. Spring	H. Barber Jr	410,230	Sept. 3	142	36, 37	48	1296
Draft-equalizer	W. Lewis	408,727	Aug. 13	814	214	48	841
Draft-equalizer	C. W. Phelps	409,497	Aug 20	1965	520	48	1074
Draft-regulator	W. E Haxtun	411 668	Sept 24	2453	650	48	1772
Draft-regulator	J. Hopson, Jr	406,138	July 2	160	47	48	33
Draft-regulator for hot-water boilers. Automatic	W. P Powers	410,717	Sept. 10	902	243	48	1448
Draft-regulator. Thermostatic	S F. Collins and G. S. Slack	406,704	July 9	1024	274	48	207
Draft-spring for vehicles	J. A. Robson	408,437	Aug. 6	349	91	48	747
Drafting apparatus for enlarging or reducing pictures	J. E Ulber	406,796	July 9	1165	308	48	234
Drafting-board	E. A Haldeman	408,970	Aug. 13	1177	311	48	913
Draftsman's protractor	W. W. Duffield	407,515	July 23	2256	583	48	464
Drain and soil pipe	W. S. Clark	409 014	Aug. 13	1243	328	48	925
Drain-tester	B Meriam	406,527	July 9	759	206	48	159
Dramatic performances. Producing	C. L Barry and G B. Upham	406,252	July 2	312	86	48	62
Drapery-trimming	P. Gumbinner	409,400	Aug. 20	1833	483	48	1047
Draw-bar attachment	J. Tuner	411 477	Sept. 24	2032	538	48	1684
Drawer	E. J. Brown	410 068	Aug 27	2804	738	48	1237
Drawer-pull	C. F. Mosman	407,027	July 16	1503	393	48	310
Drawer-pull	G. S. Pearson	406,664	July 9	964	260	48	196
Drawing-board	E. A. Newman	408,315	Aug. 6	162	41	48	711
Drawing-frames, &c. Electric stop-motion for	V. I. Cumnock	408 829	Aug 13	902	255	48	872
Drawing in perspective. Device for	A. Brix	406,083	July 2	85	25	48	19
Drawing-instrument	L. F. Rondinella	411 617	Sept 24	2243	596	48	1728
Drawing-knife	J. R. Finley	406 392	July 2	525	146	48	105
Drag-body	H W. Case	410,491	Sept. 3	551	148	48	1376
Dredging apparatus	A. B. Bowers	411 183	Sept. 17	1602	426	48	1597
Dredging apparatus. Hydraulic	J. M. Miller	410,801	Sept. 10	1041	279	48	1478

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume Spec.	Monthly volume Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Dredging-machine	W. P. Humphreys	410,759	Sept. 10	977	262	48	1462
Dredging-machine. Hydraulic	J. H. Von Schmidt	407,044	July 16	1529	400 401	48	314
Dress-extender. Folding	J. W. and L. A. Weeks	406,155	July 2	185	53	48	38
Dress-form	R. L. Dodge	411,428	Sept. 24	1905	522	48	1671
Dress-form	J. B. Stone	410,962	Sept. 10	1126	304	48	1494
Dress-form	W. Vogler	408,769	Aug. 13	868	233	48	853
Dress-form	W. Vogler	408,770	Aug. 13	870	233	48	854
Dress-form	W. Vogler	408,771	Aug. 13	871	233	48	854
Dress-form	M. E. Crandal and E. B. Reeme	409,173	Aug. 20	1497	397	48	922
Dress-shield	J. O. De Caracena	408,594	Aug. 6	597	155	48	794
Dress-waist	L. Shannon	406,239	July 2	297	82	48	59
Dresses. Attachment for							
Drier: *See* Clothes-drier. Grain-drier. Dish-drier.							
Drier	J. B. Johnson	409,359	Aug. 20	1770	466 467	48	1034
Drill: *See* Coal-drill. Grain-drill. Coal or rock drill. Ratchet-drill. Electric drill. Rock-drill. Expansion-drill.							
Drill	A. Renetzky	407,688	July 23	2490	640	48	512
Drill-machine	A. Knüpfer	410,692	Sept. 10	854	220	48	1441
Drill stocks. Fastening for mining	E. Smith	406,782	July 9	1146	303	48	230
Drills. Apparatus for operating rotary	M. T. Chapman	409,272	Aug. 20	1634	432 433	48	1009
Drills. Machine for back-clearing twist	J. D. Cox, Jr	407,517	July 23	2349	608 609	48	485
Drills. Mechanism for back-clearing twist	J. D. Cox, Jr	407,721	July 23	2542	658	48	522
Drilling-machine	U. and H. E. Eberhardt	407,319	July 23	1989	517	48	413
Drilling-machine	F. W. Luscomb and D. A. Corey	410,762	Sept. 10	982	263	48	1463
Drilling-machine	C. W. McDaniel	410,803	Sept. 10	1043	279 280	48	1478
Drilling-machine	W. S. Rogers	411,616	Sept. 24	2242	596	48	1738
Drilling-machines. Tapping attachment for	U. Eberhardt	408,698	Aug. 13	770	202 203	48	833
Drinking-vessel. Electric	F. W. Flint	408,697	Aug. 6	614	159	48	797
Drip-pan	B. McCaughey	411,670	Sept. 24	2320	615	48	1744
Driving or stop mechanism	O. W. Schmidt	409,068	Aug. 13	1323	349	48	940
Dropper: *See* Bandle-dropper.							
Drum	E. J. Cubley	407,579	July 23	2352	609	48	486
Dry closet	A. M. Coyle	408,086	July 30	3094	811	48	633
Dry-kiln furnace	W. Ketcham	408,724	Aug. 13	809	213	48	840
Drying apparatus	J. F. Gent	410,085	Aug. 27	2843	746 747	48	1244
Drying fabrics. Machine for	I. E. Palmer	409,615	Aug. 20	2140	562 563	48	1106
Drying-frame for knitted drawers	M. Clemins and C. A. Tice	409,630	Aug. 20	2166	570	48	1111
Drying-machine	J. H. Knowles and J. K. Proctor	410,110	Aug. 27	2892	759	48	1233
Drying or evaporating apparatus	A. Herr	408,660	Aug. 6	700	181	48	813
Drying or evaporating apparatus	J. B. Seaman	411,397	Sept. 17	1909	509 510	48	1635
Drying or otherwise treating materials. Apparatus for	E. M. Cook	408,217	Aug. 6	21	5	48	682
Drying starch refuse, brewer's grains, &c. Apparatus for	F. M. F. Cazin	408,824	Aug. 13	953	253 254	48	870
Drying warps, piece goods, &c. Device for	F. Haskell	408,235	Aug. 6	55	13	48	689
Dulcetina	G. C. Marsters	411,554	Sept. 24	2141	567	48	1706
Dummy or motor engine	J T. Van Gestel	410,049	Aug. 27	2781	732	48	1233
Dumping apparatus	G. W. Patnoe	406,404	July 2	542	151 152	48	108
Dumping platform	E. Burns	409,813	Aug. 27	2589	678	48	1186
Duplex engine	H. F. Gaskill	411,497	Sept. 24	2055	543 544	48	1688
Dust-collector	J. S. Ash	408,787	Aug. 13	901	241	48	859
Dust-collector	J. B. Barnes	407,392	July 23	2074	536 537	48	428
Dust-collector	W. F. Boehning	408,285	Aug. 6	121	30	48	703
Dust-collector	E. Bretney	408,074	July 30	3081	806	48	630
Dust-collector	J. M. Case	407,949	July 30	2904	756 757	48	597
Dust-collector	W. A. Cockrell	410,152	Sept. 3	20	6, 7	48	1272
Dust-collector	R. L. Downton	409,025	Aug. 13	1261	333	48	929
Dust-collector	N. W. Holt	409,465	Aug. 20	1923	509	48	1067
Dust-collector	O. Kutsche	407,598	July 23	2378	616	48	490
Dust-collector	B. F. Miesenhelder and C S. McCoy	411,662	Sept. 24	2216	590	48	1722
Dust-collector	O. M. Morse	408,987	Aug. 13	1198	316	48	917
Dust-collector	O. M. Morse	409,482	Aug. 20	1945	515	48	1071
Dust-collector	J. A. and E. F. Woodbury	408,907	Aug. 13	1081	284	48	895
Dust-collector attachment	I. E. Baker	409,638	Aug. 27	2208	581	48	1125
Dust-pan	W. F. Spurgin	407,133	July 16	1676	438	48	344
Dye. Blue	D. E. Huguenin	411,149	Sept. 17	1536	.....	48	1588
Dye. Compound	C. S. Bedford	409,364	Aug. 20	1810	.....	48	1042
Dye. Compound orcin	R. Greville-Williams. (Reissue)	11,016	July 30	3317	.....	48	671
Dye. Making a violet	R. Geigy	410,733	Sept. 10	943	.....	48	1453
Dye. Making orcine	R. Greville Williams	410,057	Aug. 27	2792	.....	48	1235
Dye. Making orcine	R. Greville Williams	410,058	Aug. 27	2793	.....	48	1235
Dyeing apparatus	I. E Palmer	408,388	Aug. 6	274	67	48	732
Dyeing apparatus	J. Smith	406,784	July 9	1148	303	48	231
Dyeing apparatus	A. A. Sprague	410,744	Sept. 10	949	235	48	1457
Dyeing artificial silk	H. de Chardonnet	410,404	Sept. 3	419	.....	48	1351
Dyeing or scouring machine	C L. Klauder	411,504	Sept. 24	2065	546	48	1691

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Dyeing yarn in cops. Hollow spindle for	I. F. Peck	406,667	Aug. 6	709	182	48	815
Dyeing yarn in cops. Hollow spindle for	W. L. Peck	406,668	Aug. 6	709	184	48	815
Dynamo	W. S. Andrews and T. Spencer	406,415	July 9	561	158	48	121
Dynamo. Alternating-current	G. Pfannkuche	407,875	July 30	2786	734	48	574
Dynamo. Self-regulating	J. J. Wood	406,493	July 9	700	{193 194}	48	149
Dynamos. Brush-holder for	J. M. McClellan	409,646	Aug. 20	2185	572	48	1114
Dynamos. Determining the shape of pole-pieces for	J. G. Statter	410,656	Sept. 10	791	{214 215}	48	1430
Dynamos or other electrical apparatus. Regulator for shunt-wound	L. S. Harris	411,551	Sept. 24	2136	566	48	1706
Dynamos. Regulation of coupled	O. P. Loomis	410,170	Sept. 3	47	12	48	1278
Ear-ring	C. P. Pike	411,509	Sept. 24	2075	544	48	1693
Easel	J. F. Bluche	410,191	Sept. 3	85	21	48	1284
Easel	J. H. White	410,226	Sept. 3	136	33	48	1295
Easel	J. Phelps	406,233	July 2	291	80	48	58
Eaves-gutter for roofs	C. M. Brion	411,574	Sept. 24	2172	573	48	1712
Eaves-trough	J. H. McEwen	408,738	Aug. 13	896	214	48	843
Eccentric-connection	J. E. Foss	406,133	July 2	154	43	48	33
Edge-burnishing tool	F. W. Cook	410,315	Sept. 3	281	72, 73	48	1323
Edger. Gang	E. J. Muller	406,458	July 9	641	{180 181}	48	138
Effervescing drinks. Apparatus for dispensing	W. Gee	410,514	Sept. 3	580	156	48	1382
Egg-beater	J. L. Kirby	406,653	July 9	951	257	48	194
Egg-beater	J. Richardson	409,616	Aug. 20	2145	563	48	1107
Eggs. Composition for coating	J. F. Timmons	406,549	July 9	789	.....	48	165
Elastic webbing	E. Lamb	410,839	Sept. 10	1092	290	48	1488
Electric-arc lights. Globe-frame for	W. Jones	411,448	Sept. 24	1963	522	48	1676
Electric battery	C. A. Hussey	406,168	July 2	201	56	48	41
Electric battery	C. A. Hussey	406,169	July 2	202	56	48	41
Electric cables. Air-tight covering for	D. Brooks, Jr.	410,953	Sept. 10	1249	330	48	1519
Electric-circuit cut-out	W. S. Hill	406,906	July 16	1332	349	48	276
Electric conductors. Device for suspending	T. E. Adams	408,334	Aug. 6	195	50	48	717
Electric conductors. Pole for supporting	S. H. Short	411,204	Sept. 17	1638	{432 433}	48	1605
Electric conductors. Safety-fuse for	W. S. Bishop	409,628	Aug. 20	2165	570	48	1111
Electric conduit	H. A. Chase	410,150	Sept. 3	16	5, 6	48	1272
Electric conduit. Underground	E. H. Phippe	407,447	July 23	2170	569	48	447
Electric cords. Terminal plug attachment for flexible	S. C. Lafferty	411,153	Sept. 17	1563	416	48	1589
Electric coupling and circuit-closer	W. H. Baker	406,331	July 2	434	108	48	87
Electric cut-out	J. L. Kimball and H. C. Wirt	407,077	July 16	1570	412	48	323
Electric cut-out	A. T. Smith	407,455	July 23	2181	{562 563}	48	449
Electric drill	I. E. Storey	408,269	Aug. 6	100	25	48	690
Electric fixture	J. C. Hollings	407,593	July 23	2371	614	48	489
Electric generation and distribution for railway-cars. System of	E. E. Rice	411,301	Sept. 17	1767	{474 475}	48	1631
Electric generator	C. E. Buel	407,327	July 23	1967	512	48	409
Electric-light fixture	J. C. Hollings	410,689	Sept. 10	850	220	48	1441
Electric-light fixture. Incandescent	P. H. Klein, Jr	411,452	Sept. 24	1997	529	48	1677
Electric-light-shade holder	H. H. Sawyer	411,396	Sept. 17	1908	500	48	1655
Electric lighting. Carbon for	C. A. J. H. Schroeder	408,358	Aug. 6	225	.....	48	723
Electric-lighting system	F. E. Kinsman	407,895	July 30	2815	733	48	540
Electric lock	L. Huebner and R. Busse	408,484	Aug. 6	423	111	48	762
Electric machine	E. H. Bennett, Jr.	407,154	July 16	1699	{443 444}	48	348
Electric machine. Dynamo	H. R. Boissier	408,206	Aug. 6	4	1	48	679
Electric machine. Dynamo	S. Z. de Ferranti	408,403	Aug. 6	302	75, 76	48	737
Electric machine. Dynamo	S. Z. de Ferranti	408,404	Aug. 6	305	76, 77	48	738
Electric machine. Dynamo	S. Z. de Ferranti	409,349	Aug. 20	1758	{462 463}	48	1032
Electric machine. Dynamo	W. L. Silvey	406,599	July 9	859	221	48	177
Electric machine. Dynamo	N. Tesla	406,968	July 16	1434	374	48	294
Electric machine. Dynamo	J. T. Van Geetel	408,768	Aug. 13	867	202	48	853
Electric machine. Magneto	A. S. Fitch	410,964	Sept. 10	1267	341	48	1522
Electric machine. Magneto	A. S. Fitch	410,965	Sept. 10	1270	342	48	1523
Electric machine. Magneto	A. S. Fitch	410,966	Sept. 10	1272	{342 343}	48	1523
Electric machine or motor. Dynamo	F. J. Patten	410,987	Sept. 10	1304	352	48	1530
Electric-machine regulator. Dynamo	H. R. Boissier	408,205	Aug. 6	3	1	48	679
Electric-machine regulator. Dynamo	J. M. Bradford	410,663	Sept. 10	806	217	48	1432
Electric-machine regulator. Dynamo	J. J. Wood	406,494	July 9	704	{194 195}	48	149
Electric machines. Brush-holder for dynamo	C. D. Jenney	410,670	Sept. 10	818	219	48	1434
Electric machines. Commutator for	S. H. Short	408,265	Aug. 6	96	24	48	698
Electric machines or motors. Commutator-brush for dynamo	R. Hoffmann	410,896	Sept. 10	1175	{316 317}	48	1504
Electric main joint	S. Z. de Ferranti	409,183	Aug. 20	1509	400	48	984
Electric meter	S. Z. de Ferranti	408,295	Aug. 6	135	34, 35	48	706
Electric meter	T. A. Edison	406,824	July 9	1207	321	48	243
Electric meter	T. A. Edison	406,825	July 9	1209	321	48	243
Electric meter	E. R. Knowles	408,016	July 30	3004	783	48	615
Electric meter	E. R. Knowles	408,017	July 30	3006	784	48	615
Electric meter	H. W. Kolle	411,042	Sept. 17	1382	{370 371}	48	1555
Electric meter	W. McKinney	407,414	July 23	2108	545	48	435
Electric meter	M. M. M. Slattery	407,619	July 23	2104	{924 925}	48	495
Electric meter	M. M. M. Slattery	410,860	Sept. 10	1124	302	48	1494
Electric meters. Recording apparatus for	G. W. Walker	406,678	July 9	983	{264 265}	48	200
Electric motor	J. Buckley	406,674	July 16	1289	338	48	965
Electric motor	S. C. C. Currie	408,590	Aug. 6	591	{153 154}	48	792

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Electric motor	G. W. Mansfield	406,922	July 16	1356	355	48	222
Electric motor	L. G. Woolley	407,272	July 16	1885	491	48	384
Electric motor. Alternating-current	E. Thomson	407,844	July 30	2737	712	48	565
Electric motor and blower. Combined	C. J. Hirlimann	411,030	Sept. 17	1365	366	48	1551
Electric-motor governor	G. H. Whittingham	408,333	Aug. 6	194	49	48	717
Electric motor. Inductional	C. J. Van Depoele	408,642	Aug. 6	672	175	48	808
Electric-motor regulation	D. Higham	407,293	July 16	1915	498	48	390
Electric-motor regulator	J. F. Kelly and P. H. Brangs	407,014	July 16	1469	{3-8 389}	48	306
Electric motors. Operating	F. J. Patten	410,988	S pt. 10	1307	352	48	1530
Electric motors. System for synchronizing	R. H. Read	411,611	Sept 24	2211	593	48	1726
Electric motors. System for synchronizing	R. H. Read	411,612	Sept. 24	2206	594	48	1726
Electric projector	J. J. Wood	407,914	July 30	2842	{740 741}	48	584
Electric propulsion. System of	H. D. Dibble	406,391	July 2	523	{145 146}	48	104
Electric signal	G. McIntosh	407,490	July 23	2236	575	48	458
Electric switch	T. F. Gaynor	406,897	July 16	1320	346	48	274
Electric switch	H. T. Rigge	408,104	July 30	3285	836	48	606
Electric switch	W. Thompson	408,678	Aug. 6	726	189	48	816
Electric wires. Underground conduit for	G. A. Wheeler	411,539	Sept. 24	2115	558	48	1701
Electric wiring	F. R. Chinnock	406,994	July 16	1403	363	48	302
Electrical apparatus. Forming cores for	A. Schmid	406,859	July 9	1262	333	48	251
Electrical apparatus. Forming laminated cores for	A. Schmid	406,858	July 9	1260	332	48	251
Electrical apparatus. Laminated core for	A. Schmid	406,776	July 9	1133	300	48	228
Electrical circuits. Automatic regulation of	W. W. Griscom	407,006	July 16	1480	386	48	304
Electrical conductors. Apparatus for applying sheathing to	C. Q. Goodwin	410,410	Sept. 3	426	113	48	1352
Electrical conductors. Underground conduit for	G. W. Cook	406,818	July 9	1201	319	48	211
Electrical distribution by secondary generators	R. Kennedy	407,294	July 16	1913	499	48	390
Electrical distribution. Multiple-wire system of	J. A. Lightlipe	407,485	July 23	2218	573	48	457
Electrical distribution. System of	C. S. Bradley	409,449	Aug. 20	1896	501	48	1061
Electrical distribution. System of	C. S. Bradley	409,450	Aug. 20	1898	{501 502}	48	1061
Electrical distribution. System of	D. Higham	407,204	July 16	1782	467	48	364
Electrical distribution. System of	R. Kennedy. (Reissue)	11,031	Sept. 24	2460	651	48	1774
Electrical distribution. System of	F. L. Perry	408,513	Aug. 6	470	124	48	771
Electrical energy. Distribution of	S. Z. de Ferranti	409,192	Aug. 20	1504	400	48	984
Electrical energy. Distribution of	S. Z. de Ferranti	409,565	Aug. 20	2058	{542 543}	48	1092
Electrical energy. Distribution of	S. Z. de Ferranti	409,566	Aug. 20	2059	543	48	1092
Electrical indicator	E. R. Knowles	408,018	July 30	3007	784	48	616
Electrical indicator	E. R. Knowles	409,207	Aug. 20	1543	406	48	991
Electrical lock	P. Schwenke	409,508	Aug. 20	1980	523	48	1077
Electrical resistance	E. M. Bentley	409,135	Aug. 13	1431	376	48	961
Electrical resistance	F. O. Blackwell	408,647	Aug. 6	681	176	48	809
Electrical switch	J. A. Powers	406,468	July 9	661	185	48	142
Electrical wire conduit	C. C. Dashiell	411,427	Sept. 24	1963	522	48	1671
Electrically-controlled elevator	C. E. Ongley	410,180	Sept. 3	58	15, 16	48	1280
Electrically-controlled elevator	C. E. Ongley	410,182	Sept. 3	65	16, 17	48	1281
Electrically-controlled elevator	C. E. Ongley	410,183	Sept. 3	69	17	48	1282
Electrically-controlled elevator	C. E. Ongley	410,184	Sept. 3	72	18	48	1282
Electricity by gas-batteries. Generating	O. Dahl	411,496	Sept. 24	1962	521	48	1670
Electricity. Conductor for conveying	S. Z. de Ferranti	409,181	Aug. 20	1506	{399 400}	48	984
Electro-dynamic machine	G. F. Card	408,910	Aug. 13	1087	{285 286 287}	48	896
Electro-magnetic separator	W. A. Anthony	411,414	Sept. 24	1943	518	48	1667
Electro-therapeutic device	H. P. Pratt	407,116	July 16	1654	433	48	339
Electrode for galvanic batteries. Zinc	J. B. Williams	408,279	Aug. 6	113	28	48	701
Electrode for secondary batteries	W. P. Kookogey	409,106	Aug. 13	1383	365	48	952
Electrode for secondary batteries	A. V. Meserole	408,809	Aug. 13	934	249	48	867
Electrode for therapeutic body-wear	H. P. Pratt	406,306	July 2	395	108	48	79
Electrode. Secondary-battery	C. H. Carter	410,136	Aug. 27	2934	770	48	1261
Electrode. Secondary-battery	J. F. McLaughlin	410,007	Aug. 27	2718	714	48	1222
Electrode. Secondary battery	A. L. Riker	406,771	July 9	1127	299	48	227
Electrode. Secondary battery	F. H. Smith	410,037	Aug. 27	2702	725	48	1230
Electrolytic apparatus. Diaphragm for	G. Kerner and J. Marx	410,976	Sept. 10	1288	{348 349}	48	1537
Electromotor	A. S. Kissell	411,150	Sept. 17	1557	415	48	1588
Elevator: *See* Electrically-controlled elevator. Hand-elevator. Harvester-elevator. Hay-elevator. Hose-elevator. Hydraulic elevator. Invalid-elevator. Sawdust-elevator. Sucker-rod elevator. Tronsera-elevator. Water-elevator.							
Elevator	C. E. Ongley	410,181	Sept. 3	63	16	48	1281
Elevator	R. C. Smith	410,212	Sept. 3	120	30, 31	48	1292
Elevator	R. J. Walker	407,626	July 23	2413	627	48	497
Elevator alarm-indicator	E. Axthelm	408,399	Aug. 6	290	72	48	735
Elevator-doors. Device for operating	W. E. Nickerson	408,509	Aug. 6	465	{122 123}	48	770
Elevator-lock	E. E. Angell	411,274	Sept. 17	1735	463	48	1624
Elevator safety attachment	J Cowie	406,630	July 9	912	216	48	187
Elevator safety device	E. Lamesse	406,743	July 9	1236	327	48	247
Elevator safety device	N. Walker	410,339	Sept. 3	323	84	48	1331
Elevator-well. Device for operating doors for	W. E. Nickerson	407,110	July 16	1644	{430 431}	48	338
Elevators. Controlling device for	W. E. Nickerson	406,296	July 2	374	{101 102}	48	75
Elevators. Fluid speed-regulator for	W. E. Nickerson	407,677	July 23	2184	{642 643}	48	510
Elevators. Indicator and signal for	W. E. Hall	407,590	July 23	2367	613	48	488

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Elevators. Safety-cushion for	W. E. Nickerson	409,486	Aug. 20	1951	516	48	1072
Elevators. Safety-cushion for	W. E. Nickerson	409,487	Aug. 20	1952	517	48	1072
Elevators. Signaling apparatus for	J. F. Bower	406,423	July 9	574	161	48	124
Elevators. Speed-controlling device for	T. H. Melrose	409,995	Aug. 27	2699	709	48	1218
Embossed work. Making decorative	W. S. Morton	407,603	July 23	2385	619	48	492
Embossing, filling, and backing-out machine. Wood	W. W. Krutsch	407,223	July 16	1813	474	48	370
Embossing machine. Thimble	J. Browning	407,637	July 23	2432	630	48	501
Embroidering-machine	J. Irish	407,352	July 23	2008	521	48	416
Embroidery-frame	J. H. White	406,119	July 2	137	41	48	29
Emery-wheel	R. W. Hardie	409,837	Aug. 27	2489	650	48	1175
End-gate	T. B. Burr	411,578	Sept. 24	2176	570	48	1713
End-gate and scoop-board. Combined	L. W. Bayliss	407,507	July 23	2247	590	48	463
End-gate. Wagon	S. J. Mason	409,413	Aug. 20	1849	488	48	1051
Enfleurage	G. D. Nellenstyn	409,859	Aug. 27	2516	658	48	1180
Engine: *See* Carding-engine. Compound engine. Dental engine. Direct-acting engine. Duplex engine. Expansion-engine. Gas-engine. Gas-motor engine. Gas or oil motor-engine. Hydrocarbon-engine. Locomotive-engine. Motor-engine. Pulp-engine. Pulp-beating engine. Pumping-engine. Rotary engine. Rotary steam-engine. Steam-engine. Traction-engine.							
Engines. Adjustment of gibs of cross-heads of steam-	G. H. Corliss	406,091	July 2	98	29	48	21
Engines. Automatic lubricator for steam-	J. H. Siegrist, Jr	410,035	Aug. 27	2759	725	48	1229
Engines. Automatic stop mechanism for steam-	W. H. Pyott	411,530	Sept. 24	2103	553	48	1698
Engines. Base-frame for	B. A. Stevens	410,811	Sept. 10	1054	281	48	1480
Engines. Bed-plate for steam-	M. Hastings	409,198	Aug. 20	1526	405	48	988
Engines. Condenser-head for the exhaust-pipes of steam-	A. M. Doane	406,296	Aug. 6	137	35	48	700
Engines. Fuel-injector for explosive	E. Capitaine	408,461	Aug. 6	385	101	48	755
Engines. Igniting apparatus for gas or oil motor-	N. A. Otto	406,762	July 9	1112	295	48	225
Engines in steamships. Indicator for the motions of the	J. G. Alison	407,503	July 23	2240	579	48	461
Engines. Stock or tool holder for direct-acting	G. A. Barth	409,659	Aug. 27	2209	581	48	1125
Engraver's tool	G. A. Mason	408,498	Aug. 6	446	117	48	767
Engraving-machine	W. S. Eaton	409,026	Aug. 13	1263	331	48	930
Envelope-damping machine	H. J. H. Schuett	411,355	Sept. 17	1853	490	48	1645
Envelope-machine	J. Ball	409,624	Aug. 20	2155	566	48	1109
Envelope-machine	A. D. Tyrrel	408,300	July 30	3292	869	48	667
Envelope moistening and sealing apparatus	N. Matte and C. Montminy	411,601	Sept. 24	2215	586	48	1722
Envelopes. Seal for	H. F. McDermott	406,056	July 2	47	13	48	12
Eraser. Blackboard-	W. F. Jones	406,650	July 9	947	255	48	193
Eraser-holder	C. A. Holmes	408,305	Aug. 6	148	37	48	708
Eraser holder	K. Parke	407,607	July 23	2390	630	48	493
Etching or engraving on glass, &c	F. Winterhoff	411,560	Sept. 24	2148	.....	48	1708
Evaporating apparatus	A. Chapman	411,011	Sept. 17	1349	360	48	1546
Evaporating apparatus	J. Foster and J. Campbell	407,398	July 23	2025	536	48	430
Evaporating apparatus	A. Miller	410,715	Sept. 10	896	240	48	1147
Evaporating apparatus. Vacuum	A. Chapman	411,012	Sept. 17	1340	361	48	1546
Evaporating liquids. Apparatus for	T. Gaunt	409,572	Aug. 20	2067	546	48	1094
Evaporating liquids. Device for	J. U. Lloyd	406,453	July 9	629	177	48	136
Evaporator	W. and W. A. Wilcox	407,048	July 16	1335	402	48	315
Evaporator	W. and W. A. Wilcox	408,365	Aug. 6	236	60	48	725
Evener. Four-horse	J. C. Boehm	411,707	Sept. 24	2274	620	48	1735
Excelsior-machine	F. Abel	411,412	Sept. 24	1939	516	48	1667
Excelsior-machine	C. G. Smith	410,564	Sept. 3	648	172	48	1396
Exerciser. Hand-	G. H. Bidwell	410,778	Sept. 10	1007	270	48	1470
Exercising-machine	J. P. Nichols	408,251	Aug. 6	73	17	48	693
Exhaust-ventilator	C. T. Murray	407,488	July 23	2224	574	48	458
Exhibitor	C. H. Bacon	409,160	Aug. 20	1482	391	48	979
Exhibitor for wall-paper or other goods	H. Michaels	409,218	Aug. 20	1557	412	48	993
Expansion-bolt	I. Church	406,565	July 9	810	210	48	168
Expansion-bolt device	I. Church	406,564	July 9	809	210	48	168
Expansion-drill	M. T. Chapman	410,311	Sept. 3	270	70	48	1321
Expansion-engine	F. M. Wheeler	410,722	Sept. 10	913	245	48	1450
Explosive. Nitro-gelatine	F. A. Abel and J. Dewar	409,549	Aug. 20	2034	.....	48	1087
Explosives. Producing high	H. Maxim	411,197	Sept. 17	1526	.....	48	1583
Extension joint or splice	L. A. Tarring	407,795	July 30	2669	693	48	553
Extension-table	W. Blankner	409,662	Aug. 27	2213	583	48	1126
Extension-table	W. H. Burk	409,911	Aug. 27	2586	677	48	1196
Extractor: *See* Bung-extractor. Butter-extractor. Juice-extractor. Lemon-juice extractor. Nail-extractor. Staple or nail extractor. Stump-extractor.							
Eye-bars. Apparatus for upsetting	W. Cooke and D. Carlough	406,501	July 9	715	197	48	151
Eye-bars. Apparatus for upsetting	W. R. Webster	406,552	July 9	792	215	48	165
Eye-bars. Die for making	J. F. Kingsley (Reissue)	11,025	Aug. 20	2202	579	48	1117

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Eyeglass-frame. Self-adjusting	F. W. Nolte	407,789	July 30	2650	666	48	550
Eyeglass-holder	S. R. Stibgen	408,268	Aug. 6	99	25	48	699
Eyeglass nose-pad	J. P. Molitor	411,164	Sept. 17	1578	420	48	1592
Eyeglasses	J. L. Borsch	410,233	Sept. 3	147	39	48	1297
Eyeglasses	R. C. Kennedy	408,109	July 30	3143	822	48	612
Eyeglasses	H. Welcker	408,151	July 30	3309	837	48	633
Eyeglasses. Electric	C. C. Smith and H. W. Martin	411,689	Sept. 24	2348	621	48	1750
Eyeglasses. Electric attachment for							
Fabric: *See* Chenille fabric. Knitted fabric. Metal fabric. Non-heat-conducting fabric. Pile fabric. Sulphur fabric. Twilled woven fabric.							
Fabric-turfing implement	M. L. Connett	409,139	Aug. 13	1436	377	48	903
Fabrics. Device for guiding the edges of	J. J. Schofield	408,758	Aug. 13	853	227	48	850
Fabrics. Machine for brushing and napping	J. Worrall and J. Kershaw	406,187	July 2	232	63	48	46
Fagot	T. Meikle	411,748	Sept. 24	2427	643	48	1765
Fan attachment	A. W. McComas and H. A. Fitzhugh	406,055	July 2	45	13	48	12
Fan blades. Attachment for rotary	D. Whitlock	411,312	Sept. 17	1792	480	48	1634
Fan. Exhaust-	A. W. McComas and H. A. Fitzhugh	408,297	Aug. 6	228	72	48	734
Fan for rocking furniture	W. H. Curtice	408,188	July 30	3276	855	48	664
Fan. Portable	C. E. Waldeck	410,497	Sept. 3	558	150	48	1378
Fans. Appliance for rotary	T. M. Bales	408,555	Aug. 6	542	143	48	783
Fanning-mill	F. B. Brownell	410,869	Sept. 10	1134	305	48	1496
Fare-box attachment	H. R. Coffey	408,076	July 30	3083	807	48	631
Fare-register	T. A. Tweedy	410,558	Sept. 10	674	180	48	1407
Farm-gate	H. L. Zimmerman	409,716	Aug. 27	2107	606	48	1143
Farm-gate	F. W. Starr	406,545	July 9	784	213	48	164
Fastener. Double-pointed corrugated	P. J. Miller	411,045	Sept. 17	1385	371	48	1557
Fastener for envelopes, boxes, &c	F. W. Starr	406,544	July 9	783	213	48	164
Fastener or binding-strap	M. C. Somborn	410,038	Aug. 27	2762	726	48	1230
Fastening device	V. A. Weaver	407,708	July 23	2526	653	48	519
Fastening strips	A. R. Brandly	408,687	Aug. 13	748	195	48	898
Faucet	G. W. Mahlmann	409,691	Aug. 27	2370	597	48	1136
Faucet	W. H. Shaw	407,495	July 23	2231	576	48	459
Faucet	F. E. Totten	407,321	July 23	2061	533	48	426
Faucet and faucet-bushing	C. T. Emerson	408,831	Aug. 13	965	276	48	872
Faucet. Coin-controlled measuring-	C. O. White	410,948	Sept. 10	1243	335	48	1518
Faucet. Self-acting	P. E. Everett	408,701	Aug. 13	778	205	48	835
Faucet. Self-closing	P. E. Everett	406,273	July 2	340	93	48	68
Faucet. Self-closing	G. Woodall	410,306	Sept. 3	263	69	48	1319
Faucet. Self-closing	E. Haas	411,026	Sept. 17	1359	365	48	1550
Faucet. Syrup-	J. Chabanel	406,161	July 2	193	54	48	30
Fecal matters. Apparatus for separating, filtering, and disinfecting	O. D. McClellan	408,506	Aug. 6	459	120	48	769
Feculent receiver	B. T. Harris	409,838	Aug. 27	2492	651	48	1175
Feed-bag	D. Frese	406,896	July 16	1318	346	48	274
Feed-cutter	M. Voice	406,976	July 16	1437	377	48	296
Feed-cutter	J. A. McAnulty	409,329	Aug. 20	1736	454	48	1026
Feed-regulator	W. Andrus	408,569	Aug. 6	563	147	48	799
Feed-trough	G. D. Burton	406,425	July 9	577	152	48	125
Feed-trough	E. Graham and J. Doolittle	406,511	July 9	732	201	48	153
Feed-trough	H. C. Seward	410,563	Sept. 3	646	172	48	1395
Feed-trough	V. H. McConnell	407,104	July 16	1635	428	48	335
Feed-water for steam-boilers. Heating and purifying	W. H. Burk	406,625	July 9	906	244	48	185
Feed-water heater	A. de Beaumont	410,139	Aug. 27	2939	772	48	1262
Feed-water heater	M. Hecking	410,517	Sept. 3	595	157	48	1383
Feed-water heater	J. J. Hoppes	406,512	July 9	733	201	48	154
Feed-water heater	J. Willenbrink	407,141	July 16	1685	440	48	345
Feed-water heater and condenser	G. B. Field	408,605	Aug. 6	611	158	48	797
Feed-water heater and purifier	E. Holthause	406,982	July 2	353	97	48	72
Feed-water heater and purifier	J. S. Stephens	407,378	July 23	2056	532	48	425
Feed-water heater and purifier	G. H. Watson	408,865	Aug. 13	1018	269	48	982
Feed-water heating and circulating apparatus	R. Fraser	407,435	July 23	2149	555	48	443
Feed-water purifier	F. V. Medynski	407,364	July 23	2036	528	48	421
Feed-water purifier for boilers	L. H. Thielmann	409,862	Aug. 27	2517	667	48	1187
Feed-water purifier for steam-boilers	H. Hackney	410,413	Sept. 3	432	115	48	1354
Feeder. Automatic	C. N. McFarland	409,341	Aug. 20	1731	455	48	1027
Feeder. Fowl or stock	B. Walton	411,627	Sept. 24	2255	599	48	1731
Feeding stock. Device for	G. Black	409,162	Aug. 20	1488	393	48	980
Felly. Boiler-	J. W. Tamplin and B. F. Holt	410,467	Sept. 3	517	130	48	1370
Felly support. Wheel-	L. Harris	408,103	July 30	3130	819	48	640
Felt for hats, &c. Treating fur or wool	T. Sealy	409,651	Aug. 20	2192	.....	48	1116
Fence	M. J. Barrow	406,695	July 9	1013	271	48	205
Fence	J. H. Crain	410,494	Sept. 3	555	149	48	1377
Fence	J. Higgins and J. Sullivan	406,645	July 9	940	254	48	192
Fence	H. E. Macrea	406,657	July 9	956	258	48	195
Fence	J. T. Mayhew	406,925	July 16	1361	356	48	282
Fence	J. D. Miller	410,912	Sept. 10	1192	302	48	1507
Fence	P. H. Robbins	410,926	Sept. 10	1214	327	48	1512
Fence	W. V. Russell	409,243	Aug. 20	1505	421	48	1000
Fence	E. Truslow	409,078	Aug. 13	1338	353	48	943
Fence-bracket	A. O. Corell	409,172	Aug. 20	1496	396	48	982
Fence-building machine	J. B. Kline	410,363	Sept. 3	353	93, 94	48	1338
Fence looms. Register for slat-	W. M. Gray and W. M. White	410,587	Sept. 10	667	184	48	1409
Fence-machine	W. S. Barker	410,482	Sept. 3	537	143	48	1373
Fence-machine	W. S. Barker	411,635	Sept. 24	2264	602	48	1733
Fence-machine	G. J. Cline	407,061	July 16	1551	407	48	318

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Fence-machine	I. R. Esig	410,706	Sept. 10	873	225	48	1445
Fence-machine	E. Hughes and B. F. Williams	406,912	July 16	1341	330	48	278
Fence-machine	T. G. and M. R. Simpson	410,654	Sept. 10	787	214	48	1429
Fence-machine	M. J. Young and L. A. Watts	411,365	Sept. 17	1864	490	48	1647
Fence machine. Picket	E. Redmond	410,650	Sept. 10	783	213	48	1428
Fence-machine tension device	A. J. Forsythe and G. L. Gwinn	411,122	Sept. 17	1520	404	48	1582
Fence machine. Wire	A. C. Bette	410,263	Sept. 3	188	49, 50	48	1305
Fence machine. Wire	J. Decker	408,164	July 30	3230	843	48	657
Fence machine. Wire	L. C. Lowden	409,477	Aug. 20	1827	513	48	1060
Fence-making implement	C. H. Fisher	411,429	Sept. 24	1966	522	48	1671
Fence-making machine	T. L. Armstrong, E. Clark, and G. Cottrell.	406,516	July 9	740	203	48	155
Fence-making machine	C. W. Bush	407,329	July 23	1969	512	48	409
Fence or gate post brace	G. W. Clark	407,330	July 23	1970	513	48	410
Fence-picket-crimping machine	M. M. Shellaberger	410,611	Sept. 10	723	193, 194	48	1416
Fence. Portable	P. M. Mishler	406,053	July 2	44	13	48	11
Fence-post	F. L. Fairchild	409,396	Aug. 20	1828	499	48	1046
Fence-post	S. J. Miller	407,365	July 23	2037	532	48	421
Fence-post. Clay	W. H. Heindel	411,027	Sept. 17	1361	366	48	1550
Fence-post. Metallic	W. M. Pressler	410,020	Aug. 27	2734	711	48	1225
Fence. Wire	D. H. Allen	408,282	Aug. 6	117	29	48	702
Fence. Wire	M. D. Kilmer	406,221	July 2	271	73	48	51
Fence. Wire	T. I. Ruebton	409,242	Aug. 20	1592	428	48	1000
Fence-wire holder and stretcher	B. Doud	410,077	Aug. 27	2836	744	48	1242
Fence-wire tightener	S. J. Miller	407,365	July 23	2037	532	48	421
Fence-wire-twisting device	W. H. H. Yount	410,951	Sept. 10	1247	330	48	1519
Fences. Device for attaching pickets to wire	R. F. Wilcox	406,490	July 9	695	193	48	148
Fences. Machine for making picket	G. W. Wickes	407,711	July 23	2529	654	48	520
Fences. Tension-machine for use in constructing	W. W. Hightree	411,029	Sept. 17	1364	366	48	1551
Ferrule	S. W. Evans, Jr	410,228	Sept. 10	1076	289	48	1485
Ferrule for umbrellas and canes	J. A. Furman	408,965	Aug. 13	1165	309	48	911
Ferrule for umbrellas, canes, &c	C. S. Smith	407,375	July 23	2053	534	48	424
Fertilizer	J. A. Lightball	408,491	Aug. 6	431	113	48	764
Fertilizer-distributer	E. P. Lewis	408,885	Aug. 13	1050	277, 278	48	888
Fertilizer. Phosphatic	N. B. Powter	407,240	July 16	1841	.....	48	376
Fertilizer. Phosphatic	N. B. Powter	407,241	July 16	1842	.....	48	376
Fertilizers. Making	C. C. Peck	409,230	Aug. 20	1574	.....	48	997
Fibrous lubricator	J. Williams, Jr	409,721	Aug. 27	2313	606	48	1144
Field-roller	A. G. Barton	406,078	July 2	78	23	48	18
Fifth-wheel. Vehicle	P. Andersen	411,564	Sept. 24	2152	570	48	1708
Fifth-wheel. Vehicle	A. O. and R. N. Clemons, 2d	409,133	Aug. 27	2330	610	48	1147
Fifth-wheel. Vehicle	J. Woods	407,984	July 30	2953	766	48	605
Figure. Automatically-moving	A. F. Ball	407,565	July 23	2337	604	48	483
File and binder combined with perforating device. Letter	S. M. Scheen	406,596	July 9	848	220	48	175
File-box	M. R. Jewell	408,978	Aug. 13	1187	312	48	915
File-box	M. R. Jewell	408,979	Aug. 13	1189	314	48	915
File-box	I. S. Smith, Sr	410,257	Sept. 3	182	47	48	1304
File. Clamp	A. Dorn	409,142	Aug. 13	1441	370	48	964
File. Document	R. S. Rich	409,236	Aug. 20	1581	410	48	996
File holder. Letter	L. F. Hurd	407,011	July 16	1485	385	48	305
File or holder. Paper	J. B. Brown	409,730	Aug. 27	2325	602	48	1146
File. Paper	R. G. Hearne	406,444	July 9	607	171, 172	48	131
Filter	H. F. Clayton and G. H. Holdroyd	409,273	Aug. 20	1640	434	48	1010
Filter	P. Laughlin	409,210	Aug. 20	1548	402	48	992
Filter	C. H. Parmenter and G. V. Blackman	407,112	July 16	1648	431, 432	48	338
Filter	O. Pierce	410,767	Sept. 10	987	265	48	1465
Filter. Continuous	J. Sutton	406,603	July 9	865	223, 224	48	178
Filter for rain-water	J. Dornbirer	407,854	July 30	2753	716	48	568
Filter. Oil	D. R. Ellis	410,319	Sept. 3	200	55	48	1325
Filter-press	F. Kleemann	407,221	July 16	1806	472, 473	48	369
Filter. Siphon	T. Slevin	409,071	Aug. 13	1327	350	48	941
Filter system	J. J. Murphy	409,611	Aug. 20	2132	560	48	1105
Filter. Water	F. W. Baker	406,189	July 2	235	64	48	46
Filter. Water	J. J. Curran	406,126	July 2	145	37	48	31
Filtering apparatus	G. W. Goetz	411,743	Sept. 24	2420	641	48	1765
Filtering medium. Water	J. B. and J. F. Ziegler	409,495	Aug. 27	2368	.....	48	1192
Filtering system and plant	J. Rigby	407,036	July 16	1517	397	48	312
Filtration	J. W. Hyatt	409,970	Aug. 27	2671	701	48	1213
Finger-guard	E. H. Chesterton	408,912	Aug. 13	1091	287	48	896
Finger-nail guard or protector	J. J. Stoll	408,052	July 30	3051	788	48	625
Finger-ring holder	C. A. Kron	407,668	July 23	2473	646	48	508
Fire-alarm box	J. Speicher	408,762	Aug. 13	859	225	48	851
Fire-alarm system	W. L. Denio	410,318	Sept. 3	286	75	48	1324
Fire-arm	D. A. Draper and A. Tonks	410,235	Sept. 3	148	39	48	1297
Fire-arm. Breech-loading	W. H. Davenport	406,031	July 2	17	6	48	6
Fire-arm. Breech-loading	P. Manser	406,924	July 16	1358	356	48	282
Fire-arm lock	E. L. Pupke	409,701	Aug. 27	2293	603	48	1140
Fire-arm. Magazine	J. M. and M. S. Browning	409,599	Aug. 20	2111	556, 557	48	1101
Fire-arm. Magazine	J. M. and M. S. Browning	409,600	Aug. 20	2114	557	48	1102
Fire-arm. Magazine	J. M. Reams and W. L. Horne	406,667	July 9	908	241	48	197
Fire-arm. Magazine	M. F. Richardson and C. A. Woodbury.	410,609	Sept. 10	719	193	48	1415
Fire-arm. Magazine	J. J Speed	406,787	July 9	1152	304, 305	48	231
Fire-arm. Magazine	C. P. N. Weatherby	409,889	Aug. 27	2557	675	48	1189

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Fire-arm. Magazine	C. P. N. Weatherby	410,621	Sept. 10	737	199, 200	48	1419
Fire-arm. Magazine or repeating	F. J. Petry	407,238	July 16	1836	479, 480	48	375
Fire-arm. Revolving	H. M. Caldwell	408,457	Aug. 6	381	100	48	754
Fire-back. Adjustable	H. O. Jeglum and S. H. Leikvold	406,401	July 2	539	150	48	107
Fire-curtain	H. G. Miller	411,163	Sept. 17	1517	419	48	1582
Fire-engine grate-bar	R. Rose	410,929	Sept. 10	1217	332	48	1512
Fire-escape	C. A. Butler	406,257	July 2	319	88	48	64
Fire-escape	O. P. Furman	406,831	July 9	1221	334	48	345
Fire-escape	J. M. Glenn	407,196	July 16	1767	468	48	361
Fire-escape	J. F. Guthrie	407,200	July 16	1774	465	48	363
Fire-escape	A. W. Lennier	411,106	Sept. 17	1494	396	48	1576
Fire-escape	L. Slough	409,511	Aug. 20	1984	521	48	1078
Fire-escape	G. C. Waterhous	407,752	July 23	2498	672	48	534
Fire-escape and ladder	F. Baker	406,617	July 9	892	241, 242	48	182
Fire-extinguisher	M. Magaldi	409,796	Aug. 27	2432	637	48	1166
Fire-extinguisher	H. A. Mansfield	406,174	July 2	214	58	48	42
Fire-extinguisher	T. R. Roeler	410,931	Sept. 10	1221	329	48	1513
Fire-extinguisher	S. H. Timmons	409,312	Aug. 20	1703	447	48	1022
Fire-extinguisher. Automatic	J. R. Gray	408,302	Aug. 6	144	37	48	707
Fire-extinguisher. Automatic	D. C. Stillson	407,701	July 23	2517	650	48	517
Fire-extinguisher. Chemical	J. Haslam	409,097	Aug. 13	1277	336	48	932
Fire-extinguisher. Electrical	T. R. Dosse	406,341	July 2	445	123, 124	48	89
Fire-extinguishers. Discharge-cock for	J. M. Miller	408,423	Aug. 6	354	96	48	744
Fire extinguishing apparatus	C. B. Harris	411,192	Sept. 17	1615	420	48	1599
Fire-extinguishing apparatus. Automatic	J. Clapp	408,089	July 2	93	27	48	21
Fire-extinguishing apparatus. Automatic	O. B. Hall	408,615	Aug. 6	696	161	48	800
Fire-extinguishing apparatus. Chemical	J. Haslam	409,038	Aug. 13	1278	337	48	932
Fire-extinguishing apparatus. Chemical	C. R. Macomber	411,552	Sept. 24	2138	566, 567	48	1708
Fire-extinguishing composition	C. Mayr	410,326	Sept. 3	305	.....	48	1322
Fire-hydrant	J. W. Ramsey	407,417	July 23	2121	547	48	437
Fire in buildings. Appliance for controlling and preventing	A. J. Goostree	410,359	Sept. 3	347	91	48	1336
Fire-kindler	A. and W. H. Brubaker	410,488	Sept. 3	546	147	48	1375
Fire-kindling composition	A. Rimpan	410,925	Sept. 10	1213	.....	48	1512
Fire-lighter	W. Harlee	411,335	Sept. 17	1823	486	48	1630
Fire-place	J. H. Dozier	407,181	July 16	1745	456	48	357
Fire-place	T. J. Suggs	407,702	July 23	2519	650, 651	48	517
Fire-place and open grate. Ventilating	H. P. K. Peck	411,393	Sept. 17	1903	507	48	1654
Fire-place attachment. Open	D. P. Lewis	410,169	Sept. 3	46	12	48	1277
Fire-place for burning gaseous fuel	R. Young	409,765	Aug. 27	2377	624	48	1156
Fire-proof materials. Making	A. Feldmann	406,714	July 9	1039	.....	48	210
Fires, giving alarms, &c. Apparatus for extinguishing	J. H. Radcliffe	408,325	Aug. 6	176	44, 45	48	714
Fireman's hat	J. R. Hopkins	407,209	July 16	1789	468	48	366
Fireman's mask	T. E. Richet	409,428	Aug. 20	1869	493	48	1055
Fish plate and joint	J. N. Valley	408,940	Aug. 13	1129	298	48	904
Fish-spear	W. Taber	406,546	July 9	786	213	48	164
Fishing-rod	J. Pepper	406,465	July 9	656	184	48	142
Fishing-snood	F. Hubbard	408,347	Aug. 6	211	53	48	720
Flanging apparatus	I. B. Coleman	408,586	Aug. 6	585	152	48	791
Flash-light. Compound for producing	A. Hemsley	407,351	July 23	2006	.....	48	416
Flat-iron heater	J. D. Klous	407,355	July 23	2025	524	48	419
Floor-beam connection	T. Edwards, Sr	407,076	July 16	1558	409	48	330
Floor-jack	J. Dix	411,589	Sept. 24	2194	583	48	1718
Floor-jack	W. W. Irwin	409,403	Aug. 20	1836	484	48	1047
Flooring, roofing, and other purposes. Composition for	C. A. Catlin	406,563	July 9	808	.....	48	166
Flooring-strip	A. M. Schilling	411,684	Sept. 24	2239	619	48	1746
Floral letter or design	W. C. Krick	408,416	Aug. 6	325	83	48	742
Florist's figure	A. T. Cefrey	407,331	July 23	1972	513	48	410
Flour-bin	E. P. Ellis	408,038	July 2	25	8	48	8
Flour bin and sifter	J. A. McClellan	411,671	Sept. 24	2321	615	48	1744
Flour-bolt	W. M. Lucas	407,601	July 23	2361	617, 618	48	491
Flour-chest	B. N. Rethey	408,928	Aug. 13	1111	292	48	901
Flour chest and sifter. Combined	E. B. Wilsey	408,780	Aug. 13	880	236	48	857
Flour-mill	N. Cornelius	410,878	Sept. 10	1144	308	48	1490
Flour-mill	N. Cornelius	410,879	Sept. 10	1146	309	48	1490
Flower-box	A. Cleland	409,925	Aug. 27	2405	632	48	1200
Flower-pot	J. H. Thayer	411,739	Sept. 24	2414	640	48	1764
Flowers. Device for preserving cut	T. W. Moore	408,735	Aug. 13	822	217	48	843
Flue-cleaner	J. Ehrlich	407,656	July 30	2756	716	48	569
Flue scraper. Boiler	W. T. Coggeshall	411,324	Sept. 17	1807	483	48	1636
Fluid-compressor	E. Hill	407,205	July 16	1783	467	48	365
Fluid-releaser. Automatic electrical	B. S. Molyneux	409,364	Aug. 20	1776	468	48	1036
Flushing device. Soil or sewer pipe	J. J. Wade	406,977	July 16	1438	377	48	296
Flushing-tank	J. Greenhalgh	409,147	Aug. 13	1448	380, 381	48	965
Flushing-tank	A. Rosewater	410,930	Sept. 10	1218	328, 329	48	1513
Fly-paper clamp. Sticky	O. Thum	407,706	July 23	2524	652	48	519
Fodder-cutter	P. Meyer and W. Schrage	406,660	July 9	950	250	48	196
Fodder-cutter	D. Swanger. (Reissue)	11,010	July 2	556	156	48	112
Fodder-cutting machine. Corn	P. J. Jordan	407,627	July 30	2714	704	48	560
Foil. Welding metal	J. H. J. Haines	407,309	July 23	2087	540	48	431
Folding box or crate	J. C. and W. L. Thompson	408,563	Aug. 20	1999	528	48	1061
Folding chair	A. B. Albert	407,714	July 23	2533	655	48	520
Folding-machine	J. C. Fowler and E. A. Henkle	408,095	July 30	3113	815, 816, 817	48	696

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Folding-machine	C. F. Hintze	410,098	Aug. 27	2874	754	48	1250
Food from starch refuse. Obtaining cattle	P. H. Grimm	406,166	July 2	199	.....	48	41
Foot-warmer	C. E. Blosfeld and C. Schnur	411,162	Sept. 17	1601	426	48	1597
Foot-warmer	H. N. Dawson	408,956	Aug. 13	1151	304	48	999
Forge. Blacksmith's	W. J. Ptorney	406,767	July 9	1119	297	48	226
Forge. Portable	A. E. Dain	411,760	Sept. 24	2443	647	48	1769
Forge. Portable	C. Hammelmann	410,161	Sept. 3	37	10	48	1276
Fork: *See* Hay-fork.							
Fork	D. J. Huckins	406,735	July 9	1064	283	48	214
Fork-blank	F. Silliman and W. H. Cowdery	406,480	July 9	674	179	48	144
Fountain: *See* Soda-fountain.							
Fowls. Drinking-fountain for	W. F. Hewes	406,095	July 2	103	30	48	22
Frame: *See* Bag-frame. Bag or satchel frame. Bed-frame. Clamping-frame. Cot-frame. Curtain-drying frame. Dip-net frame. Drying-frame. Embroidery-frame. Eyeglass-frame. Globe-frame. Grindstone-frame. Hay-frame. Mower-frame. Plate-washing frame. Quilting-frame. Sewing-machine quilting-frame. Slate-frame. Spinning frame. Stretching-frame. Tent-frame. Truck-frame.							
Freight. Apparatus for loading or unloading	T. H. Ross	410,737	Sept. 10	938	251	48	1455
Friction-coupling	R. C. Borchers	410,232	Sept. 3	146	38	48	1297
Friction. Magnetically reducing	M. W. Dewey	408,465	Aug. 6	391	102	48	756
Frog. Spring	F. C. Weir	409,539	Aug. 20	2022	535	48	1085
Fruit-box head	B. Shunk	410,034	Aug. 27	2758	724	48	1229
Fruit-cleaning machine	L. Phelps and D. P. Burdon	409,754	Aug. 27	2359	620	48	1153
Fruit-driers. Heating-drum for	N. C. and J. I. Clement	408,083	July 30	3089	810	48	632
Fruit-gatherer	C. J. Bloom	411,007	Sept. 17	1335	350	48	1545
Fruit-gatherer	A. C. Howes	406,097	July 2	104	30	48	23
Fruit-gatherer	J. Kriner	406,744	July 9	1081	287	48	219
Fruit or ice cutter	H. T. King	410,900	Sept. 10	1181	{310	{48	1504
Fruit-picker	S. Brazee	409,907	Aug. 27	2581	676	48	1194
Fruit-picker	J. B. Marshall	409,296	Aug. 20	1679	442	48	1017
Fruit-picker	H. M. Rabun	406,768	July 9	1120	297	48	226
Fruit-pitting machine	J. Rosasco	407,965	July 30	2924	766	48	601
Fruit. Transporting-package for	J. T. Mott	410,429	Sept. 3	466	125	48	1359
Fuel. Artificial	R. J. Schimper	408,854	Aug. 13	999	.....	48	879
Fuel-cartridge	W. Daly	408,220	Aug. 6	27	6	48	683
Fuel-controller. Thermostatic	E. R. Ware	411,311	Sept. 17	1589	419	48	1633
Fuel. Device for feeding fluid	W. B. Wright	409,724	Aug. 27	2316	609	48	1145
Fuel. Machine for twisting straw, &c., for	L. Sullivan	406,153	July 2	180	47	48	37
Fumes. Refining	F. L. Bartlett	406,868	July 16	1277	336	48	266
Funnel	C. F. Sautter	407,253	July 16	1860	485	48	379
Furnace: *See* Bagasse-furnace. Boiler-furnace. Boiler or other furnace. Coke-furnace. Dry-kiln furnace. Gas-furnace. Gas-generating furnace. Glass-furnace. Heating-furnace. Hot-air furnace. Metallurgical furnace. Ore-roasting furnace. Petroleum-furnace. Pot-furnace. Refuse-furnace. Retort and muffle furnace. Smelting-furnace. Smoke and gas consuming furnace. Steam-boiler furnace. Steel-furnace. Tire-heating furnace.							
Furnace	E. W. Jones	409,792	Aug. 27	2423	634	48	1164
Furnace	W. R. Roney	409,650	Aug. 20	2190	577	48	1115
Furnace	J. J. Sights and E. R. Walker	407,372	July 23	2049	530	48	423
Furnace for burning bone-black	A. Weber	407,912	July 30	2839	{738 {739	{48	584
Furnace for the desiccation, incineration, and carbonization of precipitants, &c., resulting from sludge, &c.	R. de Soldenhoff	409,022	Aug. 13	1254	{351 {352	{48	927
Furnace-grate	G. L. Allen	409,657	Aug. 27	2207	581	48	1125
Furnace-grate	O. P. and G. O. Eltcrich	407,002	July 16	1476	385	48	304
Furnace-grate	E. N. Gates	407,344	July 23	1999	519	48	414
Furnace-grate	M. H. Moskovits	407,873	July 30	2782	723	48	573
Furnace-grate	W. R. Roney	409,305	Aug. 20	1693	445	48	1020
Furnace hearth or basin. Undulating	A. Barker	410,343	Sept. 3	327	86	48	1332
Furnace or other door	G. E. Wilbur	407,980	July 30	2948	767	48	605
Furnace-pipe	E. A. Eversman and D. Wagner	411,652	Sept. 24	2289	608	48	1738
Furnaces. Apparatus for charging and drawing	S. T. Wellman	408,152	July 30	3209	{837	{48	653
Furnaces. Apparatus for maintaining combustion in secondary chambers of boiler or other	J. Wilson and A. Mason	406,684	July 9	999	268	48	202
Furnaces. Condensing fumes from metallurgic	F. P. Dewey	411,014	Sept. 17	1343	361	48	1547
Furnaces. Fire-pot for hot-air	S. Darling	410,880	Sept. 10	1147	309	48	1498
Furnaces. Hydrocarbon-burner for	A. Lentz	411,385	Sept. 17	1891	505	48	1652
Furnaces. Relighting the flame in hydrocarbon	C. L. Goodridge	411,243	Sept. 17	1688	451	48	1615
Furnaces. Smoke-preventer for	S. E. Flint	406,393	July 2	526	146	48	105
Furniture-coupling	L. E. Harvie	406,731	July 9	1060	282	48	214
Furniture. Knockdown	A. White	408,278	Aug. 6	111	28	48	701
Furniture. School	J. Pearl	408,134	July 30	3185	833	48	649
Fuses. Cap for	W. H. Frazer	408,096	July 30	3121	817	48	638

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Gage: *See* Gas-pressure gage. Measuring-gage. Micrometer-gage. Pressure-gage. Railway-gage. Recording-gage. Saw-gage. Steam-gage. Surface, scratch, and depth gage.							
Gage for marking spouting	L. S. Fletcher	407,288	July 16	1910	497	48	389
Gage-glass tubes. Device for protecting	E. Engels	409,280	Aug. 20	1653	436	48	1013
Gage-knife	W. E. Brock	409,629	Aug. 20	2168	579	48	1111
Gage-knife	F. W. Lowe	409,649	Aug. 27	2505	655	48	1178
Gage-knife	C. F. Spery	409,633	Aug. 20	1875	495	48	1057
Gage-knife	G. E. Lincoln	407,530	July 23	2300	593	48	474
Galley	C. W. Waldron and G. E. Jones	407,382	July 23	2062	533	48	426
Galley	P. B. Delany	406,997	July 16	1466	383	48	302
Galvanic battery	M. Dougana	406,636	July 9	927	250	48	189
Galvanic battery	H. Groswith	406,726	July 9	1054	281	48	213
Galvanic battery	C. J. Hirlimann	407,931	July 30	2873	748	48	590
Galvanic battery	W. P. Kookogey	407,781	July 30	2637	683	48	547
Galvanic battery	J. E. Lee	406,223	July 2	276	76	48	55
Galvanic battery	F. Lots	406,636	July 9	955	238	48	195
Galvanic battery	W. C. Thompson	411,400	Sept. 17	1914	511	48	1656
Galvanic battery	G. C. Ward	409,259	Aug. 20	1617	428	48	1005
Game apparatus	F. B. Dunham	406,632	July 9	913	{246 {247	{48	187
Game apparatus	H. S. Kenney	409,977	Aug. 27	2679	703	48	1214
Game apparatus	M. Virnoche	411,402	Sept. 17	1918	512	48	1657
Game apparatus	V. W. Wilson	407,713	July 23	2532	635	48	530
Game apparatus	C. F. M. Zill	408,869	Aug. 13	1025	{271 {272	{48	882
Game-board	J. H. Dumont	406,342	July 2	446	124	48	90
Game-board	J. Snell	409,251	Aug. 20	1607	434	48	1003
Game-board	C. Gooch	411,291	Sept. 17	1662	444	48	1610
Game board or apparatus	C. M. Crandall	410,956	Sept. 10	1252	337	48	1500
Game or puzzle	J. D. McKinney	406,663	July 9	964	260	48	196
Garlic from wheat. Machine for separating	A. Herr	408,619	Aug. 6	632	{164 {165	{48	801
Garlic from wheat. Separating	A. Herr	408,618	Aug. 6	629	{162 {163 {164	{48	801
Garment-pattern. Adjustable	J. Couteau	406,197	July 2	244	67	48	48
Garment-protector	P. R. Hanebury	410,416	Sept. 3	439	116	48	1355
Garter	J. Katzenberg	408,179	July 30	3048	818	48	661
Gas and air mixer and governor	C. F. Hovey	410,418	Sept. 3	441	116	48	1355
Gas and air mixing machine	L. B. White	409,719	Aug. 27	2310	607	48	1143
Gas and electric light fixture. Combined	T. J. Pierce	409,498	Aug. 20	1966	520	48	1075
Gas. Apparatus for manufacturing	H. S. Battin	410,220	Sept. 10	1066	286	48	1483
Gas. Apparatus for manufacturing non-luminous heating	A. Kitson	410,286	Sept. 3	225	59	48	1313
Gas. Apparatus for scrubbing and washing	K. M. Mitchell	407,025	July 16	1500	{392 {393	{48	309
Gas. Apparatus for the manufacture of	J. M. Critchlow	408,819	July 9	1202	319	48	241
Gas. Apparatus for the manufacture of	V. L. Elbert	411,022	Sept. 17	1350	363	48	1548
Gas. Apparatus for the manufacture of	F. D. Moses	410,174	Sept. 3	51	13	48	1278
Gas. Apparatus for the manufacture of	J. M. Rose	408,533	Aug. 6	501	133	48	776
Gas. Apparatus for the manufacture of	J. M. Rose	408,536	Aug. 6	512	134	48	777
Gas. Apparatus for the manufacture of	J. M. Rose	408,674	Aug. 6	719	187	48	816
Gas. Apparatus for the manufacture of	W. T. Stewart	409,761	Aug. 27	2371	622	48	1155
Gas. Apparatus for the manufacture of fuel	G. S. Dwight	406,637	July 9	928	{250 {251	{48	190
Gas. Apparatus for washing and scrubbing	S., Sr., S., Jr., and J. Chandler	406,124	July 2	143	42	48	30
Gas. Automatic safety-lock for	A. H. McClure and H. Holland	410,001	Aug. 27	2709	712	48	1219
Gas-batteries. Obtaining electricity from	L. Mond and C. Langer	409,366	Aug. 20	1781	469	48	1037
Gas-battery	L. Mond and C. Langer	409,365	Aug. 20	1777	{468 {469	{48	1037
Gas-burner	C. J. Hamilton	407,291	July 16	1913	498	48	389
Gas-burner	A. P. Jacob	406,584	July 9	833	226	48	172
Gas-burner for lighting, cooking, and heating purposes	J. H. Keyser	410,566	Sept. 3	652	173	48	1396
Gas-burner for stoves or fire-places	T. McSweeney	406,229	July 2	284	79	48	57
Gas-burner for stoves or fire-places	J. Smithley	406,860	July 9	1303	333	48	252
Gas-burner. Heating	S. Stewart	407,134	July 16	1677	438	48	344
Gas-burner. Incandescent	E. C. Davidson	410,540	Sept. 3	612	{164 {165	{48	1389
Gas-burner. Incandescent	C. B. Harris	410,549	Sept. 3	624	167	48	1391
Gas-burner. Incandescent	J. L. Stewart	408,051	July 30	3049	798	48	625
Gas-burner. Incandescent	J. L. Stewart	409,520	Aug. 20	1994	{526 {527	{48	1080
Gas-burner. Multiple heating	A. J. Doty	411,648	Sept. 24	2283	607	48	1737
Gas-burner. Regulating	J. G. Hawkins and J. Barton	407,656	July 23	2458	{636 {637	{48	505
Gas-burners. Automatic cock or cut-off for	C. H. Barnett	411,566	Sept. 24	2158	571	48	1709
Gas-burners. Heating attachment for	C. Long	411,126	Sept. 17	1525	407	48	1563
Gas-burners. Making incandescing elements for	C. B. Harris	409,667	Aug. 20	2126	559	48	1104
Gas-burning device	J. F. Barker	407,323	July 23	1957	510	48	407
Gas. Charging liquids with	C. A. Catlin	407,818	July 30	2701	701	48	556
Gas-engine	C. W. Baldwin	407,320	July 23	1952	{508 {509	{48	406
Gas-engine	C. W. Baldwin	407,321	July 23	1954	509	48	407
Gas-engine	C. W. Baldwin	408,663	Aug. 13	740	{193 {194	{48	827
Gas-engine	L. T. Cornell	406,263	July 2	336	90, 91	48	66
Gas-engine	J. Matthies	411,668	Sept. 24	2314	614	48	1743
Gas-engine	D. S. Regan	408,356	Aug. 6	223	57	48	723

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Gas-engine	C. White and A. R. Middleton	406,807	July 9	1184	314 315	48	238
Gas-engine and carburetor. Combined	L. F. McNett	407,061	July 30	2920	861	48	600
Gas-engine starting-gear	E. D. Debouttéville and L. P. C. Malandin.	411,644	Sept. 24	2278	605	48	1735
Gas engines. Atomizer for petroleum	E. Capitaine	408,460	Aug. 6	384	101	48	754
Gas engines. Igniting device for petroleum	E. Capitaine	408,459	Aug. 6	383	100	48	754
Gas-engines. Ignitor for	I. F. Allman	411,211	Sept. 17	1648	538	48	1606
Gas-engines. Operating	H. Hoellies	408,483	Aug. 6	418	109 110	48	762
Gas-fitting	G. H. Gregory	409,577	Aug. 20	2078	649	48	1066
Gas from gas-wells. Accelerating the flow of natural	E. A. Cook	408,652	Aug. 6	690	177	48	811
Gas from petroleum-oil. Apparatus for generating	A. Weyer	407,267	July 16	1879	490	48	383
Gas-furnace	R. S. Franz	407,269	July 16	1911	197	48	389
Gas-furnace	J. Zellweger	409,090	Aug. 13	1357	350	48	947
Gas-furnaces. Burner-carriage for	H. J. Bell	409,625	Aug. 20	2160	549	48	1110
Gas-generating furnace. Cupola	M. A. Morse	410,846	Sept. 10	1102	297	48	1490
Gas generator and burner	J. G. Street	410,944	Sept. 10	1235	333	48	1516
Gas generator. Fuel	J. R. Peters	409,062	Aug. 13	1311	346	48	938
Gas-governor	H. J. Bell	408,071	July 30	3078	805	48	629
Gas governor or regulator	W. H. Downing	407,645	July 23	2445	633	48	503
Gas-heater	J. Johnson and E. H. Packer	408,980	Aug. 13	1190	314	48	915
Gas-heater	J. Johnson and E. H. Packer	411,447	Sept. 24	1991	568	48	1676
Gas-heating burner	H. J. Bell	408,073	July 30	3080	805 806	48	630
Gas-heating burner	A. J. Doty	411,647	Sept. 24	2282	607	48	1736
Gas-incandescent	C. A. von Welsbach	409,528	Aug. 20	2005	.....	48	1062
Gas-incandescents. Manufacture of	C. A. von Welsbach	409,531	Aug. 20	2009	.....	48	1063
Gas-leak detector	J. F. Stark	406,241	July 2	229	62	48	60
Gas-lighter	S. B. Battey	409,737	Aug. 27	2319	610	48	1145
Gas-lighter. Electric	T. J. Zoeller	408,785	Aug. 13	898	240	48	859
Gas-lime. Revivifying	J. Bell	406,192	July 2	239	.....	48	47
Gas mains or pipes. Cross for	J. C. Conroy	408,896	Aug. 13	959	255	48	871
Gas. Manufacture of	J. M. Rose	408,535	Aug. 6	508	133 134	48	777
Gas. Manufacturing	J. M. Rose	408,532	Aug. 6	497	132	48	776
Gas. Manufacturing	J. M. Rose	408,534	Aug. 6	505	133	48	777
Gas-meter	J. W. Culmer	409,275	Aug. 20	1642	434 435	48	1010
Gas-mixer	W. S. Payne	407,237	July 16	1835	479	48	375
Gas-motor	E. Capitain	406,160	July 2	191	54	48	39
Gas-motor engine	J. J. Purnell	408,137	July 30	3188	833 834	48	640
Gas or oil motor-engine. Compound	W. J. Crossley	406,706	July 9	1026	274 275	48	207
Gas-pipe deposits. Solvent for	M. E. Waldstein	411,478	Sept. 24	2033	.....	48	1684
Gas-pressure gage and regulator	G. B. Fearnley	406,894	July 16	1317	345	48	273
Gas-pressure indicator	R. L. Simons	409,375	Aug. 20	1796	472 473	48	1039
Gas-pressure regulator	G. W. Crozier	408,873	Aug. 13	1032	273	48	885
Gas. Process of and apparatus for manufacturing	M. A. Morse and T. G. Springer	411,369	Sept. 17	1896	506	48	1653
Gas-regulator	W. C. Rosaney	411,062	Sept. 17	1400	377	48	1500
Gas-regulator	W. C. Rosaney	411,063	Sept. 17	1410	377	48	1500
Gas through mains. Apparatus for forcing	J. S. Fish	406,718	July 9	1043	279	48	211
Gas trap and sink. Sewer	W. Wallace	406,919	July 16	1440	377	48	297
Gas-washing apparatus	E. Ledig	407,936	July 30	2879	750	48	591
Gases. Apparatus for treating solids with	C. Langer	409,409	Aug. 20	1842	486 487	48	1049
Gate: *See* Bridge-gate. Railway-gate. End-gate. Road-gate. Farm-gate. Swinging gate.							
Gate	E. O. Aldrich	407,986	July 30	2956	769	48	606
Gate	A. Allen	409,094	Aug. 13	1367	360	48	949
Gate	W. F. Bradley	407,570	July 23	2342	605 606	48	484
Gate	D. C. Chaddock	408,825	Aug. 13	938	254	48	871
Gate	A. W. Chilcott	407,060	July 16	1550	406 407	48	318
Gate	C. M. Cochran	406,703	July 9	1023	273 274	48	206
Gate	W. P. Elliott and A. Farrar	406,577	July 9	825	253	48	171
Gate	A. Fawcett	408,601	Aug. 6	607	157	48	796
Gate	M. W. Forster	409,185	Aug. 20	1512	401	48	985
Gate	W. L. Haas	407,951	July 30	2907	757	48	597
Gate	C. Hansen	411,437	Sept. 24	1976	524	48	1673
Gate	F. Hopkins	407,602	July 23	2465	638	48	506
Gate	C. L. Hudler	407,010	July 16	1481	387	48	305
Gate	E. Kelsey	408,028	Aug. 6	646	168	48	804
Gate	J. E. Little	408,117	July 30	3168	828	48	645
Gate	R. M. and L. P. Lively	410,644	Sept. 10	777	210	48	1427
Gate	L. W. Loughary	408,351	Aug. 6	315	55	48	721
Gate	W. H. Reed	409,067	Aug. 13	1322	349	48	940
Gate opening and closing device. Swing	W. C. Hooker	409,969	Aug. 27	2670	700	48	1212
Gear-cutting machine	G. W. Drumheller and C. H. North	409,776	Aug. 27	2306	628	48	1150
Gear. Reversing-belt	H. E. Smith	411,738	Sept. 24	2413	640	48	1764
Gearing. Belt	J. A. Longa	410,367	Sept. 3	360	96	48	1340
Gearing. Compensating	R. S. Matthews	410,425	Sept. 3	456	122	48	1357
Gearing. Frictional	A. Robinson	408,477	July 9	669	169	48	144
Gelatine. Making	F. W. P. and L. P. Swinborne	408,549	Aug. 6	534	139	48	781
Gelatinous matter from hides or skins. Preparing	F. W. P. and L. P. Swinborne	408,548	Aug. 6	532	139	48	781
Gelatinous product	F. W. P. and L. P. Swinborne	408,636	Aug. 6	656	171	48	806

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Generator: *See* Calelectric generator. Electric generator. Gas-generator. Hot-water generator. Steam-generator. Vapor-generator. Vinegar-generator.							
Gigging-machine	C. Woelfel	406,326	July 2	424	116 117	48	85
Glass: *See* Opera or field glass							
Glass-beveling machine	A. Langlais	408,796	Aug. 13	812	214	48	841
Glass-cutting apparatus	C. W. Werner	411,764	Sept. 24	2449	649	48	1770
Glass. Device for molding articles from	W. S. Fox	406,165	July 2	198	55	48	40
Glass-furnace	E. de La Chapelle and J. Pearce. (Reissue)	11,018	Aug. 6	731	190	48	819
Glass-furnace	A. Ferrari	407,187	July 16	1755	459	48	359
Glass. Manufacture of window	M. W. Griswold	410,546	Sept. 3	619	166	48	1390
Glass-melting pot	A. G. Neville	409,368	Aug. 20	1786	470	48	1038
Glass panels. Making ornamental	J. Endres and E. Schoellig	409,634	Aug. 27	2486	650	48	1175
Glassware. Apparatus for ornamenting open-ended	T. B. Atterbury	406,693	July 9	1011	271	48	204
Glassware. Apparatus for reheating	H. Schulze-Berge	411,132	Sept. 17	1532	409	48	1584
Glassware. Furnace for heating	H. Schulze-Berge	411,131	Sept. 17	1530	409	48	1583
Glassware. Mold for	M. H. Hagerty	407,349	July 23	2004	520	48	416
Glassware. Ornamenting open-ended	T. B. Atterbury	406,692	July 9	1009	270	48	204
Glazier's diamond	J. Urbanek	408,055	July 30	3055	800	48	636
Globe-frame	D. Hyman	411,443	Sept. 24	1984	526 527	48	1674
Glove	P. Buckley and E. H. Decker	408,650	Aug. 6	688	177	48	812
Glove	A. M. Young	410,999	Sept. 10	1320	356	48	1534
Glove-fastener	E. J. Kraetzer	407,295	July 16	1917	499	48	390
Glue-cutting apparatus	C. Keller and J. Conly	407,865	July 30	2768	730	48	570
Glue-heater	S. H. Mosher	410,765	Sept. 10	984	264	48	1466
Gold surfaces. Ornamenting	L. Jagielky	407,953	July 30	2910	758	48	598
Gong. Electric	J. H. Phalan	410,189	Sept. 3	83	20	48	1284
Governor	G. S. Agee	409,063	Aug. 13	1306	360	48	948
Governor	S. Quast	411,056	Sept. 17	1490	375	48	1538
Governor. Steam-engine	F. E. Gaylord	406,510	July 9	731	201	48	153
Governor. Steam-engine	R. Hoffmann	410,997	Sept. 10	1176	317	48	1504
Governor. Steam-engine	E. F. Williams	408,153	July 30	3212	838 839	48	658
Grader. Road	M. H. Walworth	410,388	Sept. 3	387	103	48	1345
Grain-adjuster	T. B. Kirkwood	410,979	Sept. 10	1294	350	48	1528
Grain and seed separator	N. J. Vinyard	409,256	Aug. 20	1614	427	48	1005
Grain-binder	J. A. Graham	407,069	July 16	1560	410	48	320
Grain-binder	G. Greenlee, Jr	411,025	Sept. 17	1356	364 365	48	1549
Grain-binder	W. M. Holmes	406,907	July 16	1334	349	48	276
Grain-binder	S. D. Maddin	409,795	Aug. 27	2498	636 637	48	1165
Grain-binder	S. D. Maddin	410,424	Sept. 3	450	119 120 121 122	48	1357
Grain-binder	L. Miller	410,427	Sept. 3	459	123 124	48	1358
Grain-binder	J. F. Steward	406,374	July 2	480	137	48	98
Grain-binder knotting device	K. C. and A. A. Kunkle	407,734	July 23	2550	662 663	48	525
Grain-binders. Needle-arm for	W. M. Holmes	406,908	July 16	1336	349	48	277
Grain-carrier	W. H. Knapp	410,526	Sept. 3	507	160	48	1385
Grain-conveyer	S. B. Hart	411,439	Sept. 24	1978	525	48	1674
Grain. Device for separating weevil and weevil-dust from	T. E. Ferguson and A. H. Blanchard	409,180	Aug. 20	1504	397	48	964
Grain-drier	G. H. Immendorf	409,267	Aug. 20	1609	439 440	48	1015
Grain-drill	C. F. Lawrence and M. Rueckert	407,359	July 23	2029	525 526	48	420
Grain-drill	P. P. Mast	410,325	Sept. 3	303	79	48	1327
Grain-drill	W. W. and F. M. Mullen	411,528	Sept. 24	2100	554	48	1693
Grain-drill	F. R. Packham	410,436	Sept. 3	474	127	48	1361
Grain-drill	C. E. Patrie and F. R. Packham	410,438	Sept. 3	477	128	48	1361
Grain-drill shoe	C. L. Fowle	411,141	Sept. 17	1543	412	48	1586
Grain dump and elevator	M. F. Seeley	410,336	Sept. 3	317	82.83	48	1330
Grain from elevators. Apparatus for drawing off and mixing the	W. H. Sprague	407,907	July 30	2830	737	48	582
Grain-grader	G. H. Rich	410,377	Sept. 3	372	99	48	1342
Grain-heater	A. Wassmund	408,556	Aug. 6	543	143	48	783
Grain hulling and reducing machine	G. A. Buchbols	408,077	July 30	3084	807 808	48	631
Grain-mill safety device	L. Wagner	411,404	Sept. 17	1990	513	48	1657
Grain-scourer	H. A. Barnard	406,285	July 2	511	142	48	102
Grain-scourer	J. M. Case	410,069	Aug. 27	2805	738	48	1237
Grain-scourer	J. M. Case	410,070	Aug. 27	2807	739	48	1238
Grain-scourer	G. S. Cranson	407,578	July 23	2351	609	48	486
Grain-scourer	G. S. Cranson	407,722	July 23	2544	659	48	522
Grain-scourer	A. Moore	406,931	July 16	1371	359	48	284
Grain-separator	J. R. Beynon	407,052	July 16	1539	404	48	316
Grain-separator	W. F. Kehm	407,956	July 30	2914	759	48	599
Grain-separator	A. M. Mecklem	407,542	July 23	2363	594 595	48	475
Grain-separator	J. Payer	411,256	Sept. 17	1709	457	48	1619
Grain-separator	H. O. Triplett	410,776	Sept. 10	1003	269	48	1468
Grain-separator elevator attachment	S. B. Hart	411,438	Sept. 24	1977	524	48	1673
Graphophone-tablets. Repreparing	D. W. Brown	408,649	Aug. 6	684	176 177	48	810

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Grate	W. J. Owens	411,391	Sept. 17	1901	507	48	1654
Grate	T. T. Rockett	408,526	Aug. 6	488	129	48	775
Grate	H. P. Tallmadge	407,379	July 23	2058	532 533	48	425
Grate-bar	E. J. Gordon	411,379	Sept. 17	1885	504	48	1651
Grate-bar	L. Hall and O. J. Barth	410,669	Sept. 10	817	219	48	1434
Grate. Fire-place	J. C. Barry	407,989	July 30	2002	770	48	607
Grate for refuse-burners	P. Keene	410,104	Aug. 27	2281	756	48	1251
Grate or fire-place front	J. M. Seymour	411,202	Sept. 17	1715	459	48	1621
Grater and slicer	A. C. Becker	411,568	Sept. 24	2160	572	48	1710
Grating for illuminating-tiles	T. Sharts	411,134	Sept. 17	1535	409	48	1584
Grease and oil separator	E. H. Murphy	409,698	Aug. 27	2279	599	48	1138
Grease-cup	E. Lunkenheimer	410,423	Sept. 3	450	119	48	1357
Grease-cup	W. F. Mattes and J. F. Lewis	407,226	July 16	1817	475	48	371
Grease from water. Apparatus for extracting	H. Pindar	410,291	Sept. 3	237	61	48	1315
Griddle. Cake	M. Shaeffer	411,619	Sept. 24	2245	597	48	1729
Gridiron	W. C. Perkins	408,136	July 30	3188	833	48	649
Grinder. Roll	P. F. Dooley	411,095	Sept. 17	1475	391	48	1572
Grinding and crushing mill	J. F. Winchell	408,781	Aug. 13	887	237	48	857
Grinding and polishing cutlery. Machine for	H. A. Axtell	410,259	Sept. 3	184	48	48	1304
Grinding-mill	C. A. Bergtold	411,571	Sept. 24	2164	573	48	1711
Grinding-mill	F. C. Hall	406,522	July 9	753	205	48	157
Grinding-mill	R. Kent	406,651	July 9	948	256 257	48	194
Grinding-mill	A. Lamberton	406,355	July 2	466	130	48	94
Grinding-mill	J. Schweitzer	406,779	July 9	1138	302	48	229
Grinding-mill crusher	T. Roberts	409,669	Aug. 27	2529	602	48	1183
Grinding reaper-cutters. Tool for	C. H. Mallory	407,023	July 16	1499	392	48	309
Grinding sheaves, &c. Machine for	H. C. Stifel	409,254	Aug. 20	1610	425 426	48	1004
Grinding-tool	H. J. Distin	408,876	Aug. 13	1038	274	48	886
Grindstone-frame	R. Kirk	408,662	Aug. 6	703	182	48	814
Grindstone tool-holder	A. H. Dick	411,217	Sept. 17	1657	442	48	1609
Grip	W. Johnson	407,441	July 23	2159	557	48	445
Grip-tester or similar device. Coin-controlled	P. Beetz	411,569	Sept. 24	2161	573	48	1710
Gripper. Wire-guy	J. Gibson	410,687	Sept. 10	848	223	48	1440
Guano-distributer	A. Conkle, Jr.	411,545	Sept. 24	2126	561	48	1703
Guard: *See* Bridge-guard. Cattle-guard. Finger-guard. Finger-nail guard. Key-hole guard. Poison-guard. Rein-guard. Saw-guard. Stove-guard.							
Gun. Air	C. J. Hamilton	408,971	Aug. 13	1179	311	48	913
Gun and projectile for high explosives	S. H. Emmens	409,943	Aug. 27	2634	691	48	1206
Gun-barrels. Means for attaching fore-end stocks to	J. E. Gage	409,188	Aug. 20	1515	402	48	985
Gun-barrels. Ornamenting	G. A. Sachs	410,678	Sept. 10	831	223	48	1437
Gun. Breech-loading	G. S. Boesch	408,453	Aug. 6	373	98	48	753
Gun. Breech-loading	H. Comstock	409,017	Aug. 13	1245	329	48	926
Gun-carriage	J. B. G. A. Canet	410,968	Sept. 10	1275	343 344 345 346	48	1524
Gun-carriage	H. A. Ramsay	408,746	Aug. 13	834	220 221	48	846
Gun-carriages. Hydraulic buffer for siege and other	P. L. A. De Montgolfier	411,715	Sept. 24	2383	632	48	1757
Gun for throwing externally-applied projectiles	S. H. Emmens	410,320	Sept. 3	292	76	48	1325
Gun. Magazine	S. H. Roper	409,429	Aug. 20	1670	493	48	1056
Gun. Magazine	J. J. Speed	407,552	July 23	2319	599 600	48	478
Gun-mounting having a disappearing action	H. Schneider	407,418	July 23	2123	548	48	437
Gun. Pneumatic	D. Dudley	407,476	July 23	2205	569	48	454
Gun. Pneumatic piston	D. Dudley	407,475	July 23	2204	568	48	454
Gun-sight	B. Long	410,422	Sept. 3	448	110	48	1356
Gun. Transportable or field	M. Dreger	411,329	Sept. 17	1812	484	48	1637
Guns. Compressing air for pneumatic	D. Dudley	407,474	July 23	2204	568	48	453
Guns. Wind-gage sight for	J. W. Soule	410,039	Aug. 27	2763	726	48	1230
Gunpowder-canister	J. J. Stopple and E. Harigel	410,463	Sept. 3	512	137	48	1369
Gunstocks. Mechanism for fastening barrels to	W. H. Davenport	406,632	July 2	18	6	48	6
Gutta-percha. Substitute for	C. A. A. H. Siebert	411,171	Sept. 17	1586	.....	48	1594
Hair curling and crimping device	I. W. Heysinger	411,028	Sept. 17	1361	366	48	1550
Hair dye and tonic	E. A. Vogt	406,071	July 2	70	.....	48	16
Halter	J. H. Philpott	409,867	Aug. 27	2586	661	48	1163
Hame	W. V. Kay	406,351	July 2	462	129	48	92
Hame attachment	D. J. Martin	410,909	Sept. 10	1190	321	48	1507
Hame attachment	A. B. Rowell	409,505	Aug. 20	1976	522	48	1077
Hame-clip	P. Penner	407,834	July 30	2722	707	48	562
Hame-fastener	L. Anderson	406,497	July 9	710	196	48	150
Hame-fastener	W. S. Sherman	406,541	July 9	780	212	48	163
Hame-rings. Machine for attaching eyebolts to	A. Samson	410,771	Sept. 10	994	267	48	1466
Hame staple and clip	J. L. Ream	406,370	July 2	485	135	48	97
Hame-strap fastener	R. M. Dillard	407,893	July 30	2812	732	48	580
Hammer	L. D. Balfour	411,633	Sept. 24	2262	601	48	1732
Hammer. Drop	E. Hammesfahr	409,836	Aug. 27	2487	650	48	1175
Hammock and seat support	J. J. Johnson	410,796	Sept. 10	1037	277	48	1476
Hammocks. Making	J. Brayshaw	408,207	Aug. 6	7	2	48	680
Hand-elevator	G. W. Cannon	408,693	Aug. 13	764	200	48	832
Hand-hold	P. F. Crafts	406,995	July 16	1464	383	48	302
Hand-rake	J. Paxson	409,494	Aug. 20	1961	518	48	1074
Handle: *See* Latch-handle. Non-heat-conducting handle. Saw-handle. Tool-handle.							
Handle	G. A. Byor	406,496	July 9	578	162	48	135

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Handle	E. P. Nobbs	407,898	July 30	2820	734	48	581
Handle	H. L. Palmer	410,672	Sept. 10	820	220	48	1434
Handle	N. R. Streeter	411,693	Sept. 24	2354	622	48	1753
Handle	G. Vogl and J. Hess	406,670	July 2	69	20	48	16
Handle	O. S. Gandy	410,686	Sept. 10	847	227	48	1440
Handle for buckets or fruit-baskets	A. Kessler	407,015	July 16	1490	389	48	307
Handle for canes, umbrellas, and parasols							
Hanger: *See* Clothes hanger. Door-hanger. Picture-hanger. Pipe-hanger. Pulley-hanger. Shaft-hanger.							
Harmonica-holder	A. B. Clark	411,374	Sept. 17	1877	502	48	1650
Harness	G. G. Cramberg and J. H. Ranck	407,852	July 30	2750	715	48	567
Harness attachment	L. D. Saxton	410,029	Aug. 27	2749	722	48	1322
Harness-D	J. R. Kennett	408,661	Aug. 6	702	182	48	813
Harness for vicious horses. Safety	R. M. Reid	408,436	Aug. 6	348	91	48	747
Harness-loop	J. N. Barr	409,792	Aug. 27	2318	609	48	1145
Harness-loop	S. W. Shirk	411,257	Sept. 17	1856	496	48	1645
Harness-loop press	C. Pellesier	410,015	Aug. 27	2728	717	48	1224
Harness-stuffing machine	H. Leibe	408,429	Aug. 6	428	112	48	763
Harrow	A. Callander	411,009	Sept. 17	1337	360	48	1546
Harrow	M. J. Frank	409,951	Aug. 27	2344	603	48	1208
Harrow	J. T. Hamilton	408,234	Aug. 6	55	12	48	680
Harrow	M. E. Hunt	408,717	Aug. 13	799	211	48	839
Harrow	C. La Dow	411,199	Sept. 17	1637	433 434	48	1603
Harrow	D. McHugh	410,004	Aug. 27	2714	713	48	1220
Harrow	C. L. Powell	409,233	Aug. 20	1517	417	48	997
Harrow	S. Rothschild	408,930	Aug. 13	1115	293	48	901
Harrow	L. Smith	408,816	Aug. 13	945	251	48	869
Harrow	A. T. Van Slyke	407,846	July 30	2741	712	48	566
Harrow	L. B. Phelps	407,791	July 30	2652	687	48	550
Harrow and clod-crusher	J. S. Hind	407,206	July 16	1785	466	48	365
Harrow and cultivator. Combined	S. Ritte	409,238	Aug. 20	1569	419	48	999
Harrow attachment. Disk	J. T. Bell	409,818	Aug. 27	2461	646	48	1172
Harrow-disk	H. D. Blakemore	410,573	Sept. 10	667	178	48	1405
Harrow. Disk	M. Daley	411,376	Sept. 17	1880	503	48	1650
Harrow. Disk	C. S. Ruef	408,196	July 30	3287	858	48	606
Harrow. Disk	J. R. Hicks	407,658	July 23	2461	637	48	506
Harrow. Rotary	G. W. Ansley and J. H. Boyd	407,463	July 23	2192	565	48	451
Harrow. Rotary or disk	W. M. Brinkerhoff	406,256	July 2	318	87	48	64
Harrow spring-tooth	F. Van Patten	407,138	July 16	1681	439	48	344
Harrow-tooth	C. E. Bement	410,141	Sept. 3	2	1	48	1209
Harrow-tooth seat	J. J. Rogers and O. S. Kennedy	406,147	July 2	174	50	48	35
Harrows. Seeding attachment for disk	H. F. Crandall	407,063	July 16	1554	407 408	48	319
Harvester	J. W. Latimer	408,244	Aug. 6	66	15	48	632
Harvester	H. E. Pridmore	407,742	July 23	2574	666 667	48	529
Harvester	D. Best	410,307	Sept. 3	264	69	48	1319
Harvester and thrasher. Combined	E. Houts	410,100	Aug. 27	2876	755	48	1251
Harvester attachment	J. Armstrong	408,947	Aug. 13	1136	300 301	48	906
Harvester. Corn	J. Armstrong	409,443	Aug. 20	1868	499	48	1069
Harvester. Corn	T. Boggs	407,633	July 23	2426	632	48	499
Harvester. Corn	L. A. Davis	410,500	Sept. 3	569	152	48	1379
Harvester. Corn	L. A. Davis	410,530	Sept. 3	611	164	48	1388
Harvester. Corn	B. B. Leedy	409,987	Aug. 27	2683	705	48	1216
Harvester. Corn	S. M. Stevens and G. A. Harvey	411,268	Sept. 17	1722	460 461	48	1622
Harvester. Corn	S. C. Van Buren and S. C. Shoup	409,079	Aug. 13	1339	354	48	946
Harvester. Corn	R. B. Robbins	407,244	July 16	1845	482	48	377
Harvester. Corn and cane	J. J. Singley	407,944	July 30	2892	753	48	584
Harvester. Corn or sorghum	J. F. Cunningham, Sr	406,266	July 2	331	91, 92	48	67
Harvester. Cotton	A. E. Hughes	409,040	Aug. 13	1279	337 338	48	933
Harvester. Cotton	S. D. T. Manning	407,360	July 23	2031	526 527	48	490
Harvester. Cotton	W. H. Knapp	410,527	Sept. 3	597	160	48	1385
Harvester-elevator	O. Cooley and E. Pridmore	408,163	July 30	3298	842	48	656
Harvester. Grain-binding	C. D. Towne	408,999	Aug. 13	1214	330	48	920
Harvester-reel	O. Cooley, E. Pridmore, and H. M. Johnston	406,502	July 9	716	197	48	151
Harvester. Self-binding	J. S. Davis	406,654	Aug. 6	693	179	48	812
Harvesters. Carrier-belt for	M. B. Stambaugh	409,377	Aug. 20	1800	473	48	1040
Harvesters. Elevator attachment for	J. S. Davis	407,734	July 23	2546	659 660	48	523
Harvesters. Grain-conveyer for	P. J. Sprague and J. M. McCraw	406,789	July 9	1154	306	48	232
Harvesters. Grain retarder and regulator for	J. W. Latimer	407,509	July 23	2379	616	48	491
Harvesters. Raising and lowering device for	C. A. Ashley	406,614	July 9	869	239 240	48	181
Harvesters. Raising and lowering mechanism for	H. F. Crandall	408,463	Aug. 6	387	101 102	48	735
Harvesters. Reel-adjusting mechanism for	G. H. Bonte	407,634	July 23	2429	629	48	500
Harvesters. Roller-tension for self-binding	J. H. Pitkin and J. F. Steward	409,063	Aug. 13	1314	347	48	930
Harvesters. Supporting-frame for self-binding	J. H. Adamson	408,398	Aug. 6	229	72	48	734
Harvesting-machine	J. A. Norton	411,728	Sept. 24	2398	635	48	1700
Harvesting machine. Corn	J. F. Steward	408,792	July 9	1160	307	48	223
Harvesting-machines. Canvas-stretcher for	J. S. Woodhouse	408,645	Aug. 6	676	176	48	809
Harvesting machines. Knotter for grain	W. A. Firatbrook	406,895	July 16	1318	345	48	273
Hasp-fasteners. Sealing device for	E. Knight	411,383	Sept. 17	1890	505	48	1652
Hasp-lock	T. J. Manning	411,387	Sept. 17	1894	506	48	1653
Hat and coat holder	J. M. Owen and J. R. Roberts	406,532	July 9	767	208	48	160
Hat and coat rack	C. E. Keator	411,663	Sept. 24	2309	612	48	1742
Hat-bodies. Finishing	C. E. Keator	411,662	Sept. 24	2307	612	48	1741
Hat-bodies. Machine for finishing							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hat-bodies. Machine for settling and planking felt	J. and O. Oldham	406,948	July 16	1395	366, 367	48	289
Hat-bodies. Machine for starting	W. P. Mahoney	406,658	July 9	957	258	48	195
Hat-brim press	W. G. Harsin	406,214	July 2	264	73	48	53
Hat-holder	E. A. Newman	411,672	Sept. 24	2322	615	48	1744
Hat-molding machine	J. Hedges	410,969	Sept. 10	1220	346	48	1525
Hat-packing support	C. S. Peck and E. S. Davis	406,111	July 2	123	36	48	96
Hat. Padded	J. H. Moyer	409,417	Aug. 20	1854	490	48	1052
Hat sizing or shrinking machine	C. H. Merritt	406,456	July 9	638	179	48	137
Hat-stay	S. T. Newman	407,108	July 16	1640	430	48	337
Hat-stay	S. T. Newman	407,109	July 16	1642	430	48	337
Hat sweat and lining. Detachable	F. W. Lewis	411,155	Sept. 17	1564	416	48	1560
Hats made from felted materials. Treating	J. H. Neave	408,925	Aug. 13	1106	292	48	990
Hats. Making	H. Partrick	408,512	Aug. 6	469	124	48	771
Hats. Rest for packing	J. W. Seymour	406,673	July 9	975	262	48	198
Hatchway	E. J. Herman	407,526	July 23	2268	587	48	467
Hatchway	E. J. Herman	408,713	Aug. 13	796	210	48	838
Hatchway	E. J. Herman	410,278	Sept. 3	217	56, 57	48	1311
Hatchway	P. O. Wirth	410,950	Sept. 10	1246	335	48	1518
Hatchway-covers, &c. Device for operating	J. E. Briggs	410,727	Sept. 10	923	248	48	1452
Hatchways. Device for operating elevator	W. Bardsley and W. K. Crofford	407,849	July 30	2746	714	48	566
Hay-binder	E. R. Kugler	409,963	Aug. 27	2685	704	48	1315
Hay-carrier	A. P. Boyer	409,164	Aug. 20	1489	394	48	980
Hay-carrier	J. A. Cross	407,994	July 30	2802	746	48	588
Hay-carrier hook	T. J. Hitchcock	408,690	Aug. 6	636	165	48	892
Hay. Device for sampling	T. B. Draper	408,223	Aug. 6	30	6	48	683
Hay-distributer	A. McCollum	409,858	Aug. 27	2514	658	48	1180
Hay-elevator	W. Rodham	409,303	Aug. 20	1686	444	48	1019
Hay-fork	J. S. Gochnauer	411,220	Sept. 17	1661	444	48	1610
Hay-fork	S. K. Lucky	409,478	Aug. 20	1938	513	48	1069
Hay-fork. Horse	H. Burgess and J. A. Helms	410,147	Sept. 3	11	4	48	1271
Hay-frame, stock-frame, and spring-seat combined	J. T. Woods	409,764	Aug. 27	2376	623, 624	48	1156
Hay-loader	H. L. Botsford	406,699	July 9	1010	272	48	205
Hay or straw burner	W. H. and G. W. Harris	407,203	July 16	1720	467	48	364
Hay-press	J. H. Gardner	410,237	Sept. 3	152	40	48	1298
Hay-press	C. D. McNeill	410,329	Sept. 3	307	79, 80	48	1328
Hay-press. Automatic	F. X. Maurer	406,455	July 9	631	177, 178, 179	48	136
Hay-presses. Anchor for portable	M. McCulla	408,924	Aug. 13	1105	291	48	899
Hay-rack	A. Rutherford and J. Ranch	407,614	July 23	2399	623	48	494
Hay-rake	L. W. Freeman	409,032	Aug. 13	1271	335	48	931
Hay-rake	W. R. Mann and G. Keith	406,363	July 2	479	133	48	96
Hay rake and loader. Combined	H. C. Long and I. B. Walker	408,494	Aug. 6	439	115	48	766
Hay-rake. Horse	H. A. Alden	406,864	July 16	1271	335	48	265
Hay-rake. Horse	S. Pettit and W. Lottridge	411,607	Sept. 24	2226	591	48	1725
Hay-rake. Side-delivery	M. Rew	410,608	Sept. 10	718	193	48	1415
Hay raking and loading device. Combined	L. H. Dwelley	408,799	Aug. 13	919	245	48	863
Hay-sling	J. G. Archer	407,316	July 23	1946	507	48	405
Hay-stacker	W. Nightingale	406,531	July 9	765	208	48	160
Hay-stacker	A. E. Platt	408,429	Aug. 6	341	88	48	745
Head-light signal attachment	W. O. Fine	406,717	July 9	1041	279	48	210
Head-protector	H. G. Morrow	411,348	Sept. 17	1845	493	48	1643
Head-rest	J. W Campbell	409,389	Aug. 20	1816	478	48	1043
Head-rest for chairs	T. J. Carrick	408,923	Aug. 13	952	253	48	870
Header and thrasher	B. Holt	408,412	Aug. 6	318	81	48	740
Heat from steam-engines and similar apparatus. Apparatus for utilizing waste	H. S. Robinson	407,838	July 30	2726	708	48	562
Heater:							
See Air-heater.							
Barrel-heater.	Hot-air and hot-water heater.						
Blast-heater.	Portable heater.						
Car-heater.	Soldering-iron heater.						
Feed-water heater.	Tank-heater.						
Flat-iron heater.	Water-heater.						
Gas-heater.	Water-circulating heater.						
Glue-heater.	Watering-tank heater.						
Grain-heater.							
Heater	C. R. Nelson	407,107	July 16	1639	429	48	337
Heating apparatus	L. Achor and T. Hamilton	411,541	Sept. 24	2120	559	48	1702
Heating apparatus	P. Fox	408,301	Aug. 6	143	36	48	707
Heating apparatus	A. N. Martin	410,844	Sept. 10	1100	296	48	1490
Heating apparatus	E. W. Olin	410,736	Sept. 10	936	251	48	1454
Heating apparatus	C. A. Sawin	408,263	Aug. 6	93	23	48	697
Heating apparatus	E. R. Ware	411,310	Sept. 17	1766	478, 479	48	1633
Heating apparatus. Device for automatically regulating combustion in hot-water and hot-air	J. C. F. Atsatt	406,018	July 2	1	1	48	3
Heating apparatus. Regulator for hot-water	E. Major	407,784	July 30	2641	684	48	548
Heating apparatus. Steam-	J. Agate	411,631	Sept. 24	2260	601	48	1732
Heating apparatus. Steam-	H. Parsons	406,950	July 16	1397	367	48	290
Heating apparatus. Water-	N. A. Boynton	408,455	Aug. 6	376	98, 99	48	753
Heating apparatus. Water-	J. Fries	408,008	July 30	2991	779, 780	48	612
Heating apparatus. Water-	L. M. Woodcock	406,685	July 9	1000	268, 269	48	202
Heating buildings. Device for	C. M. Taylor	408,444	Aug. 6	359	93, 94	48	750
Heating furnace. Sheet-	E. J. Francis and C. Banfield	406,475	Aug. 6	407	106	48	759
Heating hot-houses. Apparatus for	J. Reilly	411,531	Sept. 24	2104	535	48	1698
Heating system. Automatic return steam-	T. J. Kieley	406,220	July 2	270	75	48	54
Heddle-making machine	J. Bénazet	407,325	July 23	1963	511, 512	48	409
Hedge	P. M. Mishler	410,914	Sept. 10	1194	323	48	1507

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hedge	P. M. Mishler	411,464	Sept. 24	2012	534	48	1680
Heel	G. Schmidt	410,030	Aug. 27	2750	723	48	1238
Heel attachment	C. Grumbach	407,860	July 30	2760	718	48	560
Heel-burnishing machine	J. Knouff and S. Pope	410,838	Sept. 10	1069	282	48	1467
Heel-burnishing machine	S. Ross, Jr.	410,938	Sept. 10	1222	320	48	1513
Heel-nailing machine	F. F. Raymond, 2d	410,675	Sept. 10	894	221	48	1435
Heel-nailing machine	C. W. Glidden	409,637	Aug. 20	2175	573	48	1119
Heel-nailing machine	F. F Raymond, 2d	409,372	Aug. 20	1791	471, 472, 22, 23, 24	48	1039
Heel-nailing machine	F. F. Raymond, 2d	410,194	Sept. 3	91	23, 24	48	1296
Heel-nailing machine	F. F. Raymond, 2d	410,195	Sept. 3	94	24, 25, 26	48	1296
Heel-nailing machine	F. F. Raymond, 2d	410,196	Sept. 3	99	26	48	1296
Heel-nailing machine	F. F. Raymond, 2d	410,676	Sept. 10	895	222	48	1435
Heel-nailing machine	F. F. Raymond, 2d	410,677	Sept. 10	899	223	48	1436
Heel-nailing machine	F. F. Raymond, 2d	411,440	Sept. 24	1960	505	48	1674
Heel-sweep attachment	M. B. Heller	408,582	July 9	231	225	48	172
Heel-trimmer	M. T. Harrigan	411,121	Sept. 17	1517	404, 405, 406	48	1561
Heel-trimming machine	F. N. Ethridge	410,086	Aug. 27	2847	748	48	1245
Heel-trimming machine	C. W. Glidden	410,087	Aug. 27	2850	748, 749	48	1245
Heel-trimming machine	C. W. Glidden	410,088	Aug. 27	2853	749	48	1246
Heel-trimming machine	C. W. Glidden	410,090	Aug. 27	2856	749, 750	48	1247
Heel-trimming machine	C. W. Glidden	410,358	Sept. 3	345	91	48	1336
Heel-trimming machine	C. W. Glidden	411,655	Sept. 24	2294	609, 610	48	1739
Heeling-machine	H. C. Hart	410,832	Sept. 10	1060	290	48	1486
Heeling-machine	G. W. Johnson	411,524	Sept. 24	2095	553	48	1697
Hemp-brake	W. Hicks	409,102	Aug. 13	1379	364	48	951
High and low water alarm. Electrical	D. H. Streeper	411,220	Sept. 17	1672	447	48	1612
Hinge	S. Birdsall	406,988	July 16	1455	381	48	300
Hinge	W. J. Boda	407,600	July 30	2691	698	48	556
Hinge	F. W. Mix	407,366	July 23	2039	528, 529	48	421
Hinge	S. L. Stiles	406,242	July 2	300	83	48	60
Hinge	G. B. Webb	406,247	July 2	307	84	48	61
Hinge	W. T. Hosea	407,594	July 23	2372	614	48	489
Hinge for buckets, &c. Adjustable cover-holding	H. Eberhardt	406,412	July 2	351	154	48	110
Hinge. Gate	L. E. Harvie	406,730	July 9	1058	282	48	213
Hinge. Lock	H. W. Steiner	406,441	Aug. 6	353	92	48	748
Hinge. Lock	A. A. Page	407,606	July 23	2369	620	48	492
Hinge. Spring	J. W. Pierce	409,371	Aug. 20	1791	471	48	1038
Hinge. Spring	C. R. Cleveland	407,332	July 23	1973	514	48	410
Hinge-stay. Bag	D. L. Hill	411,194	Sept. 17	1617	429, 430, 431	48	1600
Hinges. Machine for making wire	A. E. Rider	410,025	Aug. 27	2743	721	48	1227
Hitching-post	V. A. Massoletti	406,052	July 2	43	12	48	11
Hobble for animals	J. A. Crandall	411,643	Sept. 24	2277	603	48	1735
Hobby-horse	L. L. Schubert and F. Maierhoefer	407,908	July 30	2928	762	48	601
Hod	J. B. Johnson	406,737	July 9	1069	285	48	215
Hoe. Subsoil	H. Agan	407,592	July 23	2383	603	48	482
Hog-scraper	S. Loffer	407,063	July 16	1578	414	48	324
Hog-trap	V. Angerer	406,251	July 2	311	86	48	62
Hoist	J. J. Green	406,579	July 9	827	224	48	171
Hoist	J. Olson	411,166	Sept. 17	1580	420	48	1593
Hoist. Coal	J. S. Ebert	409,737	Aug. 27	2333	614	48	1143
Hoist-operating mechanism	C. F. Batt	411,066	Sept. 17	1461	388	48	1569
Hoist. Self-locking differential	J. King	406,243	July 2	301	83	48	60
Hoists. Detaching-hook for colliery	A. E. Brown	408,456	Aug. 6	377	99	48	754
Hoisting and conveying machine	W. T. Fain	410,507	Sept. 3	579	154	48	1380
Hoisting apparatus	J. H. Montgomery	409,656	Aug. 20	2198	578, 579	48	1116
Hoisting apparatus	C. B. Payne	408,989	Aug. 13	1200	316, 317	48	917
Hoisting-gear	O. H. H. Noack	411,165	Sept. 17	1575	420	48	1593
Hoisting-machine	E. Y. Moore and H. B. Tefft	411,604	Sept. 24	2219	590, 591	48	1723
Holdback-fastening	C. Folsom	411,716	Sept. 24	2385	632	48	1758
Holdback-snap	W. Rnudquist	408,990	Aug. 13	1201	317	48	917
Holdback. Vehicle	J. B. Hain	406,043	July 2	31	9	48	6
Holdback. Vehicle	J. R. McAlister	406,936	July 16	1378	361	48	286
Holder:							
See Bag-holder.	Eraser-holder.						
Bill or tariff holder.	Eyeglass-holder.						
Book or music holder.	Fence-wire holder.						
Candle-holder.	File-holder.						
Car-coupling-link holder.	Finger-ring holder.						
Car-label holder	Harmonica-holder.						
Card-holder.	Hat-holder.						
Chalk-holder.	Hat and coat holder.						
Clothes-line holder.	Hose-holder.						
Coat-holder.	Key-holder.						
Commutator-brush holder.	Label or card holder.						
Copy-holder.	Lamp-chimney holder.						
Cuff-holder.	Lamp-shade holder.						
	Lamp-wick holder.						
	Music-book holder.						

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Holder—Continued.							
See Nipple-holder. Sash-holder.							
Opera-glass holder. Shade-holder.							
Order-holder. Shade or globe holder.							
Paper-holder. Spectacle-case holder.							
Paper-bag holder. Spool-holder.							
Paper-roll holder. Stamp-holder.							
Pen-holder. Telephone-holder.							
Photograph.c paper-roll holder. Tidy-holder.							
Photographic-plate holder. Top-lift holder.							
Photographic roll-holder. Trace-holder.							
Pipe-holder. Twine-holder.							
Rein-holder. Umbrella-holder.							
Sack-holder. Watch-movement holder.							
Sand-paper holder. Whip and rein holder.							
Work-holder. Window-holder.							
Holder for letters, papers, cards, &c	D. A. Smith	408,541	Aug. 6	520	126	48	778
Holding-bracket	W. F. Spurgin	407,122	July 16	1675	427	48	343
Hoof-clamp	A. H. Carroll	408,080	July 30	3067	809	48	632
Hoof-expander	F. K. Dowler	407,920	July 30	2706	702	48	559
Hoof-expander	B. Stewart	410,041	Aug. 27	2768	726	48	1231
Hoof-pad	A. D. Hamlin	410,093	Aug. 27	2864	751	48	1248
Hoof-pad	A. D. Hamlin	411,745	Sept. 24	2424	642	48	1766
Hook:							
See Back-band hook. Hay-carrier hook.							
Cant-hook. Snap-hook.							
Case-hook. Suspension-hook.							
Checkrein-hook. Whiffletree-hook.							
Hook	F. Splittatoser	410,461	Sept. 3	510	137	48	1368
Hook	C. H. Thurston	407,797	July 30	2609	686	48	553
Hoop:							
See Barrel-hoop. Wooden hoop.							
Truss-hoop.							
Hoop-clamp	A. R. Wells	407,559	July 23	2329	592	48	481
Hoop-cutting machine	O. Schimansky	407,841	July 30	2734	{710 711}	48	564
Hoop-driving machine	G. W. Packer	409,297	Aug. 20	1680	442	48	1017
Hopples. Cast-off device for	H. D. McKinney	408,040	July 30	3030	799	48	631
Horse-blanket	J. L. Coburn	409,392	Aug. 20	1820	479	48	1044
Horse-blanket	J. E. Foster	409,352	Aug. 20	1763	464	48	1033
Horse-boot	A. McKay	411,049	Sept. 17	1391	373	48	1556
Horse-checking device	P. A. Bowen	407,054	July 16	1542	404	48	317
Horse-detacher	D. R. Brown	411,709	Sept. 24	2376	630	48	1756
Horse-detacher	G. C. Frisbie	407,191	July 16	1702	461	48	360
Horse-detacher	C. D. Hill	410,097	Aug. 27	2871	753	48	1249
Horse-detacher	H. J. Kennedy	410,797	Sept. 10	1037	278	48	1477
Horse-disconnector. Electric	G. A. Coulter	406,929	July 9	911	246	48	187
Horse-rake	J. A. Johnson and N. O. Starks	407,215	July 16	1798	471	48	367
Horse-tail band	A. W. Cash	406,123	July 2	142	42	48	30
Horses' feet. Device to prevent interference of	C. F. Powell	407,113	July 16	1649	432	48	339
Horses' feet. Poultice or sponge holder for	C. P. Dacey	409,633	Aug. 20	2170	571	48	1112
Horses from kicking. Device for preventing	H. W. Sisson	411,513	Sept. 24	2079	540	48	1694
Horseshoe	W. E. Carmont	410,781	Sept. 10	1011	271	48	1471
Horseshoe	W. Ziedler	410,625	Sept. 10	748	203	48	1421
Horseshoe-bar	H. C. Magnusson	409,850	Aug. 27	2506	653	48	1178
Horseshoe-bending machine	W. Eynon and W. Seaman	406,713	July 9	1037	{277 278}	48	209
Horseshoe-blank-cutting machine	E. Firth	408,226	Aug. 6	36	9	48	685
Horseshoe-blanks. Roll for rolling	W. Eynon and W. Seaman	406,711	July 9	1035	277	48	209
Horseshoe-calk. Removable	J. E. Lesueur	408,963	Aug. 13	1193	315	48	916
Horseshoe-calks. Shield for	S. T. Bane	407,506	July 23	2246	580	48	463
Horseshoe-machine	J. H. Taylor and C. Povey	408,329	Aug. 6	184	47	48	715
Horseshoe-nails. Machine for forging	D. F. Williams	409,890	Aug. 27	2559	{669 670}	48	1190
Horseshoe-nails. Manufacturing	H. A. Wills	410,624	Sept. 10	747	203	48	1421
Horseshoes. Blacksmith's device for finishing	A. R. Murphy	408,504	Aug. 6	457	120	48	769
Horseshoes. Plant of machinery for the manufacture of	W. Eynon and W. Seaman	406,712	July 9	1036	277	48	209
Horseshoes. Removable calk for	J. Neuss, Sr	410,008	Aug. 27	2720	715	48	1222
Hose-coupling	W. W. Hanscom	408,409	Aug. 6	313	79	48	730
Hose-coupling	C. Parent	408,256	Aug. 6	82	19	48	695
Hose-coupling	J. Pringle	408,434	Aug. 6	346	90	48	747
Hose-coupling	S. W. Ravenel	409,066	Aug. 13	1320	348	48	940
Hose-coupling	C. L. Smith	409,512	Aug. 20	1985	524	48	1078
Hose-coupling	G. B. Williams	407,456	July 23	2183	563	48	449
Hose coupling. Brake	E. A. Leland	408,116	July 30	3166	827	48	645
Hose-elevator over railway-tracks	T. McHenry	411,725	Sept. 24	2394	634	48	1759
Hose-holder	W. C. Willits	408,058	July 30	3057	800	48	626
Hose. Knit fabric for	H. F. Herkner	408,384	Aug. 6	265	66	48	731
Hose or pipe coupling	O. P. Hix	410,417	Sept. 3	439	116	48	1355
Hose, pipes, &c. Coupling for	G. A. and D. R. Stedman	406,964	July 16	1417	372	48	293
Hose reel or support. Fire	C. R. Robinson	407,118	July 16	1657	433	48	340
Hose-supporter	M. W. Bruce	407,810	July 30	2692	709	48	557
Hot-air and hot-water heater	F., M. J., and H. B. Farquhar	409,740	Aug. 27	2338	{614 615}	48	1149
Hot-air furnace	J. Baker	410,281	Sept. 3	186	49	48	1305
Hot-water generator	P. G. Van Wie	407,878	July 30	2791	736	48	575
House:							
See Bee-house. Poultry-house.							
Boiler-house. Smoke-house.							
Hub	E. P. Gaines and W. P. Orr	407,342	July 23	1994	518	48	414
Hub-attaching device	J. H. Lyles and E. C. Ward	410,983	Sept. 10	1300	331	48	1529

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hub. Vehicle	J. M. Lingle	408,730	Aug. 13	817	215	48	942
Hub. Vehicle	L. M. Miller	409,054	Aug. 13	1300	343	48	996
Hub. Vehicle	T. J. Reid	406,770	July 9	1193	299	48	227
Hub. Vehicle	E. L. Rowe	410,026	Aug. 27	2744	721	48	1227
Hydrant	J. Schuster	406,149	July 2	176	51	48	36
Hydrant. Self-closing	C. G. Ette	408,091	July 30	3102	{812 813}	48	634
Hydraulic elevator	G. W. Clayton	410,583	Sept. 3	604	162	48	1387
Hydraulic elevator	W. F. Toothaker	408,149	July 30	3206	837	48	652
Hydraulic jack	F. I. Joyce	407,217	July 16	1801	471	48	368
Hydraulic packing-presses. Apparatus for	E. L. Bellhouse	406,193	July 2	230	65	48	47
Hydraulic press	C. D. Davis	408,653	Aug. 6	691	{178 179}	48	811
Hydraulic presses. Packing-disk for	E. H. Garcin	407,478	July 23	2208	589	48	455
Hydrocarbon-burner	S. Bennett	408,284	Aug. 6	119	30	48	703
Hydrocarbon-burner	C. H. Phelps and E. A. Edwards	407,660	July 23	2488	643	48	511
Hydrocarbon-burner	E. Rost	411,200	Sept. 17	1713	458	48	1630
Hydrocarbon-engine	M. V. Schilts	406,540	July 9	778	211	48	163
Hydrocarbon fuel. Burner and burner-tank for	J. H. Bullard	407,639	July 23	2436	631	48	501
Hydrocarbons as fuel. Apparatus for burning	A. G. Purchas and J. E. Friend	410,193	Sept. 3	89	21	48	1285
Ice-breaker	J. H. Bullard	407,638	July 23	2434	631	48	501
Ice-cream freezer	A. H. Austin	406,694	July 9	1012	271	48	205
Ice-cream freezer	E. L. Drake	407,064	July 16	1555	406	48	319
Ice-cream freezers. Self-sealing bung for	C. G. Shepard and P. Adams	410,772	Sept. 10	998	268	48	1467
Ice-creeper	M. R. Maher	410,980	Sept. 10	1040	278	48	1477
Ice-creeper	B. Pope	407,448	July 23	2171	550	48	447
Ice-creeper fastening	C. N. Shannon	411,519	Sept. 24	2078	549	48	1694
Ice-machines. Ammonia-condenser for	W. W. and E. F. Preston	410,331	Sept. 3	310	80	48	1329
Ice-scraper	P. Steck	409,072	Aug. 13	1328	350	48	941
Incandescent lights and other electrically-controlled devices. Safety-switch for	J. E. Robertson	408,853	Aug. 13	998	264	48	878
Incrustation in steam-boilers. Means for preventing	O. S. Bussmann	411,423	Sept. 24	1958	520	48	1679
Incrustation-preventive	S. G. Cabell	409,136	Aug. 13	1434	377	48	998
Incrustation-preventive	D. R. Boogher	406,698	July 9	1016	.....	48	205
Incrustation-preventive	D. R. Boogher	411,320	Sept. 17	1803	.....	48	1636
Incrustation-preventive	T. Harris and C. Day	410,516	Sept. 3	584	.....	48	1383
Index	H. A. Stephenson	408,361	Aug. 6	230	58	48	724
Index-circular	R. R. Williams	411,315	Sept. 17	1796	481	48	1635
Index device. Ledger-	K. Buland	411,577	Sept. 24	2175	576	48	1712
Indicator:							
See Barber-shop indicator. Railway-train indicator.							
Cash-indicator. Roll-holder indicator.							
Electrical indicator. Station and street indicator.							
Elevator alarm-indicator. Street or station indicator.							
Gas-pressure indicator. Thermometric indicator.							
Time-indicator.							
Time and wage indicator.							
Indicator of motion and speed of steam and like motors	E. Lambinet	406,222	July 2	272	75, 76	48	54
Indicator to prevent overflow of liquids in closed vessels	W. S. Stuyvesant	409,339	Aug. 20	1742	458	48	1029
Induction-coil	E. Thomson	409,714	Aug. 27	2305	606	48	1142
Induction-coil. Coin-operated	J. H. Elfering	409,736	Aug. 27	2335	614	48	1148
Influence-machine	R. Voss	410,053	Aug. 27	2788	734	48	1234
Infusions or solutions. Apparatus for making	C. Jones	411,637	Sept. 17	1375	{368 369}	48	1533
Inhaler	H. T. Welch	406,118	July 2	137	40	48	29
Inhaler-mask	E. H. Hilchen	407,527	July 23	2269	588	48	468
Injector	J. R. Goehring	407,197	July 16	1768	464	48	362
Injector	L. E. Hogue	406,715	Aug. 13	797	210	48	836
Injector	L. G. Lange	409,046	Aug. 13	1290	340	48	934
Injector for steam-boilers	L. E. Hogue	406,714	Aug. 13	796	210	48	836
Injector. Steam	T. J. Sweeney	407,499	July 23	2236	577	48	461
Ink-grinding slab	W. X. Stevens	408,143	July 30	3198	835	48	651
Ink or mucilage vessel	W. T. Shaw	411,356	Sept. 17	1854	496	48	1645
Inkstand	G. A. Fifield	409,351	Aug. 20	1761	464	48	1033
Inkstand	R. S. Thain	410,219	Sept. 3	130	33	48	1293
Inkstand. Pocket	E. Ehnlich	411,021	Sept. 17	1349	363	48	1548
Insect-destroyer	G. S. Chase	407,574	July 23	2345	607	48	484
Insect-destroyers. Can for distributing	R. S. Peyton	408,514	Aug. 6	473	124	48	771
Insect-screen	J. W. Boughton	411,640	Sept. 24	2278	604	48	1734
Insecticide	B. Smith and F. Howard	410,038	Aug. 27	2761	.....	48	1230
Insecticide	R. M. Stephens	408,904	Aug. 13	1078	.....	48	894
Insulated electric wire	H. W. Johns, Jr	406,984	July 2	357	97	48	72
Insulated nippers and cutting-instrument	F. M. Casey	409,097	Aug. 13	1370	361	48	949
Insulating composition	F. Marquard	407,896	July 30	2817	.....	48	580
Insulating composition	F. Marquard	407,938	July 30	2882	.....	48	592
Insulating coupling for pipes	E. E. Erickson	408,600	Aug. 6	606	157	48	795
Insulating material into underground conduits. Introducing molten	D. Brooks, Jr	408,574	Aug. 6	568	149	48	780
Insulating-plate for secondary batteries	S. C. C. Currie	408,367	July 2	333	92	48	67
Insulation for electric conductors	C. T. Snedeker	408,901	Aug. 13	1075	283	48	893
Insulator	W. M. Davis	410,637	Sept. 10	768	208	48	1425
Insulator. Electric	L. McCarthy	411,749	Sept. 24	2428	643	48	1766
Insulator for electric wires	J. C. Gill	406,041	July 2	28	8	48	8
Insulator. Line-wire	C. G. Graham	408,383	Aug. 6	264	66	48	730
Integrating apparatus	H. Hollerith	408,106	July 30	3135	821	48	641
Intestine-cleaner	W. Bachnick	407,505	July 23	2244	{579 580}	48	462
Invalid-chair	L. M. Hoffman	410,591	Sept. 10	691	185	48	1410
Invalid-chair	W. Smith	405,313	July 2	406	{110 111}	48	81

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Invalid elevator and conveyer	T. L. Holton	408,716	Aug. 13	798	211	48	838
Iron:							
See Collar-iron. Soldering-iron. Curling-iron. Tuyere-iron. Sad-iron.							
Iron in blast and puddling furnaces. Compound for purifying	N. Booth, Sr	407,921	July 30	2860	.....	48	587
Iron into malleable iron or steel. Converting crude	G. L. Robert	407,117	July 16	1656	433	48	340
Iron. Making strap or hoop	D. Larkin	409,047	Aug. 13	1291	341	48	935
Iron or steel. Converting crude iron into malleable	J. W. Bookwalter	411,418	Sept. 24	1949	519	48	1668
Iron or steel. Converting crude iron into malleable	J. W. Bookwalter	411,419	Sept. 24	1952	519	48	1669
Iron. Refining	J. W. Bookwalter	411,417	Sept. 24	1947	518	48	1668
Ironing-board	P. Hires	407,523	July 23	2270	588	48	468
Ironing-board	J. D. Smith	409,515	Aug. 20	1987	525	48	1079
Ironing-board and table	D. Fetters	409,047	Aug. 27	2638	692	48	1207
Ironing-table and step-ladder	S. L. Strong	409,521	Aug. 20	1996	527	48	1080
Ironing-table. Folding	J. D. Pace	407,790	July 30	2652	686	48	550
Ivory, &c. Substitute for	F. Greening	408,344	Aug. 6	207	.....	48	730
Jack:							
See Boot-jack. Lifting-jack. Carriage-jack. Thill-coupling jack. Floor-jack. Wagon-jack. Hydraulic jack.							
Jacquard apparatus	S. Holdsworth	411,338	Sept. 17	1829	489	48	1640
Jail. Revolving	E. Rowe	407,677	July 30	2790	735, 736	48	575
Jar:							
See Self-sealing jar.							
Jars. Forming the necks of fruit-	C. F. and C. Leng	411,043	Sept. 17	1383	371	48	1555
Jaw-trap	T. Donlon	406,202	July 2	249	69	48	50
Joiner's set	H. Focken	408,473	Aug. 6	405	105	48	759
Joint:							
See Ball-and-socket joint. Pipe-joint. Rail-joint. Electric-main joint. Railway-rail joint. Extension-joint. Universal joint. Lock-joint							
Journal-box	T. E. Hayes and A. J. Read	408,659	Aug. 6	699	181	48	813
Journal-box. Anti-friction	J. Brewer	408,288	Aug. 6	125	31	48	704
Journal-box. Anti-friction	W. S. Sharpneck	409,307	Aug. 20	1698	446	48	1020
Journal-box for planing-machines	E. F. Autenrieth	408,421	Aug. 13	950	253	48	870
Journal-boxes. Cage for	W. S. Sharpneck	409,308	Aug. 20	1699	446	48	1021
Jug-cover	S. J. Scott	406,238	July 2	297	82	48	59
Jug-top	A. W. Paull	409,864	Aug. 27	2522	660	48	1182
Juice-extractor	C. H. Reed	411,610	Sept. 24	2221	593	48	1736
Jute-slivering machines. Making rollers for	H. P. Garland	407,194	July 16	1764	462	48	361
Kaleidoscope	J. W. Lovibond	407,937	July 30	2881	750	48	592
Kettle. Steam-	J. Petterson	410,852	Sept. 10	1112	299	48	1492
Kettles, pans, &c. False bottoms for boiling	T. A. Kimmell	410,348	Sept. 3	169	14	48	1301
Key:							
See Telegraph-key.							
Key-fastener	E. C. Townsend	411,076	Sept. 17	1442	383	48	1566
Key-holder	C. E. Van Norman	409,255	Aug. 20	1613	427	48	1005
Key-hole guard	F. Eiche	410,506	Sept. 3	571	154	48	1320
Key-seat-cutting machine	O. C. and A. M. Little	408,525	July 9	756	206	48	158
Keying wheels	H. Grafton	408,835	Aug. 13	970	257	48	873
Kiln:							
See Brick-kiln. Limekiln.							
Kiln for burning bone-black	A. Weber	407,976	July 30	2937	765	48	603
King-bolt socket	W. S. Reeder	410,853	Sept. 10	1113	300	48	1492
Kitchen-cabinet	G. E. Miller	408,125	July 30	3177	831	48	647
Kitchen-cabinet	S. and L. Pecord	406,766	July 9	1118	296	48	226
Kitchen-cabinet	J. M. Skipper	406,543	July 9	782	212	48	163
Kite-cord stick	C. Schultze	406,672	July 9	974	262	48	199
Knife:							
See Corn-cutting knife. Gage-knife. Drawing-knife. Pocket-knife.							
Knife-cleaner	H. E. Fowler	409,742	Aug. 27	2341	615	48	1150
Knife for cutting corn, &c	J. W. Calef	407,571	July 23	2343	606	48	484
Knitted drawers. Making blanks for	D. P. Mills	410,600	Sept. 10	701	187	48	1412
Knitted fabric	H. Pulster	409,425	Aug. 20	1865	492	48	1054
Knitted web. Narrowed	R. W. Scott	410,031	Aug. 27	2751	723	48	1222
Knitted webs. Narrowing	R. W. Scott	410,858	Sept. 10	1119	301	48	1493
Knitting-machine	J. S. Crane	410,495	Sept. 3	556	149	48	1377
Knitting-machine	E. Murby	407,960	July 30	2917	760	48	599
Knitting-machine	A. E. Sanborn and O. L. Merrow	411,303	Sept. 17	1775	474, 475	48	1631
Knitting-machine	R. W. Scott	410,859	Sept. 10	1121	301, 302	48	1493
Knitting-machine and needle therefor	R. W. Scott	407,616	July 23	2401	623	48	495
Knitting machine. Circular-	C. E. Bean	407,917	July 30	2853	742, 743, 744	48	586
Knitting machine. Circular-	W. D. Butz	408,952	Aug. 13	1145	362, 363	48	908
Knitting machine. Circular-	W. L. and A. T. Cathcart	410,071	Aug. 27	2808	740, 741, 742, 743	48	1238
Knitting machine. Circular-	J. L. Eck	410,505	Sept. 3	569	153, 154	48	1320
Knitting machine. Circular-	C. Frederick	408,170	July 30	3235	844, 845	48	658

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Knitting machine. Circular-	C. Frederick and J. C. Egley	408,007	July 30	2989	779	48	612
Knitting machine. Circular-	E. E. Kilbourn	408,110	July 30	3144	822, 823	48	642
Knitting machine. Circular-	E. E. Kilbourn	408,111	July 30	3150	822, 823, 824, 825	48	643
Knitting machine. Circular-	E. E. Kilbourn	408,180	July 30	3248	848, 849, 850, 851	48	661
Knitting machine. Circular-	E. E. Kilbourn	408,181	July 30	3262	851, 852, 853	48	662
Knitting machine. Circular-	J. Polleycutt	410,854	Sept. 10	1114	300	48	1492
Knitting machine. Circular-	J. H. Reed	408,582	Aug. 6	483	127	48	774
Knitting machine. Circular-	J. H. Reed	408,583	Aug. 6	485	128	48	774
Knitting machine. Circular-	H. C. Rightmire	410,118	Aug. 27	2906	762, 763, 764	48	1255
Knitting machine. Circular-rib-	R. Schofield	411,685	Sept. 24	2341	619	48	1748
Knitting machine. Circular warp	W. Start	410,040	Aug. 27	2765	726, 727, 728	48	1231
Knitting machine for making figured knit goods. Straight-	E. Tiffany	408,271	Aug. 6	102	25, 26	48	699
Knitting machine. Straight-	G. Templeman	411,113	Sept. 17	1505	399, 400	48	1578
Knitting machine. Straight-	F. Wilcomb	408,560	Aug. 6	549	144	48	784
Knitting machine. Straight-	F. Wilcomb	408,561	Aug. 6	551	145	48	785
Knitting machine. Straight-	F. Wilcomb	408,562	Aug. 6	553	145	48	785
Knitting-machine. Combined thread-guide and latch-opener for	H. A. Church	406,626	July 9	907	245	48	186
Knitting machines. Falling bar for straight-	E. Tiffany	408,363	Aug. 6	223	59	48	724
Knitting-machines. Looping attachment for	E. Murby	409,856	Aug. 27	2512	657	48	1180
Knitting-machines. Needle-picking tool for	R. W. Scott	407,125	July 16	1666	435	48	349
Knitting-machines. Needle-picking tool for	R. W. Scott	407,126	July 16	1667	436	48	342
Knitting machines. Sinker-supporting device for straight-	E. Tiffany	408,270	Aug. 6	101	25	48	699
Knitting machines. Welt or hem forming device for straight-	E. Tiffany	408,272	Aug. 6	103	26	48	700
Knob alarm. Door-	H. R. Stickney and G. W. Way	409,762	Aug. 27	2373	622	48	1155
Knob attachment	F. A. Hollenbeck	407,661	July 23	2464	638	48	506
Knob attachment	J. Schade	407,902	July 30	2896	735	48	582
Knob attachment. Door-	C. E. Steller	410,216	Sept. 3	127	32	48	1293
Knob. Door-	C. O. Case	409,010	Aug. 13	1274	326	48	963
Knobs. Making parts of hollow door-	C. O. Case	407,817	July 30	2701	701	48	558
Knockdown bench for dogs, &c	C. A. Cruft	408,464	Aug. 6	389	102	48	756
Knockdown table	E. A. and C. P. Cornillie	409,930	Aug. 27	2611	683	48	1201
Label or card holder	J. J. Gould	408,009	July 30	3124	818	48	638
Labeling machine. Can-	M. B. Chambers	408,580	Aug. 6	577	150, 151	48	790
Lace-curtains. Device for stretching and drying	D. Eastman	410,790	Sept. 10	1027	276	48	1474
Lace or other fabrics. Machine for finishing	L. Lindley	408,492	Aug. 6	432	113, 114	48	764
Ladder	W. G. Sickles	409,711	Aug. 27	2302	605	48	1142
Ladder and clothes-rack combined. Step-	G. R. Richardson	411,472	Sept. 24	2027	536	48	1683
Ladder. Extensible	J. B. Parry	406,765	July 9	1116	296	48	225
Ladder. Extension-	C. Frizell	408,610	Aug. 6	617	159, 160	48	798
Ladder. Extension-	G. L. Wright	408,281	Aug. 6	115	29	48	702
Ladder. Extension step-	W. Soper	410,612	Sept. 10	727	196	48	1417
Ladder. Fire-	W. Winkless	409,722	Aug. 27	2314	608	48	1144
Ladder, ironing-board, and stand. Combined step-	R. Hoover	406,734	July 9	1063	283	48	214
Ladder platform-bracket	L. B. Laskey	407,079	July 16	1574	413	48	323
Ladder. Sectional	C. C. Pierson	411,730	Sept. 24	2403	636	48	1761
Ladles. Nozzle for steel	C. S. Price	410,192	Sept. 3	86	21	48	1295
Lamp	A. Annibale	406,983	July 16	1447	379	48	208
Lamp	C. D. Aria	411,318	Sept. 17	1801	481	48	1635
Lamp	W. Benner	407,153	July 16	1696	442, 443	48	347
Lamp	J. E. Bissell	411,212	Sept. 17	1650	439	48	1607
Lamp	T. Gordon	409,353	Aug. 20	1764	464, 465	48	1033
Lamp	F. Rhind	409,706	Aug. 27	2296	603	48	1141
Lamp	H. E. Shaffer	407,969	July 30	2929	763	48	602
Lamp	C. P. Thayer	411,771	Sept. 24	2459	651	48	1773
Lamp	W. H. Wilder	409,086	Aug. 13	1350	357	48	946
Lamp. Arc	F. R. Boardman	411,088	Sept. 17	1464	389	48	1570
Lamp. Arc	R. D. Carson	409,390	Aug. 20	1817	478, 479	48	1044
Lamp. Arc	F. P. Cox	411,713	Sept. 24	2389	632	48	1757
Lamp. Arc	J. A. Lighthipe	408,887	Aug. 13	1053	278	48	829
Lamp. Argand	L. J. Atwood and F. W. Tobey	411,517	Sept. 24	2065	551	48	1695
Lamp. Argand	W. C. Homan	408,306	Aug. 6	150	38	48	706
Lamp attachment	C. S. Walker	409,887	Aug. 27	2355	609	48	1149
Lamp attachment. Miner's	W. C. Rockwell	410,502	Sept. 3	645	172	48	1395
Lamp bracket. Electric-	J. S. Merrill	409,852	Aug. 27	2508	656	48	1179
Lamp-burner	W. Notley	409,614	Aug. 20	2139	561, 562	48	1106
Lamp-burner	L. R. Oakes	408,510	Aug. 6	467	123	48	770
Lamp-burner. Argand	F. Rhind	407,492	July 23	2229	575	48	459
Lamp-burner attachment	W. Holmes	409,401	Aug. 20	1834	483	48	1047
Lamp. Car-vestibule	A. Rapp	407,611	July 23	2395	622	48	494

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Lamp. Central-draft	A. W. Paull	409,863	Aug. 27	2521	660	48	1182
Lamp. Central-draft	E. H. Peck	408,135	July 30	3186	833	48	649
Lamp-chimney holder	F. Hanson	410,548	Sept. 3	623	167	48	1391
Lamp. Electric-arc	W. H. Barker	408,948	Aug. 13	1139	301	48	107
Lamp. Electric-arc	R. L. Cohen	410,493	Sept. 3	554	148 / 149	48	1377
Lamp. Electric-arc	F. E. Kinsman	411,267	Sept. 17	1751	466	48	1627
Lamp-extinguisher	W. Notley	407,232	July 16	1895	477	48	373
Lamp filaments. Manufacture of incandescent	T. D. Bottome	408,286	Aug. 6	122	30	48	703
Lamp. Focusing arc	J. J. Wood	407,915	July 30	2846	741 / 742	48	585
Lamp. Hanging	W. S. McLewee	406,530	July 9	764	207	48	160
Lamp. Incandescent	C. A. Backstrom	406,498	July 9	711	196	48	150
Lamp. Incandescent gas	H. J. Bell	408,068	July 30	3073	844	48	629
Lamp. Incandescent gas	H. J. Bell	408,069	July 30	3075	844	48	629
Lamp. Incandescent gas	H. J. Bell	408,072	July 30	3079	845	48	630
Lamp. Incandescent gas	H. J. Bell	409,554	Aug. 20	2039	536	48	1068
Lamp. Incandescent gas	C. A. von Welsbach	409,530	Aug. 20	2008	530	48	1062
Lamp. Inverted gas	D. W. Sugg	407,622	July 23	2407	625 / 626 / 673 / 674	48	496
Lamp. Moderator or carcel	C. D. Aria	409,899	Aug. 27	2572	673	48	1193
Lamp or lantern lighting device	L. Gerhardt	410,238	Sept. 3	154	40	48	1298
Lamp. Regenerative	J. F. E. W. Schmidt	408,197	July 30	3289	859	48	666
Lamp. Revolving-stand	J. Kintz	409,154	Aug. 13	1459	385	48	967
Lamp-shade holder	C. G. Perkins	411,107	Sept. 17	1495	396	48	1576
Lamp socket. Incandescent-electric	J. W. Collier	409,929	Aug. 27	2060	533	48	1201
Lamp-standard	O. Luetke	409,214	Aug. 20	1553	411	48	993
Lamp-standard	C. Maschmeyer	406,107	July 2	119	34	48	25
Lamp. Standard	J. C. Miller	407,100	July 16	1627	426	48	334
Lamp. Street	W. G. Oliver	408,988	Aug. 13	1199	316	48	917
Lamp support. Electric	A. T. Thompson	407,973	July 30	2933	764	48	603
Lamp. Vapor	P. J. Fitzgerald	410,407	Sept. 3	422	112	48	1352
Lamp. Velocipede	H. Lucas	407,409	July 23	2101	543	48	433
Lamp-wick holder	G. E. Messer	408,313	Aug. 6	158	40	48	710
Lamps above streets. Structure for supporting	J. S. Adams	410,626	Sept. 10	749	203	48	1421
Lamps. Air-distributer for Argand	J. Jauch	409,466	Aug. 20	1924	500	48	1067
Lampe. Burner for central-draft	Z. Davis	408,592	Aug. 6	594	154	48	793
Lampe. Filament for incandescent electric	A. F. Oppermann	408,740	Aug. 13	828	218 / 219	48	844
Lamps. Manufacture of incandescent electric	T. A. Edison	406,130	July 2	150	44	48	32
Lamps. Manufacture of incandescent electric	T. A. Edison	411,018	Sept. 17	1346	362	48	1548
Lamps. Manufacture of incandescent electric	T. A. Edison	411,019	Sept. 17	1347	362	48	1548
Lamps. Measuring apparatus for filling street	E. W. Cooke	411,375	Sept. 17	1478	502	48	1620
Lamps or lanterns. Signal attachment for	A. L. France and A. E. Yelton	409,320	Aug. 20	1714	450	48	1024
Lampe. Shield and reflector for incandescent electric	G. Gibbs	408,478	Aug. 6	411	107	48	760
Lampe. Suspension device for	W. C. Homan	408,197	July 30	3138	821	48	641
Lampe. Suspension device for	W. C. Homan	408,575	Aug. 13	1183	312	48	914
Lampe. Wick-raiser for central-draft	E. L. Bryant	409,910	Aug. 27	2585	676	48	1195
Lampe. Wick-raiser for central-draft	Z. Davis	408,591	Aug. 6	593	154	48	793
Lance. Tubular	W. Lorenz	406,526	July 9	759	206	48	159
Land-roller	J. M. Fellows	407,520	July 23	2260	584 / 585	48	465
Lantern	H. G. Griffith	408,614	Aug. 6	622	161	48	799
Lantern	O. Haudeland	411,222	Sept. 17	1662	444	48	1610
Lantern	A. M. Schilling	409,506	Aug. 20	1977	522	48	1077
Lantern	W. C. Stewart and J. A. Blankley	410,943	Sept. 10	1234	333	48	1516
Lantern	O. D. Woodruff	408,783	Aug. 13	891	237	48	858
Lantern attachment	J. W. Feeny	411,218	Sept. 17	1658	443	48	1609
Lantern for advertising or other purposes. Magic	C. C. Bruckner and H. W. Thornton	410,135	Aug. 27	2932	770	48	1260
Lantern for varnishers of brewer's vats. Safety	W. Bregler	409,007	Aug. 13	1227	325	48	922
Lantern-guard frame	A. W. Paull	411,676	Sept. 24	2327	616	48	1745
Lantern. Magic	J. B. Colt	411,092	Sept. 17	1471	390	48	1572
Lantern or illuminator. Lawn	J. H. Sprague	410,613	Sept. 10	728	196	48	1417
Lantern. Signal	A. R. Gibson	407,436	July 23	2151	556	48	443
Lantern. Signal	E. F. Hopkins	408,803	Aug. 13	926	247	48	864
Lantern. Signal	J. Wall	409,532	Aug. 20	2011	530	48	1063
Lantern. Tubular	O. M. Smith	410,459	Sept. 3	508	136	48	1369
Lantern. Tubular	O. M. Smith	410,460	Sept. 3	509	136	48	1368
Lantern. Tubular	J. B. Stetson	409,712	Aug. 27	2303	605	48	1142
Lantern. Tubular	O. D. Woodruff	408,782	Aug. 13	889	237	48	857
Lap-ring	A. T. Foster	407,584	July 23	2361	611	48	487
Last	E. W. Arnold	409,551	Aug. 20	2036	537	48	1068
Last	B. W. Koopman	410,528	Sept. 3	599	160	48	1396
Last	F. F. Martin	407,737	July 23	2566	664	48	527
Last	E. S. Smith	411,022	Sept. 24	2248	597	48	1720
Last. Adjustable	A. M. Leighton	407,080	July 16	1574	413	48	323
Last. Boot or shoe	A. M. Leighton	407,081	July 16	1576	413	48	324
Lasting-machine	S. W. Paine	406,763	July 9	1114	296	48	225
Latch	R. H. Barber	406,019	July 2	2	1	48	3
Latch	J. Brown	410,728	Sept. 10	926	248	48	1452
Latch	J. Hope, Jr	406,648	July 9	944	255	48	193
Latch	W. Kneen	407,405	July 23	2097	542	48	433
Latch	P. May	407,227	July 16	1819	476	48	371
Latch	D. J. and D. G. Millemann	406,588	July 9	839	227	48	174
Latch	C. C. Van Brocklin	408,551	Aug. 6	541	142	48	763
Latch	E. R. Wetherell	407,268	July 16	1861	490	48	383
Latch. Gate	J. G. Dalebohn	406,931	July 2	25	7	48	8
Latch. Gate	M. M. Moore	409,797	Aug. 27	2433	638	48	1166
Latch. Gate	C. M. and J. H. Sanders	410,934	Sept. 10	1224	330	48	1514
Latch. Gate	J. J. Wright	406,485	July 9	708	195	48	149
Latch handle. Door	H. Hoffman, Jr	408,974	Aug. 13	1182	312	48	914
Lathe-carrier	J. M. Klein	407,666	July 23	2470	639	48	507

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Lathe-dog	C. W. Shartle	411,620	Sept. 24	2246	597	48	1729
Lathe having a supplemental drill-spindle. Turret	J. Hartness	409,786	Aug. 27	2415	631 / 632	48	1162
Lathe-spindle brake	E. P. Bullard	408,291	Aug. 6	130	32	48	705
Lathe. Turret	C. L. Libby	406,413	July 2	553	154 / 155 / 156	48	111
Lathes. Center-rest for	J. Klingensmith	410,901	Sept. 10	1182	309	48	1505
Lathes. Feeding mechanism for	H. M. Darling	409,456	Aug. 20	1908	505 / 506	48	1063
Lathes. Tool holder and rest for	L. S. Springer	407,972	July 30	2932	763	48	602
Lathes. Tool-post for	J. A. Myers	409,484	Aug. 20	1949	516	48	1071
Lathing. Metal	I. S. Elkins	408,509	Aug. 6	605	156	48	795
Laundry-iron attachment	J. J. Weber	407,557	July 23	2326	601	48	490
Laundry-machine	A. R. Gustafson	407,199	July 16	1771	464 / 465	48	362
Laundry-press	A. Otte	408,132	July 30	3183	832	48	648
Laundry work. Embossing device for	E. Holm, M. Joransson, and E. Anderson	410,351	Sept. 3	627	168	48	1391
Leaching tan-bark	E. F. Smith	409,876	Aug. 27	2539	665	48	1186
Lead and base bullion from slag, &c. Separating	W. B. Devereux	407,337	July 23	1985	516	48	412
Lead. Apparatus for comminuting and corroding	E. A. Webster and L. O. Gibbe	406,378	July 2	499	130	48	99
Lead or bullion in smelting from slags, mattes, or speiss. Apparatus for separating	W. B. Devereux	407,335	July 23	1979	515	48	412
Lead press	H. B. Cobb	408,375	Aug. 6	252	63	48	728
Lead-press	H. B. Cobb	408,377	Aug. 6	256	64	48	728
Lead-smelting. Apparatus for separating slags, mattes, and speiss and lead or base bullion in	W. B. Devereux	407,336	July 23	1982	516	48	412
Leaf-turner	M. Botello	410,486	Sept. 3	542	146	48	1375
Leaf-turner	C. P. Brown	410,779	Sept. 10	1008	270	48	1470
Leaf-turner	T. J. Parkinson	409,370	Aug. 20	1789	471	48	1038
Leaf-turner	A. Sommer	408,360	Aug. 6	228	.....	48	724
Leather and making the same. Water-proof	L. Rappe	409,336	Aug. 20	1738	.....	48	1028
Leather and preparing the same. Chrome-tanned	H. A. Webster	407,310	July 16	1936	504	48	395
Leather-cleaning machine	W. E. Harter	406,901	July 16	1325	.....	48	275
Leather. Dressing	G. Langenhagen	406,102	July 2	113	.....	48	24
Leather-polish	W. Schweickhardt	408,896	Aug. 13	1069	281	48	892
Leather-working machine	W. L. Snyder	409,311	Aug. 20	1702	447	48	1021
Leg. Artificial	J. T. Sykes	406,861	July 9	1265	333	48	252
Leg. Artificial	J. L. Easley	410,749	Sept. 10	1026	276	48	1474
Lemon-juice extractor	J. P. Manny	406,121	July 30	3173	830	48	646
Lemon-juice extractor	C. Engel	407,433	July 23	2147	554	48	442
Lemon-squeezer	J. J. Rausch	407,990	July 30	2963	770	48	607
Lens-blocking	L. Ehrlich	409,027	Aug. 13	1266	343	48	930
Letter-box	E. D. Moore and T. C. Chappell	407,870	July 30	2775	721	48	572
Letter-box	E. M. Noble	407,303	July 16	1929	502	48	393
Letter-box	D. Rosenthal	410,379	Sept. 3	375	100	48	1343
Letter-box	M. J. Dolphin	408,405	Aug. 6	307	78	48	738
Letter feeding and separating machine	H. W. Campbell and J. P. Davies	411,758	Sept. 24	2444	646	48	1760
Letter-press	H. A. and H. A. House, Jr	409,356	Aug. 20	1767	465 / 466	48	1034
Leveling attachment for tripod-heads	W., H., and J. Chambers	406,793	Aug. 13	908	243	48	861
Life-boats, &c. Collapsible bulwark for	A. B. Bird	408,686	Aug. 13	746	195	48	828
Life-insurance policy	E. Maynard	411,161	Sept. 17	1576	419	48	1592
Life-line. Floating	S. M. y Valdivielso	407,625	July 23	2412	626	48	496
Life-preserving buoyant bag							
Lifter: *See* Transom-lifter. Wagon-body lifter.							
Lifter for jars, bottles, or other articles	C. F. Sautter	407,254	July 16	1861	285	48	379
Lifting-jack	W. R. Andrews	406,669	July 9	1006	270	48	204
Lifting-jack	H. H. Clever	408,373	Aug. 6	248	63	48	727
Lifting-jack	L. J. Crecelius	407,173	July 16	1730	452	48	354
Lifting-jack	L. J. Crecelius	407,174	July 16	1732	452	48	354
Lifting-jack	L. J. Crecelius	410,074	Aug. 27	2432	743	48	1242
Lifting-jack	J. P. Hays	406,923	July 9	754	205	48	157
Lifting-jack	L. Miller	407,788	July 30	2647	685 / 686	48	549
Lifting-jack	M. A. Stewart	410,995	Sept. 10	1316	355	48	1532
Lifting-jack	J. T. Weatherly	410,702	Sept. 10	868	234	48	1444
Light: *See* Signal-light. Vault-light. Stove-door light.							
Light-tower	J. W. Davy	406,432	July 9	590	166	48	127
Lighting device	W. H. and H. P. Wilder	407,883	July 30	2799	729	48	577
Lighting device. Hydrocarbon	T. Schuls and F. A. Cody	411,170	Sept. 17	1585	422	48	1594
Lighting system	J. H. Hunter	407,210	July 16	1789	469	48	366
Lightning-arrester	H. Lemp	409,629	Aug. 27	2354	595	48	1135
Lightning-arrester	J. W. See	407,454	July 23	2178	562	48	449
Lightning-rod	J. H. C. Watts	406,681	July 9	989	266	48	201
Lightning. System of protection from	C. F. Hill	407,660	July 23	2463	637	48	506
Limb. Artificial	F. H. Fairchild	411,377	Sept. 17	1661	503	48	1651
Limekiln	J. and J. Druecker	406,434	July 9	592	166	48	128
Limekiln	F. Krans	407,406	July 23	2098	542	48	433
Limestone. Preparing and hardening	G. J. Randall	410,607	Sept. 10	717	.....	48	1415
Liner for machinery	W. V. Fischer	409,676	Aug. 27	2249	592	48	1132
Liniment	J. S. Schrack	407,551	July 23	2319	.....	48	478
Linting-machine	T. J. Dieuzet	411,139	Sept. 17	1540	411	48	1585
Liquids at different boiling-points. Apparatus for separating	L. E. A. Prangey	407,114	July 16	1650	432	48	330
Lister and drill. Combined	W. A. Longhry	407,664	July 16	1579	414	48	324
Lithographic press	G. Heinsius	410,708	Sept. 10	878	236	48	1446
Lobster-trap	G. Hurst	411,746	Sept. 24	2425	642	48	1708

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Lock: *See* Bed-lock. Nut-lock. Combination-lock. Permutation-lock. Electric lock. Safe-lock. Electrical lock. Seal-lock. Elevator-lock. Time-lock. Fire-arm lock. Wagon-seat lock. Hasp-lock.							
Lock	O. B. Haglund	407,479	July 23	2209	570	48	455
Lock	W. A. Martin	407,738	July 23	2367	666	48	527
Lock	G. Neubrand	407,547	July 21	2313	597	48	477
Lock	M. Riedinger	410,610	Sept. 10	721	194	48	1416
Lock	C. J. A. Sjoberg	409,119	Aug. 13	1406	371	48	956
Lock	T. Taylor	408,147	July 30	3203	836	48	652
Lock	W. H. Taylor	406,487	July 9	692	182	48	147
Lock	O. Volkerts	408,447	Aug. 6	361	95	48	751
Lock and latch combined	C. W. Folsom and A. B. Davis	407,926	July 30	2865	{740 741}	48	588
Lock-case	C. M. Burgess	408,688	Aug. 13	749	195	48	829
Lock-joint for beams	R. Wray	409,893	Aug. 27	2565	673	48	1191
Locks. Rod-handle for	W. H. Taylor	408,550	Aug. 6	534	{139 140}	48	781
Locks. Rod-handle for	H. R. Towne	408,552	Aug. 6	537	{139 140}	48	782
Locks. Rose for	A. A. Severance	409,246	Aug. 20	1598	422	48	1001
Locking a series of drawers. Device for	J. H. Rodeheaver	410,378	Sept. 3	373	99	48	1343
Locking and registering mechanism. Coin-controlled	A. B. Nicholson	408,811	Aug. 13	937	250	48	867
Locomotive	E. M. Boynton	409,006	Aug. 13	1224	{324 325}	48	922
Locomotive	J. Des Brisay	409,936	Aug. 27	2621	{686 687}	48	1203
Locomotive-brake	F. Lansberg	406,844	July 9	1237	328	48	247
Locomotive-cylinders. Drip-cock for	H. H. Riggin	410,448	Sept. 3	491	129	48	1364
Locomotive-engine	M. N. Forney	408,004	July 30	2984	771	48	611
Locomotive. Multiple-motor electric	C. J. Van Depoele	408,640	Aug. 6	666	175	48	807
Locomotive-spring	J. A. Wendlick and P. Lynch	410,668	Sept. 10	1133	304	48	1495
Locomotives. Exhaust apparatus for	J. Y. Smith	406,484	July 9	686	181	48	147
Locomotives. Exhaust-muffler for	A. S. Vogt	407,139	July 16	1662	430	48	345
Locomotives. Smoke-box for	F. Gandy	409,033	Aug. 13	1272	335	48	931
Locomotives. Triple-expansion blast or exhaust apparatus for	J. Y. Smith	406,483	July 9	680	180	48	145
Log-boom	W. H. Roan	408,046	July 30	3037	794	48	622
Log-conveyer	E. S. Jones	409,361	Aug. 20	1772	467	48	1035
Log lifting and turning machine	F. Simonson	408,760	Aug. 13	857	226	48	851
Loom	E. Herzig	406,281	July 2	352	96, 97	48	71
Loom	C. H. Knowlton and B. F. Meyer	407,597	July 23	2376	{615 616}	48	490
Loom for weaving tufted fabrics, &c	W. Adams	409,550	Aug. 20	2035	536	48	1068
Loom for weaving tufted fabrics	A. C. H. Sallandrouze	410,096	Aug. 27	2668	{752 753}	48	1249
Loom for weaving tufted fabrics	A. Siret	411,067	Sept. 17	1423	{379 380}	48	1502
Loom for weaving tufted fabrics	H. Wyman and J. G. Gale	411,410	Sept. 17	1934	515	48	1660
Loom for weaving wire	C. F. Wickwire	409,813	Aug. 27	2154	644	48	1171
Loom. Hand-	J. Scherer	410,772	Sept. 10	996	267	48	1467
Loom heald or Leddle	J. Yeadon	409,725	Aug. 27	2217	600	48	1145
Loom heddle. Jacquard	G. W. Stafford	407,620	July 23	2405	645	48	496
Loom Jacquard attachment	G. W. Stafford and S. D. Barrett	410,215	Sept. 3	125	31	48	1293
Loom Jacquard mechanism	H. Wyman	411,409	Sept. 17	1933	515	48	1659
Loom let-off and take-up mechanism	W. C. Taucke	411,172	Sept. 17	1587	422	48	1594
Loom let-off mechanism	C. Hirst	410,635	Sept. 10	1084	291	48	1487
Loom. Narrow-ware	G. C. Moore	407,872	July 30	2778	{722 723}	48	572
Loom-picker	E. H. Archibald	408,416	July 9	562	150	48	121
Loom picker-check	T. Norton	411,556	Sept. 24	2143	568	48	1707
Loom picker-staff check	T. Hall and D. Young	409,580	Aug. 20	2065	530	48	1097
Loom picker-sticks. Lug-strap for	C. C. Follett	408,703	Aug. 13	782	206	48	835
Loom picking-motion	J. Monk	408,501	Aug. 6	451	118	48	768
Loom. Pile-fabric	R. B. Leynd	410,323	Sept. 3	300	78	48	1327
Loom-shedding mechanism	R. L. Hattersley and J. Hill	409,787	Aug. 27	2416	{632 633}	48	1163
Loom shedding mechanism	G. F. Hutchins	410,734	Sept. 10	934	250	48	1453
Loom-shedding mechanism	E. Pont	410,442	Sept. 3	482	129	48	1362
Loom shedding mechanism	V. Royle	410,718	Sept. 10	905	{242 244}	48	1449
Loom shedding mechanism	G. W. Stafford	406,790	July 9	1157	305	48	233
Loom shedding mechanism	H. Wyman	411,753	Sept. 24	2435	645	48	1768
Loom-shuttle	S. A. Dudley	411,187	Sept. 17	1609	427	48	1599
Loom-shuttle	J. Elsas and H. Weissenburger	411,097	Sept. 17	1478	392	48	1573
Loom-shuttle	F. J. Hall	407,201	July 16	1775	465	48	363
Loom-shuttle	P. T. Litchfield	407,958	July 30	2915	760	48	599
Loom-shuttle	G. C. Moore	407,871	July 30	2776	731	48	572
Loom-shuttle	C. G. Petzold	409,232	Aug. 20	1576	416	48	997
Loom shuttle-binder	E. Earnshaw	408,470	Aug. 6	401	105	48	758
Loom shuttle-box-locking device	G. F. Hutchins	411,197	Sept. 17	1625	432	48	1602
Loom shuttle-box mechanism	H. Wyman	411,408	Sept. 17	1926	514	48	1659
Loom shuttle-box mechanism	H. Wyman	411,752	Sept. 24	2432	644	48	1767
Loom shuttle-box-operating device	E. E. Orrell	410,850	Sept. 10	1107	293	48	1491
Loom shuttle-motion	J. T. Cree	406,508	July 9	725	189	48	152
Loom shuttle-supplying mechanism	J. M. Evans and J. M. Shay	409,282	Aug. 20	1657	437	48	1013
Loom-shuttles. Tension-regulating device for	G. Goodline	406,135	July 2	158	46	48	33
Loom shuttles. Tension-regulating device for	G. C. Moore	407,411	July 23	2104	543	48	434

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Loom take-up mechanism	R. Rickenbacher	408,202	Aug. 6	92	23	48	697
Loom take-up mechanism	F. K. Wright	406,327	July 2	425	117	48	86
Loom-temple	J. B. Newell	409,369	Aug. 20	1787	470	48	1039
Loom-temple	T. Norton	408,354	Aug. 6	220	56	48	722
Loom-temple	J. E. Prest	407,032	July 16	1511	393	48	311
Loom weft-stop mechanism	J. Paterson and T. Brook	407,236	July 16	1833	479	48	374
Looms. Braking mechanism for	H. A. Remington	406,473	July 9	696	186	48	143
Looms. Cloth-roll support for	H. A. Remington	406,472	July 9	695	186	48	143
Loome. Dobby and Jacquard machine for	A. Insinger	408,485	Aug. 6	424	111	48	763
Looms. Heddle-frame for	C. P. Ledd and W. Muir	407,078	July 16	1572	413	48	323
Loome. Means for lubricating picking-tappets of weaving	B. Berry and D. B. Briggs	411,490	Sept. 24	2046	541	48	1636
Looms. Pin for pattern-chains for	G. W. Stafford	407,621	July 23	2406	625	48	496
Loome. Self-threading shuttle for	M. Virnoche	411,403	Sept. 17	1919	512	48	1657
Looping-machine attachment	R. E. Ellenwood	406,638	July 9	883	232	48	191
Looping-machines. Trimming attachment for	N. H. Bruce	408,575	Aug. 6	569	149	48	769
Lotion	P. Grosbéty	411,657	Sept. 24	2300	.....	48	1740
Lubricant	W. J. Corder	406,803	July 16	1399	.....	48	270
Lubricator: *See* Axle-lubricator. Pulley-lubricator. Centrifugal lubricator. Sight-feed lubricator. Fibrous lubricator. Spinning-machinery lubricator.							
Lubricator	R. M. Beck	409,660	Aug. 27	2211	582	48	1195
Lubricator	B. A. Burgess	406,813	July 9	1194	317	48	240
Lubricator	W. J. Faul	408,833	Aug. 13	963	257	48	873
Lubricator	C. H. Parshall, Sr	408,316	Aug. 6	198	49	48	712
Lubricator	D. M. Perine	406,665	July 9	965	260	48	167
Lubricator	J. Powell	408,927	Aug. 13	1109	292	48	900
Lubricator	C. F. L. Sörensen	406,675	July 9	979	263	48	199
Lubricators. Speed-reducing mechanism for	W. S. Beeman	406,419	July 9	565	150	48	122
Magnetic body-wear	G. A. Scott	410,652	Sept. 10	785	213	48	1429
Magnetic from non-magnetic particles. Separating	G. Conkling	410,876	Sept. 10	1142	{307 308}	48	1497
Magnetic separator	G. Conkling	406,337	July 2	441	122	48	89
Magnetic separator	G. Conkling. (Reissue)	11,012	July 16	1942	{505 506}	48	306
Magnetic separator	G. Conkling	410,877	Sept. 10	1143	308	48	1497
Magnets. Neutralizing the residual magnetism in electro-	F. and O. Haenichen	410,276	Sept. 3	213	56	48	1311
Mail-bag deliverer	A. P. Hause	410,095	Aug. 27	2867	{751 752}	48	1249
Mail-bag fastener	L. Crepe	407,853	July 30	2751	716	48	568
Mail-bag fastening	S. M. Moore	408,039	July 30	3029	792	48	621
Mail-bag fastening	J. A. Roosevelt	410,450	Sept. 3	494	132	48	1365
Mail-bag rack and distributing-table	S. Strange	408,966	July 16	1490	{372 373}	48	293
Mail-box attachment	R. B. Lewis	410,905	Sept. 10	1186	320	48	1506
Mail-dispatch apparatus. Pneumatic	J. L. Given and G. B. Kelly	411,333	Sept. 17	1817	{486 487}	48	1636
Mail-pouch	C. W. Miller	406,598	July 9	761	207	48	159
Mailing-box	E. B. Hillman	409,039	Aug. 13	1279	337	48	932
Mailing device for newspapers, &c	L. P. Bardwell	410,395	Sept. 3	397	106	48	1347
Mailing-machine	E. Woodward	408,302	July 30	3299	{862 863 864 865}	48	668
Mailing-sheet list	M. B. Church	407,640	July 23	2439	632	48	502
Malt-mashing device	H. Pietsch	410,019	Aug. 27	2733	716	48	1225
Malting and germinating apparatus	J. F. Gent	409,956	Aug. 27	2647	{694 695}	48	1206
Malting apparatus. Pneumatic	E. Kasten	409,151	Aug. 13	1454	{384 385}	48	966
Mandrel. Blacksmith's	J. W. Cheney	407,851	July 30	2750	715	48	567
Mangle	G. K. Geiger	408,477	Aug. 6	409	107	48	760
Mantel	W. Anderson	409,594	Aug. 20	2107	555	48	1101
Mantel for stoves	O. P. and G. O. Eiterich	407,003	July 16	1477	385	48	304
Mantles for incandescent uses. Regenerating	C. A. von Welsbach	409,529	Aug. 20	2006	.....	48	1069
Mantles. Production of incandescent	F. L. and W. S. Rawson	407,963	July 30	2922	.....	48	600
Marker. Corn-row	S. T. Boatman	407,158	July 16	1706	445	48	349
Marker. Land-	I. Ivey	409,971	Aug. 27	2673	701	48	1213
Marking pad. Indelible	J. R. Smith	411,364	Sept. 17	1718	459	48	1621
Mash machine and grain remover	G. Rieseck	410,198	Sept. 3	103	27	48	1289
Mast-arm	W. H. O'Beirne	410,559	Sept. 3	642	171	48	1394
Mat: *See* Burglar-alarm electric mat. Door-mat. Wire mat.							
Match-box-filling machine. Slide	J. D. Mantion, G. H. Millen, and A. Decurion	409,481	Aug. 20	1941	{513 514}	48	1070
Match-machine	F. Bommarius and G. Staunton	407,718	July 23	2536	{656 657}	48	521
Match-machine	J. H. White	410,622	Sept. 10	739	{200 201 202}	48	1419
Match-safe	E. P. Hasbrouck	410,568	Sept. 10	688	184	48	1409
Match-safe	W. B. Mitchell	409,055	Aug. 13	1301	343	48	936
Matches. Apparatus for winding flexible lighting	F. Bommarius	407,716	July 23	2535	656	48	521
Matches. Preparing flexible	F. Bommarius	407,717	July 23	2536	.....	48	521
Matrix-making machine	C. S. Partridge	407,608	July 23	2491	{620 621}	48	493
Mattress	J. Blocher	410,133	Aug. 27	2930	769	48	1289
Mattress bed-bottom. Wire	J. B. Ryan	411,302	Sept. 17	1774	474	48	1631
Mattress. Woven-wire	W. S. Seymour	410,937	Sept. 10	1228	331	48	1514
Measure. Ale or beer	O. Mayer	406,176	July 2	217	59	48	43

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Measure. Lumber	A. Cruikshank	407,175	July 16	1738	453	48	355
Measuring can or canister	S. B. Estabrook and J. P. Ashey	407,650	July 23	2452	635	48	504
Measuring gage. Threshold	D. W. Mackey	408,496	Aug. 6	444	116	48	786
Measuring instrument. Electric	J. A. Barrett	408,157	July 30	3218	840	48	655
Measuring machine. Cloth	B. R. Bond	410,485	Sept. 3	540	145 / 146	48	1374
Measuring-vessel	A. De Witt	409,023	Aug. 13	1256	332	48	928
Measuring-vessel	J. Freytag	406,641	July 9	936	252 / 253	48	191
Measuring-vessel	W. S. Reynolds	410,333	Sept. 3	313	81	48	1329
Measuring-vessel for liquids	J. P. Müller	406,366	July 2	491	134	48	96
Meat and vegetable chopper	I. M. Berry	410,693	Sept. 10	839	225	48	1479
Meat-cutter	G. V. Brecht	409,906	Aug. 27	2582	676	48	1195
Meat-cutter	P. H. Brodeseer and P. J. Ternes	407,056	July 16	1544	405	48	317
Meat-tenderer. Rotary	J. G. Schmidt	411,169	Sept. 17	1584	421	48	1504
Mechanical motor	E. S. Harpst	406,440	July 9	602	169	48	130
Mechanical movement	W. W. Griscom	409,193	Aug. 20	1521	403	48	987
Mechanical movement	J. P. Stiles	408,546	Aug. 6	530	138	48	780
Mechanical movement	G. W. Thomas	407,136	July 16	1679	438	48	344
Mechanical movement	R. Wehrle	409,082	Aug. 13	1344	356	48	944
(Medicine.) Cough-sirup	F. M. Jaques	408,486	Aug. 6	436	.....	48	763
(Medicine.) Liver and kidney remedy	A. H. Ramey	407,687	July 23	2496	.....	48	519
Merchandise-box	G. E. Raymond	410,990	Sept. 10	1311	353	48	1531
Merchandise. Receptacle for	P. E. McDonald	409,485	Aug. 20	1950	516	48	1072
Mercury. Preventing the flouring of	F. A. Luckenbach	410,171	Sept. 3	48	13	48	1278
Merry-go-round	J. R. Applegate	409,898	Aug. 27	2571	673	48	1192
Merry-go-round	D. G. Johnson	409,972	Aug. 27	2674	701	48	1213
Merry-go-round	W. C. Tyler	410,301	Sept. 3	256	67	48	1318
Message and time recorder	J. C. Wilson	406,809	July 9	1189	315	48	239
Metal. Attaching composition of matter to	C. T. Lee	409,986	Aug. 27	2687	.....	48	1216
Metal bars or rails. Manufacture of	E. Norton and J. G. Hodgson	406,946	July 16	1391	365 / 366	48	288
Metal fabric	R. F. Snow	406,786	July 9	1150	304	48	231
Metal-forming machine	M. T. Durkin	407,516	July 23	2256	583	48	465
Metal-forming tool	A. S. Patton	410,606	Sept. 10	716	193	48	1415
Metal-foundery patterns. Making	H. Tabor	408,677	Aug. 6	725	189	48	817
Metal. Machine for finishing and ornamenting	H. M. Quackenbush	408,521	Aug. 6	462	127	48	773
Metal. Ornamenting surfaces with molten	W. H. Marshall	406,923	July 16	1357	355	48	282
Metal pile or fagot	H. W. Borntraeger	410,134	Aug. 27	2931	769	48	1260
Metal plate. Rolled	W. J. Lewis	409,050	Aug. 13	1296	342	48	935
Metal rolls	J. T. Hastings	409,679	Aug. 27	2252	592	48	1133
Metal rolls	J. T. Hastings	409,746	Aug. 27	2346	617	48	1151
Metal rolls	J. T. Hastings	409,747	Aug. 27	2347	617	48	1151
Metal rolls. Making	C. M. Schwab	410,651	Sept. 10	784	212	48	1429
Metal-sawing machine	C. C. Newton	410,009	Aug. 27	2720	715	48	1222
Metal-shears	L. C. North	411,727	Sept. 24	2307	635	48	1760
Metal-shears and tire-upsetter. Combined	M. C. Malone	411,386	Sept. 17	1803	506	48	1652
Metal surfaces. Decorating	N. C. Duncombe	406,999	July 16	1469	384	48	302
Metal ties. Making	H. Aiken	411,117	Sept. 17	1511	402 / 403	48	1560
Metal wheel	L. J. Crecellus	406,705	July 9	1025	274	48	207
Metal wheel	J. R. Little	409,475	Aug. 20	1935	512	48	1069
Metal with natural gas. Treating molten	F. L. Slocum and H. W. Lash	411,205	Sept. 17	1639	.....	48	1605
Metal-working. Electric	M. W. Dewey	408,575	Aug. 13	1034	274	48	885
Metals from their ores. Bath or solution for separating	J. C. Wiswell	407,386	July 23	2067	535	48	427
Metals from their ores. Solution for use in separating	J. C. Wiswell	410,228	Sept. 3	140	36	48	1296
Metals. Galvanizing	T. Midgley and W. B. Nye	406,365	July 2	480	134	48	96
Metals while in a heated condition. Preventing the oxidation of	G. W. Cummins and J. H. Coleman	409,276	Aug. 20	1648	435	48	1012
Metals with zinc or other metals. Apparatus for coating	F. W. Koffler	407,222	July 16	1809	473 / 474	48	369
Metallic circuit	H. F. Campbell	411,137	Sept. 17	1537	410	48	1585
Metallic wheel	G. H. Everson	409,944	Aug. 27	2636	691	48	1206
Metallic wheel	G. H. Everson	409,945	Aug. 27	2637	691	48	1206
Metallic wheel	J. A. Johnson	407,596	July 23	2375	615	48	490
Metallurgical furnace	C. Peifer	411,226	Sept. 17	1667	446	48	1611
Meter: *See* Electric meter. Gas-meter. Piston-meter. Rotary meter.							
Methyl alcohol from wood-pulp lyes. Obtaining	E. Meyer	407,442	July 23	2160	.....	48	446
Micrometer-gage	F. Holland	410,163	Sept. 3	41	11	48	1276
Micrometer-gage	F. Schlatter	407,903	July 30	2927	736	48	592
Micrometer-gage	L. S. Starrett and C. P. Fay	411,336	Sept. 24	2111	557	48	1700
Microscope	S. Frost	407,192	July 16	1763	461	48	360
Middlings-purifiers. Dust-collector for	J. M. Case	407,948	July 30	2901	756	48	596
Milk. Centrifugal machine for creaming	C. F. Larsen	406,746	July 9	1084	288	48	220
Milk-cooling device	J. W. Wagner	408,943	Aug. 13	1133	299	48	905
Milk delivery and shipping can	C. E. Hinman and T. E. McCracken	407,207	July 16	1786	468	48	365
Milk. Preparing flour from curd of	W. Gerbel	411,717	Sept. 24	2386	.....	48	1758
Mill: *See* Cane-mill. Cider-mill. Crushing and grinding mill. Fanning-mill. Flour-mill. Grinding-mill. Grinding and crushing mill. Pulverizing-mill. Rolling-mill. Saw-mill. Windmill.							
Mill	C. F. Walters and W. N. Gartside	407,751	July 23	2597	672	48	533
Mill appliance	J. Kennedy and S. Forter	410,108	Aug. 27	2887	758 / 759	48	1253
Mill for treating fiber-yielding materials	J. D. Stanley	408,142	July 30	3197	835	48	651
Mill-signal	W. H. Donner	410,502	Sept. 3	565	152	48	1379

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Milling-cutters. Making	C. C. Tyler	408,446	Aug. 6	360	95	48	750
Millstone	C. J. Potter	406,954	July 16	1401	368	48	290
Millstone-dress	J. Boehnlein	407,326	July 23	1986	512	48	489
Mining-machine	A. J. Cooper	409,772	Aug. 27	2389	627	48	1158
Mining-machine and apparatus for operating the same	F. M. Lechner	411,200	Sept. 17	1630	434	48	1603
Mining machine. Coal	H. C. Sergeant	411,305	Sept. 17	1780	476 / 477	48	1632
Mining-machine cutter	E. E. Carter	409,138	Aug. 13	1436	377	48	963
Mirror	J. N. Richardson	410,994	Sept. 10	1212	327	48	1512
Mirror-stand	J. Kintz	409,153	Aug. 13	1459	385	48	967
Mirrors or similar objects. Adjustable support for	J. R. Perkins	408,534	July 9	770	209	48	161
Miter-box and picture-frame clamp. Combined	H. C. Marsh	408,248	Aug. 6	69	16	48	692
Miter-machine	J. J. Cowell	409,455	Aug. 20	1906	504 / 505	48	1063
Mitten, &c	J. Arbuckle	406,690	July 9	1007	270	48	204
Moistener-pad	C. A. Pratt	408,580	Aug. 6	480	126	48	773
Mold: *See* Brick-mold. Clip-mold.							
Mold-forming device	J. J. Carr	409,666	Aug. 27	2225	584	48	1128
Molds. Machine for making sand	J. J. Carr	409,667	Aug. 27	2226	585 / 586 / 587	48	1128
Molding	J. J. Carr	408,579	Aug. 6	576	150	48	790
Molding-cutter	E. Benjamin	410,572	Sept. 10	666	177	48	1405
Molding-machine	C. L. Goehring	410,887	Sept. 10	1161	312 / 313	48	1501
Molding machine. Sand	F. G. Leeder	409,471	Aug. 20	1931	511	48	1068
Molding machine. Sand	M. R. Moore	408,386	Aug. 6	270	67	48	731
Molding plastic materials. Machine for	F. C. Daum	406,707	July 9	1027	275 / 276	48	207
Molding sash-weights, &c. Apparatus for	A. S. Hodges	411,441	Sept. 24	1981	525 / 526	48	1674
Molding sheaves	E. Riley	409,117	Aug. 13	1404	370	48	956
Molding-strip. Metallic	L. L. Sagendorph	407,694	July 23	2509	648	48	515
Moldings. Machine for coating and embossing	H. Zitzewitz	407,847	July 30	2743	713	48	566
Money-box	M. Emanuel	409,778	Aug. 27	2389	622	48	1160
Monument	J. H. Webb	408,776	Aug. 13	881	233	48	656
Mooring. Electro-magnetic	H. P. Wellman	408,778	Aug. 13	883	236	48	856
Mop	C. A. Bacon and H. F. Low	408,571	Aug. 6	565	148	48	788
Mop-grip	J. H. Ware	406,410	July 2	550	154	48	110
Mop-head	H. F. Low	408,495	Aug. 6	443	116	48	766
Mop-wringer	W. P. Tracy	406,550	July 9	790	214	48	165
Mortar from freezing. Compound for preventing	G. Garrell	409,397	Aug. 20	1829	.....	48	1046
Mosquito-canopy	I. E. Palmer	406,178	July 2	220	60	48	44
Mosquito-net frame and sham-pillow holder	W. Tennison	411,073	Sept. 17	1430	383	48	1565
Motion. Apparatus for reversing rotary	G. Layng	406,586	July 9	936	226	48	172
Motion. Brake for controlling rotary	F. W. Kless	407,550	July 23	2318	599	48	478
Motion. Mechanism for converting	A. Kaiser	409,149	Aug. 13	1450	381 / 382 / 600 / 601	48	966
Motion. Mechanism for converting and reversing	T. C. Thomas	407,555	July 23	2323	599	48	479
Motive power	J. P. Schmucker	411,065	Sept. 17	1413	377	48	1560
Motive power. Transforming heat energy into	J. J. McTighe	411,605	Sept. 24	2221	591	48	1734
Motor: *See* Car-motor. Churn-motor. Current-motor. Electric motor. Gas-motor. Hydrocarbon-motor. Mechanical motor. Railway-motor. Sewing-machine motor. Spring-motor. Steam-motor. Toy motor. Vehicle-motor. Water-motor.							
Motor	H. Keller	410,105	Aug. 27	2882	756	48	1252
Motor	E. B. Newcomb	407,942	July 30	2898	752	48	593
Motor	J. R. Peck and M. Rozselle	409,231	Aug. 20	1576	416	48	997
Motor-engine worked by the combustion of spray of petroleum	N. A. Otto	407,234	July 16	1830	478	48	374
Movement-cure apparatus	H. L. Hopkins	407,071	July 16	1502	411	48	321
Mower	A. B. Graham	408,100	July 30	3125	818	48	639
Mower attachment. Lawn	D. Johnson	410,836	Sept. 10	1066	291	48	1487
Mower-frame	J. H. Jones	406,738	July 9	1060	285	48	215
Mower. Lawn	L. S. Brown	407,163	July 16	1715	447	48	351
Mower. Lawn	A. Graham	411,496	Sept. 24	2056	544	48	1689
Mower. Lawn	W. A. Loud	410,366	Sept. 3	358	95	48	1339
Mower. Lawn	C. A. Olcott	408,426	Aug. 6	337	87	48	745
Mower. Lawn	L. Wennega	408,558	Aug. 6	545	143	48	784
Mowers. Attachment for lawn	F. A. De Land	406,433	July 9	591	166	48	128
Mowers. Grass-catching attachment for lawn	G. C. Miller	408,653	Aug. 13	1299	343	48	936
Mowing-machine	C. M. Brown	411,276	Sept. 17	1737	464	48	1625
Mowing-machine	L. O. Drew	411,591	Sept. 24	2199	584 / 585	48	1719
Mowing-machine	J. Garfield	406,520	July 9	747	204 / 205	48	156
Mowing-machine	G. R. Parker	408,133	July 30	3184	832	48	649
Mowing-machine	J. F. Steward	408,050	July 30	3048	797 / 796	48	624
Mowing-machine-knife grinder	O. H. Jones	411,245	Sept. 17	1692	452	48	1616
Mowing-machine-knife grinder	C. A. Kellogg	406,739	July 9	1071	285	48	216
Muff-block	G. F. Carter	406,260	July 2	323	89	48	65
Music-book holder	W. D. Newman	411,295	Sept. 17	1759	471	48	1620
Music-holder	O. S. Donnell	411,280	Sept. 17	1743	465	48	1636
Music-leaf turner	G. Bettini	408,908	Aug. 13	1083	284 / 285	48	895
Music-leaf turner	L. N. Frymire and F. S. Derr	411,431	Sept. 24	1968	523	48	1672
Music-leaf turner	W. B. Jackson	408,977	Aug. 13	1186	312	48	914
Music-leaf turner	J. E. Nightingale	411,052	Sept. 17	1395	374	48	1557

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Music-rack. Knockdown	J. A. Lohagen	406,921	July 16	1354	355	48	221
Music-stand	A. W. Sibley	411,111	Sept. 17	1503	398	48	1577
Musical instrument	C. W. Burgess	409,315	Aug. 20	1707	449	48	1022
Musical instrument	J. C. Deagan and J. Carroll	406,655	Aug. 6	694	179	48	812
Musical instrument. Mechanical	M. Gally	409,678	Aug. 27	2251	592	48	1133
Musical instruments. Making barrels of	C. C. Carpenter, 3d, and L. A. Brott	410,875	Sept. 10	1141	307	48	1497
Musical instruments. Touch-regulating device for	W. H. Ivers	406,913	July 16	1343	352	48	220
Musician's exercising device	E. S Bonelli	410,748	Sept. 10	957	257 / 258	48	1458
Mustache-protector	J. O. Hibbard	408,013	July 30	3000	782	48	614
Nail: *See* Boot or shoe nail. Shoe-nail. Heel-nail.							
Nail-blank plate	M. Chase	411,278	Sept. 17	1742	465	48	1625
Nail-extractor	A. Rosenberger	407,371	July 23	2048	530	48	423
Nail-extractor and box-opener. Combined	D. C. Hawkins	409,355	Aug. 20	1766	465	48	1033
Nail for trunks, &c	G. Crouch	407,468	July 23	2198	567	48	453
Nail or spike blank sharpener	J. T. Jones	408,348	Aug. 6	211	54	48	721
Neck-wear box	E. R. Procter	409,703	Aug. 27	2291	602	48	1140
Necklace-clasp	A. Keller	408,308	Aug. 6	151	38	48	709
Neckscarf	E. T. Howard	406,649	July 9	946	256	48	193
Neckscarf-fastener	E. J. Friedland	410,732	Sept. 10	932	250	48	1453
Necktie	M. W. Bruce	407,811	July 30	2693	699	48	557
Necktie-fastener	H. W. Atwater	411,001	Sept. 17	1323	357	48	1543
Necktie-fastener	A. Beauland	407,508	July 23	2248	580	48	463
Necktie-fastener	E. Swem	411,136	Sept. 17	1537	410	48	1585
Needle	J. Cook	411,325	Sept. 17	1808	483	48	1637
Needle-threader and thread-cutter combined							
Needles. Machine for polishing the eyes of	P. M. Beers	407,324	July 23	1958	510 / 511	48	408
Negative. Stripped	F. Schmalz	409,507	Aug. 20	1960	523	48	1077
Nest or coop. Hen's	P. Culp	408,828	Aug. 13	961	255	48	871
Net. Fish-landing	C. E. White	407,709	July 23	2367	633	48	519
Nickel. Refining	P. Manhes	409,992	Aug. 27	2694	.....	48	1217
Nipple-holder	J. F. Guthrie, Jr	406,834	July 9	1226	325	48	246
Nipple-holder	H. D. Harmer	407,292	July 16	1914	498	48	280
Nipple-holder	J. C. Williams	406,411	July 2	550	154	48	110
Nipple-holder	H. M. Hanmore	406,644	July 9	940	254	48	192
Non-heat-conducting fabric	H. L. Palmer	410,671	Sept. 10	819	220	48	1434
Non-heat-conducting handle	E. K. Rea	406,061	July 2	59	18	48	14
Nose-ring for cattle	J. K. Griffith	411,519	Sept. 24	2087	551	48	1695
Nozzle. Tap	C. H. Davids	410,958	Sept. 10	1254	338	48	1590
Numbering device	J. R. Carter	409,920	Aug. 27	2598	681	48	1198
Numbering machine. Paper							
Numbering of checks, tickets, &c. Apparatus for the consecutive	J. Phillips	410,673	Sept. 10	821	220 / 221	48	1434
Nut for vehicles. Top-prop	C. L. Baker	407,564	July 23	2236	604	48	482
Nut-lock	J. L. Arnold and G. W. Goldinger	409,766	Aug. 27	2279	624	48	1156
Nut-lock	A. Aymond and H. La Rue	407,317	July 23	1947	507	48	405
Nut-lock	C. E. Jenkins	409,204	Aug. 20	1534	400	48	989
Nut-lock	H. Kleman	411,125	Sept. 17	1524	407	48	1583
Nut-lock	H. H. Kurtz	406,842	July 9	1235	327	48	247
Nut-lock	W. N. Offutt	411,674	Sept. 24	2324	616	48	1745
Nut-lock	A. J. Perry	406,953	July 16	1400	367	48	220
Nut-lock	W. A. Preston	407,686	July 23	2495	645	48	512
Nut-lock	A. Reed	410,445	Sept. 3	488	130	48	1363
Nut-lock	N. T. Scott	406,150	July 2	177	51	48	36
Nut-lock	A. Spear	411,265	Sept. 17	1719	460	48	1621
Nut-lock	D. Steiner	411,306	Sept. 17	1783	477	48	1633
Nut-lock	A. D. Van Bibber	406,245	July 2	305	84	48	61
Nut-lock	S. Winsor, W. G. Holt, and P. B. Gilbert	406,074	July 2	72	21	48	16
Nut. Top-prop	A. Searls	407,904	July 30	2928	736	48	582
Nut-washing machine	J. J. Phillips	410,016	Aug. 27	2730	717	48	1224
Nut-wrench	J. B. Meier	410,965	Sept. 10	1303	351	48	1529
Nuts, grain, &c. Apparatus for drying	J. J. Phillips	410,017	Aug. 27	2731	718	48	1224
Nuts, &c. Means for cleaning and drying	J. J. Phillips	410,018	Aug. 27	2732	718	48	1224
Nuts. Treating	A. H. Pratt	407,684	July 23	2402	644	48	511
Oar	H. F. Hicks	406,482	Aug. 6	417	106	48	761
Obstetrical instrument	C. D. Bobo	411,572	Sept. 24	2165	573	48	1711
Oil. Apparatus for vaporizing	H. Cottrell	406,503	July 9	719	187 / 188	48	151
Oil-burner	J. Bragg	409,556	Aug. 20	2043	536 / 538	48	1069
Oil-burner. Injector	W. N. Edson	407,065	July 16	1556	409	48	319
Oil-can	A. A. Arnold	410,342	Sept. 3	326	85	48	1332
Oil-can	A. B. Shaw	410,238	Sept. 10	1229	331	48	1515
Oil-cup	E. Lunkenheimer	409,315	Aug. 20	1554	411	48	993
Oil purifying and refining apparatus	C. Dorn and E. Noppel	411,646	Sept. 24	2281	603	48	1736
Oil. Refining mineral	J. K. Field	408,472	Aug. 6	404	.....	48	759
Oil. Vaporizing	H. Cottrell	406,504	July 9	722	188 / 189	48	152
Oil-wells. Operating	M. Lytle	406,362	July 2	476	130	48	95
Oils. Apparatus for burning hydrocarbon	E. F. Edgar	410,226	Sept. 10	1074	289	48	1485
Oils. Apparatus for burning hydrocarbon	J. S. Hull	411,163	Sept. 17	1488	395	48	1574
Oils. Refining	J. A. Dubbs	407,182	July 16	1746	.....	48	357
Oiling cartridge. See	A. H. Walker	409,886	Aug. 27	2554	669	48	1189
Oiling rocket. See	A. H. Walker	411,479	Sept. 24	2034	539	48	1684
Ointment	H. G. Turley	411,077	Sept. 17	1443	.....	48	1566
Opera-glass holder	G. Isley	406,217	July 2	267	74	48	53
Opera-glass holder	E. B. Meyrowitz	411,527	Sept. 24	2099	554	48	1697
Opera or field glass	A. B Clements	409,927	Aug. 27	2607	689	48	1200
Optical instruments. Astigmatic eye-piece for	J. Kornblum, J. A. Brashear, and P. Painter	406,725	Aug. 13	810	213	48	840
Order-holder	J. F. Brown	409,827	Aug. 27	2474	645	48	1173

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Ordnance. Breech-loading	H. T. J. Thronsen	408,637	Aug. 6	657	171 / 172	48	806
Ordnance. Operating	A. C. Koerner	407,018	July 16	1492	390	48	307
Ordnance. Training mechanism for	A. C. Koerner	408,882	Aug. 13	1046	276 / 277	48	868
Ore-concentrator	M. B. Dodge	406,201	July 2	247	68, 69	48	49
Ore-concentrator	S. Porter	411,609	Sept. 24	2229	593	48	1725
Ore-concentrator belt	J. M. Adams	409,091	Aug. 13	1364	359	48	948
Ore-concentrator belt	J. M. Adams	409,092	Aug. 13	1365	359	48	948
Ore concentrator. Dry	G. T. Chaudefosse	406,333	July 2	438	121 / 122	48	88
Ore concentrator. Dry	C. F. Jacobson	409,589	Aug. 20	2097	553	48	1099
Ore-crusher	G. W. Weller	409,084	Aug. 13	1348	356	48	945
Ore-roasting furnace	D. R. S. Galbraith	408,476	Aug. 6	408	106	48	759
Ore-separator	S. E. Griscom	409,099	Aug. 13	1375	363	48	950
Ore-separator	J. Jenkins	407,531	July 23	2274	589	48	469
Ores. Reducing metallic	M. Graff and J. Johnson	406,210	July 2	258	.....	48	52
Ores. Smelting	F. L. Bartlett	406,870	July 16	1221	336 / 337	48	266
Organ. Mechanical	E. S. Votey	407,601	July 30	2676	695	48	554
Organ-pedal	G. L. Foster	407,005	July 16	1479	385	48	304
Organ. Reed	E. S. Votey	407,600	July 30	2673	694	48	554
Organ. Reed	M. S. Wright	409,814	Aug. 27	2457	645	48	1171
Organ stop-action. Reed	J. Lane	411,453	Sept. 24	1998	530	48	1677
Organs. Driving and governing mechanism for	E. S. Votey	407,602	July 30	2677	695	48	554
Organs. Reed and fine pipe for	J. Stafford	411,135	Sept. 17	1536	410	48	1585
Ornament and advertising device	G. W. Browne	407,636	July 23	2471	630	48	500
Ornamenting open-mesh woven materials with plastics.	J. H. Harding	408,710	Aug. 13	790	208	48	837
Oven. Baker's	G. E. Bailey	411,180	Sept. 17	1599	425	48	1596
Oven. Baking	C. F. Hubbard	406,910	July 16	1338	350 / 351	48	277
Oven. Baking	J. H. Miller	410,913	Sept. 10	1193	322 / 323	48	1507
Oven. Cooking	C. F. Hubbard	406,911	July 16	1340	351	48	278
Oyster-opener	J. P. Huppmann	411,361	Sept. 17	1887	504	48	1651
Oyster-opening implement	G. W. Thompson	408,939	Aug. 13	1123	297	48	904
Ozone apparatus	H. A. B. H. de Vars	409,903	Aug. 27	2577	675	48	1194
Package. Utility	A. R. Waller	407,910	July 30	2835	738	48	583
Packing	J. Allan	411,502	Sept. 24	2150	569	48	1708
Packing and refrigerating vessel	J. Barker	410,481	Sept. 3	535	143	48	1373
Packing and sales case	A. E. Berlin and P. Wright	407,918	July 30	2856	744	48	587
Packing-case	G. W. Banker	408,664	Aug. 13	742	194	48	898
Packing-case	H. A. Moos	406,145	July 2	171	49	48	35
Packing for stuffing-boxes	C. H. Ensign and P. B. Wright	408,407	Aug. 6	311	79	48	730
Packing. Journal	H. B. Devlan	411,396	Sept. 17	1809	.....	48	1637
Packing. Piston	L. P. Lawrence	408,981	Aug. 13	1191	314	48	916
Packing. Piston	E. F. Peacock	407,370	July 23	2046	530	48	423
Packing. Piston-rod	F. G. Kellogg	407,533	July 23	2277	590	48	469
Packing. Piston-rod	H. H. Philper	410,918	Sept. 10	1302	325	48	1509
Packing-ring	J. J. Sullivan	410,127	Aug. 27	2994	767	48	1259
Packing-rings. Constructing spring	F. M. Metcalf	410,486	Sept. 3	457	122	48	1358
Packing. Rod	C. C. Jerome	409,791	Aug. 27	2421	634	48	1164
Packing. Steam-pipe	C. T. Lee	411,384	Sept. 17	1891	505	48	1652
Packing-vessels. Cover for	L. L. Frierson	410,512	Sept. 3	578	155	48	1382
Pad: *See* Eyeglass nose-pad. Moistener-pad. Hoof-pad. Ventilated pad. Marking-pad.							
Paddle hydro-motor	E. Pombas	411,167	Sept. 17	1561	421	48	1593
Paddle-wheel. Feathering	A. H. Carpenter	410,148	Sept. 3	12	4	48	1271
Paddle-wheel. Feathering	J. Williamson	409,440	Aug. 20	1862	497	48	1058
Padlock	M. Rueckert	411,054	Sept. 17	1396	375	48	1557
Padlock	A. Richards, Sr	410,024	Aug. 27	2741	721	48	1226
Padlock	M. Rueckert	410,027	Aug. 27	2747	722	48	1226
Pail, Shipping	H. Howe	408,108	July 30	3142	821	48	642
Paint compound	N. R. Bonner and I. L. Burlingame	409,904	Aug. 27	2578	.....	48	1194
Pan: *See* Baking-pan. Drip-pan. Defecating-pan. Dust-pan.							
Panel	H. A. Benedict	406,618	July 9	874	242	48	163
Paper-bag and twine holder	C. A. Lowry	409,213	Aug. 20	1552	410	48	992
Paper-bag holder	H. T. Hart	406,044	July 2	32	9	48	9
Paper-bag machine	H. C. Burdick	407,813	July 30	2695	699	48	557
Paper-bag machine	E. E. Claussen and G. Mortson	411,544	Sept. 24	2122	560 / 561	48	1703
Paper-bag machine	W. A. Lorens	410,843	Sept. 10	1098	295 / 296	48	1489
Paper-bag machine	W. A. Lorens and E. E. Claussen	410,841	Sept. 10	1094	292 / 293 / 294	48	1488
Paper-bag machine	W. A. Lorens and W. H. Honiss	410,842	Sept. 10	1097	294 / 295	48	1488
Paper-bag machine	F. M. McCulla	407,300	July 16	1923	501	48	391
Paper-bag machine	C. B. Stilwell	410,126	Aug. 27	2923	767	48	1259
Paper-bag machinery	C. B. Stilwell	407,794	July 30	2656	688 / 689 / 690 / 691 / 692 / 693	48	551
Paper-bag machinery	C. B. Stilwell	410,122	Aug. 27	2919	766	48	1257
Paper-bag machinery	C. B. Stilwell	410,123	Aug. 27	2920	766	48	1258
Paper-bag machinery	C. B. Stilwell	410,124	Aug. 27	2921	767	48	1258

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Paper-bag machinery	C. B. Stilwell	410,125	Aug. 27	2922	767	48	1258
Paper bags. Making	W. A. Lorenz	411,288	Sept. 17	1752	469	48	1628
Paper bags. Manufacture of	H. C. Burdick	407,814	July 30	2697	706	48	558
Paper barrels. Manufacture of	A. Brab	410,726	Sept. 10	922	247 / 246	48	1452
Paper box	H. Roensch	407,964	July 30	2923	761	48	600
Paper box	C. Schwartz	407,494	July 23	2230	576	48	459
Paper box	P. O. Soper	411,398	Sept. 17	1912	516	48	1655
Paper-box-making machine	H. Henschel	408,712	Aug. 13	794	206 / 210	48	898
Paper-box-making machine	I. L. Sheldon and G. F. Bailey	410,033	Aug. 27	2752	724	48	1228
Paper-calendering machine	J. McLaughlin	411,051	Sept. 17	1393	374	48	1557
Paper-clip for writing-tablets	W. K. Crofford	410,580	Sept. 10	676	181	48	1407
Paper-coating machine	J. Prasch	410,921	Sept. 10	1205	325 / 326	48	1510
Paper-cutter	L. Ehrlich	407,518	July 23	2258	584	48	465
Paper-cutter	L. Ehrlich	407,519	July 23	2259	584	48	465
Paper-cutting machines. Cutting-stick for	J. E. Hamilton	407,861	July 30	2761	716	48	569
Paper-fastener	G. W. McGill	406,759	July 9	1109	294	48	224
Paper-feeding machine	R. Barnet	408,309	Aug. 6	10	3	48	680
Paper. Finishing	Z. Crane, Jr.	406,505	July 9	724	199	48	152
Paper-folding machine	J. C. Kneeland	411,151	Sept. 17	1558	415	48	1589
Paper for cigarettes or other purposes. Machinery for cutting and winding strips of	L. Lacroix, Fils	409,408	Aug. 20	1840	485 / 486	48	1049
Paper-hanger's folding table	H. W. Allen	411,366	Sept. 17	1865	490	48	1648
Paper-hanging machine	K. L. Jones	410,642	Sept. 10	774	210	48	1421
Paper-hangings. Composition for the treatment of	N. W. Helme, R. Stockdale, and R. N. Helme.	407,008	July 16	1462	.....	48	305
Paper holder and cutter. Roll	L. Ehrlich	408,598	Aug. 6	604	156	48	795
Paper holder and cutter. Roll	L. Ehrlich	409,028	Aug. 13	1267	330	48	980
Paper holder and cutter. Roll	E. Hotchkiss	408,621	Aug. 6	636	165	48	802
Paper holder and cutter. Roll	A. Q. Ross	408,752	Aug. 13	844	225	48	848
Paper holder and cutter. Roll	W. H. Tivy and L. Ehrlich	408,551	Aug. 6	536	140	48	781
Paper holder and cutter with printing attachment	C. J. McRae and H. C. Baker	407,105	July 16	1636	439	48	336
Paper holder and printer. Combined wrapping	E. B. Weston	406,318	July 2	413	111	48	83
Paper holder, cutter, and printing device. Combined	L. A. McCord	407,489	July 23	2225	574	48	458
Paper holder, cutter, stamper, and measurer. Combined roll-	C. R. Williamson	408,563	Aug. 6	555	149	48	786
Paper holder, printer, and cutter. Roll wrapping	G. L. Kennedy	410,504	Sept. 10	695	186	48	1410
Paper holder. Toilet	W. E. Gibbons	407,345	July 23	2000	519	48	415
Paper inimitable. Rendering	A. Rimanoczy	411,059	Sept. 17	1405	.....	48	1559
Paper-jogger	W. Reiffel	411,750	Sept. 24	2429	643	48	1767
Paper-machine	J. Kingsland, Jr.	407,534	July 23	2277	590	48	469
Paper. Machine for coating continuous strips of	O. and H. O. Woodworth	409,892	Aug. 27	2563	671	48	1191
Paper-making machine	J. Hatch	409,201	Aug. 20	1530	405	48	988
Paper-making machine	C. and F. Symons	411,207	Sept. 17	1641	433	48	1605
Paper-making machines. Dandy-roll for	R. Brown	407,992	July 30	2966	770	48	607
Paper. Manufacture of waxed	E. G. Sparks	410,610	Sept. 10	1052	272	48	1480
Paper. Manufacturing bundles of toilet	O. H. Hicks	411,193	Sept. 17	1616	449	48	1600
Paper or other sheets from a pile. Mechanism for feeding	E. Woodward	407,985	July 30	2954	768	48	606
Paper-ornamenting machine	C. A. Dean and F. H. Robie	410,154	Sept. 3	94	7	48	1273
Paper-ornamenting machine	C. A. Dean and F. H. Robie	410,155	Sept. 3	96	8	48	1274
Paper. Printing-holder for roll wrapping	G. L. Kennedy	410,505	Sept. 10	696	180	48	1411
Paper-pulp. Beating-engine for	E. Conley	407,641	July 23	2439	632	48	502
Paper-pulp screen	C. H. Campbell	407,095	July 30	2971	773 / 774	48	608
Paper-reel	E. J. and C. E. Pope	411,608	Sept. 24	2227	582	48	1725
Paper-roll holder and printer	G. L. Kennedy	410,503	Sept. 10	694	180	48	1410
Paper. Shell for winding	G. B. Farrington and N. Curtis	411,140	Sept. 17	1542	412	48	1586
Paper tubes. Machine for crimping the ends of	R. K. Hill and H. C. Foote	410,518	Sept. 3	586	177	48	1383
Paper vessel	W. Foglesong	411,654	Sept. 24	2293	609	48	1739
Parer. Cocoanut	A. W. Lewis	411,598	Sept. 24	2211	583 / 589	48	1721
Paring and coring machine	S. Lyon	409,111	Aug. 13	1394	367 / 368	48	954
Passenger-register	H. Kershaw and T. Sutcliffe	406,142	July 2	166	46	48	34
Paste. Dry flour	J. H. Day	406,631	July 9	913	.....	48	187
Paste. Making dry flour	J. H. Day	406,270	July 2	337	.....	48	68
Pasteboard boxes. Blank for	T. Remus	407,493	July 23	2230	576	48	459
Pattern: *See* Garment-pattern.							
Patterns and models. Producing garment	E. Stahl	410,383	Sept. 3	379	101	48	1344
Patterns for garments. System of laying out	C. Schubert	411,686	Sept. 24	2343	619 / 620	48	1749
Pavement. Flag-stone and cement	C. Kuhl	406,289	July 2	361	99	48	73
Pavement. Vulcanite	W. C. Murdock	408,250	Aug. 6	71	.....	48	6 3
Paving composition	C. Richardson	409,504	Aug. 20	1975	.....	48	1076
Pawl-and-ratchet mechanism	H. H. Dillie	408,090	July 30	3089	822	48	634
Pea-hulling machine	W. E. Jones	408,627	Aug. 6	644	167	48	803
Pedals. Stop for	S. T. White	407,269	July 16	1882	491	48	384
Pegging-machine	J. E. Bickford	409,739	Aug. 27	2324	611 / 612	48	1146
Pelts, &c. Machine for removing water-hairs from	A. Hedbavny	408,879	Aug. 13	1042	275	48	867
Pen-cleaner	R. W. Pope	410,919	Sept. 10	1203	325	48	1509
Pen. Fountain	J. D. Bray	408,909	Aug. 13	1085	285	48	893
Pen. Fountain	D. C. Demarest	407,999	July 30	2977	775	48	610
Pen. Fountain	D. C. Demarest	408,000	July 30	2979	776	48	610
Pen. Fountain	A. M. Fox	409,952	Aug. 27	2643	693	48	1207
Pen. Fountain	J. Friedmann	407,585	July 23	2262	612	48	468
Pen. Fountain	J. Friedmann	407,586	July 23	2263	612	48	468
Pen. Fountain	J. Morris	407,412	July 23	2105	544	48	434
Pen. Fountain	C. Stockmann	408,375	July 2	402	107	48	98
Pen-holder	J. P. Egan	407,517	July 23	2257	583	48	465

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Pen-holder. Electric	W. C. Holmes	409,908	Aug. 27	2669	709	48	1212
Pens. Manufacture of	J. T. Foster	410,272	Sept. 3	209	55	48	1310
Pencil-clasp	G. H. Kent	411,450	Sept. 24	1996	529	48	1677
Pencil-sharpener	W. H. Lamson	411,526	Sept. 24	2098	533	48	1697
Pencil-sharpener	E. G. Phillips	409,202	Aug. 27	2446	630	48	1106
Pencil-sharpener	B. T. Whitehouse	409,360	Aug. 20	1502	474	48	1041
Pencil-sharpener	A. Thurber	411,173	Sept. 17	1598	422	48	1595
Pencil-sharpener and paper-weight. Combined	E. Hambujer	406,900	July 16	1324	347	48	274
Pencil sharpener. Slate	H. Kienth	411,596	Sept. 24	2209	588	48	1721
Percolator	A. E. La Roe	410,643	Sept. 10	776	210	48	1427
Perforating machine. Paper	W. Fallon	407,068	July 16	1560	409	48	320
Perforating-tool	O. Armbruster	407,464	July 23	2194	565	48	452
Perfume-carrier	S. C. Munro	406,459	July 9	646	181 / 182	48	139
Permutation-lock	J. M. Pfaum	409,496	Aug. 20	1902	519	48	1074
Petroleum and other hydrocarbons. Apparatus for vaporizing and burning	J. Wilson and A. Mason	408,644	Aug. 6	676	175	48	808
Petroleum. Apparatus for burning	J. Wilson and A. Mason	408,643	Aug. 6	674	175	48	808
Petroleum-burner	F. G. Lilly	408,245	Aug. 6	67	16	48	692
Petroleum-distillates. Purifying and deodorizing	H. R. Angus	407,274	July 16	1888	492	48	384
Petroleum-furnace	J. A. S. Gray	409,576	Aug. 20	2077	548	48	1095
Phonogram-blank	T. A. Edison	406,569	July 9	815	220	48	169
Phonogram-blank	T. A. Edison	406,576	July 9	894	223	48	170
Phonogram-blank	T. A. Edison	406,571	July 9	816	221	48	169
Phonogram-blanks. Treating	W. B. Tattersall	408,998	Aug. 13	1213	320	48	980
Phonogram-cylinder	H. F. Searle	407,127	July 16	1603	436	48	342
Phonogram-receiving box	T. A. Edison	406,568	July 9	814	220	48	169
Phonograph	T. A. Edison	406,570	July 9	815	221	48	169
Phonograph	T. A. Edison	406,572	July 9	817	221	48	169
Phonographs. Automatic determining device for	T. A. Edison	406,573	July 9	819	222	48	170
Phonographs. Automatic determining device for	T. A. Edison	406,574	July 9	821	222	48	170
Phonographs. Automatic determining device for	T. A. Edison	406,575	July 9	822	223	48	170
Phonographs. Automatic determining device for	T. A. Edison	407,728	July 23	2551	661	48	534
Photographer's portable compartment for transferring plates.	S. Green	407,275	July 16	1890	492	48	385
Photographic camera	E. B. Barker	407,567	July 23	2364	612	48	488
Photographic camera	W. H. Fuller	409,874	Aug. 27	2537	664 / 665	48	1185
Photographic camera	G. Shorkley	408,451	Aug. 6	309	96, 97	48	752
Photographic cameras. Roll-holder for	E. B. Barker	409,618	Aug. 20	2140	.....	48	1107
Photographic developing-bath	C. Spiro	406,460	July 9	647	182	48	139
Photographic films. Support for	R. McNeill	409,981	Aug. 27	2683	704	48	1215
Photographic lens	H. E. Krogmann	406,299	July 2	378	103	48	76
Photographic-light apparatus	L. C. Overpeck	411,253	Sept. 17	1704	455 / 456	48	1618
Photographic negatives. Apparatus for holding and washing	W. K. Moody	407,050	July 16	1536	403	48	316
Photographic paper-roll holder	E. B. Barker	406,065	July 2	87	26	48	20
Photographic-plate holder	G. H. Carlisle	407,647	July 23	2447	634	48	503
Photographic roll-holder	G. Eastman	406,909	July 2	336	92	48	68
Photographic washing apparatus	J. W. Dalrymple	407,695	July 23	2510	648	48	515
Piano	F. Schaaf	409,325	Aug. 20	1730	452	48	1025
Piano-action	H. L. Hone	411,248	Sept. 17	1695	453	48	1617
Piano-action	H. Kranich and J. Bach	406,405	July 2	544	152	48	109
Piano-action	S. R. Perry	407,035	July 16	1516	396	48	312
Piano-action. Shifting	C. M. Richards	408,852	Aug. 13	997	264	48	878
Piano action. Upright	A. Richter	409,513	Aug. 20	1985	524	48	1078
Piano-case	H. W. Smith	410,293	Sept. 3	134	34	48	1294
Piano. Divisible upright	W. Umland	409,810	Aug. 27	2450	642 / 643	48	1170
Pianos. Device for cutting damper-felts for	J. Swenson	408,868	Aug. 13	1024	271	48	883
Pianos. Music-rack attachment for upright	H. Ziegler	407,053	July 16	1541	404	48	316
Pick	J. T. Boen	408,471	July 9	664	186	48	142
Picker: *See* Fruit-picker.							
Picture-exhibitor	J. Reits	406,255	July 2	316	87	48	62
Picture-hanger	W. M. Brinkerhoff	406,023	July 9	903	244	48	185
Picture-hanger	W. M. Brinkerhoff	409,644	Aug. 20	2163	575	48	1114
Picture-hanger. Adjustable	L. Messer	406,654	July 9	652	257	48	194
Pie-turner	W. E. Locke	408,053	July 30	3052	799	48	625
Pigeon-hole	W. H. Taylor	407,098	July 16	1624	425	48	334
Pigeon-hole case	D. C. Meehan	408,230	Aug. 6	47	11	48	687
Pigeon-hole case. Rotating	G. A. Goodrich	408,001	July 30	2990	776	48	612
Pigeon-holes. Metallic bottom plate for	I. L. Dunn	406,871	July 16	1263	337	48	987
Pigment. Apparatus for the manufacture of	F. L. Bartlett	409,620	Aug. 27	2464	.....	48	1172
Pigment-resist	J. Bracewell	406,809	July 16	1278	336	48	266
Pigments. Manufacturing	F. L. Bartlett	411,085	Sept. 17	1460	388	48	1569
Pile fabric	W. H. Balmforth	409,342	Aug. 20	1746	459	48	1029
Piles. Machine for cutting off	E. J. Weston	407,776	July 30	2632	682	48	546
Pillow. Folding	A. W. Harrison	411,351	Sept. 17	1649	494	48	1644
Pillow-sham adjuster	J. B. Pugh	407,307	July 16	1933	503	48	304
Pillow-sham holders. Combined bracket and clamp for	G. S. Tompkins and C. Whittingham.						
Pin: *See* Clothes-pin. Crank-pin. Rolling-pin. Safety-pin.							
Pincushion	W. O. Day	406,340	July 2	444	123	48	89
Pine fiber	W. Latimer	409,608	Aug. 20	2128	.....	48	1104
Pinion-holder for pinion-polishing machines	G. Nutting	410,558	Sept. 3	640	170	48	1394
Pipe: *See* Blow-pipe. Drain and soil pipe. Furnace-pipe. Sewer-pipe. Sheet-metal pipe. Stand-pipe. Tobacco-pipe.							
Pipe-bender	E. L. Burgoin	406,992	July 16	1461	382	48	301
Pipe. Bending and coiling	H. E. Fowler	408,005	July 30	2986	777 / 778	48	611

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Pipe-bending device. Metal	H. M. Brigham	411,756	Sept. 24	2439	646	48	1768
Pipe casing or conduit	A. and E. L. Wyckoff	409,265	Aug. 20	1625	430	48	1007
Pipe-clamp	W. Walker and J. B. Davis	410,816	Sept. 10	1060	284	48	1462
Pipe-coupler	C. F. Murdock	409,697	Aug. 27	2277	599	48	1138
Pipe-coupling	E. Beck	407,151	July 16	1694	442	48	347
Pipe-coupling	W. M. Brown, Jr	407,922	July 30	2860	745	48	587
Pipe-coupling	S. R. Dresser	406,035	July 2	22	7	48	7
Pipe-coupling	D. Kennedy, Jr	410,532	Sept. 3	628	168	48	1392
Pipe-coupling	D. Lippy	409,473	Aug. 20	1933	512	48	1068
Pipe-coupling	F. C. Rockwell	410,293	Sept. 3	240	62	48	1316
Pipe-coupling	E. U. Scoville	410,032	Aug. 27	2751	723	48	1288
Pipe-coupling	J. C. Sturgeon	409,121	Aug. 13	1408	372	48	957
Pipe-coupling	J. C. Sturgeon	409,122	Aug. 13	1411	373	48	958
Pipe-coupling	W. T. Taggart	409,127	Aug. 13	1419	373	48	959
Pipe coupling and branch. Combined detachable	I. B. Potts	407,682	July 23	2490	644	48	511
Pipe coupling and branch. Combined detachable	I. B. Potts	407,683	July 23	2491	644	48	511
Pipe-coupling. Detachable	I. B. Potts	406,060	July 2	58	16	48	14
Pipe coupling. Steam	F. Hanson	410,547	Sept. 3	631	{166 167}	48	1390
Pipe-coupling. Valved	H. Trask and W. N. Carmichael	408,273	Aug. 6	105	28	48	700
Pipe coupling. Waste	W. H. H. Davis	406,888	July 16	1305	342	48	271
Pipe-covering	I. P. Wendell	411,115	Sept. 17	1507	400	48	1579
Pipe-cutter	A. V. Anderson	406,077	July 2	76	22	48	17
Pipe elbow or section	C. B. Cooper	409,631	Aug. 20	2167	571	48	1111
Pipe-elbows. Making	C. B. Cooper	410,534	Sept. 3	605	162	48	1387
Pipe-expander	J. and P. Jardine	410,262	Sept. 3	232	58	48	1313
Pipe-forming machine	C. E. Ashworth	410,630	Sept. 10	750	205	48	1423
Pipe-hanger	J. Collis	411,318	Sept. 24	2087	551	48	1695
Pipe-holder	P. McCauley	406,949	July 9	1246	330	48	949
Pipe-joint	H. Johnson	406,719	Aug. 13	803	212	48	839
Pipe-joint. Ball-and-socket	J. C. Sturgeon	409,124	Aug. 13	1414	373	48	958
Pipe-joint. Detachable	I. B. Potts	407,681	July 23	2489	644	48	511
Pipe-joint. Flexible	D. W. Magee	409,216	Aug. 20	1555	411	48	993
Pipe. Machine for bending and coiling	H. E. Fowler	408,006	July 30	2387	{776 778}	48	612
Pipe. Machine for making curved	P. J. Fish	411,023	Sept. 17	1352	363	48	1549
Pipe. Machine for making curved lead	G. W. Wicks	407,384	July 23	2064	534	48	426
Pipe-making machine. Curved	H. B. Camp	410,531	Sept. 3	602	160	48	1386
Pipe. Making square metal	W. B. Sandford	410,203	Sept. 3	113	29	48	1291
Pipe or boiler covering. Steam	P. Carey	411,091	Sept. 17	1470	390	48	1571
Pipe or hose coupling	J. C. Sturgeon	409,123	Aug. 13	1413	373	48	958
Pipe or tube	J. C. Bayles	406,332	July 2	435	120	48	87
Pipe. Rolls for the manufacture of square	W. B. Sandford	410,202	Sept. 3	111	29	48	1291
Pipe-thread-cutting machine	T. McFadden and D. Rosser	407,413	July 23	2106	{544 545}	48	434
Pipe-threading machine	R. P. Curtis	406,092	July 2	99	29	48	22
Pipe-wrench	J. A. Giles	408,479	Aug. 6	412	107	48	760
Pipe-wrench	J. D. Hodge	411,502	Sept. 24	2063	546	48	1690
Pipe-wrench	M. W. Morehouse and N. S. Kellogg	406,177	July 2	218	58	48	43
Pipe-wrench	O. C. Stanley	411,266	Sept. 17	1720	460	48	1621
Pipes. Anti-freezing device for water	C. Miller	410,693	Sept. 10	895	239	48	1442
Pipes. Apparatus for testing and disinfecting drain or soil	W. S. Clark	409,013	Aug. 13	1241	328	48	925
Pipes. Glass or porcelain lined metal T-piece or elbow for	R. Morant	409,112	Aug. 13	1398	369	48	955
Pipes. Laying submarine	G. H. Breymann	409,008	Aug. 13	1230	325	48	923
Pipes. Machine for expanding the ends of	G. Matheson	409,994	Aug. 27	2697	709	48	1217
Pipes. Machine for expanding the ends of	G. Matheson	410,000	Aug. 27	2707	711	48	1219
Pipes or tubes for coupling. Preparing	J. Robertson	407,038	July 16	1363	{360 369}	48	313
Piston-meter	W. T. Fox	410,408	Sept. 3	423	111	48	1352
Piston-rod guide	M. Hastings	409,199	Aug. 20	1527	403	48	988
Piston-rods and piston-heads in cylinders. Device for adjusting	L. Finlay	408,381	Aug. 6	262	69	48	730
Pitcher. Ice	E. Playter	409,423	Aug. 20	1861	491	48	1053
Plaiting apparatus	M. E. Cartwright	406,086	July 2	89	23	48	20
Plaiting-machine	G. C. Parker	409,974	Aug. 27	2676	703	48	1213
Plane. Bench	G. Karrmann	410,710	Sept. 10	880	234	48	1446
Plane. Carpenter's	R. T. Torkelson	406,605	July 9	870	234	48	178
Plane. Molding	E. D. Johnson	409,405	Aug. 20	1838	484	48	1048
Plane. Rasping	C. S. Snowden	410,809	Sept. 10	1051	281	48	1480
Planers. Device for setting the tool-carriers of	J. W. Nist	410,290	Sept. 3	235	61	48	1315
Planing gear-teeth. Machine for	G. B. Grant	407,437	July 23	2132	558	48	444
Planing-machine	A. B. Hutchinson and E. F. Autenrieth	406,583	July 9	832	{220 221}	48	172
Planing-machine	S. A. Woods and J. R. Thomas	411,540	Sept. 24	2115	558	48	1701
Planing machine. Blind-slat	F. H. Van Houten	408,863	Aug. 13	1014	{268 269}	48	882
Planing-machine. Rotary	V. V. Lawrence	406,587	July 9	838	220	48	173
Plant-protector	L. B. Moore and M. S. Love	411,347	Sept. 17	1844	486	48	1643
Plant-protector	I. E. Sherman and W. T. Crouch	410,653	Sept. 10	786	212	48	1429
Plant-protector	C. M. Yarborough	409,133	Aug. 13	1428	376	48	961
Plant-setting machine	N. M. Chew	406,336	July 2	440	122	48	88
Plants. Removing vermin or scales from	E. P. Fowler	408,608	Aug. 6	615	.....	48	797
Planter	J. C. Lloyd	407,021	July 16	1406	372	48	306
Planter	L. Scofield	411,203	Sept. 17	1635	435	48	1604
Planter	A. S. Tragethon	411,626	Sept. 24	2253	{596 599}	48	1730
Planter and fertilizer-distributer. Combined seed	H. J. Davis, Jr	406,127	July 2	147	41	48	31
Planter and fertilizer-distributer. Seed	J. A. Childs and W. E. Muir	411,215	Sept. 17	1653	441	48	1608
Planter and seed-drill. Potato	W. L. Coffin	408,565	Aug. 6	583	152	48	791
Planter. Check-row corn	G. L. Banks	410,140	Sept. 3	1	1	48	1269
Planter. Check-row corn	D. H. Dillon	407,179	July 16	1741	{435 436}	48	356
Planter. Check-row corn	S. D. Reynolds	409,502	Aug. 20	1972	521	48	1076

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Planter. Corn	R. H. Avery	407,848	July 30	2745	713	48	566
Planter. Corn	G. J. Cline	407,168	July 16	1722	449	48	352
Planter. Corn	G. H. Evans, Jr	411,282	Sept. 17	1745	466	48	1626
Planter. Corn	J. G. Harris	410,707	Sept. 10	875	235	48	1445
Planter. Corn	J. C. Hart	410,890	Sept. 10	1167	314	48	1502
Planter. Corn	C. Letot	410,904	Sept. 10	1185	320	48	1505
Planter. Cotton and corn	W. Watson	411,696	Sept. 24	2359	623	48	1732
Planter. Double-lister corn	C. W. Freyer	408,097	July 30	3121	817	48	638
Planter. Potato	C. Wright	406,811	July 9	1191	316	48	240
Planter. Potato or seed	W. F. Cummings and H. C. McDuffee	408,378	Aug. 6	258	64, 65	48	729
Planter. Seed	A. C. Smith	406,962	July 16	1413	371	48	292
Planter. Seed	B. O'Donnell	410,665	Sept. 10	715	192	48	1414
Planters. Marking and dropping attachment for corn	S. E. Gross	407,622	July 30	2708	703	48	559
Planting. Seed	I. C. Hart	406,215	July 2	265	.....	48	53
Plastering compound	A. T. Woodward	407,271	July 16	1884	.....	48	384
Plastic compound	J. L. Hastings	409,584	Aug. 20	2069	.....	48	1098
Plastic mineral composition	E. B. Barker	411,487	Sept. 24	2042	540	48	1686
Plate-washing frame							
Platform: *See* Dumping-platform.	W. H. Bradshaw	406,022	July 2	5	2, 3	48	3
Plow	A. I. Gale	408,906	Aug. 13	1166	308	48	911
Plow	J. B. Hawley	409,202	Aug. 20	1531	406	48	989
Plow	J. E. Holler	407,422	July 23	2213	571	48	438
Plow	J. P. Kirk	408,341	Aug. 6	63	14	48	691
Plow	J. W. Leas	411,342	Sept. 17	1838	491	48	1642
Plow	M. L. Rinehart	409,709	Aug. 27	2299	604	48	1141
Plow	C. C. Smalley	407,259	July 16	1867	487	48	381
Plow	W. H. and H. Smith	410,121	Aug. 27	2917	766	48	1257
Plow	G. B. St. John	410,659	Sept. 10	796	215	48	1431
Plow	I. W. Sylvester	410,218	Sept. 3	129	32	48	1253
Plow	J. O. Tigner and B. O. Hill	410,409	Sept. 3	519	139	48	1370
Plow	A. J. Ventzki	408,331	Aug. 6	191	48, 49	48	717
Plow	M. Wilson	407,029	July 23	2418	638	48	497
Plow	H. H. Sater	407,450	July 23	2172	560	48	447
Plow attachment	N. W. Williams	409,923	Aug. 20	2154	566	48	1109
Plow-beam	A. B. and T. A. Voelkerding	410,946	Sept. 10	1236	324	48	1517
Plow, Gang	H. G. Anderson	410,490	Sept. 3	533	143	48	1373
Plow or cultivator	J. Drader	411,650	Sept. 24	2285	608	48	1737
Plow, Rotary	W. L. Sexton	410,381	Sept. 3	377	100	48	1343
Plow-shovel	C. M. Herrey	406,733	July 9	1062	283	48	214
Plow, Sulky	E. A. Raaths	410,022	Aug. 27	2737	719	48	1226
Plow, Sulky	H. D. Terrell	406,677	July 9	982	264	48	200
Plows. Making heel-scrapers for	W. D. Lindsley	406,360	July 2	472	132	48	93
Plows. Seeding attachment for	B. A. Baker	408,283	Aug. 6	118	30	48	702
Plows. Stalk-cutter wheel for sulky	M. J. Kallaher and J. Mulrooney	407,955	July 30	2913	750	48	599
Plugs. Extension box and key for street gas or water	J. M. Cameron	409,917	Aug. 27	2594	680	48	1197
Plumb-bob	P. E. Hall, Sr	410,414	Sept. 3	434	115	48	1354
Plumber's adjustable bracket	H. Lilley	408,184	July 30	3271	854	48	663
Plumbers' hooks. Machine for making	R. and C. McAlpine	407,941	July 30	2887	751	48	593
Plumbers' use. Saw for	P. Kennedy, Jr	406,446	July 9	612	172	48	132
Pneumatic dispatch-tubes. Pneumatic switch for	P. Kennedy, Jr	406,447	July 9	613	173	48	132
Pneumatic dispatch-tubes. Switch for	W. Brede	407,055	July 16	1543	404	48	317
Pocket-knife	H. C. Hunt	407,863	July 30	2763	719	48	570
Pocket-knife	H. B. Weaver	410,390	Sept. 3	390	104	48	1345
Poison-guard	C. A. Danals	411,238	Sept. 17	1681	450	48	1614
Pole-changer. Automatic	J. Klotz and F. Kuschel	407,017	July 16	1491	389	48	307
Pole coupling. Carriage	J. G. Engliah	408,961	Aug. 13	1161	307	48	910
Pole crab. Carriage	J. P. Kline	408,242	Aug. 6	64	15	48	691
Pole or shafts for vehicles. Safety	J. H. Cunningham	408,379	Aug. 6	260	65	48	729
Pole. Sectional metal	A. Colburn	410,749	Sept. 10	959	238	48	1459
Polishing-wheel	T. C. Devlin	409,537	Aug. 27	2625	{688 689}	48	1204
Pool-register. Automatic	R. A. Paine	409,060	Aug. 13	1308	345	48	937
Pool-table	W. Earley	408,469	Aug. 6	400	105	48	758
Portable heater	A. Edwards	407,284	July 16	1903	495	48	388
Portfolio							
Post: *See* Fence-post. Hitching-post.							
Post-hole digger	J. C. Duclos	410,640	Sept. 10	772	209	48	1426
Post-hole digger	W. D. A. Gray and J. D. Klepper	411,295	Sept. 17	1749	467	48	1627
Post-office lock-boxes. Frame for doors of	B. H. Camp	409,559	Aug. 20	2049	540	48	1090
Post, rail-tie, beam, &c	O. A. Stempel	411,360	Sept. 17	1856	497	48	1646
Postal packet	M. Newiklaf	411,508	Sept. 24	2073	548	48	1693
Postmarking and canceling machine. Letter	A. Bertram	408,401	Aug. 6	294	73	48	736
Pot: *See* Coffee-pot. Tea or coffee pot. Flower-pot. Tinner's fire-pot. Glass-melting pot.							
Pot-furnace	M. V. Smith	410,742	Sept. 10	945	{253 254}	48	1456
Potato-bug catcher	G. F. Reynolds	410,197	Sept. 3	102	27	48	1288
Potato-digger	C. Brick	407,465	July 23	2194	566	48	452
Potato-digger	F. M. Burger	408,208	Aug. 6	8	2	48	690
Potato-digger	D. Y. Hallock	407,928	July 30	2870	747	48	589
Potato-digger	D. Levarn	409,472	Aug. 20	1932	511	48	1068
Potato-digger	J. A. Lewis	409,293	Aug. 20	1676	441	48	1017
Potato-digger	A. Rigby	408,670	Aug. 6	711	184	48	815
Potato-digger	O. Simons	410,210	Sept. 3	118	30	48	1291
Potato-digger	I. W. Hoover	406,096	July 2	103	30	48	23
Potato screen and separator	C. C. Thompson	409,075	Aug. 13	1234	332	48	943
Pottery-dipping tub	S. P. Jackson	406,350	July 2	460	128	48	92
Pottery. Mold or outside ring for	G. B. Adams	409,159	Aug. 20	1491	391	48	979
Pouch or bag	W. C. Williams	408,248	July 2	908	85	48	62
Poultry-fattening machine	G. W. Schroeder	406,778	July 9	1136	301	48	229
Poultry-house	J. E. Roeder	407,449	July 23	2171	560	48	447
Powder-box							

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Powder-separator	E. F. Ward	409,258	Aug. 20	1616	428	48	1005
Power-converter	G. W. and E. B. Wilsey	407,385	July 23	2066	534	48	427
Power. Transmitting	W. Main	407,089	July 16	1598	419	48	328
Power-transmitting connection for vehicles	W. Main	407,086	July 16	1583	415, 416	48	325
Power-transmitting device	W. Main	407,085	July 16	1579	414, 415	48	324
Power-transmitting device	W. Main	407,087	July 16	1589	417, 418	48	326
Power-transmitting device	W. Main	407,088	July 16	1595	419	48	328
Power-transmitting device	W. Main	407,090	July 16	1600	420	48	329
Power-transmitting device	W. Main	407,091	July 16	1603	420	48	330
Power-transmitting device	W. Main	407,092	July 16	1607	420	48	331
Power-wrench	T. F. Wells	410,129	Aug. 27	2926	768	48	1259
Precious metals from their ores. Extracting	J. S. MacArthur	411,047	Sept. 17	1388	......	48	1556
Press: *See* Baling-press. Butter-press. Copying-press. Die-press. Filter-press. Harness-loop press. Hat-brim press. Hay-press. Hydraulic press. Laundry-press. Lead-press. Letter-press. Lithographic press. Printing-press.							
Press	W. V. Kay	409,976	Aug. 27	2678	702	48	1214
Press for knitted or woven fabrics	W. D. Butz	408,578	Aug. 6	574	150	48	789
Pressure-gage	G. M. Williams	409,087	Aug. 13	1352	357, 358	48	946
Pressure-gage and safety-valve. Combined	J. D. Bowman	406,990	July 16	1457	381	48	300
Pressure-gages. Apparatus for graduating and testing	A. C. Meady and C. B. Bosworth	408,808	Aug. 13	933	248, 249	48	866
Pressure or damper regulator. Steam-	J. J. Lowden	408,889	Aug. 13	1057	279	48	890
Pressure-regulator	T. Backlejan	408,788	Aug. 13	902	241	48	850
Pressure-regulator	M. Hastings	409,200	Aug. 20	1529	405	48	988
Pressure-regulator	J. F. McElroy	410,178	Sept. 3	56	14	48	1280
Pressure regulator. Gas-	H. J. Bell	409,626	Aug. 20	2161	569	48	1110
Pressure regulator. Gas-	H. J. Bell	409,627	Aug. 20	2163	569, 570	48	1111
Pressure regulator. Steam-	N. Curtis	406,029	July 2	12	5	48	5
Pressure regulator. Water-	H. B. Williams	407,981	July 30	2950	767	48	605
Primer-tube for dynamite cartridges	G. Smith	411,206	Sept. 17	1641	436	48	1605
Printer and cutter. Combined paper	L. Ehrlich	406,597	Aug. 6	604	156	48	795
Printer. Station and want	M. D. Porter	407,416	July 23	2110	545, 546, 547	48	435
Printer's stand	S. W. Rathbun	408,747	Aug. 13	836	221	48	846
Printing	G. L. Jaeger	410,521	Sept. 3	590	158	48	1384
Printing and delivery mechanism. Web	S. D. Tucker	408,394	Aug. 6	283	71	48	733
Printing aniline-black	J. Bracewell	409,821	Aug. 27	2466	......	48	1172
Printing-cylinders. Imposing forms upon	S. D. Tucker	408,393	Aug. 6	282	70	48	733
Printing dark-blue colors	J. Bracewell	409,906	Aug. 27	2580	......	48	1194
Printing device. Automatic	N. D. Barradall and A. J. Bradley	407,631	July 23	2422	628	48	498
Printing device for wrapping-paper rolls	E. B. Weston	406,319	July 2	415	114	48	83
Printing-machine	J. H. Buxton, D. Braithwaite, and M. Smith	407,393	July 23	2077	537, 538	48	429
Printing-machine	J. C. Fowler and E. A. Henkle	408,094	July 30	3109	814, 815	48	636
Printing-machine	J. R. Rankin	407,034	July 16	1514	396	48	312
Printing-machine	M. Umbdenstock	409,885	Aug. 27	2553	668	48	1188
Printing-machine. Cylinder	G. P. Fenner	407,652	July 23	2454	635	48	504
Printing-machine dampening and feeding mechanism	W. Scott	411,535	Sept. 24	2109	556, 557	48	1699
Printing-machine delivery apparatus. Web-	S. D. Tucker	408,389	Aug. 6	275	68, 69	48	732
Printing-machine delivery mechanism	S. D. Tucker	408,390	Aug. 6	277	69	48	733
Printing-machine inking mechanism	S. D. Tucker	408,392	Aug. 6	281	70	48	733
Printing-machine. Rotary	J. J. Clause	410,576	Sept. 10	671	179	48	1406
Printing-machine. Rotary	J. L. Firm	410,271	Sept. 3	205	54, 55	48	1309
Printing-machine sheet-counting mechanism	S. D. Tucker	408,391	Aug. 6	279	70	48	733
Printing-machine sheet-delivery apparatus	G. P. Fenner	406,716	July 9	1040	278	48	210
Printing-machine. Stop-cylinder	C. B. Cottrell	407,172	July 16	1728	451, 452	48	353
Printing machine. Ticket-	J. A. and C. H. Milliken, and E. D'Amour.	410,555	Sept. 3	632	169, 170	48	1392
Printing-machines. Bed-operating mechanism for cylinder	S. Whitlock	406,320	July 2	416	114	48	83
Printing-machines. Gripper-motion for	G. P. Fenner	408,603	Aug. 6	609	157	48	796
Printing on aniline-black	J. Bracewell	409,823	Aug. 27	2470	......	48	1173
Printing or embossing fabrics, &c. Machine for	J. Farmer	408,913	Aug. 13	1092	287, 288	48	897
Printing-plates. Apparatus for graining	J. G. Harris	406,398	July 2	536	149	48	107
Printing-press	F. Van Wyck	410,302	Sept. 3	257	67	48	1318
Printing-press hand-protector	C. Reussenzehn	411,258	Sept. 17	1711	458	48	1620
Printing-presses. Automatic feeder for	J. Schaefer	407,840	July 30	2731	709, 710	48	563
Printing-presses. Feed-gage for	E. L. Megill	408,122	July 30	3174	830	48	647
Printing-presses. Feeder for power	L. Orser	406,058	July 2	50	14, 15	48	12
Printing-presses. Feeder for treadle	L. Orser	406,059	July 2	54	16, 17, 18	48	13
Printing pyroxyline compounds	C. F. Brady	409,345	Aug. 20	1751	......	48	1031
Printing signs. Device for	E. A. Bishop	406,812	July 9	1193	317	48	240
Prints, &c. Transferring	J. J. Fox	406,519	July 9	745	......	48	156
Prints, &c. Transferring	J. J. Fox	406,720	July 9	1046	......	48	211
Projectile	R. Cail	406,334	July 2	437	121	48	88
Projectile	H. S. Halford and W. E. Metford	406,728	July 9	1057	281	48	213

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Projectile for smooth-bore guns	S. H. Emmens	407,648	July 23	2450	634	48	504
Projectile. Lubricating-	S. A. Day	407,890	July 30	2807	731	48	578
Projectiles. Manufacturing	G. Kynoch and H. A. Schlund	407,536	July 23	2289	591	48	470
Propeller for boats. Hand-	J. S. Lamar	410,365	Sept. 3	355	94, 95	48	1339
Propeller. Screw-	M. Vogelgesang	408,864	Aug. 13	1017	269	48	882
Propeller-wheel	W. H. Daniels	406,708	July 9	1030	276	48	208
Propelling and ventilating ships. Device for	F. Johnson	407,214	July 16	1796	470	48	367
Propelling by reaction. Apparatus and means for	A. Ciuren	407,394	July 23	2079	538	48	429
Propelling mechanism. Water-power vessel-	H. Lobdell	408,310	Aug. 6	154	39	48	709
Protector: *See* Boot or shoe sole protector. Garment-protector. Head-protector. Mustache-protector. Plant-protector. Printing-press hand-protector. Sole-protector. Tree-protector. Wall-paper protector.							
Protractor	C. E. W. Dow	411,741	Sept. 24	2416	641	48	1764
Pruning-shears	D. B. Bentley	406,690	July 9	898	243	48	184
Pruning-shears and fruit-picker	B. Jennings	406,524	July 9	755	206	48	158
Puller: *See* Stump-puller.							
Pulley	P. V. Lawson and W. L. Field	407,866	July 30	2770	720	48	571
Pulley	H. E. Ludwig	406,361	July 2	474	133	48	95
Pulley	P. McNaughton	407,367	July 23	2040	529	48	422
Pulley	J. T. Mitchell	408,632	Aug. 6	651	169	48	805
Pulley	A. E. Preston	408,261	Aug. 6	90	22	48	607
Pulley	N. P. Smith	409,878	Aug. 27	2543	666	48	1186
Pulley	W. A. Woodward	407,388	July 23	2069	535	48	428
Pulley. Belt-	J. G. Moomy	410,763	Sept. 10	982	264	48	1464
Pulley-block	C. T. Segar	408,814	Aug. 13	943	251	48	868
Pulley blocks. Roller-bearing for	H. A. Rooke	407,603	July 23	2508	647	48	515
Pulley. Cable-guide	J. Crowther	406,820	July 9	1203	320	48	242
Pulley. Drive-	G. C. Cowles. (Reissue)	11,020	Aug. 6	734	190, 191	48	819
Pulley. Friction-clutch	G. L. Rollins	406,063	July 2	61	18	48	15
Pulley-hanger	E. R. Hyde and R. C. Horner	407,954	July 30	2910	758	48	598
Pulley lubricator. Loose-	W. J. Faul	410,406	Sept. 3	421	111	48	1351
Pulley-molding machine	J. C. McDermott	411,390	Sept. 17	1898	507	48	1653
Pulley. Split	J. B. Cornwall and H. A. Barnard	409,140	Aug. 13	1139	378	48	964
Pulley. Split	M. O. Reeves	409,427	Aug. 20	1868	493	48	1055
Pulley. Split	E. F. Schneider	406,237	July 2	296	81	48	59
Pulley. Split band-	A. Kehler	406,287	July 2	359	98	48	73
Pulley. Wood split	D. A. Sprinkle	406,067	July 2	66	19	48	15
Pulley. Wooden	J. G. Moomy	406,402	July 2	540	151	48	108
Pulley. Wooden	M. O. Reeves	409,426	Aug. 20	1867	492	48	1055
Pulley. Wooden-rim split	G. T. Eames	411,651	Sept. 24	2288	608	48	1737
Pulleys. Yielding connection for	W. E. Davis	407,997	July 30	2974	775	48	609
Pulp-beating engine	E. R. Marshall	411,251	Sept. 17	1700	454, 455	48	1618
Pulp-engine	A. Hempel	406,136	July 2	159	46	48	33
Pulp-engines. Roll for Jordan	E. W. Barton	407,276	July 16	1893	492	48	385
Pulp. Machine for forming bodies from successive layers of	H. Fairbanks and H. Parker	408,092	July 30	3105	813	48	635
Pulp-molding machine	F. E. Keyes	410,977	Sept. 10	1290	349	48	1528
Pulverizing-mill	E. C. Griffin	410,756	Sept. 10	967	260, 261	48	1460
Pulverizing-mill	E. C. Griffin	410,757	Sept. 10	971	261	48	1461
Pulverizing-mill	E. C. Griffin	410,758	Sept. 10	974	262	48	1462
Pulverizing-mill	J. K. Griffin	409,579	Aug. 20	2082	549, 550	48	1096
Pump	F. Bauer	410,396	Sept. 3	398	106	48	1347
Pump	W. Boekel	409,163	Aug. 20	1478	393	48	980
Pump	F. W. Shuls	410,456	Sept. 3	505	135	48	1367
Pump	A. Siebert	410,457	Sept. 3	506	135	48	1367
Pump	A. Siebert	410,458	Sept. 3	507	135	48	1367
Pump	F. Steinmann	410,462	Sept. 3	511	137	48	1368
Pump	J. Stevens	407,699	July 23	2514	650	48	516
Pump	I. C. N. Sweet	408,547	Aug. 6	530	138	48	780
Pump	A. Thiéry	411,625	Sept. 24	2251	598	48	1730
Pump. Air-	J. C. Kennedy	409,844	Aug. 27	2499	653	48	1177
Pump. Air or vapor	H. Von Bayer	410,052	Aug. 27	2787	734	48	1234
Pump and siphon	J. G. Brewer	408,648	Aug. 6	682	176	48	810
Pump attachment	A. Holeman	406,137	July 2	159	46	48	33
Pump bucket. Chain-	A. D. Crosby	409,562	Aug. 20	2054	541	48	1091
Pump. Centrifugal	J. J. Forcier	406,394	July 2	527	147	48	105
Pump. Disk	J. Bowns	410,308	Sept. 3	266	69	48	1320
Pump. Double-acting	R. L. Sherman	411,263	Sept. 17	1717	459	48	1621
Pump. Double-acting force-	J. Schrankel	411,261	Sept. 17	1713	459	48	1620
Pump. Force-	E. K. Hayes	406,442	July 9	604	170	48	130
Pump. Force-	J. M. Winger	408,564	Aug. 6	557	146	48	786
Pump. Gas-pressure	W. H. and S. B. Castor	406,261	July 2	324	90	48	65
Pump-governor	J. T. Pine	409,500	Aug. 20	1968	520	48	1075
Pump. Hand force-	P. Kohns	408,183	July 30	3270	854	48	663
Pump-piston	B. H. Wells	410,867	Sept. 10	1132	304	48	1495
Pump-rod coupling	C. J. Hamilton	406,276	July 2	345	94	48	70
Pump. Rotary	C. M. Young	410,747	Sept. 10	955	257	48	1457
Pump spouts. Means for securing	J. G. Taylor	406,791	July 9	1162	307	48	234
Pump. Steam-	E. C. Johnson	406,098	July 2	105	31, 32	48	23
Pump. Steam-	E. C. Johnson	406,099	July 2	109	32	48	23
Pump. Steam and vacuum	J. McFarlane	406,590	July 9	841	227	48	174
Pump. Vacuum-	J. W. Packard	406,110	July 2	122	36	48	25
Pumps. Automatic air-compressor for	H. A. Daniels	410,075	Aug. 27	2833	744	48	1242
Pumps. Device for automatically manipulating the valves of high-vacuum	E. B. Nicolaus	406,231	July 2	288	79	48	58
Pumps. Hydraulic governor for steam-	C. H. Atkins	406,615	July 9	890	240	48	182

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Pumps. Steam-motor for	H. O. Beatty	408,400	Aug. 6	291	73	48	735
Pumps. Strainer for suction-pipes of	O. H. Jewell	406,467	Aug. 6	426	113	48	763
Pumps. Valve for steam	A. A. and C. H. Tripold	408,606	July 9	672	233	48	179
Pumping-engine	H. Davey	407,580	July 23	2354	610	48	486
Pumping-engine	F. M. Wheeler	411,177	Sept. 17	1596	424	48	1596
Pumping-engine. High-service	A. J. L. Loreta	411,724	Sept. 24	2392	634	48	1759
Pumping-machine	J. Richards	411,680	Sept. 24	2332	617	48	1747
Punch	J. Draper	411,402	Sept. 24	2040	540	48	1687
Punch	J. E. Quinn	407,242	July 16	1643	435	48	376
Punch	J. Clark	407,167	July 16	1721	410	48	359
Punch. Check	E. L. Liedke	407,867	July 30	2772	739	48	571
Punch. Check	F. J. Lockwood	409,291	Aug. 20	1677	442	48	1017
Punching machine. Check	R. Gaiger	408,658	Aug. 6	697	189	48	812
Punching machine. Check	W. W. Guptill	411,744	Sept. 24	2422	{641 642}	{48}	1765
Pyrotechnic compounds. Preparing	A. Del Grande	411,714	Sept. 24	2389	.....	48	1757
Pyroxyline. Apparatus for the manufacture of	R. C. Schupphaus and M. T. White	406,597	July 9	852	229	48	176
Pyroxyline compound	C. R. Schüpphaus	410,204	Sept. 3	114	.....	48	1291
Pyroxyline compound	C. R. Schüpphaus	410,207	Sept. 3	116	.....	48	1291
Pyroxyline compound	C. R. Schüpphaus	410 209	Sept. 3	117	.....	48	1291
Pyroxyline compound	C. R. Schüpphaus	410,205	Sept. 3	114	.....	48	1291
Pyroxyline varnish	C. R. Schüpphaus	410,206	Sept. 3	115	.....	48	1291
Pyroxyline varnish	C. R. Schüpphaus	410,208	Sept. 3	116	.....	48	1291
Queen-rearing chamber	G. L. Tinker	406,972	July 16	1431	375	48	295
Quicksilver-catcher	E. A. Dodge	410,076	Aug. 27	2835	744	48	1242
Quilting-frame	U. E. Miller	406,929	July 16	1367	{358 359}	{48}	284
Race-course. Automatic	F. N. Lang	410,981	Sept. 10	1297	330	48	1529
Rack. *See* Display-rack; Hat and coat rack; Hay-rack; Mail-bag rack; Music-rack; Towel-rack; Whip-rack.							
Rack for displaying dry goods	E. C. Fain	406,131	July 2	151	44, 45	48	32
Rack for papers, &c	S. J. Beighel	410,571	Sept. 10	665	177	48	1405
Radiator	P. J. Kennedy	406,741	July 9	1074	286	48	216
Radiator	J. Liedl	408,420	Aug. 6	328	84	48	742
Radiator	B. F. Sturtevant	411,476	Sept. 24	2031	{357 358}	{48}	1684
Radiator-cover	T. T. Rockett	406,773	July 9	1128	299	48	227
Radiator foot-rest	G. C. Felter	406,640	July 9	935	252	48	191
Radiator. Hot-water	E. S. Manny	407,785	July 30	2644	694	48	548
Radiator. Portable steam	J. C. Mackey	411,156	Sept. 17	1574	418	48	1592
Radiator-sections. Coupling for	J. J. Hogan	411,031	Sept. 17	1366	367	48	1551
Radiator. Steam and hot-water	T. C. Joy	410,691	Sept. 10	853	229	48	1441
Radiators. Foot-rest for steam	J. A. Sohn	410,213	Sept. 3	123	31	48	1292
Rail-brace	F. C. Weir and C. Partington	407,753	July 23	2509	672	48	534
Rail-chair	E. Samuel	410,452	Sept. 3	497	133	48	1365
Rail-joint	R. M. Agee and E. Lane	411,542	Sept. 24	2120	559	48	1702
Rail-joint	J. W. Cloud	410,151	Sept. 3	18	6	48	1272
Rail-joint	B. F. Davis	406,038	July 2	19	6	48	6
Rail-joint	M. C. Niles	407,301	July 16	1925	501	48	392
Rail-joint	M. C. Niles	407,302	July 16	1927	502	48	392
Rail-joint	H. B. Potter	410,096	Sept. 10	859	231	48	1443
Rail-joint	A. E. Rutter	410,028	Aug. 27	2748	722	48	1228
Rail-joint	H. W. and A. H. Scheele	411,064	Sept. 17	1412	377	48	1560
Rail-joint	R. H. Soule	408,543	Aug. 6	523	136	48	779
Rail-joint. Expansion	F. C. Weir	411,302	Sept. 17	1861	498	48	1647
Rail-joint. Lock	P. C. Dockstader	411,186	Sept. 17	1607	427	48	1598
Rail-joint. Locking	P. C. Dockstader	407,644	July 23	2442	633	48	502
Rail-sawing machine	E. C. Smith	410 298	Sept. 3	249	65	48	1317
Rail-support	H. T. Moody	408,892	Aug. 13	1060	280	48	891
Rails. Machine for reducing	W. Scholl and T. G. Wolf	408,933	Aug. 13	1121	{295 296}	{48}	903
Railway	D. G. Weems	406,802	July 9	1177	311	48	236
Railway. Aerial cable	J. R. Perry and J. Mackenzie	407,835	July 30	2723	707	48	562
Railway-bracket. Combination	G. Waterman	406,863	July 9	1267	334	48	253
Railway-brake	A. Watson	409,536	Aug. 20	2016	532	48	1064
Railway brake. Cable	O. Cope	407,171	July 16	1726	{450 451}	{48}	353
Railway. Cable	J. D. Davies	411,762	Sept. 24	2445	648	48	1770
Railway. Cable	J. H. Pendleton and A. Bryson, Jr	406,303	July 2	390	107	48	79
Railway. Cable or electric street	L. M. Clement and G. C. Watriss	409,926	Aug. 27	2606	682	48	1300
Railway-chair	G. W. Rittersbach	411,250	Sept. 17	1719	458	48	1620
Railway chock or stop-block	T. B. Rogers	406,855	July 9	1255	331	48	250
Railway circuit. Electric	J. L. Blackwell	406,421	July 9	569	160	48	123
Railway. Conduit electric	B. Jennings	409,104	Aug. 13	1380	364	48	951
Railway cross-tie	E. Samuel	410,933	Sept. 10	1223	330	48	1514
Railway crossing. Electric	E. E. Ries	409,756	Aug. 27	2363	621	48	1154
Railway-crossing signal	D. H. Irwin	410,690	Sept. 10	851	{228 229}	{48}	1441
Railway crossing. Street	E. Samuel	406,309	July 2	399	{106 109}	{48}	80
Railway-crossings. Danger-signal for	A. J. McDonald	406,937	July 16	1360	361	48	286
Railway-crossings. Derailing mechanism for	M. B. Mills	408,840	Aug. 13	977	259	48	874
Railway. Electric	S. Z. de Ferranti	409,775	Aug. 27	2395	628	48	1159
Railway. Electric	S. D. Field	407,188	July 16	1756	460	48	360
Railway. Electric	G. B. Fraley	411,496	Sept. 24	2054	543	48	1688
Railway. Electric	W. H. Knight	406,743	July 9	1076	287	48	217
Railway. Electric	W. M. Schlesinger	408,855	Aug. 13	999	{264 265}	{48}	879
Railway. Electric	D. G. Weems	406,804	July 9	1179	{312 313}	{48}	237
Railway. Electric	D. G. Weems	406,805	July 9	1180	{313 314}	{48}	237

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Railway. Electric	D. G. Weems	406,806	July 9	1182	314	48	238
Railway. Electrical	S. H. Short	407,496	July 23	2232	576	48	480
Railway. Electrical	S. H. Short	407,745	July 23	2284	669	48	531
Railway. Elevated	L. J. Cody	410,577	Sept. 10	672	{179 180}	{48}	1406
Railway. Elevated	J. N. Valley	408,941	Aug. 13	1131	298	48	905
Railway-frog	O. S. Hawyer	406,278	July 2	340	95	48	70
Railway frogs and crossings. Filling for	F. C. Weir	407,754	July 23	2660	672	48	534
Railway-gage and tie-grip	A. F. Washburn and E. E. Krengel	406,801	July 9	1176	311	48	236
Railway-gate	J. T. Barlow	406,417	July 9	563	158	48	121
Railway-gate	J. Bowser	406,387	July 9	2177	577	48	1713
Railway-gate	J. B. Carey	411,520	Sept. 24	1500	397	48	983
Railway-gate	R. C. Douglass	409,177	Aug. 20	1381	362	48	987
Railway-gate	A. J. McDonald and R. B. Brent	406,938	July 16	1195	323	48	1508
Railway-gate	F. M. Montellus	410,915	Sept. 10	790	214	48	165
Railway-gate	G. Vassar, Jr	406,551	July 9	1	1	48	77
Railway grip. Cable	J. H. Pendleton and A. Bryson, Jr	406,301	July 2	383	{104 105}	{48}	805
Railway guard-rail	J. Waterhouse	408,906	Aug. 13	1080	284	48	177
Railway motor. Electric	F. J. Sprague	406,600	July 9	859	{231 232}	{48}	235
Railway motors. Mechanism for controlling electric	C. J. Van Depoele	406,798	July 9	1169	302	48	1306
Railway plow. Electric	F. O. Blackwell	410,964	Sept. 3	190	50	48	969
Railway. Pneumatic	W. L. Judson	409,205	Aug. 20	1335	{466 467}	{48}	1643
Railway-rail	H. W. Libbey	411,344	Sept. 17	1841	492	48	1371
Railway-rail and wheel therefor	C. White	410,472	Sept. 3	523	140	48	1532
Railway-rail chairs. Making	E. Samuel	410,993	Sept. 10	1314	354	48	91
Railway-rail coupling and bolt	D. P. Henninger	406,348	July 2	456	127	48	1271
Railway-rail joint	J. S. Chadbourne and L. C. Stuckey	410,149	Sept. 3	15	5	48	631
Railway-rail. Reversible	R. B. Burns	408,078	July 30	3085	808	48	288
Railway-rails. Apparatus for manufacturing	E. Norton and J. G. Hodgson	406,944	July 16	1388	{363 364}	{48}	960
Railway-rails. Brace-chair for	J. B. Wettergreen	409,131	Aug. 13	1426	375	48	955
Railway-rails. Interlocking brace-chair for	P. O'Connell	409,114	Aug. 13	1400	369	48	1294
Railway rolling-stock rerailing device and bridge-guard for safety	B. E. Tilden	410,222	Sept. 3	133	33, 34	48	505
Railway-signal	C. A. Finley	407,653	July 23	2455	636	48	1745
Railway-signal	A. B. Fisk	411,742	Sept. 24	2417	641	48	874
Railway-signal	C. T. Hallowell	408,837	Aug. 13	973	259	48	1115
Railway-signal	R. W. Norwood	409,648	Aug. 20	2186	576	48	815
Railway-signal	J. W. Riggs	408,671	Aug. 6	712	{184 185}	{48}	965
Railway-signal	W. F. Grassler	409,146	Aug. 13	1447	380	48	78
Railway-signal. Electric	J. H. Pendleton and A. Bryson, Jr	406,302	July 2	388	{105 106}	{48}	1570
Railway structure. Cable	A. Boucher	411,089	Sept. 17	1465	389	48	7
Railway-switch	J. F. Duggan	406,036	July 2	23	7	48	1339
Railway-switch	W. N. Knight	410,364	Sept. 3	355	94	48	1531
Railway-switch	J. T. Rigney	410,992	Sept. 10	1313	{353 354}	{48}	15
Railway-switch	W. Spielman	406,066	July 2	64	19	48	60
Railway-switch	J. B. Suffern	406,244	July 2	363	83, 84	48	1329
Railway-switch	I. Randolph	410,332	Sept. 3	311	80	48	402
Railway-switch appliance	J. T. Argo	407,504	July 23	2242	{578 579}	{48}	1521
Railway-switch. Automatic	R. S. Eastman	410,961	Sept. 10	1261	340	48	123
Railway-switch. Automatic	B. C. Rowell	410,200	Sept. 3	109	28	48	1290
Railway-switch. Automatic	F. O. Blackwell	406,420	July 9	568	159	48	279
Railway switch. Electric	W. L. Judson	406,915	July 16	1345	353	48	869
Railway switch. Pneumatic street	C. Aikins	408,920	Aug. 13	949	252	48	991
Railway switch-stand	H. Brown and J. Gough	409,168	Aug. 20	1493	395	48	1043
Railway-switches. Safety attachment for	W. H. Caine	409,388	Aug. 20	1614	477	48	779
Railway-switches. Safety-lock and shackle for	F. J. Sprague	408,544	Aug. 6	524	{137 138}	{48}	998
Railway system. Electric	E. E. Ries	409,237	Aug. 20	1582	{418 419}	{48}	1157
Railway system. Electrical	M. Bodefeld	409,709	Aug. 27	2362	{625 626}	{48}	236
Railway system. Pneumatic	D. G. Weems	406,803	July 9	1178	311	48	271
Railway systems. Carrier for electric	M. W. Dewey	406,8 0	July 16	1307	343	48	1727
Railway systems. Electric heating apparatus for	A. L. Riker	411,613	Sept. 24	2238	594	48	1298
Railway systems. Trolley for electric	A. B. Filch	410,236	Sept. 3	150	39	48	91
Railway-tie	L. Haas	406,346	July 2	433	196	48	1279
Railway-tie	J. R. McCartey	410,176	Sept. 3	54	14	48	1181
Railway-tie	A. C. Nickley	409,860	Aug. 27	2518	650	48	695
Railway-tie	C. B. Palmer	406,255	Aug. 6	81	19	48	1439
Railway-tie	B. W. Ellicott	410,684	Sept. 10	842	226	48	31
Railway-tie. Metal	T. R. Dunning	406,129	July 2	149	44	48	911
Railway-tie. Metallic	W. T. Forbes and R. C. Kerr	408,964	Aug. 13	1164	308	48	910
Railway-tie. Metallic	P. H. Dudley	408,960	Aug. 13	1160	306	48	168
Railway-tie plate	P. H. Dudley	406,566	July 9	811	220	48	663
Railway-ties. Preserving	D. S. Moore	408,186	July 30	3274	855	48	1433
Railway-track layer	E. P. Edwards	410,666	Sept. 10	813	218	48	477
Railway-tracks. Foot-guard for	J. T. Odell and T. J. De Lamere	407,548	July 23	2215	{597 598}	{48}	335
Railway-train indicator	N. S. Mussey	407,103	July 16	1631	{426 427 428}	{48}	1096
Railway-trains. Safety-pilot for	J. Gresham	409,578	Aug. 20	2079	540	48	622
Railways. Applying sand to rails of	A. Pferdner	408,043	July 30	3033	794	48	428
Railways. Automatic signal for cable	G. H. Wright	407,329	July 23	2070	{535 536}	{48}	1006
Railways. Automatic signal for crossings of cable	D. W. Binns and C. Wolff	409,268	Aug 20	1626	430	48	
Railways. Automatic switch for horse							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Railways. Circuit for electric	H. H. Cutler	407,470	July 23	2200	567	48	453
Railways. Closed slotted conduit for electric	C. J. Van Depoele	406,797	July 9	1166	308	48	234
Railways. Curve and crossing device for cable	A. Martinez	406,752	July 9	1099	291, 292	48	222
Railways. Device for depressing cables at the street-crossings of cable	G. H. Wright	410,062	Aug. 27	2796	736	48	1236
Railways. Double suspended conductor system for electric	C. J. Van Depoele	409,156	Aug. 13	1462	386, 387	48	968
Railways. Overhead frog for electric	M. J. Wightman	411,313	Sept. 17	1793	480	48	1634
Railways. Overhead frog for electric	M. J. Wightman	411,314	Sept. 17	1795	480	48	1634
Railways. Semaphore-signal for	C. H. Koyl	410,598	Sept. 10	699	187	48	1411
Railways. Semaphore-signal for	C. H. Koyl	410,599	Sept. 10	701	187	48	1411
Railways. Stationary switch for horse-	A. L. Plimpton and E. Harrington	408,744	Aug. 13	832	220	48	845
Railways. System of electrical distribution for	W. J. McElroy	409,752	Aug. 27	2353	620	48	1152
Railways. Tension device for the cables of cable	W. H. Paine	411,675	Sept. 24	2325	616	48	1745
Railways. Traction-gripper for cable	M. A. Michales	406,928	July 16	1366	357	48	263
Railways. Trolley for electric	J. G. and R. Dickson and P. Snyder	409,603	Aug. 20	2119	558	48	1103
Railways. Tubular conductor for electric	L. Daft	410,498	Sept. 3	559	150, 151	48	1378
Railways. Underground conduit for electric	E. E. Ries	409,757	Aug. 27	2365	621	48	1154
Railways. Underground conduit for electric	C. J. Van Depoele	408,639	Aug. 6	663	172, 173	48	807
Rake: *See* Hand-rake. Horse-rake. Hay-rake.							
Rand-forming machine	F. P. Arnold	406,865	July 16	1273	335	48	265
Range and position of distant objects. Finding	B. A. Fiske	406,830	July 9	1218	323	48	245
Range-finder	B. A. Fiske	406,829	July 9	1216	323	48	244
Raspe. Forming teeth of	P. S. Stokes	408,936	Aug. 13	1124	296, 297	48	903
Ratchet-drill	D. Kidney and A. Verboort	411,664	Sept. 24	2310	613	48	1742
Ratchet mechanism	C. Stevenson	408,545	Aug. 6	529	138	48	780
Razor-sharpening machine	A. Dey	411,587	Sept. 24	2191	582	48	1717
Razor-strop	J. R. Torrey	409,715	Aug. 27	2307	606	48	1143
Reactive and induction coil	E. Thomson and E. W. Rice, Jr	410,468	Sept. 3	518	139	48	1370
Reapers, mowers, &c. Finger-bar for	A. Womack	407,387	July 23	2068	535	48	427
Reaping and mowing machines. Apparatus for sharpening the cutters and fingers of	R. McGregor	411,048	Sept. 17	1389	372, 373	48	1556
Receipt-blank. Stub-identification	T. S. Quincey	411,057	Sept. 17	1402	375	48	1558
Recorder: *See* Message and time recorder. Telegraphic recorder. Time-recorder. Speed-recorder.							
Recording-gage. Electric	J. Wills	409,891	Aug. 27	2562	671	48	1191
Reel: *See* Bolting-reel. Paper-reel. Clothes-reel. Yarn-reel. Harvester-reel.							
Reel-carriage	J. F. Miller	408,499	Aug. 6	447	117	48	767
Reel or swift	H. Epple	410,405	Sept. 3	420	111	48	1351
Reflector. Artificial-light	M. B. Parkinson	410,186	Sept. 3	77	19	48	1283
Refractory compound	J. L. Hastings	409,563	Aug. 20	2068	.....	48	1098
Refractory compounds. Producing	J. L. Stewart and J. L. Hastings	410,042	Aug. 27	2769	.....	48	1211
Refrigerating apparatus	F. A. Walin	407,045	July 16	1531	401	48	314
Refrigerative apparatus	P. R. and P. R. Gray, Jr	406,345	July 2	450	125, 126	48	90
Refrigerator	G. W. Bullis	407,059	July 16	1549	406	48	318
Refrigerator	R. R. Graf	409,635	Aug. 13	1274	336	48	9:2
Refrigerator	M. Knickerbocker	411,665	Sept. 24	2310	613	48	1742
Refrigerator	N. D. Mertz	410,911	Sept. 10	1191	322	48	1307
Refrigerator	W. A. Preston	407,685	July 23	2493	645	48	512
Refrigerator	F. C. H. Strasburger	406,905	Aug. 13	1059	284	48	994
Refrigerator-car	J. F. Hanrahan	407,802	July 30	2762	719	48	570
Refuse-ejector	J. S. Wallace	408,201	July 30	3297	861	48	668
Refuse-furnace	H. W. Whiting	408,559	Aug. 6	548	144	48	784
Regenerative burner	R. Wallwork	407,750	July 23	2593	671	48	533
Register: *See* Cash-register. Passenger-register. Fare-register. Pool-register.							
Register and automatic stop	C. J. Hartley	410,942	Sept. 3	158	42	48	1299
Registering apparatus. Autographic	J. B. Thies	410,616	Sept. 10	732	197	48	1418
Registering apparatus. Electric	J. A. Lannert	406,172	July 2	208	57, 58	48	42
Registering-machine	C. W. Fowler	409,950	Aug. 27	2640	693	48	1207
Registering machine. Ticket and cash	I. Pforzheimer	409,640	Aug. 20	2188	576, 577	48	1115
Registering mechanism	P. Ford	410,885	Sept. 10	1154	311	48	1499
Registering-wheel	F. W. Smith	406,312	July 2	405	110	48	81
Regulator: *See* Draft-regulator. Pressure-regulator. Electric-machine regulator. Pressure or damper regulator. Electric-motor regulator. Scale-regulator. Feed-regulator. Valve-regulator. Gas-pressure regulator. Water-regulator.							
Regulator and cut-off	O. S. King and H. H. Swaney	411,041	Sept. 17	1380	370	48	1554
Rein-fastening	C. H. Bagley	410,260	Sept. 3	185	48	48	1305
Rein-guard	W. P. Young	411,484	Sept. 24	2040	539	48	1685
Rein-holder	T. H. Bolls	411,639	Sept. 24	2271	604	48	1734
Rein-holder	E. Welch	410,225	Sept. 3	135	34	48	1295
Reseaving-machine	E. Fischer	411,098	Sept. 17	1479	392, 393	48	1573
Respirations of the body. Apparatus for recording the	K. M. Tata	408,938	Aug. 13	1126	297	48	904

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Respirator. Nasal	S. H. Guyot	406,580	July 9	828	224	48	171
Retort and muffle furnace	J. T. Haase and H. M. Vacherot	406,732	July 9	1061	282	48	214
Retort-charging device	J. H. Walker	406,409	July 2	547	153	48	109
Retort for distilling wood and making charcoal	F. S. Clark	407,166	July 16	1719	449	48	352
Reversing mechanism	N. A. Otto	410,012	Aug. 27	2725	716	48	1223
Revolving signal	J. W. Warren and S. H. Radford	409,534	Aug. 20	2015	531	48	1084
Rheobathometer	H. Flad	409,780	Aug. 27	2401	629	48	1160
Ribbon-roll clasp	D. H. Darby and G. R. Chittenden	406,517	July 9	743	203	48	155
Rice-hulling machine	A. A. Bourgeois	409,905	Aug. 27	2579	675	48	1194
Rifle-barrels. Machine for grinding and polishing	O. M. Grimes	406,643	July 9	938	253, 254	48	192
Ring: *See* Ear-ring. Packing-ring. Lap-ring. Yoke-ring. Nose-ring.							
Rings or tires. Manufacturing rolled	J. Manton	410,604	Sept. 10	714	192	48	1414
Rivet	J. J. Unbehend	411,174	Sept. 17	1580	422	48	1595
Riveting-machine	L. Delaloe and A. Piat	409,393	Aug. 20	1921	480	48	1045
Riveting-machine	A. G. Digen	409,939	Aug. 27	2628	689	48	1204
Rock-drill	T. Doup, Jr	408,697	Aug. 13	769	202	48	836
Rock-drill. Steam	C. A. Case	408,372	Aug. 6	247	63	48	737
Rock-drill. Steam	E. A. Rix	410,334	Sept. 3	314	81	48	1329
Rock-drill support	J. C. Githens	408,878	Aug. 13	1040	275	48	887
Rock-drills. Tripod-support for	H. C. Sergeant	407,257	July 16	1805	487	48	380
Rock-drilling machine	A. J. Sypher	407,704	July 23	2522	652	48	516
Rock for paving, roofing, and building purposes. Bituminous sand-	H. B. Utter	411,078	Sept. 17	1443	384	48	1566
Rockers. Spring and bracket connection for platform-	W. Patterson and E. Groat	409,493	Aug. 20	1960	.....	48	1074
Rod: *See* Fishing-rod. Lightning-rod.	G. J. Shults	409,509	Aug. 20	1961	523	48	1078
Roll	C. J. Curtin	408,219	Aug. 6	26	6	48	683
Roll-holder indicator	G. Eastman	407,396	July 23	2092	538	48	430
Roller: *See* Cotton-gin roller. Road-roller. Land-roller.							
Roller	S. E. Davis	408,338	Aug. 6	200	51	48	718
Roller and seed-sower. Combined	T. A. Butler	410,673	Sept. 10	1140	307	48	1497
Roller-mills. Feed-regulator for	J. W. Wilson	408,156	July 30	3216	840	48	655
Roller-stud	S. Arnold	410,569	Sept. 10	663	177	48	1405
Rollers. Covering for	C. Halstead	409,101	Aug. 13	1378	363	48	951
Rolling apparatus	L. D. York	410,724	Sept. 10	917	246, 247	48	1451
Rolling axles	J. R. Jones	408,720	Aug. 13	804	212	48	839
Rolling bars into sheets. Rolls for	E. D. Wassell	410,258	Sept. 3	183	48	48	1304
Rolling drive-screws. Die for	C. D. Rogers	408,528	Aug. 6	490	130	48	775
Rolling flanged beams	J. Kennedy and H. Aiken	410,107	Aug. 27	2885	757, 758	48	1252
Rolling flanged beams. Mill for	J. Kennedy and H. Aiken	410,106	Aug. 27	2883	757, 758	48	1252
Rolling girder-rails. Machine for	F. Colley	410,821	Sept. 10	1067	286, 287	48	1484
Rolling iron or steel	A. J. Moxham	408,844	Aug. 13	982	260, 261	48	875
Rolling metal	W. J. Lewis	409,049	Aug. 13	1295	342	48	935
Rolling-mill	R. A. Carter	406,701	July 9	1018	273	48	206
Rolling-mill for hoop or strap iron	D. Larkin	409,048	Aug. 13	1293	341	48	935
Rolling-mill plant	F. H. Daniels	407,177	July 16	1737	454, 455	48	355
Rolling mill. Wire-rod	F. H. Daniels	407,176	July 16	1735	453, 454	48	355
Rolling-pin. Adjustable	L. Curtis	409,564	Aug. 20	2057	549	48	1092
Rolling sheet metal from fluid metal. Apparatus for	E. Norton	406,947	July 16	1394	306	48	280
Rolling side-bearing rails. Rolls for	F. Colley	410,855	Sept. 10	1251	337	48	1319
Rolling steel or iron	A. J. Moxham	408,843	Aug. 13	981	260	48	875
Roof-covering	J. T. Henthorn	408,304	Aug. 6	147	37	48	708
Roofing, ceiling, or siding. Sheet-metal	W. B. Curtis and W. H. Huntley	407,772	July 30	2623	680	48	544
Roofing composition. Packing	C. S. Bushnell	408,951	Aug. 13	1143	302	48	906
Roofing. Machine for the manufacture of	G. W. McGraw. (Reissue)	11,017	July 30	3318	866, 867	48	671
Roofing. Metal	J. D. Burton	406,024	July 2	8	3	48	4
Roofing. Metallic	H. Klebe	407,535	July 23	2279	590	48	409
Roofing. Metallic	L. L. Sagendorph	411,683	Sept. 24	2338	618	48	1748
Roofing. Metallic	J. W. Beaumont	408,066	July 30	3070	803	48	628
Roofing or sheathing	M. Ehret, Jr	407,582	July 23	2360	611	48	487
Roofing-paper roll	C. M. Garrison	407,195	July 16	1766	462	48	361
Roofing-sheet	S. Slocombe	409,510	Aug. 20	1983	523	48	1078
Roofing. Sheet-metal	L. L. Sagendorph	407,966	July 30	2925	762	48	601
Roofing-sheet. Metallic	L. H. Bohn	410,066	Aug. 27	2800	737	48	1237
Roofing-sheets. Machine for edging	L. L. Sagendorph	410,294	Sept. 3	241	62	48	1316
Roofing, siding, &c. Metallic	C. Burkelman	409,912	Aug. 27	2586	677	48	1196
Roofing-tank apparatus. Portable	A. Blank	409,096	Aug. 13	1369	351	48	949
Roofing. Water-proof and fire-proof material for	J. S. Powell	408,891	Aug. 13	1044	280	48	891
Rope attachment	M. Campbell	407,573	July 23	2244	607	48	484
Rope-clasp	M. Furst	407,522	July 23	2263	585, 586	48	466
Rope-making machine	I. E. Palmer	409,227	Aug. 20	1572	415	48	996
Ropes. Hitching device for	J. B. Cornwall	409,632	Aug. 20	2168	571	48	1112
Rotary bolt	J. H. Walsh	410,861	Sept. 10	801	216	48	1432
Rotary bolt	W. S. Johnston	407,665	July 23	2469	630	48	507
Rotary brake	J. J. Bentley	406,060	July 2	79	23, 24	48	19
Rotary engine	W. M. Griscom	408,101	July 30	3128	819	48	630
Rotary engine	T. E. Keavy	409,591	Aug. 20	2100	553	48	1099

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Rotary engine	J. McCaskey and C. P. Shaw	410,431	Sept. 3	468	125	48	1359
Rotary engine	F. D. Owen	409,800	Aug. 27	2436	638, 639	48	1167
Rotary engine	J. E. Studley and R. C. Berry	410,043	Aug. 27	2770	729	48	1231
Rotary meter	W. Willis, J. and W. H. Smith	411,700	Sept. 24	2361	624, 625, 626	48	1753
Rotary shears	C. Thomas and J. W. Haviland	411,074	Sept. 17	1440	383	48	1566
Rotary steam-engine	J. H. Dow. (Reissue)	11,028	Sept. 3	657	174, 175	48	1397
Roundabout	W. A. Dodge	408,798	Aug. 13	918	245	48	863
Routing and wood-working machine	H. M. Albee	408,366	Aug. 6	237	60, 61	48	725
Rubber. Apparatus for washing and separating	N. C. Mitchell	408,424	Aug. 6	335	86	48	744
Rubber coats. Pocket for	H. J. Miller	407,024	July 16	1500	392	48	309
Rubber. Machine for cleaning refuse	C. Mayer	409,693	Aug. 27	2272	597, 598	48	1137
Rubber. Mill for grinding and sheeting	N. C. Mitchell	408,734	Aug. 13	821	216	48	842
Rubber-shoe attachment	J. Van Ausdall and B. A. Dolan	409,717	Aug. 27	2309	606	48	1143
Rubber-shoe fastening	F. S. Hand and E. Richardson	407,525	July 23	2267	587	48	467
Rubber-vulcanizing apparatus	L. K. Scotford	407,255	July 16	1862	485, 486	48	379
Rule, calipers, dividers, &c. Combined carpenter's	W. A. Delmage	409,934	Aug. 27	2619	685, 686	48	1203
Rule. Flexible	H. B. Williams	407,756	July 23	2602	673	48	535
Ruler	W. J. Wright	407,144	July 16	1687	441	48	346
Ruler. Parallel-	J. J. Hamilton	407,350	July 23	2005	521	48	416
Ruler. Perspective-	J. Varley	410,050	Aug. 27	2784	733	48	1234
Ruling machine. Paper-	W. McNab	406,940	July 16	1383	362	48	287
Ruling slates. Frame for	O. Ortell and W. Rottmann	408,387	Aug. 6	273	67	48	732
Running-gear	U. E. Miller	406,226	July 2	281	78	48	57
Sack-holder	J. B. Harman	409,195	Aug. 20	1523	404	48	987
Sad-iron	J. H. Dubrow	408,168	July 30	3234	844	48	657
Sad-iron	S. M. Nickerson and C. J. Holman	406,943	July 16	1386	363	48	287
Sad-iron	S. Waterman	406,608	July 9	875	236	48	179
Sad-iron polishing and waxing stand	H. H. Hull	411,523	Sept. 24	2094	552	48	1697
Saddle. Harness-	C. J. Cooper	408,827	Aug. 13	960	255	48	871
Saddle. Harness-	J. L. Richards	410,253	Sept. 3	176	46	48	1303
Saddle. Riding-	S. Haiukel	409,323	Aug. 20	1717	451	48	1025
Saddle. Riding-	J. S. Sullivan	411,072	Sept. 17	1438	383	48	1565
Saddle-tree	C. F. Bustin	408,577	Aug. 6	573	149	48	789
Saddle tree. Side-	M. J. Mohan	406,108	July 2	120	35	48	25
Saddles. Connecting-bar for riding-	W. W. Lewis	409,848	Aug. 27	2504	655	48	1178
Safe	J. J. Brown	406,122	July 2	141	41	48	30
Safe. Fire-proof	M. Mosler and M. S. Goldsmith	406,848	July 9	1241	329	48	248
Safe. Flour or meal	L. A. Haight	411,435	Sept. 24	1974	524	48	1673
Safe-lock	J. C. Harris	407,775	July 30	2626	681	48	545
Safety-pin	E. McConnell	406,367	July 2	482	134	48	96
Sale-slip	T. J. A. Macdonald	407,299	July 16	1922	500	48	391
Sand-band	F. Werner and R. Oehmigen	406,073	July 9	71	21	48	16
Sand-blast apparatus	J. E. Mathewson	409,751	Aug. 27	2353	619	48	1152
Sand-paper holder	T. L. Prevost	408,433	Aug. 6	345	90	48	746
Sand-screen	P. Drendul	410,078	Aug. 27	2836	745	48	1242
Sash and belt. Combined	T. J. Flagg	410,510	Sept. 3	576	155	48	1381
Sash-balance	A. W. Biddle	406,987	July 16	1453	381	48	300
Sash-balance	L. W. Doren	409,569	Aug. 20	2064	544	48	1093
Sash-balance	N. J. Skaggs	409,376	Aug. 20	1799	473	48	1040
Sash-cord fastener	E. W. Abbe	411,486	Sept. 24	2042	540	48	1686
Sash-cord fastener	R. Fagan	409,030	Aug. 13	1269	334	48	931
Sash-cord guide	W. G. Shedd	410,741	Sept. 10	944	252, 253	48	1436
Sash-fastener	G. Fitch and R. W. Williams	408,228	Aug. 6	44	10	48	686
Sash-fastener	H. B. Hebert	406,903	July 16	1328	348	48	275
Sash-fastener	H. S. and H. E. Klein	410,837	Sept. 10	1088	291	48	1487
Sash-fastener	W. Livingstone	408,493	Aug. 6	437	115	48	765
Sash-fastener	H. H. Meyer	411,128	Sept. 17	1526	407	48	1583
Sash-fastener	C. H. Miller and S. A. McDonald	408,920	Aug. 13	1101	290	48	899
Sash-fastener	E. Reed	410,115	Aug. 27	2900	761	48	1255
Sash-fastener	H. Staggs	410,382	Sept. 3	378	100	48	1344
Sash-holder	D. Easton	411,330	Sept. 17	1813	485	48	1637
Sash-holder	S. E. Harrington	407,952	July 30	2908	758	48	597
Sash-holder	E. C. Pruitt	406,234	July 2	292	80	48	58
Sash-lift	G. Hasenpflug	409,582	Aug. 20	2087	551	48	1097
Satchel attachment. Lady's	H. S. Craus	406,996	July 16	1466	383	48	302
Sausage-stuffer	F. W. Wilder	408,945	Aug. 13	1134	299, 300	48	906
Saw	G. W. Prescott	408,669	Aug. 6	710	184	48	815
Saw	G. F. Sellstrom	411,475	Sept. 24	2030	537	48	1684
Saw. Circular	S. P. Grey	411,189	Sept. 17	1611	428	48	1599
Saw-filing machine	W. H. Penrose	409,866	Aug. 27	2525	660	48	1182
Saw-gage	H. Saunders	406,774	July 9	1130	300	48	228
Saw-gin	W. L. Ellis	410,082	Aug. 27	2840	746	48	1243
Saw-grinding machine	W. J. Perkins	411,729	Sept. 24	2401	635, 636	48	1761
Saw guard. Band-	A. P. Hyde	407,211	July 16	1790	469	48	366
Saw guide. Band-	H. D. Fields	411,241	Sept. 17	1684	450	48	1615
Saw-gummer	J. F. Brower	409,825	Aug. 27	2472	646	48	1173
Saw-gummer	J. W. Mixter	406,228	July 2	283	78	48	57
Saw gummer. Gin-	E. W. Thompson and L. W. Haskell	406,315	July 2	409	111, 112	48	82
Saw gumming and sharpening machine	H. T. Basim	406,079	July 2	79	23	48	18
Saw-handle	J. A. Corey	407,333	July 23	1974	514	48	410
Saw-mill	H. D. Wickes	410,474	Sept. 3	525	141	48	1371
Saw mill. Band-	W. M. Wilkin	406,322	July 2	418	115	48	84
Saw mill. Band-	W. M. Wilkin	406,323	July 2	421	115	48	84

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Saw-mill carriages. Feed mechanism for	A. E. Hoffman	409,464	Aug. 20	1921	509	48	1066
Saw mill. Circular	E. C. Wiley	409,261	Aug. 20	1619	428, 429	48	1006
Saw-mill dog	G. M. Hinkley	411,195	Sept. 17	1621	431	48	1601
Saw-mill dog	B. J. Kelley	411,503	Sept. 24	2063	546	48	1691
Saw-mill feed	S. T. Reamy	411,679	Sept. 24	2330	617	48	1746
Saw mill. Gang-	T. S. Wilkin	410,623	Sept. 10	745	202	48	1421
Saw mill. Gang-	W. M. Wilkin	406,324	July 2	422	116	48	85
Saw-mill head-block	S. R. Smith and E. Myers	409,517	Aug. 20	1989	525, 526	48	1079
Saw-mill head-blocks. Dogging device for	S. R. Smith	409,516	Aug. 20	1988	525	48	1079
Saw mill. Reciprocating gang-	W. E. Mann	408,807	Aug. 13	931	248	48	866
Saw-mill set-works	F. W. Cook	410,349	Sept. 3	335	88	48	1334
Saw-mill set-works	A. Cunningham and E. J. Muller	407,234	July 23	1975	514, 515	48	410
Saw-mill set-works	G. W. Huckabay	407,664	July 23	2467	638	48	507
Saw-mills. Mechanism for governing the feed of	H. B. Strong	410,337	Sept. 3	321	83	48	1330
Saw-mills. Power-feed mechanism for log-carriages of	C. F. Thompson	409,883	Aug. 27	2548	667	48	1187
Saw-regulating attachment for band sawing-machines	E. S. Gilmore	406,209	July 2	257	71	48	52
Saw-set	M. H. Gross	407,438	July 23	2155	537	48	444
Saw-set	P. Ryan	409,805	Aug. 27	2443	640	48	1168
Saw-set	S. Shoup	408,759	Aug. 13	856	227	48	851
Saw-sharpening device	W. Ruttan	408,357	Aug. 6	224	57	48	723
Saw-sharpening machine	A. F. Radant	410,414	Sept. 3	486	130	48	1363
Saw-swage	J. W. Mixter	406,227	July 2	282	78	48	57
Saw-tooth. Removable	P. Cardiff	409,271	Aug. 20	1633	432	48	1000
Saw-tooth swage	C. O. and A. D. Porter	411,055	Sept. 17	1399	375	48	1557
Saws. Automatic balancing device for swing-	J. Ross	410,199	Sept. 3	107	28	48	1290
Saws. Device for jointing the teeth of band-	J. E. Miles	410,647	Sept. 10	780	211	48	1428
Sawdust-burner	H. L. Hildreth	409,285	Aug. 20	1667	439	48	1015
Sawdust-elevator	W. Frey	411,332	Sept. 17	1816	486	48	1638
Sawing beams. Apparatus for hot-	C. M. Schwab	410,119	Aug. 27	2914	765	48	1256
Sawing-machine	J. Fensom	406,274	July 2	342	94	48	69
Sawing-machine. Band	E. S. Gilmore	406,396	July 2	530	148	48	106
Sawing machine. Gang circular	J. O. Butler	408,790	Aug. 13	904	242	48	860
Sawing-machine. Self-acting	A. Greg	407,523	July 23	2264	586, 587	48	466
Sawing machine. Slab-	D. S. Abbott	410,777	Sept. 10	1004	269	48	1468
Scaffold	E. Brooksmith	409,167	Aug. 20	1492	395	48	981
Scaffold	T. E. Williams	411,363	Sept. 17	1862	498	48	1647
Scale. Automatic grain-	W. A. Bradley	406,254	July 2	314	87	48	63
Scale. Automatic grain-	K. H. Schaper	410,857	Sept. 10	1118	301	48	1493
Scale-regulator. Grain-	C. H. Cooley	409,669	Aug. 27	2235	587	48	1130
Scale regulator. Grain-	C. H. Cooley	410,138	Aug. 27	2938	772	48	1261
Scale regulator. Grain-	F. H. Richards	410,116	Aug. 27	2902	761, 762	48	1255
Scale regulator. Grain-	F. H. Richards	410,117	Aug. 27	2904	762	48	1255
Scale. Spring-	E. F. Bergman	406,499	July 9	712	196	48	150
Scale. Spring-	E. F. Bergman	410,952	Sept. 10	1248	336	48	1519
Scale. Spring-	C. Forschner	406,518	July 9	744	204	48	156
Scale. Weighing-	T. H. Herndon	411,336	Sept. 17	1825	488	48	1640
Scales. Automatic weighing-	J. Conmee	407,170	July 16	1725	450	48	353
Scales for suspension-tramways. Weighing-	W. J. Miller	411,507	Sept. 24	2070	548	48	1692
Scales. Medicine or postal	W. R. Watt	409,080	Aug. 13	1340	354	48	944
Scales. Price-indicating attachment for weighing-	L. L. Wands	410,389	Sept. 3	388	103	48	1345
Scales. Stop-motion register for grain-	F. H. Richards	408,192	July 30	3280	856, 857	48	665
Scales. Weighing-	R. E. Glover	409,191	Aug. 20	1519	403	48	986
Scales. Weighing-	G. L. Phelps	408,319	Aug. 6	169	42, 43	48	712
Scales. Weighing-	W. H. Stewart	407,747	July 23	2586	670	48	531
Scarfing-machine	E. B. Rich	409,337	Aug. 20	1740	457	48	1028
Scissors attachment	J. H. Norrell	410,375	Sept. 3	370	99	48	1342
Scoop for clay or ore mills	E. J. Mildren	411,463	Sept. 24	2010	533	48	1679
Scourer: *See* Grain-scourer.							
Scourer and cleaner	R. Steel	409,652	Aug. 20	2193	577	48	1116
Scouring and washing machine	S. Hodgson	410,519	Sept. 3	587	157, 158	48	1383
Scow. Dumping-	J. Edwards	408,298	Aug. 6	139	35, 36	48	706
Scow. Dumping-	J. Edwards	409,942	Aug. 27	2632	690, 691	48	1205
Scraper	P. V. Egbert	406,093	July 2	100	29	48	22
Scraper and bell-pull. Combined shoe or boot	T. Böhm and L. Eichelberg	410,633	Sept. 10	763	206	48	1424
Scraper or self-loading cart. Wheeled	C. H. Sawyer	407,451	July 23	2173	560, 561	48	448
Scraper. Road-	F. T. Lomont	410,249	Sept. 3	169	44, 45	48	1301
Scraper. Wheeled	A. Brown	411,119	Sept. 17	1514	403	48	1580
Scraper. Wheeled	C. H. Sawyer	407,452	July 23	2176	561, 562	48	448
Screen: *See* Coal-screen. Insect-screen. Paper-pulp screen. Potato-screen. Sand-screen. Window-screen.							
Screw	G. P. Rose	411,202	Sept. 17	1634	435	48	1604
Screw-blanks and screws. Machine for cutting	J. P. Berkholz	410,484	Sept. 3	539	144	48	1374
Screw-blanks. Machine for dressing the ends of	G. E. Witherell	409,441	Aug. 20	1883	497, 498	48	1056
Screw-caps. Forming	G. Schrader and J. Schmitt	406,479	July 9	673	188	48	144
Screw clamp. Hand-	G. A. Waterhouse	410,303	Sept. 3	258	68	48	1318
Screw-cutting die	A. Saunders	406,857	July 9	1258	332	48	251
Screw-cutting die-stock	J. H. Sternbergh and R. Pemberton	409,253	Aug. 20	1609	424	48	1004
Screw-cutting head	A. B. Landis	409,208	Aug. 20	1544	408	48	991
Screw-cutting machine	E. P. Bullard	410,146	Sept. 3	10	3	48	1270

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Screw. Drive	C. D. Rogers	410,698	Sept. 10	862	232	48	1443
Screw-heads. Machine for slotting	J. A. Bidwell	407,155	July 16	1701	444	48	349
Screw. Lag	G. P. Rose	408,751	Aug. 13	843	224	48	848
Screw machine. Metal	G. A. Fairfield and G. E. Witherell	409,674	Aug. 27	2240	589	48	1131
Screw-swaging machine	C. D. Rogers	408,529	Aug. 6	492	130	48	775
Screw-swaging machine	C. D. Rogers	408,673	Aug. 6	716	196	48	816
Screw-threads on articles of sheet metal. Machine for forming	W. F. Lewis	411,156	Sept. 17	1565	416	48	1500
Screw-threads upon screws. Forming	C. D. Rogers	408,530	Aug. 6	495	132	48	776
Screw. Wood	C. D. Rogers	408,531	Aug. 6	497	132	48	776
Screw. Wood	C. D. Rogers	410,697	Sept. 10	860	231	48	1443
Screws, &c. Device for removing broken	M. Cahn	410,760	Sept. 10	1010	270	48	1470
Screws. Machine for making	G. Landmann	407,537	July 23	2282	592	48	470
Screws. Machine for rolling threads on	J. Sheldon	408,048	July 30	3040	795	48	623
Scrubbing-machine	J. Hebert	408,802	Aug. 13	925	246	48	864
Scythe-sharpening apparatus	J. E. Parmentier	409,753	Aug. 27	2357	630	48	1153
Scythe-snath fastening	A. D. Myers	408,505	Aug. 6	457	120	48	769
Sea sounder. Electric registering deep	A. J. Cooper and E. E. Wigzell	410,786	Sept. 10	1020	274	48	1473
Seal for mail-packages, &c	E. J. Brooks	407,057	July 16	1546	405	48	317
Seal-lock	C. E. Davis. (Reissue)	11,011	July 9	1368	334	48	253
Seal-lock	R. W. Gillespie	409,034	Aug. 13	1573	335	48	931
Seal-lock	G. W. Lewis	408,826	Aug. 13	1059	276	48	889
Seal-lock	O. S. Winans	406,810	July 9	1190	316	48	239
Sealing-disk for jars, &c	D. W. Johnson	408,177	July 30	3245	847	48	660
Seam-finishing machine	P. A. and J. Cerpal	410,636	Sept. 10	766	207	48	1425
Seaming machine. Metal	J. Solter	411,071	Sept. 17	1436	382	48	1564
Seaming machine. Roofing double	S. Y. Buckman	407,466	July 23	2196	566	48	452
Seaming tin boxes. Machine for	H. P. F. Ewers	411,331	Sept. 17	1814	485	48	1638
Seaming, trimming, and overseaming machine. Combined	H. H. Fefel	407,286	July 16	1907	496	48	388
Seat: *See* Bicycle-seat. Car-seat. Cart-seat. Harrow-tooth seat. Vehicle-seat. Vehicle jump-seat. Water-closet seat.							
Secondary battery	N. B. Aldrich	408,367	Aug. 6	240	61	48	726
Secondary battery	T. D. Bottome	408,287	Aug. 6	124	31	48	703
Secondary battery	C. S. Bradley	409,448	Aug. 20	1893	501	48	1061
Secondary battery	H. E. Dey	406,822	July 9	1206	320	48	242
Secondary battery	V. H. Ernst	408,002	July 30	2981	776	48	611
Secondary battery	C. A. Faure	409,178	Aug. 20	1501	399	48	983
Secondary battery	W. W. Griscom	406,439	July 9	601	160	48	129
Secondary battery	I. Kitsee	406,916	July 16	1347	353	48	290
Secondary battery	J. F. McLaughlin	408,666	Aug. 6	707	183	48	814
Secondary battery	C. H. Thompson	406,969	July 16	1498	374	48	294
Secondary battery	J. T. Van Gestel	410,680	Sept. 10	836	224	48	1438
Secondary-battery plates. Apparatus for filling	H. G. Morris and P. G. Salom	408,986	Aug. 13	1197	315	48	916
Sectional boiler	J. Bond	407,920	July 30	2838	745	48	587
Seed cleaner. Cotton	R. H. Collyer	408,085	July 30	3092	810	48	633
Seed crusher. Cotton	G. W. Simmons	407,373	July 23	2050	530	48	494
Seed-crushing machine	J. A. J. Gibson	407,346	July 23	2001	519	48	415
Seed from pulp. Machine for separating	L. Ladd	408,243	Aug. 6	65	18	48	692
Seed. Machine for delinting cotton	G. H. Croker	408,796	Aug. 13	916	244	48	892
Seed. Machine for delinting cotton	J. H. McCormick	411,294	Sept. 17	1758	470	48	1629
Seeder	W. D. Arnett	410,064	Aug. 27	2798	737	48	1236
Seeder and fertilizer-distributer	G. F. Strawson	411,692	Sept. 24	2353	620	48	1751
Seeder and harrow. Combined	A. F. Brown	408,290	Aug. 6	128	31.32	48	704
Seeder and harrow. Combined	J. B. Coon	406,881	July 16	1297	340	48	269
Seeder. Broadcast	F. J. Henrichsen	407,657	July 23	2459	637	48	505
Seggar	T. A. Bell	408,369	Aug. 6	242	61	48	726
Self-oiling wheel	N. D. Helmick	407,777	July 30	2633	686	48	546
Self-sealing jar	J. W. Bulger	409,169	Aug. 20	1493	396	48	982
Selling-machine	J. M. O'Kelly	406,563	July 9	844	220	48	175
Selling-machine. Automatic	J. W. Vaughn	407,946	July 30	2996	786	48	595
Semaphore-signal	J. W. Hancock	406,836	July 9	1227	320	48	246
Separator: *See* Centrifugal separator. Electro-magnetic separator. Grain-separator. Grain and seed separator. Grease and oil separator. Magnetic separator. Ore-separator. Powder-separator.							
Separator	L. A. Palmar	407,225	July 16	1832	472	48	374
Sewer-pipe	J. A. Misend	407,102	July 16	1631	426	48	335
Sewer-sheathing. Driving-head for	N. E. Green	407,348	July 23	2003	540	48	415
Sewing knit fabrics. Trimming attachment for machines for	E. H. Brown	406,424	July 9	576	151	48	124
Sewing looped fabrics. Trimming attachment for machines for	A. L. Traver	410,720	Sept. 10	910	242	48	1449
Sewing-machine	P. A. Darracq	406,431	July 9	585	165	48	126
Sewing-machine	H. H. Fefel	407,186	July 16	1754	459	48	359
Sewing-machine	B. Fischer	408,227	Aug. 6	41	9,10	48	686

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Sewing-machine	T. C. Harris	410,277	Sept. 3	215	56	48	1311
Sewing-machine	T. F. Hart and G. S. Hill	406,277	July 2	316	85	48	70
Sewing-machine	A. M. Leslie	406,019	July 30	3008	784	48	616
Sewing-machine	S. O'Connor	410,011	Aug. 27	2723	716	48	1223
Sewing-machine	R. Otto	406,427	Aug. 6	339	87	48	745
Sewing machine. Broom	G. F. McCombs	407,741	July 23	2569	665	48	598
Sewing-machine. Button-hole	F. H. Bennett and J. Dowling	409,728	Aug. 27	2330	610	48	1146
Sewing-machine button-hole attachment	D. Mills	408,500	Aug. 6	448	611	48	767
Sewing-machine button-hole attachment	C. J. A. Sjoberg	406,115	July 2	127	117	48	87
Sewing-machine button-hole attachment	W. Wallick	406,799	July 9	1171	309	48	235
Sewing-machine button-hole attachment	W. Wallick	406,800	July 9	1174	310	48	236
Sewing-machine button-hole clamp	C. J. Woodward	411,703	Sept. 24	2389	628	48	1754
Sewing-machine cording attachment	E. J. Toof	410,618	Sept. 10	734	029	48	1418
Sewing-machine feeding device	M. Marcil	407,296	July 16	1921	198	48	391
Sewing-machine feeding mechanism	F. N. Cookson	411,491	Sept. 24	2046	500	48	1687
Sewing-machine motor	J. M. Bröslus	407,058	July 16	1547	541	48	317
Sewing-machine. Multiple	F. Kern	411,104	Sept. 17	1490	406	48	1575
Sewing-machine. Overseaming	J. C. Goodwin	408,009	July 30	2993	395	48	613
Sewing-machine plaiting attachment	C. M. Hine	407,400	July 23	2089	780	48	431
Sewing-machine presser-foot	C. Timm	408,767	Aug. 13	866	540	48	853
Sewing-machine quilting-frame	J. E. Gibbs	409,143	Aug. 13	1442	232	48	853
Sewing-machine ruffler	E. J. Toof	410,619	Sept. 10	735	379	48	904
Sewing machine. Shoe	A. Eppler, Jr.	409,281	Aug. 20	1655	198	48	1418
Sewing machine. Shoe-welt	J. S. Turner	407,974	July 30	2934	436	48	1013
Sewing-machine shuttle	J. F. McKenney	406,368	July 2	483	764	48	603
Sewing-machine shuttles. Raceway for rotary	D. E. Marsh	411,290	Sept. 17	1754	734	48	96
Sewing machine. Sole	J. E. Bertrand	409,161	Aug. 20	1488	469	48	1628
Sewing machine. Straw-braid	M. Marcil	407,297	July 16	1919	391	48	979
Sewing-machine thread-slackening device	C. J. Woodward	411,702	Sept. 24	2366	392	48	391
Sewing-machine treadle	H. K. House	410,099	Aug. 27	2776	393	48	1753
Sewing-machine treadle	W. F. Otis	408,131	July 30	3181	409	48	1250
Sewing-machine trimming device	A. C. Campbell	407,572	July 23	2344	754	48	648
Sewing-machine tuck-folder	L. J. Pearsall	406,258	Aug. 6	84	606	48	484
Sewing-machine tuck-marker	F. Henry	409,841	Aug. 27	2495	20	48	696
Sewing-machine tucking-guide	H. L. Nick	408,190	July 30	3279	652	48	1176
Sewing-machines. Feed-operating mechanism for	J. Tripp	409,129	Aug. 13	1424	856	48	664
Sewing-machines. Rotary shuttle-actuating mechanism for	H. W. Hadley	406,042	July 2	29	375	48	960
Sewing-machines. Separator-plate for	M. G. Turner	406,316	July 2	410	9	48	8
Sewing-machines. Thread-controlled stop mechanism for	A. J. Hart	409,963	Aug. 27	2961	112	48	82
Sewing shoes. Machine for	H. H. Buffum	410,145	Sept. 3	6	113	48	1210
Shackle	W. D. Duncan	407,582	July 23	2359	698	48	1270
Shade-fastener	P. A. Harris	408,410	Aug. 6	314	611	48	487
Shade-holder	H. J. Bell	408,070	July 30	3077	80	48	740
Shade or globe holder	B. L. Coe	409,928	Aug. 27	2608	804	48	920
Shade-roller fixture	H. W. Simms	406,481	July 9	676	683	48	1200
Shade supporter. Window	W. S. Reynolds	406,474	July 9	667	189	48	145
Shaft and belt-tightener. Counter	P. H. Kroncke	408,417	Aug. 6	325	187	48	143
Shaft-bearings. Lubricator for	J. Comer	407,771	July 30	2922	84	48	742
Shaft cooling-box	H. Kleman	408,663	Aug. 6	704	679	48	544
Shaft-coupling	J. Chivill	408,953	Aug. 13	1148	182	48	814
Shaft-coupling	W. D. Gray	408,011	July 30	2997	304	48	908
Shaft-coupling	J. H. Hebblethwaite	406,798	July 9	1220	781	48	813
Shaft-coupling	J. A. Chapman	409,732	Aug. 27	2329	326	48	946
Shaft coupling. Vehicle	E. A. Newman	411,673	Sept. 24	2323	618	48	1147
Shaft coupling. Vehicle	W. W. Rankin	406,536	July 9	773	615	48	1745
Shaft coupling. Vehicle	M. D. Strait	408,819	Aug. 13	948	210	48	102
Shaft gearing. Vehicle	T. E. Golden	407,347	July 23	2001	252	48	689
Shaft-hanger	G. Rieseck	408,680	Aug. 6	730	520	48	415
Shaft supporter. Vehicle	H. F. Welch	409,621	Aug. 20	2158	189	48	818
Shafts. Machine for straightening, rounding, and condensing	G. F. Simonds	407,843	July 30	2736	190	48	1108
Shaping-machines. Dirt-guard for	U. Eberhardt	409,941	Aug. 27	2630	711	48	585
Sharpening device	C. Everding	407,651	July 23	2452	690	48	1205
Shears: *See* Animal-shears. Metal-shears. Pruning-shears.					635	48	504
Shears. Attachment for	J. W. Emmert	406,039	July 2	26	8	48	8
Sheave. Carrying	A. Mill	410,986	Sept. 10	1303	351	48	1530
Sheet-metal articles. Machinery for polishing	F. W. Perry	410,851	Sept. 10	1111	299	48	1492
Sheet-metal elbow	A. O. Kittredge	407,356	July 23	2027	545	48	419
Sheet-metal-making apparatus	E. Norton and J. G. Hodgson	406,945	July 16	1360	364	48	986
Sheet-metal pipe	H. L. Gates	410,409	Sept. 3	425	365	48	1332
Sheet-metal pipe	C. L. Hart	409,196	Aug. 20	1524	113	48	987
Sheet-metal-shaping machine	H. Aiken	411,116	Sept. 17	1508	404	48	1570
Sheet-metal-shaping machine	T. W. Irwin	407,530	July 23	2273	401	48	486
Sheet-metal structure	W. Orr and P. S. Brown	407,111	July 16	1646	569	48	336

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg's.	Official Gazette. Vol.	Official Gazette. Page.
Sheet-metal vessel	D. V. Thrift	410,617	Sept. 10	733	198	48	1418
Sheet-metal vessels. Machine for making	F. A. Walsh	408,774	Aug. 13	876	234 235	48	855
Shelf: *See* Stove-pipe shelf.							
Sheller: *See* Corn-sheller.							
Shells, &c. Joint for hollow	L. White	406,683	July 9	998	268	48	202
Shingle. Metallic	J. Henning	410,894	Sept. 10	1172	315 316	48	1503
Shingle-sawing machine	F. Challoner	409,011	Aug 13	1224	326 327	48	923
Shingle-sawing machine	J. Challoner	411,580	Sept. 24	2178	577	48	1714
Shingle. Sheet-metal	W. J. Brown and J. O. Thorn	409,367	Aug. 20	1814	477	48	1043
Shingles. Machine for treating	W. H. Heath	406,045	July 2	32	9, 10	48	9
Shipping-can for perishable articles	D. H. and A. C. Eaton	411,096	Sept. 17	1477	391	48	1372
Shipping-case	W. P. Kookogey	407,957	July 30	2914	750	48	509
Shipping-case	E. M. Thompson	407,137	July 16	1680	439	48	344
Shirt	J. Adair	407,764	July 30	2615	677	48	543
Shirt	J. Adair	407,765	July 30	2616	678	48	543
Shirt	M. Cohen	409,016	Aug. 13	1244	329	48	925
Shirt	S. Miller	410,398	Sept. 3	307	79	48	1398
Shirt	E. Oppenheim	410,376	Sept. 3	371	99	48	1342
Shirt. Woolen	S. Marens	410,964	Sept. 10	1302	351	48	1529
Shock-compressor	W. W. Harter	411,721	Sept. 24	2390	633	48	1759
Shock or bundle tyer	W. W. Huffman	411,033	Sept. 17	1370	367	48	1552
Shoe	W. J. McKinney	406,769	July 9	1110	294	48	224
Shoe-beading machine	S. Rose, Jr.	408,537	Aug. 6	516	135	48	778
Shoe-burnishing machine	S. Rose, Jr.	409,240	Aug. 20	1591	419	48	999
Shoe. Galvanic	J. S. Mellon	407,673	July 23	2478	641	48	509
Shoe-nail. Wire	A. Briggs	408,159	July 30	3222	841	48	655
Shoe-string fastener	J. Driscoll	408,167	July 30	3233	844	48	657
Shoe-tying machine	A. E. Ayer	411,565	Sept. 24	2154	570 571	48	1709
Shoe-uppers. Machine for cutting	T. Brining	407,159	July 16	1707	445 446	48	350
Shoe-wiper	J. and F. Rennie	411,532	Sept. 24	2106	555	48	1699
Shoes or slippers. Manufacture of wigwam	H. L. Larrabee and D. Putnam	411,454	Sept. 24	1999	530	48	1677
Shot. Apparatus for producing	F. S. Köhler	406,353	July 2	463	129 130	48	93
Shot-canister	E. Harigel	411,123	Sept. 17	1521	406	48	1582
Shovel: *See* Plow-shovel.							
Shovel	J. Pfeifer	411,257	Sept. 17	1710	457	48	1620
Shovels, scoops, &c. Making	T. F. Stevenson	406,817	Aug. 13	946	252	48	860
Show-card	J. W. Davies	407,282	July 16	1901	495	48	387
Show-case	J. Buckmaster	409,009	Aug. 13	1232	326	48	923
Show-case. Cabinet	E. Pfferling	406,517	Aug. 6	477	126	48	772
Shutter-fastener	T. Thorn	407,845	July 30	2741	712	48	565
Shutter-fastener	A. Van Wie	407,308	July 16	1934	503	48	394
Shutter-fastener	L. Whitehouse	409,436	Aug. 20	1880	496	48	1058
Shutter-worker	G. S. Elliott	411,548	Sept. 24	2132	564 565	48	1704
Shutter-worker	R. W. Jorres	409,406	Aug. 20	1839	484 485	48	1049
Shutter-worker	D. H. Royer	407,119	July 16	1658	433 434	48	340
Sifter and coal-scuttle. Ash-	K. E. Sheppard	408,815	Aug. 13	943	251	48	868
Sifter and dumper. Ash-	E. T. Brown and S. Page	410,575	Sept. 10	670	179	48	1406
Sifter. Ash-	J. W. Love	406,224	July 2	277	77	48	55
Sifter. Ash-	C. L. Porter	411,529	Sept. 24	2102	554	48	1698
Sifter. Flour-	R. Olp	409,491	Aug. 20	1958	518	48	1073
Sight-feed lubricator	W. Woodward	407,805	July 30	2683	696	48	555
Sign. Street-lamp	J. Stewart	408,199	July 30	3291	859	48	667
Signal: *See* Car-signal. Railway-crossing signal. Electric signal. Revolving signal. Mill-signal. Semaphore-signal. Railway-signal. Time-signal.							
Signal	W. H. Donner	410,270	Sept. 3	205	54	48	1309
Signal appliance	W. J. Barnes	406,558	July 9	799	216	48	166
Signal apparatus. Municipal	J. C. Wilson	411,407	Sept. 17	1925	513	48	1658
Signal-box. Electric	D. A. Palmer	408,042	July 30	3032	793	48	621
Signal-light	J. F. Ridenour	406,539	July 9	776	211	48	162
Signal-operating mechanism	J. T. Hambay	408,616	Aug. 6	627	165	48	800
Signal or alarm transmitter and time-indicator	A. J. Reams	406,769	July 9	1121	297 298	48	226
Signal-receiving instrument. Electric	S. D. Field	409,673	Aug. 27	2246	591	48	1132
Signal-rod coupling	J. T. Hambay	406,811	July 2	259	71, 72	48	52
Signaling apparatus	W. R. Cole	411,120	Sept. 17	1516	404	48	1581
Signaling apparatus	G. F. Milliken	407,101	July 16	1628	429	48	335
Signaling apparatus. Electric	W. Eddy	406,224	Aug. 6	31	7	48	C84
Signaling apparatus. Marine	A. Taylor	409,074	Aug. 13	1333	351 352	48	942
Signaling apparatus. Nautical	T. Smith	409,250	Aug. 20	1606	421	48	1003
Signaling apparatus. Train-	M. E. Campany	407,879	July 16	1897	494	48	396
Signaling device. Electric	J. C. O. Nell	406,057	July 2	48	14	48	12
Signaling device for time-service. Automatic	C. H. Pond	408,846	Aug. 13	966	261	48	876
Silk-reeling machinery	E. W. Serrell, Jr	406,508	July 9	854	230	48	176
Silverware-cases. Clip for	H. and W. Siebert	408,935	Aug. 13	1123	299	48	903
Sink and kitchen-cabinet. Combined	J. H. Rice	411,352	Sept. 17	1850	494	48	1644
Sink-back	T. F. Coyne	406,198	July 2	245	67, 68	48	49
Sink-coupling	L. J. Euvrard	406,272	July 2	339	92	48	68
Siphon	L. Meyer	408,918	Aug. 13	1099	299	48	898
Siphon	M. Sierszdorfer	407,971	July 30	2831	763	48	602
Siphon-closet	H. C. Weeden	409,341	Aug. 20	1744	458	48	1029
Sirup for soda-water	F. L. Smith	406,783	July 9	1147	.....	48	231
Sizing compound	R. D. Buncke	407,510	July 23	2250	.....	48	463
Skate	J. H. Young	406,699	July 9	976	256	48	179
Skelping or tube-welding. Apparatus for	J. A. Simpson	407,206	July 16	1932	503	48	393
Slat-fastener	A. Frans	406,438	July 9	600	166	48	129
Slate, &c. Machinery for grinding the edges of a series of slabs of	S. Lloyd	407,408	July 23	2100	542 543	48	433
Sled	S. L. Allen	408,681	Aug. 13	737	193	48	827
Sled	A. Tode	407,796	July 30	2676	694	48	553
Sled. Bob-	W. J. Blackinton	406,560	July 9	801	217	48	167
Sled. Bob-	J. A. Johnson	407,595	July 23	2373	615	48	490
Sled-brake	J. P. Tadder	410,466	Sept. 3	316	130	48	1369
Sled. Coasting-	A. I. Gallaway	406,723	July 9	1050	280	48	212
Sled-propeller	J. D. Thomas	410,220	Sept. 3	131	33	48	1294
Sled-runner. Shoe for	J. R. Campbell	409,317	Aug. 20	1710	449	48	1023
Sleigh	S. C. Felt	410,584	Sept. 10	681	182	48	1408
Sleigh	W. D. Rumsey	407,120	July 16	1660	434	48	341
Sleigh. Bob-	G. A. Bain	406,867	July 16	1276	335	48	266
Sleigh. Bob-	C. W. Creesap	406,028	July 2	12	4	48	5
Sleigh-knee	H. P. Titus	409,376	Aug. 20	1800	474	48	1040
Sleighs. Arm-rail for	A. Searls	407,905	July 30	2829	736	48	582
Slicer. Vegetable-	J. Enoch	410,592	Sept. 10	678	181	48	1408
Slivers from gill-boxes. Apparatus for drawing	T. H. Ackroyd and A. Broadley	407,291	July 23	2073	536	48	428
Slotting-machine. Device for tilting the tool of a	J. C. Caldwell	409,451	Aug. 20	1900	502	48	1002
Smelting-furnace	J. J. Williams	409,541	Aug. 20	2024	534	48	1086
Smoke and gas consuming furnace	A. Fickett	407,287	July 16	1909	497	48	389
Smoke-box front door	E. W. M. Hughes	408,026	July 30	3014	787	48	617
Smoke-consumer	G. McDowell	406,757	July 9	1106	293 294	48	223
Smoke-consuming apparatus	J. G. Mohn and A. Yelles	407,026	July 16	1502	393	48	309
Smoke-house	E. C. Ford	409,319	Aug. 20	1719	450	48	1083
Smoke-stack. Ventilator	O. R. Kuehne	410,113	Aug. 27	2308	761	48	1254
Snap-hook	H. Hulvel	411,442	Sept. 24	1983	526	48	1674
Snap-hook	C. A. Mann	407,096	July 16	1622	424	48	313
Snap-hook	H. McPherson	407,545	July 23	2311	597	48	477
Snap-hook	L. P. Riley	408,813	Aug. 13	942	250	48	868
Snow and cleaning roadways. Apparatus for removing	A. Hentschel	410,895	Sept. 10	1174	316	48	1503
Snow and ice. Apparatus for melting	W. Briscoe	408,333	July 2	436	120	48	88
Snow-plow	W. H. Deadman	407,513	July 23	2252	581 582	48	464
Snow-plow. Railway	L. E. Truesdell	406,117	July 2	135	39	48	26
Soap-box. Folding	I. B. Jones	407,076	July 16	1569	416	48	322
Soap. Machine for stamping and molding	C. P. Oldham	407,233	July 16	1896	477 478	48	373
Sod-cutter	L. T. Price	409,868	Aug. 27	2598	661	48	1183
Soda apparatus. Hot-	C. C. Morian	411,293	Sept. 17	1757	470	48	1620
Soda-fountain	J. G. Low	408,888	Aug. 13	1055	278	48	890
Soda-water, &c. Apparatus for dispensing	W. Gee	409,955	Aug. 27	2646	694	48	1208
Soda-water fountains. Apparatus for charging	F. S. Waldo	406,276	Aug. 6	109	27	48	700
Solar bath	S. D. Evans	407,434	July 23	2148	555	48	443
Solder rings. Machine for hemming can-caps with sheet-	J. G. Hodgson and E. Norton	406,317	Aug. 6	165	41, 42	48	711
Soldering caps on fruit-cans. Machine for	E. De Cew and A. E. Carpenter	407,773	July 30	2624	669	48	545
Soldering-clamp for eaves-troughs and spouts	H. C. Atkinson	406,616	July 9	891	240	48	192
Soldering-iron	T. W. Eversole	406,406	Aug. 6	312	79	48	739
Soldering-iron	J. H. Ferns	410,064	Aug. 27	2842	746	48	1243
Soldering-iron	C. L. Wagandt	408,772	Aug. 13	873	234	48	854
Soldering-iron	J. S. Hull	409,357	Aug. 20	1768	466	48	1034
Soldering-irons, lead-melting pots, &c. Device for heating	J. N. Sanger	406,310	July 2	400	109	48	80
Soldering-machine	J. G. Hodgson	406,238	Aug. 6	60	13	48	699
Soldering-machine	A. W. Livingston and G. Wilcox	410,761	Sept. 10	940	253	48	1463
Soldering machine. Can-	W. D. Brooks	407,161	July 16	1710	446	48	350
Soldering machine. Can-	W. Hipperling	406,647	July 9	942	255	48	193
Soldering machine. Can-	J. Selter	411,070	Sept. 17	1431	381 382	48	1564
Soldering machine. Can-cap-	E. Norton	406,252	Aug. 6	75	17	48	693
Soldering machine. Can-cap-	E. Norton and J. G. Hodgson	406,316	Aug. 6	163	41	48	711
Soldering metal pipes	W. A. Henderson	407,778	July 30	2634	682	48	546
Soldering vent-holes. Machine for	E. Norton	406,253	Aug. 6	77	17	48	694
Sole and heel trimmer	C. H. Trask	406,974	July 16	1433	375 376	48	295
Sole and heel trimmer	C. H. Trask	407,263	July 16	1876	489	48	361
Sole-cutting die	J. B. Keaney	410,984	Sept. 3	224	58	48	1313
Sole-cutting machine	H. Loewer and B. L. Blair	407,735	July 23	2561	663	48	508
Sole-edge trimmers. Manufacture of cutting-wheels for	E. E. Bean	409,506	Aug. 20	2110	556	48	1101
Sole-marking machine	P. Cox	410,316	Sept. 3	284	73, 74	48	1324
Sole-protector	J. F. Pratt	407,009	July 23	2393	621	48	493
Sole-shaping machine	T. A. Bresnahan	409,269	Aug. 20	1629	431	48	1008
Sole-trimming machine	C. W. Glidden	410,069	Aug. 27	2855	749	48	1246
Soles. Apparatus for molding spring-heels of	P. Cox	410,317	Sept. 3	285	74	48	1324
Soot and spark arrester	J. B. Z. Dumais	406,710	July 9	1034	277	48	208
Sounds. Apparatus for the record and reproduction of	G. Bettini	409,004	Aug. 13	1220	323	48	921
Sounds. Apparatus for the record and reproduction of	G. Bettini	409,005	Aug. 13	1222	324	48	921
Sounds. Recording and reproducing	G. Bettini	409,003	Aug. 13	1219	323	48	921
Sower and clod-crusher. Combined seed-	J. W. Self	409,070	Aug. 13	1325	349 350	48	941
Sower. Broadcast seed-	H. W. Ru Ton and H. A. Gore	409,373	Aug. 20	1793	472	48	1039

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Sewer. Broadcast seed	S. Smoker	408,542	Aug. 6	522	136	48	779
Spacing or marking wheel	F. C. Vibert	409,718	Aug. 27	2310	607	48	1143
Spark-arrester	J. B. Barnes	409,344	Aug. 20	1749	459	48	1030
Spark-arrester	J. Q. Donnald	411,327	Sept. 17	1810	463	48	1637
Spark-arrester	W. J. Ussery	406,488	July 9	693	192	48	148
Spark-conductor	E. J. Brandt	406,622	July 9	901	243	48	184
Spark-conductor	K. H. Carper	411,323	Sept. 17	1805	482 / 483	48	1636
Spectacle-case	W. W. Brilhart	410,234	Sept. 3	148	39	48	1297
Spectacle-case	C. R. Loug	410,798	Sept. 10	1038	278	48	1477
Spectacle-case	J. J. Bleich and J. F. Sarratt	411,118	Sept. 17	1513	403	48	1580
Spectacle-case holder	J. A. Maloney	411,160	Sept. 17	1575	419	48	1592
Speculum	J. I. Thornycroft	409,324	Aug. 20	2001	528	48	1061
Speed-measurer	F. Richard	410,023	Aug. 27	2738	719 / 720	48	1226
Spelling-stick	A. F. Smith	407,374	July 23	2052	541	48	494
Spindle: *See* Spinning-spindle. Winding-spindle.							
Spindle-driving bands. Tension-regulating device for	A. McDonald	408,189	July 30	3278	855	48	664
Spindle-driving bands. Tension-regulating device for	A. Netherwood	409,799	Aug. 27	2435	638	48	1167
Spinning frame. Ring	W. E. Sharples	410,255	Sept. 3	179	47	48	1303
Spinning-frames, &c. Support for the rollers of	E. Tweedale	408,275	Aug. 6	108	27	48	709
Spinning-frames. Thread-separator for	W. E. Sharples	407,420	July 23	2125	548 / 549	48	438
Spinning hemp, &c. Machine for	J. F. W. Stairs	406,601	July 9	863	223 / 224	48	177
Spinning-machine	E. Gessner	409,958	Aug. 27	2654	690	48	1209
Spinning-machine	E. Gessner	409,959	Aug. 27	2655	697	48	1209
Spinning-machine	E. Gessner	409,960	Aug. 27	2657	697	48	1209
Spinning-machine	P. Smith, Jr., and J. Lund	408,900	Aug. 13	1074	285 / 286	48	893
Spinning machine. Ring	E. Gessner	409,957	Aug. 27	2651	690	48	1209
Spinning machines. Flexible support for rings of ring-	H. F. Shaw	410,256	Sept. 3	181	47	48	1304
Spinning-machines. Saddle for top rolls of	W. T. Carroll	408,292	Aug. 6	131	33	48	705
Spinning-machines. Spindle-driving mechanism for	C. W. Jones	408,804	Aug. 13	927	247	48	865
Spinning-machines, &c. Spindle-holder for	A. W. Allen	410,392	Sept. 3	392	104	48	1346
Spinning-machines. Tension-regulating device for driving-bands of	E. Maertens	409,412	Aug. 20	1847	488	48	1051
Spinning-machines. Top drawing-roll for	W. T. Kellogg	406,740	July 9	1073	280	48	216
Spinning-machinery lubricator	L. B. Sanford and T. G. Grisenthwaite	407,122	July 16	1663	433	48	341
Spinning-mule	E. Hilton	409,266	Aug. 20	1668	430	48	1015
Spinning-mule	J. Lowe	407,783	July 30	2639	685 / 686	48	547
Spinning-mule	O. Schimmel	408,540	Aug. 6	518	134 / 135	48	778
Spinning-mule	E. Wright	411,062	Sept. 17	1448	375 / 376 / 377	48	1567
Spinning-spindle	J. E. Tyman	408,862	Aug. 13	1012	263	48	881
Spinning-spindle and support therefor	C. A. Pratt	408,812	Aug. 13	940	244	48	868
Spinning-spindle bearing	J. W. Wattles	408,866	Aug. 13	1030	270	48	882
Spinning-spindle. Compound	J. Lees	410,969	Sept. 10	1299	339	48	1529
Spinning-spindle step	O. B. Parker and G. T. Esten	410,014	Aug. 27	2727	717	48	1224
Spinning-spindle support	C. H. Chapman	408,581	Aug. 6	578	151	48	790
Spinning-spindle support	C. H. Chapman	408,582	Aug. 6	580	151	48	791
Spinning-spindle support	G. O. Draper	408,165	July 30	3231	845	48	657
Spinning-spindle support	G. O. Draper	410,354	Sept. 3	341	90	48	1335
Spinning-spindle support	G. O. Draper	410,355	Sept. 3	342	90	48	1335
Spinning-spindle support	W. F. Draper	406,823	July 9	1207	321	48	243
Spinning-spindle support	W. F. Draper	408,166	July 30	3232	849	48	657
Spinning-spindle support	B. N. Goodale	409,638	Aug. 20	2176	573	48	1113
Spinning-spindle support	J. J. Heywood	410,279	Sept. 3	218	57	48	1312
Spinning-spindle support	G. Jaquith	410,974	Sept. 10	1285	340	48	1527
Spinning-spindle support	T. H. Logan	408,185	July 30	3272	854	48	663
Spinning-spindle support	F. Seymour	408,264	Aug. 6	95	23	48	698
Spinning-spindle support	H. Thrasher	408,330	Aug. 6	189	47, 48	48	716
Spinning-spindle support	R. W. Jorres	406,219	July 2	259	74, 75	48	54
Spiral grooves. Machine for forming ornamental	E. J. Colby	406,069	July 2	95	28	48	21
Spirometer. Coin-released	H. D. Terrell	409,881	Aug. 27	2546	666	48	1187
Spoke and felly fastening	H. D. Melendy	408,732	Aug. 13	818	216	48	848
Spool	J. Blaszkaye	406,159	July 2	190	54	48	39
Spool-holder	A. W. Sawyer	410,699	Sept. 10	863	232	48	1443
Spool-holder	H. W. Steiner	408,328	Aug. 6	184	46	48	715
Spool-holder	E. P. Brownell	409,665	Aug. 27	2218	584	48	1127
Spool-machine	W. P. McAllister	410,175	Sept. 3	53	14	48	1279
Spool-stand. Revolving	P. Maloney and G. Robertson	410,908	Sept. 10	1189	321	48	1506
Spout for vessels	E. F. Dietericha	409,350	Aug. 20	1761	464	48	1033
Spouted can	N. R. Deppe	408,068	July 30	3096	811	48	633
Spreader	J. H. Day	410,822	Sept. 10	1069	287	48	1484
Spreading viscous substances. Machine for							
Spring: *See* Bed-spring. Locomotive-spring. Buggy-spring. Vehicle-spring. Car-spring. Wagon-spring. Carriage-spring. Wagon bolster-spring. Door-spring. Watch-case spring. Draft-spring.							
Spring-motor	T. P. Cook	410,137	Aug. 27	2935	771	48	1261
Spring-motor	P. J. and E. H. Gates	411,099	Sept. 17	1481	382 / 384	48	1573
Spring-motor	W. J. Gordon, E. D. Gilbert, and D. M. Pfaute	408,175	July 30	3242	846 / 847	48	659
Spring-motor	L. Melchior and G. Haas	407,899	July 30	2883	750	48	592
Springs. Machine for making side-bar	M. D. L. Williams	407,913	July 30	2842	740	48	584

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Sprinkler: *See* Water-sprinkler.							
Sprinkling apparatus	A. Mayer and H. G. Stiebel	408,631	Aug. 6	649	169	48	804
Square, level, protractor, &c. Combined	C. Easminger	407,385	July 16	1905	496	48	368
Squirrel-poisoning machine	W. J. Howard	406,909	July 16	1337	350	48	277
Stack-fastener	W. L. Murdy	409,657	Aug. 27	2514	658	48	1169
Stack. Reducing	C. J. Eames	407,000	July 16	1473	384	48	303
Staging	G. W. Zeigler	411,273	Sept. 17	1734	453	48	1624
Stair-rod fastener	A. D. Field	408,627	July 9	1213	323	48	244
Stair-rod securer	M. Rush	406,959	July 16	1407	370	48	291
Stairway	L. G. Souder	406,314	July 2	407	111	48	82
Stake-pocket	W. Evans	410,731	Sept. 10	931	249	48	1453
Stalk cutter and mower	W. I. Knox	409,979	Aug. 27	2681	703	48	1214
Stalk-cutter and rake. Combined	A. T. Boykin	406,082	July 2	83	24, 25	48	16
Stamp canceling and postmarking machine	G. W. Iley	408,411	Aug. 6	315	80	48	740
Stamp-canceling device	F. Horn	409,640	Aug. 20	2178	574	48	1113
Stamp. Hand	M. L. Luebben	411,158	Sept. 17	1571	418	48	1591
Stamp. Hand	D. C. Stover	410,464	Sept. 3	513	138	48	1369
Stamp. Hand	D. C. Stover	410,465	Sept. 3	515	138	48	1369
Stamp. Hand	D. M. Bloch	407,509	July 23	2248	581	48	463
Stamp holder. Postage	C. C. Hill	409,394	Aug. 20	1718	452	48	1025
Stamp. Perforating	B. B. Hill	410,589	Sept. 10	989	184	48	1409
Stamp. Self-inking time and dating	J. H. Hager	409,283	Aug. 20	1660	438	48	1014
Stamps. Device for carrying and applying postage	H. Helland and F. Matzow	411,593	Sept. 24	2203	586	48	1720
Stamping apparatus. Envelope	Z. W. Smith	406,785	July 9	1149	304	48	231
Stanchion							
Stand: *See* Boiler-stand. Printer's stand. Carboy-stand. Sad-iron polishing and waxing stand. Display-stand. Mirror-stand. Spool-stand. Music-stand. Switch-stand.							
Stand and pad or tablet. Combined	H. H. Unz	409,340	Aug. 20	1743	458	48	1029
Stand-pipe and fire-escape	F. W. Barker	407,392	July 23	1955	510	48	407
Staple-driver	A. White	406,075	July 2	73	21, 22	48	17
Staple forming, setting, and clinching machine	J. Chantrell	407,431	July 23	2141	552 / 553 / 554	48	441
Staple or nail extractor	O. Rickolson	406,538	July 9	775	211	48	192
Stapling implement	H. F. White	409,540	Aug. 20	2023	533 / 543	48	1065
Stapling-machine	E. P. Donnell	406,891	July 16	1310	344	48	272
Starch. Manufacturing	A. Behr	409,019	Aug. 13	1249	330	48	927
Starching-machine	J. G. Crawford	407,502	July 23	2239	578	48	461
Starching-machine	D. B. Young	406,170	July 2	204	56, 57	48	41
Station and street indicator	C. H. Jenne	410,994	Sept. 10	1315	354	48	1532
Stave-dressing machine	C. Sommer	410,954	Sept. 10	1250	336	48	1519
Stay and fastener. Combined dress	L. K. Buchanan	11,009	July 2	585	156	48	112
Stay. Garment	E. C. Bowling. (Reissue)	407,674	July 23	2170	641	48	509
Stays. Package for dress	C. Mosher	411,642	Sept. 24	2274	605	48	1735
Steam and hot-water boiler. Combined	H. M. Chapman	410,304	Sept. 3	304	105	48	1346
Steam-boiler	G. H. Aslre	410,065	Aug. 27	2799	737	48	1236
Steam-boiler	O. Bellman	410,309	Sept. 3	967	70	48	1339
Steam-boiler	S. Braggins	407,868	July 30	2804	730	48	578
Steam-boiler	J. A. Caldwell	411,094	Sept. 17	1474	391	48	1571
Steam-boiler	J. Dick	408,343	Aug. 6	206	52, 53	48	720
Steam-boiler	W. M. Glasson	411,434	Sept. 24	1973	523	48	1673
Steam-boiler	A. Grant	408,303	Aug. 6	146	37	48	708
Steam-boiler	H. Hackney	411,191	Sept. 17	1613	428 / 429	48	1599
Steam-boiler	P. Hanres	409,504	Aug. 20	2106	555	48	1100
Steam-boiler	F. Kitten	407,538	July 23	2209	593	48	474
Steam-boiler	D. T. Lawson	406,235	July 3	292	80, 81	48	58
Steam-boiler	R. S. Rodie	407,251	July 16	1856	484	48	376
Steam-boiler	P. Rohan	407,300	July 16	1869	487	48	381
Steam-boiler	A. Stirling	408,996	Aug. 13	1210	319	48	919
Steam-boiler	T. L. Sturtevant	406,220	Aug. 6	114	28, 29	48	701
Steam-boiler	G. P. Wilson	410,227	Sept. 3	138	35	48	1295
Steam-boiler	J. E. Wilson	409,313	Aug. 20	1704	446	48	1022
Steam-boiler	R. R. Zell	407,744	July 23	2580	668 / 669	48	530
Steam-boiler. Sectional	J. and W. Rowbotham	411,706	Sept. 24	2373	630	48	1755
Steam-engine	A. T. Bemis	409,563	Aug. 20	2055	542	48	1091
Steam-engine	J. Curtis	409,155	Aug. 13	1460	386	48	966
Steam-engine	C. R. Dellenbaugh	409,457	Aug. 20	1912	506	48	1004
Steam-engine	J. W. Dennis and F. A. Shoemaker	407,338	July 23	1967	516	48	412
Steam-engine	J. G. Downie	409,672	Aug. 27	2238	588 / 589	48	1130
Steam-engine	N. H. Edgerton	408,704	Aug. 13	782	206	48	836
Steam-engine	A. J. and H. A. Foulds	410,412	Sept. 3	430	114	48	1353
Steam-engine	J. A. Groshon	409,284	Aug. 20	1661	438 / 439	48	1014
Steam-engine	M. W. Hall	410,525	Sept. 3	595	160	48	1385
Steam-engine	W. E. Jones	408,490	Aug. 6	429	112 / 113	48	764
Steam-engine	G. W. Lewis	410,432	Sept. 3	470	126	48	1300
Steam-engine	E. T. McKaig	410,190	Sept. 3	84	20	48	1264
Steam-engine	W. A. Pitt	410,451	Sept. 3	495	132	48	1365
Steam-engine	F. S. Ruttmann	406,607	July 9	874	235	48	179
Steam-engine	W. A. Vreeland	410,866	Sept. 10	1130	304	48	1495
Steam-engine	J. T. Warner	408,154	July 30	3214	839	48	654
Steam-engine	S. S. Williams	410,411	Sept. 3	428	113 / 114	48	1353
Steam-engine. Direct-acting	J. A. Groshon	411,510	Sept. 24	2076	548	48	1692
Steam-gage	C. H. Riley						

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Steam-gage	C. Winther	407,963	July 30	2952	788	48	605
Steam. Generating	A. Poggendorff, C. and F. Brede	406,467	July 9	660	185	48	141
Steam-generator	W. M. Brown	409,664	Aug. 27	2216	583	48	1127
Steam-generator	H. M. Clark, J. Taylor, and J. B. Henshaw.	410,267	Sept. 3	196	52	48	1308
Steam-generator	G. D. Cooper	407,395	July 23	2081	538	48	430
Steam-generator	S. R. Crowner	407,460	July 23	2199	567	48	453
Steam-generator	D. W. Fletcher	409,781	Aug. 27	2406	630	48	1161
Steam-generator	O. F. Gilbert and G. W. Farrar	406,613	Aug. 6	621	160	48	799
Steam-generator	E. F. Gordon and H. Hobbs	408,708	Aug. 13	788	{207 / 208}	48	836
Steam-generator	T. F. Morrin	407,940	July 30	2885	751	48	592
Steam-generator	T. L. and T. J. Sturtevant	408,095	Aug. 13	1209	319	48	919
Steam-motor	T. J. Frazier	408,229	Aug. 6	45	10	48	687
Steam or water trap	H. F. Leland	407,294	July 16	1815	475	48	371
Steam-trap	C. A. Carleton	406,875	July 16	1291	338	48	268
Steam-trap	C. Cornwell	406,964	July 2	323	91	48	66
Steam-trap	G. J. Graebert	408,176	July 30	3244	847	48	660
Steam. Utilizing exhaust	W. Schmidt	406,372	July 2	486	{135 / 136}	48	97
Steam-washer	W. Klahr	411,924	Sept. 17	1665	445	48	1611
Steamer	E. Dimmick	410,752	Sept. 10	963	259	48	1459
Steamer and boiler	A. H. Storms	406,793	July 9	1161	307	48	231
Steamer. Grain	L. Atkins	408,682	Aug. 13	739	193	48	927
Steaming food for stock. Device for	G. F. C. Kloeppinger	411,525	Sept. 24	2097	553	48	1697
Steel. Basic process of making	E. Bertrand	408,572	Aug. 6	506	.....	48	788
Steel direct from the ore by the use of natural gas. Making	W. F. M. McCarty	410,430	Sept. 3	467	.....	48	1350
Steel-furnace	L. G. Laureau and F. W. Gordon	407,600	July 23	2380	617	48	491
Steel. Manufacture of	T. S. Blair, Jr	407,156	July 16	1703	444	48	349
Steel. Recarbonizing	J. H. Darby	406,430	July 9	584	165	48	126
Steeping-tub for steeping barley or other grains	F. Susemihl	406,486	July 9	690	191	48	147
Steering apparatus. Steam	F. C. Lang	409,749	Aug. 27	2350	618	48	1151
Stereotype-block	J. C. Merritt	410,714	Sept. 10	896	242	48	1447
Stereotype-matrices. Backing compound for	J. F. Frey	410,830	Sept. 10	1078	.....	48	1485
Stereotype or electrotype plates. Block for	H. Fietsch, Jr	406,928	July 9	1215	322	48	244
Stereotype-plate and base	F. D. Thomason	406,262	July 9	1206	333	48	252
Stereotype-plates. Means for securing	D. Reid	410,922	Sept. 10	1211	327	48	1511
Stereotype-plates which are cast separately from their beds. Means for securing	E. D. Rogers	406,371	July 2	486	135	48	97
Stills. Sectional roof for	J. G. Mitchell	409,908	Aug. 27	2704	710	48	1218
Stilt	J. M. Porter	408,518	Aug. 6	479	126	48	773
Stilt. Walking	G. R. Nado	407,546	July 23	2312	597	48	477
Stirrup	J. Bull	409,558	Aug. 20	2048	540	48	1090
Stirrup	J. Bull	411,757	Sept. 24	2440	646	48	1769
Stirrup	E. G. Sellors	410,939	Sept. 10	1220	332	48	1515
Stirrup. Reversible safety	J. C. Welcome	406,944	Aug. 13	1134	299	48	906
Stock marker. Live	A. Casper and A. Jacobson	410,782	Sept. 10	1012	271	48	1471
Stoker. Mechanical	W. Leach	410,735	Sept. 10	935	250	48	1454
Stone. Artificial	O. E. C. Guelick	410,688	Sept. 10	849	.....	48	1441
Stone fences. Mold for artificial	J. and H. Jessen	408,623	Aug. 6	638	166	48	802
Stone grinding and polishing machine	J. McEnerney	409,419	Aug. 20	1856	490	48	1052
Stone, &c. Implement for reducing	J. W. Maloy	409,051	Aug. 13	1297	342	48	935
Stone, &c. Implement for reducing	J. W. Maloy	409,052	Aug. 13	1297	342	48	936
Stone-planing machine	E. Smallwood	409,249	Aug. 20	1604	423	48	1003
Stone. Producing artificial	G. M. Breinig	410,635	Sept. 10	765	.....	48	1425
Stone. Quarrying	J. H. Jacobs	410,165	Sept. 3	43	11	48	1277
Stone-sawing machine	G. Dalrymple	408,293	Aug. 6	133	33, 34	48	705
Stone-sawing machine	G. A. Davidson	409,670	Aug. 27	2236	588	48	1130
Stone-sawing machine	G. A. Davidson	409,774	Aug. 27	2394	627	48	1159
Stone-sawing machine	J. C. Ferguson	410,385	Sept. 10	683	182	48	1408
Stone-sawing machine	T. A. Jackson	410,419	Sept. 3	442	{116 / 117}	48	1356
Stone-setting machine	C. Reynolds	408,326	Aug. 6	178	45, 46	48	714
Stone. Stamping-machine for molding artificial	J. Winkler	409,542	Aug. 20	2027	534	48	1066
Stool and bucket. Combined milking	J. H. Stewart	410,658	Sept. 10	797	215	48	1431
Stool. Camp	J. W. Oulton and D. A. Meister	408,741	Aug. 13	829	219	48	844
Stool. Piano	W. Heap	409,585	Aug. 20	2090	551	48	1098
Stopper: *See* Bottle-stopper.							
Store-service apparatus	G. R. Elliott	409,098	Aug. 13	1370	{361 / 362}	48	949
Store-service apparatus	J. H. Goodfellow	410,239	Sept. 3	155	40, 41	48	1299
Store-service apparatus	N. Nowman	406,942	July 16	1386	363	48	287
Store-service apparatus	M. C. Swezey	409,126	Aug. 13	1417	373	48	950
Stove	A. M. Blakesley	410,143	Sept. 3	4	2	48	1269
Stove	N. J. Engler	406,204	July 2	251	69	48	50
Stove	E. Lofts	411,459	Sept. 24	2004	532	48	1679
Stove attachment. Gas	B. G. Dosch and F. C. Sawhill	410,504	Sept. 3	568	153	48	1320
Stove burner. Gas	H. R. Gammer	410,092	Aug. 27	2263	751	48	1248
Stove. Cooking	V. M. Barrett	407,149	July 16	1692	441	48	347
Stove. Cooking	W. Lamb	406,051	July 2	42	12	48	11
Stove-door light	J. T. Fleehearty	408,963	Aug. 13	1164	307	48	911
Stove-doors. Pin for hinges of	D. C. Kuhn	411,152	Sept. 17	1562	415	48	1589
Stove for heating purposes. Oil	A. F. Zimmerling	407,390	July 23	2072	536	48	428
Stove. Gas	A. J. Doty	411,649	Sept. 24	2284	607	48	1737
Stove. Gas	J. Gibbone	410,792	Sept. 10	1029	276	48	1475
Stove. Gas	L. Ketchum	407,938	July 30	2875	{748 / 749}	48	590
Stove. Gas	W. Swindell	409,763	Aug. 27	2375	623	48	1156
Stove-grate	W. J. Andrews	411,317	Sept. 17	1800	481	48	1635
Stove-grate	J. F. Brayer	411,184	Sept. 17	1604	426	48	1597
Stove-grate	W. C. Metzner	407,727	July 30	2646	685	48	549
Stove-guard	G. W. Slawson	411,735	Sept. 24	2409	639	48	1763

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Stove. Heating	C. C. Augustine	410,229	Sept. 3	141	36	48	1296
Stove. Heating	J. L. Collins and H. C. Burgie	409,452	Aug. 20	1901	{502 / 503}	48	1062
Stove. Heating	O. P. and G. O. Elterich	407,001	July 16	1474	384	48	303
Stove. Heating	C. O. Graves	406,521	July 9	752	205	48	157
Stove. Heating	L. W. Hagey	409,036	Aug. 13	1275	336	48	932
Stove. Heating	F. W. Rider	406,955	July 16	1402	366	48	290
Stove. Heating	S. S. Wales	408,773	Aug. 13	874	234	48	854
Stove. Heating	J. W. Broer	406,991	July 16	1459	382	48	301
Stove. Lamp	W. H. Wilder	411,909	Sept. 17	1644	457	48	1606
Stove. Lamp	C. Truesdale	410,138	Aug. 27	2925	768	48	1230
Stove-lining	C. H. Boeck	407,560	July 23	2341	605	48	484
Stove. Oil	A. H. Calkins	408,210	Aug. 6	11	3	48	680
Stove. Oil	A. H. Calkins	408,211	Aug. 6	15	3	48	681
Stove. Oil	J. De Mooy, Jr	410,638	Sept. 10	760	208	48	1436
Stove. Oil	J. Goldstein and I. Block	411,719	Sept. 24	2387	633	48	1758
Stove. Oil	A. C. West	411,406	Sept. 17	1923	513	48	1658
Stove. Oil	S. C. Davidson	408,402	Aug. 6	300	74	48	737
Stove or air-heating apparatus	S. L. West	410,391	Sept. 3	321	104	48	1346
Stove or furnace door	J. Orr	408,191	July '30	3220	856	48	665
Stove-ovens. Door for	J. B. Leach	408,884	Aug. 13	1049	277	48	898
Stove-pipe attachment	A. J. Robinson	411,130	Sept. 17	1529	408	48	1584
Stove-pipe coupling	J. Lindenmayer	408,020	July 30	3010	784	48	616
Stove-pipe fastener	W. J. and S. H. Young and Z. U. Knode.	411,485	Sept. 24	2041	540	48	1686
Stove-pipe shelf	W. H. Wilder	407,882	July 30	2797	{738 / 739}	48	576
Stove range. Oil	I. J. Miller and H. A. Drake	407,602	July 23	2384	618	48	491
Stove. Straw-burning	G. Laube	409,209	Aug. 20	1547	409	48	991
Stove. Straw-burning cook	J. S. Butler	408,079	July 30	3008	800	48	631
Stove. Vapor	G. B. McClelland	409,221	Aug. 20	1565	413	48	995
Stove. Vapor-burner	J. B. Curl	410,537	Sept. 3	606	{163 / 164}	48	1388
Stove. Vapor-burning	S. S. Utter	407,707	July 23	2524	653	48	519
Stoves, &c. Adjustable pipe-opening in	A. G. Sargent	410,453	Sept. 3	498	133	48	1365
Stoves. Automatic oil-feeder for oil	F. S. Moore	406,932	July 16	1373	360	48	285
Stoves or lamps for burning oil. Feeder for	W. H. Clemes	406,027	July 2	10	4	48	5
Stoves. Wick-tube for oil	A. Thomson. (Reissue)	11,015	July 23	2609	675	48	536
Strainer. Milk	W. J. Pierpont	409,499	Aug. 20	1967	520	48	1075
Strap for packing-boxes	H. Baker	407,319	July 23	1949	508	48	406
Straw-binding machine	C. Crook	407,467	July 23	2197	586	48	458
Straw-board-lining-cutter machine	W. E. Davis	408,221	Aug. 6	98	6	48	683
Straw-cutter	J. F. Gaumer	409,398	Aug. 20	1630	482	48	1046
Straw-stacker	P. J. Sprague	406,788	July 9	1154	305	48	232
Straw-stacker	H. Heltman	410,550	Sept. 3	925	{167 / 168}	48	1301
Street or station indicator	J. B. Arci	408,646	Aug. 6	679	176	48	809
Street-washer	G. F. Stengel	410,745	Sept. 10	951	256	48	1457
Stretching-frame	F. A. Widger	410,475	Sept. 3	587	141	48	1379
Striking apparatus	H. Cooper	409,453	Aug. 20	1902	{503 / 504}	48	1062
Striking-machine. Coin-freed	A. Felldin	406,602	Aug. 6	606	157	48	796
String stretching and tuning device	F. H. Cilley	411,013	Sept. 17	1342	361	48	1547
Structures. Construction of metallic	L. D. Copeland	406,882	July 16	1299	341	48	270
Stuffing-box	J. H. Terry	406,795	July 9	1163	{307 / 308}	48	234
Stump-extractor	O. A. Kleits	407,667	July 23	2471	640	48	508
Stump-puller	J. B. Gerber	406,725	July 9	1053	{280 / 281}	48	212
Submarine boat	H. Knox	408,415	Aug. 6	324	83	48	741
Sucker-rod elevator	H. E. Niese	409,333	Aug. 20	1732	{455 / 456}	48	1027
Sugar. Refining	H. P. Weldig	407,311	July 16	1937	.....	48	395
Sulphur fabric	E. D. Babbitt	406,204	Aug. 6	1	1	48	679
Sun and vapor bath							
Supporter: *See* Abdominal supporter. Hose-supporter. Shade-supporter. Broom-supporter. Shaft-supporter. Curtain-supporter.							
Surface, scratch, and depth gage. Combined	T. E. Cassidy	409,921	Aug. 27	2600	681	48	1199
Surgeon's silk or catgut. Package of	R. W. Johnson	408,625	Aug. 6	642	167	48	803
Surgical pump for transfusion of blood	E. E. Allen	409,000	Aug. 13	1215	320	48	920
Suspender attachment	J. P. Rummel	408,536	Aug. 6	516	135	48	778
Suspender-end	E. B. Stimpson	409,338	Aug. 20	1741	457	48	1029
Suspender-straps. Attaching device for	H. E. Messimer	409,694	Aug. 27	2272	598	48	1137
Suspenders	M. Rubin	410,855	Sept. 10	1116	300	48	1492
Suspension-hook	L. F. Roller	409,239	Aug. 20	1590	419	48	999
Swaging and rolling apparatus	H. H. Warren	411,480	Sept. 24	2036	538	48	1685
Swaging-machine	W. H. Dayton	408,294	Aug. 6	134	34	48	705
Swing	S. W. Parsons	408,742	Aug. 13	831	219	48	845
Swing	G. W. Zeigler	409,545	Aug. 20	2030	535	48	1067
Swinging chair or hammock	H. W. Messer	407,099	July 16	1696	425	48	334
Swinging gate. Vertically	L. G. Knowles	411,565	Sept. 24	2068	547	48	1692
Switch: *See* Electric switch. Railway-switch. Electrical switch.							
Switch and signal apparatus	J. T. Hambay	406,213	July 2	263	72, 73	48	52
Switch and signal interlocking apparatus	J. T. Hambay	406,212	July 2	261	72	48	52
Switch-stand	N. O. Goldsmith	408,174	July 30	2241	646	48	550
Switch-stand	F. C. Weir and N. O. Goldsmith	407,755	July 23	2601	673	48	534
Switch-stand	N. W. Boyd	406,500	July 9	714	196	48	159
Switch-stand. High-signal	H. M. Norton	410,916	Sept. 10	1196	324	48	1508
Switches. Mechanism for operating three-throw	J. W. Dunlap, Sr	408,468	Aug. 6	396	104	48	757
Switching apparatus. Magneto-electric individual	H. B. Thompson	410,221	Sept. 3	132	33	48	1294
Swivel for flag-halyards							

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Syringe	J. W. Kirkwood	407,934	July 30	2876	749	48	590
Table: *See* Extension-table. Turn-table. Ironing-table. Type-table. Knockdown table. Veterinary operating-table. Pool-table.							
Table	S. and M. Henry	407,924	July 30	2710	703	48	580
Table	L. Stockman	407,908	July 30	2833	737	48	583
Table and chair. Combined	W. O. Whitney	408,439	Aug. 20	1681	496	48	1058
Table-leaf support	T. G. Bugbee	407,812	July 30	2694	699	48	557
Table-leaf support	J. G. Garretson	408,967	Aug. 13	1168	308	48	912
Table-leaf support	E. Helm	410,892	Sept. 10	1171	315	48	1503
Table-leaves. Machine for rabbeting	R. W. Woodman	406,686	July 9	1002	269	48	203
Tack-driver	N. Newman	407,444	July 23	2162	558	48	446
Tackle-block	J. Dunn	411,240	Sept. 17	1683	450	48	1614
Tag	W. D. Smith	408,359	Aug. 6	226	58	48	723
Tally-sheet	B. F. McMillan	409,223	Aug. 20	1567	413	48	995
Tan-liquor. Apparatus for heating	O. F. Carley	407,281	July 16	1900	494, 495	48	387
Tan-liquor. Heating	O. F. Carley	407,280	July 16	1899	494	48	387
Tank: *See* Disinfecting-tank. Water-closet tank. Flushing-tank. Watering-tank. Water-tank. Weighing oil-tank.							
Tank-heater	G. Armstrong	407,988	July 30	2859	770	48	606
Tanning apparatus	G. S. Tunstead	408,395	Aug. 6	285	71	48	734
Tap and bushing for barrels	G. W. Jackson	409,288	Aug. 20	1670	440	48	1016
Tap and drill. Machine	C. Steiner	410,614	Sept. 10	730	197	48	1418
Tap and faucet. Automatic ale	H. D. Northrup	409,059	Aug. 13	1306	345	48	937
Tap. Collapsible	A. B. Babbitt	408,570	Aug. 6	564	147, 148	48	788
Tape-measure	E. G. Soltmann	406,065	July 2	64	19	48	15
Target-trap	W. T. Best	407,429	July 23	2138	551, 552	48	441
Tea or coffee pot	L. S. Wright	411,483	Sept. 24	2089	539	48	1685
Teaseling-machine	F. Jopp	409,975	Aug. 27	2677	702	48	1214
Teeth. Fastening artificial	G. M. Weirich	411,272	Sept. 17	1733	463	48	1624
Telegraph. Autographic	J. H. Robertson	407,092	July 23	2504	647	48	514
Telegraph. Automatic	F. Anderson	406,942	July 16	1444	378	48	298
Telegraph. Automatic	F. Anderson	407,460	July 23	2187	564	48	450
Telegraph-key	A. E. Johnson	411,198	Sept. 17	1626	433	48	1602
Telegraph-key	H. S. Tebbs, N. C. Lane, and V. Coombs.	411,770	Sept. 24	2458	651	48	1773
Telegraph-key	H. A. Waldo	406,489	July 9	604	192	48	148
Telegraph-pole	C. M. Russell	406,406	July 2	545	152	48	108
Telegraph. Printing	C. L. Healy	407,729	July 23	2552	661	48	504
Telegraph. Printing	C. L. Healy	407,730	July 23	2553	661	48	525
Telegraph. Selecting	M. W. Dewey	407,581	July 23	2356	610, 611	48	486
Telegraphs. Relay for quadruplex	C. L. Healy	407,480	July 23	2211	570	48	455
Telegraphic apparatus. Mechanical	A. Cazalis	408,214	Aug. 6	18	4	48	681
Telegraphic recorder. Automatic	F. Anderson	407,463	July 23	2190	565	48	450
Telegraphy. Automatic	F. Anderson	407,461	July 23	2188	564, 565	48	450
Telegraphy. Harmonic	F. Van Ryselberghe	409,157	Aug. 13	1469	367	48	969
Telegraphophone	M. Wheless	410,305	Sept. 3	261	68	48	1319
Telephone	T. A. Edison	406,567	July 9	613	158	48	168
Telephone	J. Trowbridge and S. Sheldon	407,799	July 30	2671	694	48	553
Telephone. Acoustic	L. V. Elliott	410,791	Sept. 10	1028	276	48	1475
Telephone-holder	C. T. Dickson	411,586	Sept. 24	2192	566	48	1717
Telephone. Mechanical	W. H. Eastman	411,767	Sept. 24	2452	650	48	1771
Telephone. Mechanical	C. M. Radford	411,058	Sept. 17	1404	370	48	1559
Telephone receiving-instrument	R. D'Unger	409,736	Aug. 27	2333	613	48	1148
Telephone-switch system	C. C. Gould	409,574	Aug. 20	2072	547	48	1095
Telephone system	J. R. Smith	408,327	Aug. 6	180	46	48	714
Telephones	J. J. Wolf	410,059	Aug. 27	2794	735	48	1235
Telephones. Adjustable elbow-rest for	W. Gray	408,709	Aug. 13	789	206	48	837
Telephones. Coin-controlled apparatus for	N. S. Flak	407,004	July 16	1478	387	48	304
Telephonic apparatus	J. A. Boyce	408,335	Aug. 6	197	50	48	718
Tellurian	H. N. Felkel	408,900	Aug. 13	923	240	48	863
Tellurian	O. McCullough	408,352	Aug. 6	217	55, 56	48	722
Tenoning-machine	W. Chadd	410,783	Sept. 10	1014	271	48	1471
Tent	G. W. Zeigler	407,427	July 23	2134	553	48	440
Tent-frame	J. T. Stoll	410,812	Sept. 10	1056	283	48	1481
Terret	H. F. Beimling	411,570	Sept. 24	2164	577	48	1710
Testing device	C. E. Buzby	406,084	July 2	86	25, 26	48	19
Testing-machine	E. J. Colby	411,494	Sept. 24	1959	521	48	1670
Testing machine. Coin-controlled blow	J. F. Kingwill	411,769	Sept. 24	2455	650, 651	48	1772
Textile fabrics. Apparatus for treating	J. H. Lorimer	406,143	July 2	168	44	48	35
Theatrical appliance	E. W. Emerson	406,271	July 2	338	91	48	68
Thermometer	J. Hopson, Jr.	406,139	July 2	162	47	48	34
Thermometer	J. D. Ward	409,379	Aug. 20	1801	474	48	1040
Thermometer. Metallic	T. L. Sturtevant	406,152	July 2	179	51	48	37
Thermometric indicator	M. Meyer	409,996	Aug. 27	2702	709	48	1218
Thermostat	A. M. Butz	409,316	Aug. 20	1708	449	48	1023
Thill-coupling	T. Brinson	407,160	July 16	1709	448	48	350
Thill-coupling	W. J. Card	406,388	July 2	517	143, 144	48	104
Thill-coupling	R. G. W. Foster	409,741	Aug. 27	2340	618	48	1149
Thill-coupling	L. D. Haskell, Jr	411,661	Sept. 24	2306	611	48	1741
Thill-coupling	H. J. Ilse	408,976	Aug. 13	1185	313	48	914
Thill-coupling	F. J. Miller	411,044	Sept. 17	1384	371	48	1555
Thill-coupling	A. J. Obrist	410,849	Sept. 10	1106	295	48	1491

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Thill-coupling jack	J. H. Miller	408,921	Aug. 13	1102	291	48	899
Thill-coupling jack	J. M. Smith	407,131	July 16	1674	437	48	342
Thills into couplings. Device to assist in the insertion of vehicle-	F. J. Porter	409,300	Aug. 20	1683	443	48	1016
Thimbles. Thread-cutter for	O. Cady	407,719	July 23	2540	657	48	502
Thioparatolnidine	W. Pfitsinger	406,932	July 16	1460	.....	48	290
Thrasher. Traveling	B. Holt and J. Draper	406,413	Aug. 6	320	82	48	741
Thrashing-machine	A. L. Gill	406,388	Aug. 6	263	66	48	709
Thrashing-machines. Adjusting attachment for	J. D. Burkhart	407,511	July 23	2250	581	48	463
Thrashing-machines. Band-cutter and feeder for	W. H. Alston	409,897	Aug. 27	2570	672	48	1192
Thrashing-machines. Shoe attachment for	L. M. Wilson	409,069	Aug. 13	1336	358	48	947
Thread and winding the same on shuttle-bobbins. Machine for waxing	D. H. Campbell	409,270	Aug. 20	1631	431, 432	48	1009
Ticket. Railway	L. D. Heusner	409,203	Aug. 20	1532	406	48	989
Tide-power. Device for utilizing	J. Ringen	406,585	Aug. 6	487	128, 129	48	774
Tidy-holder	F. A. Gira and J. H. Gfell	411,188	Sept. 17	1610	428	48	1590
Tie: *See* Bag-tie. Railway cross-tie. Railway-tie.							
Tie-bars and switch-rails. Bracket for connecting	F. C. Weir and C. Partington	410,056	Aug. 27	2799	725	48	1235
Tights. Bicycle-	R. G. Roper	406,436	Aug. 6	250	91	48	748
Tile-cutting machine	T. Somerville, Jr	411,080	Sept. 24	2349	621	48	1750
Tile-machine	W. D. Sherman	410,455	Sept. 3	501	134	48	1386
Tile or brick cutting table	J. Bensing	411,638	Sept. 24	2200	603	48	1734
Tile. Roofing	R. Liddell	411,006	Sept. 24	2311	613	48	1748
Tile. Roofing	J. Rapp	411,299	Sept. 17	1764	472	48	1630
Timber-coupling for framed structures	M. F. Rockwell and G. W. Pearsall	408,750	Aug. 13	842	224	48	818
Time and wage indicator	J. T. Rice	409,503	Aug. 20	1973	521, 522	48	1076
Time-detectors. Station-box for watchmen's electric	J. E. Richard	409,755	Aug. 27	2361	621, 622	48	1153
Time-indicator	P. G. Giroud	410,907	Sept. 10	1274	343	48	1521
Time-lock	L. F. Manger	409,220	Aug. 20	1561	412	48	994
Time-piece escapement	A. Kaiser	409,150	Aug. 13	1451	382, 383, 384	48	966
Time-recorder. Workman's	A. Dey	411,586	Sept. 24	2186	580, 581, 582	48	1716
Time-signal	N. H. Borgfeldt	406,969	July 16	1456	381	48	300
Tinner's fire-pot	J. S. Hull	409,358	Aug. 20	1709	456	48	1034
Tinning copper sheets. Machine for	D. Evans	408,632	Aug. 13	966	256, 257	48	872
Tire-bender	I. L. Anwerter	406,984	July 16	1448	379	48	299
Tire-heating apparatus	J. W. Foisey	406,719	July 9	1045	279	48	211
Tire-heating furnace	J. Kiefer	408,349	Aug. 6	212	54	48	721
Tire-setting machine	D. R. Miller	407,720	July 23	2538	665	48	527
Tire-tightener	A. Knox	407,838	July 30	2715	704	48	560
Tire-truing machine	T. J. Reid	408,044	July 30	2835	736	48	582
Tire. Wheel-	J. H. Klipstein	406,742	July 9	1075	286	48	217
Toaster	F. W. Uram	410,338	Sept. 3	323	84	48	1331
Toaster or broiler	C. T. Tarpenning	406,547	July 9	787	213	48	166
Tobacco and match case. Combined	F. E. Elliott	409,029	Aug. 13	1368	334	48	931
Tobacco and pipe box. Combined	F. R. Kaldenberg	406,286	July 2	358	98	48	73
Tobacco-box	J. M. Brosius	407,625	July 23	2430	630	48	500
Tobacco-box	O. Bejach	408,789	Aug. 13	903	241	48	860
Tobacco-moistening cabinet	H. C. W. Emery and E. Christian	408,341	Aug. 6	204	52	48	719
Tobacco-pipe	C. L. Nesler	406,941	July 16	1385	363	48	287
Tobacco-pouch	J. R. McLaren, Jr	406,939	July 16	1382	362	48	287
Toboggan	C. H. Emerson	406,892	July 16	1312	344, 345	48	273
Toboggan. Coasting	J. A. Baughman	407,768	July 30	2819	679	48	544
Toe-weight	A. J. Wood	406,554	July 9	794	215	48	166
Tongs for handling merchandise	T. James	409,843	Aug. 27	2497	650, 653	48	1176
Tongs. Furnace	T. B. Beeson	411,755	Sept. 24	2438	645	48	1768
Tongs. Roofing	A. Koehler	406,515	July 9	739	202	48	155
Tongue attaching device. Wagon	M. L. Horner	406,283	July 2	355	97	48	72
Tongue-support	W. W. Mayne	408,312	Aug. 6	156	40	48	710
Tongue support. Vehicle	R. Lynn, Sr	410,799	Sept. 10	1039	278	48	1477
Tongue support. Wagon	J. P. Johnson	407,604	July 30	2767	719	48	570
Tongue. Vehicle	T. Andress	406,188	July 2	234	63	48	46
Tongues. Safety-tip for vehicle	J. T. Carter and W. Koepke	406,993	July 16	1462	382	48	301
Tool. Combination	W. R. Van Vliet	411,679	Sept. 17	1444	381	48	1566
Tool. Combination	A. Schuermann	407,842	July 30	2735	711	48	564
Tool-driver	N. Linsley	409,969	Aug. 27	2691	706	48	1216
Tool-handle	F. Müller	407,230	July 16	1894	477	48	373
Tool-holder	R. E. Breed	408,336	Aug. 6	198	50	48	713
Tool-socket	D. M. Small	408,898	Aug. 13	1072	282	48	893
Tooth. Apparatus for allaying the sensibility of a	S. B. Dewey	409,671	Aug. 27	2237	588	48	1130
Tooth-crown. Artificial	L. W. O'Brian	410,435	Sept. 3	472	127	48	1360
Tooth-holder. Right-angle	K. M. Hellwig	410,794	Sept. 10	1035	.....	48	1476
Tooth-pick. Antiseptic	B. T. Mason	407,262	July 23	2035	527	48	421
Tooth-pick. Combination	J. T. Redington	408,435	Aug. 6	347	90	48	747
Toothed wheel	E. A. Tripp	406,183	July 2	227	62	48	45
Top-lift holder	E. A. Tripp	406,184	July 2	228	62	48	45
Top-lift holder	C. W. Glidden	409,783	Aug. 27	2411	631	48	1162
Top-lift plate	G. Fischer	407,521	July 23	2292	585	48	485
Top. Musical	J. T. Meats	411,366	Sept. 17	1895	506	48	1653
Top-roll clearers. Guide for	W. E. Robinson	406,749	Aug. 13	641	234	48	849
Top. Spinning	W. C. Beckwith	409,902	Aug. 27	2576	675	48	1194
Torpedo. Railway	T. M. Dile	406,998	July 16	1468	384	48	302
Towel-rack	I. Gates	411,432	Sept. 24	1970	523	48	1672

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Toy	W. S. How	410,101	Aug. 27	2877	755	48	1251
Toy	G. W. Nusbaum	409,421	Aug. 20	1859	491	48	1033
Toy	J. S. O'Brien	410,010	Aug. 27	2722	716	48	1222
Toy	H. L. Phillips	409,701	Aug. 27	2286	600	48	1139
Toy	G. E. Throop	408,148	July 30	3205	836	48	652
Toy	C. Wobito	407,142	July 16	1666	440	48	346
Toy. Automatic	F. Noecker	409,488	Aug. 20	1953	517	48	1027
(Toy.) Automatic pneumatic instructor	J. Seyberth	407,128	July 16	1670	436	48	342
Toy building-blocks	A. F. C. Garben	409,744	Aug. 27	2344	616	48	1150
Toy cannon	G. W. Nash	410,433	Sept. 3	471	126	48	1360
Toy. Coin-operated	F. O. Claflin	409,923	Aug. 27	2602	682	48	1199
Toy figures. Mechanism for operating dancing, acrobatic, and other	G. F. Luttieke	410,907	Sept. 10	1188	321	48	1506
Toy gun	T. Adams	408,062	July 30	3065	802	48	627
Toy gun	G. W. Nash	410,434	Sept. 3	471	126	48	1360
Toy gun	G. H. Weston	409,085	Aug. 13	1349	357	48	945
Toy locomotive	G. F. Luttieke	409,991	Aug. 27	2693	707	48	1216
Toy motor	H. B. Schureman	409,806	Aug. 27	2443	640	48	1168
Toy. Musical	F. A. Sommer	408 635	Aug. 6	655	170	48	805
Toy race-track	W. N. McManus	407,674	July 30	2784	724	48	573
Toy. Swing-figure musical	F. A. Sommer	407,697	July 23	2513	649	48	516
Trace	A. W. Bricken	409,166	Aug. 20	1491	394	48	981
Trace	G. W. Fail	406,436	July 9	527	168	48	129
Trace-holder	G. L. Hydorn	408,239	Aug. 6	61	14	48	690
Track-jack. Ratchet	T. R. Gabel	411,411	Sept. 17	1935	515	48	1600
Track. Suspension	C. Carr	406,195	July 2	242	66	48	48
Track-sweeper. Electric	W. H. Knight	406,917	July 16	1349	354	48	280
Traction-engine and digging-machine. Combined	F. J. Burrell	406,194	July 2	241	65, 66	48	48
Tramway. Aerial	A. H. De Camp	411,584	Sept. 24	2163	{579 / 580}	48	1715
Transom-lifter	C. C. Mitchell	411,465	Sept. 24	2013	534	48	1660
Transom-lifter	A. Twyman	407,624	July 23	2411	626	48	496
Transplanter	J. K. Nissley, J. S. Mumma, J. Hostetter, and J. W. Harrie.	411,225	Sept. 17	1666	445	48	1611
Transplanting implement	R. Foster	409,949	Aug. 27	2640	692	48	1207
Transportation. System of	B. S. Henning	406,711	Aug. 13	792	209	48	837
Trap: *See* Animal-trap. Ant-trap. Bottle-trap. Gas-trap. Hog-trap. Jaw-trap. Lobster-trap. Steam-trap. Steam or water trap. Target-trap.							
Trap	C. F. Parker	411,606	Sept. 24	2225	591	48	1724
Traps. Making lead	A. A. Robinson	406,146	July 2	172	49	48	35
Traveling-bag	G. W. Strattan	407,642	July 16	1567	400	48	313
Tray	Z. T. Hall	408,102	July 30	3129	819	48	639
Tray. Jewelry	L. Burt	408,576	Aug. 6	572	149	48	789
Treadle	J. H. Whitney	407,804	July 30	2681	696	48	554
Treadle-motion	W. H. Doughty	407,472	July 23	2201	568	48	433
Tree-protector	H. F. Juette	407,532	July 23	2276	590	48	469
Trestle	G. W. Zeigler	409,544	Aug. 20	2029	535	48	1067
Trestle-brace	G. W. Zeigler	409,543	Aug. 20	2028	534	48	1066
Tricycle	G. Johnson	408,624	Aug. 6	640	166	48	803
Tricycle	F. W. Pool	408,745	Aug. 13	833	220	48	845
Trimmer: *See* Heel-trimmer. Sole and heel trimmer.							
Trimming for fabrics	J. D. Morley	409,416	Aug. 20	1853	489	48	1052
Trimming for the edges of fabrics	J. D. Morley	410,428	Sept. 3	464	125	48	1359
Trimming the edges of fabrics. Machine for	E. T. Smith	410,655	Sept. 10	788	214	48	1429
Trolley-track	J. H. Morley	408,503	Aug. 6	455	119	48	768
Trough: *See* Eaves-trough. Feed-trough.							
Trousers and boots combined	J. G. Gladding	411,433	Sept. 24	1972	528	48	1672
Trousers-elevator	S. W. Brock	410,704	Sept. 10	870	234	48	1444
Trousers-stretcher	J. F. Duhamel	409,777	Aug. 27	2398	628	48	1169
Trousers. Waistband for	J. E. Leavitt	411,250	Sept. 17	1696	454	48	1617
Truck	E. W. M. Hughes	408,027	July 30	3015	787	48	618
Truck	E. W. M. Hughes	408,034	July 30	3019	790	48	619
Truck	E. W. M. Hughes	410,164	Sept. 3	42	11	48	1277
Truck	J. W. King	407,354	July 23	2024	524	48	419
Truck	E. F. Scholder. (Reissue)	11,022	Aug. 13	1475	{388 / 389}	48	971
Truck and carrier. Combined	F. P. Keiler	407,218	July 16	1802	472	48	308
Truck. Barrel	J. P. Hill	406,646	July 9	541	234	48	192
Truck. Car	M. G. Hubbard	407,402	July 23	2091	541	48	431
Truck. Car	B. F. Manier	409,993	Aug. 27	2695	{707 / 708}	48	1217
Truck. Car	W. H. H. Sisum	411,068	Sept. 17	1431	381	48	1563
Truck. Car	S. W. Tanner	411,751	Sept. 24	2431	644	48	1767
Truck. Elevating	C. B. De Weese	410,157	Sept. 3	31	9	48	1274
Truck-end plate	E. W. M. Hughes	408,030	July 30	3017	788	48	618
Truck. Fire-ladder	J. E. Furry	409,835	Aug. 27	2486	650	48	1175
Truck for carrying brick-pallets	J. R. Craven	406,885	July 16	1301	341	48	270
Truck for railway-carriages	E. W. M. Hughes	408,022	July 30	3011	{785 / 786}	48	616
Truck for rolling vehicles	E. W. M. Hughes	408,033	July 30	3018	789	48	619
Truck-frame	E. W. M. Hughes	408,024	July 30	3013	786	48	617
Truck. Hand	B. Riddell	411,353	Sept. 17	1850	494	48	1644
Truck. Hook-and-ladder	J. Schmidlapp	409,759	Aug. 27	2369	622	48	1154
Truck. House-moving	G. Gary	411,024	Sept. 17	1354	364	48	1547
Truck. Pressed-steel	E. W. M. Hughes	408,031	July 30	3017	789	48	618
Truck. Pressed-steel	E. W. M. Hughes	408,119	July 30	3171	829	48	646
Truck. Six-wheeled car	W. A. Scott	406,993	Aug. 13	1206	{318 / 319}	48	918

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Truck. Stove	G. W. Amos	408,568	Aug. 6	562	147	48	798
Truck. Weighing hand	J. N. Brown	411,576	Sept. 24	2174	576	48	1713
Trucks. Bolster for car	L. K. Jewett	409,686	Aug. 27	2260	584	48	1134
Trunk	P. Carpelos	408,462	Aug. 6	386	101	48	755
Trunk	R. D. McGee	406,756	July 9	1108	294	48	204
Trunk	W. Roemer	406,585	July 9	847	229	48	175
Trunk stay or brace	S. H. Davenport	407,178	July 16	1740	455	48	356
Trunk tray and cover	J. J. Pelton	408,299	Aug. 20	1662	443	48	1018
Truss	L. Roth	409,941	Aug. 20	1592	420	48	1000
Truss-hoop							
Tub: *See* Bath-tub. Coal-tub. Pottery-dipping tub. Steeping-tub.							
Tube: *See* Boiler-tube.							
Tube-bending machine	J. F. McNutt and H. F. Grimmesey	407,675	July 23	2480	642	48	509
Tubes. Apparatus for the manufacture of metal	J. Robertson	411,060	Sept. 17	1405	376	48	1559
Tubes. Attaching plates to	S. R. Wilmot	407,982	July 30	2951	768	48	695
Tubes. Device for slotting	C. H. Wiesing	410,723	Sept. 10	915	246	48	1450
Tubes. Making flattened	S. R. Wilmot	408,050	July 30	3056	801	48	627
Tubes. Mechanism for the manufacture of	J. Robertson	411,109	Sept. 17	1496	{307 / 308}	48	1577
Tubes or pipes. Coupling	J. Robertson	407,037	July 16	1519	398	48	313
Tubing	A. H. Limont	408,728	Aug. 13	815	215	48	841
Tubing composed of plastic materials. Incasing	H. B. Cobb	408,374	Aug. 6	250	63	48	727
Tubing. Making duplex	A. H. Limont	408,729	Aug. 13	816	215	48	841
Tubing. Manufacturing	H. B. Cobb	408,376	Aug. 6	254	64	48	728
Tubing. Single-ply spiral	E. K. Coes	409,171	Aug. 20	1495	396	48	982
Tubular articles. Mold for	J. Kinzer	410,325	Sept. 3	224	59	48	1313
Tug. Hame	H. P. Jensen	407,013	July 16	1498	398	48	306
Tug. Hame	J. H. McKenzie	406,529	July 9	763	207	48	160
Tug loop. Harness	S. D Harris	406,104	July 30	3131	819	48	640
Tunnel for railways, &c. Buoyant subaqueous	E. J. Reed	408,748	Aug. 13	837	{221 / 222 / 223 / 224}	48	846
Turfing implement	M. C. Ayer	409,900	Aug. 27	2574	674	48	1193
Turn-buckles. Making	J. H. Simpson	410,190	Aug. 27	2916	765	48	1457
Turn-table. Cable-railway	J. C. H. Stut	408,443	Aug. 6	355	92, 93	48	749
Turning-machine	F. E. Keyes	406,514	July 9	737	202	48	156
Turning-off machines. Trimming and brushing attachment for	N. H. Bruce	409,557	Aug. 20	2044	{539 / 540}	48	1029
Tuyere. Forge	J. Malquist	408,120	July 30	3172	822	48	646
Tuyere-iron	F. G. Koehler	410,903	Sept. 10	1184	319	48	1505
Twilled woven fabric	B. Barraclough	409,767	Aug. 27	2380	{624 / 625}	48	1157
Twine ball	C. P. Mitchell	408,842	Aug. 13	980	260	48	875
Twine-holder. Automatic	W. N. Candee	409,137	Aug. 13	1435	377	48	963
Twine. Manufacturing binder	J. Lyall	408,947	Aug. 6	60	.....	48	692
Twine package	C. P. Mitchell	408,841	Aug. 13	979	259	48	875
Twisting and covering cords, &c. Machine for	W. Clerer	408,696	Aug. 13	767	{201 / 202 / 63 / 64 / 65}	48	832
Twisting and doubling machine	J. W. Shepherd, W. Ayrton, and R. Clegg.	410,297	Sept. 3	243	64	48	1316
Type	A. D. Reed	408,195	July 30	3286	858	48	666
Type-distributing apparatus	L. K. Johnson and A. A. Low	409,748	Aug. 27	2348	617	48	1151
Type-distributing apparatus	A. A. Low	409,690	Aug. 27	2266	{595 / 596 / 597}	48	1135
Type. Elastic-faced	E. A. Leland	407,670	July 23	2474	640	48	508
Type-plates. Manufacture of	C. H. Perry	407,902	July 30	2921	761	48	690
Type-table and galley-rack. Combined	J. Jehle	407,403	July 23	2093	541	48	432
Type-writer cabinet	L. G. Billings	411,003	Sept. 17	1327	{357 / 358}	48	1544
Type-writer cabinet	L. G. Billings	411,004	Sept. 17	1330	358	48	1544
Type-writer cabinet	J. Kiefer	408,385	Aug. 6	267	66, 67	48	731
Type-writer cabinet	C. H. Tyler	410,470	Sept. 3	590	140	48	1370
Type-writer desk	C. H. Tyler	408,553	Aug. 6	530	142	48	782
Type-writer. Electrical	M. W. Dewey	406,390	July 2	519	{144 / 145}	48	104
Type-writing machine	D. Allen, Jr	410,627	Sept. 10	751	204	48	1422
Type-writing machine	G. K. Anderson	410,628	Sept. 10	754	204	48	1423
Type-writing machine	H. L. Arnold	410,629	Sept. 10	756	205	48	1423
Type-writing machine	J. W. Barnes	411,498	Sept. 24	2043	540	48	1686
Type-writing machine	G. C. Blickensderfer	410,662	Sept. 10	803	{216 / 217}	48	1432
Type-writing machine	E. I. Blount, D. E. Kempster, J. H. Currier, and B. Dore.	410,966	Sept. 3	194	51, 52	48	1307
Type-writing machine	A. T. Brown	411,421	Sept. 24	1955	520	48	1669
Type-writing machine	F. Burns	409,914	Aug. 27	2590	{678 / 679}	48	1197
Type-writing machine	W. Cahoon, Jr	410,490	Sept. 3	548	{147 / 148}	48	1376
Type-writing machine	H. E. Curtis	411,583	Sept. 24	2182	579	48	1715
Type-writing machine	J. H. Day and C. Spofford	406,507	July 9	787	200	48	153
Type-writing machine	I. B. Dodson	407,180	July 16	1763	456	48	357
Type-writing machine	W. H. Elling	407,185	July 16	1750	{458 / 459}	48	358
Type-writing machine	F. Felt and I. W. Archibald	406,437	July 9	588	168	48	129
Type-writing machine	F. E. Gladwin	409,655	Aug. 20	2196	578	48	1116
Type-writing machine	W. F. Judy	411,339	Sept. 17	1831	{489 / 490}	48	1641
Type-writing machine	J. F. McLaughlin	406,292	July 2	365	100	48	74

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Dr'g.	Official Gazette. Vol.	Page.
Type-writing machine	I. A. Salmon	406,064	July 2	62	19	48	15
Type-writing machine	S. J. Seifried	411,066	Sept. 17	1415	378, 379	48	1261
Type-writing machine	W. G. Spiegel	410,941	Sept. 10	1232	332	48	1515
Type-writing machine	A. W. Steiger	411,023	Sept. 24	2249	598	48	1730
Type-writing machine	D. C. Stover	409,073	Aug. 13	1329	351	48	942
Type-writing machine	C. E. Tilton	409,128	Aug. 13	1420	374	48	959
Type-writing machine	F. X. Wagner	411,361	Sept. 17	1860	497	48	1646
Type-writing machine	G. W. M. Yost	408,061	July 30	3062	801	48	627
Type-writing-machine cleaner	A. T. Brown	406,873	July 16	1283	338	48	268
Type-writing machine. Electrical	J. F. McLaughlin	406,291	July 2	363	99	48	74
Type-writing machines. Aligner for	C Spiro	410,743	Sept. 10	947	255	48	1456
Type-writing machines. Cam-motion for	F. L. Twiss	408,150	July 30	3207	837	48	653
Type-writing machines. Ink-ribbon mechanism for	J. F. McLaughlin	409,613	Aug. 20	2136	561	48	1105
Type-writing machines. Printing mechanism for	A. I. Jacobs	409,289	Aug. 20	1671	440	48	1016
Type-writing machines. Ribbon movement for	L. A. Brott	408,289	Aug. 6	127	31	48	704
Umbrella. Folding	E. J. Preston	410,114	Aug. 27	2899	761	48	1255
Umbrella-holder	S. R. Haskell	411,521	Sept. 24	2091	552	48	1696
Umbrella or parasol	E. B. Gaze	410,273	Sept. 3	211	55	48	1310
Umbrella or parasol	H. A. L. C. Kahle and F. W. Kirchhoff.	408,721	Aug. 13	805	212	48	840
Umbrella ribs and stretchers. Joint for	H. R. Kemp and H. E. Marsden	408,722	Aug. 13	806	213	48	840
Umbrella-runner	G. Josepha and E. I. O'Neill	407,216	July 16	1800	471	48	367
Umbrella-sticks. Machine for slotting	J. B. Jesson and J. K. Weed	410,975	Sept. 10	1286	348	48	1527
Umbrella-tree	J. Haight	407,967	July 30	2868	747	48	589
Umbrellas. Flexible drip-cup for	G. A. Beach	406,020	July 2	3	1	48	3
Umbrellas or parasols. Detachable cover for	A. J. Robinson	411,682	Sept. 24	2337	618	48	1748
Universal joint	S. Arnold	410,570	Sept. 10	664	177	48	1405
Valve	J. Fornirasco	409,031	Aug. 13	1270	334	48	931
Valve	J. Galvin	411,283	Sept. 17	1747	466, 467	48	1626
Valve	W. and W. A. Wilcox	407,047	July 16	1534	402	48	315
Valve attachment for gage-cocks. Safety-	F. Mears	409,217	Aug. 20	1556	411	48	993
Valve. Automatic	J. Clapp	406,067	July 2	90	27	48	20
Valve. Automatic air-	C. Jenkins	409,685	Aug. 27	2259	594	48	1134
Valve. Back-pressure	G. M. Davis and A. Bement	410,538	Sept. 3	610	164	48	1388
Valve. Balance-	C. A. Southwick	406,116	July 2	133	38, 39	48	28
Valve. Balanced	W. T. Reaser	407,304	July 16	1930	502	48	393
Valve. Balanced slide-	J. C. Askren	411,754	Sept. 24	2437	645	48	1768
Valve. Balanced slide-	J. B. Barnes	406,557	July 9	798	216	48	166
Valve. Balanced slide-	F. D. Patten	406,229	July 2	290	80	48	58
Valve. Cut-off	M. J. Heaphy	406,443	July 9	606	171	48	131
Valve. Double-seated	A. F. Nagle	407,678	July 23	2492	642	48	509
Valve. Electric	M. C. Wheeler and A. M. Clark	409,170	Aug. 20	1494	396	48	982
Valve. Flushing-	C. H. Dillon	410,541	Sept. 3	614	165	48	1389
Valve. Flushing-	G. Michaud	408,124	July 30	3176	830	48	647
Valve for car-heaters. Safety-	C. F. Murdock	406,290	July 2	362	99	48	73
Valve for steam or water	S. T. Hall	409,100	Aug. 13	1377	363	48	951
Valve-gear	M. E. Hall	406,635	July 9	1296	325	48	246
Valve-gear	C. Hartung	409,197	Aug. 20	1595	404	48	988
Valve-gear	G. H. Helvey	406,904	July 16	1330	348	48	275
Valve-gear	D. W. Payne	407,031	July 16	1509	394, 395	48	311
Valve-gear. Engine	J. McLaren	409,058	Aug. 13	1306	344	48	937
Valve-gear. Engine	R. N. Percy	409,061	Aug. 13	1310	345, 346	48	938
Valve-gear for engines	E. J. Woolf and J. Peebles	407,806	July 30	2685	697	48	555
Valve-gear for engines. Cut-off	I. F. Thompson	410,775	Sept. 10	1001	268	48	1468
Valve-gear for gas-engines	E. Capitaine	410,729	Sept. 10	927	249	48	1452
Valve-gear for multiple-cylinder engines	E. Kaselowsky, K. Gramm, and G. Kürbitz.	408,915	Aug. 13	1095	289	48	897
Valve-gear for pumping-engines	M. Misic and E. Schweizer	409,854	Aug. 27	2510	656, 657	48	1179
Valve-gear for steam-engines	A. Blaha	408,452	Aug. 6	372	97	48	752
Valve-gear for steam-engines	C. W. Hunt	410,709	Sept. 10	879	236	48	1446
Valve-gear for steam-hammers	M. B. Kirker	409,845	Aug. 27	2501	653	48	1177
Valve-head for blowing-engines	C. L. Moore	410,372	Sept. 3	366	97	48	1341
Valve. Needle-bath water-supply	B. C. Smith	406,761	Aug. 13	858	228	48	851
Valve. Piston-	A. Loomis	410,906	Sept. 10	1187	321	48	1506
Valve. Pop safety-	M. McNeil	411,254	Sept. 17	1707	456	48	1619
Valve regulator. Thermostatic-	C. F. Sautter	406,775	July 9	1132	300	48	228
Valve. Safety check-	M. Warren	407,911	July 30	2836	736	48	583
Valve. Screw and slide	D. Davis	410,499	Sept. 3	561	151	48	1378
Valve-seat blanks. Die for compressing	J. Powell	408,322	Aug. 6	174	43	48	713
Valve. Slide-	B. Carley	406,258	July 2	320	88	48	64
Valve. Steam-actuated	E. A. Marsh	409,851	Aug. 27	2506	655	48	1178
Valve. Steam-actuated	W. L. G. Williams	411,234	Sept. 17	1675	448, 449	48	1613
Valve. Steam-engine	M. C. Bullock	407,994	July 30	2969	772, 773	48	606
Valve. Steam-engine	T. H. Haberkorn	407,894	July 30	2813	732	48	580
Valve. Steam-engine	J. H. Williams	409,720	Aug. 27	2312	607	48	1144
Valve. Stop-	R. S. Gilleapie	408,706	Aug. 13	785	207	48	836
Valve. Straight-way	W. Porteous	406,179	July 2	221	60	48	44
Valve stuffing-box	R. T. Crane	411,425	Sept. 24	1961	521	48	1670
Valve. Three-way	C. W. Johnson	406,141	July 2	163	47	48	34
Valve. Throttle-	W. W. St. John	406,145	July 30	3200	836	48	651
Valve. Wasteway-	J. Powell	408,321	Aug. 6	173	43	48	713
Valves. Safety-nut for	J. H. Beckman	409,553	Aug. 20	2038	537	48	1068
Vapor-burner	H. S. Belden	407,632	July 23	2424	629	48	488
Vapor-burner	C. H. Childs. (Reissue)	11,024	Aug. 20	2201	579	48	1117
Vapor-burner	G. S. Grimston	407,198	July 16	1770	464	48	362
Vapor-generator	G. W. Clark	411,712	Sept. 24	2379	631	48	1756
Vaporizer and burner. Hydrocarbon-oil	J. S. Semon	408,198	July 30	3290	859	48	667

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Dr'g.	Official Gazette. Vol.	Page.
Vaporising and burning hydrocarbon oils. Apparatus for	E. F. Edgar	410,627	Sept. 10	1075	289	48	1485
Vaporizing hydrocarbon oil and burning the same. Device for	A. Doney	410,639	Sept. 10	770	208	48	1486
Vaporising oil and water and superheating and burning the same. Apparatus for	N. Rogers and J. A. Wharry	407,901	July 30	2824	735	48	581
Vault-light	C. H. Ross	410,380	Sept. 3	376	100	48	1343
Vault or safe	J. H. Myers	411,669	Sept. 24	2316	614	48	1743
Vehicle	F. A. Huntington	411,196	Sept. 17	1623	432	48	1602
Vehicle	W. Johnson	410,594	Sept. 3	594	159	48	1395
Vehicle attachment	D. M. and T. H. Parry	406,851	July 9	1249	330	48	249
Vehicle bodies. Steadying device for	G. Johnson	411,036	Sept. 17	1374	368	48	1553
Vehicle-brake	M. Cooney	406,698	July 9	909	245	48	186
Vehicle-brake	J. Maul	408,421	Aug. 6	329	85	48	743
Vehicle-brake	J. C. Morton	408,736	Aug. 13	823	217	48	843
Vehicle-brake	J. N. Valley	408,942	Aug. 13	1132	298	48	905
Vehicle brake. Wheeled-	G. B. Hamlin	410,094	Aug. 27	2866	751	48	1248
Vehicle. Buckboard-	J. Walters	410,304	Sept. 3	250	66	48	1319
Vehicle-curtain fastener	R. N. Allen	409,815	Aug. 27	2450	645	48	1171
Vehicle. Electrically-propelled	J. A. Chapman	409,731	Aug. 27	2327	613	48	1147
Vehicle-gear	A. E. Harrell	409,581	Aug. 20	2066	550	48	1097
Vehicle hand-motor	F. G. Davis	409,141	Aug. 13	1440	378	48	964
Vehicle. Jump-seat	W. W. Griscom	408,233	Aug. 6	53	12	48	688
Vehicle-motor	J. Potter	408,430	Aug. 6	342	89	48	746
Vehicle-motor	W. Main	407,095	July 16	1618	423, 424	48	333
Vehicle-propulsion	W. Main	407,093	July 16	1609	421, 422	48	332
Vehicle-propulsion by electric motors	C. A. Blume and F. N. Armstrong	411,372	Sept. 17	1674	501	48	1649
Vehicle running-gear	J. H. Ferguson	406,604	Aug. 6	609	158	48	796
Vehicle running-gear	J. H. Harvey	409,965	Aug. 27	2663	699, 699	48	1211
Vehicle running-gear	H. E. Olmstead	406,298	July 2	377	102	48	76
Vehicle running-gear	F. B. Parker	409,298	Aug. 20	1681	443	48	1018
Vehicle running-gear	L. W. Sheets and J. M. Walker	406,373	July 2	488	136	48	97
Vehicle running-gear	C. S. Beebe	409,445	Aug. 20	1890	500	48	1060
Vehicle-seat	F. C. Straub	406,188	July 2	225	61	48	45
Vehicle-seat	H. P. Wells and J. Spofford, Jr	411,060	Sept. 17	1445	384	48	1567
Vehicle-seat	W. T. and W. Angus	410,393	Sept. 3	393	105	48	1346
Vehicle-seat. Convertible	E. Cliff	408,871	Aug. 13	1030	273	48	884
Vehicle. Spring-	H. A. Moyer	410,647	Sept. 10	1104	297	48	1490
Vehicle. Spring-	G. Bardonner	410,262	Sept. 3	187	49	48	1305
Vehicle-spring	E. H. Carpenter	410,705	Sept. 10	871	234	48	1444
Vehicle-spring	E. Jarrell	411,286	Sept. 17	1750	466	48	1627
Vehicle-spring	G. Norwood	410,716	Sept. 10	901	243	48	1448
Vehicle-spring	N. B. Phelps	407,899	July 30	2821	734	48	581
Vehicle-spring	W. E. Powers	408,519	Aug. 6	480	126	48	773
Vehicle-spring	A. Waggoner	406,406	July 2	547	153	48	109
Vehicle storm-apron	P. J. Gibbons and D. B. Shelly	411,592	Sept. 24	2202	586	48	1719
Vehicle. Two-wheeled	G. Beebe	407,715	July 23	2534	656	48	1031
Vehicle. Two-wheeled	K. A. Brigham	409,346	Aug. 20	1752	460	48	1031
Vehicle. Two-wheeled	G. Geddes	409,321	Aug. 20	1715	451	48	1024
Vehicle. Two-wheeled	R. W. Hare	411,720	Sept. 24	2388	633	48	1758
Vehicle. Two-wheeled	H. G. M. Howard and B. J. Healy	409,588	Aug. 20	2096	552	48	1099
Vehicle. Two-wheeled	W. Lauria	406,919	July 16	1351	354	48	289
Vehicle. Two-wheeled	J. R. Parks and J. Kimball	409,422	Aug. 20	1660	491	48	1053
Vehicle. Two-wheeled	E. P., B. F., and W. H. Settles, Jr.	410,454	Sept. 3	500	133	48	1366
Vehicle. Two-wheeled	W. J. Wayne	410,294	Sept. 3	135	34	48	1294
Vehicle. Two-wheeled	E. Batlle	411,469	Sept. 24	2045	541	48	1686
Vehicle-wheel	R. Bean	407,769	July 30	2620	679	48	544
Vehicle-wheel	J. W. Brook	411,347	Sept. 3	333	87	48	1333
Vehicle-wheel	W. C. Hednett	407,779	July 30	2635	682	48	546
Vehicle-wheel	S. C. Mead	410,645	Sept. 10	778	210	48	1427
Vehicle-wheel	A. R. Miller	409,610	Aug. 20	2130	560	48	1104
Vehicle-wheel	D. S. West	407,266	July 16	1578	420	48	283
Vehicle-wheel	G. Johnson	408,240	Aug. 6	62	14	48	691
Vehicle wheel and axle	W. H. Chafey	410,310	Sept. 3	269	70	48	1320
Vehicles by secondary batteries. Means for propelling	W. W. Griscom	406,833	July 9	1223	324, 325	48	245
Vehicles by secondary batteries. Means for propelling	W. W. Griscom	408,231	Aug. 6	48	11	48	687
Vehicles by secondary batteries. Means for propelling	W. W. Griscom	408,232	Aug. 6	51	11, 12	48	688
Vehicles. Shifting rail for	S. Burdsall	408,651	Aug. 6	689	177	48	811
Vehicles. Spring bearing-block for	F. Selle	409,245	Aug. 20	1597	421	48	1001
Veil-fastener	P. N. Tryon	408,445	Aug. 6	360	94	48	750
Velocipede	G. H. Davis	410,751	Sept. 10	900	258, 259	48	1450
Velocipede	O. Hanson and A. Fyrberg	406,581	July 9	839	224, 225	48	171
Velocipede	T. B. Jeffery	406,445	July 9	606	172	48	131
Velocipede	T. B. Jeffery	408,014	July 30	3000	782, 783	48	614
Velocipede	T. B. Jeffery	411,035	Sept. 17	1372	368	48	1532
Velocipede	O. Neubauer	410,179	Sept. 3	58	15	48	1320
Velocipede	A. H. Overman	406,461	July 9	648	169	48	140
Velocipede	W. Phillips and R. W. Smith	406,516	Aug. 6	475	125	48	773
Velocipede	W. H. Rudy	406,634	Aug. 6	654	170	48	805
Velocipede	J. D. Ballmann and G. Eckenroth	406,148	July 2	175	50	48	36
Velocipede	G. Schloemer and E. Hausknecht	409,758	Aug. 27	2368	621	48	1154
Velocipede	J. L. Watkins	410,661	Sept. 10	837	225	48	1436
Velocipede	A. H. Overman	406,462	July 9	650	183	48	140
Velocipede-brake	J. E. Robinson	407,676	July 30	2789	725	48	574
Velocipede. Ice-	T. B. Jeffery	408,718	Aug. 13	801	211	48	839
Velocipede-saddle	W. B. Turner and J. Asbury	408,661	Aug. 13	1012	267	48	661
Velocipede-saddle							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Velocipede-sled	S. J. Talbott	407,623	July 23	2410	626	48	496
Vending apparatus	T. Bergmann	408,870	Aug. 13	1026	272	48	884
Vending apparatus	C. F. De Redon	406,633	July 9	916	247	48	187
Vending apparatus	C. F. De Redon	406,634	July 9	920	247 248 249	48	188
Vending apparatus	W. C. Doubleday	408,959	Aug. 13	1157	306	48	910
Vending apparatus	P. Reiner	408,851	Aug. 13	994	263	48	877
Vending apparatus. Coin-operated	C. Dreimiller and J. Bove	408,466	Aug. 6	393	103	48	756
Vending-machines. Apparatus for preventing fraud in	E. P. Appleyard and J. Johnson	407,428	July 23	2136	551	48	440
Veneer	E. H. Balmforth	411,634	Sept. 24	2263	601	48	1732
Ventilated pad	M. Hansen and F. Roepert	406,837	July 9	1228	326	48	246
Ventilating apparatus	L. J. and J. T. Hope	411,522	Sept. 24	2001	552	48	1696
Ventilator: *See* Exhaust-ventilator. Window-ventilator.							
Ventilator	O. B. Grant	407,859	July 30	2759	718	48	509
Ventilator	W. Y. Ober	409,294	Aug. 20	1569	414	48	985
Ventilator	B. M. Turnbull	409,525	Aug. 20	2002	529	48	1002
Vermifuge	W. Dawson	409,175	Aug. 20	1498	.....	48	983
Vessel. Ice transportation and storage	R. Rich	411,201	Sept. 17	1633	434	48	1604
Vessels. Apparatus for loading or unloading	J. D. Fiske	408,702	Aug. 13	780	205	48	835
Vessels. Raising sunken	J. Wanner	409,257	Aug. 20	1615	427	48	1005
Veterinary operating-table	D. R. Price	407,610	July 23	2294	601	48	493
Veterinary parturition-instrument	A. P. Shearburn	411,621	Sept. 24	2217	307	48	1729
Vinegar generator and filter	R. H. Herder	406,905	July 16	1331	348	48	276
Violin	J. D. Loppentien	406,750	July 9	1096	291	48	222
Violin-support and garment-protector. Combined	F. P. Hoelscher	409,842	Aug. 27	2496	652	48	1176
Vise	C. A. Chandler	406,815	July 9	1197	318	48	240
Vise	W. Lorey	407,486	July 23	2219	573	48	457
Vise	C. H. Robinson	406,957	July 16	1404	369	48	291
Vulcanizer	E. B. Crane	410,073	Aug. 27	2831	743	48	1343
Wagon-body corner	H. S. Fairbanks	410,508	Sept. 3	573	151	48	1361
Wagon-body lifter	R. L. Keith	406,352	July 2	402	120	48	93
Wagon bolster-spring	W. Cole and V. C. Dillmann	406,879	July 16	1295	339	48	269
Wagon-box fastener	A. J. Adamson	410,735	Sept. 10	920	247	48	1451
Wagon-brake	W. W. Atteberry	410,631	Sept. 10	761	205	48	1429
Wagon-brake	S. Kauffman	408,015	July 30	3004	783	48	615
Wagon-brake	W. M. Mason	409,602	Aug. 27	2271	597	48	1136
Wagon-brake. Automatic	J. W. Bruce	410,400	Sept. 3	408	109	48	1349
Wagon. Dumping	W. E. Welch	409,083	Aug. 13	1347	356	48	945
Wagon-gear	M. Conrad and C. Hotz	409,829	Aug. 27	2475	647 648	48	1173
Wagon-jack	W. J. Hollenbeck	407,529	July 23	2271	589	48	468
Wagon. Lumber	W. and J. H. Leonhardt	409,411	Aug. 20	1845	487	48	1050
Wagon or cart. Child's	H. H. Higham	409,682	Aug. 27	2255	593	48	1134
Wagon running-gear. Road	C. W. Saladee	411,473	Sept. 24	2027	537	48	1683
Wagon-seat lock	D. D. Whitney	407,627	July 23	2414	627	48	497
Wagon. Skeleton	S. Toomey	407,390	July 23	2060	533	48	426
Wagon-spring	B. Smith	410,211	Sept. 3	119	30	48	1291
Wagons. Spring-platform for road	C. W. Saladee	411,732	Sept. 24	2405	637	48	1702
Wagon-standard	N. R. Deppe	409,935	Aug. 27	2521	666	48	1203
Waistband-fastener	J. Ewig	408,300	Aug. 6	141	36	48	707
Walking and running. Apparatus to facilitate	N. Yagn	406,328	July 2	427	117 118	48	86
Walking-beam	J. Bly	409,385	Aug. 20	1811	476	48	1062
Wall-decorating material	W. S. Morton	407,604	July 23	2386	619	48	492
Wall-paper protector	F. W. Woodhull	407,143	July 16	1686	440	48	346
Wall-socket plate for building-timbers	W. H. Drake	409,831	Aug. 27	2483	649	48	1174
Walls. Covering for interior	T. W. Burger	407,993	July 30	2362	745	48	589
Walls, &c. Material for the treatment of	J. B. King	406,585	July 9	835	.....	48	173
Walls. Molded facing for	J. Klee	406,448	July 9	615	173	48	133
Walls or other surfaces. Manufacture of material for covering	T. J. Palmer	406,464	July 9	655	184	48	141
Walls. Ornamentation of	M. B. Church	409,019	Aug. 13	1240	.....	48	925
Ware. Die for forming flat or hollow	A. E. Hobson	410,280	Sept. 3	219	57	48	1312
Ware. Die for forming flat or hollow	A. E. Hobson	410,281	Sept. 3	220	58	48	1312
Warp-dressing machines. Striping attachment for	H. Gildard	407,758	July 23	2003	674	48	535
Warps. Machine for linking	C. Denn	407,514	July 23	2253	563	48	464
Wash-bench	E. J. Whitlow	406,898	July 9	1186	315	48	239
Wash-bench. Folding	J. B. Mersman	408,123	July 30	3175	830	48	647
Wash-boards. Compound for the scrubbing-surfaces of	J. R. Cluxton	406,427	July 9	579	162	48	125
Wash-boiler	H. Farewell	407,727	July 23	2550	660	48	524
Wash-boiler	A. P. Thissell and G. S. Bradstreet	408,766	Aug. 13	865	232	48	853
Washer: *See* Axle-washer. Steam-washer. Bottle-washer. Street-washer.							
Washing and starching machine	F. M. Watkins	409,535	Aug. 20	2016	531	48	1084
Washing-fluid	J. H. Stewart	410,657	Sept. 10	796	.....	48	1431
Washing-machine	J. W. Baker	406,556	July 9	796	216	48	166
Washing-machine	G. M. Beck	407,152	July 16	1695	442	48	347
Washing-machine	C. C. Burton and D. H. Benjamin	408,690	Aug. 13	750	196 197 198	48	829
Washing-machine	T. H. Carson	407,816	July 30	2700	701	48	559
Washing-machine	J. Chambers	408,062	July 30	3069	809	48	632
Washing-machine	W. S. Cronk	408,797	Aug. 13	918	244	48	862
Washing-machine	E. A. Egelston	411,494	Sept. 24	2052	542	48	1689
Washing-machine	H. H. Gifford	409,399	Aug. 20	1832	483	48	1047
Washing-machine	F. D. Harding	411,638	Sept. 24	2009	611	48	1740
Washing-machine	F. D. Harding	411,639	Sept. 24	2003	611	48	1740
Washing-machine	L. L. Kellogg	410,302	Sept. 3	351	93	48	1336
Washing-machine	H. O. Kelsey and D. H. Gibson	409,794	Aug. 27	2426	635	48	1165

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Washing-machine	B. Kingsley	409,105	Aug. 13	1382	364 365	48	838
Washing-machine	J. P. Knisley	410,109	Aug. 27	2490	720	48	1253
Washing-machine	J. Knoble	410,902	Sept. 10	1163	310	48	1505
Washing-machine	J. L. Knoll	406,918	July 16	1350	354	48	280
Washing-machine	H. W. Kriete	410,960	Sept. 10	1295	350	48	1528
Washing-machine	J. Lee, Jr.	407,484	July 23	2217	572	48	457
Washing-machine	G. M. Miller	407,228	July 16	1890	476	48	371
Washing-machine	H. Nadorff	411,349	Sept. 17	1846	493	48	1644
Washing-machine	H. Netzell	406,230	July 2	286	79	48	57
Washing-machine	H. H. and S. D. Palmer	409,236	Aug. 20	1571	414	48	996
Washing-machine	L. E. Palmer	406,764	July 9	1115	296	48	225
Washing-machine	A. Rammoser	409,501	Aug. 20	1970	521	48	1078
Washing-machine	P. W. Rodecker	408,527	Aug. 6	489	129 130	48	775
Washing-machine	D. Savage	407,453	July 23	2177	562	48	448
Washing-machine	D. D. Shannon	407,130	July 16	1673	437	48	343
Washing-machine	L. B. Warren	411,333	Sept. 17	1675	448	48	1613
Washing-machine	W. White	407,881	July 30	2796	738	48	576
Washing-machine	W. Scott	408,897	Aug. 13	1071	283	48	892
Waste-pipe connection	C. T. Mason	406,364	July 2	490	133	48	96
Watch. Anti magnetic	J. Logan	406,655	July 9	653	258	48	194
Watch-balances and hair-springs. Apparatus for testing	C. H. Meylan	410,327	Sept. 3	305	79	48	1328
Watch-barrel	J. W. Allen	409,957	Aug. 20	1627	430	48	1006
Watch. Cane or parasol	E. C. Chappotte	406,816	July 9	1198	318	48	241
Watch-case	C. Dubois	408,830	Aug. 13	964	256	48	872
Watch-case	W. C. Taft and P. J. Morand	410,945	Sept. 10	1237	333	48	1516
Watch-case	W. W. Bradley	411,490	Sept. 24	1953	519	48	1689
Watch-case pendant	J. D. Ewing	409,739	Aug. 27	2337	614	48	1149
Watch-case spring	H. R. Gaul	409,745	Aug. 27	2345	616	48	1150
Watch-case spring	G. Schelker	410,808	Sept. 10	1050	281	48	1490
Watch-cases. Picture-holder attachment for	F. Lautermilch	406,356	July 2	467	121	48	94
Watch-makers' lathes. Split-chuck for	J. A. Miller	406,037	July 30	3036	792	48	630
Watch-maker's tweezers	G. Hunter. (Reissue)	11,014	July 23	2607	675	48	536
Watch-movement	G. A. and A. C. Moeckel	410,370	Sept. 3	364	97	48	1341
Watch-movement box	H. Heidenreich	407,481	July 23	2212	571	48	456
Watch-movement holder	W. T. Graesale	410,831	Sept. 10	1079	290	48	1466
Watch-pendant winding and setting device	C. E. Monfort	410,173	Sept. 3	50	13	48	1278
Watch-pivot	E. Heuer	411,148	Sept. 17	1532	414	48	1568
Watch. Repeating	E. K. Boyd	408,573	Aug. 6	567	148	48	788
Watch. Stem winding and setting	C. Dinichert	407,642	July 23	2441	632	48	509
Watch. Stem winding and setting	O. F. Guns	411,146	Sept. 17	1550	414	48	1567
Watch. Stem winding and setting	O. F. Guns	411,147	Sept. 17	1551	414	48	1567
Watch. Stem winding and setting	G. F. Johnson	406,513	July 9	736	202	48	154
Watch. Stem winding and setting	H. Rempe	407,943	July 16	1844	481	48	376
Watch. Stem winding and setting	A. Troller	406,274	Aug. 6	106	27	48	700
Watch. Stem winding and setting	W. N. Clifford	406,702	July 9	1020	273	48	206
Watch-winding mechanism	H. Sandoz	407,640	July 16	1525	399	48	313
Watches. Box for repeating	S. Jenkins	409,789	Aug. 27	2420	633	48	1163
Watches. Hair-spring stud for	E. J. Roux	406,307	July 2	397	106	48	80
Watches. Hand-setting mechanism for	H. H. Sporton and E. White	410,214	Sept. 3	194	31	48	1292
Water, &c. Apparatus for recording automatically the flow of	J. Keith	409,041	Aug. 13	1281	338	48	932
Water-boiler. Sectional	J. Keith	409,042	Aug. 13	1283	339	48	933
Water-boiler. Sectional	J. Keith	409,043	Aug. 13	1285	339	48	933
Water-boiler. Sectional	M. Havey	406,902	July 16	1326	347	48	275
Water-circulating heater	A. F. Biesch	411,067	Sept. 17	1462	386	48	1569
Water-closet	W. Bunting, Jr.	408,371	Aug. 6	246	62	48	726
Water-closet	H. H. Craigie	410,269	Sept. 3	202	53, 54	48	1309
Water-closet	J. Guy	408,536	Aug. 13	971	256	48	873
Water-closet	E. Hammann	411,520	Sept. 24	2090	551	48	1696
Water-closet	L. Lattan, H. Tripp, and J. Faulkner.	411,455	Sept. 24	2001	531	48	1678
Water-closet	G. D. Moffat	408,038	July 30	3027	792	48	621
Water-closet	W. Scott	407,041	July 16	1526	399	48	313
Water-closet, &c.	D. Wellington	407,558	July 23	2227	602	48	481
Water-closet attachment	G. V. Eldridge	407,397	July 23	2064	549	48	430
Water-closet bowl	W. Scott	406,780	July 9	1141	302	48	239
Water-closet bowls. Coupling for	T. McHugh	410,648	Sept. 10	1106	297	48	1491
Water-closet flushing-valve	J. W. Stevens	407,748	July 23	2585	669	48	531
Water-closet seat. Portable	H. H. Tittmann	406,904	July 9	969	234	48	178
Water-closet tank	H. H. Craigie	408,218	Aug. 6	24	5	48	682
Water-closet valve	E. L. Knight. (Reissue)	11,029	Sept. 3	659	175	48	1398
Water coil boiler	R. W. Applegarth and E. D. Moore	409,134	Aug. 13	1429	376	48	961
Water coil boiler	E. D. Moore	409,056	Aug. 13	1302	343 344	48	936
Water-cooler	M. S. Foye	407,190	July 16	1760	461	48	309
Water cooler and filter. Combined	L. W. Mozingo	406,054	July 2	45	13	48	12
Water-elevating apparatus	N. A. Conklin	406,880	July 16	1296	340	48	269
Water-elevating apparatus	I. T. Dyer	409,279	Aug. 20	1659	436	48	1012
Water-elevator	A. H. Elfers	406,406	Aug. 6	309	78, 79	48	730
Water elevator and carrier	W. S. Talley	406,967	July 16	1423	373	48	294
Water-falls. Apparatus for utilizing the force of	S. H. Hamilton	407,007	July 16	1481	386 387	48	305
Water-heater	N. P. Andrus	410,529	Sept. 3	509	161	48	1386
Water-heater	G. C. Blackmore	409,314	Aug. 20	1706	448	48	1022
Water-heater	N. A. Boynton	407,850	July 30	2747	714 715	48	567
Water-heater	J. Hacker, L. W. Colby, and J. W. Helton.	406,727	July 9	1055	281	48	213
Water-heater	T. G. G. Mouat	408,949	Aug. 6	70	17	48	692
Water-heater	T. G. G. Mouat and L. Burt	408,693	Aug. 13	1062	280	48	891
Water-heater	F. Wilson	407,561	July 23	2231	602 603	48	481

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Water heater and condenser	J. E. Crawley	406,265	July 2	330	91	48	66
Water-heater. Electric	D. W. Smith	411,737	Sept. 24	2412	639	48	1764
Water heating and purifying apparatus	A. P. Creque	407,*19	July 30	2703	701	48	559
Water-indicators. Electrical circuit closer for	F. M. Dunn, A. Petticord, and J. H. King.	409,460	Aug. 20	1915	507	48	1065
Water-lifting apparatus. Solar	A. L. Reynolds	408,929	Aug. 13	1112	293	48	901
Water-meters. Apparatus for constructing	L. H. Nash	408,508	Aug. 6	463	121 / 122	48	770
Water-meters. Case for rotary	L. H. Nash	408,507	Aug. 6	462	121	48	770
Water-motor	H. Brown	408,075	July 30	3082	806 / 807	48	631
Water-motor	F. Johnson	407,213	July 16	1794	470	48	366
Water-motor	L. P. Santy	407,123	July 16	1664	435	48	341
Water-motor	J. Smith	409,514	Aug. 20	1966	594	48	1078
Water-motor	H. A. Strong	406,676	July 9	980	263 / 264	48	199
Water-motor	L. R. Witherell	410,132	Aug. 27	2929	760	48	1260
Water or steam, or both. Apparatus for maintaining a supply of boiling	C. Jones	409,360	Aug. 20	1771	467	48	1035
Water-proof composition for pipe-joints, &c. Non-conductive and elastic	B. Overlack	406,949	July 16	1397	.....	48	229
Waterproofing compound	T. Manahan	409,479	Aug. 20	1939	.....	48	1069
Waterproofing textile fabrics. Apparatus for	T. F. Wiley	411,081	Sept. 17	1447	384	48	1567
Waterproofing textile materials. Composition for	J. Welti	407,264	July 16	1878	.....	48	383
Waterproofing textile materials. Composition for	J. Welti	407,265	July 16	1878	.....	48	383
Water-purifier and scale-arrester	B. F. Field	410,509	Sept. 3	574	158	48	1321
Water-purifying apparatus	F. H. Moore	411,292	Sept. 17	1756	470	48	1628
Water-purifying apparatus	H. Roeske	407,250	July 16	1855	483	48	378
Water regulator and accumulator for house purposes.	A. J. L. Loretz	407,630	July 30	2718	703	48	561
Water-sprinkler	W. S. Kisinger	409,978	Aug. 27	2680	703	48	1214
Water tank or cistern	R. H. Mason	409,609	Aug. 20	2130	550	48	1104
Water-tube boiler	J. Taylor	406,376	July 2	493	138	48	98
Water-tube boiler	J. Wood, Jr	408,060	July 30	3060	801	48	627
Water-wheel	H. J. Adams	411,210	Sept. 17	16-8	438	48	1606
Water-wheel	L. A. Pelton	409,865	Aug. 27	2523	650	48	1182
Water-wheel. Turbine	H. Broomell	410,487	Sept. 3	544	146	48	1375
Waterer. Stock-	J. M. Dewey	410,882	Sept. 10	1149	310	48	1499
Watering-tank heater. Stock-	C. Fishbaugh	410,357	Sept. 3	344	90	48	1336
Watering tank. Stock-	M. Lynch	407,410	July 23	2103	543	48	434
Wax. Tool for applying sealing-	W. A. Porterfield and J. B. Shannofelt, Jr.	410,330	Sept. 3	310	80	48	1328
Weather-strip	J. Burnham	408,949	Aug. 13	1141	301 / 302	48	907
Weather-strip	O. B. Hathaway	408,346	Aug. 6	210	53	48	720
Weather-strip	R. C. Miller	407,443	July 23	2161	554	48	446
Weaving gauzes. Heddle for	J. H. and T. W. Bentley	410,483	Sept. 3	538	144	48	1373
Weed-cutter	E. A. Hermann	406,280	July 2	351	90	48	71
Weeder. Lawn-	M. A. Stebbins	409,619	Aug. 20	2150	564	48	1107
Weigher. Automatic grain-	C. J. Hartley	410,241	Sept. 3	157	41	48	1299
Weigher. Automatic grain-	C. J. Hartley	410,243	Sept. 3	160	42	48	1299
Weigher. Automatic grain-	E. A. Hoover	409,326	Aug. 20	1721	453	48	1025
Weigher. Automatic grain-	T. J. Underwood	411,763	Sept. 24	2448	649	48	1770
Weighing and putting up package-tea, &c. Apparatus for	O. A. Gill	410,896	Sept. 10	1156	318	48	1500
Weighing and registering machine. Grain	A. H. W. Droste	408,467	Aug. 6	395	103 / 104	48	757
Weighing apparatus. Automatic grain or oil	R. Strain, Jr.	409,808	Aug. 27	2448	642	48	1169
Weighing apparatus. Grain-	D. Wilde	411,514	Sept. 24	2080	549 / 550	48	1694
Weighing-machine	E. Roche	409,302	Aug. 20	1685	444	48	1018
Weighing machine. Automatic grain-	E. L. Wells	407,383	July 23	2063	536	48	426
Weighing-machine. Coin-controlled	J. C. J. C. Favre	406,132	July 2	153	40	48	32
Weighing-machine. Coin-freed	H. Knight	407,463	July 23	2214	573 / 574	48	456
Weighing machine. Grain-	H. M. Fulwider	406,722	July 9	1048	249	48	211
Weighing machine. Grain-	H. Pooley and J. Parkinson	409,702	Aug. 27	2287	601 / 602	48	1140
Weighing oil-tank	E. N. Bachelder and F. E. Lovejoy	408,450	Aug. 6	367	95	48	751
Welding compound	W. H. Cutbirth and J. Summers	406,267	July 16	1304	.....	48	271
Welding compound	H. G. Hicks	407,659	July 23	2462	.....	48	506
Welding. Device for preparing tubes for	H. Jeffrey	409,641	Aug. 20	2179	574	48	1113
Welding. Electric	C. L. Coffin	409,015	Aug. 13	1243	328	48	925
Well-boring apparatus	J. E. Day	406,300	July 2	246	67	48	49
Well-boring implement	L. B. Hart	411,660	Sept. 24	2304	611	48	1741
Well-drilling tool	H. H. McLane	407,028	July 16	1504	393	48	310
Well packing and anchor. Combined	W. A. Donnell	406,162	July 2	194	55	48	40
Wells. Apparatus for drilling and pumping oil or other	M. Harold	407,302	July 16	1776	466 / 467	48	363
Wells. Compressed air and steam apparatus for sinking	H. K. Goodrich	406,298	July 16	1322	346	48	274
Wells. Means for sinking tube-	F. W. Miller	406,457	July 9	639	169	48	138
Wells. Sinking	H. W. Blaisdell	409,446	Aug. 20	1891	500	48	1060
Welt and upper guide. Combined	G. Amborn, Jr.	407,987	July 30	2957	769	48	606
Wheel:							
See Car-wheel.							
Emery-wheel.							
Fifth-wheel.							
Metal wheel.							
Metallic wheel.							
Paddle-wheel.							
Polishing-wheel.							
Propeller-wheel.							
Registering-wheel.							
Self-oiling wheel.							
Spacing or marking wheel.							
Toothed wheel.							
Vehicle-wheel.							
Water-wheel.							
Wheel	S. Ritty	407,613	July 23	2396	623	48	494
Wheel	H. M. Wright	411,364	Sept. 17	1864	498	48	1647

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Wheel-molding machine	A. Delaney	410,156	Sept. 3	27	8	48	1274
Wheels. Manufacture of metal	J. R. Little	406,747	July 9	1046	288	48	220
Wheels. Manufacturing metal	J. R. Little	409,474	Aug. 20	1934	512	48	1069
Wheelbarrow	B. H. Barr	411,319	Sept. 17	1602	492	48	1636
Wheelbarrow	C. W. Stambaugh and V. L. Ney	408,904	Aug. 13	1207	319	48	918
Whiffletree	S. J. Arnold	406,691	July 9	1009	270	48	204
Whiffletree	L. S. Flatau	406,207	July 2	255	70	48	51
Whiffletree	J. B. Howell	410,520	Sept. 3	590	158	48	1384
Whiffletree	I. T. McIntyre	409,057	Aug. 13	1305	344	48	937
Whiffletree	M. M. McKinnon	409,796	Aug. 27	2434	636	48	1167
Whiffletree	A. E. Quidort	407,491	July 23	2227	575	48	459
Whiffletree	G. Reiter	407,836	July 30	2724	707	48	569
Whiffletree	L. W. Smith	410,661	Sept. 10	1125	302	48	1494
Whiffletree	W. W. Burson	408,629	Aug. 13	749	196	48	629
Whiffletree-clip	W. H. Cutbirth and J. Summers	409,174	Aug. 20	1498	397	48	982
Whiffletree-hook	G. Reiter	407,837	July 30	2725	708	48	569
Whiffletrees and draft-bars. Manufacture of	E. K. Warren	411,628	Sept. 24	2256	589	48	1731
Whip	J. L. Cavanaugh	406,876	July 16	1292	339	48	268
Whip and rein holder	D. T. Wilson and F. C. Rheubottom.	407,560	July 23	2330	602	48	421
Whip-rack	E. Ring	407,690	July 23	2500	646 / 647	48	513
Whip-rolling machine	E. Ring	407,691	July 23	2502	647	48	514
Whip-rolling machine	J. R. Eldridge	407,067	July 16	1559	409	48	320
Whistle	E. S. Russell	408,539	Aug. 6	517	135	48	778
Whistle	C. D. Lynch	406,454	July 9	630	177	48	136
Whistle. Steam-	C. P. Goodspeed	409,639	Aug. 20	2177	573	48	1113
Wick-adjusting mechanism	H. E. Shaffer	407,970	July 30	2930	763	48	602
Wick-raiser	L. Schembeck	410,740	Sept. 10	943	252	48	1456
Wind-instrument	H. C. Block	409,447	Aug. 20	1892	500	48	1061
Winding bandages, &c. Device for	S. S. Rumberg	410,254	Sept. 3	177	46	48	1302
Winding mechanism	J. E. Tynan	408,396	Aug. 6	267	71	48	734
Winding-spindle	B. Saunders	407,124	July 16	1665	435	48	342
Windlass. Ship-	F. S. Manton	406,144	July 2	170	49	48	35
Windmill	A. R. Carpenter	406,259	July 2	321	89	48	64
Windmill	A. J. Corcoran	411,581	Sept. 24	2180	578	48	1714
Windmill	J. W. Currie	409,932	Aug. 27	2613	684 / 685	48	1201
Windmill	E. F. Haberlein	411,550	Sept. 24	2134	565 / 566	48	1705
Windmill	B. F. Ham	410,360	Sept. 3	348	91	48	1337
Windmill	S. Harbaugh	410,361	Sept. 3	349	92	48	1337
Windmill	P. P. Mast and H. Croft, Jr	408,422	Aug. 6	332	85, 86	48	743
Windmill	A. T. Winchell	407,457	July 23	2184	563	48	449
Windmill	R. Worsley	408,946	Aug. 13	1135	300	48	906
Windmill	L. J. M. Neff	407,106	July 16	1638	427	48	336
Windmill-posts. Anchor attachment for	C. B. Putnam	406,470	July 9	663	186	48	142
Windmill-tower	G. Wallenbeck	406,679	July 9	987	265	48	200
Windmill-tower	P. D. Corrigan	410,535	Sept. 3	606	163	48	1367
Window	J. E. Roeder	411,615	Sept. 24	2240	595	48	1727
Window	C. A. Sigle	409,310	Aug. 20	1701	447	48	1021
Window-cleaning apparatus	A. Lange	411,154	Sept. 17	1563	416	48	1580
Window-cleaning chair	S. H. Crook	410,957	Sept. 10	1253	337	48	1520
Window-guard	E. C. G. Von Pein	411,306	Sept. 17	1784	478	48	1633
Window-guard	E. C. G. Von Pein	411,309	Sept. 17	1786	478	48	1633
Window-holder	E. E. De Kalb	409,635	Aug. 20	2172	572	48	1112
Window-screen	A. Archambault	408,786	Aug. 13	900	240	48	859
Window-screen	A. L. Benedict	409,555	Aug. 20	2041	538	48	1069
Window-screen	L. W. Braun	411,008	Sept. 17	1335	359	48	345
Window-screen	A. H. Cleaveland	406,878	July 16	1294	339	48	269
Window-screen	F. and A. Leduc	407,669	July 23	2473	640	48	508
Window-screen	J. W. Pease	409,601	Aug. 27	2438	639	48	1168
Window-screen	D. Stone	410,217	Sept. 3	128	32	48	1293
Window-screen attachment	W. J. Horton	407,072	July 16	1564	411	48	321
Window. Swinging	E. E. De Kalb	409,634	Aug. 20	2171	571 / 572	48	1112
Window-ventilator	T. Bury	407,328	July 23	1969	513	48	409
Wire. Apparatus for coiling galvanized	J. Coffin	410,314	Sept. 3	275	71, 72	48	1321
Wire cables for fences, &c. Machine for making	H. C. Sieg and J. T. Wiley	409,248	Aug. 20	1600	422	48	1002
Wire-connecting instrument. Line-	W. H. Coughlin	411,093	Sept. 17	1472	390	48	1571
Wire. Continuously annealing and plating	J. Coffin	410,313	Sept. 3	274	71	48	1321
Wire-drawing die	H. H. Sawyer	406,671	July 9	973	262	48	198
Wire-drawing machine	F. H. Daniels	406,030	July 2	14	5	48	5
Wire-fastener	B. T. Barret and R. Nussbeck	408,065	July 30	3070	803	48	628
Wire-forming machine	F. B. Manville	409,643	Aug. 20	2181	574 / 575	48	1114
Wire hook or hanger	I. J. Turner	411,307	Sept. 17	1783	477	48	1633
Wire machine. Barb-	A. J. Bates	406,190	July 2	236	64	48	47
Wire. Manufacture of	E. Martin	410,368	Sept. 3	361	96	48	1340
Wire mat	S. Rogers	408,047	July 30	3038	795	48	623
Wire mat. Woven-	R. R. Pease and H. Roberts	407,760	July 23	2606	674	48	536
Wire ropes. Splicing	T. C. Batchelor and A. Latch	411,637	Sept. 24	2268	603	48	1734
Wire-splicing tool	W. S. Leanon	407,789	July 30	2938	683	48	547
Wire-stitching machine	J. F. Daggett	409,630	Aug. 27	2479	648 / 649	48	1174
Wire-stretcher	V. Arnold and W. L. Yergin	409,597	Aug. 20	2108	556	48	1101
Wire-stretcher	W. G. Frost	406,642	July 9	937	253	48	191
Wire-stretcher	D. H. Lunn	411,600	Sept. 24	2214	589	48	1722
Wire-stretching device	S. Taft	408,997	Aug. 13	1211	320	48	919
Wire-tightener	J. S. Guyton	409,322	Aug. 20	1716	451	48	1024
Wire tightener and splicer	S. P. R. Taylor, W. T. Sharman, and J. L. Jamison.	409,434	Aug. 20	1876	495	48	1057
Wire-tightening device	J. McDougall	410,557	Sept. 3	638	170	48	1384

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Wire-working apparatus	D. Rawson	407,612	July 23	2397	622	48	404
Wood-filler	G. M. Breinig	410,144	Sept. 3	6	.....	48	1270
Wood-grinding apparatus	F. H. Schmidt	411,734	Sept. 24	2408	638	48	1763
Wooden hoop. Flat	J. F. Rich	410,446	Sept. 3	488	130	48	1364
Wooden hoop. Flat	J. F. Rich	410,447	Sept. 3	490	131	48	1364
Wool. Cleaning	I. Singer and M. W. Judell	406,781	July 9	1142	302, 303	48	230
Wool. Feeding mechanism for machines for treating	W. C. Bramwell	411,090	Sept. 17	1468	389, 390	48	1570
Wool-washing machine	H. W. Church	410,312	Sept. 3	272	71	48	1321
Wool-washing machine	F. G. and A. C. Sargent	411,533	Sept. 24	2107	556	48	1699
Wool-washing machine	F. G. and A. C. Sargent	411,534	Sept. 24	2108	556	48	1699
Wool-washing machines. Feeding mechanism for	S. A. Seat, M. W. Perkins, and J. T. Toolcose.	411,511	Sept. 24	2077	549	48	1694
Work-bench	H. Bogardus	410,398	Sept. 3	401	107	48	1347
Work-bench and tool-cabinet. Combined	W. B. Bradshaw	411,708	Sept. 24	2375	630	48	1756
Work-holder	W. J. Muncaster	409,367	Aug. 20	1784	470	48	1038
Work-holder	D. B. Kerr	411,040	Sept. 17	1378	370	48	1554
Woven fabric	R. H. Thompson and S. H. Wilson	406,971	July 16	1428	374, 375	48	295
Wrappers for bottles, &c. Machine for manufacturing	D. F. McDonald	407,544	July 23	2308	595, 596	48	476
Wrapping-machine	C. F. Royce and G. E. Gies	406,236	July 2	294	81	48	59
Wrecking-frog							
Wrench: *See* Chain-wrench. Combination-wrench. Nut-wrench. Pipe-wrench. Power-wrench.							
Wrench	H. Hammond	410,240	Sept. 3	156	41	48	1299
Wrench	H. B. Morrison	407,740	July 23	2569	665	48	528
Wrench	C. A. Swanson	410,384	Sept. 3	382	101	48	1344
Wrench	J. H. Loso	409,476	Aug. 20	1936	512	48	1069
Wrench and oil-can. Combined	B. A. Haines	411,190	Sept. 17	1612	428	48	1599
Wrench and screw-driver. Combined							
Wringer: *See* Mop-wringer.							
Writing-surfaces. Manufacture of	K. Engler	407,649	July 23	2451	.....	48	504
Yarn, &c. Device for cleaning	J. H. Marsden	406,846	July 9	1242	329	48	248
Yarn, &c. Machine for tying skeins of	R. H. Comey	406,216	Aug. 6	19	5	48	682
Yarn-reel	E. C. Duffy	409,940	Aug. 27	2629	690	48	1205
Yoke attachment. Neck	R. W. McMaster	409,332	Aug. 20	1731	455	48	1027
Yoke center. Neck	J. W. Albright	406,250	July 2	310	85	48	62
Yoke. Neck	W. Likes	411,458	Sept. 24	2004	530	48	1678
Yoke. Ox	W. Kidd	409,687	Aug. 27	2261	593	48	1135
Yoke ring. Neck	W. H. Johnson	406,914	July 16	1344	353	48	279
Zirconium nitrate. Making	F. Thiele	410,865	Sept. 10	1130	.....	48	1495
Zirconium nitrate. Obtaining	C. A. von Welsbach	409,653	Aug. 20	2194	.....	48	1116

ALPHABETICAL LIST OF DESIGNS.

Design.	Name.	No.	Date.	Official Gazette. Volume.	Official Gazette. Page.
Advertising-card	S. C. McClure	19,297	Sept. 3	48	1269
Badge	T. H. Bachelor	19,319	Sept. 24	48	1695
Badge	H. M. Betz	19,233	July 30	48	542
Badge	J. K. Davison	19,159	July 2	48	2
Badge	J. K. Davison	19,271	Aug. 20	48	978
Badge	C. F. Irons	19,191	July 2	48	2
Badge	J. C. Underwood	19,194	July 2	48	2
Bag frames. Ornamentation of chatelaine	L. B. Prahar	19,305, 19,306	Sept. 10	48	1404
Bracket	M. Merklen	19,296	Sept. 3	48	1269
Bracket	M. Merklen	19,303	Sept. 10	48	1404
Brushes, &c. Back for	H. Perry	19,223	July 23	48	403
Brushes, &c. Back for	H. Berry	19,351	Aug. 13	48	696
Burial-case	A. W. Glass	19,226	Aug. 27	48	1124
Burial-casket lid	L. Stein	19,310	Sept. 10	48	1404
Car dash. Street	J. W. Fowler	19,254	Aug. 6	48	678
Carpet	J. S. Lamond and C. T. Robertson	19,208	July 16	48	264
Carpet	E. G. Sauer	19,246	July 30	48	542
Carriage body. Baby	D. F. Jefferies and J. G. Rodgers	19,231	July 23	48	404
Ceiling	G. W. Gardner	19,295	Sept. 3	48	1268
Celery-dish	J. Locke	19,313	Sept. 10	48	1404
Chimney-cap	G. Poirier	19,304	Sept. 10	48	1404
Clock-case	G. W. Bidwell	19,269, 19,270	Aug. 20	48	978
Clock-case	E. C. Stoddard	19,267	Aug. 13	48	696
Coffin	L. Stein	19,309	Sept. 10	48	1404
Collar. Apparel	F. Belermeister, Jr.	19,314	Sept. 17	48	1542
Corsets. Ornamentation of	C. A. Griswold	19,234 to 19,240	July 30	48	542
Curtain	R. Hartley	19,214 to 19,218	July 23	48	403
Curtain	W. T. Smith	19,318	Sept. 17	48	1542
Curtain and cover	J. Daubek	19,262, 19,263	Aug. 13	48	696
Decorative fabric	C. H. Koster	19,243	July 30	48	542
Dish	C. E. Haviland	19,273, 19,274	Aug. 20	48	978
Dish	T. Maddock	19,201	July 9	48	120
Dish-cover	T. B. Atterbury	19,247 to 19,250	Aug. 6	48	678
Dish-cover	T. B. Atterbury	19,282, 19,283	Aug. 27	48	1124
Drawer	O. Martin	19,344	July 30	48	542
Druggist's sign	W. G. Walter	19,260	Aug. 6	48	678
Electric-light shade	A. Howard	19,275	Aug. 20	48	978
Electric-light shade	J. Webb	19,279	Aug. 20	48	978
Electric-wire bracket	R. Herman	19,190	July 2	48	2
Electric-wire bracket	R. Herman	19,241, 19,242	July 30	48	542
Fan appliance. Rotary	C. E. Waldeck	19,259	Aug. 6	48	678
Feather. Artificial	H. H. Plaut	19,317	Sept. 17	48	1542
Fence-gate	R. B. McMullen	19,258	Aug. 6	48	678
Fence-twisting disk. Wire	C. T. Hupp	19,308	Sept. 10	48	1404
Flask. Pocket	C. H. Read	19,230	July 23	48	404
Flower-pot	J. G. Whildin	19,280	Aug. 20	48	978
Fine stopper or collar	E. Ettenheimer	19,195	July 9	48	120
Gimp	G. W. Graham	19,196	July 9	48	120
Gimp	C. Weinberg	19,193	July 2	48	2
Glass. Surface ornamentation of sheet	A. D. Brogan and A. M. Malloch	19,206	July 16	48	264
Glassware	T. W. Meller	19,209	July 16	48	264
Grate. Fire-place	E. L. Caley	19,253	Aug. 6	48	678
Grave-marker	H. F. Jenks	19,316	Sept. 17	48	1542
Hame	N. Kelsay	19,288	Aug. 27	48	1124
Handle for canes, &c. Stick	S. M. Creteau	19,213	July 23	48	403
Handle for spoons, &c	L. R. Horton	19,257	Aug. 27	48	1124
Handle for spoons, forks, &c	F. Schmidt	19,203	July 9	48	120
Handle for table-ware	R. H. Klingel	19,276	Aug. 20	48	978
Hardware. Ornamentation of	J. E. Harbster	19,272	Aug. 20	48	978
Harrow	C. La Dow	19,320, 19,321	Sept. 24	48	1666
Hassock	C. H. Bartlett	19,196	July 2	48	2
Hose-carriage body	W. C. Gleason and J. C. Ryan	19,315	Sept. 17	48	1542
House. Exterior of a country	A. Lacroix, Jr	19,307	July 16	48	264
Knitted shirts. Ornamentation of	T. A. Pearce	19,266	Aug. 13	48	696
Knitted shirts. Ornamentation of	T. A. Pearce	19,296	Sept. 3	48	1268
Lamp-burner	L. J. Atwood and F. W. Tobey	19,307	Sept. 10	48	1404
Lock-case	R. W. E. Christesen	19,188	July 2	48	2
Lounge	A. Karpen	19,199	July 9	48	120

Alphabetical list of designs, July to September, inclusive—Continued.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Mariner's clock-dial	S. H. Harding, Jr.	19,255	Aug. 6	48	678
Memorial tablet	J. W. Dowling	19,264	Aug. 13	48	826
Oil-cloth	C. T. and V. E. Meyer	19,225 to 19,228	July 23	48	403
Oil-cloth	C. T. and V. E. Meyer	19,263	July 23	48	404
Paper-weight	W. H. Ryer	19,223	July 23	48	403
Papers. Fastener for	G. W. McGill	19,220	July 23	48	403
Pen nozzle. Fountain	N. F. Palmer	19,265	Aug. 13	48	826
Pen or pencil holder. Fountain	E. Todd, Jr.	19,277 19,278	Aug. 20	48	978
Perfumery-holder, &c	G. W. Bean, A. M. and S. A. Vail	19,292	Sept. 3	48	1268
Piano having supplemental top. Upright	G. W. Lyon	19,302	Sept. 10	48	1404
Radiator	T. H. Williams	19,311 19,312	Sept. 10	48	1404
Sad-iron handle	H. W. Schneider	19,204	July 9	48	120
Sash-cord-guide face-plate	S. Palmer	19,245	July 30	48	542
Sash-lifts or other articles of builders' hardware. Ornamentation of	F. N. Perkins	19,202	July 9	48	120
Sewing-machine cover	T. Kundtz	19,200	July 9	48	120
Spoon, &c	G. P. Tilton	19,205	July 9	48	120
Spoon, fork, &c	J. H. Argyll	19,301	Sept. 10	48	1404
Spoon, fork, &c	G. H. Balch	19,284 19,285	Aug. 27	48	1124
Spoon, fork, or other table utensil	E. C. Moore	19,210 19,211	July 16	48	264
Spoon or fork handle	W. Rogers	19,213	July 16	48	264
Stove. Gas	H. G. Wilson	19,221	Aug. 20	48	978
Stove. Heating	W. C. Higgins	19,219	July 23	48	403
Stove. Vapor	T. Johnson	19,198	July 9	48	120
Strap	E. B. Stimpson	19,290 19,291	Aug. 27	48	1124
Strength or power testing machine case	A. W. Roovers	19,221	July 23	48	403
Suspender-end	E. W. Whittaker	19,268	Aug. 13	48	826
Suspenders. Back-plate for	T. O. Potter	19,289	Aug. 27	48	1124
Tea-pot	J. E. Jeffords	19,256	Aug. 6	48	678
Tea-pot, &c	W. H. Sills	19,192	July 2	48	2
Trimming	J. M. Tappen	19,300	Sept. 3	48	1268
Truck frame. Car	J. Stephenson	19,299	Sept. 3	48	1268
Type. Font of printing	G. F. Jordan	19,257	Aug. 6	48	678
Under-garment for ladies. Combination	M. V. Betts	19,187	July 2	48	2
Wall-paper	C. Booze	19,251 19,252	Aug. 6	48	678
Water-closet-bowls. Surface ornamentation of	C. H. Hansen	19,197	July 9	48	120
Wedding-card	G. F. Brown	19,224	July 23	48	403
Writing-table	F. A. Coffin	19,293 19,294	Sept. 3	48	1268

ALPHABETICAL LIST OF TRADE-MARKS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
Antiseptic preparations. Liquid	M. J. Pinault	16,930	Aug. 13	48	826
Asphaltum paving-blocks	Trinidad Asphaltum Block Company	16,805	July 9	48	120
Beer	J. & P. Baltz Brewing Company	16,814	July 16	48	264
Beer	P. M. Ohmels & Co	17,006	Sept. 19	48	1404
Beer, ale, mineral waters, and carbonated (aerated) drinks	Koster & Bial	16,884	July 30	48	542
Beer of all descriptions	Bass, Ratcliffe & Gretton	16,850	July 23	48	404
Beer of all descriptions	Bass, Ratcliffe & Gretton	16,851	July 23	48	404
Bells	H. McShane & Co	16,889	July 30	48	543
Bells	H. McShane & Co	16,890	July 30	48	542
Beverages. Aerated non-alcoholic	Smith & Washburn	16,784	July 2	48	2
Beverages and bitters for indigestion. Liquid preparation for use as an ingredient in	W. R. J. G. Knight	16,800	July 9	48	120
Beverage composed of liquors, &c. Mixed	J. J. Hartigan	16,978	Sept. 3	48	1268
Bitters. Stomach	Hostetter Company	16,921	Aug. 13	48	826
Blacking. Liquid shoe	J. M. Hillen	16,998	Sept. 10	48	1404
Boiler-cleansing material	S. W. Lord & Co	16,999	Sept. 10	48	1404
Boots and shoes	American Shoe Company	16,936	Aug. 20	48	978
Boots and shoes	Bemis & Fletcher	16,907	Aug. 6	48	678
Boots and shoes	E. Dalsimer	16,839	July 23	48	404
Boots and shoes	J. E. Lents	16,885	July 30	48	543
Boots and shoes of all kinds	T. N. Ferguson	16,840	July 23	48	404
Boots or shoes with rubber soles	Butler, Richards & Co	16,875	July 30	48	543
Braids	Pector & Ducout, Jr	17,008	Sept. 10	48	1404
Brandy. Cognac	B. H. Smith	17,045	Sept. 17	48	1542
Bread, cakes, pies, and all bakery products. Light	Eastwood Wire Manufacturing Company.	16,793	July 9	48	120
Bronze, copper, and babbitt ingots and articles useful and ornamental made therefrom.	L. A. E. Robert	16,806	July 16	48	264
Brushes	Grocers Supply and Storage Company.	16,902	Aug. 6	48	678
Butter. Creamery	F. Fournier & Knopf	16,900	Aug. 6	48	678
Buttons. Shoe	L. J. E. Gourdé	16,918	Aug. 13	48	826
Buttons with metal loops or eyes. Black shoe	A. Booth Packing Company	16,989	Sept. 3	48	1268
Canned fruits, vegetables, and fish	Biloxi Canning Company	16,988	Sept. 3	48	1268
Canned goods. Hermetically-sealed	Russian American Packing Company.	17,064	Sept. 24	48	1686
Canned salmon	J. H. Brookmire & Co	16,895	Aug. 6	48	678
Canned vegetables, fruits, fish, oysters, and meats	Robinson & Braudoo	16,951	Aug. 20	48	978
Cards. Playing	Van Deventer & Co	16,931	Aug. 13	48	826
Carpets and rugs. Ingrain	M. J. Whittall	16,957	Aug. 20	48	979
Carpets. Brussels	D. M. Sechler Carriage Company	16,968	Aug. 27	48	1124
Carts	H. B. Sleeman	17,043	Sept. 17	48	1542
Catheters, bougies, stomach, rectum, and vagina tubes, specula and enema tubes.	Krug & Co	17,037	Sept. 17	48	1542
Champagne	Doctor Thorpe Medicine Company	16,818	July 16	48	264
Chemicals and drugs to produce laxative effects	Mosler	17,039	Sept. 17	48	1542
Chocolate	Westcott Chuck Company	17,088	Sept. 24	48	1686
Chucks. Lathe	W. L. Horne	16,799	July 9	48	120
Cider or other charged with carbonic-acid gas. Fermented	J. Bardou et Fils	16,992	Sept. 10	48	1404
Cigarette-paper	Oneida Cigar Co	17,007	Sept. 10	48	1404
Cigars	N. Schubmehl	17,010	Sept. 10	48	1404
Cigars, cigarettes, and tobacco	Colby Wringer Company	16,909	Aug. 6	48	678
Clothes-wringers	H. Thorne & Company	16,779	July 2	48	2
Cocoa	A. M. Martinez	16,846	July 23	48	404
Coffee	J. H. Thompson & Company	16,894	July 30	48	542
Coffee	D. D. Williamson	16,873	July 30	48	542
Coffee-extract	Indiana Coffee Company	16,962	Aug. 27	48	1124
Coffee. Roasted	H. R. Eaton	16,897	Aug. 6	48	678
Complexion. Preparation for the	G. Ziegler Company	16,803	July 23	48	404
Confectionery	Schlichter Jute Cordage Company	17,009	Sept. 10	48	1404
Cordage	Topas Cinchona Cordial Company	16,820	July 23	48	404
Cordial, liver-pills, blood-specific, and ointment	A. B. Paulus & Co	16,967	Aug. 27	48	1124
Corn cure	J. R. Freud	16,945	Aug. 20	48	978
Corsets	K. B. Sonnehill & Son	16,954	Aug. 20	48	978
Corsets	J. Martin & Co	16,979	Sept. 3	48	1268
Cotton fabrics. Dyed	S. A. Crozer & Son	16,838	July 23	48	404
Cotton goods	L. J. McConnell	17,004	Sept. 10	48	1404
Cough-sirup	F. A. Kennedy Company	16,845	July 23	48	404
Crackers, biscuits, wafers, cakes, and kindred articles	N. K. Gentry	16,901	Aug. 6	48	678
Cream. Remedial and cosmetic	Drs. Farnsworth	16,785	July 2	48	2
Croup and cough sirup	Brookes & Crookes	16,788	July 2	48	2
Cutlery and hardware	G. W. Fels	16,794	July 9	48	120
Dental instruments, machinery, preparations, and furniture	W. Bannerman	16,967	July 30	48	542
Deodorizer, a disinfectant, and germicide. Compound constituting a	Tilden & Co	16,786	July 2	48	2
Deodorizers and disinfectants with styptic, antiseptic, and alterative qualities.	Laundrine Manufacturing Co	16,924	Aug. 13	48	826
Detergents or washing compounds	Reed & Carnrick	16,983	Sept. 3	48	1268
Diphtheritic membrane. Solvent for	W. A. Aiken	16,787	July 9	48	120
Display-frames having adjustable joints for exhibiting wearing-apparel.	W. F. Read	16,852	July 23	48	404
Dress-goods and umbrella-coverings	G. A. Harmount	16,797	July 9	48	120
Electric batteries					

Alphabetical list of trade-marks, July to September, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Embrocation preparations or extracts of sarsaparilla, stomachic tinctures, bitters, lozenges, and pastils.	F. A. Richter	16,853	July 23	48	404
Extracts for beverages	P. B. Knapp & Sons	16,923	Aug. 13	48	826
Finger-rings	Sinnock & Sherrill	16,908	Aug. 6	48	678
Fire-extinguishing apparatus. Chemical	Worcester Fire Appliance Company	16,807	July 9	48	120
Flies. Device for containing a poison solution for killing	Moore & Kibler	16,888	July 30	48	542
Floor and bath mats	McKesson & Robbins	17,008	Sept. 10	48	1404
Flour	G. V. Hecker	16,842	July 23	48	404
Flour	G. V. Hecker	16,947	Aug. 20	48	978
Flour. Wheat	C. F. Herning	16,892	July 30	48	542
Fly-paper. Sticky	National Fly Paper Company	16,828	July 16	48	264
Food for cattle. Spiced	T. Myers	16,826	July 16	48	264
Food for infants and invalids. Milk	Reed & Carnrick	16,950	Aug. 20	48	978
Game-board	F. B. Denham	16,763	July 2	48	2
Gelatine. Phosphated preparations of	C. G. Whitten	16,935	Aug. 13	48	826
Ginger-ale	F. L. Hazelton	16,841	July 23	48	404
Ginger-ale	J. Morgan	17,003	Sept. 10	48	1404
Gloves	Sterling Fast Black Glove Co	16,857	July 23	48	404
Glycerine-cream	J. Simon	17,042	Sept. 17	48	1542
Gold paint made from gold bronze	Gerstenlörfer Bros	16,795	July 9	48	120
Gold paint made from gold bronze	Gerstenlörfer Bros	16,796	July 9	48	120
Gold paints and inks, copper fluids, furniture-polishes, and bronze powders.	American Gold Paint Co	16,760	July 2	48	2
Grape-vines, grape-vine slips, and grapes	S. Heyth's Sons	16,961	Aug. 27	48	1124
Grease and oil. Axle and shafting	R. D. Sheason	17,044	Sept. 17	48	1542
Guano	R. A. Wooldridge & Co	16,908	Sept. 3	48	1268
Guitars and mandolins	J. W. Jenkins & Son	16,844	July 23	48	404
Gum. Chewing	F. J. Banta	17,015	Sept. 17	48	1542
Hair-restorer	M. A. Dodge	16,880	July 30	48	542
Hog and poultry cure	W. Hall Medicine Company	16,960	Aug. 27	48	1124
Horse-blankets	W. Ayres & Sons	16,937	Aug. 20	48	978
Horse-blankets	L. C. Chase & Co	17,050	Sept. 24	48	1666
Horse-nets	W. Ayres & Sons	16,938	Aug. 20	48	978
Hose. Mill or fire	Boston Woven Hose Company	16,868	July 30	48	542
Hose. Rubber or cotton	Revere Rubber Company	16,892	July 30	48	542
Hose. Rubber or cotton	Revere Rubber Company	16,893	July 30	48	542
Ice-making machines	A. Conscher	16,994	Sept. 10	48	1404
Ink. Writing	C. P. Dimitry	16,944	Aug. 20	48	978
Insect-exterminators	L. Dirksen	16,879	July 30	48	542
Insecticide	G. Q. Dow	16,971	Sept 3	48	1268
Jute products, such as twine, bagging, carpetings, oil-cloth, and the like.	Chelsea Jute Mills	16,948	Aug. 20	48	978
Kerosene-oil	Wilson Grocery Company	16,861	July 23	48	404
Knives and surgical and other cutting instruments classed as cutlery. Pocket, pen, erasing, and table	C. Lüttgen & Co	16,767	July 2	48	2
Lace. Cotton	Les Fils de Cartier-Bresson	17,026	Sept. 17	48	1542
Lace. Cotton	Les Fils de Cartier-Bresson	17,029	Sept. 17	48	1542
Lager-beer	F. Heim Brewing Company	16,843	July 23	48	404
Lamps	K. E. Jacobson and E. H. Fessenden	16,975	Sept. 3	48	1268
Lamps or stoves and burners therefor. Oil	R. Wallwork and A. C. Wells	16,965	Aug. 27	48	1124
Leather, upholstery leather, and articles manufactured therefrom, such as foot-wear, hand-bags, pocket-books, and the like.	White Bros. & Co	16,934	Aug. 13	48	826
Liniment	C. W. Munn	16,762	July 2	48	2
Liniment	E. E. Prowell	16,770	July 2	48	2
Liniment	D. Scott	16,783	July 2	48	2
Liniment for man and beast	J. A. Achard	16,959	Aug. 27	48	1124
Liquor extracted from cherries	Dubonnet Frères	17,034	Sept. 17	48	1542
Liquors. Fermented, malt, and distilled	C. Watkins & Son	16,933	Aug. 13	48	826
Lye. Powdered	E. Myers & Co	16,949	Aug. 20	48	978
Meats and meat food products	Armour & Co	16,990	Sept. 10	48	1404
Medical beverages from the soda-fountain and tonics for the stomach and for the nervous system.	E. W. Healy	16,823	July 16	48	264
Medical compound for destroying microbes	S. E. Gillett	16,917	Aug. 13	48	826
Medical compounds for external application for producing epidermical heat.	M. E. Cazin & Co	16,837	July 23	48	404
Medical compounds for the treatment of asthma	R. Schiffmann	16,771	July 2	48	2
Medical preparations. Various specified	C. F. Williams	16,967	Sept. 3	48	1268
Medicinal and toilet cream	F. H. Hillard and S. S. Stewart	16,920	Aug. 13	48	826
Medicinal bath. Preparation for a	C. W. Roberts	16,984	Sept. 3	48	1268
Medicinal preparation for curing dyspepsia and kindred diseases.	Tilden & Co	16,785	July 2	48	2
Medicinal preparation for treating and beautifying the finger-nails.	L. M. Weston	17,069	Sept. 24	48	1666
Medicinal preparation in the form of pastils for curing uterine diseases.	W. A. France	16,821	July 16	48	264
Medicinal preparation of a prophylactic character	W. Radam	16,848	July 23	48	404
Medicinal preparation of a prophylactic character	W. Radam	16,849	July 23	48	404
Medicine against sea-sickness	E. Fournier	17,033	Sept. 17	48	1542
Medicine. Cough	T. Candy	16,836	July 23	48	404
Medicine in the nature of a sirup for certain diseases named	D. W. Saxe	16,832	July 16	48	264
Medicine to cure rheumatism. Liquid	C. Wertheim	16,835	July 16	48	264
Medicines for diseases of the air-passages of the head, throat, and lungs, and appliances used in connection with the same.	W. J. Keefe	16,922	Aug. 13	48	826
Medicines for stomach and bowel difficulties	A. J. Rankin	16,830	July 16	48	264
Medicines of histogenetic character	J. E. Jordan	16,824	July 16	48	264
Medicines to prevent unnatural accumulation of flesh	F. Potter	16,829	July 16	48	264
Metallic tubes of all descriptions	Weldless Steel Tube Co	16,956	Aug. 20	48	978
Mineral-spring water. Natural	D. W. Brown	17,018	Sept. 17	48	1542
Mineral water	Apollinaris Company	16,813	July 16	48	264
Mineral water. Deodorized and charged	T. C. Owen	16,769	July 2	48	2
Mineral water, its salts, and compounds containing the same. Natural	Apollinaris Company	16,809	July 16	48	264
Mineral water, its salts, and compounds containing the same. Natural	Apollinaris Company	16,810	July 16	48	264

Alphabetical list of trade-marks, July to September, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Mineral water, its salts, and compounds containing the same. Natural	Apollinaris Company	16,811	July 16	48	264
Mineral water, its salts, and compounds containing the same. Natural	Apollinaris Company	16,812	July 16	48	264
Mineral waters	J. Morgan	17,002	Sept. 10	48	1404
Nervine and general restorative	V. H. Monroe	17,001	Sept. 10	48	1404
Newspaper	D. Stern	16,858	July 23	48	404
Oil and japan, black, and green teas. Olive	McCulloch & Co	16,928	Aug. 13	48	826
Oil for sewing-machines and light machinery	N. D. Stoops	16,803	July 9	48	120
Oil. Illuminating	Tide Water Oil Company	16,774	July 2	48	2
Oil. Olive	C. Maspero	16,802	July 9	48	120
Oils. Illuminating	R. Wallwork and A. C. Wells	16,932	Aug. 13	48	826
Oils. Lubricating and illuminating	J. Ellis & Co	16,881	July 30	48	542
Ointment. Goiter and tumor	H. H. Hayasen	16,919	Aug. 13	48	826
Organs. Reed	Mason & Risch	16,872	July 30	48	542
Packing. Machinery	Greene, Tweed & Co	17,054	Sept. 24	48	1666
Paint	Le Gros Building and Car Roofing Company.	16,781	July 2	48	2
Paint ground in linseed-oil. White	M. P. Drury	17,051	Sept. 24	48	1666
Paint. Preserving	Avenarius Gebrüder	16,788	July 9	48	120
Paints and pigments	T. Hubbuck & Son	16,766	July 2	48	2
Paints and varnishes. Mixed	Baum & Co	16,815	July 16	48	264
Paints, compositions, anti-corrosives, and anti-foulers	Suter, Hartmann & Rahtjens Composition Company.	17,035	Sept. 17	48	1542
Paper and envelopes	Z. & W. M. Crane	16,869	July 30	48	542
Paper and envelopes	Z. & W. M. Crane	16,870	July 30	48	542
Paper and envelopes. Writing	G. H. Dickson's Sons	16,943	Aug. 20	48	978
Paper clothing	R. C. Mudge and E. M. Wasson	16,904	Aug. 6	48	678
Paper. Commercial-note writing	H. S. Crocker & Co	17,032	Sept. 17	48	1542
Paper-cutting machines	Shniedewend & Lee Company	16,854	July 23	48	404
Paper-cutting machines	Shniedewend & Lee Company	16,855	July 23	48	404
Paper. Parchmentized	Leatheroid Manufacturing Company.	17,038	Sept. 17	48	1542
Paper. Toilet	G. W. Thompson	16,859	July 23	48	404
Paper. Writing and printing	C. L. Seeger	16,833	July 16	48	264
Parasols and umbrellas	F. Revel Père et Fils	16,831	July 16	48	264
Pear-trees	Idaho Pear Co	16,863	July 23	48	404
Pens	D. Leonardt & Co	16,977	Sept. 3	48	1268
Pens. Metallic	Penns, O'Kelly & Co	17,041	Sept. 17	48	1542
Perfume for toilet uses in liquids, powders, and soaps	G. Lorenz	16,976	Sept. 3	48	1268
Perfumes	S. Palmer	16,964	Aug. 27	48	1124
Perfumery and perfumed toilet preparations and extracts	F. C. Calvert & Co	16,993	Sept. 10	48	1404
Pills. Dyspepsia	J. A. Deane	16,817	July 16	48	264
Pills of essence of tar	A. Bertelli & Cie	16,789	July 9	48	120
Pills of essence of tar	A. Bertelli & Cie	17,016	Sept. 17	48	1542
Pins, bracelets, chains, charms, sleeve and shirt buttons, and like articles.	Plainville Stock Company	16,866	July 23	48	404
Planters. Check-row corn	H. P. Deuscher Company	16,942	Aug. 20	48	978
Plasters. Medicinal	Potter Drug and Chemical Co	16,906	Aug. 6	48	678
Plate-powder	Overton	16,768	July 2	48	2
Polish for jewelry, metals, mirrors, and the like	W. Reed and E. S. Barton	17,063	Sept. 24	48	1666
Poultry. Dressed	W. C. Williams	17,070	Sept. 24	48	1666
Printing-presses	Shniedewend & Lee Company	16,856	July 23	48	404
Pulp made of pulverized, powdered, and prepared minerals	Natural Dam Pulp Company	16,929	Aug. 13	48	826
Puzzles	M. Warnier	16,955	Aug. 20	48	978
Rat and roach exterminator	C. D. Maurer	16,887	July 30	48	542
Razors	T. Hessenbruch & Co	16,973	Sept. 3	48	1268
Remedies for asthma	F. Gouaux	17,053	Sept. 24	48	1666
Remedy for indigestion. Certain	G. Batten	16,911	Aug. 13	48	826
Remedy for internal and external use. Liquid	J. F. Venner	17,046	Sept. 17	48	1542
Remedy for rheumatism and gout	B. G. McSwyny	16,827	July 16	48	264
Remedy for rheumatism and like diseases	J. A. Smith	16,834	July 16	48	264
Remedy. Stomach	H. Asthalter	16,910	Aug. 13	48	826
Remedy. Tape-worm	J. G. Egersdorff	16,916	Aug. 13	48	826
Restorative specific	J. W. Patrick	16,982	Sept. 3	48	1268
Ropes, yarns, twines, and cords	Plymouth Cordage Company	16,891	July 30	48	542
Rubber boots and shoes and all kinds of rubber and oil clothing, also rubber hose and tubing.	Day Rubber Company	16,941	Aug. 20	48	978
Rubber goods, as nipples, syringes, teething-rings, water-bottles, air-pillows, air-cushions, &c. Druggists'	Tyer Rubber Company	16,806	July 9	48	120
Salmon. Hermetically-sealed	Peninsular Trading and Fishing Company.	17,061	Sept. 24	48	1666
Salmon. Hermetically-sealed	Peninsular Trading and Fishing Company.	17,062	Sept. 24	48	1666
Salt	T. Higgin & Co	16,798	July 9	48	120
Salve	G. F. Leighton	16,925	Aug. 13	48	826
Salves	G. J. Kannmacher	16,871	July 30	48	542
Sewer-pipe	Akron Sewer Pipe Company	17,047	Sept. 24	48	1666
Sheetings. Bleached cotton	A. N. Beckwith	16,939	Aug. 20	48	978
Shoe-elastic, boots, and shoes	Herbert & Rapp Company	17,036	Sept. 17	48	1542
Shoes	M. Elkin & Co	16,995	Sept. 10	48	1404
Shoes. Children's	Walden-Parcels-Jordan Shoe Company.	16,773	July 2	48	2
Shoes for men, women, and children	Peters & Miller Shoe Company	16,905	Aug. 6	48	678
Shoes. Men's	J. Meier	16,903	Aug. 6	48	678
Silver-polish	Jones & Dudley	16,853	July 30	48	542
Soap	J. Crosfield & Sons	16,913	Aug. 13	48	826
Soap	M. L. Edwards	16,784	July 2	48	2
Soap. Facial	J. H. Woodbury	16,958	Aug. 20	48	978
Soap. Harness oil	R. K. Miller	16,927	Aug. 13	48	826
Soap-powder	C. Lipps	16,886	July 30	48	542
Soap. Toilet	Granite City Soap Company	16,997	Sept. 10	48	1404
Specifics for rheumatic, neuralgic, and scrofulous disorders and their related diseases.	S. French	16,822	July 16	48	264
Stain for furniture. Liquid	Fleury & Faust	16,996	Sept. 10	48	1404

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Stoves. Heating and cooking	Michigan Stove Company	17,000	Sept. 10	48	1404
Sugar and other packed confectionery	M. Lippman & Bro	16,926	Aug. 13	48	856
Tea	Davidson & Co	16,877	July 30	48	542
Tea	Davidson & Co	16,878	July 30	48	542
Tea	McClure & Ridpath	17,058	Sept. 24	48	1666
Tea. Mixed	T. R. Hill	16,974	Sept. 3	48	1268
Teas	S. L. Jones & Co	16,976	Sept. 3	48	1268
Thrashing-machines	Eagle Machine Works Company	17,052	Sept. 24	48	1666
Thread. Cotton	Les Fils de Cartier-Bresson	17,019	Sept. 17	48	1542
Thread. Cotton	Les Fils de Cartier-Bresson	17,020	Sept. 17	48	1542
Thread. Cotton	Les Fils de Cartier-Bresson	17,021	Sept. 17	48	1542
Thread. Cotton	Les Fils de Cartier-Bresson	17,022	Sept. 17	48	1542
Thread. Cotton	Les Fils de Cartier-Bresson	17,023	Sept. 17	48	1542
Thread. Cotton	Les Fils de Cartier-Bresson	17,024	Sept. 17	48	1542
Thread. Cotton	Les Fils de Cartier-Bresson	17,025	Sept. 17	48	1542
Thread. Cotton	Les Fils de Cartier-Bresson	17,027	Sept. 17	48	1542
Thread. Cotton	Les Fils de Cartier-Bresson	17,028	Sept. 17	48	1542
Thread. Cotton	Les Fils de Cartier-Bresson	17,030	Sept. 17	48	1542
Thread. Cotton	Les Fils de Cartier-Bresson	17,031	Sept. 17	48	1542
Tobacco and plug-tobacco for chewing. Smoking	Arnold, Carlton & McCord	16,991	Sept. 10	48	1404
Tobacco. Chewing	Bitting & Hay	16,940	Aug. 20	48	978
Tobacco. Cured	W. H. Snow	16,953	Aug. 20	48	978
Tobacco. Leaf	Brand & Bethel	16,761	July 2	48	2
Tobacco, particularly plug. Chewing	Perkins & Ernst	16,965	July 23	48	404
Tobacco-pipes	Ruth Pipe Company	16,952	Aug. 20	48	978
Tobacco. Plug and twist chewing	J. H. Stewart	16,985	Sept. 3	48	1268
Toilet preparations. Various	W. S. Thomson	17,014	Sept. 10	48	1404
Tonic and stimulant, a cleanser and purifier, and a balm for the skin.	C. E. Draper	16,819	July 16	48	264
Tonic preparation for the cure of rheumatism, gout, neuralgia, &c. Liquid	J. W. Carroll & Son	17,049	Sept. 24	48	1666
Tooth-paste, cold cream, lip-salve, shaving-paste, and shaving-soap.	H. B. Sleeman	17,066	Sept. 24	48	1666
Twine. Binding	McCormick Harvesting Machine Company.	16,980	Sept. 3	48	1268
Under-clothing, garments, corsets, and embroideries, laces, and trimmings for the same. Ladies' and children's	Stapley & Smith	17,011	Sept. 10	48	1404
Under-clothing, garments, corsets, and embroideries, laces, and trimmings for the same. Ladies' and children's	Stapley & Smith	17,012	Sept. 10	48	1404
Under-clothing, garments, corsets, and embroideries, laces, and trimmings for the same. Ladies' and children's	Stapley & Smith	17,013	Sept. 10	48	1404
Underwear	J. Meyer & Co	16,963	Aug. 27	48	1124
Underwear	J. Meyer & Co	17,040	Sept. 17	48	1542
Valves and water-valves. Steam	Fairbanks & Co	16,898	Aug. 6	48	676
Valves and water-valves. Steam	Fairbanks & Co	16,899	Aug. 6	48	678
Varnish. Finishing	Lawson Valentine Company	16,777	July 2	48	2
Varnish. Finishing	Lawson Valentine Company	16,778	July 2	48	2
Varnish. Finishing	Lawson Valentine Company	16,779	July 2	48	2
Varnish. Finishing	Lawson Valentine Company	16,780	July 2	48	2
Varnish. Flatting	Lawson Valentine Company	16,775	July 2	48	2
Varnish. Flatting	Lawson Valentine Company	16,776	July 2	48	2
Varnishes, stains, japans, surfacers, and kindred goods	Watts DeGolyer Company	16,914	Aug. 13	48	826
Vehicle-wheels	J. Bolick	16,876	July 30	48	542
Vehicles	Bradley & Company	17,048	Sept. 24	48	1666
Velvets and plushes	Peltzer Gebrüder	16,946	Aug. 20	48	978
Vermouth	Noilly Prat & Cie	17,059	Sept. 24	48	1666
Vermouth	Noilly Prat & Cie	17,060	Sept. 24	48	1666
Wall-finishes, plastic compounds, and cement	J. B. King & Co	16,825	July 16	48	264
Watch-cases. Composition	Dueber Watch Case Manufacturing Company.	16,915	Aug. 13	48	826
Watch-movements	American Waltham Watch Company.	16,874	July 30	48	542
Water-proof compounds for pulley-belts	J. H. Faulkner	16,820	July 16	48	264
Whips. Carriage or driving	Sanford Whip Company	17,065	Sept. 24	48	1666
Whisky	Betterton & Co	16,790	July 9	48	120
Whisky	E. Block & Sons	16,791	July 9	48	120
Whisky	J. M. Mackenzie & Co	16,801	July 9	48	120
Whisky	P. J. Sullivan	16,804	July 9	48	120
Whisky. Hand-made sour-mash	E. H. Taylor, Jr., & Sons	17,067	Sept. 24	48	1666
Wine. Champagne	J. Bollinger	17,017	Sept. 17	48	1542
Wine. Sherry	D. Hermanos	17,055	Sept. 24	48	1666
Wine. Sherry	D. Hermanos	17,056	Sept. 24	48	1666
Worm remedy	A. C. McIntosh	16,864	July 23	48	404
Yarns. Knitting and darning	Morse & Kaley Manufacturing Company.	17,057	Sept. 24	48	1666
Yeast. Compressed	National Distilling Company	16 981	Sept. 3	48	1268
Yeast. Dry hop	Chicago Yeast Company	16,896	Aug. 6	48	678
Yeast in powdered form. Dry	Charm Manufacturing Company	16,966	Aug. 27	48	1124
Yellow fever. Preparation for the cure of	W. Condory	16,816	July 16	48	264

ALPHABETICAL LIST OF LABELS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
"Ague Busters." (For medicines)	Bolling Drug Company	6,002	Aug. 27	48	1124
"Arnica Premium Salve"	J. A. Jungkind	6,022	Sept. 24	48	1666
"Averbeck's Birch Beer"	M. J. Averbeck	5,966	July 16	48	264
"Averbeck's Birch Beer"	M. J. Averbeck	5,967	July 16	48	264
"Back." (For stays for ladies' dress waists)	A. Kelley	6,010	Sept. 3	48	1268
"1-7 Ball Puzzle"	L. Mortimer	5,969	July 16	48	264
"Bay Side," (for Printed Woolen Goods)	Union Print Works	5,971	July 16	48	264
"Brand B" (for Sheathing Paper)	M. E. Manahan	5,974	July 23	48	404
"Bromo Celery Compound," (For a Medicinal Preparation)	J. H. Hancock	5,997	Aug. 13	48	826
"Carter's Liquid Glue"	Carter, Dinsmore & Co	5,977 / 5,978	July 23	48	404
"Chemical and Vegetable Parlor Illuminator" (for Burning Fluid.)	W. R. Wales	5,975	July 23	48	404
"Coin Gum." (For packages of chewing-gum with which coin is given away.)	F. A. Seeber and J. S. Ammon	6,013	Sept. 10	48	1404
"Cycle-Chain Graphite," (For a Lubricant for Tricycles and Bicycle Chains.)	J. P. Downs	5,995	Aug. 13	48	826
"D. Maurer & Son's Infallible Rat and Roach Exterminator"	C. D. Maurer	5,992	July 9	48	120
"Dalsimer Last." (for Boots and Shoes)	E. Dalsimer	5,981	July 30	48	542
"Dart." (For a dress-stay)	A. Kelley	6,015	Sept. 17	48	1542
"Diehl's Sausage"	G. H. Diehl	6,014	Sept. 17	48	1542
"Dr. C. K. Merriam's Female Herbal Pastilettes"	C. K. Merriam	5,963	July 9	48	120
"Dr. Getman's Pain Relief or Mountain Herb Liniment"	Getman & Lainson	6,011	Sept. 10	48	1404
"Dr. W. C. Detweiler's Marvelous Specifics"	W. C. Detweiler	5,979	July 23	48	404
"Dundee Creamery Butter"	Grocers Supply and Storage Company.	5,992	Aug. 6	48	678
"Glasgo Lace Thread Co"	Glasgo Yarn Mills Company	5,994	Aug. 6	48	678
"Golden Seal Catarrh Cure"	M. Miller and E. Gundacker	5,993	Aug. 6	48	678
"Gouaux's Anti Asthmatic Powder"	F. Gouaux	6,021	Sept. 24	48	1666
"Greff's Rustan Chewing Gum"	H. Greff	5,991	Aug. 6	48	678
"Hair Wash"	C. Parker	5,964	July 9	48	120
"Hog Cholera Cured." (For a medical compound)	G. Thomas and F. A. Stahl	6,006	Aug. 27	48	1124
"Holden's Cough Syrup"	I. D. Holden	5,976	July 23	48	404
"Hop Tea Tonic"	F. Heim Brewing Co	5,985	July 30	48	542
"Hospital Remedies"	A. H. Dixon	5,958	July 9	48	120
"Irondale Spring Water." (For natural mineral water)	F. Nemegyei	6,023	Sept. 24	48	1666
"Japanese Brand," (for Moth Paper)	M. E. Manahan	5,990	July 23	48	404
"Jencks' Pile Remedy"	S. R. Jencks	5,986	July 30	48	542
"Kincaid's Corn Cure"	S. J. Kincaid	6,004	Aug. 27	48	1124
"Langlies" (for Biscuits)	J. J. Langlés	5,960	July 9	48	120
"Langlés Biscuits"	J. J. Langlés	5,987	July 30	48	542
"Leibe's Remedy for Piles"	D Leibe	6,007	Sept. 3	48	1268
"Martinsville Artesian Mineral Water"	M. Dickson	5,993	July 30	48	542
"Martinsville Mineral Water"	M. Dickson	5,992	July 30	48	542
"Merchant's Roofing"	Merchant & Co	6,000	Aug. 20	48	978
"Mexican Filler." (For cigars)	F. C. Lauer	6,012	Sept. 10	48	1404
"Mrs. A. A. Draper's Corn Killer"	A. A. Draper	5,959	July 9	48	120
"Ohmart's Liniment"	S. Ohmart	5,956	July 2	48	2
"One (Baker's) Dozen." (For safety-pins)	G. Frost & Co	6,001	Aug. 20	48	978
"One Solid Foot of Chewing Tobacco for 10 cts." (For tobacco.)	L. P. Stovall & Co	6,018	Sept. 17	48	1542
"Our Native Herbs." (For a medicine)	A. O. Bliss	5,999	Aug. 20	48	978
"Packers' Factory Filled," (for Salt)	Genesee Salt Company	5,984	July 30	48	542
"Pierce's Selected Calcined Plaster"	H. H. Pierce	6,005	Aug. 27	48	1124
"Plymouth Cordage Company" (for Ropes, Yarns, and Twines)	Plymouth Cordage Company	5,988	July 30	48	542
"Pomeroy's Quintessence of Celery"	H. R. Pomeroy	5,998	Aug. 13	48	826
"Portland Boot"	Potter & Tillinghast	5,957	July 2	48	2
"Riveredge" (for Printed Woolen Goods)	Union Print Works	5,980	July 30	48	542
"Saxe's Phospho-Guarana With Celery"	D. W. Saxe	5,989	July 30	48	542
"Side-Back." (For a dress-stay)	A. Kelley	6,017	Sept. 17	48	1542
"Smith's Iron Wood and Vegetable Specific Bitters"	G. Smith	6,024	Sept. 24	48	1666
"Sure Cure, (Never Fails)." (For a Medicine)	B. F. Hamilton	5,996	Aug. 13	48	826
"Taylor's Compound Elixir of Blackberry"	E. W. Taylor	6,008	Sept. 3	48	1268
"Taylor's Extract of Ginger and Tolu with Mint"	E. W. Taylor	6,009	Sept. 3	48	1268
"The Hatch Rochester Leather Counter"	J. L. Hatch	6,003	Aug. 27	48	1124
"The 'Laster' Furniture Polish"	J. S. Mack	5,973	July 23	48	404
"The St. Louis Jeans Pants"	H. N. Marx and A. Haas	5,961	July 9	48	120
"Tlis Fluid" (for Cleaning Fabrics)	E. J. Austin & Co	5,955	July 2	48	2
"Under-Arm." (For a dress-stay)	A. Kelley	6,016	Sept. 17	48	1542
"Viscol-Dressing" (for Leather)	A. Sommer	5,965	July 9	48	120
"Voelcker's Prune Syrup Laxative"	J. C. H. Voelcker	6,019	Sept. 17	48	1542
"Warranted Fast Colors," (for Cotton Goods)	S. A. Crozer & Son	5,968	July 16	48	264
"White Pine." (For a cough cure)	R. J. Wait	6,020	Sept. 17	48	1542
"Woodruff's Catarrh Snuff"	Scott & Co	5,970	July 16	48	264
"Young's Headache Tablets"	M. B. Young	5,972	July 16	48	264

DISCLAIMERS.

Invention.	Patentee.	No. of patent.	Date of patent.	Disclaimer filed.	Official Gazette. Vol.	Page.
Garter and belt. Coil-spring	James M. Ellis	145,160	Dec. 2, 1873	June 29, 1889	48	120
Gas-furnace for steam-boilers	John A. Lambing	398,482	Feb. 26, 1889	Sept. 4, 1889	48	1404
Insulating-support for electric conductors	Sidney H. Short	398,661	Feb. 26, 1889	July 15, 1889	48	404
Paper bags. Manufacture of	Mark L. Deering. (Reissue)	10,063	May 11, 1880	July 29, 1889	48	678
Water. Purifying	Isaac S. Hyatt	293,740	Feb. 19, 1884	July 27, 1889	48	678

OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

VOLUME XLIX.

OCTOBER 1 TO DECEMBER 31, INCLUSIVE,

1889.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1890.

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DIGEST OF DECISIONS OF THE COMMISSIONER OF PATENTS AND OF THE UNITED STATES COURTS IN PATENT CASES.

INDEX OF PATENTS AND PATENTEES FOR THE QUARTER YEAR, OCTOBER TO DECEMBER, 1889.

ERRATA.

412,777, page 302, in claim, line 2, for "bore" read *bar*.

412,796, page 307, third claim, second line, for "the teeth" read *ten teeth*.

412,908, pape 336, in title, name of assignee, for "George H. Nelson" read *Edwin H. Nelson*.

413,167, page 420, in title, name of assignee, for "Erwin G. Boynton" read *Ervin G. Boynton*.

413,616, 413,617, 413,618, and **413,619,** pages 549 and 550, in title, assignment, after "assignors to" insert *said Albert Domeier and*.

413,622, page 550, in title, after "deceased" insert *assignor to the Long Spring Truss Joint Company, of Illinois*.

413,821, page 615, in title, name of assignee, for "William L. Merrow" read *William L. Morrow*.

414,286, page 769, in title, name of inventor, for "John A. Carmichoel" read *John A. Carmichael*.

414,360, page 792, in title, names of inventors, for "Augustus N. Makepiece" read *Augustus N. Makepeace*.

414,546, page 852, title of invention, for "Expansion-Box and Key for Water and Gas Plugs" read *Extension-Box and Key for Water or Gas Plugs*.

414,676, page 900, strike out all after number—title, drawing, and claims—and insert WITHDRAWN.

414,774, page 926, in title, name of inventor, for "Gains L. Merrell" read *Gaius L. Merrell*.

415,545, page 1163, in title, after residence of inventor, insert *assignor to The Mather Bleaching and Kier Company, Wilmington, Del.*

416,229, page 1390, in title, residence of last named assignee, for "Shelby County" read *Shelby*.

416,255, page 1398, second, third, fourth, and fifth claims, lines 1–2, after "suspending-cord" insert a comma and the words *the drum*, and line 2, same claims, strike out the words "the drum" before "provided."

416,289, page 1409, in title, date of filing, for "Dec. 13" read *Nov. 13*.

416,561, page 1492, in title, residence of inventor, for "Howard, Mass." read *Harvard, Mass.*

417,127, page 1665, in title, name of assignee, for "John Emerson" read *John Emerson Lavely*.

417,151, page 1672, in title, name of inventor, for "Sebem A. Cooney" read *Sebern A. Cooney*.

417,206, page 1688, second claim, line 6, after "torpedo-bow" insert *engaging said grooves*, and same claim, line 7, for "bow" read *bolt*.

417,471, page 1772, first claim, line 9, insert a comma after the word "each" and for "valve" read *valves*.

417,661, page 1828, in title, assignment, insert after "mesne assignments, to" *The R. E. Dietz Company and*.

418,640, page 2142, in title, names of assignees, for "Thomas Kees Bartling" read *Thomas Rees Bartling*.

11,038, (reissue,) page 889, strike out all after number—title, drawings, and claims—and insert CANCELED.

11,048, (reissue,) page 1980, first and second claims, line 4, for "felly" read *fellow*.

ANNOUNCEMENTS—VOL. XLIX.

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OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

OCTOBER–DECEMBER, 1889.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 49—No. 1. TUESDAY, OCTOBER 1, 1889. PRICE—$5 per year.

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Changes in Classification.

(ORDER No. 578.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 2, 1889.

The following changes are directed in Division IV:

New Class 189, Iron Structures, and sub-classes thereunder are established, as follows:

1. Jails.
2. Buildings.
3. Grilles.
4. Metallic ceilings.

The following sub-classes are established:

In Class 14, Bridges:
11. Flooring.
12. Truss, Bow-string.

In Class 108, Roofing:
8. Flashing.

In Class 150, Fire Escapes and Ladders:
20. Fluid-check.
21. Fly-check.
22. Escapement-check.
23. Governor-check.

ROBERT J. FISHER,
Acting Commissioner.

Additional Sub-Classes.

(ORDER No. 579.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 3, 1889.

The following additional sub-classes are hereby established in Division XXVI:

In Class 171, Electricity, Generation:
121. Inductoriums—
122. Induction-coils.
123. Transformers, Rotary.
124. Transformers, Stationary.
125. Pyro-magneto-electric devices.

In Class 172, Electricity, Motive-Power:
126. Motors, Reciprocating.

ROBERT J. FISHER,
Acting Commissioner.

Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., September 13, 1889.

SIR: The Secretary of the Interior has ordered that J. M. D. Miller, of Iuka, Miss., be not recognized after this date as attorney or agent in the prosecution of any claim or other matter before this Department or any bureau thereof.

Very respectfully, E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

49 O G—1—i

Issue of October 1, 1889.

Patents	453	No. 411,773 to No. 412,224, inclusive.
Designs	16	No. 19,328 to No. 19,343, inclusive.
Trade-Marks	13	No. 17,071 to No. 17,083, inclusive.
Labels	6	No. 6,025 to No. 6,030, inclusive.
Reissue	1	No. 11,089.
Total issue	491	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nebraska	3	
Arizona Territory			Nevada		
Arkansas			New Hampshire	6	
California	12		New Jersey	32	1
Colorado	3		New Mexico Terri'y		
Connecticut	11		New York	76	6
Dakota Territory	2		North Carolina	1	
Delaware	2		Ohio	41	1
District of Columbia	5		Oregon	1	1
Florida	1		Pennsylvania	49	1
Georgia	3		Rhode Island	3	
Idaho Territory			South Carolina		
Illinois	44	1	Tennessee	1	
Indian Territory			Texas	6	
Indiana	7		Utah Territory		
Iowa	5	1	Vermont	1	
Kansas	3		Virginia	2	1
Kentucky	12		Washington Terri'y		
Louisiana	4		West Virginia	3	
Maine	2		Wisconsin	7	
Maryland	5		Wyoming Territory	1	
Massachusetts	48	1	United States Army		
Michigan	26		United States Navy		
Minnesota	2	1			
Mississippi	1		Total to citizens of the United States	436	15
Missouri	13				
Montana Territory	2				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			France	4	
Australia			Germany	3	2
Austria-Hungary	3		Italy	1	
Belgium			Mexico		
Bermuda			New South Wales	1	
Brazil			New Zealand		
Canada	6		Norway		
Chili			Scotland	1	
Costa Rica			Spain		
Cuba			Sweden		1
Curaçoa			Switzerland	1	
Denmark					
England	12	1	Total to citizens of foreign countries	33	4
Finland	1				

DESIGNS.

19,332.—HOOK-RACK.—*James W. Campbell*, Germantown, assignor to *The Ferguson Brothers*, New York, N. Y. Application filed August 20, 1889. Serial No. 321,409. Term of patent 3½ years.

19,333.—DOOR-LOCK CASE.—*Rudolphe W. E. Christesen*, New Britain, Conn., assignor to *The Russell & Erwin Manufacturing Company*, same place. Application filed August 27, 1889. Serial No. 322,068. Term of patent 14 years.

19,334.—CURTAIN OR COVER.—*Josef Daubek*, Vienna, Austria-Hungary, assignor to *Mills & Gibb*, New York, N. Y. Application filed August 20, 1889. Serial No. 321,410. Term of patent 3½ years.

19,335.—PIANO-STOOL.—*Elvin B. Dungan* and *James G. Ramsdell*, Philadelphia, Pa. Application filed August 21, 1889. Serial No. 321,530. Term of patent 3½ years.

19,336 and 19,337.—COOKING-STOVE.—*James Dwyer*, Detroit, Mich. Applications filed August 10, 1889. Serial Nos. 320,414 and 320,415. Term of patents 7 years.

19,338.—LAMP OR GAS SHADE.—*Andrew Howard*, Pittsburg, Pa. Application filed August 13, 1889. Serial No. 320,641. Term of patent 3½ years.

19,339.—ELECTRIC-LIGHT SHADE.—*Andrew Howard*, Pittsburg, Pa. Application filed August 13, 1889. Serial No. 320,642. Term of patent 3½ years.

19,330 and 19,331.—CURTAIN OR COVER.—*Heinrich Hackl*, Vienna, Austria-Hungary, assignor to *Mills & Gibb*, New York, N. Y. Applications filed August 14, 1889. Serial Nos. 320,758 and 320,759. Term of patents 3½ years.

19,332.—END-STICK FOR LOCKING UP TYPE.—*Joseph Philip Kerr*, San Jacinto, Cal. Application filed August 16, 1889. Serial No. 321,023. Term of patent 14 years.

19,333.—RUG.—*Giulio Marchetti*, Halifax, county of York, England, assignor to *John Crossley & Sons*, New York, N. Y., and London, England. Application filed September 2, 1889. Serial No. 322,792. Term of patent 3½ years.

19,334.—BACK OF A BRUSH.—*Frank Mauser*, North Attleborough, Mass. Application filed August 21, 1889. Serial No. 321,516. Term of patent 3½ years.

19,335 and 19,336.—RUG.—*Adolph Petzold*, Philadelphia, Pa., assignor to *John Bromley & Sons*, same place. Applications filed August 19, 1889. Serial Nos. 321,177 and 321,178. Term of patents 3½ years.

19,337.—SPOON-HANDLE.—*Frederick E. Prétat*, Waterbury, Conn., assignor to *The Rogers & Hamilton Company*, same place. Application filed August 26, 1889. Serial No. 322,082. Term of patent 7 years.

19,338.—METALLIC FINISHING-PLATE.—*Longley Lewis Sagendorph*, Cincinnati, Ohio, assignor of one-half to *Charles N. Harder*, Philmont, N. Y. Application filed August 17, 1889. Serial No. 321,149. Term of patent 14 years.

19,339.—FLOWER-POT.—*John G. Whilldin*, Philadelphia, Pa., assignor to *The Whilldin Pottery Company*, same place. Application filed August 31, 1889. Serial No. 322,621. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

17,071.—WOOD PULP AND ARTICLES MADE FROM THE SAID PULP AND METAL.—*Konga Aktiebolag*, Konga Tingaryd, Sweden. Application filed August 20, 1889. Used since May 13, 1889.

"The representation of a crowned head."

17,072.—PACKED BUTTER, LARD, OLEOMARGARINE, TALLOW, AND GREASE.—*Belle C. Daily*, Philadelphia, Pa. Application filed April 20, 1889. Used since February 6, 1886.

"The letters 'D. P. Co.'"

17,073.—WOVEN AND KNIT FABRICS OF ALL KINDS.—*Wm. Donaldson & Co.*, Minneapolis, Minn. Application filed November 26, 1888. Used since January 1, 1878.

"The words 'GLASS BLOCK.'"

17,074.—MEDICAL COMPOUND FOR THE TREATMENT OF CATARRH AND HAY-FEVER.—*The J. M. Harding Manufacturing Company*, New York, N. Y. Application filed August 8, 1889. Used since April, 1889.

"Two bust pictures of a man arranged side by side."

17,075.—KNIT WOOLEN, SILK, AND COTTON FABRICS.—*Louis Hermsdorf*, Chemnitz, Saxony, Germany. Application filed August 20, 1889. Used since July 9, 1889.

"The representation of a faceted diamond and radiating rays."

17,076.—GRANULATED SOAP.—*Thomas Hersom*, New Bedford, Mass. Application filed July 1, 1889. Used since November 10, 1884.

"The word 'SAPONE,' with so much of the picture of a kitchen scene, which it surmounts, as is made up by a stove, a wash-tub, and a woman seated in a rocker holding up and looking at a package of Sapone and saying: 'ISN'T THIS NICE! MY WASHING GOING ON ALL THE SAME.'"

17,077.—CHOCOLATE AND CHOCOLATE PREPARATIONS.—*Huyler's*, New York, N. Y. Application filed June 13, 1889. Used since July, 1887.

"The words 'MEXICAN CHOCOLATE' associated with a representation of a medallion having on its face the Mexican coat of arms."

17,078.—MEDICAL PREPARATION FOR PURIFYING THE BLOOD.—*I. G. Kiesow*, Augsburg, Bavaria, Germany. Application filed August 20, 1889. Used since August 23, 1879.

"A heraldic coat of arms, comprising a shield or panel on which three trefoils are arranged, symmetrical scrolls at both sides of said shield, a helmet above the same, and the upper part of the body of a boy above said helmet."

17,079.—MEDICAL COMPOUND FOR EXTERNAL AND INTERNAL USE.—*Monroe & Myers*, Chicago, Ill. Application filed April 1, 1889. Used since January, 1889.

"The word-symbol 'CHICKASAW INDIAN PUL-KER.'"

17,080.—TOKAYER WINE.—*Anton Stein*, New York, N. Y. Application filed July 23, 1889. Used since January, 1880.

"The word 'MEDICINAL,' together with the figure of a man clad in the attire of a Hungarian holding up a glass of wine in his right hand, his left hand thrust in the pocket of his trousers."

17,081.—PUZZLES.—*William E. Taylor* and *George W. Turner*, New York, N. Y. Application filed August 29, 1889. Used since August 1, 1889.

"The word-symbol 'BLOCKS OF FIVE.'"

17,082.—TEA.—*Joseph Tetley & Co.*, London, England. Application filed August 19, 1889. Used since July 10, 1889.

"The representation of an elephant's head and two cases or packages suspended from the trunk."

17,083.—MEDICINE FOR THE CURE OF HEADACHE AND LIVER TROUBLES AND A COUGH CURE.—*Larkin Vanderpool*, Dufur, Oregon. Application filed August 20, 1888. Used since January, 1879.

"The letters 'S. B.'"

LABELS.

6,025.—Title: "BILLER'S SPEEDY CURE." (For a medicine.)—*Hiram N. Biller*, Akron, Ohio. Application filed August 19, 1889.

6,026.—Title: "REVERSIBLE CIRCULAR MIRROR."—*Thomas B. Hicks*, Richmond, Va. Application filed September 7, 1889.

6,027.—Title: "ASH-WALNUT BRAND." (For sheathing-paper.)—*Margaret E. Manahan*, New York, N. Y. Application filed August 21, 1889.

6,028.—Title: "MONTGOMERY'S COMPOUND TAR CONDITION POWDERS."—*G. S. Montgomery & Co.*, Atlantic, Iowa. Application filed September 9, 1889.

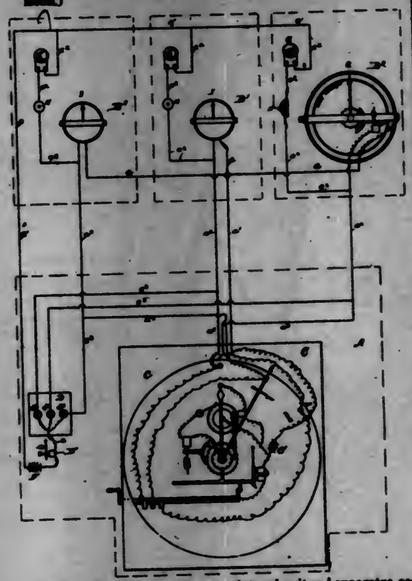
6,029.—Title: "THE MAGIC MOSQUITO BITE CURE AND INSECT EXTERMINATOR."—*Mary F. Sallade*, New York, N. Y. Application filed August 16, 1889. (Trade-Mark Registered.)

6,030.—Title: "ADMINISTRATION PUZZLE."—*William E. Taylor*, Passaic Bridge, N. J., and *George W. Turner*, Brooklyn, N. Y. Application filed August 22, 1889.

PATENTS

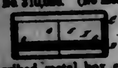
GRANTED OCTOBER 1, 1889.

411,772. HOTEL ELECTRICAL ANNUNCIATOR-CIRCUIT. CHAS G. ANDERSON, Englewood, Ill., assignor to the New Haven Clock Company, New Haven, Conn. Filed July 1, 1889. Serial No. 316,173. (No model.)



Claim.—A system of hotel-annunciator circuit and apparatus, consisting of the combination of a central indicator-box C, its battery C', an annunciator-box in each chamber, in which the circuit stands open when the same is not in operation, individual wires a' from said boxes to the central indicator, a common or base wire d from all of said boxes to said central indicator, the wires d' d^2 d^3, the switch-board D, the wire e, and the battery F, the normally-closed switch or push button H in each room, and the buzzer B, between the switch-board D and battery F, substantially as specified.

411,773. METAL BOX. WILLIAM H. ATTERBURY, Brooklyn, N. Y. Filed May 8, 1888. Serial No. 310,026. (No model.)



Claim.—The herein-described metal box, consisting of the cup-shaped body B, the collar I, fitting within the body, with its ends 4 5 abutting, and its upper edge extending above the body and held in place by a bead 6, which produces frictional engagement between the body and collar, and the cover C, also cup-shaped and adapted to fit over the upwardly-projecting edge of said collar, substantially as described.

411,774. BOLDBACK. RUSSELL C. BABB, Chipley, Fla. Filed Feb. 21, 1888. Serial No. 300,091. (No model.)

Claim.—1. The combination, with the boldback provided with the curved horn, of the curved arm pivoted to the end of the horn and provided with a hook bent to correspond with the curve of the horn, and a double-acting spring secured to the boldback under the said horn and bearing against the extreme end of the hook for holding the curved arm up or down, substantially as set forth.



2. The combination, with the boldback provided with the curved recessed horn having its end bifurcated, of the curved arm pivoted in the said bifurcated end and provided with a hook fitting inside the hollow in the horn, and a spring secured to the boldback under the horn for retaining the hook in the said hollow, substantially as and for the purpose set forth.

3. The combination, with the boldback provided with the curved horn and the hole under the horn, of the curved arm pivoted to the horn and provided with a hook, and a spring secured to the boldback under the horn and provided with a double-acting curved portion engaging with the end of the said hook through the said hole in the boldback, substantially as and for the purpose set forth.

4. The combination, with the boldback provided with the curved horn and the hole under the horn, of the curved arm pivoted to the horn and provided with a hook, and a spring secured to the boldback at one end and provided with a double-acting curved portion projecting through the hole in the boldback and engaging with the end of the said hook, and a stop upon its free end engaging with the edge of the said hole, substantially as and for the purpose set forth.

411,775. ROLLER-SHADE HOLDER. ELIAS BRAND, Chicago, Ill., assignor to the Wyant Manufacturing Company, same place. Filed Apr. 12, 1889. Serial No. 306,948. (No model.)



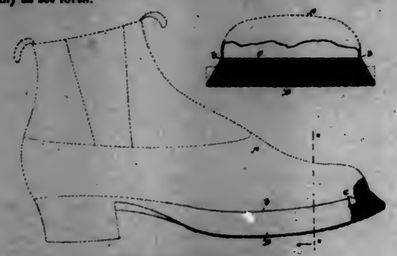
Claim.—1. The sheet-metal roller-shade holder made semicircular, so as to conform to the surface of the roller, and provided at its central portion with stiffening-indentations, substantially as specified.

2. The sheet-metal clamp for roller-shades, made semicircular, so as to conform to the surface of the roller, and provided with central transverse indentations, whereby the longitudinal center of the clamp is rendered stiffer than the edges thereof, substantially as specified.

411,776. BOOT OR SHOE. SAMUEL BEATTIE, Cleveland, Ohio. Filed Sept. 20, 1888. Serial No. 285,927. (No model.)

Claim.—The combination, with upper and substantially square-edge insole, the outer edges of the latter resting against the inner

face of the upper, of the broad sole, the upper outer edge of which is worked up against the upper to a point approximately opposite the upper face of the insole, so as to leave no appreciable ridge projecting beyond the upper or channel between the upper and sole, substantially as set forth.



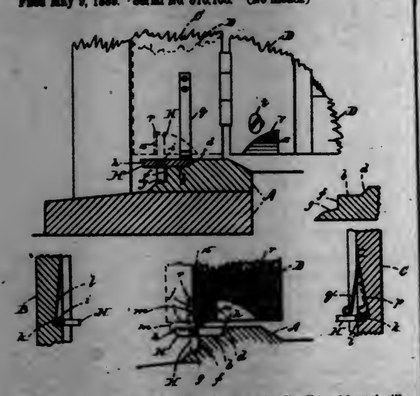
411,777. BUCKLE. FREDERICK D. BOSTWICK, Ripon, Ohio. Filed Dec. 21, 1888. Serial No. 294,234. (No model.)



Claim.—1. The herein-described buckle, comprising the U-shaped side bars B B, connected at their front and rear ends, respectively, by the bars C and C', the transverse bar C^2, arranged below the bar C' and thereby forming a transverse slot *c*, and the transverse bars D, D', and D^2, connecting the horizontal portions of the side bars, the side bar between the bars D and D^2 and the bar D being provided, respectively, with the cuts K and K', all substantially as and for the purpose specified.

2. As an improved article of manufacture, the buckle A, having upturned ends and provided with a transverse slot C at one end and the parallel transverse bars D D' D^2, substantially as and for the purpose specified.

411,778. WEATHER-STRIP. EDWARD BOOTHBY, Watton, Mass. Filed May 9, 1888. Serial No. 310,100. (No model.)



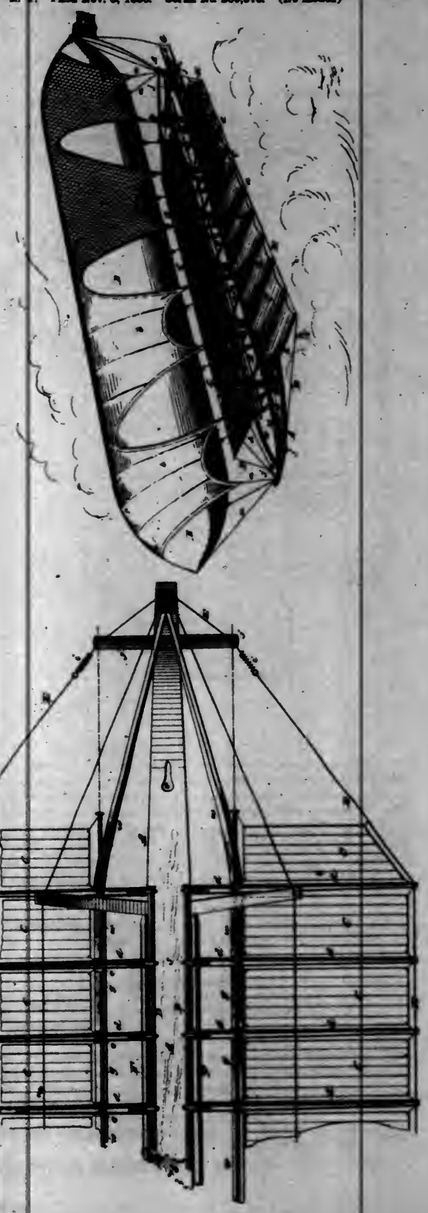
Claim.—1. The combination of a longitudinally-rabbeted sill, a weather-strip pivoted in the door-casing to enter said rabbets, a spring on the casing projecting into the path of said strip, a socket for the spring, a door having a strip-groove in its bottom, a stud for depressing said spring, and a socket in its outer edge having a curved rear wall engaging a stud on the weather-strip when the door is closing, substantially as described.

2. The casings B C and sill A, provided with the rabbets *b f*, in combination with the door D and weather-strip H, pivoted in said casing and provided with the stud *m*, substantially as described.

3. The casings B C, provided with the slots *p l*, sockets *k*, and spring *q*, in combination with the sill A, having the rabbets *b f*, the door D, and the strip H, pivoted in said sockets and provided with the stud *m*, substantially as described.

4. The combinations of the casings B C, having the sockets *k* and slots *l p*, the spring *q*, the strip H, provided with the stud *m*, the sill A, having rabbets *b f*, and the door D, provided with the grooves *r j*, arranged to operate substantially as described.

411,779. FLYING-MACHINE. NICHOLAS H. BORNFELDT, Brooklyn, N. Y. Filed Nov. 3, 1888. Serial No. 289,978. (No model.)



Claim.—1. In a flying-machine, the combination of a car-body with a series of laterally-projecting flexible rods *d d*, and a series of wings C C, arranged between said rods, each of said wings being attached to one of said rods only, substantially as and for the purpose described.

2. In a flying-machine, the combination of the laterally-extending flexible rods *d* with the series of sails $b\ b^1\ b^2$, &c., arranged between said rods to constitute wings C, each of said sails being fastened, on a line parallel to said rods *d*, directly to one of the rods *d* only and along one longitudinal edge only, all for the purpose of enabling the sails to overlap and open alternately, and also to bulge, substantially as specified.

3. The combination of the car-body A with the laterally-projecting flexible rods *d d*, the handle-bars D, and outer continuous flexible braces E, with the wings C, placed between said rods *d*, each wing being fastened to one of the two rods only between which it is placed, substantially as herein shown and described.

4. The wing C, composed of sails $b\ b^1\ b^2$, &c., and of the cords $l\ l^1\ l^2$, &c., each sail having a single loop *n* at the outer end and several loops *o o* at the inner end, substantially as herein shown and described.

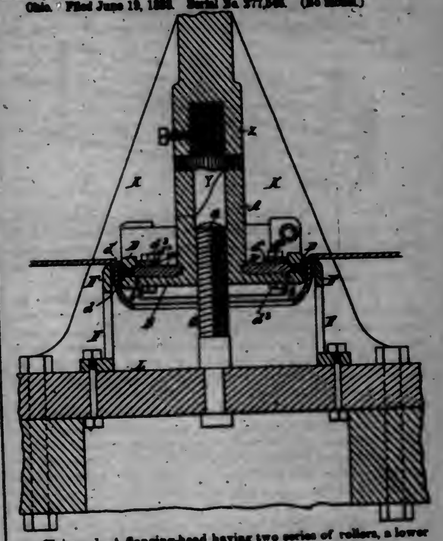
5. The combination of the flexible wing-rods *d d*, with their connecting-bar D, at the inner ends connecting-rope E, at the outer ends connecting-brace *h*, near their outer end sails $b\ b^1\ b^2$, &c., their end loops *n o o*, inner rod *p*, for connecting with the loops *o o*, and springs *q*, holding the rod *p*, substantially as and for the purpose described.

6. The wing C, composed of sails $b\ b^1\ b^2$, &c., that are held along one longitudinal edge only, in combination with the springs *q* at the inner ends of said sails, acting longitudinally on the same, as described.

7. The combination of the wings C, each having for its base one straight flexible rod *d*, which is hinged to the car-body, with the car-body and with the outer continuous flexible brace E, that connects with the rods *d* and with the car-body, as described.

8. The pivoted wing-rods *d d*, combined with the car-body A and with the outer flexible brace E, whose ends are joined to the car-body at points aligned with the hinge-centers *e* of the rods *d*, as specified.

411,780. FLANGING-MACHINE. JOHN B. BROWNELL, Dayton, Ohio. Filed June 19, 1888. Serial No. 277,548. (No model.)



Claim.—1. A flanging-head having two series of rollers, a lower series describing a lesser circle and an upper series describing a larger circle, substantially as and for the purposes specified.

2. A flanging-head having a series of rollers mounted horizontally and a series of rollers mounted vertically, substantially as and for the purposes specified.

3. A flanging-head having two series of rollers, the upper series projecting out further than the lower series, substantially as and for the purposes specified.

4. A flanging-head having two series of rollers, the lower series describing a smaller circle and the upper series describing a larger circle, the rollers of the upper series being more beveled or rounded than those of the lower series, substantially as and for the purposes specified.

5. A flanging-head provided with the vertical rollers D and the horizontal rollers E, substantially as and for the purposes specified.

6. A flanging-head having the stem A, plate B, arms D', rollers D, and clamps holding the arms D' in place, substantially as and for the purposes specified.

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7. A flanging-head having the stem A, plate B, arms D', received in recesses in the stem A, rollers D, and clamps holding the arms D' in place, substantially as and for the purposes specified.

8. A flanging-head having the stem A, plate B, arms D', received in recesses in the stem A, rollers D, plates d^3, and bolts d^4, substantially as and for the purposes specified.

9. A flanging-head having the stem A, plate B, lugs C, and vertical rollers E, attached to lugs C, substantially as and for the purposes specified.

10. A flanging-head having the stem A, plate B, lugs C, angles c^4, provided with arms c' and c^2 and attached to lugs C, and rollers E, pivoted to arm c', substantially as and for the purposes specified.

11. A flanging-head having the stem A, plate B, arms D', rollers D, the axes of said rollers being set in advance of the radii of the plate B and parallel to the said radii, and clamps holding arms D' in place, substantially as and for the purposes specified.

12. In a flanging-machine, the head having rollers D, whose respective axes are placed in advance of the radii or diameter of said head and parallel thereto, substantially as and for the purposes specified.

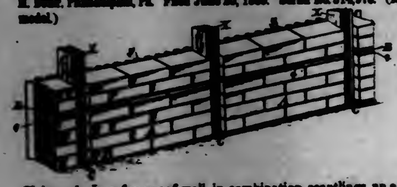
13. In a flanging-machine, the head having rollers E, whose axes are respectively located in advance of the diameter of said head and parallel thereto, substantially as and for the purposes specified.

14. In a flanging-machine, the head having rollers D and E, whose axes are respectively located in advance of the diameter of said head and parallel thereto, substantially as and for the purposes specified.

15. In a flanging-machine, the head having stem A, plate B, lugs C, angles c^4, rollers E, arms D', rollers D, and clamps for arms D', substantially as and for the purposes specified.

16. In a flanging-machine, the combination of the flanging-head provided with a female screw and the two series of rollers, the screw G, and support F, substantially as and for the purposes specified.

411,781. CONSTRUCTION OF FIRE-PROOF BUILDINGS. GEORGE H. BUZZ, Philadelphia, Pa. Filed June 20, 1888. Serial No. 314,973. (No model.)



Claim.—1. In a fire-proof wall, in combination, scantlings, an exterior metallic surface secured to said scantlings, an inner wall of brick or other suitable material, said wall projecting beyond said scantlings, and mortar or other suitable material filled in the space in the wall formed by said scantlings.

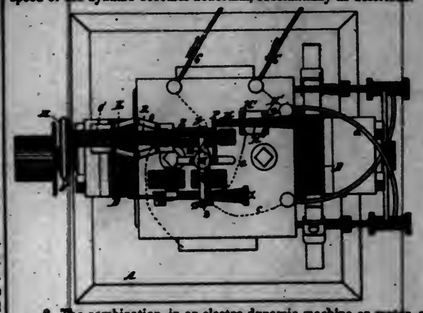
2. In a fire-proof wall, in combination, scantlings, an exterior metallic surface secured to said scantlings, an inner wall of brick or other suitable materials, stretchers placed between said scantlings at intervals in said wall and to which the exterior metallic surface may be secured, the wall projecting beyond said scantlings and stretchers, and mortar or other suitable material filled in the space in the wall formed by said scantlings and stretchers.

3. In a fire-proof wall, in combination, an exterior corrugated metallic surface secured to said scantlings, an inner wall of brick or other suitable material, said wall projecting beyond said scantlings, and mortar or other suitable material interposed between the inner wall and the corrugated metallic exterior surface, and mortar or other suitable material filled in the spaces in the interior wall formed by said scantlings.

4. In a fire-proof wall, in combination, scantlings, an exterior corrugated metallic surface secured to said scantlings, an inner wall of brick or other suitable material, stretchers placed between said scantlings at intervals in said wall and to which the exterior metallic surface may be secured, the wall projecting beyond said scantlings and stretchers, and mortar or other suitable material filled in between the interior wall and the corrugated metallic exterior surface and in the spaces in the interior wall formed by said scantlings.

411,782. GOVERNOR FOR ELECTRO-DYNAMIC MACHINES. GEORGE F. CARD, Covington, Ky., assignor to the George F. Card Manufacturing Company, Cincinnati, Ohio. Filed Oct. 20, 1888. Serial No. 288,264. (No model.)

Claim.—1. The combination, in an electro-dynamic machine or motor, of the driving-circuit, the normally-open low-resistance differential circuit having two pairs of rheophores at its terminals, one of each pair of rheophores being movable and the other relatively stationary, the centrifugal speed-regulator, and connections between the same and the movable rheophores, whereby the respective pairs of rheophores will be caused to contact with variable degrees of pressure and thereby vary the resistance of the differential circuit when the speed of the dynamo becomes abnormal, substantially as described.

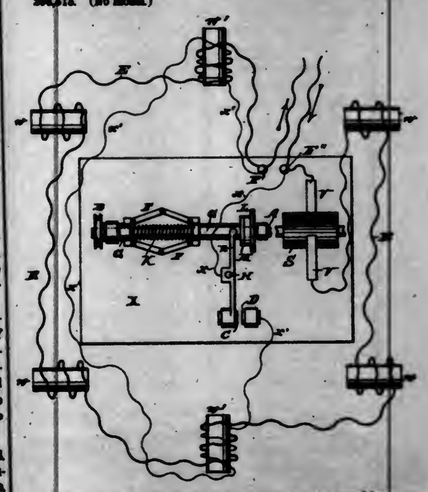


2. The combination, in an electro-dynamic machine or motor, of the driving-circuit, the normally-open differential circuit having the carbon rheophores at its terminals, one of which is movable, and the centrifugal speed-governor connected to the movable carbon rheophore, and thereby adapted to vary the resistance of the differential circuit at abnormal speeds, substantially as described.

3. In an electro-dynamic machine or motor, the combination of the armature, the centrifugal speed-governor revolable synchronously therewith, the field-magnets having the differential circuit wound in the reverse direction to the drive-circuit, said differential circuit having the vibrating terminal connected to and operated by the governor, and the opposing relatively stationary terminals on opposite sides of the vibrating terminal, substantially as described.

4. In an electro-dynamic machine or motor, the combination of the centrifugal speed-governor, the field-magnets having the differential circuit wound in the reverse direction to the drive-circuit, said differential circuit having the vibrating terminal operated by the governor, and the opposing terminals on opposite sides thereof, and the gage to limit the play of the vibrating terminal, substantially as described.

411,788. GOVERNOR FOR ELECTRO-DYNAMIC MACHINES. GEORGE F. CARD, Covington, Ky., assignor to the George F. Card Manufacturing Company, Cincinnati, Ohio. Filed Feb. 1, 1889. Serial No. 298,318. (No model.)



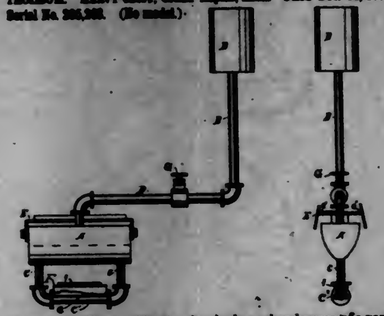
Claim.—1. In a governor for an electro-dynamic machine or motor, the combination, with a differential neutralizing circuit, of an elastically-pivoted lever and two carbon points for making or breaking the differential circuit, so arranged that a velocity of the machine beyond the maximum fixed moves the lever and closes the circuit through the carbon points until the velocity is reduced, substantially as and for the purpose described.

2. In a governor for an electro-dynamic machine or motor provided with a differential or neutralizing circuit, the carbons C D, one of which is stationary and the other attached to a lever E, said lever pivoted at or near its center and actuated by the regulator F to govern the speed of the machine, substantially as and for the purpose described.

3. The lever E, elastically pivoted at or near its center, in the manner described, in combination with a centrifugal regulator operating to close the differential circuit at speeds above the maximum, substantially as and for the purpose described.

4. In a governor for an electro-dynamic machine or motor provided with a differential or neutralizing circuit, the regulator F, in combination with the collar G' and non-conducting disk M, and lever E, carrying the carbon C, substantially as and for the purpose described.

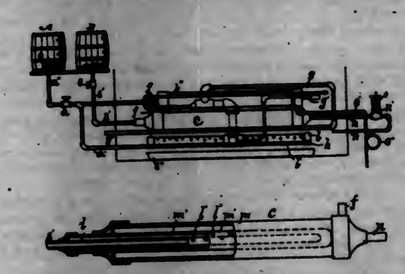
411,784. APPARATUS FOR VAPORIZING AND BURNING PETROLEUM. HARVY CLOSE, Grand Rapids, Mich. Filed Dec. 31, 1888. Serial No. 295,263. (No model.)



Claim.—1. The combination, in a hydrocarbon-burner, of a vaporizer provided with an oil-conductor pipe, an oil-tank, a valve, and a depending vapor-pipe having a small orifice for the escape of vapor with an adjustable bonnet fitting snugly to the vapor-pipe, open at the ends, and provided with a slot for the passage of the burning vapor, substantially as and for the purpose set forth.

2. The combination, in a hydrocarbon-burner, of a vaporizer, an oil-tank, an oil-pipe, a valve, and a depending vapor-pipe having a small hole for the escape of vapor with an adjustable bonnet upon the vapor-pipe, arranged to be thrown from side to side and having a slot for the passage of the burning vapor, and a bonnet pivoted to the ends of the vaporizer, provided with depending wings and long narrow apertures, substantially as and for the purpose set forth.

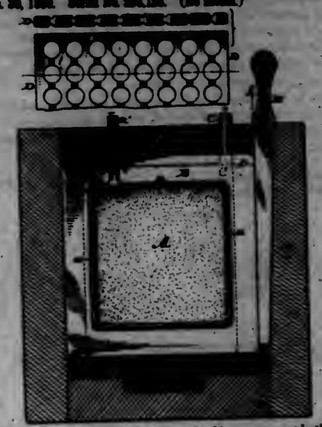
411,785. APPARATUS FOR VAPORIZING AND BURNING CRUDE OIL. GEORGE W. CRAWFORD and WILLIAM A. REED, Kenton, Ohio. Filed Oct. 25, 1888. Serial No. 288,154. (No model.)



Claim.—1. In a hydrocarbon generator and burner, the retorts for supplying superheated steam, consisting of the outside cylinder, the two inside perforated cylinders d m', and the pipe f and pipes n, in combination with the automatic spring-valve o s', all as shown and described.

2. In a hydrocarbon generator and burner for use in a stove, and having oil and water reservoirs connected therewith, the combination of the superheating steam-retort c with internal concentric perforated cylinders d m', and pipe f with diminished nozzle f', and pipe n with automatic spring-valve o s', the oil-retort c' with pipe g', and pipe o' with trap o'', and the air-supply pipe g, mixer h, down-pipe g'', and burners with connecting supply-pipes, all constructed and arranged as shown and described.

411,786. METHOD OF FORMING PLATES FOR SECONDARY BATTERIES. SAMUEL C. C. CURRIE, Philadelphia, Pa., assignor to the United Electric Improvement Company, Gloucester City, N. J. Filed Jan. 30, 1888. Serial No. 262,122. (No model.)



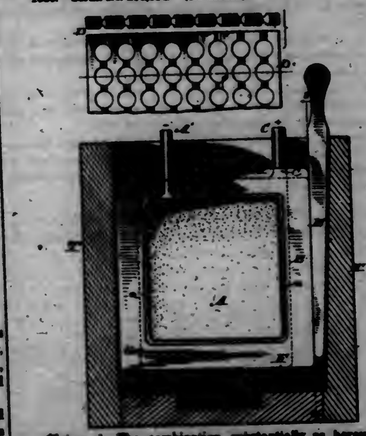
Claim.—1. The hereinbefore-described improvement in the method of forming elements of electrical accumulators, which consists in converting the plates into the peroxide state while confined against expansion, substantially as set forth.

2. The hereinbefore-described improvement in the method of forming elements of electrical accumulators, which consists in converting the plates into the peroxide state while they are confined at their edges against expansion, substantially as set forth.

3. The hereinbefore-described method of making plates or elements for electrical accumulators, which consists in reducing the metal to a soft spongy state and then forming it while confined against expansion, substantially as set forth.

4. The hereinbefore-described method of making plates or elements for electrical accumulators, which consists in condensing the mass constituting the body of the plate by the force exerted by the expansive action of the forming process itself, in contradistinction to external mechanical pressure.

411,787. APPARATUS FOR FORMING SECONDARY-BATTERY PLATES. SAMUEL C. C. CURRIE, Philadelphia, Pa., assignor to the United Electric Improvement Company, Gloucester City, N. J. Filed Jan. 31, 1888. Serial No. 262,304. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the plate of active material, its inclosing-rim, the closely-fitting detachable inclosing-frame, and the electrical circuit-connections constituting it an electrode, whereby the plate may be removed or inserted without affecting the electrical contents of the elements.

2. The combination, substantially as hereinbefore set forth, of a

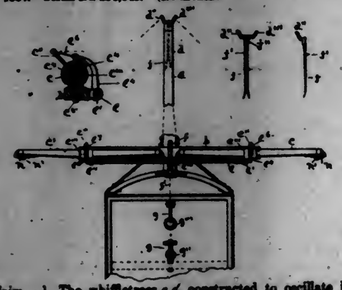
series of compound negative elements consisting of plates of active material, their rims, and inclosing-frames with interposed plain plates constituting the positive elements of the accumulator.

2. An accumulator separating-plate constructed, as described, of insulating material with transverse perforations and vertical longitudinal grooves to permit of free circulation of fluids and gases.

4. The combination, substantially as hereinbefore set forth, of the compound negative plates, the positive plates, and the interposed grooved and perforated insulating-plates.

5. The accumulator-plate-forming apparatus herein set forth, consisting of the combination of the cell or tank, the elements or plates, their insulating-plates, and the wedges for locking the removable parts in position.

411,788. WAGON. ALFRED B. DALE, Rhinebeck, N. Y. Filed Dec. 15, 1887. Serial No. 258,068. (No model.)



Claim.—1. The whiffletrees *c c'*, constructed to oscillate in the ring-bolts c^3 by the levers c'', in combination with the partially-rotary rod *e*, attached to the evener *b*, the ends of the rod being provided with the crank-arms e^1, connected to the levers c'', and with the lever *f*, by which the rod is partially rotated, the said device detaching the harness-traces from the whiffletrees, as set forth.

2. A wagon-tongue provided with a slip-rod *j*, with spring divisions on its socket end and with holdback-loops on its outer end, whereby a retention of the rod in its socket is had, as set forth.

3. A wagon-tongue provided with a slip-rod *j* at its outer end, in combination with the tenon j^x and with the slot j^w in the ferrule d', whereby the rod is prevented from rotation.

4. The holdback-rod *j*, constructed in two halves, one half for each horse of a double team, there being disconnected loops on the outer ends of each half for the breast-strap of each horse, and the rod connected when in the socket and falling apart when the rod is out of the socket.

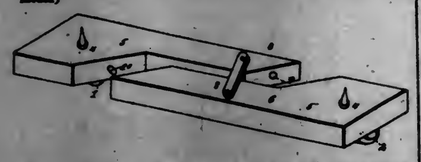
5. The lever *g* and its connecting strap, cord, or rod f', in combination with the lever *f*, rod *e*, cranks e^1, and oscillatory whiffletrees, as set forth.

6. The hook-shaped socket *a* in the lever *f*, provided with the spring a', whereby the lever is adapted to the ready attachment and detachment of cord, chain, or rod, as set forth.

7. In a single-horse vehicle, the lever *g* and its chain, strap, or rod f', in combination with the lever e^4, rod or connecting link and lever e^5, and partially-rotating whiffletrees, as set forth.

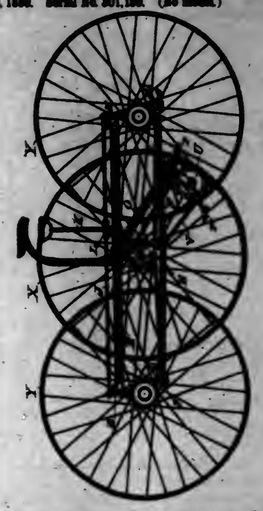
8. The rod *g* and ring g', attached to the driver's seat, in combination with the lever *g* and connecting rod, cord, or chain f', whereby the means is provided for the ready operation of the detaching device, as set forth.

411,789. DETACHABLE AND ADJUSTABLE ROLLER. JOHN L. DELANY, Tyler, Tex. Filed July 30, 1888. Serial No. 318,162. (No model.)



Claim.—In a device of the character described, the combination, with the sections 5 and 6, arranged parallel to each other and adapted to have a combined longitudinal and lateral motion with reference to each other, as described, rollers located upon the under side of said sections, and the spurs on the upper faces at each end, of the braces 7 and 8, located, respectively, upon the lower and upper faces of the device and diagonally across the same, and pivoted at each end to said sections 5 and 6, the openings 9 provided on said sections, and the dowels 10 on said sections opposite to the openings 9, and adapted to enter the same when the sections are closed, for the purposes specified.

411,790. TRICYCLE. ALLEMUS G. DOWDS, Charlevoix, Mich. Filed Feb. 18, 1889. Serial No. 301,160. (No model.)



Claim.—1. A tricycle having a frame composed of the pieces A, B, D, and O, a driving mechanism consisting of a driving-shaft C, separated into two sections by a compensating or differential gear in which a spherical universal joint is used, said driving-shaft C having the track-wheel X solidly attached to one end and the section *a* of the telescopic crank-arm H to the other, a telescopic crank H, composed of the sections *a* and *b*, the section *b* being provided with a spherical or globe bearing *c*, and thereby attached to the connecting-rod F, a connecting-rod F, communicating with the shaft C by means of the telescopic crank-arm H, said rod F being provided with a spherical journal-box to receive the globe-bearing *c*, and being connected pivotally at either end with a journal-box or ball-bearing journal-case *g*, inclosing the crank-axles G G, crank-axles G G, journaled in the steering-forks E E and having solidly attached to them outside of E E the steering track-wheels Y Y, three track-wheels of equal diameter X and Y Y being respectively solidly attached to the shaft C and the axles G G, all being driven, a steering mechanism consisting of the arms M M, solidly attached to the steering-forks E E, but extending in opposite directions, the rod J, connecting said arms, and the steering-standard K, solidly attached to the ratchet-wheel L, which is adapted to engage a ratchet-face upon J, all substantially as and for the purpose above specified.

2. In a tricycle, three track-wheels of equal diameter X and Y Y, the wheels Y Y being also steering-wheels, and all being adapted to be driven by means of the shaft C, the crank H, and the connecting-rod F, substantially as and for the purpose above specified.

3. In a tricycle, the use of a connecting-rod F, pivotally attached to journal-boxes or ball-bearing cases *g g*, which inclose the journals of the axles G G, and provided with a spherical journal-box *d*, adapted to receive the globe-bearing *c*, substantially as and for the purpose above specified.

4. In a tricycle, a universal-joint connection between the rod F and the axles G G, consisting of the forked ends of F, fastened pivotally to the journal-boxes or ball-bearing cases *g g* by the pins *f* and *f'* at right angles to the axles G G, the pin *f* having a screw-thread and adapted to be locked in any suitable manner, as by the set-screw *r*, the journal-boxes *g g*, adapted to inclose the axles G G, adapted to receive the ends of the pins *f* and *f'*, substantially as and for the purpose above specified.

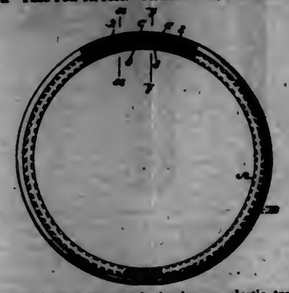
5. In a tricycle, the combination of the connecting-rod F, the universal joint formed by the pivotal connection of F with the journal-box *g*, the steering-forks E E, and the steering track-wheels Y Y, substantially as and for the purpose above specified.

6. A telescopic crank H, consisting of the sections *a* and *b*, *b* having a globe-bearing *c*, substantially as and for the purpose specified.

7. In a tricycle, the combination of the shaft C, the telescopic crank H, and the connecting-rod F, as and for the purposes above specified.

8. A spherical universal joint consisting of the spherical journal *h*, perforated by the double-V-shaped slot *l* in the axis of the shaft R, adapted to receive and work upon the pin *m*, the pin *m* rectangular in section and tapering from end to end with conical sections at either end, adapted to be journaled in the caps *n n* and adjusted by the set-screws *o o*, the spherical journal-box of sections A and A', A being attached to the shaft Q and A' being provided with an aperture *q* of any desired diameter, the two sections A and A' being adapted to be fastened together, as by bolts or screws *i i*, with a compensating or differential gear consisting of the mesh or friction gears S S, or equivalents, upon a secondary shaft R, journaled at one end in fixed journal-boxes T and connecting with a main shaft Q, substantially as and for the purpose above specified.

411,791. VEHICLE-WHEEL TIRE. HOWARD M. DU BOIS, Philadelphia, Pa. Filed Feb. 13, 1889. Serial No. 300,312. (No model.)



Claim.—1. A tire for a vehicle, having an elastic tread with a sectional band within the same, the ends of the sections having loops and the sides of the tire having coincident openings, and keys passing through loops and openings, said parts being combined substantially as described.

2. In a vehicle-tire, an elastic tread having a strap, band, or ring of metal or other material within the same, and keys which are passed through the tire proper and the ends of said band, substantially as described.

3. An elastic tread having a ring inclosed or embedded therein, the ends of said band being provided with loops to receive keys, whereby said ends may be brought together and the tread contracted, substantially as described.

4. A channeled tire and an elastic tread, in combination with a ring inclosed or embedded in said tread, and keys passing through the tire, the tread, and the ends of said ring, whereby the tread may be firmly held on the tire, the parts named being combined substantially as described.

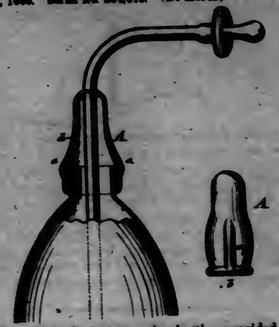
411,792. RUBBER SYRINGE. ANTON C. BOEHME, New York, assignor to the Ideal Rubber Company, Brooklyn, N. Y. Filed Dec. 19, 1888. Serial No. 294,078. (No model.)



Claim.—1. A rubber syringe composed of an elastic bulb having a contracted neck, an elastic cap made integral with the neck of the bulb, and a discharge-tube inserted into said neck, substantially as set forth.

2. A rubber syringe composed of an elastic bulb having a contracted neck, an elastic cap made integral with said neck, said neck being extended below the top of the cap, and a discharge-tube inserted into said neck, substantially as set forth.

411,798. NURSING-BOTTLE NIPPLE. ANTON C. BOEHME, New York, assignor to the Ideal Rubber Company, Brooklyn, N. Y. Filed Dec. 27, 1888. Serial No. 294,618. (No model.)



Claim.—A nipple for nursing-bottles, provided with an exterior rib extending upwardly from the rim of the nipple, a vent-passage in said rib, and a flap-valve at the upper and inner end of the vent-passage, said valve being made integral with the nipple, substantially as set forth.

411,794. NURSING-BOTTLE NIPPLE. ANTON C. BOEHME, New York, assignor to the Ideal Rubber Company, Brooklyn, N. Y. Filed Dec. 27, 1888. Serial No. 294,620. (No model.)



Claim.—A nipple for nursing-bottles, provided with an exterior elastic cap, an interior tubular stopper, and a vent-passage passing through said stopper and provided with a valve at the inner end of the vent-passage, said valve being made integral with the nipple, substantially as set forth.

411,795. WATER-BOTTLE STOPPER. ANTON C. BOEHME, New York, assignor to the Ideal Rubber Company, Brooklyn, N. Y. Filed Mar. 8, 1889. Serial No. 302,502. (No model.)



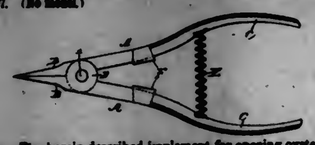
Claim.—The combination, with the interiorly-threaded neck of a combined rubber fountain and water-bottle, of a stopper having a hollow exteriorly-threaded cheek, an interiorly-threaded discharge-nozzle above the head of the cheek, a link or bail pivoted to said head, and a screw-plug fitting into the nozzle and provided with a headed shank that is guided in the perforated upper end of the pivot link or bail, substantially as set forth.

411,796. PRIMER. STEPHEN H. RUSSELL, London, England. Filed May 16, 1888. Renewed Feb. 11, 1889. Serial No. 299,893. (No model.)



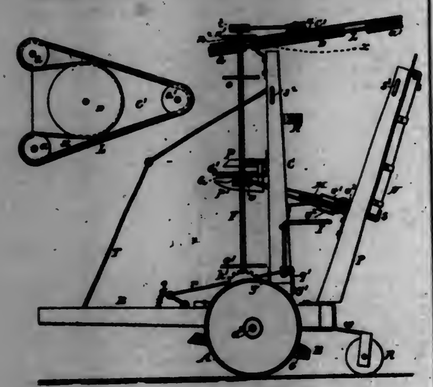
Claim.—In combination with the customary cup containing the fulminate, the within-described anvil part in the form of a sleeve embracing said cup, and having rigid internal fingers with sharp edges to penetrate the fulminate, substantially as hereinbefore specified.

411,797. IMPLEMENT FOR OPENING OYSTERS OR CLAMS. ANDREW F. FARRELL, Albany, N. Y. Filed Mar. 30, 1889. Serial No. 304,697. (No model.)



Claim.—The herein-described implement for opening oysters and other bivalves, the same comprising a pair of arms which are pivoted together near one end in such manner that a closing movement at one end of said arms will reciprocally produce an opening movement at the opposite end of the same, said arms having at one end a pair of chisel-pointed jaws, and at the opposite end a pair of handles by which said implement is operated, said handles being provided with oppositely-located cutters, and said cutters and jaws located at opposite sides of the pivotal center, and an interposed spring arranged to normally hold said jaws in a closed condition, substantially as herein specified.

411,798. CANE OR CORN HARVESTING MACHINE. HENRY FAHS, Middletown, Ind. Filed July 6, 1889. Serial No. 316,719. (No model.)



Claim.—1. In a harvesting-machine for corn and cane, the combination, with a frame, of a platform provided with a cutter formed of two blades, one of which is pivoted, a vertical rotative shaft provided with two cranks, one of which is connected with said pivoted blade, a trigger formed of a bent rod which extends over the cutter and is connected with one of said cranks and with the platform, a mutilated gear-wheel on said rotative shaft, and mechanism to engage the same, substantially as and for the purposes described.

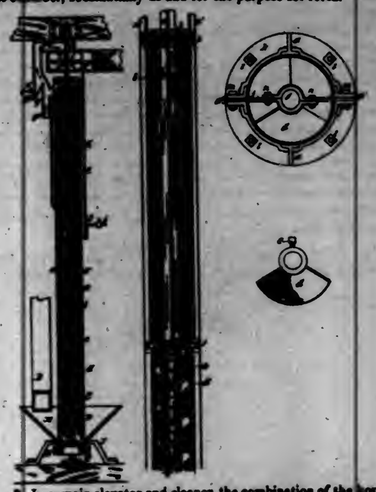
2. The combination, with a platform provided with the cutter having a fixed blade *b* and a pivoted blade *b'*, of the trigger *f*, a vertical shaft *d*, provided with two cranks *c c'*, one of which is connected with the trigger and the other with said pivoted blade, a mutilated gear-wheel *d'* on shaft *d*, and driving mechanism to engage said gear-wheel, substantially as set forth and described.

3. The combination, with rope L and a frame provided with pulleys D, *a*, and *a'*, of an elevator provided with an endless carrying-belt and an intervening reel which is adapted to transfer stalks from said frame to the elevator, substantially as set forth and described.

411,799. GRAIN ELEVATOR AND CLEANER. ANTON FELP, Cedar Rapids, Iowa. Filed May 7, 1889. Serial No. 309,982. (No model.)

Claim.—1. In a combined grain elevator and cleaner, the combination of a vertical spiral elevator, an inclosing-cylinder perforated near the lower end for the admission of air and near the upper end for the escape of dust, the middle portion being imperforate, a hopper at the lower end of said cylinder and elevator for the admission of grain thereto, and a suitable outlet at the top, substantially as described.

2. The combination, in a grain elevator and cleaner, of an elevator-column and worm, substantially as described, a hopper communicating with said elevator at the bottom, a dust-chamber surrounding the upper perforated portion of the elevator-column, an outlet near the top thereof for the grain and an outlet for dust near the bottom, and a suction-fan communicating with the upper portion of said dust-chamber, substantially as and for the purpose set forth.

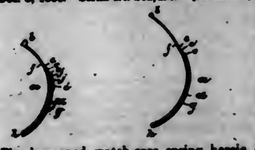


3. In a grain elevator and cleaner, the combination of the hopper A, elevator-column C, composed of perforated sections at the top and bottom and intermediate imperforate sections, worm or conveyer D, fan F, and dust-chamber G, having trap-doors *h h'*, outlets *g g' g''*, and air-passage *g'''*, all substantially as and for the purpose set forth.

4. In a grain elevator and cleaner, the herein-described column, composed of sections suitably bolted together, the lower and upper sections being perforated for the admission of air, and the upper one also perforated for the escape of dust, and the middle one imperforate, each section being composed of a cylindrical drum secured to posts of angle-iron *a a* and *a' a'*, and these posts to terminal coupling-rings *k*, substantially as and for the purpose set forth.

5. The combination, in an elevator and cleaner, substantially as described, of the cylindrical tube or drum *b c*, posts *a a'*, terminal rings *k k*, and transversely-mounted box *j*, all substantially as and for the purpose set forth.

411,800. WATCH-CASE SPRING. JAMES H. FLEMING, Newark, N. J. Filed Dec. 3, 1888. Serial No. 292,490. (No model.)



Claim.—1. The improved watch-case spring herein described, consisting of a sheet of spring metal doubled as described, one end being soldered to the face of said spring and the other being provided with a laterally-projecting lip or spur, substantially as and for the purpose set forth.

2. The improved watch-case spring herein described, consisting of a strap of sheet metal doubled on itself and forming a longitudinal slot to receive the holding-pin, one end of said spring being provided with a lip or spur, and the opposite end being soldered to the face of said spring, substantially as and for the purposes set forth.

3. The improved watch-case spring herein described, consisting of a spring-metal strap bent on itself, one end being corrugated and soldered to the face of said strap and the other end being provided with a lip or spur, substantially as and for the purposes set forth.

4. The improved watch-case spring herein described, consisting of parts *d f*, forming a longitudinal slot, the part *d* having a series of corrugations forming with the part *f* pin-receptacles, substantially as and for the purposes set forth.

5. The improved watch-case spring herein described, consisting of parts *d f*, one of which is provided with a lip *b*, and the other of which is bent, as at *e*, and soldered to the first, substantially as and for the purposes set forth.

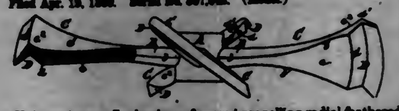
411,801. WIRE HOLDER AND INSULATOR. JOHN B. FLEMMER, Dayton, Ohio. Filed Mar. 16, 1889. Serial No. 303,649. (No model.)

Claim.—1. As a new article of manufacture, the wire-holder comprising a body with a longitudinal groove to receive insulators and the screw as integral part thereof, and the binding-screws *f f*, substantially as shown and described.



2. The metallic holder A, with groove and screw, in combination with the insulating blocks B C, provided with transverse notches, substantially as set forth.

411,802. SCREW-PROPELLER. DAVID FERRIS, Philadelphia, Pa. Filed Apr. 19, 1889. Serial No. 307,962. (Model.)



Claim.—A propeller having a forward propelling radial feathered or spiral surface *c*, terminated by a spiral furrowed end formation D, and a backward propelling radial spiral surface *c'*, terminated with a spiral reserved surface *c''*, substantially as and for the purpose described.

411,803. THRASHING-MACHINE. JOSEPH GALLAHER, Mansfield, Ohio, assignor to The Aultman & Taylor Company, same place. Filed Jan. 7, 1889. Serial No. 295,693. (No model.)

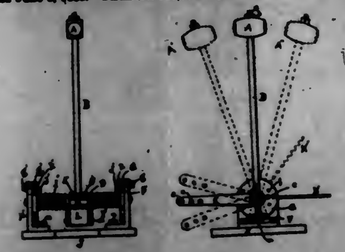


Claim.—1. The combination, with the straw-carrier of a thrashing-machine and the straw-cutting cylinder and its concave, of the steeply-inclined toothed feeder fixing the carrier and receiving therefrom the crank-shaft connected to the upper end thereof, to give a forward and downward movement to the feeder for causing it to grasp the straw coming from the carrier and to crowd the same into the bite of the cutting-cylinder, substantially as described.

2. The combination, with the straw-carrier and the straw-cutting cylinder B and its concave, of the steeply-inclined reciprocating toothed feeder fixing the cylinder and carrier, the crank-shaft connected with the upper end of said feeder for actuating it, and inclined ways for guiding the lower end of said feeder, whereby it is made to move forward and downward in its operative stroke for adapting it to seize and force the straw to the action of the cutting-cylinder, as described.

3. The combination, with the straw-carrier and the straw-cutting cylinder B, of the steeply-inclined reciprocating toothed feeder D, fixing the cylinder and carrier, and the crank-shaft, inclined ways, and spring for actuating and giving the desired movement to said feeder, substantially as described.

411,804. BELL-STRIKING APPARATUS. THOMAS F. GAYNOR, Louisville, Ky., assignor to the Gaynor Electric Company, same place. Filed June 6, 1889. Serial No. 313,207. (No model.)



Claim.—1. In a bell-striking apparatus, the combination of an angle-shaped hammer-lever to one end of which a hammer is secured, and said lever being provided with a pivot-shaft, a base-plate provided with two standards each having a bearing for said pivot-shaft and each having a concentric adjusting-slot therein, and two spiral tension-springs axially arranged around said pivot-shaft, one end of each of which impinges against said hammer-lever, the other end of each of which is provided with an adjustable bolt-connection in one of said standards to each standard, substantially as specified.

2. In a bell-striking apparatus, the combination of an angle-shaped hammer-lever to one end of which a hammer is secured, and being provided with a pivot-shaft, a base-plate provided with two standards, each having a bearing for one of the ends of said pivot-shaft and each having a concentric adjusting-slot, and two tension-springs arranged axially around said pivot-shaft, one end of each of which impinges against said hammer-lever, the other end of each of which is provided with an adjusting-disk which is secured thereto, and which is pivoted upon a hub on one of said standards, and having a concentric bolt adjustment in the adjusting-slots in said standards, substantially as specified.

3. In a bell-striking apparatus, the combination of an angle-shaped hammer-lever to one end of which a hammer is secured, said lever being provided with a spring-pin, and being also provided with a pivot-shaft, two spiral springs, each provided with a loop end and a straight end, the latter being adapted to impinge against the spring-pin aforesaid, and being arranged axially upon the aforesaid pivot-shaft, two adjusting-disks, each of which is provided with a spring-bolt hole, adjusting-bolt holes, and a central bearing-hole, spring-holes adapted to secure the spiral tension-springs through their looped ends to the aforesaid disks through the bolt-holes therein, a base-plate having two standards secured thereto, each of which is provided with a bearing for the aforesaid pivot-shaft, and which is also provided with a hub-bearing adapted to fit the central bearing-hole of one of the aforesaid disks, and each of which is also provided with a concentric adjusting-bolt-hole slot, two adjusting-bolts, one of which extends through the slot in one of the aforesaid standards, and the other bolt similarly arranged with the other standard, and by means of which one of the aforesaid disks is adjustably secured to said standard, and an adjusting-lever adapted to fit holes in the peripheries of said adjusting-disks, substantially as specified.

4. In a bell-striking apparatus, the combination of an angle-shaped hammer-lever to one end of which a hammer is secured, and being provided with a pivot-shaft, two adjusting tension-springs, a base-plate having two standards, each of which has a bearing for the aforesaid pivot-shaft and also a concentric adjusting-slot, and two combined spring and adjusting bolts, one of which is adapted to adjustably secure the outer end of one of the aforesaid tension-springs through the concentric slot in one of the said standards to such standard, and the other to similarly secure the other spring, substantially as specified.

5. In a bell-striking apparatus having a hammer-lever to which a hammer is secured, and provided with a pivot-shaft, which shaft is mounted in two bearing-standards, in combination therewith, two spiral hammer-lever springs arranged axially around said pivot-shaft, and which are provided with a radial bolt adjustment upon said standards, substantially as specified.

6. In a bell-striking apparatus having a hammer-lever to which a hammer is secured, and provided with a pivot-shaft, which shaft is mounted in two bearing-standards, in combination therewith, two spiral hammer-lever springs arranged axially around said pivot-shaft, the outer end of each of which projects outwardly from the shaft, so as to admit of being secured to an adjusting-disk having an adjustable-bolt connection with a standard, substantially as described.

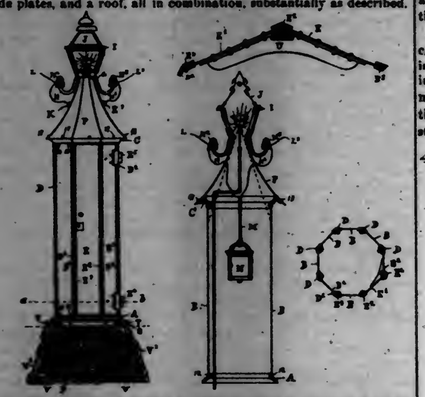
411,805. BOOTH FOR SIGNALING PURPOSES. THOMAS F. GAYNOR, Louisville, Ky., assignor to the Gaynor Electric Company, same place. Filed June 10, 1889. Serial No. 313,806. (No model.)

Claim.—1. A booth consisting of a bed-plate, standards provided with adjusting-bolts, a base-plate, a sill-plate, side plates, binding-posts, a door hinged to one of said side plates, a roof-plate, a roof provided with an opening at its apex, through which the light of a lamp may be admitted, and also provided with a collar to which a lamp-supporting frame and insulator-brackets may be secured, and a lamp, all in combination, substantially as described.

2. A booth consisting of a sill-plate, side plates, binding-posts, a door hinged to one of said side plates, a roof-plate, a roof provided with an opening at its apex, through which the light of a lamp may be admitted, and also provided with a collar to which a lamp-supporting frame and insulator-brackets may be secured, and a lamp, all in combination, substantially as described.

3. A booth provided with a roof having a light-admitting aperture at its apex, in combination with a lamp supported above the roof, substantially as described.

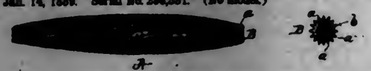
4. A booth having a sill-plate, a roof-plate, side plates connected with said sill-plate and roof-plate, separable binding-posts adapted to cover the joints between said side plates, a door provided with a separable binding-post, jamb-posts, and braces and hinged to one of said side plates, and a roof, all in combination, substantially as described.



5. In combination with the roof of a booth, a lamp-supporting and an insulator-bracket-supporting collar, substantially as described.

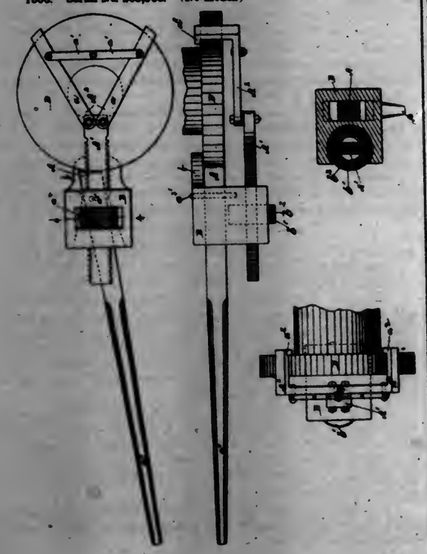
6. In combination with the base-plate and the foundation-standards of a booth, the adjusting-bolts and adjusting-wedges, substantially as described.

411,806. CIGAR. GEORGE GRUNWEDTHER, Cincinnati, Ohio. Filed Jan. 14, 1889. Serial No. 296,231. (No model.)



Claim.—An improved article of manufacture consisting of a cigar the tip of which is removed, a perforated paper disk having points around its periphery, said disk being pasted on the severed end of the cigar, with the points secured to its body and the disk being coated with a tasteless and insoluble substance, whereby it is rendered saliva-proof, as set forth.

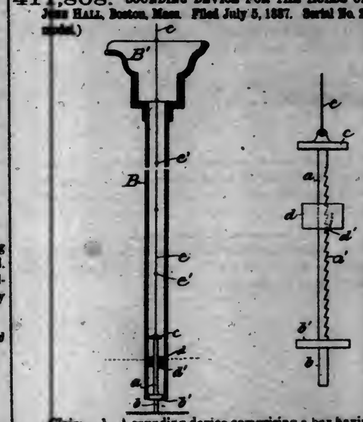
411,807. FLANGE-WRENCH. JAMES F. GUTHRIE, Jr., Somerville, assignor of one-half to Thomas C. Ashley, Boston, Mass. Filed Aug. 23, 1888. Serial No. 283,586. (No model.)



Claim.—1. The herein-described combination of jaw A, carrier B, jaw-carrier A', and jaw A^2, jaw A being fulcrumed in carrier B, and jaw-carrier A' being mounted in carrier B, and jaw A^2 being provided with one or more sidewise projections a^2, all arranged to grip a flange between the inner end of the jaw A and the sidewise projections a^2, all substantially as and for the purpose set forth.

2. The herein-described combination of jaw A, carrier B, jaw-carrier A', jaw A^2, and nut b', jaw A being fulcrumed in the carrier B, in which is mounted jaw-carrier A' and nut b', the jaw-carrier A' passing through the nut b', and the jaw A^2 being provided with one or more sidewise projections a^2, all arranged to grip a flange between the inner end of the jaw A and the sidewise projections a^2, all substantially as and for the purpose set forth.

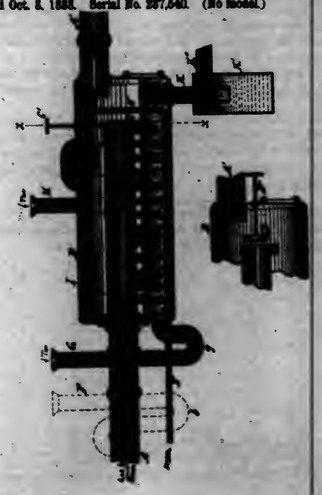
411,808. SOUNDING DEVICE FOR THE HOLDS OF VESSELS. JOHN HALL, Boston, Mass. Filed July 5, 1887. Serial No. 243,422. (No model.)



Claim.—1. A sounding device comprising a bar having flanges or centering devices at or near its upper and lower ends, combined with a float guided upon and movable along the said bar between its ends, and an engaging device which permits upward movement, but prevents downward movement, of the float along the bar, substantially as and for the purpose set forth.

2. A sounding device comprising a bar having a flange near its lower end and a foot projecting below said flange, and a flange at its upper end, combined with a float movable along the said bar and an engaging device, whereby said float is retained at the height to which it is raised on the said bar, substantially as and for the purpose set forth.

411,809. GAS-ENRICHER. EUGENE W. HANLIN, Wilmington, Ohio. Filed Oct. 3, 1888. Serial No. 287,540. (No model.)

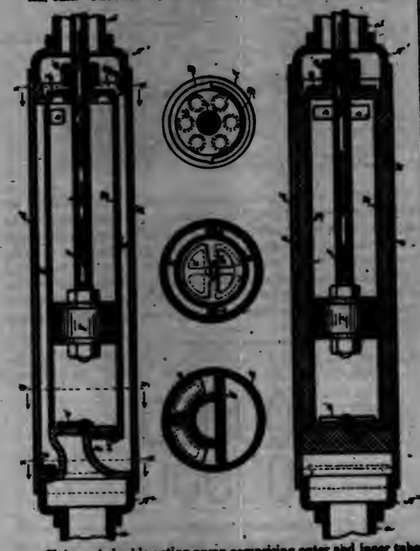


Claim.—1. In a gas-enricher, the combination of a receptacle adapted to contain tar in its lower portion, a gas-induction pipe having an opening into said receptacle above the normal level of said tar, a valve in said opening, branches connected to the gas-induction pipe and dipping below the normal level of said tar, a steam-heating pipe extending through the lower portion of said receptacle, a tar-feed pipe, and tar-pan on top of the induction-pipe and below the tar-pipe, and a gas-exit pipe from the upper portion of said receptacle, arranged in the manner above described.

2. In a gas-enricher, the combination of the receptacle adapted to contain tar in its lower portion, the gas-induction pipe having an opening into said receptacle above the normal level of said tar, a valve in said opening, branches connected to the gas-induction pipe and dipping below the normal level of said tar, a steam-heating pipe extending through the lower portion of said receptacle, a tar-feed pipe, and a gas-exit pipe from the upper portion of said receptacle, arranged and combined substantially as and in the manner described.

3. In a gas-enricher, the combination of a receptacle adapted to contain tar in its lower portion, a gas-induction pipe having an opening into said receptacle above the normal level of said tar, a valve in said opening, branches connected to the gas-induction pipe and dipping below the normal level of said tar, a tar-feed pipe, and a gas-exit pipe from the upper portion of said receptacle, arranged and combined substantially as and in the manner described.

411,810. DOUBLE-ACTING PUMP. CASPER HARWIG, Canal Fulton, Ohio. Filed June 3, 1889. Serial No. 312,916. (No model.)

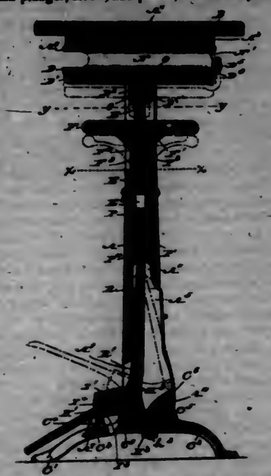


Claim.—A double-acting pump comprising outer and inner tubes, partitions dividing the annular space between the tubes into compartments respectively for induction and eduction purposes, heads fitting the bore of the outer tube and abutting the ends of the inner tube, one of said heads having a valve opening upwardly for the admission of water to the induction-compartment, a valve opening downwardly for the discharge of water into the eduction-compartment, and a valve for the admission of water to the pump-barrel, the other head having valves for the discharge of water from the pump-barrel above the piston, screw-caps engaging the outer tube and abutting each heads, and the caps connecting respectively with the suction and discharge-pipes of the pump, substantially as set forth.

411,811. COPYING-PRESS. ISAAC W. HEYBURN, Philadelphia, Pa. Filed May 14, 1888. Serial No. 310,411. (No model.)

Claim.—1. In a letter-copying press, in combination with the hollow column A, having foot C, vertical branching arms A' A', and top plate A^2, the plunger P, adapted to reciprocate in said hollow column, screw-shank E, supported upon said plunger, hand-wheel F, operating said screw-shank, platen D, supported upon the same, and toggle R R' H^3, supported upon rigid bearing C^3, together with foot-lever H, adapted to operate said toggle, substantially as described.

2. In combination with the hollow column A, supported upon foot C, having branching arms A' A' above and connecting top A^2, the plunger P, adapted to reciprocate in said hollow column, said plunger having internal vertical opening P', angular in cross-section, open above, and screw-shank E, having angular head E^2, adapted to reciprocate in the vertical opening P' of said plunger without rotation, together with hand-wheel F, working upon said screw-shank and supported upon the top of the said plunger, said hand-wheel adapted by its rotation to raise or lower the said screw E, and the platen D, supported upon the end of the said screw and adjustable toward said top A^2 by said hand-wheel F, and the toggle-lever R H, adapted to engage with and operate said plunger, screw, and platen, substantially as described.



3. In a toggle-lever press, in combination with the platen D and the foot-lever H, adapted by downward pressure to operate the toggle R R' H^3 C^3 and platen D, the said toggle held under tension by the pivot R' passing over the line of thrust and support I^{2a} H^3, the supplemental foot-lever I, attached to the said foot-lever H by pivot I^4 and having support I^3 against bearing C^3 in front of said pivot I^4, said supplemental lever adapted to stand elevated by impingement of support I^3 against bearing C^3 when said foot-lever H is depressed and said toggle locked, and by pressure upon said supplemental lever to reverse the said foot-lever H and release the said toggle, substantially as described.

4. In a toggle-lever press, in combination with the locking-lever H, the supplemental releasing-lever I, pivoted to said locking-lever and operating by a separate fulcrum against a fixed support to release the same, substantially as described.

5. In a toggle-lever press, the hollow column A, having opening A^{10} in front, near the lower part thereof, and thrust-support A^{10} H^3 C^3, A^9 in front, near the lower part thereof, and thrust-support A^{10} H^3 C^3, extending across the bottom of the said hollow column, the toggle supported in open bearing H^3, having pivot R', thrust-bar R, foot-lever H, reciprocating plunger P, notched at P^4 and supported upon said bar R, platen D, supported by said plunger P, and flat top A^9, against which said platen faces and is reciprocated by the operation of said toggle, substantially as described.

6. In a foot-press adapted to stand upon the floor, the toggle H^3 H^2 R' R, placed near the bottom thereof and supported upon fixed bearings C^3, foot-lever H, hollow plunger P, supported upon thrust-bar R of said toggle, screw-shank E, vertically adjustable in said hollow plunger by screw-threaded hand-wheel F, platen D, supported upon the upper end of said screw E, together with foot C, hollow column A, branching arms A' A', and transverse top A^9, the whole constructed to operate substantially as and for the purposes shown and described.

7. In a foot-press, in combination with the hollow column A, branching arms A' A', connecting top A^9 and foot C, the thrust-support A^{10} C^3, extended across the lower end of said hollow column and toggle-support H^3, adapted to operate in bearing C^3 thereof, pivot R', thrust-bar R, and operating-lever H, the hollow plunger P, supported by bearing P^4 upon the upper end of said bar R, said plunger having angular internal opening P' from above downward, screw-shaft E, having angular head E^2, adapted to reciprocate in said opening P', screw-threaded hand-wheel F P^5, operating upon said screw-shaft and adapted to rest upon the upper end of said plunger during its reciprocation by said toggle and raise or lower the said screw, together with platen D, supported upon the upper end of said screw E, oper-

ated by said toggle, and adjustable to different thicknesses of material by said hand-wheel, substantially as described.

8. In a letter-press, the platen D, supported upon the screw E, said platen having elongated collar D^3, provided with vertical central opening D^4 beneath, in combination with the flexible sleeve O, forcibly interposed between the sides of screw E and inside D^4 of collar D^3, the whole adapted to maintain said platen D in a horizontal position and admit of flexibility under irregular compression, substantially as described.

9. In a letter-press, the platen D, having raised fingers D^5 at its rear side and transverse groove D^6 along the rear margin within the line of said fingers, substantially as and for the purpose described.

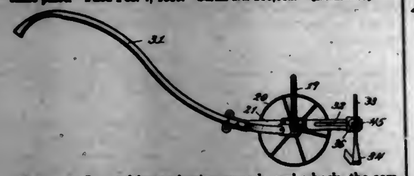
10. In a letter-press having foot C, top A^2, platen D, lever H, and mechanism for operating said platen, the hollow column A, resting upon foot C in a position inclined backward from the vertical and from below upward, substantially as and for the purpose described.

11. In combination with a letter-copying press having top A^2, stiffening-ribs A^3 A^4 upon its upper surface, and attached cover B, supported upon said ribs, a rack consisting of a shelf or the like M and supporting frame-work J J K^2, said frame-work having projecting arms K K, adapted to be inserted into the spaces between said top A^2 and said cover B in the interspace between the ribs A^3 A^4, and thereby support said rack upon said press, substantially as described.

12. In a letter-copying press, the platen D, screw E, and adjusting hand-wheel F, all adapted to reciprocate together, said hand-wheel supported upon the top of reciprocating plunger P, in combination with toggle-lever mechanism beneath adapted to cause the said plunger to be reciprocated, so as to bring said platen under compression against top plate A^2 or release the same, substantially as described.

13. As an article of manufacture, a combined toggle and screw press having hollow column A, branching arms A' A', top plate A^2, support-block A^{10} C^2, and opening A^5, all formed in a single construction, foot-piece consisting of foot C C C^2 and central recessed support C^3, adapted to receive the lower end of column A, rigidly bolted thereto, supplemental wooden cover B, attached to top A^2, platen D, moving vertically between arms A' A' and guided thereby, screw-shaft E, seated at its upper end in packed collar D^3 of said platen, screw-centered hand-wheel F, operating said screw-shaft E, fitted to and supported upon upper end of hollow plunger P, the lower end of said screw-shaft E adapted to reciprocate in vertical opening P' of said hollow plunger, bearing P^4 beneath said hollow plunger, toggle H^2, adapted to operate through suitable connection against said plunger and reciprocate the same, and foot-lever H' H, projecting forward through said opening A^5 and adapted to be operated by pressure upon foot-plate H, substantially as described.

411,812. CULTIVATOR. MARSHALL B. BUSH, Davenport, Iowa, assignor of one-half to Hiram P. Goodwin and Adam M. Dedrick, both of same place. Filed Feb. 7, 1889. Serial No. 299,022. (No model.)



Claim.—1. In a cultivator having an axle and wheels, the combination therewith of two beams cross-grooved at the axle and with slotted forward extensions, the perforated concave plates 23, and sleeves 26, fitted upon the axle having vertical standards 27, and pivots 30, whereby each beam may have independent movement upon the axle, substantially as described.

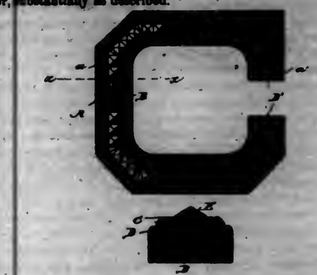
2. The combination, with the frame or axle, of the grooved and slotted beams, the plates 23, sleeves 26, with standards 27 and pivots 30, and the plates 28, recessed to embrace an arched axle, whereby one beam may be made rigid with the axle while the other may rotate freely thereon, substantially as described.

3. The combination of the axle and wheels, the beams having longitudinal slots at their front ends for exchangeable cultivating-tools and with cross-slots at their rear ends, and the handles vertically adjustable on the beams, substantially as shown and described.

411,818. LETTER OR NUMBER FOR SIGNS. DUDLEY H. LANTON, Chicago, Ill. Filed May 13, 1889. Serial No. 309,942. (Model.)

Claim.—1. The method of forming letters and numbers for signs, which consists in embedding a dowel or dowels in the blank from which the letter is to be cut and across the grain of the wood, and then cutting the letter in such manner that the dowel or dowels shall fall within the narrow part or parts of the letter or number, substantially as set forth.

2. A letter or number for signs cut from a wooden blank, having dowels embedded in that part of the wood across the grain thereof from which the letter or number is cut, so that the dowel or dowels shall fall within the narrow cross-grained parts of the letter or number, substantially as described.



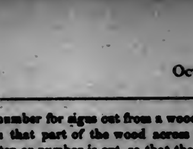
3. A letter or number for signs, formed of wood and having a dowel or dowels embedded in the narrow cross-grained parts thereof, the face of said letter being grooved and being provided with a waterproof plastic composition within the grooved portion serving to strengthen and ornament the letter or number, substantially as described.

411,814. PIT-FURNACE. LOUIS G. LAUREAU, Philadelphia, Pa. Filed Apr. 22, 1889. Serial No. 308,126. (No model.)



Claim.—In a pit-furnace, the combination, substantially as set forth, of a furnace substantially rectangular in plan, a regenerator structure at each end of the furnace, combustion-nozzles leading from the regenerator structures to the furnace, a longitudinal wall disposed centrally in the furnace and extending from the floor to the roof thereof, and a series of arch-walls arranged in the chambers at each side of said longitudinal wall at right angles to said wall, and springing therefrom and from the side walls of the furnace and extending to the roof of the furnace.

411,815. PREPARING MEDICINAL PLASTERS. FRED L. LEAVITT, Auburn, Me. Filed Apr. 5, 1889. Serial No. 306,096. (No specimens.)



Claim.—1. The process of forming medicinal plasters, which consists in placing a suitable amount of a medicinal substance upon a piece of rubber tissue, which rests upon a piece of cloth, covering these with another piece of cloth, and joining the three thicknesses into one at the boundary-line of the plaster by the combined effect of heat and pressure, all as set forth.

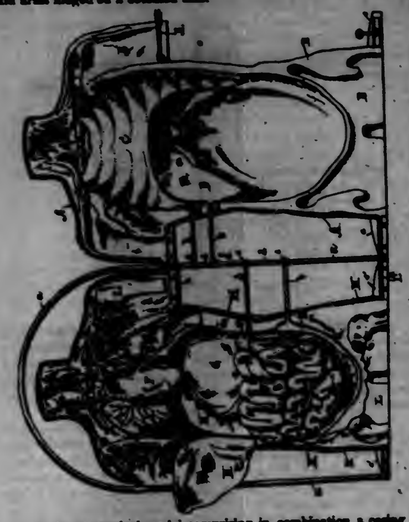
2. The process of forming a compound sheet of medicinal plasters, which consists in placing a sheet of rubber tissue upon a sheet of stronger flexible material, placing upon the rubber tissue separate portions of the medicinal substance, covering with a sheet of cloth, and then uniting the three layers at and near a line surrounding each separate portion of the medicinal substance by pressing with a heated iron, all as set forth.

411,816. ANATOMICAL MODEL. DAVID T. LEE, St. John's Wood, County of Middlesex, England. Filed July 14, 1888. Serial No. 279,572. (No model.) Patented in England July 14, 1888, No. 10,591.

Claim.—1. An anatomical model composed of separate parts hinged upon one common axis.

2. An anatomical model composed of separate parts, in combination with hinged arms supporting said parts in their relative positions, all said arms being hinged on one common axis.

3. An anatomical model comprising, in combination, a frame, being a portion of said model, movable parts, being portions of said model, and arms supporting said parts in their relative position, all said arms hinged on a common axis.



4. An anatomical model comprising, in combination, a casing in two hinged parts, being a portion of said model, a number of separate parts, being portions of said model, and arms supporting said parts in their relative position, said arms being hinged on a common axis with the casing.

5. An anatomical model comprising, in combination, a base-plate, a rod on said base-plate, a casing in two parts, being a portion of said model and hinged on said rod, a number of separate parts, being portions of said model, and arms supporting said parts in their relative position and hinged on said rod.

6. An anatomical model comprising, in combination, a base-plate, a rod standing perpendicularly from said base-plate, a casing in two parts, being portions of the model, hinged on said rod, separate parts, being portions of said model, and arms supporting said parts in their relative position and hinged upon said rod.

7. An anatomical model comprising, in combination, a base-plate, a rod standing perpendicularly from said base-plate, a casing in two parts, being the exterior portions of the model, hinged on said rod, separate parts, being interior portions of said model and supported in relative position thereto, sockets in said parts, arms hinged upon said rod, and pintles on said arms engaging in said sockets for supporting said separate parts, for the purpose set forth.

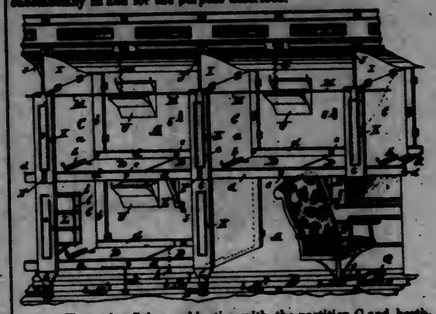
8. An anatomical model comprising, in combination, a main stationary portion, a base therefor, a rod arranged vertically on one side of said portion, passing over the same and descending vertically on the other side of said portion, inner movable parts, arms pivoted on one side of said rod and supporting said inner parts in their relative position, distance-sleeves on said rod between the arms, outer parts forming coverings in detachable halves, pivoted on the one side of said rod each in two pieces, flanges on the lower edges thereof adapted to meet when said parts are closed, and a lock in said flanges remote from the pivots of the parts, for the purpose set forth.

411,817. COMBINED SLEEPING AND PARLOR CAR. HOSEA W. LIBBEY, Boston, Mass. Filed Nov. 11, 1886. Serial No. 218,573. (No model.)

Claim.—1. The combination of the partitions C, hinged to the side of the car, the end pieces c being finished to correspond with the side walls of the car, with berth-bottoms D, hinged to the partitions C, the bottom of the berths on one side being finished to correspond to the side walls of the car, so that when closed up the partition will stand longitudinally against the side of the car and occupy the space of a window and also conform to the general appearance of the walls of the car, substantially as set forth.

2. In a combined parlor and sleeping car, the partitions C C, divided in the center of their height, and having half-berth bottoms hinged on each side, each half of the partition being capable of being folded against the side of the car, so that either the upper or lower, or both, series can be opened out for use, substantially as shown and described.

3. The combination of the filling-in piece I and the partition C, said filling-in piece being capable of being folded upon the partition and the partition capable of being folded against the side of the car, substantially as and for the purpose described.



4. The spring S, in combination with the partition C and berth-bottom D, for assisting to raise the latter to a vertical position, substantially as shown and described.

5. The folding bracket E, consisting of a T-shaped furcated arm g, hinged to the side of the car in a groove f, a bar A, the upper end of which is hinged to the outer end of the arm g and its lower end to a block i, held in but free to work in the groove f, so that it will support the two half-berth bottoms in the center when in use, and capable of being folded flush with the side of the car when not in use, substantially as shown and described.

6. The flush hook or catch K, in combination with the partitions C and side of the car A, substantially as and for the purposes set forth.

7. The folding ladder L, in combination with the partition C and berths, substantially as shown and described.

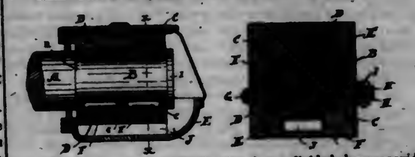
8. In combination with the folding ladder L, the bar m, slide n, and guides p, substantially as and for the purposes set forth.

9. The curtain-rods M, divided in the center and provided with a slide q, in combination with the partitions C, substantially as shown and described.

10. The spring N, secured to the roof of the car, in combination with the curtain-bars M, substantially as and for the purposes set forth.

11. In combination with a sleeping-car, the folding pockets U, consisting of solid front pieces and flexible sides, and provided with studs or standards s, substantially as shown and described.

411,818. ANTI-FRICTION BEARING. HOSEA W. LIBBEY, Boston, Mass. Filed Dec. 17, 1888. Serial No. 293,792. (No model.)



Claim.—1. In an anti-friction bearing, a divided sleeve provided with slots and rings or round projections on its outer circumference, in combination with friction-rollers, and a divided outer brass having recesses to receive the rings on the sleeve, substantially as and for the purpose set forth.

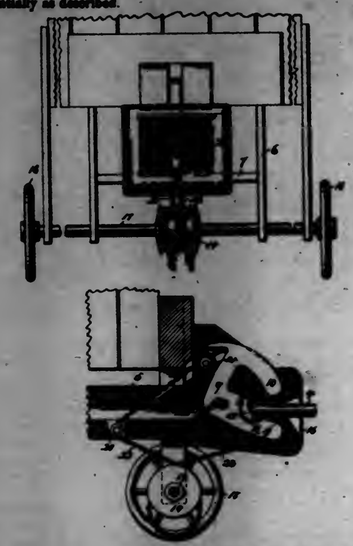
2. In an anti-friction bearing, the sleeve C, formed in two parts and provided with slots a, and rings or circular projections c, in combination with the brass D, formed in two parts and provided with recesses d, the friction-rollers F, and box E, substantially as shown and described.

3. An anti-friction bearing for car-axles, consisting of the divided sleeve C, rollers F, and brass D, in combination with an axle-box divided into two parts horizontally, whereby the anti-friction bearing can be placed around the axle, substantially as shown and described.

411,819. CAR-COUPLING. DANIEL F. MACCARTEY, St. Paul, Minn. Filed July 23, 1888. Serial No. 318,245. (No model.)

Claim.—1. The combination, with a coupler-head, of a coupling-latch pivoted therein above its medial line, having a slotted pivot-hole allowing forward and backward movement of the latch in the head, and having a downwardly-projecting hook for engaging the coupling-link, and a forwardly-projecting arm beneath said hook, arranged when the latch is raised to be interposed in front of the opening in the coupling-head and to be struck by an entering link, a socket in the coupler-head to receive the end of said arm and support it in its raised

position, and a spring arranged behind said latch and bearing upon the same, and adapted to force said latch forward in the coupler-head, substantially as described.



2. In a car-coupler, the combination, with the coupler-head 2, provided with a suitable recess and a vertical longitudinal slot through the same, of the latch 9, pivoted in said recess above the center of the head, having an elongated pivot-hole and provided with the hook 10, and the arm 11, having the shoulder 12, the recess 16, arranged in the front wall of the interior of the coupler-head beneath the link-opening and adapted to receive the arm 11, and the spring 15, secured to the interior rear wall of the coupler-head and bearing against said latch, substantially as and for the purposes set forth.

3. The combination, with a coupler-head having a suitable vertically-slotted interior recess, and socket 16 in the front wall thereof beneath the link-opening, of the pivoted latch 9, having the elongated pivot-hole 14, the hook 10, the arm 11, and the shoulder 12, the spring 15, arranged in the rear of the coupler-head recess and bearing against said latch, the drum-carrying shaft 17, arranged transversely underneath the draw-bar, and the chains 22 and 23, each secured by one end to said drum and wound oppositely thereupon, and having their other ends secured, respectively, to the hook 10 on the arm 11 of the coupling-latch, substantially as described

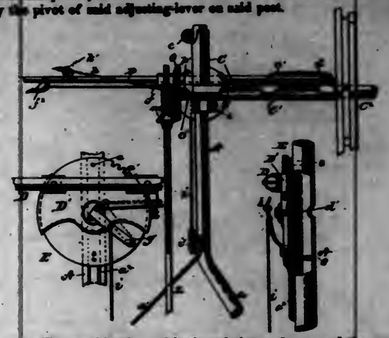
4. The combination, with a coupler-head having a vertically-swinging pivoted latch adapted to engage a coupling-link and by its pressure upon the end of said link to raise and lower the projecting end of the link to any desired angle, of a drum-carrying shaft journaled transversely underneath the draw-bar, chains running from said drum to said latch and adapted as the drum is rotated in one direction to raise the latch, and when rotated in the opposite direction to lower said latch, substantially as described.

5. The combination, with a coupler-head, of a latch loosely pivoted therein having a downwardly-projecting link-hook, and a forwardly-projecting arm underneath said hook provided with a shoulder arranged to be interposed in front of the link-opening in the coupler-head when the latch is in its raised position, a spring adapted to force said latch forward in the head, and a socket in said head to receive and support said arm as forced forward by said spring, by means of which an entering link will strike upon the shoulder of said arm and force said arm backward from the socket, bringing the hook into engagement with the link, which by its pressure upon the same supports the outer end of said link at any desired angle, substantially as described.

411,820. HARVESTER-REEL. LEWIS MILLER, Akron, Ohio. Filed Nov. 26, 1887. Serial No. 256,262. (No model.)

Claim.—1. The combination, with the reel-post and a reel adjustable thereon, of a reel-lifting lever connected to said reel and moving in a vertical plane substantially parallel with the axis of the reel-shaft.

2. In a harvesting-machine, the combination, with the reel-post and reel, of a reel-adjusting lever pivoted on said post and moving in a vertical plane parallel with the reel-shaft, and a reel-bracket sliding by the pivot of said adjusting-lever on said post.



3. The combination, with the tubular reel-post and the reel, of the adjustable slotted reel-bracket sliding on said post and having a slotted arm in which the reel-shaft is journaled and a reel-adjusting lever pivoted on said post and engaging said slotted arm, the slot in the bracket permitting the latter to pass the pivot of the lever, substantially as and for the purpose described.

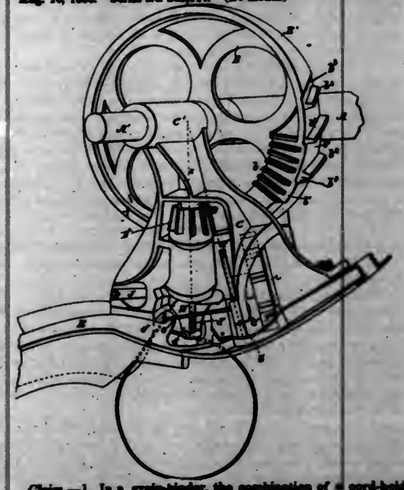
4. The combination, with the tubular reel-post and the reel, of the adjustable slotted reel-bracket sliding on said post and having a slotted arm in which the reel-shaft is journaled, a reel-adjusting lever pivoted on said post to move in a transverse vertical plane parallel with the reel-shaft and engaging said slotted arm, and a rib on the tubular post, the slot in the reel-bracket engaging said rib for preventing the rotation of the slotted reel-bracket and permitting the latter to pass the pivot of the lever, substantially as described.

5. The combination of a reel-post, a reel, and a reel-lifting lever fulcrumed on the reel-post and connected with the reel and moving in a plane parallel, or nearly so, with the axis of the reel-shaft.

6. The combination, with the reel-post, of a reel, a reel-adjusting lever pivoted on said post, a reel-bracket sliding on said post and having a slotted arm in which the reel-shaft is journaled and with which the lever engages for raising and lowering the reel, substantially as described.

7. The combination, with the reel-post, of a reel-bracket adjustable on said post and having a slotted arm or sleeve in which the reel-shaft is journaled, a reel, a reel-adjusting lever pivoted on said post and engaging said arm for adjusting the reel, and means, substantially as described, for preventing the reel-bracket from rotating on the reel-post.

411,821. GRAIN-BINDER. LEWIS MILLER, Akron, Ohio. Filed Aug. 14, 1888. Serial No. 282,917. (No model.)



Claim.—1. In a grain-binder, the combination of a cord-holder disk, a pinion rigid on the shaft of said disk, the knotter, and a wheel giving motion to said knotter and disk and having a broad flat periphery covering the outer ends of two adjoining teeth of the pinion and acting thereon as a delay-surface, and provided with a peripheral depression having teeth for giving an intermittent rotary movement to the pinion and cord-holder disk, substantially as described.

2. In a grain-binder, the combination, with the rotating knotter, of a slotted knotter breast-plate provided with two rigid spurs or fingers projecting into the cord-slot within the circle described by the knotter, one for upholding the cord in front of the knotter and over which the cord is carried by the revolution of the knotter, and the other in rear of the knotter for holding the cord leading to the holder until the latter is grasped by the knotter, which in its revolution then carries the cord past said finger, substantially as described.

3. The combination of the knotter, the cord-holder-actuating pinion, a driving-wheel common to both and having a broad flat periphery acting on the ends of two adjoining teeth of said pinion, the knotter-actuating shaft, the slotted knotter breast-plate, and an upright cord-holder disk rigid with said pinion, crossing obliquely the vertical plane of the slot in the breast-plate, and inclined to the axial line of the knotter-shaft in a plane intersecting said line in the knotter-actuating shaft, substantially as described.

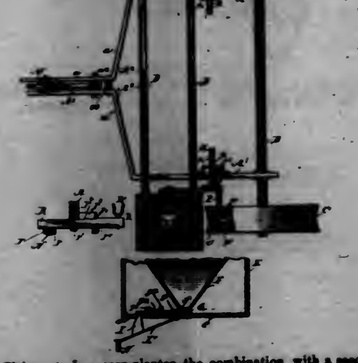
411,822. MOP. WILLIAM H. MILLER, Chelsea, Mass. Filed Apr. 23, 1889. Serial No. 308,093. (No model.)



Claim.—1. In a floor-mop, a handle provided with a clamp and a vertical chamber opening therethrough, in combination with a sleeve-shaped mop-cloth having openings adapted to register with the mouth of said chamber, a rod fitted to slide therein and provided with a cross-bar, and a spring-catch for detachably securing said rod in the handle-chamber, substantially as described.

2. In a floor-mop, a handle chambered vertically in its lower end, a spring-catch projecting into said chamber, a rod fitted to slide therein, having a cone-shaped head and a cross-bar on its outer end, a clamp on said handle, through which said rod passes, and a sleeve-shaped mop-cloth secured in said clamp and provided with a series of holes for said rod, substantially as described.

411,823. CORN-PLANTER. VINCENT MEER, Chicago, Ill. Filed Mar. 12, 1888. Serial No. 266,972. (No model.)

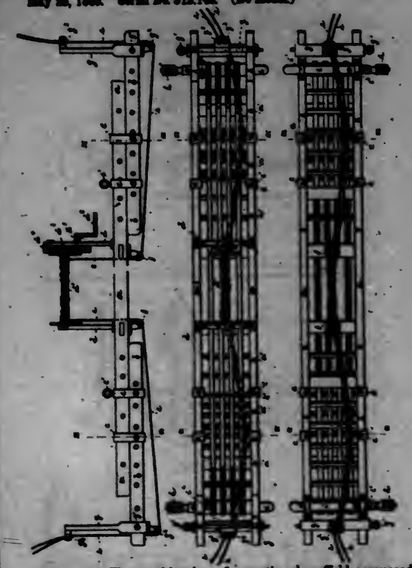


Claim.—1. In a corn-planter, the combination, with a seed-box, of a slotted feed-slide, a cam working in the slot of said feed-slide, and a pivot-bar whereon said cam is mounted, and an operating-lever for moving said pivot-bar, substantially as described.

2. In a corn-planter having provision for one or more seed-boxes, the combination, with a seed-box having a seed-slide, of a vertically-vibrating lever, a cam operated by the lever for moving the slide, and a drive-wheel provided with trip-arms for vibrating the lever, substantially as described.

3. In a corn-planter having provision for one or more seed-boxes, the combination, with a seed-box having a seed-slide, of a vertically-vibrating lever for operating the slide formed with a laterally-movable hinged portion, and a drive-wheel provided with trip-arms for engaging the hinged portion of the lever, whereby the same is vibrated, substantially as described.

411,824. SCAFFOLD. ABNER MILLER, Brooklyn, N. Y. Filed May 25, 1889. Serial No. 312,142. (No model.)



Claim.—1. The combination of a sectional scaffold composed of central section *a* and sliding end sections *b*, with a winch mounted on section *a*, and with the frames *g*, secured to sections *b*, and with the downwardly-projecting pulleys *f f'*, and a rope *c*, passing from the winch first downward, thence around pulleys *f*, thence beneath sections *a b*, and thence around pulleys *f'*, substantially as specified.

2. The combination of section *a*, carrying winch and pulleys *f*, with sections *b*, hooks *c*, and pins *c'*, and with the end frames *g*, having pulleys *f'* and perforations *g'*, and with rope *c*, passing from the winch over pulleys *f f'*, and through perforations *g'*, substantially as specified.

3. The combination of the following elements: a central section *a*, adjustable end sections *b*, perforated frames *g*, secured to sections *b* by bolts *g'*, pulleys *f f'*, a winch, a rope *c*, and friction-rollers *h*, secured to adjustable bars *i*, substantially as specified.

411,825. SHINGLE-SAWING MACHINE. JOSEPH A. MURPHY, Hantsport, Nova Scotia, Canada. Filed Oct. 22, 1887. Serial No. 253,112. (No model.)

Claim.—1. In a shingle-sawing machine, the combination, with the block-carrying carriage and the saw, of a jointer mounted on the saw-arbor and a swinging carriage for holding the shingles while being jointed, substantially as described.

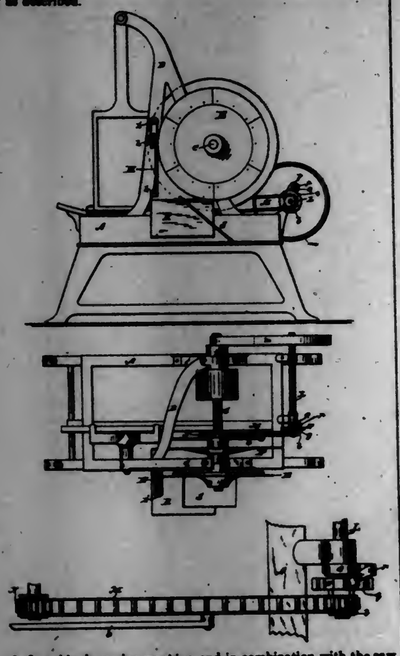
2. In a shingle-sawing machine, the combination, with the block-carrying carriage and saw, of a balance-wheel mounted on the saw-arbor having a jointing-saw secured to its periphery and a swinging carriage for holding the shingles while being presented to the jointing-saw, substantially as described.

3. In a shingle-sawing machine, the combination, with the saw and the pivoted block-carrying carriage free to swing in one direction, of the endless chain running over suitable guide and power pulleys, and a connection between said chain and pivoted block-carrying carriage, whereby the latter is caused to swing with relation to the saw, substantially as described.

4. In a shingle-sawing machine, the combination, with the saw and a reciprocating block-carrying carriage free to move in one direction, of an endless chain running over suitable guide and power pulleys connected to said block-carrying carriage by a pitman, whereby the said carriage is caused to reciprocate with relation to the saw, substantially as described.

5. In a shingle-sawing machine, the combination, with the saw and reciprocating block-carrying carriage, of an endless chain running over suitable guide and power pulleys connected to said block-carry-

ing carriage by a pitman and a clutch-connection between said power-pulley and its driving-shaft, whereby the carriage is caused to move toward the saw, but is free to move in the opposite direction, substantially as described.



6. In a shingle-sawing machine, and in combination with the saw and block-carrying carriage, a continuous chain running over sprocket-wheels and connected to said carriage, one of said sprocket-wheels being connected rigidly to a ratchet-wheel, and a pawl mounted rigidly on the power-shaft for engaging said ratchet-wheel, whereby the carriage is moved positively in one direction, but is free to move in the opposite direction, substantially as described.

7. In a shingle-sawing machine, and in combination with the saw and reciprocating-block-carrying carriage, a mechanism for causing the reciprocation of said carriage, consisting of a continuous chain connected therewith and running over suitable sprocket-wheels, one of which is connected to a ratchet-wheel and loosely mounted on the power-shaft, and a pawl mounted on said shaft for engaging said ratchet-wheel and causing its rotation in one direction, but leaving it free to rotate in the opposite direction, substantially as described.

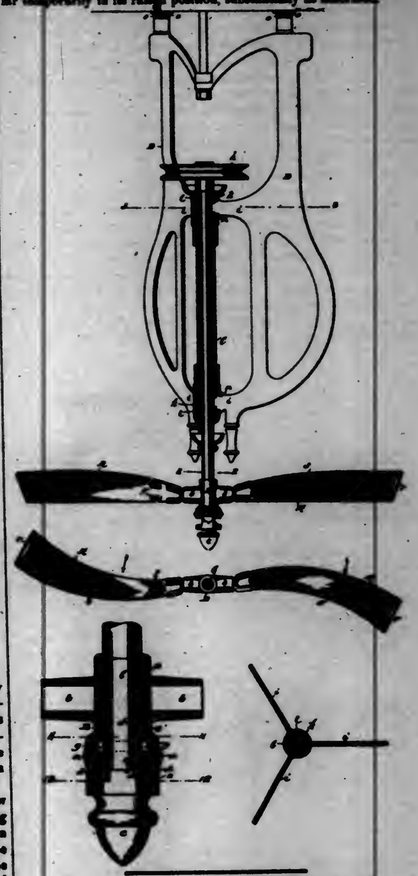
411,826. POWER-FAN. PETER MURRAY, Jr., Newark, N. J. Filed Nov. 30, 1887. Serial No. 256,468. (No model.)

Claim.—1. In a power-fan, the combination, with the main shaft C, of the radial blades A, set obliquely to the shaft and provided with air-passages *r*, opening at the ends of the blades, and with openings *p*, communicating with said passages and opening through the sides of the blades which act upon the air when the fan is in motion, substantially as described.

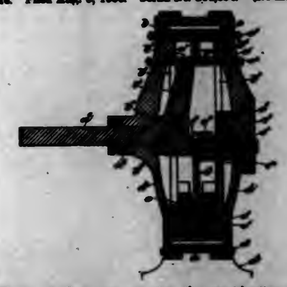
2. In a power-fan, the combination, with the main shaft C, of the radial blades A, set obliquely to the shaft, so as to throw the air in the direction of the length of the shaft, and also bent in the direction of their length to throw the air laterally, and provided with air-passages *r*, opening outward at the ends of the blades, and with openings *p*, communicating with said passages and opening through the sides of the blades which act upon the air when the fan is in motion, substantially as described.

3. In a fan-hanger, the combination, with the arms *i*, having studs at their ends, of the washers *e*, fitting loosely on said studs and made thicker at one side than at the other, substantially as described.

4. The combination, with the rotating shaft C and the hub B, turning freely on the shaft, said shaft and hub having the locking-pin *f* and recess *e*, of the head *e*, secured to the shaft and having the incline *d*, the loose collar *a*, interposed between the head *e* and hub B, and having the incline *d*, said inclines being provided with the projection 2 and recess 3, for engaging with each other to arrest the collar temporarily in its raised position, substantially as described.



411,827. ROTARY MOTOR. ANDREW MCFARLAND, Thomaston, Me. Filed Aug. 3, 1889. Serial No. 319,854. (No model.)

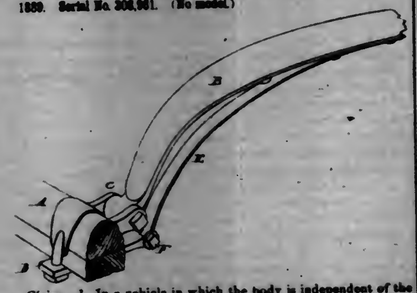


Claim.—1. In a rotary motor, the combination, with a shell or cylinder provided with an inlet and exhaust port, of a rotary piston therein consisting of concentric rings *b b'*, connected by a web b^2 and provided with a series of substantially radial slots, a block or abutment d^2, secured to the said shell, a main shaft to which the said concentric rings are connected, and a series of sliding abutments or wings b^3, connected to a hub eccentrically mounted with relation to the said piston, substantially as described.

2. In a rotary motor, the combination, with the shell or cylinder composed of the ring *a* and heads a^2 a^3, provided with the annular projections c^1 and having an inlet and exhaust port, and a block or abutment d^2, secured to said annular projections, of a rotary piston consisting of concentric rings *b b'* on opposite sides of the said block or abutment, a web b^2, connecting said rings and forming with the said annular projections steam-spaces, a main shaft to which the said rings are connected, a series of substantially radial slots in said rings, and a series of sliding abutments or wings b^3, fitted into said slots and connected to a hub eccentrically mounted with relation to the said main shaft, substantially as described.

3. In a rotary motor, the combination, with the shell or cylinder composed of the ring *a* and heads a^2 a^3, provided with the annular projections c^1 and having an inlet and exhaust port, and a block or abutment d^2, secured to said annular projections, of a rotary piston consisting of concentric rings *b b'* on opposite sides of the said block or abutment and provided with substantially radial slots, ears b^{10}, secured to the ring *b'*, a web b^2, connecting said rings and forming with the said annular projections steam-spaces, a main shaft to which the said rings are connected, and a series of sliding abutments or wings fitted into said radial slots and connected to a hub eccentrically mounted with relation to the said main shaft, substantially as described.

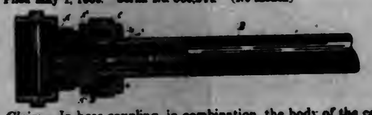
411,828. SHAFT-SUPPORT. DANIEL MCVAW, Louisville, Ky., assignor of one-half to William F. Brewer, same place. Filed Apr. 29, 1889. Serial No. 308,961. (No model.)



Claim.—1. In a vehicle in which the body is independent of the shafts, the combination, with axle A, of the shafts B, connected therewith by a coupling C, a plate D, secured to the axle, and projecting in advance thereof, a spring E, secured at its forward end to the under side of the shafts, and a bolt F, pivotally connecting the rear end of the spring with the plate D, all substantially as shown.

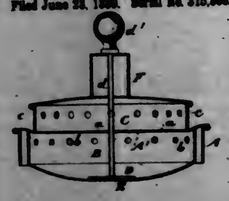
2. In a vehicle in which the body is independent of the shafts, the combination, with axle A, shafts B, and coupling C, of a spring-arm E, secured at its forward end to the under side of the shafts and at its rear end to the axle, and provided with a joint at a point between its ends, all substantially as shown and described.

411,829. HOSE-COUPLING. JOHN F. MACHTAMER, Cleveland, Ohio. Filed May 1, 1889. Serial No. 309,344. (No model.)



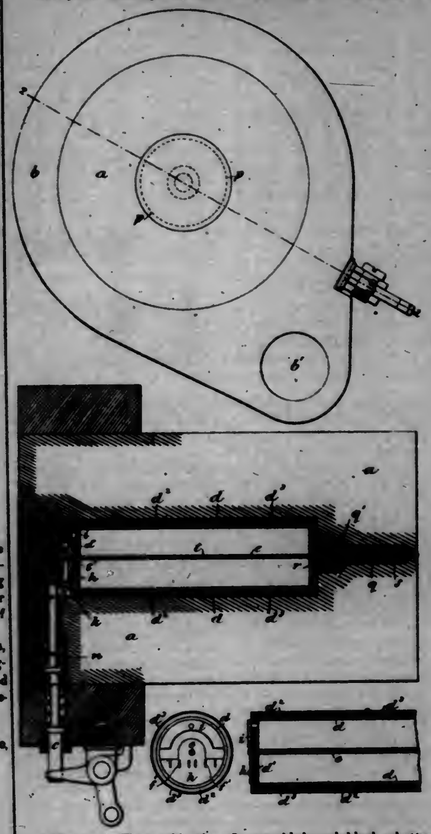
Claim.—In hose-coupling, in combination, the body of the coupling having a nozzle for entering the hose, and having an external screw-threaded section, a cap for clamping the hose, cut rings mounted on the hose opposite the nozzle, the body of the coupling and the cap having, respectively, opposing conical seats adapted to embrace and compress the cut rings by screwing the cap home, whereby the compression of the rings clamps the hose on the nozzle, substantially as set forth.

411,830. COVER FOR COOKING-VESSELS. CHRISTIAN HEILMAN, Atlantic, Iowa. Filed June 28, 1889. Serial No. 315,269. (No model.)



Claim.—A boiler-cover having a bottom apertured and downwardly inclining toward the middle, a valve to cover said aperture, a chamber B, perforated at the side to admit the boiling water, an upper chamber C, side-perforated to admit the air, and the perforated partition A' between said chambers, substantially as shown and described.

411,831. ELECTRIC FIRING MECHANISM FOR BREECH-LOADING GUNS. THOMAS HORSFIELD, Westminster, England, assignor to the Maxim-Nordenfelt Guns and Ammunition Company, (Limited,) same place. Filed Apr. 24, 1889. Serial No. 308,264. (No model.)



Claim.—1. The combination of a movable breech-block, a battery contained therein, and mechanism for closing the circuit of this battery through the electric fuse of the cartridge.

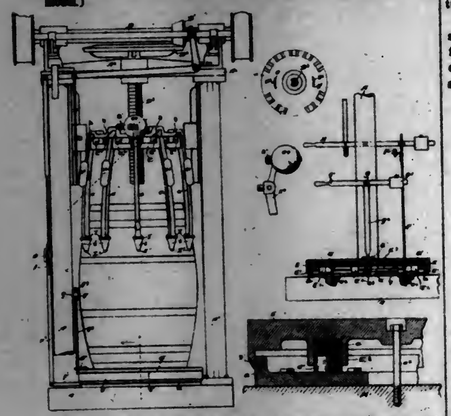
2. The combination of a breech-block turning in a ring pivoted to the gun, a battery contained within the block, a contact-maker at the fore end of the block making contact either directly or through another contact-maker with the electric fuse of the cartridge, a contact-maker radial to the block, and firing mechanism carried by the ring, the radial contact-maker being so placed that its outer end comes opposite to the firing mechanism, by which it is actuated and the circuit closed when the breech is completely shut.

3. The combination of a breech-block, a battery contained within the block, a tube passing through the battery and connected to one of the plates thereof, a contact-making pin passing through the said tube, one end of the pin making contact either directly or through a contact-maker with the electric fuse of the cartridge, and mechanism for operating the other end of the pin and closing the circuit.

4. The combination of a breech-block turning in a ring pivoted to the gun, a battery contained within the block, a tube passing through the battery and connected to one of the plates thereof, a contact-making pin passing through the said tube, the fore end of the pin making contact with the rear end of a contact at the front of the

block, the fore end of which makes contact with the electric fuse of the cartridge, a flap connected to the other plate of the battery and running against the rear end of the pin, but insulated therefrom, a contact-maker radial to the block and in contact with and actuating the flap, and firing mechanism carried by the ring and coming opposite to the radial contact-maker when the breech is completely shut.

411,832. MACHINE FOR DRIVING BARREL-HOOPS. John S. Oran, Cleveland, Ohio. Filed Jan. 13, 1888. Serial No. 260,702. (No model.)



Claim.—1. In a machine for driving hoops, the combination, with a movable table and springs for yieldingly supporting same, of bolts for partially depressing the table and springs and holding them depressed, substantially as set forth.

2. In a machine for driving hoops, the combination, with a movable table, springs for yieldingly supporting same, and bolts for partially depressing the table and springs and holding them depressed, of drivers acting in a direction opposite to the direction of pressure of the springs, substantially as set forth.

3. The combination, with depressible table, substantially as indicated, of plate or false top supported by and adapted to turn on such table, a hand-lever connected with the plate for turning the same on its axis, a counterbalance connected with such lever for reversing the plate, substantially as set forth.

4. The combination, with a series of gravity driver-arms and cam-ring for engaging and distending such arms in opposition to the gravity of such arms, of a driver-arm having a universal fulcrum, a link connecting such arm with the cam-ring, whereby a lateral movement of this arm rotates the cam-ring and causes distention of the other driver-arms, substantially as set forth.

5. The combination, with a series of gravity driver-arms acting in vertical radial planes, a cam-ring for distending and elevating such arms, of arms c^3, having a universal fulcrum, such arm being connected by a link with the cam-ring and having a counter-balance located above and outside the fulcrum thereof, whereby such counter-balance by gravity moves this arm toward the barrel when such arm is in its depending position, substantially as set forth.

6. The combination, with driver-arms, substantially as indicated, of drivers connected with the free ends of these arms, such drivers consisting, essentially, of metal plates set edgewise to and approximately fitting the barrel, each driver having a groove on the under side thereof extending to and parallel with the adjacent edge of the driver, such groove being adapted to receive the edge of the hoop, substantially as set forth.

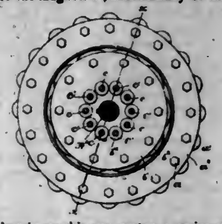
7. The combination of driver-arms, drivers, and removable and adjustable conical guides located below the drivers, substantially as set forth.

411,833. ELECTRIC MOTOR. Charles C. Peck, Middlebury, Vt., assignor to the Giant Electric Motor Company, Kittery, Me. Filed Sept. 23, 1888. Serial No. 286,319. (No model.)

Claim.—1. In an electric machine or motor, a series of fixed electro-magnets and a second series of electro-magnets movable about an axis parallel to its own magnetic axis, and having its surface adjacent to the fixed electro-magnet made eccentric to the axis of revolution but more nearly concentric with its own magnetic mass, one series of magnets being wound, substantially as described, to produce reversals of polarity in each of its magnets as each magnet of the other series is revolved by each magnet of the first series of magnets, substantially as described.

2. In an electric machine or motor, a series of magnets having two sets of pole-pieces forming peripheral surfaces concentric with the axis of revolution, and a second set of magnets arranged to revolve on the axis of revolution, and having the surfaces of its pole-pieces adjacent to the first set of magnets eccentric to the said peripheral surfaces, combined with a commutator consisting of contact-pieces b^{13}, connected to said magnets and provided with a groove, and pins, as c c', having spherically-shaped ends fitted into said groove, and means, substantially as described, to maintain said pins in electrical connection with the said contact-pieces, substantially as set forth.

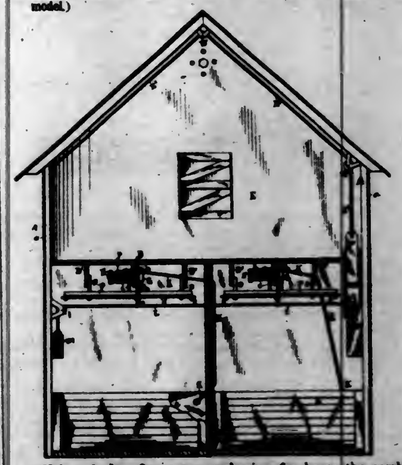
3. In an electric motor, the combination, with the frame A, the shaft A^1, disks b b', mounted thereon, and magnets c', attached to said frame, of magnets b^3, having the outer periphery of their pole-pieces eccentric to the inner periphery of the poles of the magnets c', and supports A A' for the magnets b^3, substantially as described.



4. In an electric machine or motor, a series of magnets having two sets of pole-pieces forming peripheral surfaces concentric with the axis of revolution, combined with a second set of magnets arranged within the first set of magnets to revolve on the axis of revolution, and having the surfaces of its pole-pieces adjacent to the outer set of magnets eccentric to the said peripheral surfaces, the outer set of magnets being wound, substantially as described, to produce reversals of polarity in each of the said outer magnets as each inner magnet is revolved by each of the said outer magnets, substantially as described.

5. In an electric machine or motor, a series of magnets having two sets of pole-pieces forming peripheral surfaces concentric with the axis of revolution, a second set of magnets arranged within the first set of magnets to revolve on the axis of revolution, and having the surfaces of its pole-pieces adjacent to the outer set of magnets eccentric to the said peripheral surfaces, the outer set of magnets being wound, substantially as described, to produce reversals of polarity in each of the said outer magnets as each inner magnet is revolved by each of the said outer magnets, combined with the commutator consisting of contact-pieces b^{13} and pins c c', co-operating therewith, substantially as described.

411,834. FIRE-ESCAPE MECHANISM FOR BARNS. J. Wilson Peters, Galloway, Ohio. Filed May 3, 1889. Serial No. 309,442. (No model.)



Claim.—1. In a fire-escape mechanism for barns, the combination, with the frame-work, the swinging doors F, pivotally connected at their rear ends with the frame-work above the stalls and having pins A, projecting upwardly therefrom and through keepers G, secured to the joists B, and halter-ropes K, looped over the upper ends of said pins A, of the hanging triggers g, the latter detachably supporting said swinging doors, as described, rope L, supporting weights m N, and wires o, connecting said rope L and triggers g, substantially as described.

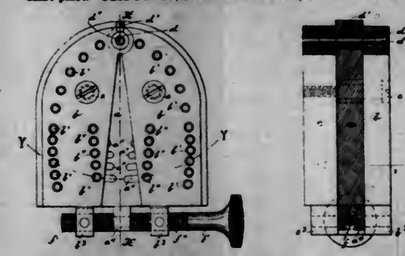
2. In a fire-escape mechanism for barns, the combination, with the frame-work, the swinging doors F, pivotally connected at their rear ends with the frame-work above the rear ends of the stalls, pins A, projecting upwardly through keepers G on said upper frame-work, halter-ropes K, looped over the upper ends of said pins, stationary reels H, their brake-blocks p, and ropes i, the latter connecting with the doors F, of the hanging triggers g, detachably supporting the front ends of said doors, as described, rope L, running over pulleys and supporting weights N and M, and wires o, connecting said rope and triggers, substantially as and for the purpose set forth.

3. In a fire-escape mechanism for barns, the combination, with the frame-work of a barn, stable-door P, door-frame Q, and locking-link q, passing through said door and frame, of a padlock clasped to the outer end of said link, locking-pin r, chain r', connected with said locking-pin, rope L, supporting, as described, weights N and m, and wire r^2, connecting said rope L and chain r', substantially as and for the purpose specified.

4. In a fire-escape mechanism for barns, the combination, with the frame-work of a barn, door P, and arms S, depending from joists in front of the rear side of said door and supporting pulleys t and U, of the horizontal sliding arm s, supported in the lower ends of said arms S, pulley s', pivoted in the outer ends of said arm s, weight T, rope u, passing over pulley U and supporting said weight, and chain s^2, secured at one end to the frame-work above arm s and at its remaining end to the weight T and passing over pulleys s' and t, substantially as and for the purpose set forth.

5. In a fire-escape mechanism for barns, the combination, with the frame-work of a barn, of swinging doors F, pivotally supported at their rear ends above the rear ends of the stalls b and detachably supported at their forward ends on hanging triggers g, rope L, supported from the barn frame-work on pulleys, weights m and N, supported by said rope, wires o, connecting said rope L and triggers g, and block M, over which said rope passes, the rope E, having one end secured to the frame-work of the hay-mow and passing over pulleys suspended from said frame-work, and sharpened weight w, suspended by said rope E within an opening formed in the floor of the mow and above the block M, substantially as set forth.

411,835. NAIL-DIE FOR HEELING-MACHINES. Joseph H. Pope, Brockton, Mass., assignor to the American Heeling Machine Company, same place. Filed Feb. 23, 1889. Serial No. 300,859. (No model.)

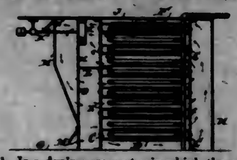


Claim.—1. A nail-die for a heeling-machine, consisting of a middle stationary die-plate having a series of slots, movable top and bottom die-plates each having a series of nail-holes, respectively, coincident with the slots, and adjusting and holding devices for adjusting the movable die-plates and holding them in fixed positions relative to each other, said slots of the stationary die-plate registering with the nail-holes in the movable die-plates under all adjustments of the latter, substantially as described.

2. A nail-die for a heeling-machine, consisting of a middle stationary die-plate having a series of slots, a series of movable top and bottom die-plates arranged upon each side of the stationary die-plate and each having a series of nail holes and adjusting and holding devices for simultaneously adjusting the movable die-plates and holding them in fixed positions relatively to each other, substantially as described.

3. The improved nail-die, as described, consisting of the stationary slotted middle part a, and the upper and lower perforated expansive dies b b c c, pivoted to a tube d, secured to said middle part, combined with the set-screws e e, for holding said middle and expansive dies together, and the right-and-left-handed screw F, journaled in a bearing on the middle die a and working in nuts pivoted to the expansive dies b b c c, substantially as and for the purpose set forth.

411,836. DRYING-MACHINE. Josiah K. Prosser and John H. Knowles, Philadelphia, Pa., assignors to the Philadelphia Textile Machinery Company. Filed Dec. 13, 1888. Serial No. 293,465. (No model.)



Claim.—1. In a drying apparatus in which the material or goods to be treated traverse or are moved in a circuitous course, the combination of rollers or drums for guiding the material or goods through the drying-room in a circuitous course, with a fan to circulate the air through the room, a deflector located within said room to cause the air-currents being circulated to pass horizontally through or across the moving material in one direction on one side of the deflector, and to return in an opposite direction on the other side of the deflector, and a passage opening from the room and leading to the fan, for the purpose of enabling a recirculation of the air.

2. In a drying apparatus, the combination of a closed air-chamber, through which the material or goods to be treated are passed in a circuitous course, provided with openings for the entrance and exit of said materials or goods, rollers or drums for guiding the material through said chamber in a circuitous course, inlet and outlet passages in said chamber for the entrance of dry and the discharge of damp air, a fan to circulate air through said chamber, and a deflector located within said chamber to cause the air being circulated to pass horizontally through or across the moving material in one direction on one side of the deflector and to return in an opposite direction on the other side of the deflector, and a passage opening from the room and leading to the fan, for the purpose of enabling a recirculation of the air.

3. In a drying apparatus, the combination of a closed air-chamber, through which the material or goods to be treated are passed in a circuitous course, provided with openings for the entrance and exit of said material or goods, rollers or drums for guiding the material through said chamber in a circuitous course, inlet and outlet passages in said chamber for the entrance of dry and the discharge of damp air, provided with doors by adjusting which the temperature and humidity of the air may be regulated, radiators about which the material to be treated passes in traversing said chamber, a fan to circulate the air through said chamber, and a deflector located within said chamber to cause the air being circulated to pass horizontally through or across the moving material in one direction on one side of the deflector and to return in an opposite direction on the other side of the deflector, and a passage from said chamber leading to the fan, for the purpose of enabling a recirculation of the air.

411,837. RECORDING DEVICE FOR WEIGHING-SCALES. Isaac B. Sager, East St. Louis, Ill. Filed Mar. 22, 1888. Serial No. 304,262. (No model.)

Claim.—1. In a recording-scale, the combination of a scale-beam, a poise arranged thereon, a sliding bar mounted on the poise, a punch mounted on the sliding bar, and gearing which connects the sliding bar with the scale-beam, substantially as and for the purposes described.

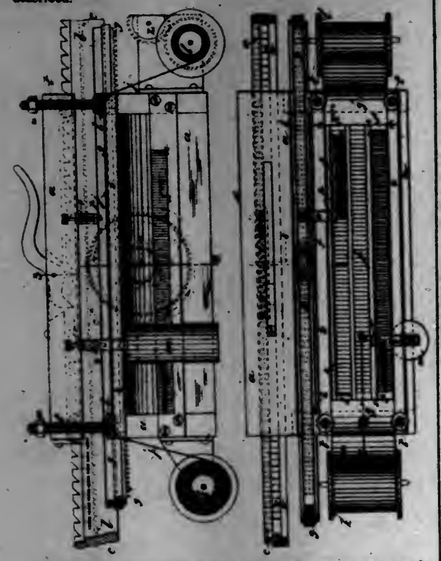
2. In a recording-scale, the combination, with the scale-beam having a tooth-rack thereon, of a poise arranged on the beam and provided with ways, a sliding rack-bar mounted in said ways and carrying a recording device, a shaft journaled on said poise, and gear-wheels secured to the shaft, one of said gear-wheels engaging the rack on the scale-beam and the other the sliding rack-bar on the poise, substantially as and for the purposes described.

3. In a recording-scale, the combination of a scale-beam, a graduated poise arranged thereon, a sliding bar mounted on the graduated poise, gearing which connects the sliding bar with the scale-beam, a punch mounted on the sliding bar, a second poise arranged on the graduated poise, and a second punch mounted on the second poise, substantially as and for the purposes described.

4. In a recording-scale, the combination of a scale-beam, a graduated poise arranged thereon, a sliding bar mounted on the graduated poise, a punch mounted on the sliding bar, gearing which connects the scale-beam and sliding bar, and a table arranged on the graduated counterpoise parallel with the sliding bar and beneath the punch thereon, substantially as and for the purposes described.

5. In a recording-scale, the combination of a scale-beam, a graduated poise arranged thereon, a sliding bar carried by the graduated poise, a punch mounted on the sliding bar, a second poise mounted on the graduated poise, a punch mounted on the second poise, and a punch-table arranged on the graduated poise parallel with the sliding

bar and beneath the two punches, substantially as and for the purpose described.



6. In a recording-scale, the combination of a scale-beam, a graduated poise arranged thereon, a sliding bar mounted on the graduated poise, a punch mounted on the sliding bar, gearing which connects the scale-beam and sliding bar, a table arranged on the graduated counterpoise parallel with the sliding bar and beneath the punch thereon, and strip-rollers journaled in brackets on the scaled counterpoise, substantially as and for the purposes described.

7. In a recording-scale, the combination of a scale-beam, a poise mounted thereon and provided with a recording device, a spring actuated or retracting platen arranged over the recording device, a locking-lever for locking the scale-beam, and mechanism for actuating the spring-platen or retracting-platen from the locking-lever, substantially as and for the purposes described.

8. In a recording-scale, the combination, with the scale-beam, of a poise arranged thereon and provided with a recording device, a table mounted on the poise and having a cavity in its face, a spring-bolt mounted in guides on the poise and registering with said cavity, a spring actuated or retracting platen for controlling the recording device and spring-bolt, a locking-lever for locking the scale-beam, and mechanism for actuating the retracting-platen from the locking-lever, substantially as and for the purposes described.

9. In a recording-scale, the combination of a scale-beam, a counterpoise arranged thereon, a table arranged on the counterpoise, strip-rolls journaled on the counterpoise, a paper strip supported on said table and provided at intervals with holes in line with a cavity in the table, a spring-bolt adapted to enter said opening and stop the passage of said paper strip, a locking-lever for locking the scale-beam, and mechanism for actuating said spring-bolt from the locking-lever, substantially as and for the purposes described.

10. In a recording-scale, the combination, with the scale-beam, of a poise arranged thereon and provided with a recording device, a table mounted on the poise and having a cavity in its face, a spring-bolt mounted in guides on the poise and registering with said cavity, said bolt having collars above and below said guides, a spring actuated or retracting platen provided with spring-catches adapted to engage the collars on the bolt and control the action of said bolt, a locking-lever for locking the scale-beam, and mechanism for actuating the retracting-platen from the locking-lever, substantially as and for the purposes described.

11. In a recording-scale, the combination, with the scale-beam, of a poise arranged thereon, a table mounted on the poise, a vertically-movable spring-actuated platen arranged horizontally above the table, a spring-supported bar arranged above and parallel with said platen, cam-levers fulcrumed to stationary supports, and a scale-beam-locking lever connecting said cam-levers for operating said cams to depress the spring-supported bar and platen, substantially as and for the purposes described.

411,838. PULP-DIGESTER. CHARLES C. STEPHENS, Boston, Mass. Filed Jan. 7, 1889. Serial No. 296,660. (No model.)

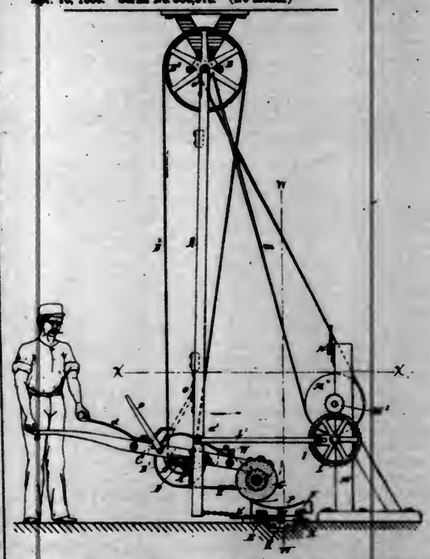


Claim.—1. In a boiler or digester for the manufacturing of pulp, the combination, with the boiler-shell, of an acid-resisting lining therefor consisting of blocks or tiles, and a backing or covering for each tile composed of lead or acid-resisting metal having side flaps, the flaps of the coverings of adjacent tiles being sealed together to effect a liquid-tight joint and maintain the lining of tiles intact within the boiler, substantially as described.

2. In a boiler or digester for the manufacturing of pulp, the combination, with the boiler-shell, and a layer of sheet-lead next to the boiler-shell, of an acid-resisting lining therefor consisting of blocks or tiles, and a backing or covering for each tile composed of lead or acid-resisting metal having side flaps, the flaps of the coverings of adjacent tiles being sealed together to effect a liquid-tight joint and maintain the lining of tiles intact within the boiler, substantially as described.

3. In a boiler or digester for the manufacturing of pulp, the combination, with the boiler-shell and a layer of sheet-lead next to the boiler-shell, of an acid-resisting lining consisting of blocks or tiles, and a backing or covering for each tile composed of sheet-lead having side flaps, and a cushion of asbestos or yielding acid-resisting material interposed between the backings or coverings and the layer of lead, the flaps of the coverings of the adjacent tiles being sealed together to effect a liquid-tight joint and maintain the lining of tiles intact within the boiler, substantially as described.

411,839. MACHINE FOR GRINDING AND POLISHING ROAD-SCRAPER BLADES, &c. GEORGE W. TAFT, Kennett Square, Pa. Filed Apr. 10, 1889. Serial No. 306,676. (No model.)



Claim.—1. In a machine for the purpose specified, the combination of the swinging bars, a centrally-pivoted upwardly and downwardly yielding grinder-carrier disposed between the lower ends thereof, and an intermittently-movable work-supporting carriage mounted on tracks that extend laterally beneath the end of said carrier, with feed mechanism actuated from said swing-bars for advancing said carriage synchronously with the vibrations of the swinging grinder, substantially as set forth.

2. In a machine for the purpose set forth, the carrier-frame, its side bars having the bearings R of the grinder-shaft mounted at one end thereof and provided with handles c at the opposite end and pivotally supported to afford tilting action, in combination with the two backwardly and forwardly swinging supporting-bars A, the laterally-extended footways E, and the movable work-supporting table or carriage traveling on said ways, substantially as set forth.

3. In a machine for the purpose specified, the combination, with the swing-frame having side bars A A suspended from the over-head shaft, the wheel-carrier frame disposed between said side bars, flexibly connected thereto, and carrying the center shaft, grinder-shaft, grinding-wheel, and driving-belts, as shown, of the vibrator-gears having wrist-pins adjustable therein for varying the length of throw, connecting-rods from the wrist-pins pivoted to the opposite sides of said swing-frame, the actuating-gears, back shaft M', pulley M², and belt *m*, substantially as described, for rotating said vibrator-gears, as and for the purpose set forth.

4. In a machine for the purpose specified, the combination, with the swing-frame suspended from the overhead shaft and the tilting carrier flexibly connected with said swing-frame, as shown, of the center shaft, its journal-bearings forming the hinge or fulcrum axis for said carrier, the grinder-shaft carrying a grinding or polishing wheel mounted in bearings on said carrier, driving-belts for rotating said shaft and wheel, the footway or guiding tracks extending laterally in relation to the swing of said frame, and the work-supporting carriage movable longitudinally on said tracks, substantially as set forth.

5. In a machine for the purpose specified, the combination of the swing-frame suspended from the overhead driving-shaft, the upwardly and downwardly swinging grinder-carrier flexibly connected thereto, the center shaft, the grinder shaft and wheel supported on the rear end of said carrier, the work-supporting carriage running on the transversely-disposed footway-guides, vibrating gear for imparting motion to said swing-frame, and feed-actuating mechanism automatically operated from said swing-frame for imparting movement to said carriage, substantially as set forth.

6. In a machine for the purpose specified, the combination, with the swing-frame, tilting carrier, and grinding-wheel, and laterally-moving carriage provided with a ratchet or engaging devices, of the reciprocating bar and pawl or its equivalent, and the actuating-lever operated by said swing-frame to effect movement of said carriage, as set forth.

7. The combination of a plurality of grinders, each comprising a swing-frame, and a tilting carrier provided with a grinding-wheel mounted and operating thereon, a footway common to said grinders, a carriage adapted for sustaining a scraper-blade or uneven plate, movable on said footway for advancing it forward beneath the several grinding-wheels, and mechanisms, substantially as described, for automatically imparting pendulous motion to said grinders and for advancing said carriage, as and for the purpose set forth.

8. In a machine for the purpose specified, the removable carriage adapted for supporting a road-scraper-blade plate, in combination with swinging frame, tilting grinder-carrier, grinding mechanism, the carriage guiding-way, and feed-actuating mechanism, substantially as described, for the purpose set forth.

9. In a machine for the purpose specified, the combination, with the carriage, its guideway and feed-operating lever and ratchet, of an engaging pawl and pawl-supporter for moving said carriage, and a throw-off lever connected therewith for starting and stopping the feed of the carriage, substantially as set forth.

10. In a machine for the purpose specified, the combination, with the carriage F, its ratchet *f*, of the reciprocating bar H, carrying the pawl h, the shifting-frame K, supported by inclined guides *i*, and the shifting-lever *l*, substantially as set forth.

11. In a machine for the purpose specified, the journal-supporting boxes A' for the center-shaft provided with extensions, and the supporting-boxes A², attached to the carrier and mounted on said extensions, in combination with the swing-frame and tilting carrier, substantially as set forth.

12. In a machine for the purpose specified, the yielding journal-boxes for supporting the grinder-shaft, in combination with the rocking carrier swing-frame and work-supporting carriage, substantially as set forth.

13. In a machine for the purpose specified, the combination, with the swing-frame A and grinder carrier-frame C flexibly connected thereto and having the grinding-wheel shaft mounted in journal-boxes at one of its ends and handles c at its other end, of the adjustable stop-dog O, substantially as described, for temporarily sustaining said carrier with the grinding-wheel elevated.

411,840. AUTOMATIC SYNCHRONIZING-COMMUTATOR. ROBERT S. TAYLOR and MARSHALL H. M. SLATTERY, Fort Wayne, Ind. Filed June 26, 1889. Serial No. 315,614. (No model.)

Claim.—1. An automatic pole-changer comprising in combination an alternating motor adapted to run synchronously with the dynamo generating the current to be commuted and carrying upon its armature-shaft the commutator through which the commutation is effected, and an induction-motor for obtaining initial motion of the armature of the synchronizing-motor.



2. An automatic pole-changer comprising in combination an alternating-current motor adapted to run synchronously with the dynamo generating the current to be commuted and carrying upon its armature-shaft a commutator connected up with its armature-coils in such manner that the current to be commuted shall pass through said armature-coils and be transformed into a continuous current by said commutator, and an induction-motor to produce initial revolution of the synchronizing-armature.

3. An automatic pole-changer consisting of two motors having a common shaft, one of them being an induction-motor for initial action and the other an alternating-current motor adapted to operate synchronously with the dynamo generating the current to be commuted, and carrying upon its armature-shaft a commutator through which the commutation is effected.

411,841. SPIKE. WILLIAM TAYLOR, Allegheny, Pa. Filed Apr. 19, 1889. Serial No. 307,949. (No model.)



Claim.—1. A new article of manufacture consisting of a hook-headed nail or spike having a shank of triangular form its entire length and outwardly-curved triangular shoulders underneath the head.

2. A hook-headed nail or spike having a triangular shank, the triangular sides of which are thickened and spread outwardly into curved triangular shoulders forming part of the head.

3. A hook-headed nail or spike having a shank of triangular form its entire length, a suitable point, and outwardly-curved triangular shoulders forming part of the head.

411,842. SPINDLE-DRIVING DEVICE FOR SPINNING-MACHINES. THEO VANDERWEIL, Yonkers, N.Y. Filed June 4, 1889. Serial No. 313,003. (No model.)

Claim.—1. In spindle-driving devices for spinning-machines, the combination of a spindle, a driving-drum, a driving-band, a tension-arm made of spring metal coiled at one end to form a spring and having its other end free, and a sleeve to which said pulley is attached longitudinally adjustable on said arm, substantially as described.

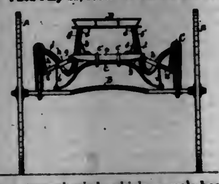
2. In spindle-driving devices for spinning-machines, the combination of a series of spindles, a driving-drum, a driving-band passing alternately about the drum and the spindles and from one end spindle to the other end spindle, a bracket, a spring, a tension-arm controlled by said spring, an idler-pulley, and a sleeve to which said pulley is attached longitudinally adjustable on said arm, said pulley being arranged between the bands passing over and under said driving-drum to the whirls and acting on the band between the end spindles, substantially as described.

3. In a tension-regulator for spindle-driving bands, the combination of a spindle, a driving-drum, a driving-band, a spring, a tension-arm controlled by said spring, a bracket to which said spring is at-

tached, and a set-screw for securing said spring to said bracket and for adjusting the tension of said spring, substantially as described.

4. In spindle-driving devices for spinning-machines, the combination of a series of spindles, a driving-drum, a driving-band passing alternately about the drum and the spindles and from one end spindle to the other end spindle, a bracket, a spring, a tension-arm controlled by said spring, an idler-pulley, a sleeve to which said pulley is attached longitudinally adjustable on said arm, said tension-arm being made of spring metal and having a free end adapted to move up and down as well as forward and back, and said pulley being arranged between the bands passing over and under said driving-drum to the whirls and acting on the band between the end spindles, substantially as described.

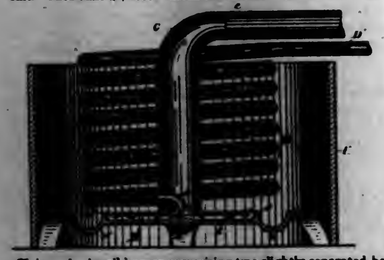
411,848. TWO-WHEELED VEHICLE. HENRY W. VISTHEYER, Columbus, Ohio. Filed July 22, 1889. Serial No. 318,282. (No model.)



Claim.—1. In a two-wheeled vehicle, a scale-beam for the purpose of practically increasing or decreasing the length of the vehicle-spring, said beam being jointedly connected with said spring and its bar and adjustably supported by hangers, substantially as described.

2. The combination, with the frame-work of a two-wheeled vehicle, of a scale-beam for the purpose of practically increasing or decreasing the length of the vehicle-spring, said beam being jointedly connected with said spring and adjustably supported by hangers, substantially as and for the purpose specified.

411,844. VAPOR-BURNER. EDWARD H. WAGNERMAN, Cleveland, Ohio. Filed June 27, 1889. Serial No. 315,098. (No model.)



Claim.—1. An oil-burner comprising two slightly-separated horizontal disks, the upper disk having a central opening for receiving an air-pipe from above, the lower disk having a crowning center and having an annular trough or lighting-cup at the periphery thereof, an upwardly-projecting rim extending athwart the opening between the disks, and a vapor-generator comprising a coil of pipe located above the trough, the lower end of the coil leading into the air-pipe and discharging from thence downward, substantially as and for the purpose set forth.

2. In a vapor-burner, in combination, two slightly-separated horizontal disks, an air or commingling tube leading from above and discharging through a central orifice in the upper disk, a vapor-generator consisting of a coil of pipe surrounding the air-commingling tube and discharging downward inside the latter, and an annular rim projecting up from the lower disk for deflecting the flame against the generating-coil, substantially as set forth.

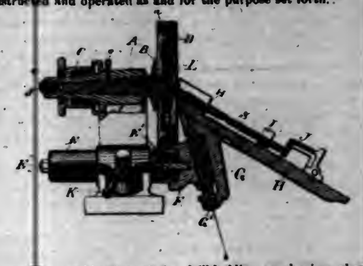
411,845. DRILL-GRINDING MACHINE. OAKLEY S. WALKER, Worcester, Mass. Filed Dec. 23, 1887. Serial No. 258,088. (No model.)

Claim.—1. The V-grooved drill-holder H, in combination with the stationary drill-lip rest *t*, which has its line of drill-contact inclined to the bisecting line of the V-angle and intersecting the same near the apex of said angle, as and for the purpose described.

2. The combination, with the drill-holder H and guide-bracket G, of an inclined and screw-threaded axis of oscillation, along which the drill-holder is helically advanced by said screw-thread when oscillated, as above set forth.

3. In combination with the V-grooved drill-holder H, the separate drill-stop J, and the independent V-shaped support I, which is adjustable in a direction parallel to the axis of the drill, as described.

4. The combination of the drill-holding mechanism, comprising drill-holder H, guide-bracket G, separate drill-stop J, and the independent adjustable V-shaped support I, with the cylindrical slide E, constructed and operated as and for the purpose set forth.

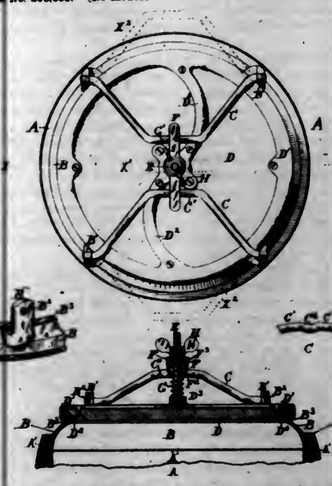


5. The combination of the drill-holding mechanism above described, supported on a cylindrical slide provided with a swivel, arranged to swing the drill to any desired part of the grinding-surface, as described.

6. The drill-holder H, the stationary lip-rest *t*, and the guide-bracket G, combined with the inclined and screw-threaded axis of oscillation G', arranged to helically advance the drill along the axis toward the grinding-wheel as the drill-holder is oscillated, as described.

7. The angular sliding drill-holder H and guide-bracket G, combined with the swivel-head F, arranged to swing the drill across the grinding-surface in a plane parallel to the same, as and for the purpose described.

411,846. CLOSURE FOR CHURNS. HENRY A. WEBBER, Rockton, assignor to Searle, Bishop & Co., Rockford, Ill. Filed Feb. 4, 1889. Serial No. 298,655. (No model.)

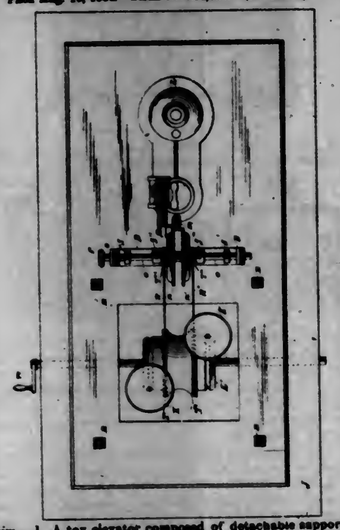


Claim.—1. In combination, a circular cover having a metallic casing inclosing the periphery and upper peripheral angle thereof, and a transverse strengthening-brace integral with said casing, extending across the center of the cover, and provided with a central vertical boss on the upper side thereof, a vertical bolt, threaded at both ends, tapped into said boss, a thumb-nut, a spring coiled about said bolt, a cam-bail button having a vertical hole therein to admit said bolt, and being provided with a central vertical recess on the under side thereof to admit the upper end of said spring, and a central vertical recess on the upper side of the same to receive the thumb-nut, substantially as set forth.

2. In combination, a churn having a cross in the chine thereof, a chine-ring head, concavo-convex in form, seated in said cross, projecting above and extending inwardly from the open end of said churn sufficiently to adapt the upper side thereof to receive and sustain bail-lugs located thereon, cam-bails pivoted to said lugs, a circular cover having a metallic casing inclosing the periphery and upper peripheral angle thereof, and a transverse strengthening-brace integral with said

casing, extending across the center of the cover, and provided with a central vertical boss on the upper side thereof, a vertical bolt, threaded at both ends, tapped into said boss, a thumb-nut, a cam-bail button having a vertical hole therein to admit said bolt, and being provided with a central vertical recess on the under side thereof to admit the upper end of said spring, and a vertical recess on the upper side of the same to receive the thumb-nut, substantially as and for the purpose set forth.

411,847. TOY ELEVATOR. OSCAR A. WEISSENBORN, Jersey City, N. J. Filed Aug. 16, 1888. Serial No. 282,809. (No model.)



Claim.—1. A toy elevator composed of detachable supports fitting into each other and into a bottom platform and secured by pins, a roof supported by uprights, balconies surrounding said supports, braces fitting into notches in the supports, pulleys placed one in the roof and another in the bottom platform, a cord passing over said pulleys, small elevator-cars attached to said cord, and a crank or other means for imparting motion to the cord and elevator-cars, substantially as described.

2. A toy elevator composed of detachable supports fitting into each other and into a bottom platform and secured by pins, a roof supported by uprights, balconies surrounding said supports, braces fitting into notches in the supports, pulleys placed one in the roof and another in the bottom platform, a cord passing over said pulleys, small elevator-cars attached to said cord, a toy engine, clock-work, or other means of imparting motion to the cord and elevator-cars, the gear-wheel *m*, the support D, axle *o*, push-button P, gear-wheels *n n'*, pulleys T, collars S S', pulley L', grooves T, collars S', and cords R R', substantially as described.

411,848. COMPOSITION FOR FUEL. GEORGE A. SWIM, Covington, Ky. Filed Feb. 23, 1889. Serial No. 300,906. (Specimens.)

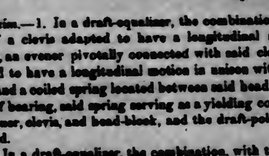
Claim.—1. An odorless and smokeless fuel composition consisting of eighty-seven parts of carbonaceous matter, such as vegetable or mineral coal or peat, three parts of saltpeter, three parts of lime, three parts of sulphite of lime, three parts of sulphate of lime, and one part of chloride of lime, this whole mass bound together and held in suitable shape by a binder of a purely vegetable origin and prepared without chemical treatment, as fully described.

2. In an artificial-fuel composition, the combination of the same with the binder of a purely natural vegetable source and with a deodorizer consisting of three parts of lime, three parts of sulphite of lime, three parts of sulphate of lime, and one part of chloride of lime, as described.

411,849. FASTENER FOR FILE-CASES. THEODORE J. ARMOUR, Chicago, Ill., assignor to the Amberg File and Index Company, same place. Filed May 6, 1889. Serial No. 309,670. (No model.)

Claim.—1. The combination, with a file-case having a front wall B and an opening and closing lid A, of a locking-clamp plate *d*, pivoted to the front wall and having one end bent into a clamping-hook which receives and embraces the front edge of the lid, substantially as described.

2. The combination, with the cover and front wall of a file-case, of a locking-clamp having a hooked end and pivoted to the said front wall to swing in a plane parallel thereto for causing the said hooked end to embrace the front edge of the cover and hold it against the front wall of the case, substantially as described.



3. In a file-case, the combination, with the cover A, having the orifice *a*, of the front B, having a stud *c* to enter the said orifice, and a locking-clamp *d*, swinging in a plane parallel to said front and having a hooked end which directly engages the front edge of the cover and holds the latter against the front of the case and in engagement with the stud, substantially as described.

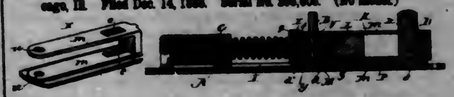
411,850. APPARATUS FOR THE MANUFACTURE OF WOOD-GAS. JOHN D. AVERILL, Brooklyn, N. Y., assignor, by mesne assignments, to the Terrya Patent Gas Company, Philadelphia, Pa. Filed Jan. 17, 1889. Serial No. 296,669. (No model.)



Claim.—1. A wood-gas generator comprising an imperforate cartridge adapted to receive the wood to be distilled and be removably inserted in a retort, said cartridge constructed of sheet metal having an inner open end, a longitudinally-concaved bottom, and of a size to leave gas-passages and heating-spaces between its open end and its sides and the inner walls of the retorts, substantially as described.

2. In a wood-gas-generating apparatus, a normally-closed retort, in combination with an imperforate wood-receiving cartridge removably located in the retort, said cartridge having its inner end open, through which the cartridge is charged and the gas escapes into the retort, said cartridge forming gas-passages and heating-spaces between its open inner and end walls and the inner walls of the retort, for the purpose set forth.

411,851. SPRING-DRAFT ATTACHMENT. HIRAM BARBER, Chicago, Ill. Filed Dec. 14, 1888. Serial No. 293,603. (No model.)



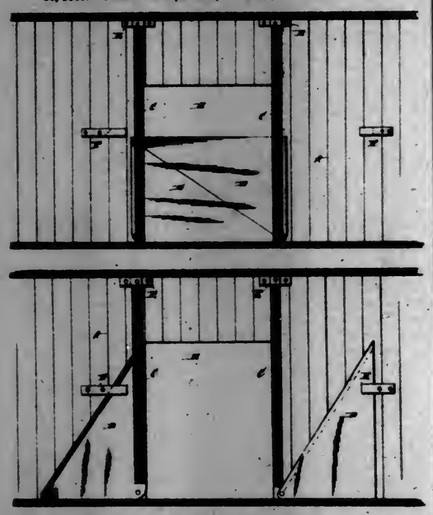
Claim.—1. In a draft-equalizer, the combination, with the draft-pole, of a clevis adapted to have a longitudinal motion relatively thereto, an evener pivotally connected with said clevis, a head-block adapted to have a longitudinal motion in unison with the evener and clevis, and a coiled spring located between said head-block and a fixed point of bearing, said spring serving as a yielding connection between the evener, clevis, and head-block, and the draft-pole, substantially as specified.

2. In a draft-equalizer, the combination, with the draft-pole, of a plate secured thereto, a clevis adapted to have a sliding motion thereon, and guided in its movements by said plate and evener having a pivotal connection with the clevis, a head-block adapted to have a sliding motion on the plate, and guided thereby, a coiled spring having one end bearing upon a rigid support attached to the forward end of the plate, and its other end bearing upon the head-block, said spring serving as a yielding connection between the clevis, the evener, the head-block, and the draft-pole, when a forward draft is brought upon said evener, substantially as specified.

3. In a draft-equalizer, the combination, with the draft-pole, of a plate secured thereto, a clevis *g* adapted to have a longitudinal movement relatively to said plate, said plate being slotted to serve as a guide for the clevis, and adapted to impart the longitudinal movement to the clevis when draft is applied, a head-block adapted to have a sliding movement upon the plate in unison with that of the clevis and evener, and guided in its movements by the plate, and a coiled spring located between the head-block and a fixed point of bearing on the plate, substantially as specified.

4. In a draft-equalizer, the combination, with the draft-pole, of a longitudinally-slotted plate A, a clevis K, having the upper and lower parts *m m*, provided with corresponding eyes or openings at its rear and forward ends, the evener L passing through the clevis, and provided with the plate M, having the sleeve V, the thimble T, passing through the sleeve, and the forward openings of the plates *m m*, the standard D, and bolt B, united by the strap P, said standard passing through the rear openings of the plates *m m*, and the bolt passing through the thimble T, the head-block H, having a head F, and a shank J, said head-block being adapted to have a sliding movement on the plate A, and guided in said movement by the slot therein, the casing C, secured to the forward end of the plate, and a coiled spring located between said casing and the head of the head-block, said parts being arranged for co-operation, substantially as described, and for the purposes specified.

411,852. CAR-DOOR. CHARLES BERNARD, Trenton, Ill. Filed Apr. 16, 1889. Serial No. 307,389. (No model.)



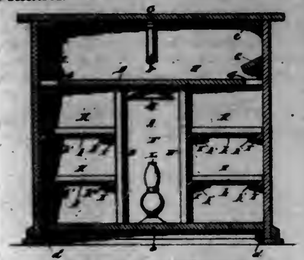
Claim.—1. The combination, with the car, of the triangular door-sections pivoted to the side of the same and having their adjacent edges overlapping when closed, as set forth.

2. The combination, with the car, of the standards C and keepers F, arranged on opposite sides of the door-opening in the side of the car, and the triangular door-sections pivoted on the side of the car and moving between the same and the standards C and adapted to engage the keepers F, as set forth.

3. A car-door consisting of two triangular sections pivoted on opposite sides of the door-opening and having their longest edges adapted to meet across the door-opening, as set forth.

411,853. BREAD-RAISER. ELIJAH BRENTZER and AARON BRENTZER, Hastings City, Pa. Filed June 15, 1888. Serial No. 277,263. (No model.)

Claim.—The improved bread-raiser, comprising the chest, the series of shelves or gratings arranged at each side of the chest and forming an intermediate space adapted to receive a lamp or other source of heat, the deflector located at the top of the said intermediate space and serving to deflect the heat down upon the shelves or gratings, the partition D, arranged above the shelves and providing a kneading-board, and having notches *d* in its sides for the passage of the heat, said partition also forming an upper chamber or compartment for the reception of a thermometer, the transverse strips arranged above the notches and inclined to deflect the heat toward the middle of the upper compartment, and the removable cover, substantially as described.



411,854. FRUIT-CANNER. MARTHA A. CARTER, Ames, Ind. Filed June 29, 1889. Serial No. 315,968. (No model.)



Claim.—1. In a fruit-canner, the inner basket formed of a series of radial arms perforated and provided with a wire bottom, substantially as specified.

2. In a fruit-canner, the basket formed of a series of arms which terminate in guiding-flanges perforated, and provided with a wire bottom having spring-tongues occurring intermediate each of the arms, substantially as specified.

3. In a fruit-canner, the inner basket formed with radial arms perforated for the passage of water, and provided at their lower ends with a series of perforations and a bottom formed of wire, which is passed in a convolute manner from one perforation in one arm to a corresponding perforation in an adjacent arm, and so on throughout the series, substantially as specified.

4. In a fruit-canner, a basket having a series of radial arms, the ends of which terminate in guiding-flanges, the flanges being formed integral with the arms, substantially as specified.

5. In a fruit-canner, the inner basket formed of a series of arms which are perforated and provided with a bottom having spring-tongues, which occur intermediate each of the arms, as set forth.

411,855. DUST-PAN. LEON CLINE, Chicago, Ill. Filed Dec. 7, 1888. Serial No. 292,986. (No model.)



Claim.—A dust-pan made of a single sheet of metal having a pointed rear portion, the corner of such pointed portion being brought flat on the bottom of the pan, and provided with an aperture, both these parts and also the sweeping-edge of the pan being bent downward below the plane of said bottom, substantially as set forth.

411,856. VALVE. SAMUEL P. COLLINS, Binghamton, N. Y. Filed Feb. 14, 1888. Serial No. 263,831. (No model.)



Claim.—1. In combination, a valve having an annular channel and a screw-threaded central projection on its lower face, a packing-ring fitting the channel, and a collar provided with a ledge for holding said ring in place, a channel provided with a packing-ring in the upper face of the valve, a central socket for the end of the valve-spindle, and a ring having an overhanging holding-lip, substantially as described.

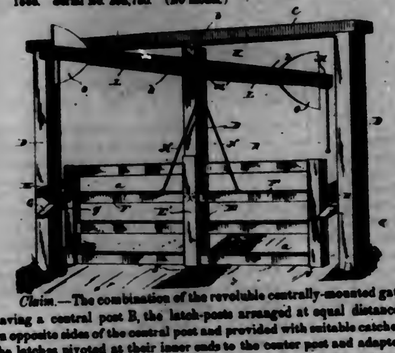
2. In a valve, an annular channel on its upper face provided with a packing-ring, a central socket for the end of the valve-spindle, and a ring having an overhanging lip to bear on the packing, said ring fitting around the valve-spindle and having screw-threads on its outer periphery engaging the screw-threads of the socket, substantially as described.

411,857. HOOK. FRANK R. DE LONG, Philadelphia, Pa., assignor of one-half to Charles F. De Long, same place. Filed Mar. 18, 1889. Serial No. 303,691. (No model.)



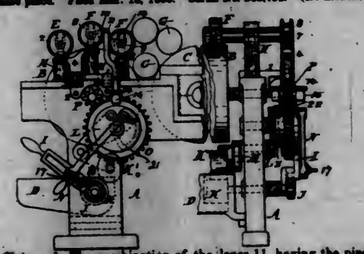
Claim.—A hook comprises of a hook proper and a shank formed of substantially parallel bars, and a tongue having its free end forming a loop coincident with the bend of the hook, said tongue and loop being intermediate of said side bars, substantially as described.

411,858. GATE. THOMAS J. BUSBANK, Bagwell, Tex. Filed Dec. 6, 1888. Serial No. 292,760. (No model.)



Claim.—The combination of the revoluble centrally-mounted gate having a central post B, the latch-posts arranged at equal distances on opposite sides of the central post and provided with suitable catches, the latches pivoted at their inner ends to the center post and adapted to engage the said catches, the operating-bar affixed at its center to the upper end of the center post and at right angles to the gate, the loop N, connected at its free ends, respectively, to the latches, and the operating-cords L L, running over guide-pulleys M and M', and connected at their inner ends to the closed upper end of the loop N, whereby both latches may be raised by drawing either operating-cord, substantially as specified.

411,859. VIBRATING APPARATUS FOR INKING-ROLLERS. SAMUEL G. GOSS, Chicago, Ill., assignor to the Goss Printing Press Company, same place. Filed Mar. 18, 1889. Serial No. 303,732. (No model.)



Claim.—1. The combination of the lever 11, having the pins or rollers 12, 13, and 15, with the wheel O, having the cams 23 24, and the rollers F F', having the grooved wheels 8 and 9, substantially as specified.

2. The lever or arm L, having the pin or roller 22, in combination with the wheel O, having the cams 21, 23, and 24, substantially as and for the purpose specified.

3. In the inking apparatus for a printing-press, the plate 1, having the bearings 2 and 10, in combination with the lever 11 and rocking arm 4, substantially as described.

4. The combination of the rollers E F F', the grooved wheels or sheaves 7, 8, and 9, rocking bar 4, having the pins or rollers 5 6, and lever 11, having the pins or rollers 12, 13, and 15, with the wheel O, having the cams 23 24 constructed and operated substantially as specified.

5. The gear-wheel O, provided with cams 21, 23, and 24, formed substantially as described, in combination with the lever L, the take-up roller K, the lever 11, and the rollers E F F', substantially as and for the purpose specified.

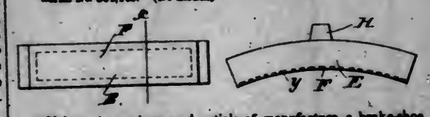
411,860. TRIP-HOOK FOR HAY-ELEVATORS. CLARK HASKINS, Dexanna, Oreg. Filed Apr. 25, 1889. Serial No. 308,542. (No model.)



Claim.—1. The combination of a shank or body, hooks diverging outwardly from the rear side of the same, a trip-hook connected pivotally to its lower end and adapted to fold upwardly against the front side of said shank, a link sliding vertically upon said shank and adapted to engage the trip-hook, and a trip-cord for raising said link, substantially as set forth.

2. The combination of the shank having rearwardly-extending diverging hooks and provided with an eye at its upper end, a trip-hook pivoted at the lower end of said shank, a link sliding vertically upon the latter and having an upwardly-extending bail or staple, a pin extending laterally from the shank to limit the movement of said link, a sheave journaled in the eye at the upper end of the shank, and a trip-cord passing over said sheave and attached to the upwardly-extending bail of the sliding link, substantially as herein set forth.

411,861. BRAKE-SHOE. SAMUEL HAYT, Montreal, Quebec, Canada, assignor to George Sanderson, same place. Filed July 26, 1888. Serial No. 281,105. (No model.)



Claim.—As an improved article of manufacture, a brake-shoe, substantially as described, having a marginal portion of chilled metal formed on its sides and arranged, as described, so that there will be a uniform relative proportion of chilled and soft metal throughout the places of its wear from front to back, the whole substantially as described.

411,862. ENVELOPE OPENER AND SEALER AND STAMP-MOISTENER. CLARENCE C. LAMB, Pittsburg, Pa. Filed Aug. 20, 1888. Serial No. 284,042. (No model.)



Claim.—The combination, with a stamp-moistener consisting of a strip of absorbent material D and an inclosing-case A, provided with slots or openings *g* and *h*, of an envelope-opener or paper-cutter consisting of a blade D and handle D', having flanges *d d'*, said flanges fitting, respectively, above and below the edges of the slot *h*, substantially as described.

411,863. ROAD-CART. HENRY G. LEA, Novada, Ohio. Filed May 6, 1889. Serial No. 309,731. (No model.)



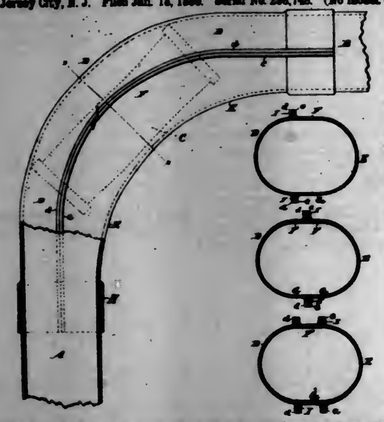
Claim.—1. In a road-cart, the combination, with the thills and cross-bar connecting the same, of the seat-bars having laterally-movable connections with the thills, an inverted curved spring mounted on the cross-bar, and links connecting said spring with the seat-bar and embracing the cross-bar, whereby longitudinal movement of the seat is obviated, substantially as set forth.

2. In a road-cart, the combination, with the seat-bars provided with a corresponding top and bottom series of indentures, of an adjustable seat provided with staples embracing said bars and with studs or pins adapted to be received by said top perforations and form pivotal bearings for the seat, and set-screws for engaging the said bottom perforations to retain the seat in adjusted position, substantially as and for the purpose set forth.

3. In a road-cart, the combination, with the thills and a cross-bar connecting the same, of seat-bars having a pivotal spring connection with the thills, substantially as described, and carrying a seat, and an inverted curved spring mounted on the cross-bar and connected with the seat-bars by laterally-movable elongated links embracing said cross-bar, substantially as set forth.

4. In a road-cart, the combination of the thills, seat-bars connected therewith by approximately U-shaped springs, said springs being rigidly secured to said bars and pivotally secured to the thills in the manner set forth, an inverted curved spring mounted on a cross-bar and in a plane therewith and provided with bearing-eyes at its ends, laterally-movable elongated links bearing in said eyes and embracing the cross-bar, links or rings encircling the seat-bars and connected with said elongated links, and a seat adjustably mounted on the seat-bars, substantially as set forth.

411,864. PNEUMATIC DISPATCH-TUBE. Edwin D. Leavcraft, Jersey City, N. J. Filed Jan. 18, 1889. Serial No. 296,743. (No model.)

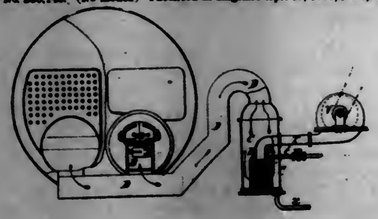


Claim.—1. In a pneumatic dispatch-tube, the combination, with cylindrical straight portions, of a curved portion widened in one direction so as to match to the carrier in traversing it, as herein specified.

2. In a pneumatic dispatch-tube, the flattened portion D E F G, in combination with the straight portions A B, and with the joining means H, adapted to serve as herein specified.

3. The pieces D and E, with their flanges *d* and *e* and the portions F and G, with their flanges *f* and *g*, and joining means H, arranged as shown, in combination with each other and with the straight lengths of cylindrical pipe A and B, as herein specified.

411,865. FURNACE. Robert Le Lan, Walnut Tree, near Cardiff, England, and Albert Rosen, Paris, France. Filed July 12, 1888. Serial No. 280,140. (No model.) Patented in England Apr. 13, 1888, No. 5,527.

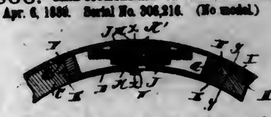


Claim.—1. The grate of a furnace and an air-pump for supplying air under pressure beneath said grate, in combination with an intervening air-moistening device consisting of a casing, an air-inlet leading from the pump and conducting air to the lower part of the casing, an air-outlet to the furnace, leading from the upper part of the casing, whereby the air under pressure is forced upwardly through the casing, a water-inlet pipe entering the upper part of the casing, and a water-distributer adapted to subdivide the water and cause it to descend through the casing in such manner as to intercept and mingle with the ascending air, whereby the latter is caused to pass through the descending water and become thoroughly moistened thereby.

2. The grate of a furnace and an air-pump for supplying air beneath the same, in combination with a casing, an air-inlet pipe leading from the pump to the casing, an air-outlet pipe leading from the casing to the furnace, a cloth or fabric arranged within the casing to be traversed by the air in passing from the inlet to the outlet pipes, and a water-inlet conducting water to said fabric to keep it saturated, substantially as set forth.

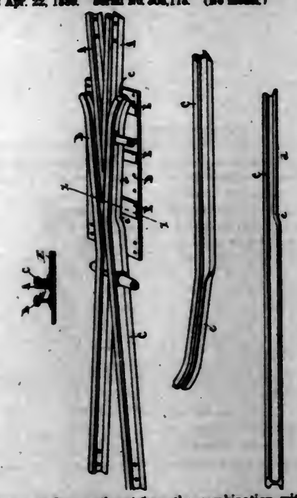
3. The grate of a furnace and an air-pump for supplying air beneath the same, in combination with a casing, an air-inlet pipe leading from the pump to the casing, an air-outlet pipe leading from the casing to the furnace, a frame or box within the casing inclosing the mouth of the air-inlet pipe, a cloth or fabric covering said frame or box, and a water-inlet pipe conducting water to said casing for keeping said cloth saturated, substantially as set forth.

411,866. TIRE-TIGHTENER. Addison E. Leonard, Kinsley, Kans. Filed Apr. 6, 1889. Serial No. 306,216. (No model.)



Claim.—In a wheel, the combination of the divided felly having recesses G in its outer side at its ends, the casing D, arranged between the ends of the felly and provided with the spurs or points E, adapted to enter the ends of the felly, and the lips F, adapted to engage the recesses G, the divided tire fitted around the felly and provided at its ends with the integral internally-threaded bosses J, fitting in the casing, the coupling having its ends engaging said threaded bosses and provided at its center with diametrical openings, the plate K, adapted to be arranged between the ends of the tire and provided on its inner side with longitudinal ribs adapted to engage against the sides of the casing, and the bolt passed through said plate and one of the diametrical openings of the coupling, as set forth.

411,867. RAILWAY-FROG. Walter C. Mehring, Jersey City, N. J. Filed Apr. 22, 1889. Serial No. 308,118. (No model.)



Claim.—1. In a railroad-frog, the combination, with the frog-point, of a wing-rail having a portion of one of its flanges turned up to lie against the rail-web, adapting its head to lie against the point of the frog, substantially as described.

2. In a railroad-frog, a wing-rail reduced in height where it lies adjacent to the point of the frog and with its inner flange turned upward, so that the head of said wing-rail may lie against the point of the frog, substantially as described.

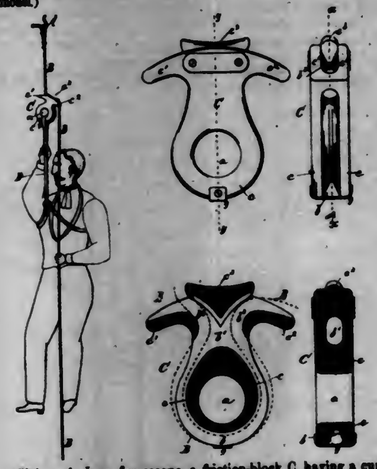
3. In a railroad-frog, the combination, with the frog-point, of the stationary wing-rail, the movable wing-rail with the offset on its under side and upwardly-turned flange, and the raising plate or plates, substantially as described.

411,868. COMBINED PULLEY-BLOCK AND RELAYING-PIN. James E. Miller, Emporia, Kans. Filed Apr. 4, 1887. Serial No. 233,600. (No model.)



Claim.—A shock-binder composed of a block having its front end rounded and pointed, as shown at *e*, the rear end extended to form a handle having a notch in its end, a slot in the side of the block, a pulley mounted therein, and a binding-rope having a loop A in one end permanently secured thereby to the pointed end of the block, its other end being adapted to be passed around the shock, over the pulley, and around the handle, as described, to and across its pointed end, for the purpose set forth.

411,869. FIRE-ESCAPE. Curtis M. Mitchell, Hudson, and Geo. R. Small, Hudson, N. H. Filed June 13, 1889. Serial No. 314,103. (No model.)



Claim.—1. In a fire-escape, a friction-block C, having a curved lower portion with a groove in its outer edge, a central downwardly-tapered portion c^3, having a groove in its inner edge, and one or more wings, as c' c^3, having, respectively, a grooved inner and upper surface, and said block being also formed with an entrance and exit passage for the rope B at its top, substantially as described.

2. The combination, with a fire-escape friction-block C, having an entrance and exit passage at its top, and formed with a curved lower portion having a groove in its outer edge, a central downwardly-extended portion c^3, having a groove in its inner edge, and with one or more wings, as c' c^3, having, respectively, a grooved inner and upper surface, of a suspending-strap D, applied to the lower end of the block, and a rope B, rove through the block and adapted to be suspended from a fixed part of a building and therefrom extend below the block, all substantially as described.

411,870. CHOCOLATE-POT. Charles J. Mulford, New York, N. Y. Filed May 25, 1889. Serial No. 312,062. (No model.)

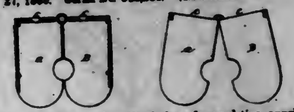
Claim.—1. The herein-described vessel, provided with a cover having an elongated slot therein and a detachable puddler or stirrer adapted to be supported upon said vessel over the cover and extending into the vessel and removable therefrom through the slot in its cover.

2. The combination, with a vessel and its cover B, having a central elongated slot therein, of a detachable frame supporting a vertical shaft having blades and an extended plate F, secured to said frame and bearing upon the cover, substantially as described.

3. The combination, with a vessel and its cover B, having a central elongated slot therein, of a frame removably supported over the cover, provided with a cross-piece *o*, and a curved bar *p*, providing a bearing *q*, a vertical shaft *r*, having a beveled pinion at its end supporting the same in said bearing, so that it may depend therefrom into the vessel through the slot in its cover, a horizontal shaft *n*, and a driving-wheel *v*, meshing with said pinion for rotating the shaft, substantially as described.

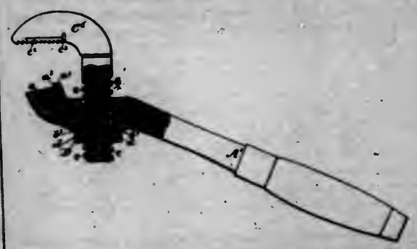


411,871. NECKTIE-FASTENER. Willam B. McCormick, Cleveland, Ohio, assignor of one-half to William A. Smith, same place. Filed May 27, 1889. Serial No. 312,202. (No model.)



Claim.—The herein-described clasp for neck-ties, consisting of the two plates provided with the recess to inclose the shank of the collar-button and the wire pins secured to the plates and having the central spring-coil, the depending pins and spring-coils therefor, and the fast-ening-loops for the pins, substantially as described.

411,872. PIPE-WRENCH. George F. Newell, Newton, Mass., assignor to Stiles Frost, same place, and F. L. Ferguson, Byfield, Mass. Filed Jan. 21, 1889. Serial No. 297,006. (No model.)



Claim.—1. In a pipe-wrench, the combination of a lever having the body A perforated, and hooked lips b^3 on the sides of the perforation, and a toothed jaw at one end, with the nut D, having a peripheral groove, and the movable jaw having its stem screw-threaded and inserted through the perforation of the body of the lever, substantially as described.

2. In a pipe-wrench, the combination of a lever having the body A perforated, and hooked lips b^3 on the sides of the perforation, and a jaw at one end, having a beveled face *a* and a tooth the edge of which overhangs said beveled face, with the circumferentially-grooved nut D and the serrated movable jaw having its stem passing through the lever, substantially as shown and described.

411,873. COVERING FOR VASES. Gustav Gmelin, Chicago, Ill. Filed June 27, 1888. Serial No. 315,772. (No model.)

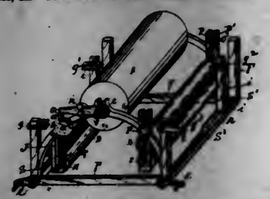
Claim.—1. An ornamental covering for vases, &c., comprising sections of card-board or similar material having a longitudinal fold, whereby each section is formed into two integral parts, in combination with means for flexibly connecting the adjacent edges of the sections, substantially as and for the purposes described.

2. An ornamental covering for vases, &c., constructed in separable sections, each section having a longitudinal central fold or crease and

the side margins thereof having perforations, and lacing-cords whereby to secure the sections together, substantially as described.

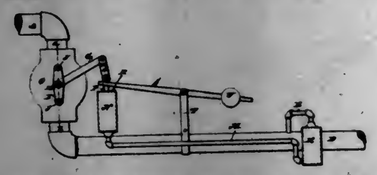


411,874. CLOTH-MEASURING MACHINE. BYRON A. ROATH, Marseilles, Ill. Filed June 6, 1889. Serial No. 313,415. (No model.)



Claim.—In combination with the frame F, the measuring-roll A, having the cam c and cam-strap forming arm c, provided with leg c', roll B, having the pinions L L, racks T T, for engaging said pinions, rolls D and E, the roll E being adapted to be vertically adjusted in boxes O, rotatable checks g, g', g², and g³, having crank Z, adjustable posts i, and screw-rods S', having cranks e, substantially as and for the purpose set forth.

411,875. SAFETY-PRESSURE GAS-REGULATOR. CHARLES M. RYDER, Findlay, Ohio. Filed Jan. 4, 1889. Serial No. 295,451. (No model.)

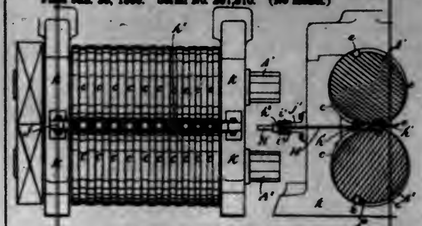


Claim.—1. The combination, with a valve, of a movable fluid-chamber mechanically connected therewith, a balance for such chamber, and pressure communication between the outlet side of the valve and such chamber, a body of fluid being shifted by the forces of pressure and gravity to act on the balance, and so move the chamber, and hence the valve, substantially as set forth.

2. The combination, with a valve, of a movable fluid-chamber mechanically connected therewith, a balance for such chamber, a stationary fluid-chamber communicating with the outlet side of the valve and located at a lower level than the movable chamber, and a flexible pipe connecting the two chambers, a body of fluid being forced into the movable chamber by pressure and running out of it by gravity to disturb its balance and move it, and so operate the valve, substantially as set forth.

3. The combination, with a valve, of a movable fluid-chamber mechanically connected therewith, a weighted lever connected with the chamber so as to balance it, a stationary fluid-chamber communicating with the outlet side of the valve and located at a lower level than the movable chamber, and a flexible pipe connecting the two chambers, a body of fluid being forced into the movable chamber by pressure and running out of it by gravity to disturb its balance and move it, and so operate the valve, substantially as set forth.

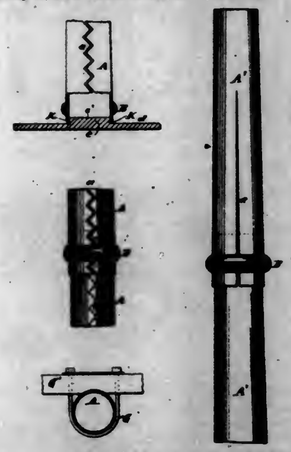
411,876. METHOD OF MANUFACTURING BLANKS FOR AXLE-BOXES. JOHN SUTTER, Baltimore, County of Worcester, England. Filed Jan. 23, 1889. Serial No. 297,310. (No model.)



Claim.—1. The improved method of manufacturing axle-boxes for carriages and other road-vehicles, which consists in passing a heated tubular blank between rolls which form a reduced part or parts, and a collar or collars thereon corresponding, respectively, with the barrel and collar parts of the required axle-boxes, the said tubular blank meanwhile being supported internally by a mandrel, substantially as hereinbefore described.

2. The improved method of manufacturing axle-boxes for carriages and other road-vehicles, which consists in passing a heated round blank between rolls which form a reduced part or parts, and a projecting feather or feathers and a collar or collars thereon, corresponding, respectively, with the barrel, feather, and collar parts of the required axle-boxes, substantially as hereinbefore described.

411,877. METALLIC POLE. SAMUEL H. THEBY, St. Louis, Mo. Filed May 14, 1889. Serial No. 310,907. (No model.)



Claim.—1. A tubular metallic pole having a longitudinal slot extending a part of the length of a section, in combination with a binding-ring, as above described, and for the purposes set forth.

2. In a metallic pole made of tubular or hollow sections, a slotted section having the edges of the slot during a whole or a part of its distance provided with notches or saw-teeth uniting or interlocking in each other, in combination with a binding-ring, substantially as above described, and for the purposes set forth.

3. A tubular or hollow metallic pole having a longitudinal slot extending the whole or a part of the length of the pole, said slot having its edges provided with notches or teeth made integral with the metal of the pole and adapted to unite with each other, in combination with a binding-ring surrounding the pole, as and for the purposes set forth.

4. A tubular metallic pole having a longitudinal slot or slots provided on the edges of the slots with notches or recesses, whereby the edges of the slots are prevented from moving on each other.

5. In a hollow or tubular metallic pole, an internal projecting flange on the inside of the bottom of the pole engaging an outward-projecting flange on a base-plate, in combination with a binding-ring, whereby the base-plate is firmly secured to the pole, substantially as shown and described.

411,878. SPINNING-SPINDLE AND SUPPORT THEREFOR. JOSEPH R. TYRAR, Paterson, N. J. Filed June 7, 1888. Serial No. 276,277. (No model.)

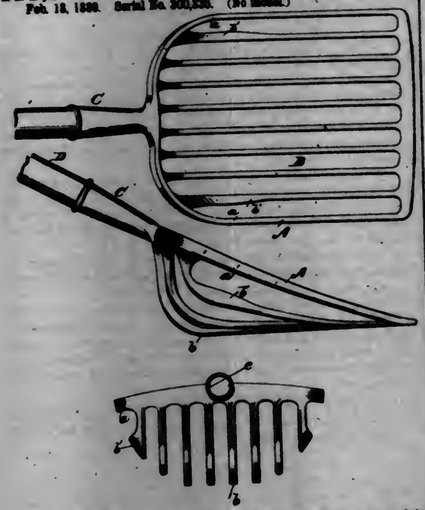
Brief.—The object of the invention is to provide an improved construction whereby the spindle may be self-centering under an unbalanced load, and otherwise to simplify the construction.



Claim.—1. The combination of a bolster-supporting tube having a fixed step-bearing at the bottom thereof, a spindle the lower end of which enters and is confined laterally in said bearing, and which is flexible, unconfined laterally, and free to bend immediately above said bearing, and a bolster fitting the said spindle and having an externally-swelled portion, which alone fits the supporting-tube, substantially as herein described.

2. The combination, with a spindle for spinning, a supporting-tube therefor having a step-bearing for the spindle in its lower part, a lateral oil-passage communicating with said step-bearing, and a shoulder opposite to said tube for supporting a bolster, of a bolster having a projection at its bottom entering said oil-passage, substantially as herein described.

411,879. POTATO-SCOOP. JOSEPH VOWLES, Hilliard, Mich. Filed Feb. 18, 1889. Serial No. 300,836. (No model.)



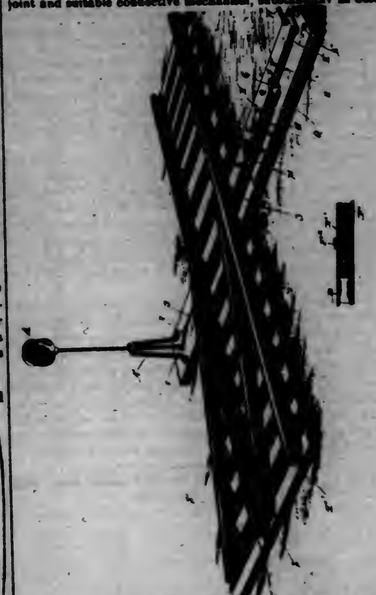
Claim.—1. A potato-scoop, as herein described, consisting of the frame A and the curved ribs B, said ribs being thickened at their heads b and flattened on the under sides of said heads, and the outer ribs thickened also on their sides adjacent to the frame, substantially as described.

2. A potato-scoop, as herein described, having the ribs which are adjacent to and extending parallel with the frame widened to fill the intervening space, substantially as described.

411,880. INTERLOCKING-SWITCH-OPERATING MECHANISM. FRANK P. ARMBRUSTER, Sunbury, Pa. Filed Jan. 9, 1889. Serial No. 295,953. (No model.)

Claim.—1. In an apparatus for producing two or more independent and consecutive motions, the combination of the sliding and twisting piece, a supporting-piece which has inclined guideways, and two or more sliding pieces, against certain parts of which projections on the sliding and twisting piece strike, together with suitable mechanism for imparting motion to the sliding and twisting piece, substantially as described.

2. In an apparatus for producing two or more independent and consecutive motions, the combination of a sliding and twisting piece, a supporting-piece which has guideways upon which certain projections from the sliding and twisting piece move, said guideways being inclined to the axis of motion of the sliding and twisting piece for certain portions of their length, while other portions are parallel to said axis, two or more sliding pieces which move parallel to the axis of motion of the sliding and twisting piece, and which have certain rigid parts with which projections from the sliding and twisting piece engage at predetermined points in its travel, together with mechanism for imparting motion to the said sliding and twisting piece, substantially as described.



3. In an apparatus for producing two or more independent and consecutive motions, the combination of a sliding and twisting piece, a supporting-piece which has guideways upon which certain projections from the sliding and twisting piece move, said guideways being inclined to the axis of motion of the sliding and twisting piece for certain portions of their length, while other portions are parallel to said axis, two or more sliding pieces which move parallel to the axis of motion of the sliding and twisting piece, and which have certain rigid parts with which projections from the sliding and twisting piece engage at various predetermined points in its travel, together with a reciprocating lever connected to the sliding and twisting piece by a swivel-joint and suitable connective mechanism, substantially as described.

4. In an apparatus for producing two or more independent and consecutive motions, the combination of a sliding and twisting piece, a supporting-piece which has guideways upon which certain projections from the sliding and twisting piece move, said guideways being inclined to the axis of motion of the sliding and twisting piece for certain portions of their length, while other portions are parallel to said axis, two or more sliding pieces which move parallel to the axis of motion of the sliding and twisting piece, and which have certain rigid parts with which projections from the sliding and twisting piece engage and disengage at various predetermined points in its travel, together with a reciprocating lever connected to the sliding and twisting piece by a swivel-joint and suitable connective mechanism, substantially as described.

5. In an apparatus for producing two or more independent and consecutive motions, the combination of the sliding and twisting piece, a supporting-piece which has inclined guideways, and two or more sliding pieces against certain rigid parts of which projections on the sliding and twisting piece strike, together with suitable mechanism for imparting motion to the sliding and twisting piece, and a lock operated by one of the said sliding pieces to lock and unlock the other sliding piece, substantially as described.

6. In an apparatus for producing two or more independent and consecutive motions, the combination of a sliding and twisting piece, a supporting-piece which has guideways upon which certain projections upon the sliding and twisting piece move, said guideways being inclined to the axis of motion of the sliding and twisting piece for certain portions of their length, while other portions are parallel to said axis, two or more sliding pieces which move parallel to the axis

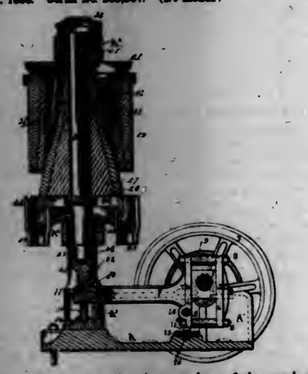
of motion of the sliding and twisting piece, and which have certain rigid parts with which projections from the sliding and twisting piece engage at predetermined points in its travel, and a lock operated by one of the said sliding pieces to lock and unlock the other in its various positions of rest, together with mechanism for imparting motion to the said sliding and twisting piece, substantially as described.

7. In an apparatus for producing two or more independent and consecutive motions, the combination of the sliding and twisting piece, a supporting-piece which has inclined guideways, and two or more sliding pieces against certain rigid parts of which projections on the sliding and twisting piece strike, together with suitable mechanism for imparting motion to the sliding and twisting piece, a locking-bar which has projections which engage with suitable portions of one of the sliding bars, and a bell-crank by which the other sliding piece reciprocates the locking-bar, substantially as described.

8. In an apparatus for producing two or more independent and consecutive motions, the combination of a sliding and twisting piece, a supporting-piece having inclined guideways, two or more sliding pieces which have certain rigid parts with which projections on the sliding and twisting piece engage at predetermined points in its travel, a movable switch connected to one of said sliding pieces, and a tell-tale device connected to the other of said sliding pieces, together with suitable mechanism for imparting motion to said sliding and twisting piece, substantially as described.

9. In an apparatus for producing two or more independent and consecutive motions, the combination of a sliding and twisting piece, a supporting-piece having inclined guideways, two or more sliding pieces which have certain rigid parts with which projections on the sliding and twisting piece engage at predetermined points in its travel, a movable switch connected to one of said sliding pieces, a tell-tale device connected to the other of said sliding pieces, and a locking device for the movable switch, also operated by the second sliding piece, together with suitable mechanism for imparting motion to the first-named sliding and twisting piece, substantially as described.

411,881. CRUSHER. DAVID H. ANDERSON, Granite, Mont. Filed Sept. 17, 1888. Serial No. 285,567. (No model.)



Claim.—1. The combination, in a crusher, of the crank-shaft, a bearing-box therefor, a connecting-bar provided with vertical slideways embracing the bearing-box, and a toggle-lever for actuating the cone and coupled to the connecting-bar, substantially as described.

2. In a crusher, a toggle-lever actuating the cone, a connecting-bar coupled to said toggle-lever and having a slideway at its other end, a crank and a bearing in the slideway, and a swinging link connected to the bar and to the frame, all combined substantially as described.

3. In a crusher, a vertically-reciprocating shaft, a toggle-lever supporting the same, and a connecting-bar interposed and forming the sockets for the adjacent ends of the toggle-levers, said bar connected to the driving mechanism, all combined substantially as described.

4. The combination, in a crusher of the character described, of a vertically-reciprocating conical plunger and a surrounding shell having a conical chamber therein, substantially as described.

5. The combination, in a crusher of the character described, of a vertically-reciprocating conical plunger and a surrounding shell having a chamber of less taper than the taper of the cone, substantially as described.

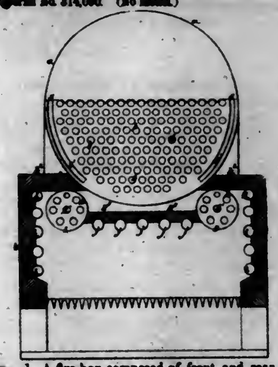
6. In a crusher, the combination of a vertically-reciprocating conical plunger having a fluted surface and a surrounding shell having a less taper than the plunger.

7. In a crusher, the combination of a vertically-reciprocating conical plunger and a surrounding shell fluted on its interior surface, substantially as described.

8. The combination, in a crusher, with a vertically-reciprocating conical plunger, of a surrounding shell having conical chamber, said shell being vertically adjustable on its supports, as set forth.

9. The combination, in a crusher, of a vertically-reciprocating conical plunger having its base downward and a shell having a hardened interior lining with a surface of less taper than the taper of the plunger, substantially as described.

411,882. BOILER. JOHN BAIRD, New York, N. Y. Filed June 13, 1888. Serial No. 314,090. (No model.)



Claim.—1. A fire-box composed of front and rear water-spaces and tubes horizontal, or nearly so, forming the sides and top thereof when said tubes pass through sleeves at one of said ends and are connected to the front and rear water-spaces, all substantially as described.

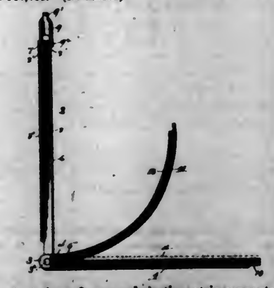
2. In combination with a fire-box composed of front and rear ends and of sides, and a top formed of tubes, all made and connected as described, large tubes provided with flues, such as *I I*, combined therewith, as described.

3. In combination with the end of a fire-box such as is described, and with water-tubes connected therewith and a boiler, a pipe, such as *p*, with a floating valve therein, whereby a connection may be at times established between said tubes and the boiler proper, in the manner and for the purposes set forth.

4. In combination with horizontal flues or tubes inclosed in a shell, as described, deflectors above the upper tier thereof, said deflectors being bars of angle-iron supported as described.

5. In combination with a shell inclosing horizontal tubes or flues, as described, plates of metal extending over the space between the outer flues and the shell of the boiler and provided with depending tubes, which latter descend in the comparatively cool space between the shell and the flues, whereby circulation is improved, substantially as set forth.

411,883. CLAMP FOR MATRIX-PLATES. GILBERT H. EMERSON, Ellenville, and PATRICK M. FURLONG, Albany, N. Y. Filed Apr. 19, 1888. Serial No. 307,705. (No model.)



Claim.—1. A clamp for curved elastic matrix-supports, consisting, essentially, of a flat bed-plate and a frame fitted to the bed-plate and constituting a clamp-jaw and a molding-guard for the same, substantially as described.

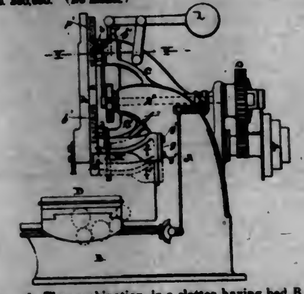
2. In a combined clamp and molding-pan for curved elastic matrix-supports, the combination of a flat bed-plate having one edge provided with a molding-guard with a frame fitted to the bed-plate, constituting a clamp-jaw and a guard for the other sides of the same, substantially as described.

3. In a combined clamp and molding-pan for curved elastic matrix-supports, the combination of a flat bed-plate having one edge provided with a molding-guard recessed on its under side for the reception of one edge of the matrix-support with a three-sided open frame fitted to the bed-plate, constituting a clamp-jaw and molding-guard for the other sides of the same, substantially as described.

4. In a combined clamp and molding-pan for curved elastic matrix-supports, the combination of a flat bed-plate with a frame hinged to move in planes at right angles to the face of the bed-plate and constituting a clamp-jaw and a molding-guard for three sides of the same, substantially as described.

5. In a combined clamp and molding-pan for curved elastic matrix-supports, the combination of a flat bed-plate having one edge provided with a molding-guard recessed on its under side for the reception of one edge of the matrix-support with a three-sided open frame fitted to the bed-plate, constituting a clamp-jaw and a molding-guard for the other sides of the same, and clamps for holding the frame to the bed-plate and for releasing it from the same, substantially as described.

411,884. SLOTTING-MACHINE. HENRY L. SIMMS, New York, N. Y., and ARTHUR J. PRITT, Newark, N. J. Filed July 21, 1888. Serial No. 280,656. (No model.)



Claim.—1. The combination, in a slotter having bed B, table D, and column A, with crank-shaft *d'*, journaled therein, as set forth, of the brackets *c* and *c'*, projected from the column above and below the crank-shaft, the slide *c*, fitted to seats *d d'* upon the brackets and clamped thereto by bolts *b*, and the foot *f*, attached to the lower end of the slide and fixed movably upon the front of the column, substantially as herein set forth.

2. The combination, in a slotter having bed B, table D, and column A, with crank-shaft *d'*, journaled therein, as set forth, of the brackets *c* and *c'*, projected from the column above and below the crank-shaft, the slide *c*, fitted to seats *d d'* upon the brackets and clamped thereto by bolts *b*, the foot *f*, projected from the lower end of the slide adjacent to the bracket *c'* and clamped movably upon the front of the column, and the screw M, connecting the foot and the bracket *c'* to adjust the slide vertically, substantially as herein set forth.

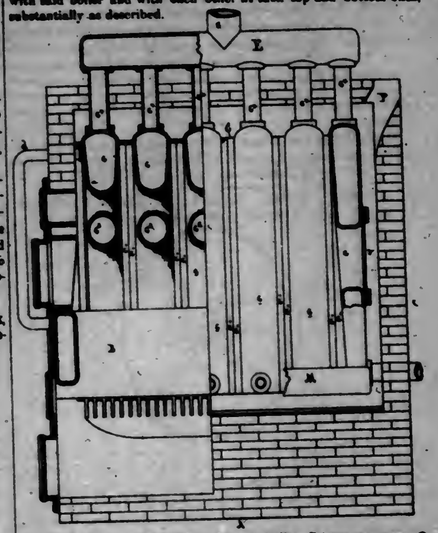
3. The combination, in a slotter having bed B, table D, and column A, with crank-shaft *d'*, journaled therein, as set forth, of the brackets *c* and *c'*, projected from the column above and below the crank-shaft, the slide *c*, fitted to seats *d d'* upon the brackets, and clamped thereto by bolts *b*, the foot *f*, projected from the lower end of the slide, and formed with the flanges *f'*, adapted to move outside the bracket *c'*, the flanges *f'* upon the front corners of the column, with the gibs *g*, and bolts *g'* for clamping the same thereto, and the screw M, connecting the foot and the bracket *c'*, as and for the purpose set forth.

4. The combination, in a slotter having bed B, table D, and column A, with crank-shaft *d'*, journaled therein, as set forth, of the brackets *c* and *c'*, projected from the column above and below the crank-shaft, the slide *c*, fitted to seats *d d'* upon the brackets, and clamped thereto by bolts *b*, the foot *f*, attached to the lower end of the slide and fixed movably upon the front of the column, the tongue *a*, fitted to a recess in the seat *d*, and the ribs *r*, fitted to the beveled edges of the seat, as and for the purpose set forth.

411,885. STEAM-HEATER. EDWIN G. BROWN, Waltham, Mass. Filed Apr. 16, 1888. Serial No. 270,122. (No model.)

Claim.—1. In combination with the fire-pot boiler B, two or more ∩-shaped tubes *c c*, reaching over and around it and connected by a common water and steam passage with it and with each other at their top and bottom ends, substantially as described.

2. In combination with the fire-pot boiler B, two or more ∩-shaped tubes *c c*, reaching over and around it, each provided with cross-tubes *c' c'* and connected by a common water and steam passage with said boiler and with each other at their top and bottom ends, substantially as described.

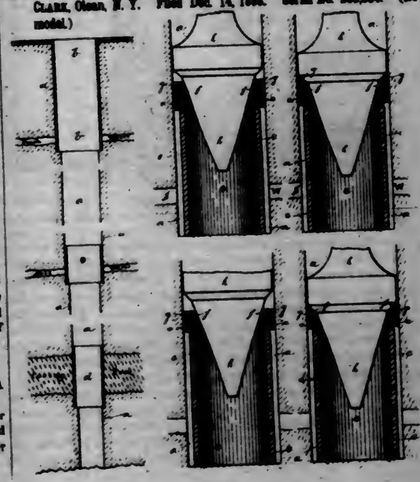


3. In combination with a fire-pot boiler B, two or more ∩-shaped tubes extending over and around it and connected with each other at top and bottom by a common water and steam passage, and the outer shell or casing A around the latter, connected by pipes with boiler B, the whole forming a base-burning heating-furnace, substantially as described.

4. The combination of steam-drum E, ∩-shaped tubes *c c*, one or more water-drums M, fire-pot boiler B, and steam and water escape passage *d*, leading from the upper end of the latter, the whole being connected together by water and steam passages, substantially as described.

5. In combination with fire-pot boiler B, a ∩-shaped tubular reservoir *c*, embracing the fire-pot between its lower ends and provided with a cross-tube *c'*, passing over the fire-pot between its opposite sides and forming a double crown-sheet for the ascending heat, substantially as described.

411,886. CASING FOR ARTESIAN WELLS. ALEXANDER J. CLARK, Ocean, N. Y. Filed Dec. 14, 1888. Serial No. 293,580. (No model.)



Claim.—1. As a means for packing Artesian wells, a short casing adapted to extend a short distance above the vein or rock to be shut off and having a packing at the upper end thereof, substantially as and for the purposes set forth.

2. The combination of a short casing for Artesian wells, a collar and nipple at the upper end thereof, and a packing-ring supported by said collar and nipple, substantially as and for the purposes set forth.

3. The combination of a short casing for Artesian wells, a nipple at the upper end, and a rubber, hemp, or like packing-ring surrounding said nipple and adapted to be forced against the walls of the well by the spreading of the nipple, substantially as and for the purposes set forth.

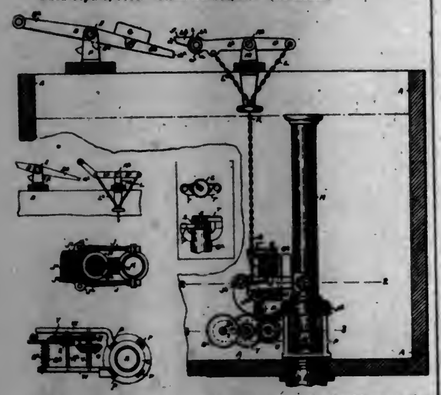
4. The combination, with a short casing for Artesian wells, of a nipple at the upper end adapted to be spread or expanded, substantially as and for the purposes set forth.

411,887. WHEEL. GEORGE B. DEAN, Lancaster, Ill. Filed Nov. 12, 1888. Serial No. 290,637. (No model.)



Claim.—The combination of the hub having a central annular flange, said flange being provided with radial grooves in its sides, transverse openings at the inner ends of said grooves, and lugs near the outer ends of the same at the sides thereof, and the spokes fitting in said grooves and between said lugs and having their inner ends bent laterally and passed through the transverse openings in the flange, as set forth.

411,888. OPERATING MECHANISM FOR VALVES OF WATER-CLOSET OR OTHER TANKS. PATRICK W. DOHERTY, Boston, Mass. Filed Sept. 3, 1888. Serial No. 284,511. (No model.)



Claim.—1. The combination, with a tank for liquid, an outlet-pipe for the liquid, an opening and closing valve to the outlet-pipe, and mechanism adapted to secure an opening and closing of the valve, of gearing composed of a train or series of wheels severally turning on fixed axes, and having the wheel at one end geared to the valve or some part connected therewith, and the wheels interposed between the opposite end wheels and said end wheels adapted to impart to the wheel at the opposite end of the train to the wheel geared to the valve a speed of rotation reduced as compared with that of the end wheel geared to the valve, and of means—such as a spring, weight, &c.—applied to said train to act as a resistant to its movement, substantially as described, for the purpose specified.

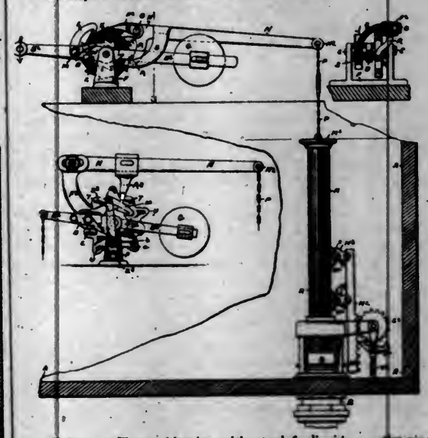
2. The combination, with a tank for liquid, an outlet-pipe for the liquid, and opening and closing valve to the outlet-pipe, and mechanism adapted to secure an opening and closing of the valve, of gearing composed of a train or series of wheels severally turning on fixed axes, and having the wheel at one end geared to the valve or some part connected therewith, and the wheels interposed between the opposite end wheels and said end wheels adapted to impart to the wheel at the opposite end of the train to the wheel geared to the valve a speed of rotation reduced as compared with that of the end wheel geared to the valve, and of means—such as a spring, weight, &c.—applied to said train to act as a resistant to its movement, and also of a ratchet-wheel S, turning on a fixed axis and pawl to engage with and disengage from said ratchet-wheel in the opposite movements of the valve, substantially as described, for the purpose specified.

3. The combination, with a tank for liquid, an outlet-pipe for the liquid, an opening and closing valve to the outlet-pipe, and mechanism adapted to secure an opening and closing of the valve, of a train of gearing connected to the valve or some part connected therewith and adapted to exert resistance to the movement of the valve, and comprising a suitably supported and rotating cam-slotted sleeve O^2, engaged by a pin N of the valve, a pawl T, carried by said sleeve, and an arbor Q, turning in said sleeve and having a ratchet-wheel S, and connected to said gearing-train, substantially as and for the purpose specified.

4. The combination, with a tank for liquid, an outlet-pipe for the liquid, and an opening and closing valve to the outlet-pipe, of a reciprocating lever D, an oscillating lever L^2 at one end, and also one end of said lever D adapted for abutment on and escape from each other in the movement to and fro of lever D, and flexible lines L L^1—such as chains—each connected at one end to and on opposite sides of the fulcrum of lever L^2, and at its other end to the valve or part connected therewith, substantially as described, for the purposes specified.

5. The combination, with a tank for liquid, an outlet-pipe for the liquid, and an opening and closing valve to the outlet-pipe, of an oscillating lever L^2, a lever J, fulcrumed on a suitable support and engaging the valve or some part connected therewith, and lines L L^1—such as chains—connected to the lever L^2 on opposite sides of its fulcrum and to the lever J, substantially as described, for the purpose specified.

411,889. OPERATING MECHANISM FOR VALVES OF WATER-CLOSET OR OTHER TANKS. PATRICK W. DOHERTY, Boston, Mass. Filed Sept. 3, 1888. Serial No. 284,512. (No model.)



Claim.—1. The combination, with a tank for liquid, an outlet-pipe for the liquid, and an opening and closing valve for the outlet-pipe, of a cam rotating about a fixed axis and suitably adapted to be rotated, and a lever having a fixed fulcrum and adapted to rest on said cam and connected to the valve, so that on a rotation in one direction of said cam said lever is operated to open the valve and then the valve left free to close, substantially as described.

2. The combination, with a tank for liquid, an outlet-pipe for the liquid, and an opening and closing valve for the outlet-pipe, of a cam rotating about a fixed axis, a ratchet-wheel turning on a fixed axis to rotate in one direction of its rotation said cam, a pawl to engage and thus to rotate said ratchet-wheel, and adapted to be reciprocated about the axis of said ratchet-wheel, and a lever having a fixed fulcrum and adapted to rest on said cam and connected to the valve, all so that on a rotation in one direction of said cam said lever is operated to open the valve and the valve left free to close, substantially as described.

3. The combination, with a tank for liquid, an outlet-pipe for the liquid, and an opening and closing valve for the outlet-pipe, of two

cams separately and independently rotating about a fixed axis common to both, two pawls—one for each cam—to engage and thus to rotate it, a device carrying said pawls and reciprocating them about the axis of said cams, and a lever having a fixed fulcrum and adapted to rest on each of said cams and connected to the valve, and all so that on a forward and backward reciprocation of said pawls about the axis of said cams one of the said cams will be rotated in said forward and the other in said backward reciprocation of the pawls, and thereby each of said cams rotated about its axis and said lever operated by each, securing two openings of the valve and a leaving of the valve to close after each opening, substantially as described, for the purpose specified.

4. The combination, with a lifting and dropping valve elevated by a positive connection with a valve-lifting mechanism of the water-closet, of a vertical toothed or rack bar N^3, links N^2 at their opposite ends pivoted to the rack-bar and to the valve or some part held thereon, and having abatement-shoulders *g* A at opposite points to abut against the valve or some part held thereon, and a gear-wheel turning on a fixed axis and arranged to mesh with said rack-bar, substantially as described, for the purpose specified.

411,890. MEANS FOR OPENING BOTTLES CONTAINING LIQUIDS UNDER PRESSURE. FREDERICK PEATES, London, England. Filed Dec. 4, 1888. Serial No. 292,694. (No model.)



Claim.—As an improved article of manufacture, the trigger-opener hereinbefore described, and particularly illustrated by Fig. 3 of the accompanying drawings, having a curved part D to overlap the stopper and trunnions E E at its extremities to form the hinge required to operate the pricker C by means of the handle B, as and for the purposes substantially as described.

411,891. CAR-COUPLING. GEORGE W. GEMMING and EDGAR S. LEWIS, Ingraham, Ill. Filed June 13, 1889. Serial No. 314,177. (No model.)



Claim.—The cars A A, provided with counterpart draw-heads B B, containing the cushioned buffer-blocks F, in combination with the headed pin D, moving in said guides, the link C, the chain L, and the arm J, movable either by the lever J^4 or by lever J^3 through the chain K, the whole co-operating in the manner, for the purpose, and in the correlation herein fully shown and described.

411,892. SCISSORS. JOSEPH O. HEBNER, Grand Rapids, Wis. Filed Mar. 18, 1889. Serial No. 303,894. (No model.)

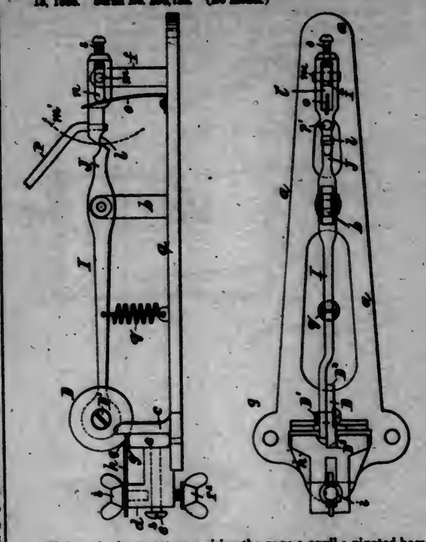


Claim.—1. The combination, with the opposite blades pivoted near their rear ends, of a finger-receiving ring connected to one of the blades intermediate its point of pivot and free ends, and similar rings connected to the opposite blade at each side of its pivot, substantially as specified.

2. The combination, with the pivoted blades, of a loosely-swiveled finger-receiving ring mounted in each blade, substantially as specified.

3. The combination, with the blade 1, of the blade 2, pivoted to each other, as at 7, the blade 1, having the opening 8 intermediate its point of pivot and free end, and the finger-receiving ring 3 swiveled therein, and the blade 2, having the opposite perforation 9 and swiveled ring 5, and the perforation 6 in rear of its pivot, and the loosely-swiveled ring 4 therein, substantially as specified.

411,898. SAW-SET. JAMES ELDER, Bound Brook, N. J. Filed Nov. 13, 1888. Serial No. 290,722. (No model.)



Claim.—1. A saw-set comprising the gage *c*, anvil *c*, pivoted hammer-helve I, with hammer-head pressed toward the anvil by a spring, the lever J, projected from the rear of the hammer-helve, and the trip *l*, formed with slot *n*, fitted movably upon the pin *m*, and provided with adjusting set-screw *s* and spring *o*, the whole arranged and operated as and for the purpose set forth.

2. A saw-set comprising the bed *a*, provided with fulcrum-bearing *b*, trip-bearing *f*, gage *c*, anvil *c*, and set-screw c^2, for clamping the same removably in its place, the hammer-head D, the helve I, with the lever *j* projected from the rear of the bearing *b*, the spring *g*, and the trip *l*, formed with slot *n*, fitted movably upon the pin *m*, and provided with the adjusting set-screw *c*, spring *o*, and hand-lever P, the whole arranged and operated substantially as set forth.

3. A saw-set comprising the bed *a*, provided with fulcrum-bearing *b*, trip-bearing *f*, gage *c*, anvil *c*, having different bevels upon its four corners, numbered substantially as herein set forth, and set-screw c^2, for clamping the same removably in its place, the hammer-head D, the helve I, with the lever *j* projected from the rear of the bearing *b*, the spring *g*, and the trip *l*, formed with slot *n*, fitted movably upon the pin *m*, and provided with the adjusting set-screw, spring, and hand-lever, the whole arranged and operated substantially as set forth.

4. In a saw-set, the combination, with an anvil and a hammer head vibrated to and from the same, of a centering device consisting in the toggles *r'*, jointed together and to the bed of the saw-set, and provided at their outer ends with the mandrel *r*, the socket *t*, and the conical plug *t'*, the whole arranged and operated as and for the purpose set forth.

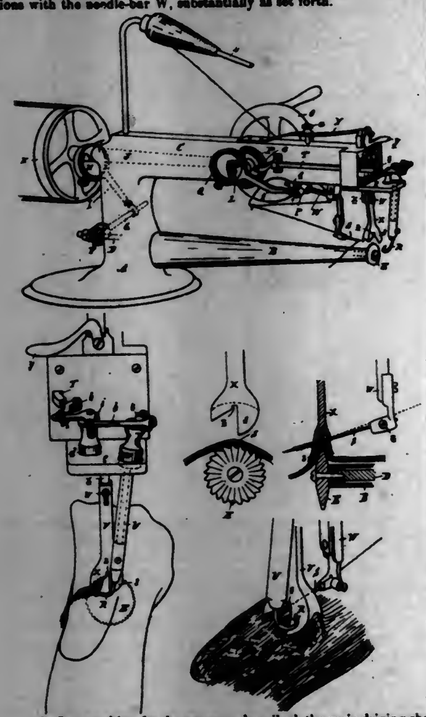
411,894. SEWING-MACHINE FOR MAKING LOOP-STITCH LINING. HENRY H. HUMPHREY, Detroit, Mich. Filed Nov. 24, 1888. Renewed July 13, 1889. Serial No. 317,466. (No model.)

Claim.—1. In a machine for the purpose described, and in combination with the needle and looping mechanism thereof, a feed-disk which decreases in thickness from the center to the periphery and a notched presser-foot extending down on both sides of said disk, and constructed and arranged to press the fabric into a ridge, substantially as described.

2. In a machine for the purpose described, an oscillating looper, a feed-disk which decreases in thickness from the center to the periphery, a grooved presser-foot extending down on each side of the disk, and a reciprocating needle running in a path substantially parallel with the axis of the disk, substantially as described.

3. In a machine for the purpose described, the combination of the table B, shaft D, carrying upon its end a corrugated feed-disk, which decreases in thickness from the center to the periphery, said shaft running through said table, a presser-foot extending down both sides of the disk, and a ratchet-wheel F, secured on said shaft, with the pawl G, connecting strap I, and eccentric H, secured on the main driving-shaft J, substantially as specified.

4. In a machine for the purpose described, the combination, with the stitch-forming mechanism and feeding devices, of the shaft L, journaled transversely through the arm C, with the channeled cam P and its connections with the looper R, and eccentric Q and its connections with the needle-bar W, substantially as set forth.



5. In a machine for the purposes described, the main driving-shaft J, journaled longitudinally in the arm C and carrying upon its end a bevel-pinion N, in combination with shaft L, journaled transversely in the arm C and carrying a bevel-pinion M, the eccentric H, the feed-disk and its connections with the eccentric H, channeled cam P, the looper R and its connections with the cam P, and the eccentric Q, the needle and its bar, and its connections with the eccentric Q, substantially as specified.

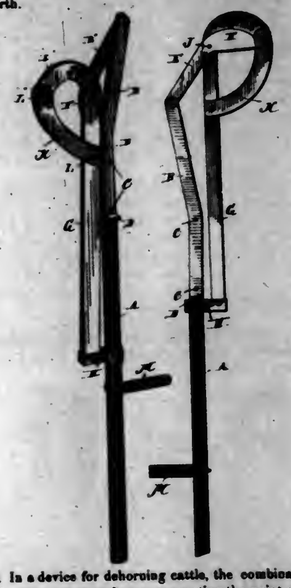
6. In a machine for the purpose described, and in combination with the sewing devices and the feed-disk, a recessed presser-foot extending down both sides of the feed-disk, and having lip 3 extending down between the looper and the material being operated on, substantially as described.

411,895. DEVICE FOR DEHORNING CATTLE. JAMES M. KING, Chester, Nebr., assignor of one-half to John W. Mendenhall and John P. Beermaster, same place. Filed May 9, 1889. Serial No. 310,171. (No model.)

Claim.—1. In a device for dehorning cattle, the combination of a hooked-shaped knife or cutter, plates or braces connecting the point of said cutter with the shank of the same, and a knife or cutter attached pivotally at the base of said hook-shaped cutter, with its point sliding between the said plates or braces, substantially as set forth.

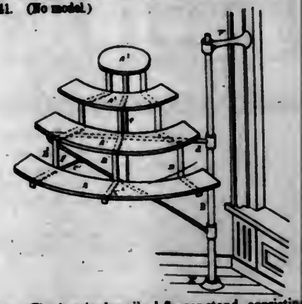
2. The combination of a rod or handle, the metallic bars or straps attached to the sides of the same and having their lower ends bent outwardly to form shoulders or offsets, a knife or cutter having the outer end of its shank mounted pivotally between the outer ends of said straps, a hook-shaped knife or cutter, a bolt or rivet connecting the said knives or cutters at their respective bases, and a ring suitably attached to the shank of the hook-shaped cutter for the passage of the rod or handle, substantially as set forth.

3. In a device for dehorning cattle, the combination of a hook-shaped cutter, straps or braces connecting the point of the same with the shank thereof, a cutter mounted pivotally at the base of the said hook-shaped cutter, a handle having upwardly-extending straps, the outer ends of which are connected pivotally with the outer end of the shank of the pivoted cutter, and a ring or guide for said handle at the lower end of the shank of the hook-shaped cutter, substantially as set forth.



4. In a device for dehorning cattle, the combination of a hook-shaped cutter, straps or braces connecting the point of the same with the shank thereof, a cutter mounted pivotally at the base of said hook-shaped cutter, a ring suitably attached to the shank of the latter, and a rod extending through said ring and having a laterally-extending handle and upwardly-extending straps, the outer ends of which are connected pivotally with the outer end of the shank of the pivoted cutter, and the lower ends of which are bent outwardly so as to form shoulders or offsets, substantially as and for the purpose set forth.

411,896. FLOWER-STAND. JAMES A. KOEHLER and CLARENCE A. KOEHLER, East Saginaw, Mich. Filed Jan. 16, 1889. Serial No. 296,541. (No model.)

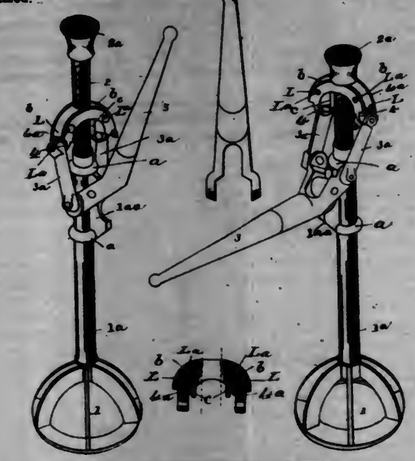


Claim.—The herein-described flower-stand, consisting of a series of stepped brackets, shelves secured to said step-brackets one above the other, a rotatable standard, a bracket-supporting arm constructed of a piece of bent metal having its two extremities fixed to said standard, and braces c, c', and c^2, connecting the opposite portions of said bracket-arm with the said shelves, substantially as set forth.

411,897. LIFTING-JACK. LORENZO MERKER, Chicago, Ill., assignor of one-half to Delivar Mosher, Detroit, Mich. Filed July 9, 1889. Serial No. 316,942. (No model.)

Claim.—1. A lifting-jack consisting of the base A, to the center of the upper surface of which is secured the upright tubular standard 1^a, having the lateral projection 1^m, such projection being secured thereon by collars a a, the bifurcous lever 3, to the ends of which are pivotally connected arms 3^a, which in like manner are joined to the clutch, the clutch 4, consisting of the frame 4^a and dogs b b, as shown, and the screw-threaded cylindrical shaft arranged to freely enter the tubular standard and to be secured at any point by the clutch and having on its upper end head 2^a.

2. The combination of the tubular standard 1^a, the base 1, the lateral projection 1^m, collars a a, bifurcous lever 3, arms 3^a, clutch 4, and screw-threaded shaft 2, all as described, and for the purpose named.



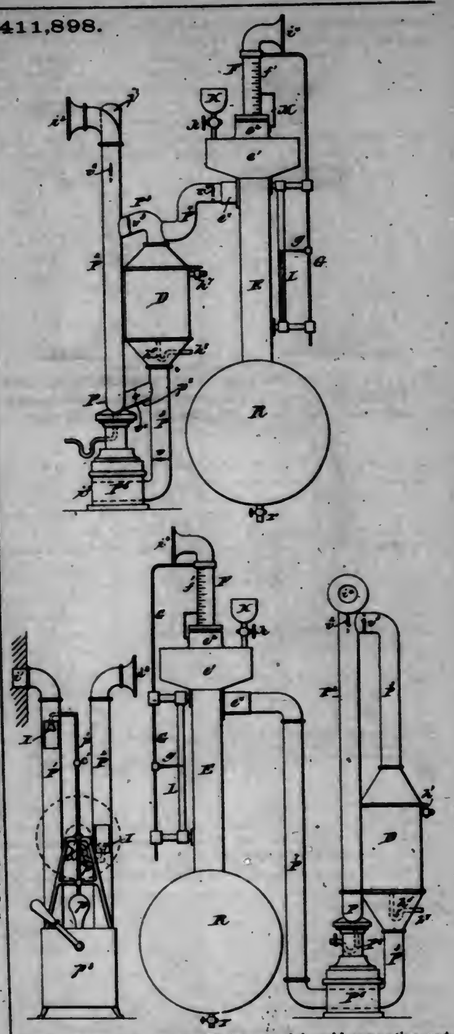
411,898. VENTILATING APPARATUS. MAX MEISTER, Turin, Italy, assignor to himself, Victor de L'Hervilliers, same place, and Theresa Meistera, Munich, Germany. Filed Mar. 10, 1888. Serial No. 266,816. (No model.) Patented in England Feb. 10, 1888, No. 871; in Austria-Hungary Apr. 1, 1888, No. 43,306 and No. 10,097; in Italy Dec. 31, 1888, XLI, 400; in Norway May 2, 1887, No. 626, and in Spain Feb. 16, 1888, No. 12,095.

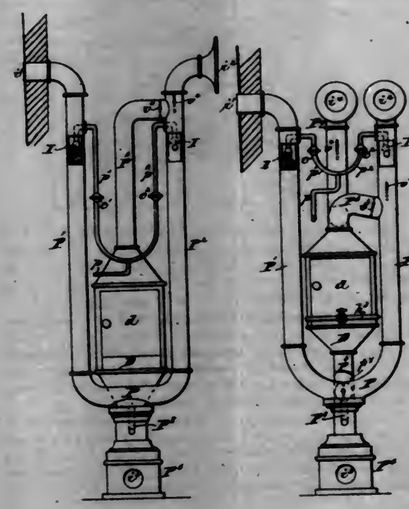
Claim.—1. A combined ventilating and heating apparatus consisting of a U-shaped air-pipe, an injector in the inlet branch thereof, a hot-air pipe connected with the outlet branch of said U-shaped pipe, and a damper in said hot-air pipe, substantially as and for the purposes specified.

2. A combined ventilating and air heating or cooling apparatus consisting of a U-shaped air-pipe, an injector in the inlet branch thereof, the drum D, and air inlet and outlet pipes for the same, said outlet-pipe being provided with a damper and connected with the outlet branch of the U-shaped air-pipe, substantially as and for the purposes specified.

3. A combined ventilating and air heating or cooling apparatus consisting of a U-shaped pipe, an injector in the inlet branch thereof, the drum D, air inlet and outlet pipes therefor, said air-outlet pipe being provided with a damper and connected with the outlet branch

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of the U-shaped pipe, a pipe P^4, interposed in said connection and provided with a damper v^1, and the valved connection p^x between the U-shaped pipe and the air-inlet pipe of the drum D, substantially as and for the purposes specified.

411,899. ELECTRO-MAGNETIC SEPARATOR. RICHARD R. MOFFATT, New York, N. Y., assignor, by direct and mesne assignments, to the Moffatt Electric Construction Company, of New York. Filed Aug. 9, 1888. Serial No. 282,267. (No model.)

Claim.—1. An electro-magnetic separator having one or more electro-magnets that are energized by means of an alternating electric current, substantially as and for the purpose specified.

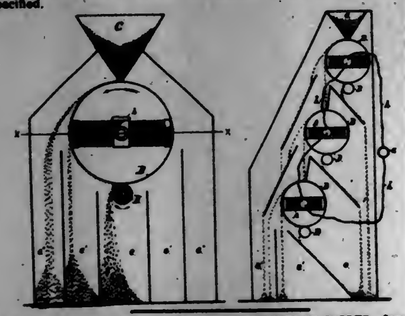
2. In an electro-magnetic separator, an electro-magnet energized by means of an alternating current of electricity, substantially as and for the purpose specified.

3. In an electro-magnetic separator, an electro-magnet, combined with means for rapidly changing its polarity, substantially as and for the purpose herein specified.

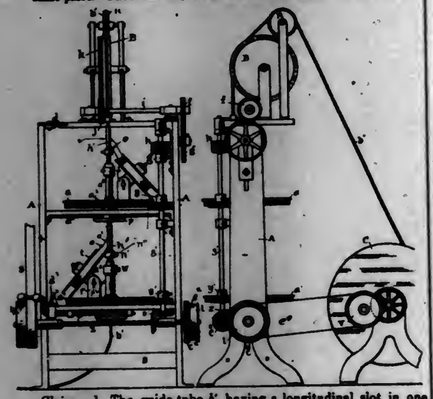
4. In an electro-magnetic separator, the stationary electro-magnet A, located within a magnetic rotating drum B, substantially as and for the purpose specified.

5. In an electro-magnetic separator, the stationary electro-magnet A, located within a rotating drum B, and energized by means of

an alternating electric current, substantially as and for the purpose specified.



411,900. MACHINE FOR COVERING WIRES OR CABLES. JOHN MCCAREY, Providence, R. I., assignor to the New England Butt Company, same place. Filed June 27, 1888. Serial No. 315,784. (No model.)



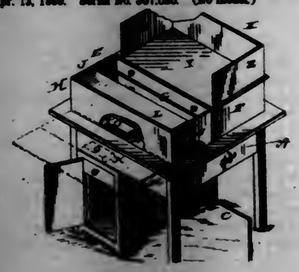
Claim.—1. The guide-tube *h'*, having a longitudinal slot in one side and recessed out at its lower end to fit on the hub of plate *a*, and provided with a set-screw to hold it in place, in combination with said plate *a*, a reel attached to said plate, and mechanism to revolve the plate, substantially as and for the purpose specified.

2. The collar *n'*, furnished with a pin *o* and set-screw, substantially as described, in combination with the tube *h'* and plate *a*, having a reel attached to its face, for the purpose set forth.

3. A reel composed of a plate *t'*, having a hollow hub on its face, the plate *t*, provided with a hub having a hole through it fitted to slide on the hub of the plate *t'*, washer a^3, spring n^3, and screw *t*, in combination with the stud a^3, knee-plate *r*, and plate *a*, substantially as and for the purpose set forth.

4. The combination of plate *a*, gear-wheel *c'*, made adjustable to and from said plate by means of a slot made in the table for its stud, substantially as described, with gear-wheels *g'* and *d'*, upright shaft *s'*, and means for rotating said shaft, for the purpose set forth.

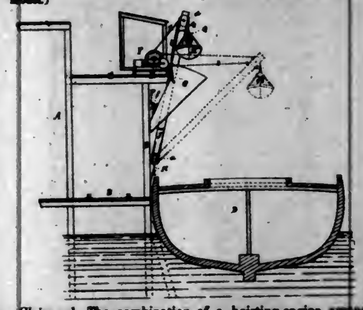
411,901. SEWING-CABINET. JULIA A. MCGLOSSON, Kingston, Tenn. Filed Apr. 13, 1888. Serial No. 307,080. (No model.)



Claim.—1. The combination, with the supporting-table having a hook D on its side, of the rack pivoted at one end to the side of the table and having its free end resting on said hook D, the said rack being made in two sections pivoted together, as set forth.

2. The combination of the table, the stationary frame F, secured on the upper side thereof, the folding frame H, consisting of the base-plate I, the side plates J, leaf K, and partial top L, and the screw X, hinged to the stationary frame F and adapted to swing over the folding frame, as set forth.

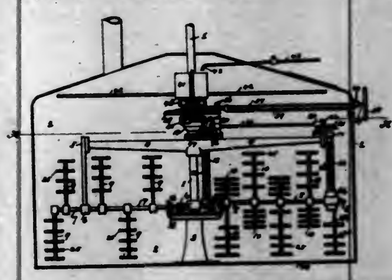
411,902. APPARATUS FOR HANDLING COAL. GEORGE W. RAWSON, Cambridge, Mass. Filed Feb. 21, 1889. Serial No. 300,651. (No model.)



Claim.—1. The combination of a hoisting-engine arranged to move on a track, a hopper secured to said engine and movable therewith, the rail H, the shears having sheaves *d* and guides *e* and adapted to move lengthwise on and swing transversely of the said rail, and the guys *b b*, connected to the engine and shears, with the hoisting-bucket and its operative lines, all supported, arranged, and operated essentially as shown and set forth.

2. The shears provided with sheaves *d d*, guide-prongs *e*, wheels *a*, and hook *c*, pivoted thereto, in combination with the hoisting-engine arranged to move on a track and having secured to it a hopper movable with it, said hopper provided with a wheel to work against a rail P, the rail H, supported as described, for sustaining the shears, the guys *b b*, secured to the engine and shears, and the hoisting-bucket and its operative lines, all supported, arranged, and operated essentially as shown and set forth.

411,903. MASH-MACHINE. GEORGE RIEBECK, Allegheny, Pa. Filed May 31, 1887. Serial No. 239,877. (No model.)



Claim.—1. In a mash-machine, the combination, with the power-shaft and a rigid arm extending angularly therefrom, of a rotatable mixer-shaft provided with the usual mixers and vertically adjustable, whereby said mixers may be brought into or out of contact with the mash, and suitable means whereby to adjust said mixer-shaft.

2. In a mash-machine, the combination, with a vertical power-shaft located axially on the mash-tub, of a longitudinal arm rigidly fixed upon said shaft toward the top of the mash-tub, guides depending from said arm toward the respective ends thereof, a mixer-shaft adjustable vertically along said guides, and suitable means for raising and lowering said shaft, substantially as described.

3. In a mashing-machine, the combination, with a vertical rotary shaft 1, carrying a shaft 7, having a series of mash-arms or paddles 9, and a fixed gear-wheel with which the shaft 7 engages, of a vertically-movable shaft 8, mounted in sliding bearings and adapted to gear with the fixed gear-wheel when lowered, and elevating-screws

for raising said shaft 8 at any desired elevation within the mash-tub, substantially as and for the purpose described.

4. In a mashing-machine, the combination, with a vertical rotary shaft 1, carrying a horizontal shaft 7, having a series of mash-arms, and a fixed gear-wheel with which said horizontal shaft is normally geared, of a vertically-movable shaft 8, journaled in sliding bearings and adapted when lowered to gear with the fixed gear-wheel and be rotated thereby, the elevating-screws 13, for raising the shaft 8 and bearings, and mechanism, substantially as described, for simultaneously rotating the elevating-screws, substantially as and for the purpose described.

5. In a mashing-machine, the combination of a vertically-movable horizontal shaft 8, journaled in sliding bearings and having a series of arms, a vertical shaft 1, carrying upright guides 23, upon which the sliding bearings are fitted, the elevating-screws working in the bearings, a shaft 20, geared to both screws to simultaneously rotate the same, a clutch fitted on the vertical shaft and having one section thereof normally geared with the screw-operating shaft, and an externally-operated shaft adapted to rotate the clutch and the screws to adjust the vertically-movable shaft, substantially as and for the purpose described.

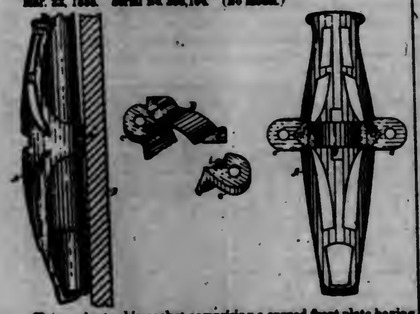
6. In a mashing-machine, the combination of a vertically-movable shaft 8, carrying a series of mash-arms and journaled in sliding bearings, a vertical shaft 1, carrying the beam 4 and the vertical parallel guides 23, upon which the sliding bearings work, the elevating-screws, a horizontal shaft 20, geared to the elevating-screws to simultaneously rotate the same, the clutch fitted on the vertical shaft and having one section thereof geared with the shaft 20, a gear-wheel 28, secured to the other section of the clutch, and an externally-operated rotatory shaft 37, adapted to gear with the wheel 29 to rotate the clutch and the elevating-screws, substantially as and for the purpose described.

7. In a mashing-machine, the combination, with a vertical shaft 1 and a fixed gear-wheel 11, of a vertically-movable shaft 8, carrying a series of mash-arms and journaled in sliding bearings, fixed guides for the bearings, the elevating-screws, a clutch fitted on the vertical shaft and having one section thereof geared with the elevating-screws, an externally-operated shaft for rotating the clutch, and tripping devices for automatically uncoupling the clutch-sections when the vertically-movable shaft reaches its lowest limit and gears with the fixed gear-wheel, substantially as and for the purpose described.

8. In a mashing-machine, the combination, with a vertical shaft 1 and a fixed gear-wheel 3, of a vertically-movable shaft 8, carrying a series of mash-arms and journaled in sliding bearings 46, one of which has a lug 34, the elevating-screws to rotate the same simultaneously, a clutch having one section thereof geared with the screw-operating shaft, and an operating-rod 32, connected at one end with one section of the clutch and adapted to strike the lug 34 when the shaft 8 is lowered, to thereby uncouple the sections of the clutch, substantially as and for the purpose described.

9. In a mashing-machine, the combination, with a vertical shaft 1, carrying the horizontal rotary shafts 8, provided with the mash-arms, of a sectional water-reservoir fitted loosely on the vertical shaft above the horizontal shafts and supported on friction-rollers which rest upon a suitable support, the horizontal radial pipes 42, secured to the reservoir and having a series of fine perforations formed in opposite sides, and a pipe for supplying water to the reservoir, substantially as and for the purpose described.

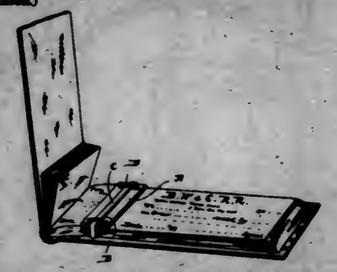
411,904. WHIP-SOCKET. GEORGE P. ROSS, Fenton, Mich. Filed Mar. 22, 1888. Serial No. 268,164. (No model.)



Claim.—1. A whip-socket comprising a curved front plate having side lugs for attachment and a cross-bar extending across the rear portion of said front plate and connected to said front plate at about the center or fulcrum-point, substantially as described.

2. A whip-socket comprising a curved front plate having side lugs for attachment and a cross-bar extending across the rear portion of said front plate and connected thereto at about the center or fulcrum-point by rivets cast on the front plate and headed over the cross-bar, substantially as described.

411,905. STRAIGHT-EDGE FOR RECEIPT OR STUB BOOKS. GEO. ROSS, South Butte, Mont. Filed Mar. 8, 1889. Serial No. 302,703. (No model.)



Claim.—1. The straight-edge for receipt or stub books, consisting of a plate bearing on the leaves and provided with a continuous elastic band encircling both the plate and the book and secured to the plate to hold it in place, substantially as specified.

2. The straight-edge for receipt or stub books, consisting of the plate provided with upstruck ears, and the band extending over the plate and engaged by the said ears, substantially as specified.

3. As a new article of manufacture, the straight-edge for receipt or stub books, consisting of a plate A, having parallel edges and opposite struck-up bent ears formed intermediate its ends, and an elastic band connected to the plate by means of the ears and adapted to extend around the leaves of the book, substantially as specified.

411,906. CULTIVATOR. JAMES SHANK, Clayton, Ill. Filed Mar. 27, 1888. Serial No. 268,033. (No model.)



Claim.—In a cultivator, the combination, with the beams formed as shown and having their rear ends provided with vertically-disposed cross-heads *b*, of the toothed bars or plates arranged above the beams and in engagement with the forward edge of the upper branch of the cross-head, the lower branch of said head being in engagement with the outer side of the yoke, the yoke straddling the beam and plates from below upwardly, and the plates and nuts for securing the yokes in position, substantially as specified.

411,907. GRIP-HOISTING ARCH-BAR FOR CABLE CARS. JOHN STEVENSON, New York, N. Y. Filed July 20, 1888. Serial No. 318,113. (No model.)

Claim.—1. A car having as part of its apparatus a cable-grip machine, and above it an arch-bar adapted to support a tackle for lifting the cable-grip machine, substantially as and for the purpose described.

2. A car having a cable-grip below the car-floor with opening through the floor sufficient for the passage of the cable-grip machine, and over the machine and connected with the upper part of the car structure an arch-bar suitable for holding a tackle adapted to hoisting and lowering the grip-machine in and out of place in the car, substantially as and for the purpose described.

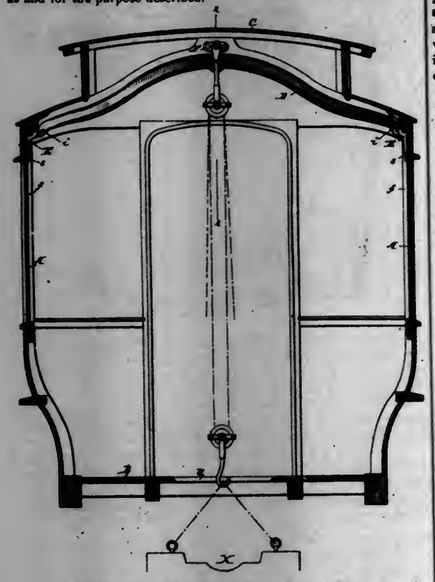
3. A car having above a cable-grip machine an arched bar with its ends supported by the side walls of the car-body, substantially as and for the purpose described.

4. A car having a tackle-supporting arched bar with its ends lodged in metal plates secured to the side top rails of the car-body, substantially as and for the purpose described.

5. A car having a tackle-supporting arch-bar immediately beneath the car-roof, with the ends of the arch-bar lodged in sockets or metal plates secured in part to the side pillar or other portion of the car-body, substantially as and for the purpose described.

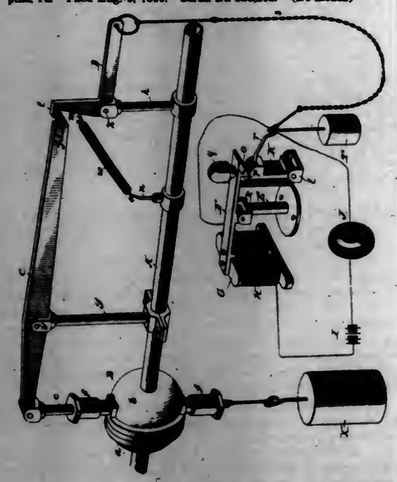
6. A car having a tackle-supporting arch-bar immediately beneath

the car-roof, with the end of the arch-bar connected to a metal plate or socket secured to the side wall structure of the car-body by a detachable connection, permitting removal of the arch-bar without affecting the metal plate or socket union with the car-body, substantially as and for the purpose described.



7. A car having a tackle-supporting arch-bar with and a stay for supporting the crown of the arch, and adapted to permit the arch-bar being removed or withdrawn from its place without disturbing the crown stay or brace, substantially as and for the purpose described.

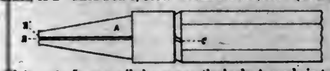
411,908. ELECTRIC VALVE DEVICE. FRANK STEVENS, Philadelphia, Pa. Filed Aug. 9, 1889. Serial No. 320,292. (No model.)



Claim.—1. In an electric valve device, the combination of the supply-pipe, a weighted valve in the line thereof, a standard on the pipe, a lever pivoted to the standard and connected to the valve, a detent adapted to engage the free end of the lever, a spring, a weight connected to the detent, a pivoted dog normally carrying said weight, and an electro-magnet and connections controlling the dog, substantially as set forth.

2. In an electric valve device, the combination of the supply-pipe, a weighted valve in the line thereof, a standard on the pipe, a lever pivoted to the standard and connected to the valve, a second standard also carried by the pipe, an L-shaped detent pivoted to the latter standard and adapted to engage the free end of the lever, a spring, a weight loosely connected to the detent, a pivoted dog normally carrying said weight, and an electro-magnet and connections controlling the dog, substantially as described.

411,909. PENCIL-SHARPENER. PARDON W. TILLINGHAST, Providence, R. I. Filed Dec. 5, 1888. Serial No. 292,762. (No model.)



Claim.—1. In a pencil-sharpener, the body A, made in two pieces, in combination with the collar A', for the purpose of holding the two parts A together.

2. In a pencil-sharpener, the body A, made in two pieces and provided with a ferrule or collar A' and having cutting-edges B and C, the said cutting-edges C being at an angle to the plane of the pencil, for the purpose described.

3. In a pencil-sharpener, the body A, composed of one or more parts and provided with cutting-edges at each end of the same, the cutting-edges C being at an angle to the axis of the sharpener and to the plane of the pencil for the purpose of trimming down the pencil, so that the outside of the sharpener may be the same or a smaller diameter than the pencil.

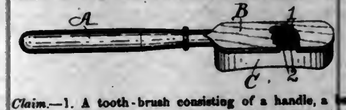
4. In a pencil-sharpener, the body A, composed of one or more parts, in combination with the nut E or other suitable means for adjusting the outlet B' to a large or small diameter, as and for the purpose described.

5. In a pencil-sharpener, the body A, composed of one or more parts and having its smallest diameter slightly removed from the end of the same, for the purpose of giving a curved cutting-edge B at the point or outlet B'.

6. A pencil-sharpener composed of one or more parts and provided with an inwardly-projecting piece D, adapted to press into the pencil and hold the sharpener on the same.

7. In a pencil-sharpener, the combination of the body A, cutting-edges B and C, tongue D, and adjusting-nut E, all for the purpose specified.

411,910. RUBBER TOOTH-BRUSH. HERMAN E. VAN HORNE, New York, N. Y. Filed Mar. 20, 1888. Serial No. 267,871. (No model.)



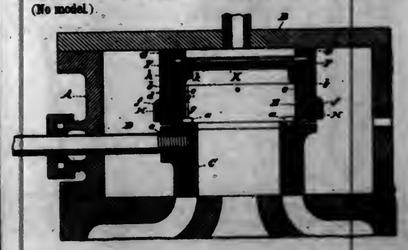
Claim.—1. A tooth-brush consisting of a handle, a back, and a honeycombed brush of soft rubber secured to the back, substantially as described.

2. As a new article of manufacture, a tooth-brush consisting of a handle and a back of hard material and a brush portion constructed of soft rubber secured to the back and honeycombed, substantially as described.

3. A tooth-brush consisting of a handle, a back, and a vertically-honeycombed brush of soft rubber attached to the back, substantially as described.

4. In a tooth-brush, a honeycombed brush portion formed of soft rubber adapted to be attached to a brush handle or back, substantially as described.

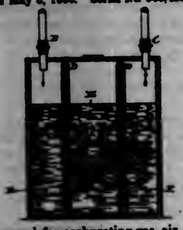
411,911. BALANCED SLIDE-VALVE. WILLIAM A. WHEELAND and JOHN J. WHEELAND, Chicago, Ill. Filed Jan. 28, 1889. Serial No. 297,982. (No model.)



Claim.—1. The balanced slide-valve provided with a hollow extension having steam-passages, in combination with the follower encircling said valve-extension and having between itself and said extension a packing-chamber the upper wall of which is formed by an inner flange upon the follower about midway the height of said follower, said flange forming the bottom of a steam-space communicating with said steam-passages of the valve-extension, substantially as set forth.

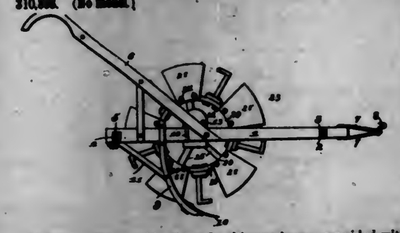
2. The balanced slide-valve provided with a hollow extension having steam-passages, and a covering-plate connected thereto, in combination with the follower encircling said valve-extension and having connected to its lower end a ring, and provided with a steam-space communicating with said steam-passages, said valve-extension having a flange forming with the valve-covering plate the bottom and top walls of a packing-chamber, and said follower having a flange forming with an inwardly-projecting flange of said ring the bottom and top walls of an additional packing-chamber, intermediately of which packing-chambers is arranged the aforesaid steam-space, substantially as set forth.

411,912. CARBURETING COMPOUND. TIMOTHY R. WHELAN, New York, N. Y. Filed May 2, 1889. Serial No. 309,483. (No specimens.)



Claim.—A compound for carbureting gas, air, or other illuminating-fluids, composed of benzole, sulphuric ether, and bisulphide of carbon united, as and for the purposes set forth.

411,913. COTTON-CUTTER. THEODORE C. WILDER, Heber, Tex., and ATWOOD R. WILDER, Homer, La. Filed May 15, 1889. Serial No. 310,893. (No model.)



Claim.—1. The combination of cultivator-beams provided with opposite adjustable brackets secured thereto, and provided with yielding bearings mounted in the brackets, of a transverse shaft mounted in the bearings, and a cupping-wheel mounted on the shaft, substantially as specified.

2. In a machine of the class described, a cupping-wheel consisting of a hub and rim, the latter provided with circumferential slots and with cups mounted in the slots, and intermediate legs or spokes also mounted in the slots, the cups and the spokes being adjustable and having their outer extremities curved upon the same radius, substantially as specified.

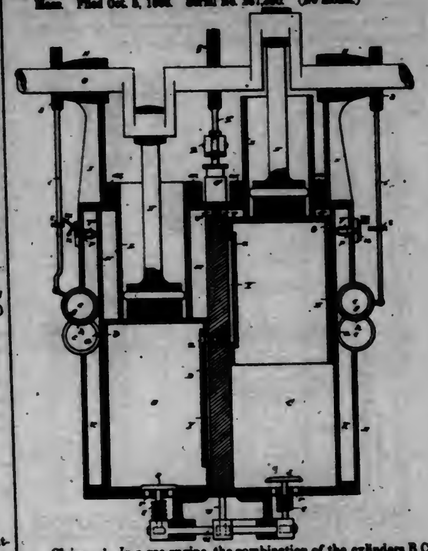
3. The combination, with opposite beams provided with opposite bearings, of opposite shafts mounted in the bearings, a sleeve connecting the shafts, a wheel mounted on the sleeve, and adjustable cups mounted on the wheel, substantially as specified.

4. The cupping-wheel consisting, essentially, of the hub 24 and spokes 25, the double rim 26, having space 27, the cups 28, secured to the rim by flanges 29, and bolts and nuts, and the intermediate arms 33, having the curved foot 36, and also secured to the rim by tenons inserted in the space 27 and held by nuts, as set forth.

5. The beams having the spring-actuated bearing-blocks, the separate opposite shafts or axles mounted in the said blocks, the sleeve connecting the inner ends of the separate shafts, and the cupping-wheel mounted on the sleeve, as set forth.

6. The beams having the adjustable brackets 13, forming bearings and having spring-actuated bearing-blocks carried thereby, combined with the cupping-wheel, having its shaft or axle mounted in the brackets and held down by the bearing-blocks, as set forth.

411,914. HYDROCARBON-ENGINE. ROBERT ALDERSE, Melville, Minn. Filed Oct. 5, 1888. Serial No. 287,260. (No model.)



Claim.—1. In a gas-engine, the combination of the cylinders B C, trunk-pistons with contracted portions forming chambers, and with recesses, as described, the cylinders O O', with piston-valves P P', provided with ports U U' and W W', the pipes V V', with fluid and air inlets, means, substantially as described, for operating the piston-valves P P', and igniting-jets *d*, communicating through ports with the cylinders, as set forth.

2. In a gas-engine of the character described, the combination of the pipe V, the fluid-supply pipe *p*, the air-valve *n*, and a tripping device applied to the rod *i* of the lighting device, substantially as described.

3. In a gas-engine, the combination of cylinders B C, trunk-pistons having contracted portions forming elongated chambers Y, the cylinders O O', provided with piston-valves P P', ported at U U' W W', the pipes V V', having fluid and air inlets, the ports Z Z X X', and means, substantially as described, for operating said valves P P', and igniting-jets *d*, communicating through ports with the cylinders, as specified.

4. The combination of the cylinders B C, the trunk-pistons constructed, as described, with recesses Y and ports Z *b*, the ported cylinders c c, communicating with each other and with the ports *b*, and gas-jets in said cylinders, for the purpose specified.

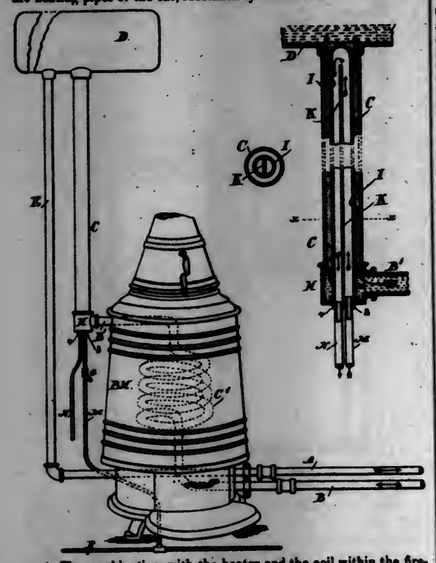
411,915. HEATING APPARATUS FOR RAILWAY-CARS. WILLIAM C. BAKER, New York, N. Y., assignor to the Baker Heater Company, same place. Filed Dec. 10, 1888. Serial No. 293,120. (No model.)

Claim.—1. The combination, with the expansion-vessel D, pipe E, and the heating-pipes within the car through which the water circulates, of the vertical pipe C below the expansion-vessel, the tube I within the pipe C, the head H, that closes the lower end of the pipe C and to which the pipe I is connected, the pipe M, for supplying steam, and the pipe N, for the water of condensation, and a partition within the pipe I for promoting the circulation of the steam within such pipe I, substantially as set forth.

2. The expansion-vessel D, descending pipe E, heating-pipes within the car, the end A of which is connected to the pipe E, a heater having a fire-chamber, and a coil of pipe within the fire-chamber, the lower end of which is connected to the pipe B of the heating-pipe, a vertical pipe C, connected at its upper end to the expansion-vessel and at the lower part to the upper end of the coil within the heater, the head H, for closing the lower end of the pipe C, the vertical steam-heating pipe I within the pipe C and connected at its lower end to the head H, and the pipes M and N, connected to such head and opening into the pipe I for supplying steam to such pipe I and taking off the water of condensation, substantially as set forth.

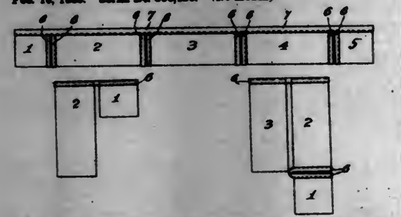
3. The combination, in a car-heating apparatus, of the heating-coil within the fire-chamber of the heater, an ascending pipe C, ex-

pansion-drum, descending pipe E, and heating-pipes within the car for the circulating hot water, and a steam-heating pipe within the vertical pipe C for imparting heat to the water within such pipe C and causing the same to circulate up into the expansion-vessel and thence through the heating-pipes of the car, substantially as set forth.



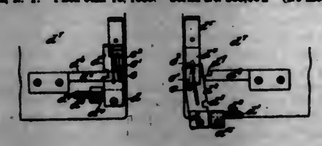
4. The combination, with the heater and the coil within the fire-chamber thereof, the heating-pipes within the car for circulating hot water, and an elevated expansion-vessel, of a rising pipe for the circulating water extending from the upper end of the coil to the expansion-vessel, and a steam-supply pipe and heater acting upon the water in the rising pipe and entirely above the coil in the fire-chamber of the heater, substantially as specified.

411,916. METHOD OF MAKING BUTTON-HOLE STRIPS. MORRIS F. BRAY, Amenia, assignor to Henry W. Lyon, Bridgeport, Conn. Filed Feb. 16, 1889. Serial No. 300,180. (No model.)



Claim.—The method of making button-hole strips from separate short sections, the same consisting in placing the ends of successive sections in alignment, uniting said ends by stitching a binder around the same and throughout their length, swinging the sections so united into extended alignment, whereby the strip is formed and said bound ends are brought into parallelism to form the button-holes, and stitching a continuous binder around and throughout the length of the front or closed edge of the strip, substantially as set forth.

411,917. PLAITING ATTACHMENT FOR SEWING-MACHINES. ALFRED FAHLBERG, Jersey City, N. J., assignor to Eli W. Broadbent, New York, N. Y. Filed Jan. 10, 1889. Serial No. 296,004. (No model.)

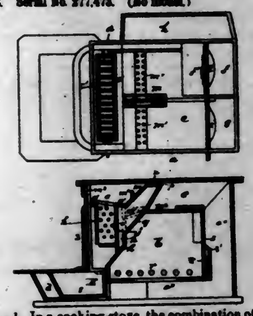


Claim.—1. The combination, with two sewing-machines, of two knives or tongues, levers for operating said knives or tongues, mechanism, substantially such as described, for operating both said sewing-machines and said levers in unison, springs on the levers for forcing said knives or tongues in one direction, bearing-surfaces against which said knives or tongues are forced by said springs, and other springs adjacent to said knives or tongues adapted to bear directly thereon to force them away from the goods when moved in one direction and acting against the resistance of the springs first named, substantially as specified.

2. The combination, with two sewing-machines, of two reciprocating knives or tongues, levers for operating said knives or tongues and with which the latter have pivotal connections, bearing-surfaces, springs on the levers exerting pressure in opposite directions for forcing the knives or tongues against said bearing-surfaces, and other springs adjacent to said knives or tongues and adapted to bear directly against the same to force the knives or tongues away from the goods when moving in one direction, the operation of said first-named springs being such that one of said knives will be forced downwardly while the other is being forced upwardly, and vice versa, substantially as specified.

3. The combination, with two sewing-machines, of two knives or tongues having oblique movements in contrary directions, guides for the knives or tongues guiding them in oblique direction, levers for operating said knives or tongues and with which the latter are pivotally connected, bearing-surfaces adjacent to each of said knives or tongues, springs on the levers for forcing said knives or tongues against the bearing-surfaces, and other springs adjacent to the knives or tongues and adapted to bear directly upon the same in order to move the knives or tongues away from said bearing-surfaces when moving in one direction, substantially as specified.

411,918. COOKING-STOVE. WILLIAM A. GREBER, Ocean Grove, assignor of one-half to Edward R. Cahoone, Newark, N. J. Filed June 18, 1888. Serial No. 277,473. (No model.)



Claim.—1. In a cooking-stove, the combination of a fire-box having an air-space surrounding it, said air-space being closed all round at the top and also at the bottom on the rear side and having a passage leading from it up to the top of the stove, and diffusion-chambers formed on the under side of the top communicating with the passage, as set forth.

2. In a cooking-stove, the combination of a fire-box and air-space surrounding the fire-box and closed at the top thereof, and a passage leading from the air-space to diffusion-chambers on the under side of the stove-lid, said passage having openings communicating with the oven, as set forth.

3. In a cooking-stove, an extension formed on the back of and above the fire-box, having the hook or projection m^3, as set forth.

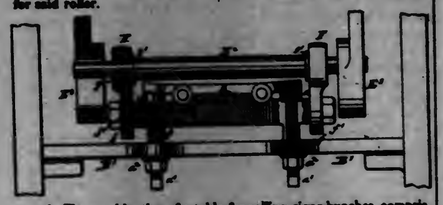
4. In a cook-stove, the combination of the fire-box, the passage m above and back of it, a hook or projection m^3 on the front of said passage, and a door m^2 at the top of the front thereof, as set forth.

5. In a cooking-stove, the combination, with a fire-box, oven, and flues around the oven, of the projections t' t' at the back of the oven in the rear flue of the stove, as and for the purpose set forth.

411,919. CIGAR-BUNCHING MACHINE. FERDINAND J. HAGEN, New York, N. Y. Filed Oct. 1, 1888. Serial No. 286,884. (No model.)

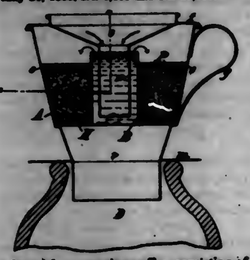
Claim.—1. The combination of a table for rolling cigar-bunches, comprising a middle portion and side portions hinged to swing upward, adjusters to hold the side portions in inclined positions, and a rolling-apron.

2. The combination of a table for rolling cigar-bunches, comprising a middle portion and side portions hinged to swing upward, adjusters to hold the side portions in inclined positions, a rolling-apron, a reciprocating light-forming roller, and vertically-adjustable guides for said roller.



3. The combination of a table for rolling cigar-bunches, comprising a middle portion provided with a transverse pocket and side portions hinged to swing upward, adjusters to hold the side portions in inclined positions, a rolling-apron, a reciprocating light-forming roller, and vertically-adjustable guides for said roller.

411,920. FUNNEL FOR PREPARING COFFEE. CARL HEISSER, Hamburg, Germany. Filed Aug. 23, 1888. Serial No. 283,716. (No model.) Patented in Germany Feb. 2, 1888, No. 43,673; in France Feb. 6, 1888, No. 185,916; in Belgium Feb. 6, 1888, No. 84,913, and in Austria-Hungary May 30, 1888, No. 6,169 and No. 10,988.



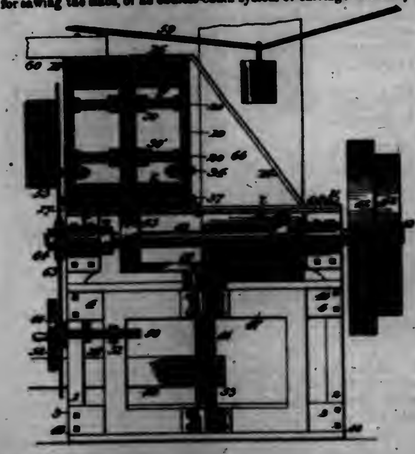
Claim.—The funnel for preparing coffee, consisting of the combination of the outer mantle A, the strainer H in said mantle, the tube B, having a closed bottom above the strainer H, and the infusion-vessel c, having an attached tube r, and supported upon the mantle A, with said tube r within the tube B, substantially as herein described.

411,921. REMEDY FOR NEURALGIA. JACOB O. ISHAM, Jr., Ivydell, Tex. Filed May 27, 1889. Serial No. 312,207. (No specimens.)

Claim.—The described compound for relieving neuralgia, consisting of butternut, alder, hoshane, oil of sassafras, carbonate of iron, spikenard-root, sapocarbonate of soda, and pepsine in wine syrup or other suitable vehicle, in about the proportions set forth.

411,922. SLAB-SAWING MACHINE. ALBERT T. LINDERMAN, Whitehall, Mich. Filed Feb. 12, 1887. Serial No. 227,451. (No model.)

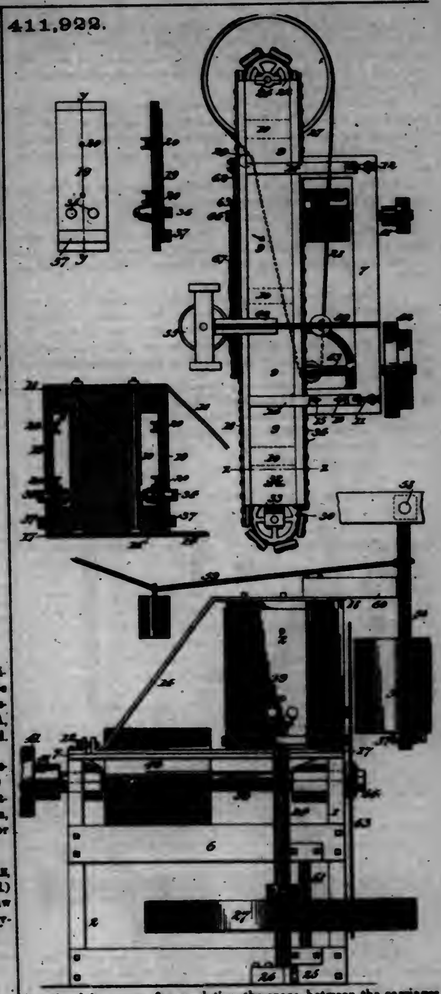
Claim.—1. In a slab-sawing machine, the combination, with a saw for sawing the slabs, of an endless-chain system of carriages for carrying the slabs, means for regulating the space between the carriages and the saw, whereby the thickness of the lumber cut from the slab is regulated, wood or soft-metal faced supports upon the carriages for supporting the slabs, wood or soft-metal faced receding dogs in the carriages for dogging the end of the slab, whereby it is driven along with the carriages, a reciprocating presser-wheel ahead of the saw for holding the slab against the carriages, and suitable mechanism for stopping, starting, or reversing the feed of the carriages, substantially as set forth.



2. In slab-sawing machines, the combination, with a saw for sawing the slabs, of a moving endless-chain system of carriages provided with receding dogs which recess in the carriages when covered by the slab, but become operative to dog the end of the slab when not so covered, whereby the slab is driven with the carriages, substantially as shown and described.

3. In slab-sawing machines, the combination, with a saw for sawing the slabs, of an endless-chain system of moving carriages provided with wood or soft-metal faced feet for supporting and carrying the slab while it is being cut, means for changing and regulating the distance of the travel of the moving carriages from the saw, whereby the thickness of the lumber cut from the slab is regulated, and a presser-wheel for holding the slab in position on the carriages, as set forth.

411,923.



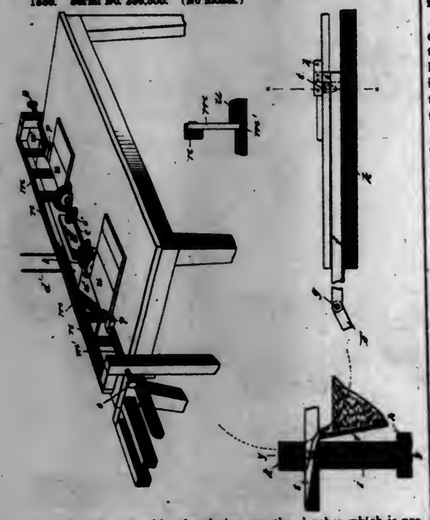
4. In the moving endless-chain system of carriages for slab-sawing machines, a carriage provided with wood or soft-metal faced receding dogs for driving the slabs, whereby contact of the saw-teeth with said dogs is rendered harmless to the saw-teeth, substantially as shown and described.

5. In the moving endless-chain system of carriages for slab-sawing machines, a carriage provided with a wood or soft-metal faced foot for supporting the slab, whereby contact of the saw-teeth with said foot is rendered harmless to the teeth of the saw, substantially as shown and described.

6. The combination, in a machine for sawing slabs, of a saw for sawing the slabs, an endless-chain system of moving carriages for carrying the slab, means for regulating the distance evenly of the carriages from the saw, whereby the thickness of the lumber cut is regulated, and the presser-wheel 55, arranged to operate in holding the slab to the carriages where they are regulated, substantially as set forth.

7. The machine for sawing slabs, consisting, essentially, of a vertical circular saw, a vertical flat-surfaced endless carrier moving parallel to the plane of the saw and provided with a bottom support for the slab, and dogs for dogging it at its rear end, and a presser-wheel adapted to act upon the rough side of the slab, substantially as set forth.

411,923. DOVETAIL-JOINT-CLOSING MACHINE. ALBERT T. LUDERMAN, Whitehall, Mich. Filed Mar. 6, 1886. Renewed Feb. 9, 1889. Serial No. 299,355. (No model.)



Claim.—1. A machine for closing together lumber which is provided with interfitting dovetail joints upon its edges, having the following elements: a table for the receiving and incoming lumber, a pusher for driving the incoming into the receiving stock, a guide-fence alongside the pusher's travel for regulating the position of the incoming piece, an adjustable follower-block to support the end of the receiving stock against the push of the incoming piece, and gages to regulate the position of the receiving stock when it is pressed against them, which gages are so arranged as to recede from before the incoming stock as it is driven home, substantially as set forth.

2. In a dovetail-joint-closing machine, the combination, with a reciprocating pusher for driving the stock and an adjustable guide-fence alongside the pusher's travel to regulate the position of the incoming stock, of two sets of devices at opposite sides of the table, each of which sets of devices consists of an adjustable follower-block to support the end of the receiving stock against the push of the incoming stock and gages to regulate the position of the receiving stock, so arranged as to recede from before the incoming stock as it is driven home, substantially as set forth.

3. The combination, with the table for the receiving and incoming lumber, a guide-fence, a stop for the receiving lumber to resist the push of the incoming piece, and receding gages to regulate the position of the receiving lumber, of a gluing device for applying liquid glue to the edge of the incoming piece as it is driven into the receiving piece, substantially as set forth.

4. In a machine for closing dovetail tenon-joints, the combination, with a table for the receiving and incoming lumber, a stop for the receiving lumber, receding gages to regulate the position of the receiving piece, and a gluing device for spreading liquid glue from a glue-pan underneath upon the edge of the incoming piece while in transit, of a waste-glue spout opposite the gluing device recessed in the table-top and a pusher for driving the incoming stock, having overhanging ends whereby the stock is driven home without interference to the waste-glue spout, substantially as shown and described.

5. In a machine for closing dovetail tenon-joints, the combination, with a table for the lumber, a guide-fence, and a reciprocating pusher having overhanging driving ends, of two sets of devices at opposite sides of the table, each set consisting of a gluing device, a stop-block for the receiving lumber, pendent sidewise-yielding gages, and a trough recessed in the table for waste glue, as and for the purposes set forth.

6. In a machine for closing dovetail tenon-joints, the combination, with a table for the receiving and incoming lumber, a guide for the incoming lumber, and a gluing device, of the bar n above the table and gage-pins m, pivotally attached to the bar to gage the position of the receiving lumber and recede successively before the incoming lumber, substantially as set forth.

7. The combination, with a table for the receiving and incoming lumber, a guide-fence, a gluing device, a pusher for the incoming piece of lumber, and a stop for the receiving lumber to resist the push of the incoming piece, of gages pivotally arranged above the table to regulate the position of the receiving lumber and to yield sidewise before the incoming piece, substantially as specified.

8. The machine for closing dovetail joints, consisting, essentially, of a pusher reciprocating along a table for supporting the material to be joined and adapted to drive the incoming stock and a stop for holding the other portion of the stock against the push of the incoming stock, in combination with said table and separate devices for positioning both parts of the stock preparatory to uniting them, substantially as set forth.

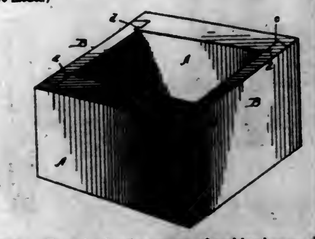
9. In a machine for uniting tongued and grooved lumber, the combination, with a table for supporting the material to be joined and a power-driven pusher reciprocating along such table and acting to drive the incoming stock, of one or more gages for positioning the receiving stock, such gages being located in the path of and adapted to be moved out of the way by the incoming stock, and a holding device for the receiving stock, substantially as set forth.

10. In a machine for uniting tongued and grooved lumber, the combination of a table for supporting the material to be joined, a reciprocating pusher for driving the incoming stock moving along said table, and a fence against which the incoming stock is positioned, with a stop for holding the receiving stock against the push of the incoming stock and a gage or gages against which the receiving stock is positioned, substantially as set forth.

11. In a machine for uniting tongued and grooved lumber, the combination, with a table for supporting the material, a reciprocating pusher moving along said table and adapted to drive the incoming stock into the receiving stock by a lengthwise-sliding movement, and a stop for holding the receiving stock, of a brush-wheel located essentially as shown and adapted to apply glue to the edge of the moving stock as it enters the receiving stock, substantially as set forth.

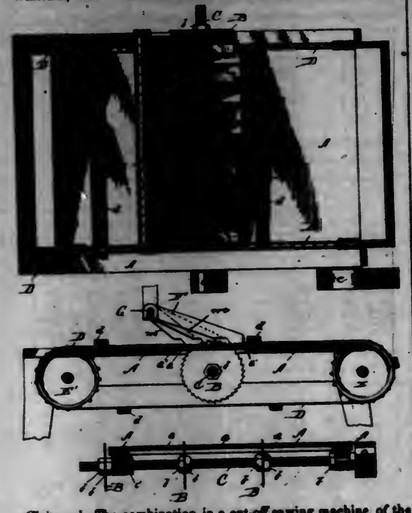
12. The combination, in a machine of this character, with a reciprocating pusher adapted to drive incoming stock in both directions and a table for supporting the material, said pusher moving along over said table, of a stop at each side of said pusher for holding the receiving stock against the push of the incoming stock, substantially as set forth.

411,924. CORNER-JOINT FOR PACKING-BOXES. ALBERT T. LUDERMAN, Whitehall, Mich. Filed Feb. 16, 1889. Serial No. 300,195. (No model.)



Claim.—The joint for the corners of packing-boxes, wherein one part is provided with the bevel-groove *c* and tongue *d*, and the other part is provided with the bevel *e* and groove *f*, substantially as set forth.

411,925. CUT-OFF SAWING-MACHINE. ALBERT T. LUDERMAN, Whitehall, Mich. Filed Mar. 1, 1889. Serial No. 301,670. (No model.)



Claim.—1. The combination, in a cut-off sawing machine, of the adjustable saw or saws, a carrier, and a stationary table having a portion made changeable to accommodate the adjustments of the saw, such changeable portion being composed of movable narrow pieces *a*, substantially as set forth.

2. The combination, with the table and saw or saws of a cut-off sawing-machine, of an endless carrier having wood-pushing slats, such slats passing over the saws and extending both above and below the top thereof, substantially as set forth.

3. The combination, with the table and the adjustable saw or saws, of an endless carrier having wood-pushing slats, such slats passing over the saws and extending both above and below the top thereof, substantially as set forth.

4. The cut-off sawing-machine, consisting of an adjustable saw or saws, a table changeable to accommodate the saw adjustments, and an endless carrier, the pushing-slats whereof are of wood and extend both below and above the top of the saws, substantially as set forth.

5. The combination, with the table, the carrier, and the laterally-adjustable saw or saws, of arms for holding down the stuff, such arms being movable to different positions upon their support to accommodate the different positions of the saws, substantially as set forth.

6. The cut-off sawing-machine, consisting of an adjustable saw or saws, a table for supporting the stuff to be sawed and changeable to accommodate the various positions of the saws, an endless carrier for pushing the stuff along the table, and arms movable to different positions upon their support to accommodate adjustment of the saws and adapted to hold down the stuff while being sawed, substantially as set forth.

411,926. BOBBIN-HOLDER FOR SPINDLES OF SPINNING-MACHINES. JOHN B. MAWBEY, Philadelphia, Pa. Filed Feb. 21, 1889. Serial No. 300,717. (No model.)

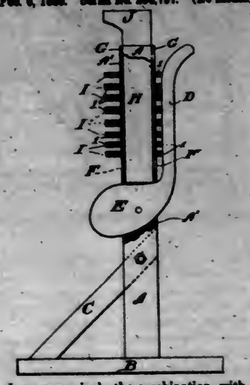
Brief.—The object of the invention is to provide simple and effective means whereby the bobbin is held in contact with the rotating spindle and prevented from jumping.



Claim.—1. A spinning-machine bobbin provided with two grooves concentric to the spindle to which the bobbin is applied and in each of which grooves is partially concealed or inclosed a hook adapted to engage with a similar hook provided on a bobbin-rest of the spindle, substantially as and for the purposes set forth.

2. A spinning-machine bobbin provided with concentric grooves, each having secured therein a hook, in combination with a spinning-machine spindle having a bobbin-rest provided with similar hooks to those of the bobbin, said hooks adapted and arranged to interlock with each other, substantially as and for the purposes set forth.

411,927. WAGON-JACK. ANDREAS P. HILLEBRAND, Bridgeport, Conn. Filed Feb. 6, 1889. Serial No. 299,797. (No model.)



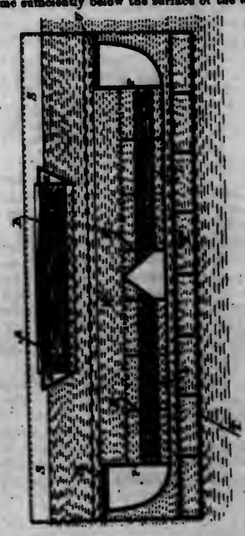
Claim.—1. In a wagon-jack, the combination, with a vertically-movable slide-lift, of a vertical series of pin-supports extending freely through said lift to a place beyond the front of said jack, substantially as set forth.

2. The combination of the slide-lift having movable pin-supports extending transversely therethrough, and the operating-lever, the lower end whereof supports the lift, while the handle in normal position abuts against the rear ends of said pins, substantially as shown and described.

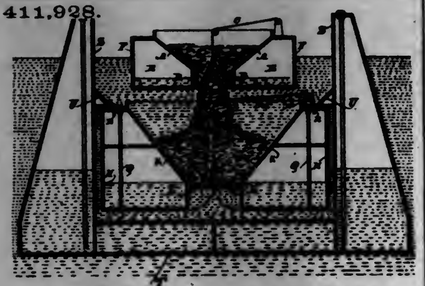
3. The combination of the uprights, the operating-lever pivoted between said uprights, the plates F, which bridge the space between said uprights, the plates G, secured to said uprights at the upper end thereof and extended only part way across said space, the slide-lift between said uprights and confined therein by said plates, the pins I, extending in a vertical series loosely through said lift from front to rear the cross-pins *l* within the front and rear ends of said pins I, and the cam-lever pivoted between said uprights and supporting the slide-lift, substantially as and for the purposes hereinbefore set forth.

411,928. METHOD OF REMOVING MUD, &c. CHARLES A. MORSE, Moorefield, and RALPH G. PACKARD, Morristown, N. J. Filed Dec. 21, 1888. Serial No. 294,322. (No model.)

Claim.—1. The method herein specified of loading, conveying, and discharging materials—such as mud, sand, ashes, &c.—consisting in loading the same first into comparatively small scows or vessels, providing a receiving-vessel of large capacity with compartments, sinking the same sufficiently below the surface of the water for float-



411,928.



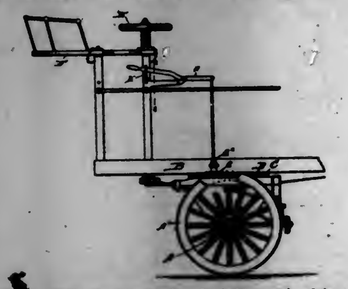
ing the small scows or vessels over the receiving-vessel and discharging the contents of the small scows or vessels into the receiving-vessel and raising such receiving-vessel, so that the upper parts thereof are above the water-line, and floating such vessel to the place where the contents are discharged, substantially as set forth.

2. The method herein specified of receiving and floating away refuse or solid materials, consisting in floating the receiving-vessel into a dock, sinking such receiving-vessel sufficiently below the water-line, floating small scows in above the receiving-vessel, discharging their contents into the receiving-vessel to load the same, and then floating the receiving-vessel and removing the same from the dock to the place of discharge, substantially as set forth.

3. The method herein specified of loading and discharging a receiving-vessel, consisting in sinking the vessel sufficiently below the surface of the water for the reception of its load, introducing the load from above the vessel, pumping out water from the compartments to raise the vessel, towing or propelling the vessel to the place of discharge, and discharging the contents downwardly while the vessel is floating, substantially as specified.

4. The method herein specified of loading vessels and conveying the same to the point of discharge, consisting in sinking the vessel below the surface of the water, discharging the load into the vessel from above it while below the water, floating the vessel to the surface of the water, and towing or propelling the same to the point of delivery of the contents of such vessel, substantially as set forth.

411,929. FIRE-LADDER TRUCK. EVERETT B. PRESTON, Chicago, Ill. Filed July 27, 1889. Serial No. 318,894. (No model.)



Claim.—1. The combination, in a fire-ladder truck, of the truck-frame with the axle, the fifth-wheel, and a locking-bolt engaging the two rings of the fifth-wheel, substantially as specified.

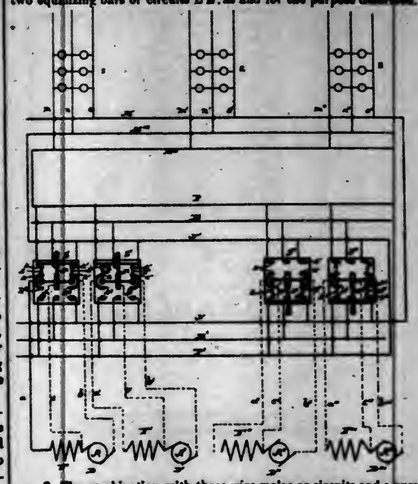
2. The combination, in a fire-ladder truck, of the truck-frame with the axle, the fifth-wheel, and a locking-bolt engaging the two rings of the fifth-wheel, said locking-bolt being provided with a spring for setting the same automatically, substantially as specified.

3. The combination, in a fire-truck, of the truck-frame, the axle, the fifth-wheel, a steering mechanism, and a locking-bolt engaging the two wheels of the fifth-wheel for locking the same rigidly together, substantially as specified.

411,930. STATION SWITCH-BOARD AND CONNECTION. BROWN W. ESTY, Jr., and ALBERT L. HERMAN, Lynn, Mass. Filed July 20, 1889. Serial No. 318,099. (No model.)

Claim.—1. The combination, with dynamo-machines, of electric switches controlling the connections of such machines in multiple are to the conductors or mains to be supplied and provided with supplemental switch-contacts in circuits from such machines to an equalizing bar or connection.

2. The combination, with dynamo-machines, of double-throw electric switches controlling the connection of such dynamos in multiple to a three-wire system and provided with a supplemental double-throw switch device controlling the connection of such dynamos with two equalizing bars or circuits E E', as and for the purpose described.



3. The combination, with three wire mains or circuits and a number of dynamos having switches for connecting such dynamos in multiple to either side of the system at pleasure, of two equalizing bars or connections—one for forming an equalizing-connection when the dynamos are connected in multiple to one side of the system, and the other for forming a similar connection when they are connected to the other side of the system, as and for the purpose described.

411,931. TANNING COMPOSITION. GEORGE H. RUSSELL, Roxbury, Pa. Filed Mar. 7, 1889. Serial No. 302,462. (No specimens.)

Claim.—The herein-described compound for tanning, composed of bark, bicarbonate of soda, salt, sulphuric acid, and water, in about the proportions specified.

411,932. TANNING PROCESS. GEORGE H. RUSSELL, Roxbury, Pa. Filed Dec. 10, 1888. Serial No. 292,197. (No specimens.)

Claim.—1. The herein-described improvement in the art of tanning, which consists in first unhairing the hides, then dispensing with the usual masure bates and treating the hides with an alkaline or neutral solution of a salt of an alkali and sulphuric acid and then treating them with a tanning agent, substantially as described.

2. In converting hides into leather, the herein-described process of treating them with a watery solution of salt, bicarbonate of soda, and sulphuric acid, substantially in the proportions specified, and then treating them with a tanning-liquor.

3. In converting hides into leather, the process of first treating the hides after being unhaired with a solution containing salt of an alkali to open the pores and remove the lime, and then tanning them in liquors containing tannic acid, to which liquors has been added a watery solution of salt, bicarbonate of soda, and sulphuric acid.

4. In converting hides into leather, the process of treating them with a watery solution of salt, bicarbonate of soda, and sulphuric acid, and then treating them with a tanning-liquor containing tannic acid, to which has been added a watery solution of salt, bicarbonate of soda, and sulphuric acid.

5. The improvement in the art of tanning to produce leather of great toughness, which consists in subjecting the hides to the action of a solution containing a salt of an alkali, sulphuric acid, and sulphate of zinc preparatory to treating them with a tanning agent.

411,933. CURLING-COMB. EDWARD T. RYAN, New Bedford, Mass. Filed May 31, 1889. Serial No. 312,664. (No model.)



Claim.—1. The combination, with a hollow handle or body having the comb-teeth upon one end, of a spring-retracted curling or heating iron adapted to normally lie concealed within said handle.

2. A curling-comb consisting of the hollow tube *a*, handle *b*, formed integral therewith, the slot *m*, having notch *h* in its forward end, the spring-retracted curling or heating iron *d*, provided with the stud *c*, for engagement with the notch *h*, to hold the curling-iron in its projected position when desired, substantially as described.

411,934. PIANO-AGRAFFE. EDWARD G. SHELLENBERG, Mount Vernon, N. Y. Filed Feb. 1, 1889. Serial No. 298,302. (No model.)



Claim.—1. An agraffe for piano-fortes, consisting of a continuous piece having a flat base portion whereby the agraffe is screwed or bolted to the wrest-plank, and a continuous vertical portion, the latter being provided with oblique holes, whereby two bearing-points for the strings are provided, substantially as shown and described.

2. An agraffe for piano-fortes, having a base portion and a continuous vertical portion, the latter being provided with oblique holes for the strings, whereby two bearing-points are provided, the base portion extending forward and having its front edge elevated, whereby a third bearing-point is formed, substantially as shown and described.

411,935. CUT-OUT. ALBERT P. SEYBOLD, Syracuse, N. Y. Filed Jan. 3, 1889. Serial No. 295,523. (No model.)



Claim.—1. The combination, in an electric switch, of a main-line contact connected to one pole of the line, a branch contact, an intermediate contact connected to the other pole of the line, and an arc-rupturing magnet applied to the main-line contact and having its coils in the line-connection from the opposite pole of the line to the intermediate contact, as and for the purpose described.

2. In an electric switch, the combination, with two contact-blocks mounted on a suitable base and having overhanging contact ends, of an intermediate moving contact making sliding connection with the under surface of the overhanging ends and wider than the space between them, and a spring tending to move the intermediate contact bodily in a line transverse to the plane of the contact-surfaces and away from the base carrying the contact-blocks.

3. The combination, in a lever electric switch, of two simultaneously-engaged fixed contacts D I at opposite sides of the pivotal point for the lever and an intermediate sliding-contact switch-lever provided with a spring tending to press it in the direction of its pivoted axis and toward the plane of the contact-surfaces for the fixed contacts, said contact-lever being fitted loosely to its pivot, so as to be capable of a slight rocking motion in a direction transverse to the plane of its swing, as and for the purpose described.

4. The combination, with the switch-lever loosely fitted to its pivot, so as to be capable of a slight rocking movement in a direction transverse to the plane of its swing, and having a spring tending to move it in the direction of its pivotal axis, of the two fixed sliding-connection contacts I D at opposite sides of the pivotal point for the lever, and a spring-contact L, engaged by the levers simultaneously with the other two.

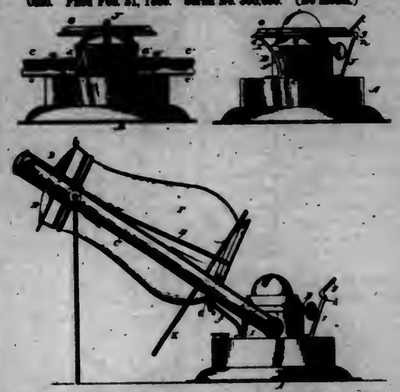
411,936. CARBON-CLAMP FOR ARC LIGHTS. ALBERT P. SEYBOLD, Syracuse, N. Y. Filed July 20, 1889. Serial No. 318,749. (No model.)



Claim.—1. A detachable clamp for carbon-carriers, having its body slit transversely at the part where it connects with the carbon-carrier, and provided with carbon-clamping devices which tend to draw the two sides of the clamp-body together against the carrier.

2. In a detachable clamp for carbon-carriers, the combination, with the clamp-body having a screw-threaded socket and transverse slit through the side of the socket, of a clamping-rod and clamp-block bearing on the clamp-body in a direction transverse to the line of the slit in the body.

411,937. TUBULAR LANTERN. WILLIAM C. STEWART, Bellaire, Ohio. Filed Feb. 21, 1889. Serial No. 300,689. (No model.)



Claim.—1. In a tubular lantern, the combination of the base, side tubes pivotally connected to the base, a globe movably connected to the central tube by means of the canopy, a supporting-plate for said globe pivotally attached to the base at one side of the side tubes, and connecting-braces secured to the canopy and globe-supporting plate, whereby when the side tubes are moved to one side both vertical and lateral motions are imparted to the globe, substantially as set forth.

2. In a tubular lantern, the combination of the base, side tubes pivotally connected to the base, a globe movably connected to the central tubes by means of the canopy, a supporting-plate for said globe pivotally attached to the base at one side of the side tubes, connecting-braces secured to the canopy and globe-supporting plate, whereby when the side tubes are moved to one side both vertical and lateral motions are imparted to the globe, and a latch attached to the base and engaging with the globe-supporting plate when the parts are in their normal position, substantially as set forth.

3. In a tubular lantern, the combination of the base, side tubes pivoted in sleeves *a a* on the base, slots *b b* within said sleeves, studs *d d* in said side tubes and engaging with said slots, a globe movably connected to the central tube by means of the canopy, a supporting-plate for said globe pivotally attached to the base at one side of the side tubes, and connecting-braces secured to the canopy and globe-supporting plate, whereby when the side tubes are moved to one side both vertical and lateral movements are imparted to the globe, substantially as set forth.

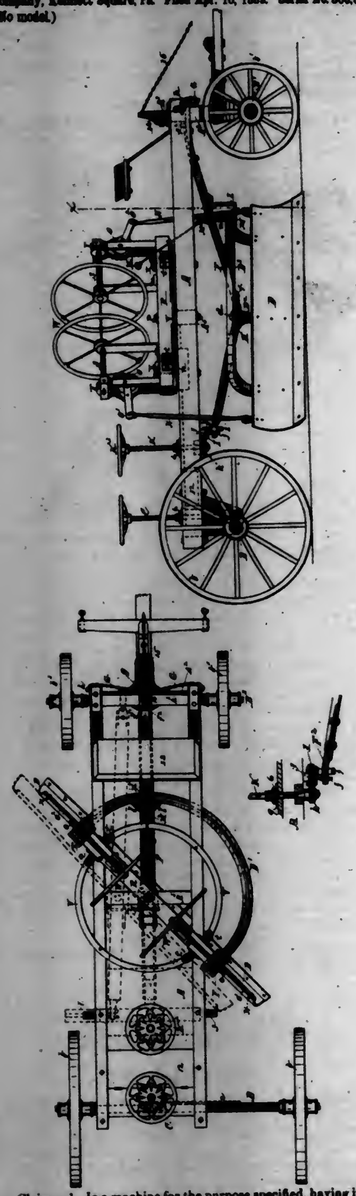
411,938. CHAIR. WILLIAM SORRENTI, West Stratford, Conn. Filed July 20, 1888. Serial No. 280,708. (No model.)



Claim.—1. The garment-supporter A, provided at its outer ends with the journals *d d*, said journals formed substantially at right angles to the upright arms of said supporter, combined with bearings secured to the chair-back to receive said journals, and a guard in rear of said journals to prevent the same disengaging from their bearings, substantially as shown.

2. The combination, with a chair-back having supporting-legs attached thereto, and a supporting device journaled in said legs and operating freely therein, of a guard situated back of each of said journals, one of said guards having a groove formed transversely through a portion thereof to admit one end of said supporting device to enable the journal to enter its bearing, as described, and for the purpose set forth.

411,939. **MACHINE FOR MAKING, REPAIRING, AND CLEARING ROADS.** GEORGE W. TAPT, Kennett Square, Pa., and ELIAS L. LATHROP, Fort Wayne, Ind., assignors to the American Road Machine Company, Kennett Square, Pa. Filed Apr. 10, 1889. Serial No. 306,688. (No model.)



Claim.—1. In a machine for the purpose specified, having its body or carriage frame mounted on front and rear traveling wheels, the combination, with said carriage-frame and the scraper-blade, of a reach or draft-bar for sustaining the scraper, having its forward end confined and adjustable in a transverse slot in the front end of the carriage-frame, and its rear end confined by an eye on a laterally-movable supporter connected with the carriage-frame, whereby said reach is laterally adjustable in relation to said carriage-frame at both its front and rear ends, and fastenings for retaining the same at positions of adjustment, for the purpose set forth.

2. In a machine for the purpose specified, having a body or carrying frame supported at front and rear on wheels, the combination, with said body and the diagonal scraper, of a reach or scraper connecting-frame sustained at its ends beneath said body, and provided at an intermediate position in its length with a transverse hinge having a normally horizontal axis, substantially as and for the purpose set forth.

3. In a machine for the purpose specified, the combination, with the diagonal scraper-blade and the body or carrying frame mounted on front and rear axles and wheels, of a reach or draft-bar, to which said scraper is attached, having its ends supported in connection with the body-frame and provided with a hinge in rear of the scraper attachment, to permit upward and downward movement of the scraper while the ends of said draft-bar remain at a given position in relation to the frame, and means, substantially as described, for raising and depressing the respective ends of the scraper, as set forth.

4. In a machine for the purpose specified, the combination of the carrying-frame mounted on front and rear axles and wheels, the reach having both of its ends pivotally sustained in connection with said carrying-frame and provided with a central horizontal hinge, the scraper connected to said reach by a pivoting-axis and provided with a semicircle D', the brace L and guides whereby the front of said semicircle is held in connection with said reach, a fastener or locking-bolt arranged thereon for confining the semicircle, and connections for operating said fastener or locking-bolt, substantially as set forth.

5. In a machine for the purpose specified, the combination of a carrying-frame mounted on wheels, an adjustable diagonal scraper having a semicircle attached thereto, a reach-bar, to which said scraper is pivoted, having a hinge in rear of the scraper-pivot, its ends supported in connection with the carrying-frame and laterally adjustable thereon, a swing-beam pivoted on said carrying-frame, and hand-wheels and operating-gear mounted in bearings on said swing-beam, with connections and rods at the respective ends of the scraper for effecting adjustment of the same, all substantially as set forth.

6. In a machine for the purpose specified, the combination, with the scraper and its carrying-frame having a transverse slot at its forward end, of the reach or scraper draft-bar F, its forward end extending through and laterally adjustable in said slot and furnished with a head-plate *g*, and means for retaining the head of the reach at different positions of adjustment in relation to the carrying-frame, all substantially as and for the purpose set forth.

7. In a machine for the purpose specified, the combination, substantially as described, of the carrying-frame, the longitudinally-adjustable rear axle, the laterally-adjustable reach F, the diagonal scraper-blade pivotally connected to and adjustable with said reach, the traverse guide-bar J, the slide I, provided with a loop *i*, that supports the rear end of said reach, the hand-wheel shafts C and K, and connecting-gear for shifting said slide and rear axle, for the purpose set forth.

8. In a machine for the purpose specified, the combination of the carrying-frame mounted on front and rear wheels, the circular traverse-track V, fixed thereon, the diagonal adjustable scraper-blade, the laterally-adjustable reach supporting said scraper, the swing-beam R, centrally pivoted on the carrying-frame and supported on said traverse-circle V, the lifting-rods N, connecting the scraper with lifting-arms, and operating mechanism supported on said swing-beam for working said scraper, all combined substantially as and for the purposes set forth.

9. In a machine for the purpose specified, in combination with the diagonal adjustable scraper and its support, substantially as described, the guide-bar J, fixed to the carrying-frame, the slide I, mounted on said guide-bar, having a toothed rack and a dependent loop *i*, that embraces the tail end F^3 of the scraper-support, the pinion *k*, shaft K, hand-wheel K', locking-wheel 6, and lever 7, all arranged for operation as and for the purpose set forth.

10. In a machine for the purpose specified, the combination, with the scraper-blade D, semicircle D', reach F, and brace L, of the locking-bolt M, its spring *m*, actuating cam-lever M', and handle-rod M^3, substantially as described.

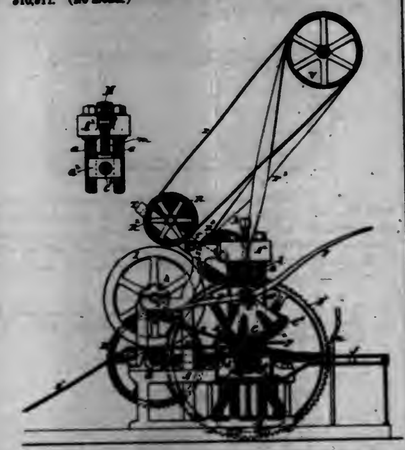
11. In a machine for the purpose specified, the combination, with the swing-beam R, carrying the scraper-adjusting gearing, and the traverse-circle V, fixed to the carrying-frame, of the clamping-plate *n*, its cam-lever X, and connecting-bolt *n'*, substantially as and for the purpose set forth.

12. In a machine for the purpose specified, the combination, with the main carrying-frame and the laterally-adjustable reach or draft-bar, of the primary scraper-blade D, having the semicircle D', with downwardly-curved ends attached thereto pivotally connected for oblique adjustment, and the auxiliary scraper-blade D^2, arranged on said primary scraper-blade and attached thereto by clips 20, and detachable fastening-bolts 18, fitted in slots or openings 16 in said primary blade, said auxiliary blade being longitudinally adjustable for extension at the right or left of said primary blade, all substantially as shown and described.

13. In a machine for the purpose specified, the combination of a carrying-frame mounted on wheels, a diagonally and vertically adjustable scraper, a reach to which said scraper is connected supported by and laterally adjustable in relation to the carrying-frame at both its front and rear ends, a longitudinally-adjustable rear axle, hand-wheels and gearing mounted on the rear part of the carriage for effecting adjustment of said reach and axle, and means for holding the parts at different positions, substantially as set forth.

14. In a machine for the purpose specified, the combination, with the carrying-frame mounted on wheels, of the traverse-circle V, fixed on said frame, the laterally-adjustable reach, the scraper pivoted to said reach, and scraper-operating mechanism supported by a carrier or swing-beam that moves on said traverse-circle, substantially as set forth.

411,940. **MACHINE FOR BENDING ROAD-SCRAPER BLADES.** GEORGE W. TAPT, Kennett Square, Pa. Filed May 16, 1889. Serial No. 310,911. (No model.)



Claim.—1. In a plate-bending machine, the swinging die or former, having its pattern-surface shaped to the curvature of a road-scraper blade, the swinging jaw-plate arranged along the rear edge of said former, connected thereto by adjustable hinging-studs, and provided with weighted arms that force said jaw-plate toward the former-surface for retaining the work thereon, and a lifter for opening the jaw, in combination with the bender-roll over which the forming-surface travels, intermatching teeth that connect the former and bender-roll, and operating-gearing fixed on the bender-roll axles for imparting rotative movement to said bender-roll, all substantially as and for the purposes set forth.

2. In a machine for the purpose specified, the combination of the former C, provided with the gripping-jaw D and jaw-operating lever, the bed-roll B, journaled on the housing-frame and connected by gears *b* and C' with said former, the roll-operating gears E', and the shaft G, having pinions G', that mesh with said roll-operating gears, all substantially as and for the purpose set forth.

3. In a machine for the purpose set forth, the combination of the frame having uprights *a* and heads A^2, the bed-roll supported in the stationary boxes *a'*, the former C, supported in movable journal-boxes a^2 between said uprights, the presser-levers M, fulcrumed on the heads, and the struts *m* and weights N, substantially as and for the purposes set forth.

4. In a machine for the purpose specified, the combination of the bed-roll B and the former C, geared together and provided with the gripping-jaw D, the feed-apron J at the front of said roll disposed for directing the edge of the plate between said jaw and the former-surface, and the discharge-apron K, disposed for receiving the plate after it has passed through the machine, substantially as set forth.

5. In a machine for the purposes specified, the combination, with the bending-former, bed-roll, and their operating-shafts and gearing, of the main friction-wheel I, the oscillating frame T, supported on a center arbor, the oppositely-operative friction-wheels R and R', having their arbors mounted on said oscillating frame and respectively provided with pulleys R^2 and R^3, that receive driving-belts for moving in opposite directions, and a shifting mechanism, whereby either of said driving friction-wheels R or R' is brought into contact with said main friction-wheel, substantially as and for the purpose set forth.

6. In a machine for the purpose specified, the combination of the former C, the gripping-jaw D, the connecting-bolts *d*, the jaw-operating arms *e*, weight-bar E, lifter F, and the springs S, substantially as and for the purpose set forth.

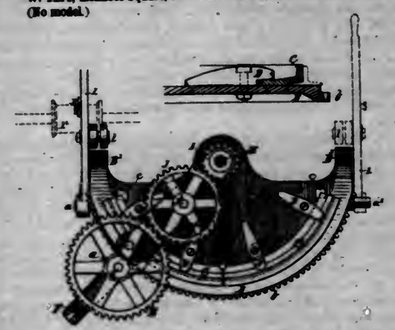
7. In a machine for the purpose specified, the rolling-former having the curved surface *c*, and the removable longitudinal rib or bar C^3 for offsetting the edge-cant in a scraper-blade, in combination with the gripping-jaw D, bending-roll B, pressure-screws L, and operating-gearing, substantially as described, for imparting motion thereto, as set forth.

8. In a machine for the purposes set forth, the guard-band fillet C^3, in combination with the former C, having pattern-surface *c*, and bed-roll B, geared for rolling action in conjunction therewith, substantially as and for the purpose set forth.

9. In a machine for the purpose specified, the guard-band fillets C^3 and lifting-lugs C^4, in combination with the former C, provided with a gripping-jaw, and the bed-roll B, geared thereto, substantially as and for the purpose set forth.

10. In a machine for the purpose specified, the combination of the former having the curved pattern-surface, the offset bar C^3, attached thereto, the gripping-jaw hinged to said former by adjustable connections, the jaw-operating mechanism, and the bed-roll having a longitudinal groove or depression and geared or connected for operation in unison with said former, substantially as set forth.

411,941. **MECHANISM FOR BENDING METAL BARS.** GEORGE W. TAPT, Kennett Square, Pa. Filed June 3, 1889. Serial No. 312,975. (No model.)



Claim.—1. A bending-machine having a shaping-former, a central operating-shaft, a radial arm that swings about the axis of said operating-shaft as a fulcrum, a follower-roll journaled in said arm and provided with a toothed pinion that engages with gear-teeth on the frame or former-plate for rolling about the periphery of the former, and a train of gears carried on said arm by which power and motion are transmitted to said follower-roll from a gear fixed on said operating-shaft and axially coinciding with the fulcrum-axis of said arm, substantially as set forth.

2. In a machine for bending segmental forms of flat, T, or angle iron, the combination of a former having an overhanging rim or flange and a toothed periphery, a swinging arm carrying a presser or follower roll provided with gear-teeth that mesh with the teeth on said periphery, a central operating-shaft about which said arm swings as an axis, and a train of gears supported on said arm for rotating said follower-roll from said operating-shaft, substantially as set forth.

3. In a machine for shaping compound curved semicircles from T-bars or angle-bars, the combination, substantially as described, of the former composed of a main segment provided with supplemental end segments disposed with their planes at an angle or transverse to the plane of the main segment, and continuing the forming-surface on downward curves, the removable flange section or sections, guide-lugs, and recesses that indicate the position for the flange-section on the former-plate, and turn-buttons that detachably secure said flange-section to the main segment, for the purpose set forth.

4. In a machine for binding semicircles for road machines or scrapers, the former comprising a main segment with shaping-periphery and supplemental end segments disposed in planes at an angle to the plane of the main segment, and an overhanging supporting-flange detachably fixed on the forming curvature of said main segment, in combination with an arm and follower-roll that travels around said main segment, and an auxiliary arm and follower for forcing the metal

bar to the curves of the supplemental segments in a direction transverse to said main curve, substantially as set forth.

5. The combination of the removable former provided with a toothed segment, the sweep or radial arm F, carrying the follower-roll G, said roll being geared to match into said toothed segment, the operating-shaft E, disposed at the center or axis of the radial arm and former, a train of gears for rotating said follower-roll, and means for adjusting the axes of the follower-roll and intermediate gear to accommodate formers of greater or less radial diameter, substantially as set forth.

6. In a machine for the purpose specified, the arm F, provided with means for shifting or adjusting the follower-roll axis A, and geared J', the geared follower-roll G, and its actuating-gear H, mounted on the axis or shaft A, that is adjustable in said arm, and the intermediate gear J, journaled on a stud J', that is adjustable in said arm, in combination with a peripherally-toothed removable former and a central operating-shaft provided with a driving-gear I, substantially as and for the purpose set forth.

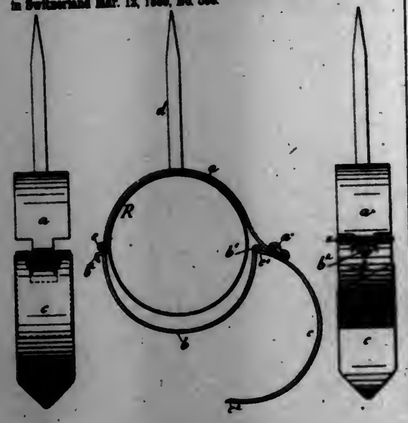
7. The combination of the former composed of the main segment having the overhanging flange and toothed periphery, and the supplemental end segments continuing the forming-surface on curves in a different plane from that of the main segment, the central shaft, the radial arm fulcrumed on said shaft, the follower-roll journaled on said arm and geared to the toothed periphery of said former, the driving-gear fixed on said shaft, a train of gears mounted on said arm for rotating said presser-roll, and a supplemental follower for bending the metal around said supplemental end segments, substantially as set forth.

8. The combination of the former composed of the main segment having the toothed periphery, overhanging flange, and the supplemental end segments continuing the forming-surface on curves different from that of the main segment, the radial arm or sweep fulcrumed at the axis of the former, the follower-roll journaled on said arm and geared to the toothed periphery of said former, the supplemental bending-follower for bending the metal around said supplemental end segments, and means, substantially as described, for applying power to said supplemental bending-follower, substantially as set forth.

9. In mechanism for the purpose specified, the combination, with the peripherally-toothed former B, the backwardly and forwardly swinging arm F, carrying the pressing-roll or follower G, its actuating-gears H, I, and J, and the operating-shaft E, of the vibrating shaft E', having the friction-wheel M fixed thereon, the oppositely-rotating drive-shafts N and N', and with driving friction-wheels n and n', respectively fixed thereon and means, substantially as described, for swinging said shaft to bring the wheel M into or out of engagement with either of the driving-wheels n or n', all substantially as set forth.

10. In mechanism for the purpose specified, the combination of a peripherally-toothed former, an operating-shaft carrying an actuating-gear I at the center of said former, the swinging arm F, the follower-roll G, and roll-operating gears H and J, adjustably mounted on said arm, the flange on said former having guiding-surface, the follower guide-roll W, connected with the follower-roll journal-support, and links K and K', connecting the gear-axes with the operating-shaft, substantially as and for the purpose set forth.

411,942. PIPE-HANGER. GABRIEL TSCHUDI, Madretsch, Switzerland. Filed Apr. 26, 1889. Serial No. 308,739. (No model.) Patented in Switzerland Mar. 12, 1889, No. 568.



Claim.—1. A pipe-hanger composed of a main loop having a suitable device for attaching it to a wall or other object, a loop hinged to one end of said main loop, and a locking-loop hinged to the other end of said main loop, substantially as set forth.

2. In a pipe-hanger, the combination, with a main loop having a suitable device for securing it to a wall or other object, of a loop hinged to one end of the main loop and provided with a hook on its opposite end, a locking-loop hinged to the opposite end of the main loop and provided on its hinged end with a tongue adapted to engage the hook on the free end of the loop that is hinged to the other end of the main loop, substantially as set forth.

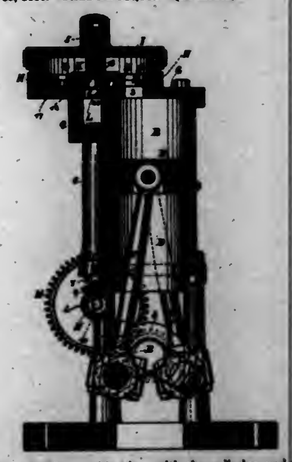
3. In a pipe-hanger, the combination, with a main loop *a*, having a suitable device for securing it to a wall or other object, of the loop *b*, hinged to one end of the loop *a*, and provided below said hinged end with a hook *b'* and with a hook *b'* on its free end, the locking-loop *c*, connected by a link or staple with one end of the loop *a*, and provided at its hinged end with a tongue *c'* and at its opposite end with a hook *c'*, substantially as set forth.

411,943. APPARATUS FOR SEPARATING BUTTERMILK FROM BUTTER. ALBERT F. THAYER, Maple Hill, Kans. Filed May 4, 1889. Serial No. 309,653. (No model.)



Claim.—The herein-described apparatus for separating buttermilk from butter, consisting of the separator A, provided with the perforated shelf or strainer B and suitable perforations *a*, a butter-beater supported in the upper portion of said separator, and the vessel C, all arranged, combined, and constructed to operate substantially as and for the purpose set forth

411,944. VALVE FOR STEAM-ENGINES. CHARLES VOGEL, Port Lee, assignor to himself and George O'Rourke, Englewood, N. J. Filed June 13, 1889. Serial No. 314,142. (No model.)



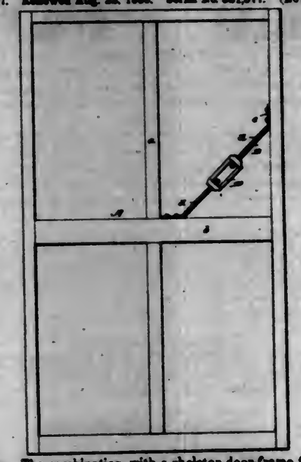
Claim.—1. The combination, with the cylinder and piston in an engine, of a circular steam-chest having a lateral opening through which steam is supplied, and a circular valve-seat having ports therein leading to the cylinder and a central exhaust-port, a circular valve covering the exhaust-port and having ports and recessed exhaust-passages, a spindle for rotating the valve, having a T head or connection and passing up from beneath the valve, so that the valve may be removed from the spindle, and a removable cover to the steam-chest, substantially as set forth.

2. The combination, with the cylinder and piston in an engine, of a circular steam-chest having a lateral opening through which steam is supplied, and a circular valve-seat having ports therein leading to the cylinder and a central exhaust-port, a circular valve covering the

exhaust-port and having ports and recessed exhaust-passages and a central stem, a spindle for rotating the valve, having a T head or connection and passing up from beneath the valve, so that the valve may be removed from the spindle, and a removable cover to the steam-chest, having a central socket for the valve-stem, substantially as set forth.

3. The combination, with the cylinders A B C, their pistons, connecting-rods, main shaft and cranks, of a head to the three cylinders, having steam-ports in it, a steam-chest upon such head, having a central exhaust and lateral steam-supply, a removable cover to the steam-chest, a valve having two steam-ports and recessed exhaust-passages and covering the central exhaust-port, a spindle passing up from below for rotating such valve, and gearing for connecting the spindle and the main shaft, so that the valve may revolve once for every two revolutions of the main shaft, substantially as set forth.

411,945. DOOR. WALTER R. WEBER, Wayne, Kans. Filed Sept. 26, 1887. Renewed Aug. 22, 1889. Serial No. 321,577. (No model.)



Claim.—The combination, with a skeleton door-frame formed as shown, of the angularly-arranged adjustable brace interposed between the transverse bar and the outer vertical bar, and composed of the threaded rods *d*, having the angular portions *e*, and the turn-buckle D, arranged upon the threaded portions of the rods, substantially as specified.

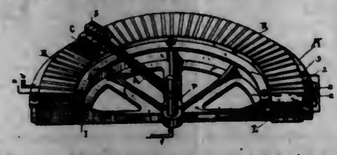
411,946. HORSE-GIN. FRANZ WEHNEMANN, Saarlingen, near Klein-Kreuts, Prussia, Germany. Filed June 18, 1889. Serial No. 314,748. (No model.)



Claim.—1. The combination of pivoted beam A, with connected elbow-levers G pivoted thereto, and with the frames H, secured to the elbow-levers, substantially as specified.

2. The combination, in a gin, of the following elements: pivoted beam A, elbow-levers G H, braces K, hubs M, rings N, rods O, and chains Q, substantially as specified.

411,947. RHEOSTAT. MERLE J. WIGHTMAN, Lynn, Mass. Filed July 5, 1889. Serial No. 316,660. (No model.)



Claim.—1. An electric-resistance pile consisting of alternate layers of conducting and insulating material, having the parts of each conducting-strip to either side of its center connected, respectively, to the two adjoining conducting-strips.

2. An electric-resistance pile consisting of a series of interlocked pairs of sheets of insulating and conducting material, having the successive sheets of conducting material in electrical contact alternately at opposite sides of their centers.

3. An electric-resistance pile consisting of a series of pairs of sheets of conducting and insulating material intersecting to one side of their center and piled together with the successive sheets of conducting material in electric contact.

4. An electric-resistance pile made up of alternate layers of conducting material and a non-combustible insulator.

5. An electric-resistance pile consisting of alternate sheets of mica and a conducting material, with the successive sheets of the conducting material in electrical contact.

6. An electric-resistance pile consisting of alternate layers of conducting and insulating material piled together, with the successive conducting-layers in electrical connection through parts integral with them.

7. An electric-resistance pile consisting of alternate sheets or layers of mica and iron, having the successive sheets of iron in electrical connection.

8. In a rheostat, a pile of alternate sheets of insulating and conducting material clamped in a holder or trough lined with insulating material, as and for the purpose described.

9. An electric-resistance pile formed of sheets of conducting and insulating material formed with shoulders, as and for the purpose described.

10. An artificial electric resistance consisting of interlocked or crossing sheets of iron and mica having shoulders at their opposite ends, in combination with a holder or trough into which the same are set edgewise and clamping-plates for engaging with the shoulders, as and for the purpose described.

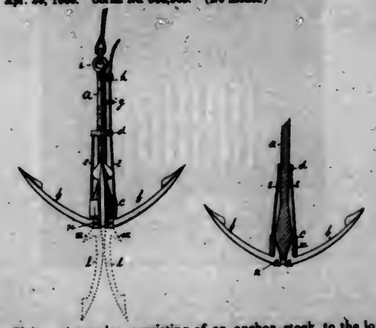
11. The combination, with an artificial electric resistance, of an arc-rupturing magnet applied to the final contact of the series and connected to the resistance-circuit, as described, so as to be energized as the moving contact nears the terminal contact.

12. The combination, with an artificial electric resistance and the fixed contacts therefor, of a movable contact and an arc-rupturing magnet the field of which includes the arc-forming space at the final contact of the series.

13. In an electric-resistance pile, alternate sheets of conducting and non-conducting material provided with slots extending inward from their edges, as and for the purpose described.

14. An electric-resistance plate formed with shoulders at its ends and with one or more slots extending inward from its edges, as and for the purpose described.

411,948. ANCHOR. OMAR F. WILCOX, New Bedford, Mass. Filed Apr. 29, 1889. Serial No. 308,905. (No model.)



Claim.—An anchor consisting of an anchor-stock to the lower end of which are pivoted the flukes having spurs on their inner ends adapted to be inclosed by a ring inclosing the anchor-stock, together with means for sliding said ring on the anchor-stock, whereby the spurs are released and the anchor is caused to let go its hold, substantially as and for the purpose shown and described.

411,949. STEAM-BOILER FURNACE. LEVI D. YORK, Portsmouth, Ohio. Filed June 13, 1889. Serial No. 314,155. (No model.)



Claim.—1. In a steam-boiler furnace, the combination of the boiler, a combustion-chamber arranged centrally under it and in line of the draft, the coking-chambers upon each side of said combustion-chamber and closed off from the draft except through said combustion-chamber, doors at the top of said chambers for the supply of fuel to said chambers, and the grate-bars extending under the three chambers, substantially as and for the purpose set forth.

2. The combination, substantially as specified, of the boiler and fire-box with the inclined tiles G, dividing the said fire-box into three chambers E F F, said chambers F being closed, except at the bottom, so that their only communication with the draft is through the chamber E.

411,950. ARMATURE. ARTHUR S. ATWATER, Cleveland, Ohio. Filed Mar. 30, 1889. Serial No. 305,304. (No model.)



Claim.—Laminæ consisting of wrought-iron plates cut out with the two passages and shaft-hole, and having the channels stamped nearly radially to afford air-escape, substantially as and for the purposes described.

411,951. WATER-HEATER. WILLIAM H. CAMPBELL, Alpena, Mich. Filed Mar. 26, 1889. Serial No. 304,813. (No model.)



Claim.—1. In a boiler, a section composed of a header having fire-flues therein and depending pipes communicating with said header at the lower surface thereof and having indirect communication with the base of the boiler, substantially as described.

2. In a boiler, the combination, with the sections, the cross-chamber, and the pipes, of the longitudinal pipes C, joining the sections above the pipes and entering the cross-chamber, substantially as described.

3. In a boiler, the combination, with the fire-box, of a main hot-air flue D and the side flues E, affording communication between the fire-box and the flue D, substantially as described.

4. In a boiler, a base, a water-supply for the same, supply-pipes J, extending upward from the same, and a top having depending manifold pipes H', in combination with sloping pipes connecting said supply-pipes with said manifold pipes, and vertical pipes connecting said base with said top, substantially as described.

5. In a boiler, a fire-box surrounded with tubes for water, flattened above so as to inclose said fire-box and flattened below in the opposite direction, substantially as described.

6. In combination with the fire-box of a boiler, a base, a water-supply for the same, vertical tubes at the opposite ends, sloping pipes connecting the same, and one of said end rows communicating with a top water-chamber, and vertical pipes at the sides of said fire-box, said tubes flattened above to inclose said box and below in a direction at right angles to the flattening of the upper part, substantially as described.

411,952. GAME-COUNTER. WILLIAM W. CLAY, Chicago, Ill. Filed Apr. 3, 1888. Serial No. 269,444. (No model.)



Claim.—1. A counter for games, comprising a main portion or body, as A, and a plurality of parts, as B, said parts being entirely independent of each other, and joined to the body A at a portion of their margins and separately detachable from said body, substantially as described.

2. A game-counter comprising a main portion or body, as A, provided with a plurality of detachable parts secured to said body at a portion of their margins and independent of each other, and means permanently revealing the number of parts detached from said body, whereby the number of games lost is indicated, substantially as described.

3. A game-counter comprising a main portion or body, as A, and a plurality of separately detachable parts, as B, which are separately secured to said body at a portion of their margins, one of which parts is to be removed when a game is lost, said body of the counter being provided also with a plurality of V-shaped cuts, as C, adapted to receive the detachable portion of another similar counter, substantially as specified.

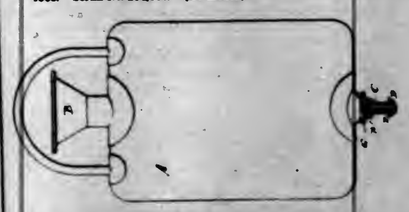
411,953. ADJUSTABLE BIT. JAMES M. CUNNINGHAM, Lewisburg, W. Va., assignor of one-half to John F. Estill, same place. Filed Sept. 26, 1888. Serial No. 286,463. (No model.)



Claim.—1. The combination, with the section A, having the leg B and provided with the grooves H and I, of the section D, having the leg E, provided with the slotted arms F and G, and the set-screws J and K, substantially as described.

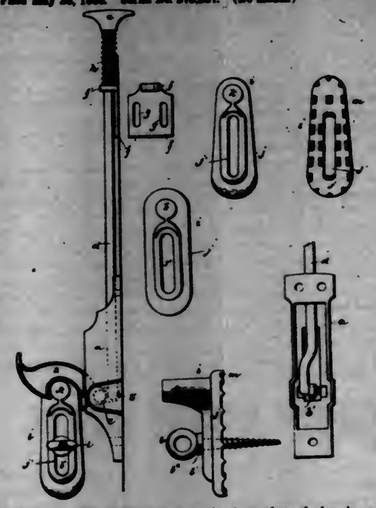
2. In a bit, the combination, with the section A, having the leg B, provided with the bevel cutting-edge *b*, the body C, the neck *c*, and the slots H and I, of the section D, having the leg E, provided with the cutting-edge *e* and the slots *f* and *g* in its arms F and G, and the set-screws J and K, substantially as described.

411,954. FOUNTAIN-SYRINGE. ARTHUR G. BOSSERT, New York, assignor to the Ideal Rubber Company, Brooklyn, N. Y. Filed Dec. 19, 1888. Serial No. 294,077. (No model.)



Claim.—The combination, with a rubber bag provided with a top filling-opening and at the bottom with an outlet-tube having a bead at its lower end, a neck of less diameter above said bead and a screw-threaded shoulder at its upper end, of a screw-cap adapted to be screwed on the screw-threaded collar of the outlet-tube for the purpose of closing the same, substantially as set forth.

411,955. GATE-LATCH. CHARLES H. BLAIR, New Albany, Ind. Filed May 20, 1889. Serial No. 310,957. (No model.)



Claim.—1. The casing *a* and the hook *b*, pivoted therein, combined with the rod *d*, jointed to the hook and extended up out of the casing, the adjustable bracket *f*, and the spring *h*, interposed between said adjustable bracket and the rod-knob, substantially as shown and described.

2. The casing *a* and the hook *b*, pivoted therein, combined with the rod *d*, jointed to the hook and extended up out of the casing, the adjustable bracket *f*, and the spring *h*, interposed between said adjustable bracket and the rod-knob, and the adjustable catch *i*, having the projecting arm *k*, to be engaged by the hook, substantially as shown and described.

411,956. SPRING-HINGE. HENRY L. PERRIN, Harvard, Ill., assignor to Hunt, Heim & Perrin, same place. Filed Jan. 24, 1889. Serial No. 297,621. (No model.)

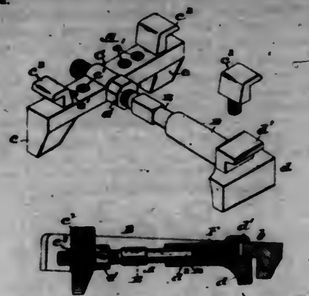


Claim.—1. A spring-hinge comprising two leaves pivotally secured together at their adjacent ends, a spring located over one of said leaves, one end of said spring being pivotally secured to one leaf at a remove from the other leaf, the remaining end of said spring being pivotally secured to the second leaf at a point adjacent to the first leaf in line with but below and between the axis of the pivots which unite said leaves, substantially as described.

2. In a spring-hinge, the combination, with the leaves A A', hinged together at their adjacent ends, of a tube B', closed at one end and pivoted at its open end to the leaf A, a spring B, located in said tube, a movable plate *c'* in engagement with one end of the spring B, and a rod C, secured at one end to said movable plate *c'*, and at its other end pivotally secured to the leaf A', substantially as described.

411,957. HORSESHOE. LEWIS FISHER, St. Louis, Mo. Filed Apr. 22, 1889. Serial No. 308,211. (No model.)

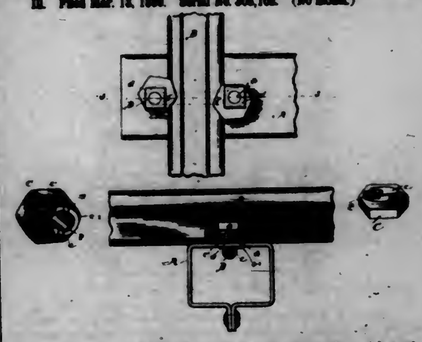
Claim.—1. The herein-described horseshoe attachment, consisting of the cross-bar having the calks and adjustable clips, the longitudinal bar having the calk and lug, the thrust-bar, and the spring, said longitudinal bar having a recess to receive said spring and the forward end of said thrust-bar, and said cross-bar having a threaded perforation to receive the rear end of said thrust-bar, substantially as described.



2. The combination of the cross-bar having the calks and the adjustable lugs, the longitudinal bar having the calk and lug at its forward end and being recessed at its rear end, the thrust-bar, the spring, and the jam-nut, the said spring and the forward end of said thrust-bar being held in said recess, the rear end of said thrust-bar engaging in a threaded perforation in said cross-bar, and said jam-nut being applied to said thrust-bar, substantially as described.

3. The combination of the horseshoe, the cross-bar, the longitudinal bar, the thrust-bar, and the spring, said cross-bar and longitudinal bar having the calks and lugs, as described, said spring being held in a recess within said longitudinal bar, and said thrust-bar being at one end thereof held in said recess against said spring and at its opposite end engaging in a threaded perforation in said cross-bar, substantially as described.

411,958. RAILWAY-RAIL CLAMP. ROBERT FORSYTH, Chicago, Ill. Filed Mar. 13, 1889. Serial No. 303,102. (No model.)



Claim.—1. A railway-rail clamp comprising a bolt, and a perforated jam-block upon said bolt, said jam-block having an eccentrically-curved portion to bear laterally against the rail and having a shoulder or offset to enter a hole in the tie-plate, substantially as described.

2. A railway-rail clamp comprising a bolt, and a perforated jam-block upon said bolt, said jam-block having a shoulder to lock the edge of the rail-flange and having a shoulder to enter a hole in the tie (one of said shoulders being eccentrically curved) and having a broad portion to overlap the rail-flange, substantially as described.

3. A railway-rail clamp comprising a bolt, and a perforated jam-block upon said bolt, said jam-block having an eccentrically-curved shoulder, to lock the rail-flange, and having a broader portion to overlap said flange, said broader portion of the jam-block being of polygonal shape to be engaged by a suitable wrench, substantially as described.

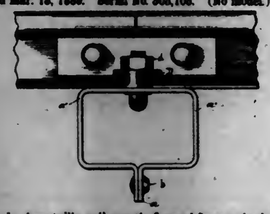
4. A railway-rail clamp comprising a bolt, and an eccentrically-perforated jam-block upon said bolt, said jam-block having a shoulder to bear against the edge of the rail-flange and having a shoulder to enter a hole in the tie, (one of said shoulders being eccentrically curved,) and having a polygonal body adapted to overlap the rail-flange, substantially as described.

5. A railway-rail clamp comprising a bolt, and a perforated jam-block upon said bolt, said jam-block having a shoulder to bear against the edge of the rail-flange, and having a shoulder to enter a hole in the tie-plate, (one of said shoulders being eccentrically curved,) in combination with said perforated tie-plate, substantially as described.

6. The combination, with a railway-tie having a perforated plate A, of a rail-clamp comprising a U-shape bolt D, the jam-blocks C, having the shoulders *c* and *c'*, and the nuts, substantially as described.

7. The combination, with a suitable perforated plate for supporting the rail, of a bolt, a perforated jam-block upon said bolt, said jam-block having a shoulder to bear against the edge of the rail-flange, and having a shoulder considerably smaller than the perforation of said plate to enter said perforation, (one of said shoulders being eccentrically curved,) substantially as described.

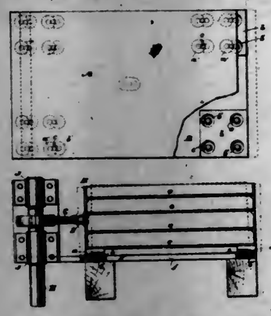
411,959. METALLIC RAILWAY-TIE. ROBERT FORSYTH, Chicago, Ill. Filed Mar. 13, 1889. Serial No. 303,108. (No model.)



Claim.—1. A metallic railway-tie formed from a single plate bent to box-like shape and having its abutting edges provided with the flanges bent in the same direction from the body of the metal and bearing against each other, substantially as described.

2. A metallic railway-tie formed of a plate bent to box-like shape and having its abutting edges flanged and projecting downwardly from the lower side of the tie, substantially as described.

411,960. MECHANICAL MOVEMENT. THOMAS R. GRIFFITH, Wilkes-Barré, Pa. Filed June 18, 1889. Serial No. 314,737. (No model.)



Claim.—1. In a mechanical movement, the combination, substantially as hereinbefore set forth, of two parts, one of which is movable and the other of which is stationary, provided upon their inner faces with a circular track or bearing, and a globe or sphere placed between and having rolling contact with said tracks and arranged to furnish a rolling gyrating bearing and support for the upper of said parts.

2. As a means for enabling a relatively-gyrating motion to be produced between two parts which have parallel inner faces, and in combination therewith, a globe or sphere that is placed between and has rolling contact with said faces, substantially as and for the purposes shown and described.

3. As a means for supporting a part parallel with and enabling the same to be gyrated over a relatively stationary part, the combination therewith of two or more globes or spheres which are placed between and have rolling contact with the contiguous parallel faces of said parts, substantially as and for the purposes specified.

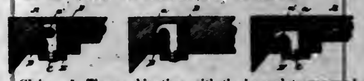
4. In a mechanical movement, the combination, substantially as hereinbefore set forth, of a movable part arranged to gyrate over a relatively stationary part, one or more globes placed between said parts and having rolling contact with the contiguous faces of the same, and means, substantially as described, for imparting motion to the movable part.

5. In a mechanical movement, the combination, substantially as hereinbefore set forth, of a movable part arranged to gyrate over a relatively stationary part, one or more globes placed between said parts and having rolling contact with circular guide tracks or bearings on each of the contiguous faces of said parts, and means, substantially as described, for imparting a gyrating motion to the movable part.

6. In a mechanical movement, the combination, substantially as hereinbefore set forth, of a movable part the lower face of which is composed of any number of relatively-inclined surfaces, a stationary part over which said movable part gyrates, the upper face of which is composed of an equal number of correspondingly inclined and parallel faces, one or more globes or spheres placed between any pair of the contiguous faces of said parts and arranged so as to form a rolling contact between the same and support for the movable part, and means, substantially as described, for imparting a gyrating motion to said movable part, whereby a vertical or jigging motion is at the same time imparted to the movable part.

7. In a mechanical movement, the combination, substantially as hereinbefore set forth, of a movable part the lower face of which is composed of one or more relatively-inclined surfaces, a stationary part over which said movable part gyrates, the upper face of which is composed of an equal number of correspondingly inclined and parallel surfaces, one or more globes or spheres placed between any pair of the contiguous faces of said parts, having rolling contact with circular guide tracks or bearings on each of said faces, whereby a support is formed for said movable part, and means, substantially as described, for imparting a gyrating motion to said movable part, whereby a vertical or jigging motion is at the same time imparted to the movable part.

411,961. HORSESHOE. JAMES A. HAMLAR, Washington, D. C. Filed Jan. 5, 1889. Serial No. 295,494. (No model.)



Claim.—1. The combination, with the base-plate, recessed as described, and a pintle within each recess, of a shoe or calk, a fastening-bolt whose upper end enters the recess in the base-plate and engages with the pintle, and whose lower end passes through the shoe or calk, and means, substantially as described, for tightening the bolt, for the purposes set forth.

2. The combination, with the base-plate, recessed as described, and a pintle within each recess, of a shoe or calk, a fastening-bolt whose upper end enters the recess in the base-plate and engages with the pintle, and whose lower end is screw-threaded and passes through the shoe or calk, a filling-block in the recess alongside the bolt, and a nut on the bolt, for the purposes set forth.

3. The combination, with the base-plate, recessed as described, and a pintle within each recess, of a shoe or calk having an integral filling-block on its upper surface, a fastening-bolt whose upper end enters the recess in the base-plate and engages with the pintle, and whose lower end passes through the shoe or calk, and means, substantially as described, for tightening the bolt, for the purposes set forth.

411,962. MOLDER'S SPRUE. DANIEL J. HEAPHY, Grand Rapids, Mich. Filed Mar. 5, 1889. Serial No. 301,961. (No model.)



Claim.—1. A molder's sprue constructed in two parts and provided with means, substantially as described, for effecting permanent longitudinal extension.

2. In a molder's sprue constructed in two parts and having a body provided with a conical head, a cylindrical extensible part provided with means for effecting permanent longitudinal extension, substantially as described.

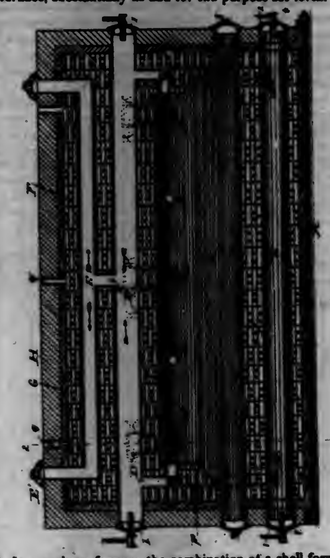
3. In a molder's sprue constructed in two parts for the purpose of effecting permanent longitudinal extension, a body provided with a central longitudinal chamber adapted to a cylindrical extensible part, in combination with a cylindrical extensible part provided with means for effecting permanent longitudinal extension, substantially as described.

4. In a molder's sprue, the combination and arrangement of the body A, having chamber F and pin D, the part B, and pin C, arranged substantially as described.

5. In a molder's sprue, the combination and arrangement of a fixed or non-movable part, and movable or extensible part provided with means of permanent screw adjustment, substantially as described.

411,963. GARBAGE-FURNACE. BERNARD C. HEAVEY, Chicago, Ill., assignor of one-third to Mortimer Sunsius, same place. Filed Feb. 1, 1889. Serial No. 298,333. (No model.)

Claim.—1. In a garbage-furnace, the combination of a shell formed with material non-conductive of heat, a fire-chamber B, and a retort C above the fire-chamber, surrounded by a mass of spaced brick, substantially as described, within the shell, and inlet and outlet passages extending from the retort and fire-chamber to the exterior of the furnace, substantially as and for the purpose set forth.



2. In a garbage-furnace, the combination of a shell formed with material non-conductive of heat, a fire-chamber B, and a retort C above the fire-chamber, surrounded by a mass of spaced brick, substantially as described, within the shell, one or more passages M, connecting the fire chamber and retort, and one or more flues and chutes extending from the exterior of the furnace to the retort, substantially as set forth.

3. In a garbage-furnace, the combination of a shell formed with material non-conductive of heat, a fire-chamber B, and a retort C above the fire-chamber, surrounded by a mass of spaced brick, substantially as described, within the shell, a passage M, connecting the fire-chamber and retort, a chute K, and flue in the furnace-wall provided with a port L, the said chute, port, and flue extending from the exterior of the furnace to the retort, a door *s*, affording access to the retort from without the furnace, an ash-pit N, and a chute *r*, extending from the retort to the ash-pit, substantially as described.

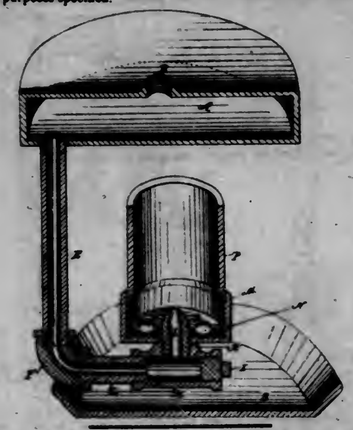
4. In a garbage-furnace, the combination of a shell formed with material non-conductive of heat, a fire-chamber B, a retort C above the fire-chamber, surrounded by a mass of spaced brick, substantially as described, within the shell, a second fire-chamber B', intercommunicating with the retort, and inlet and outlet passages extending from the retort and fire-chambers to the exterior of the furnace, substantially as and for the purpose set forth.

5. In a garbage-furnace, the combination of a shell formed with material non-conductive of heat, a retort C, fire-chambers B and B', respectively below and above the retort, passages D and M, affording communication between the fire-chambers and the retort, a mass F of spaced brick, substantially as described, about the chambers B' C and the chamber B, which opens into the mass F, a flue *q*, extending through the shell, a chute K in the furnace-wall, provided with a port L, the said chute and port extending from the exterior of the furnace to the retort, a door *s*, affording access to the retort from without the furnace, an ash-pit N, a chute *r*, extending from the retort to the ash-pit, and a flue E, extending from the fire-chamber B' to the exterior of the furnace, substantially as described.

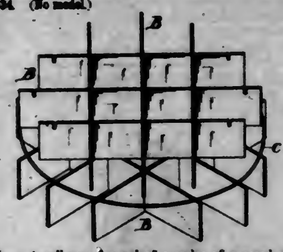
411,964. OIL-BURNER FOR HEATING PURPOSES. FRANCIS G. LILLY, Jamestown, N. Y., assignor to Charles H. Gregory, same place. Filed Feb. 26, 1889. Serial No. 301,462. (No model.)

Claim.—1. The combination, in an oil-burner, of the retort A, the section H, connecting therewith by means of a pipe E, the externally-threaded jet-burner connected to the branch K of said section, and the cylindrical section M, secured to the jet-burner and resting upon the branch K, the said cylindrical section being provided with draft-apertures R, substantially as and for the purposes specified.

2. The combination, with the section H, connected with the retort A, of the externally-screw-threaded jet-burner, the short section M, secured thereto and resting on the branch K, and the cylinder P, mounted on the upper part of said section M, substantially as and for the purposes specified.

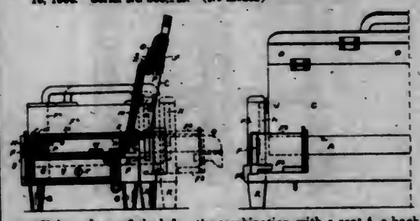


411,965. CELL-CASE FOR TOBACCO-PAILS. EDWARD MARSH and JOHN HARTNER, Detroit, Mich. Filed July 12, 1889. Serial No. 317,394. (No model.)



Claim.—A cell-case formed of a series of crossed strips notched together and secured by the hoop C, resting in notches in the upper edges of the crossed strips near their ends, substantially as and for the purpose set forth.

411,966. SOFA-BED. ISAAC H. MILLER, Boston, Mass. Filed July 16, 1888. Serial No. 280,145. (No model.)

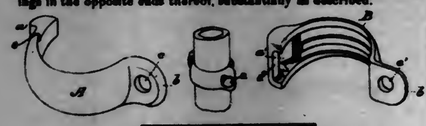


Claim.—In a sofa-bed, &c., the combination, with a seat A, a back C, hinged to the seat, and a horizontal arm or arms made in parts F F², one stationary and the other adapted to travel on the stationary part and also connected through a vertical way H to the back, and the back adapted to travel on said way H, of a horizontal extension F² at one end, hinged to the rear end of the stationary part F of the arm F F², to be placed in and out of line with said part F, and when in line with said part F the other and sliding part F² can travel over it, substantially as described, for the purpose specified.

411,967. CLAMPING DEVICE. PETER RIEMER, Allegheny, Pa. Filed Feb. 25, 1889. Serial No. 300,982. (No model.)

Claim.—The combination, with the part A, having at one end a lug *a* and shoulder *c*, of the part B, having its corresponding end enlarged and provided with a through opening *a'* and recess *c'*, whereby the lug *a* is secured through the opening *a'* and into recess *c'*, the shoul-

der *c* abutting against the outside wall of said enlarged end, and said parts A and B being secured together by a bolt passing through openings in the opposite ends thereof, substantially as described.



411,968. HOOK. ALBERT SANFORD, Oshkosh, Wis. Filed July 21, 1883. Serial No. 260,637. (No model.)



Claim.—1. A hollow chain-hook having the core-support holes in the back or edges closed or filled, substantially as set forth and described.

2. As an improved article of manufacture, a blank from which to form a hollow hook, having its walls integral at the back with openings therein, and flanges for closing said openings, substantially as described.

3. As an improved article of manufacture, a blank from which to form a hollow hook, having its walls integral at the back with openings in said back, flanges for closing the same, and openings in the side walls of the hook, substantially as described.

411,969. APPARATUS FOR FORMING GLASSES, &c. NATHAN R. SCOTT, Wheeling, W. Va. Filed Apr. 29, 1889. Serial No. 309,071. (No model.)



Claim.—1. A device for joining glass bodies to their standards and comprising a mold for the glass bodies having an aperture therein, in combination with a movable holder adapted to hold the disconnected standard and to insert the end of the same into said aperture and press it in contact with the body to unite it thereto, substantially as specified.

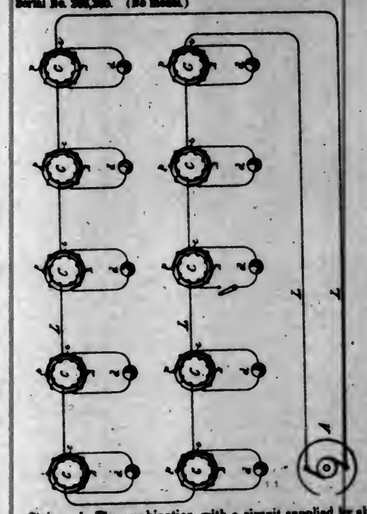
2. A device for joining standards to glass bodies, comprising a holder for the glass standards adapted to move vertically, in combination with a mold for the bodies situated above said holder, with sufficient space between said aperture and holder for the standard, and provided with an aperture situated directly above said holder, substantially as specified.

3. A device for joining glass standards to glass bodies, consisting of a table having a flanged collar and a body-mold fitting over said collar and constructed to form the body only, in combination with a stem bearing a platform arranged at a distance from the bottom of said mold and adapted to slide vertically under said mold beneath an aperture therein, substantially as specified.

4. A device for joining glass bodies and standards, consisting of a table having a flanged collar and an apertured mold fitting over said collar and designed to form the body only, in combination with a vertically-sliding stem under said aperture, a platform on said stem, a guide projecting above said platform, and a lever pivoted to said table and connected to said stem, substantially as specified.

5. A device for joining glass bodies and standards, consisting of a table having a flanged collar and a separable glass-mold constructed to form the body only and fitting over said collar and having an aperture in the bottom thereof, in combination with a vertically-sliding stem under said aperture, said stem having a restricted portion, a platform, and a guide, said platform being arranged at a distance from the aperture in the bottom of the mold substantially equal to the length of the standard, and a lever pivoted to the table and having an end embracing said restricted portion, substantially as specified.

411,970. SYSTEM OF ELECTRICAL DISTRIBUTION FOR STREET-LIGHTING. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Oct. 16, 1888. Serial No. 288,265. (No model.)

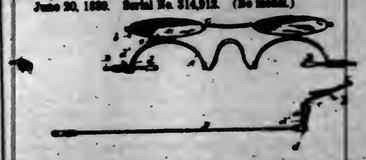


Claim.—1. The combination, with a circuit supplied by alternating electric currents, of two or more electric converters having their primary coils connected in series in said circuit, and an incandescent electric lamp or other translating device connected in the secondary circuit of each converter, the coils of the converters being so proportioned to the mass of iron in the corresponding cores that upon the interruption of the circuit through any lamp a normal current is allowed to pass through the other converters by reason of the high magnetic saturation of the core of the corresponding converter.

2. In a series system of secondary distribution, a converter so proportioned that the self-induction of its primary with open secondary is the equivalent of the resistance of the translating devices normally on the secondary circuit.

3. In a series system of electrical secondary distribution, converters having their primary coils so proportioned that the inductive opposition to the current is approximately the same when the secondary is open as when the secondary is closed through its normal circuit.

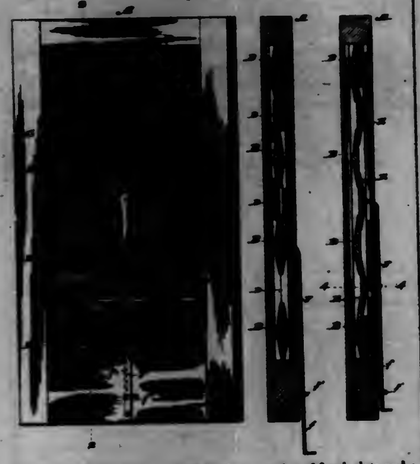
411,971. SPECTACLES. URIAH SMITH, Battle Creek, Mich. Filed June 20, 1888. Serial No. 314,912. (No model.)



Claim.—1. The combination, with a main spectacle-frame and an adjustable swinging frame carrying suitable glasses, of a spring for lifting and holding the swinging frame out of range of the eyes, substantially as described.

2. The combination, with a main frame and an adjustable frame hinged thereto, of a spring for lifting and holding the latter in its raised position, and a latch or catch for holding said adjustable frame in its position in line with the eyes, substantially as described.

411,972. WINDOW-BLIND. EDWARD SCHEPELWEIN and HENRY SCHEPELWEIN, St. Louis, Mo. Filed May 11, 1888. Serial No. 311,361. (No model.)



Claim.—1. A window-blind having a series of fixed slats and a sliding series of slats, the slats of said sliding series at the upper edge thereof lapping upon the inner face of the fixed slats, respectively, next above and at the lower edge thereof lapping upon the outer face of the fixed slats next beneath, substantially as described.

2. A window-blind having a series of fixed slats and a sliding series of slats, the slats of said sliding series at the upper edge thereof lapping upon the inner face of the fixed slats, respectively, next above and at the lower edge thereof lapping upon the outer face of the fixed slats next beneath, and said sliding series of slats having connected therewith the adjusting-bar F, arranged as described, for sliding and holding in position said series of slats, substantially as described.

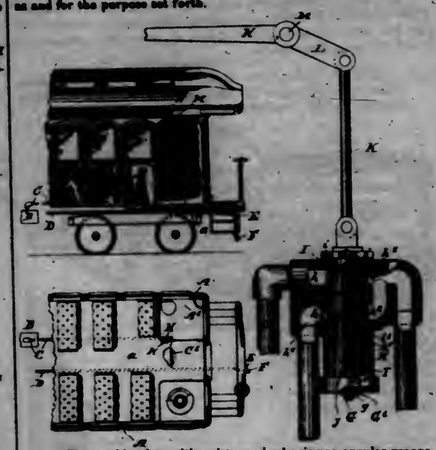
3. The combination, in a window-blind, of the series of fixed slats B and the sliding series of slats E, said slats B being spaced apart, as described, and having the outer face *b'* inclined, as shown, and the upper portion of the inner face made vertical and the lower portion inclined, as shown, and said slats E being spaced apart, as shown, and the upper portion being made vertical and the lower portion inclined and made to lap upon the fixed slats, substantially as described.

411,973. VALVE. CHARLES F. WEBB, Concord, N. H., assignor to the Westinghouse Air Brake Company, Allegheny, Pa. Filed June 21, 1888. Renewed Aug. 17, 1889. Serial No. 321,143. (No model.)

Claim.—1. An automatic relief-valve consisting of a valve-housing provided with a valve-chamber having upper and lower ports, the two upper ports connecting with the supply-pipe and the two lower ports with said supply and an exhaust pipe, and an air-inlet located below the lower ports, whereby an air-cushion is formed below a piston-valve, the said piston-valve fitting the valve-chamber in said housing and having an annular groove for conducting air through the same, and a suitable spring or springs for holding said valve normally with its groove below the lower ports, all substantially as and for the purpose set forth.

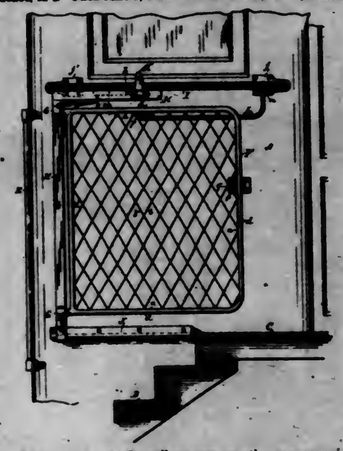
2. The combination, with a piston-valve having an annular groove, of a valve-housing provided with upper and lower ports, the two upper ports connecting with the supply-pipe and the two lower ports with said supply and an exhaust pipe, a suitable spring or springs for closing said valve, and an aperture or air-inlet for admitting air to the valve-chamber below said lower ports and the said piston-valve, whereby the closing movement of said valve is sufficiently retarded to exhaust the air in the supply or delivery pipe back through said valve to a waste-pipe.

3. In a valve having automatic relief mechanism, the combination, with a chamber underneath the valve, having a small opening for admission of air, of an opening provided with an adjustable device for controlling the escape of confined air from said chamber, comprising a screw threaded to said opening, having a longitudinal groove at one side, and a flexible collar or washer interposed between the bottom of said chamber and the head of said screw, substantially as and for the purpose set forth.



4. The combination, with a piston-valve having an annular groove, of a valve-housing provided with upper and lower ports, the two upper ports connecting with the supply-pipe and the two lower ports with the supply and an exhaust pipe, a suitable spring or springs for closing said valve, an aperture or air-inlet for admitting air to the valve-chamber below said lower ports, and a device for controlling its escape, consisting of a threaded opening in the bottom of said chamber, to which is fitted a screw the threads of which are flattened or removed on one side, and a flexible washer, all substantially as and for the purpose set forth.

411,974. GATE FOR RAILWAY-CARS. JOHN B. WOOD, Providence, R. I. Filed June 6, 1889. Serial No. 313,189. (No model.)



Claim.—1. A gate for railway-cars or other purposes, jointed to a support which is adapted for inward and outward movement in operating the gate, substantially as described.

2. A gate for railway-cars or other purposes, jointed to a support which is adapted for inward and outward movement in operating the gate, and provided with the guiding-rod to control the opening and closing movement, substantially as described.

3. The slotted guide-tube adapted to guide the supporting-bar of the gate, substantially as described.

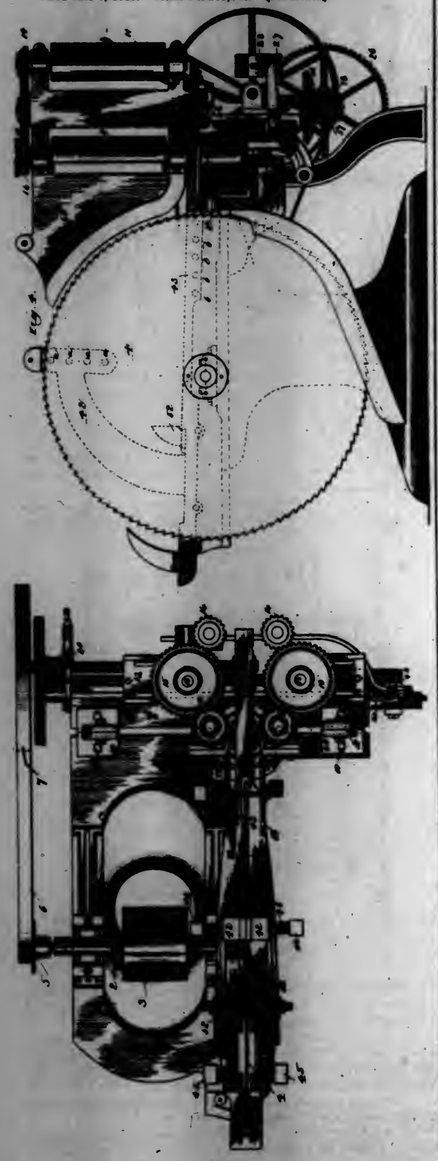
4. A gate for railway-cars or other purposes, jointed to a support which is adapted for inward and outward movement in operating the

gate, in combination with a latch for holding the gate in position, substantially as described.

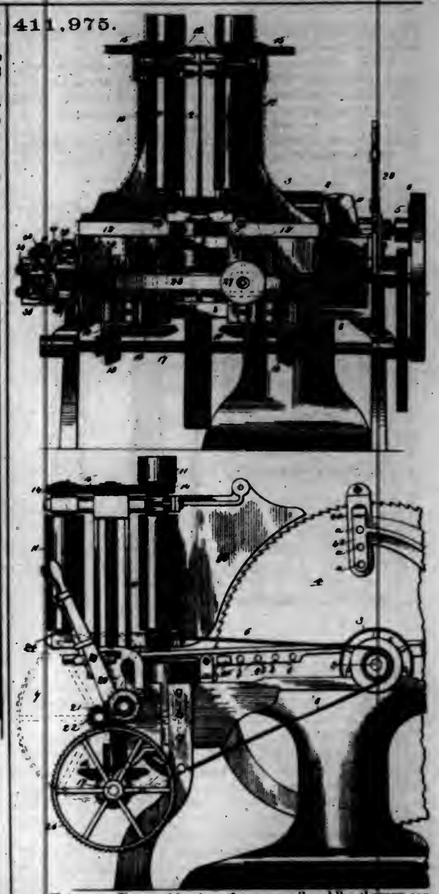
5. A gate for railway-cars or other purposes, formed with the cross-wires, the channel-bars, and the rounded bands, and provided with the pintle-pieces, substantially as described.

6. A gate for railway-cars or other purposes, jointed to a support which is adapted for inward and outward movement in operating the gate and held in a guide-tube slotted at its under side, substantially as and for the purpose specified.

411,975. **RESAWING-MACHINE.** ERWIN BENJAMIN, South Evanston, Ill., assignor to the Benjamin Machine Company, of Illinois. Filed Jan. 7, 1889. Serial No. 296,671. (No model.)



411,975.



Claim.—1. The combination of a cross-rail, saddles thereon carrying the feed-rolls and capable of movement on the rail, a yielding lever pivoted in fixed relation to said rail, and connections from each of said saddles, respectively, to points upon said yielding lever oppositely situated in relation to the pivot thereof, whereby the saddles and the rolls supported thereon are adapted to yield simultaneously in opposite directions, substantially as described.

2. The combination of a cross-rail, saddles movable thereon and carrying the feed-rolls, a yielding lever pivoted in stationary relation to said rail and having cams or lugs placed oppositely with relation to said pivot, and blocks connected with each of said saddles and with said lugs or cams, one of said cams being detachably connected by means of a latch pivoted to the block and having a recess engaging with said leg or cam.

3. The combination, with the cross-rail and saddles carrying the feed-rolls of a resawing-machine, of a block connected to said saddle and sliding in said cross-rail, and a latch pivoted to said block and adapted to engage with a yielding lever or with a stop attached to the cross-rail.

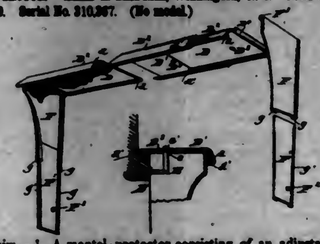
4. The combination, with the rail 8 and saddle carrying the feed-rolls, of screw 34, block 32, latch 38, handle 39, and stop 43.

5. The combination of a saw, saddles carrying feed-rolls, guide-aprons secured to said saddles and extending from the feed-rolls to the saw, and a bolt passing through both aprons and having a spring-washer intervening between it and the apron so as to form an elastic connection between said aprons, substantially as described.

6. The combination, in a resawing-machine, of a vertical pivot supported by the frame of the machine, a rail having a socket fitted to said pivot, saddles on said rail, and feed-rolls carried by said saddles, whereby the horizontal rotation of said rail and the alignment of the direction of feed with the saw is permitted, substantially as described.

7. The combination, in a resawing-machine, of a vertical pivot supported by the frame of the machine and adapted to be partially rotated on a horizontal axis, a rail having a socket fitted to said pivot, saddles on said rail, and feed-rolls carried by said saddles, whereby the horizontal rotation of said rail and the alignment of the direction of feed with the saw is permitted, substantially as described.

411,976. **GRATE AND FIRE-PLACE CORNICE AND MANTEL-PROTECTOR.** ELIJA B. BRIDGERS, Wilmington, N. C. Filed May 11, 1889. Serial No. 310,267. (No model.)



Claim.—1. A mantel-protector consisting of an adjustable top formed of the middle section D', bent down near its front edge, and the end sections D D, bent down near their front edges and having the outer upwardly-extending end flanges D^4, and the adjustable and removable side pieces formed of the lower sections F' and the upper sections F, having the top end grooves F^3, substantially as set forth.

2. In a mantel-protector, the combination of the retaining-hooks E, the adjustable top formed of the middle section D', bent down near its front edge and having the apertures D^5, and the end sections D, bent down near their front edges and formed with the apertures D^5 and the outer upwardly-extending end flanges D^4, the adjustable sides formed of the lower sections F', having the apertures F^5, and the upper sections formed with the upper end grooves and the retaining-screws, substantially as set forth.

411,977. **OIL-CAN.** JAMES A. CAMPBELL, New Orleans, La. Filed Sept. 5, 1888. Serial No. 284,502. (No model.)



Claim.—1. The combination, with an oil-can nozzle having a bearing in its lower end, of a wire passing through said bearing and nozzle and having a reduced diameter at the delivery end of the nozzle, an adjusting-piece through which the lower end of the wire passes, and a spiral spring on the wire between said bearing and adjusting-piece, substantially as set forth.

2. An oil-can nozzle having a sleeve *a* in its outer end, a trapezoidal guide-piece in its inner end, a wire extending through the guide-piece and sleeve and having a reduced diameter of greater length than the latter, and a spiral spring on the wire pressing at its upper end against the lower end of the guide and at its lower end against a bearing on the wire, substantially as set forth.

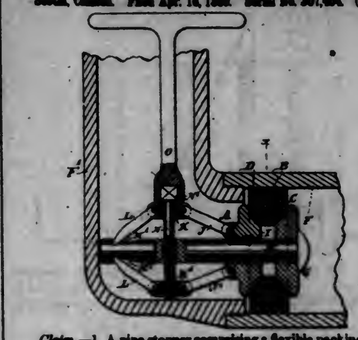
3. The combination, with the nozzle B and wire *c*, of the guide C', formed of a strip of metal bent into trapezoidal shape and provided with apertures *b* for receiving the said wire *c*, substantially as specified.

4. In an oil-can, the combination, with the oil-can nozzle having a longitudinal slot at the delivery end thereof, of the sliding wire having a projecting pin near its outer end entering said slot, provided with a notch in its side, the notch being normally within the end of the nozzle, substantially as set forth.

5. In an oil-can, the combination, with the nozzle having guides, of a sliding wire passing through the guides and projecting beyond the delivery end of the nozzle, a spring pressing the rod inwardly, a sleeve on the inner end of the rod, and a pin extending upwardly into the lower end of the sleeve and engaging the inner extremity of the wire, substantially as set forth.

6. In an oil-can, the combination, with the nozzle having a sliding wire extending through it, the wire having a contracted diameter adjacent to the delivery end of the nozzle, and a spring normally pressing the wire inwardly to hold said contracted part within the nozzle, of an adjusting-piece on the inner end of the wire, having a right-opening on one side, and a pin extending upward through the lower end of the adjusting-piece against the extremity of the wire, substantially as set forth.

411,978. **PIPE-STOPPER.** JOHN W. CHANDLER, Liverpool, Nova Scotia, Canada. Filed Apr. 16, 1889. Serial No. 307,494. (No model.)

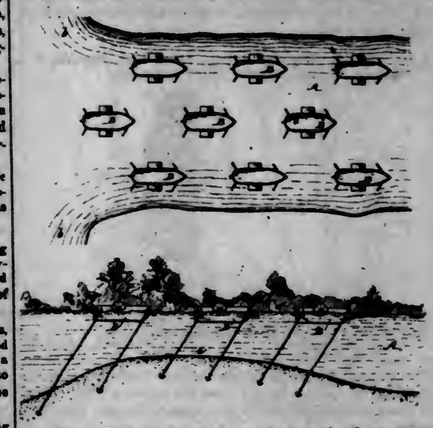


Claim.—1. A pipe-stopper comprising a flexible packing-ring having the inner half of its cross-section semicircular, a disk fitting onto one side of the said semicircular cross-section and closing the central opening of the packing-ring, a rod extending centrally from the said disk and passing through the central opening of the packing-ring, a second disk held on the said rod and adapted to be moved onto the packing-ring opposite the other disk, a toggle-joint connected with the said second disk, and a screw-rod for operating said toggle-joint, substantially as shown and described.

2. A pipe-stopper comprising a flexible packing-ring, two disks at opposite sides of said ring and closing its opening, the disks being rounded or inclined to expand the ring when forced together, a headed rod passed through the disks, opposite toggles connecting the outer end of the rod with the adjacent end of the disk and provided with collars at their joints, one collar being threaded, and the operating screw-rod passing through one of said collars and rod and engaging the opposite threaded collar, substantially as set forth.

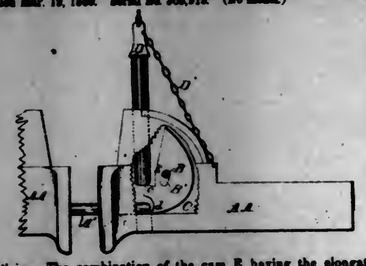
3. A pipe-stopper comprising a flexible packing-ring B, the disks G I at opposite sides thereof, the rod H, passed through said disks and having a head bearing on disk G, an aperture near its opposite end and opposite notches H' H', the links J, hinged to the disk I, the links L, engaging the notches H', the collars K K', connecting the links J L and the screw N, passed through the collar K and aperture in rod H into the threaded collar K', substantially as set forth.

411,979. **MEANS FOR CONTROLLING THE FLOW OF NAVIGABLE RIVERS OR OTHER WATERS.** JOSEPH G. COBLE, Crockett, Tex. Filed Apr. 27, 1889. Serial No. 308,782. (No model.)



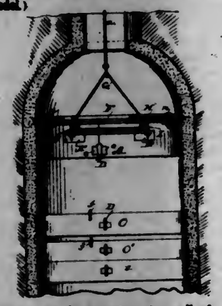
Claim.—The herein-described means for increasing the current or outflow of rivers and other streams to prevent the formation of sand-bars and the overflow of the banks of rivers, consisting of a series of anchored steam-vessels arranged in parallel rows, with their heads in the same direction, and in alternation, as specified, and provided with propelling devices which are in practice kept in motion for accelerating the outflow of the stream, as set forth.

411,980. CAR-COUPLING. JAMES H. CRITTENDEN, Fall River, Mass. Filed Mar. 19, 1889. Serial No. 303,912. (No model.)



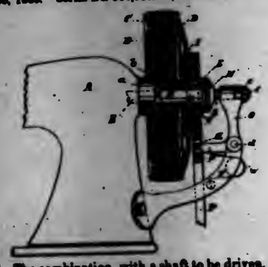
Claim.—The combination of the cam E, having the elongated slot B', shoulder C, and the offset *d*, in combination with the pivot B, pin D, and the housing or chamber for the same, all substantially as described.

411,981. METHOD OF CEMENTING CISTERNS OR WELLS. WILLIAM H. H. DAVIS, Oakfield, Mich. Filed Sept. 24, 1887. Serial No. 250,667. (No model.)



Claim.—The process of constructing the wall of a well by successive excavations and cementing, consisting, first, in making a single excavation, then inserting an expansible, redesible, and forming cylinder in said excavation, then filling the space between the said cylinder and the earth wall with cement, then making another excavation, inserting a cylinder, and cementing as before, thus cementing and completing the well in sections by successive downward steps, substantially as described.

411,982. ELECTRIC MOTOR. PHILIP DIEHL, Elizabeth, N. J. Filed Apr. 20, 1889. Serial No. 307,917. (No model.)



Claim.—1. The combination, with a shaft to be driven, of an electric motor the wheel of which is loosely mounted on said shaft, a clutch-disk connected with said shaft so as to rotate therewith and adapted to be engaged with said wheel, and an arm or lever for forcing said disk and wheel into frictional contact with each other when desired.

2. The combination, with a shaft to be driven, of an electric motor comprising a stationary field-magnet and a rotary armature, forming part of a wheel which is loosely mounted on said shaft, a clutch-disk connected with said shaft to rotate therewith and adapted to be frictionally engaged with said wheel, and means for forcing said disk and wheel into frictional contact with each other when desired.

3. The combination, with a shaft to be driven, of an electric motor the wheel of which is loosely mounted on said shaft, a clutch-disk rotatively connected with said shaft and adapted to be engaged with said wheel, means for causing a frictional engagement between said disk and wheel, and a brake arranged to arrest the movements of said disk and of the shaft driven thereby, when the pressure of the said disk against said wheel is relieved.

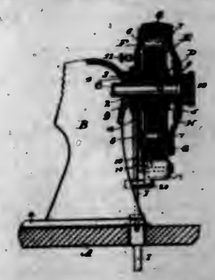
4. The combination, with a shaft to be driven and a sleeve secured to said shaft, of an electric motor comprising a stationary field-magnet and an armature, forming part of a wheel which has a hub mounted loosely on said sleeve, a clutch-disk rotatively connected with said sleeve, but adapted to slide thereon into or out of engagement with said wheel, and an arm or lever for pressing said disk into frictional contact with said wheel, when desired.

5. The combination, with a shaft to be driven and a sleeve secured to said shaft, of an electric motor comprising a stationary field-magnet and an armature, forming part of a wheel which has a hub mounted loosely on said sleeve, a clutch-disk rotatively connected with said sleeve, but adapted to slide thereon into or out of engagement with said wheel, an arm or lever for pressing said disk into frictional contact with said wheel, when desired, and a spring-pressed brake to arrest the movements of the said disk and shaft when the pressure of the said arm or lever on said disk is relieved.

6. The combination, with the shaft E and the sleeve H, fixed thereto, of the stationary field-magnet D, the rotary armature-wheel B, having the hub *b* loosely fitting said sleeve, the clutch-disk L, keyed to said sleeve and having the button M, and the spring-operated lever O, provided with a brake G.

7. The combination, with the arm A, having the hub *a* and bracket F, of the shaft E, extending through said hub and provided with the sleeve H, the stationary field-magnet D, secured to said hub *a*, the rotary armature-wheel B, having hub *b* loosely fitting said sleeve, the clutch-disk L, free to slide on said sleeve, but keyed thereto for rotate therewith, the bell-crank clutch-lever O, pivoted to said bracket and provided with the brake G, and the spring *w* to operate said lever.

411,983. ELECTRIC MOTOR. PHILIP DIEHL, Elizabeth, N. J. Filed Apr. 20, 1889. Serial No. 307,918. (No model.)



Claim.—1. In an electric motor, the combination, with a shaft to be driven, of a rotary armature normally connected with said shaft to rotate therewith, a field-magnet adapted to rotate independently of said shaft when desired, and means for frictionally holding said magnet or armature more or less tightly to regulate the movement of the active part of the motor.

2. In an electric motor, the combination, with a rotary field-magnet and rotary armature, of a clamping device for frictionally holding one or both of said parts more or less tightly, and comprising a normally stationary disk or plate to which the circuit-terminals are attached and which is provided with contact-rings to be engaged by brushes on the armature.

3. In an electric motor, the combination, with a rotary field-magnet provided with friction plugs or blocks, of a sleeve having a threaded portion, a plain portion on which said magnet is loosely mounted, and a flange at its end opposite to said threaded portion, a clamping-disk having an orifice interiorly threaded to engage said threaded portion of the sleeve, an armature surrounding said field-magnet, a wheel by which said armature is carried, a brake to engage said wheel, and a driven shaft with which said wheel is operatively connected.

4. In an electric motor, the combination, with a shaft to be driven, of a field-magnet adapted to rotate independently of said shaft when desired, means for frictionally holding said magnet more or less tightly, a rotary armature, a wheel carrying said armature and which is normally connected with said shaft to rotate therewith, and a brake for arresting the movements of said wheel when the frictional hold on the magnet is relaxed.

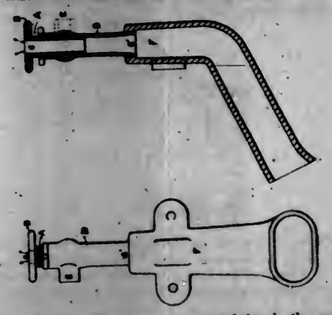
5. In an electric motor, the combination, with a rotary field-magnet and a clamping disk or plate for frictionally holding the same more or less tightly, of a rotary armature-wheel and a brake arranged to engage said wheel, said brake being operated by said disk or plate and adapted to be forced into contact with said wheel when said magnet is released and to be released from said wheel when said magnet is clamped.

6. The combination, with the rotary field-magnet, the clamping-disk F, the armature, and the wheel H, of the brake-lever 17, pivoted to said disk and having an inclined under side, and the arm E, having the pin or projection 20, on which said lever rests.

7. The combination, with the arm A, having the hub 3, of the sleeve D, attached to said hub and having plain and threaded portions, the rotary field-magnet mounted loosely on said plain portion, the plate or disk mounted on said threaded portion, the armature surrounding said field-magnet, the wheel H, carrying said armature and having the hub 8, the sleeve on which said hub loosely fits, the shaft C, connected with said sleeve 9, the stop-motion or clutch-screw 10, and the brake-lever operated by said disk.

8. The combination, with a sewing-machine provided with an electric motor, of a stopping and starting or regulating device for said motor, and a pitman for operating said stopping and starting or regulating device, said pitman being provided with a joint just above the level of the top of the sewing-machine table, or in the line with the pivots of the machine hinges, thereby permitting the machine to be turned up on its hinges without disconnecting said pitman.

411,984. FURNACE. ALFRED DEE and JOHN SAMES, Sydney, New South Wales. Filed Jan. 8, 1889. Serial No. 295,689. (No model.)

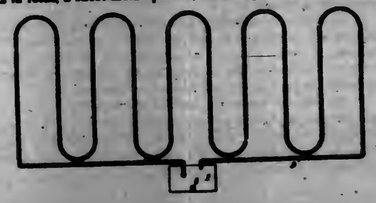


Claim.—An attachment for furnaces, consisting in the angular distributing-tube, the two arms of which form an obtuse angle, and the bore of the tube gradually increasing in diameter from its inlet to its discharge end, and the annular injector having an adjustable air-pipe and connected at its outlet end to the upper or inlet end of the distributing-tube, substantially as set forth.

411,985. STEAM-CAR-HEATING APPARATUS. JOHN L. HADLEY, New York, and MICHAEL H. WHALEN, Brooklyn, N. Y. Filed Apr. 26, 1889. Serial No. 308,509. (No model.)

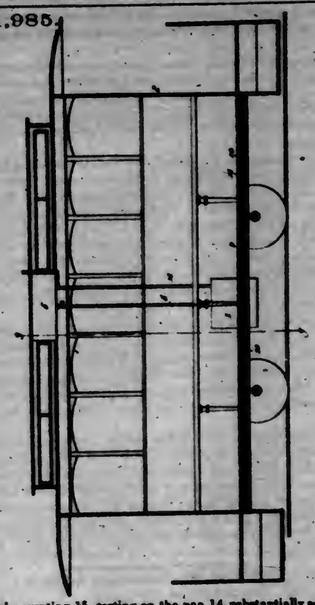
Claim.—1. A street-car-heating apparatus consisting of a heater mounted on the car, a heat-radiating pipe connected with the heater and extending in folds over the floor of the car, a removable sheet-metal pan extending over the folds of the heat-radiating pipe, and a removable floor-grating extending over the sheet-metal pan, substantially as shown and described.

2. A street-car-heating apparatus consisting of a casing 1, mounted in the bottom and side of a car 2, and having an oil-tank 5, with burners 7, located in the bottom of casing 1, a water-supply tank 6, located in the car at its top, a boiler 3, suspended in casing 1, above burners 7, and connected with water-tanks 6 by pipe 8, a heat-radiating pipe 9, leading from boiler 3 and extending over the floor of car 2 in folds, a sheet-metal pan 14, extending over the folds of pipe

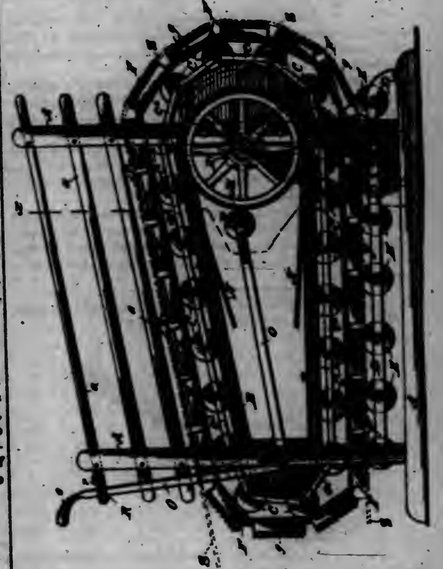


9, and a grating 15, resting on the pan 14, substantially as shown and described.

411,985.



411,986. ANIMAL TREAD-POWER. DAVID C. FRASHER and WILLIAM J. DAVIS, New Market, N. J. Filed Oct. 12, 1888. Serial No. 288,021. (No model.)



Claim.—1. The combination, in a tread-power, of a supporting-frame, a track or guide thereon, an endless chain of rollers running freely on the track and independently of drums or wheels which transmit the power of the machine, and an endless chain of lugs running freely on the endless chain of rollers and independently of drums or

wheels which support the endless chain of rollers or which transmit the power of the machine, substantially as described, for the purposes set forth.

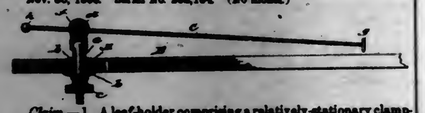
2. The combination, in a tread-power, of a supporting-frame, a track or guide thereon, an endless chain of rollers running freely on the track, an endless chain of lags running freely on the endless chain of rollers and provided with racks, and gearing engaged by the racks and transmitting the power of the machine, substantially as described, for the purposes set forth.

3. The combination, in a tread-power, of a supporting-frame, a track or guide thereon, a series of anti-friction wheels journaled below the track, an endless chain of rollers running freely on the track and independently of drums or wheels which transmit the power of the machine, and an endless chain of lags running freely on the endless chain of rollers and independently of drums or wheels which support the endless chain of rollers or which transmit the power of the machine, said endless chain of lags running between the endless chain of rollers and the lower anti-friction wheels, substantially as described, for the purposes set forth.

4. The combination, in a tread-power, of a supporting-frame, an endless track B thereon, an endless chain of rollers C, running freely on the track, an endless chain of lags F, provided with tracks *g* and running freely on the endless chain of rollers, a shaft H, a gear-wheel G thereon engaged by the lag-racks, and gearing driven by the shaft H and transmitting the power of the machine, substantially as herein set forth.

5. The combination, in a tread-power, of a supporting-frame, an endless track B thereon, an endless chain of rollers C, running freely on the track, a series of anti-friction wheels E, journaled to the frame below the track, an endless chain of lags F, having racks *g*, and running freely on the endless chain of rollers and over the anti-friction wheels E, a shaft H, a gear-wheel G thereon engaged by the lag-racks, and gearing driven by the shaft H and transmitting the power of the machine, substantially as described, for the purposes set forth.

411,987. MUSIC-HOLDER. BURDETT GUY, Oneonta, N. Y. Filed Nov. 30, 1888. Serial No. 292,184. (No model.)



Claim.—1. A leaf-holder comprising a relatively-stationary clamping-bolt, a transversely-apertured head turning on the outer end of the said bolt, and a sliding rod passed through said aperture, substantially as set forth.

2. In a music-holder, the combination, with a post, of a swiveling head thereon having an eye oblique to the axis of the post, and a longitudinally-sliding rod fitted to pass through said eye and adapted to bear at its dipping end down upon the music, substantially as specified.

3. The combination of the screw-threaded post A, having an upper collar *c*, the flanges *b b*, the nut *e*, the swiveling head *d*, having an eye *f* oblique to the axis of the post, and the longitudinally-sliding rod C, essentially as shown and described.

4. In a music-holder substantially as specified, the rod C, having a button-shaped projection *g* on its one end and a stop *h* at its opposite end, in combination with the swiveling head *d*, having an eye *f* oblique to the axis of the post, through which said rod is guided and free to move, as set forth.

411,988. MUSTACHE-GUARD. MAY R. HARRINGTON, Oakland, Cal. Filed June 6, 1888. Serial No. 313,409. (No model.)



Claim.—1. As a new article of manufacture, a mustache-guard provided with a spring extending in the direction of its length, and means at the free end of the spring for securing it to the handle of the article to which it is to be applied, whereby, when in place, the guard will be supported above the edge of the article and have a laterally-yielding movement, substantially as set forth.

2. As a new article of manufacture, a mustache-guard provided with a spring extended in the direction of its length and bowed at its free end, and a clamp at the bowed extremity of the spring to embrace the handle of the article to which the guard is to be applied, whereby the guard may be supported above the edge of a spoon or cup and have a laterally-yielding movement, substantially as set forth.

3. As a new article of manufacture, a mustache-guard provided with an elastic shank or support having its free end extending toward the guard and into a lower plane than the main portion of the shank, and a clamp provided with an adjusting-screw passing through the free end of the shank, substantially as set forth.

4. The combination, with an article of tableware for use in eating liquid food, of a yielding mustache-guard secured thereto above and independent of the edge thereof, substantially as set forth.

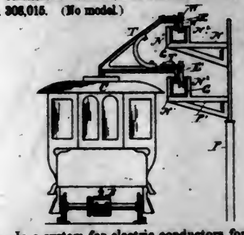
5. The combination, with a spoon or analogous article, of an elastic shank or support secured to the handle and extending over the bowl thereof, and a guard on the said shank above the bowl, substantially as set forth.

6. The combination, with a spoon, of a guard provided with an elastic shank having clamping-jaws embracing the spoon-handle, substantially as set forth.

7. The combination, with a spoon, of an inwardly-yielding guard above and projecting beyond one edge of the bowl, substantially as set forth.

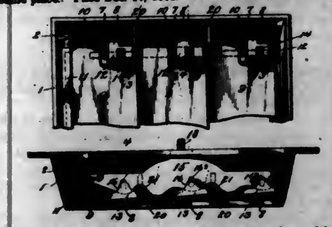
8. As a new article of manufacture, a mustache-guard having a spring extending in the direction of its length, and a clamp at the outer end of the spring and on which it has a vertically-swinging movement, substantially as set forth.

411,989. SYSTEM FOR ELECTRIC CONDUCTORS FOR ELECTRIC CARS. CHARLES A. JACKSON, Billerica, Mass. Filed Apr. 20, 1889. Serial No. 308,015. (No model.)



Claim.—In a system for electric conductors for cars, the combination of the double-armed trolley T T, extending laterally from the car and having trolley-wheels, as described, with the conducting-wires and with supporting-brackets, substantially as and for the purpose set forth.

411,990. HOT-AIR REGISTER. JOSEPH W. JOHNSON, Philadelphia, Pa., assignor to the Philadelphia Hardware and Malleable Iron Works, same place. Filed Dec. 17, 1883. Serial No. 293,793. (No model.)

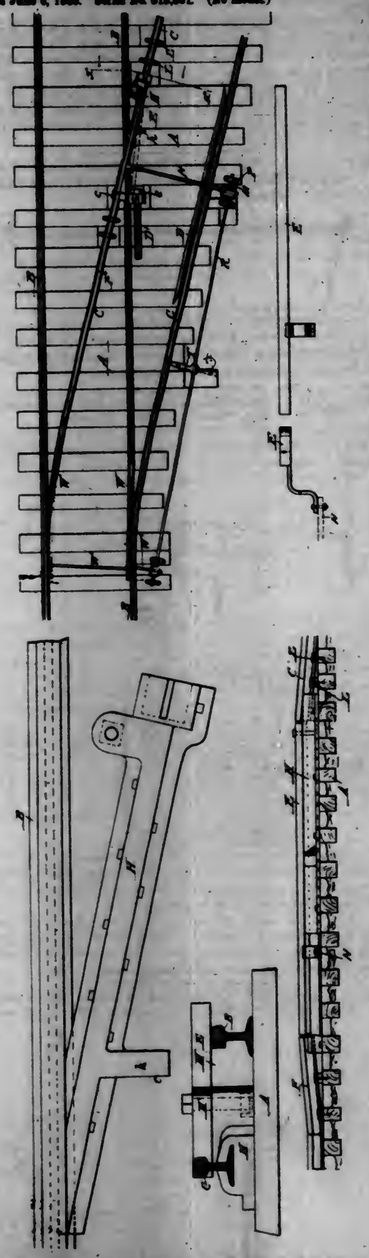


Claim.—1. In a hot-air register, the combination, with a frame having opposite perforations in its end walls and inwardly-projecting flanges intermediate its sides, of shutters having trunnions mounted in the perforations and provided with short lugs at one of their ends, and a link perforated for and mounted on the short lugs, guided by the flanges, and formed with recesses intermediate its perforations, substantially as specified.

2. In a hot-air register, a frame having inclined end walls, opposite perforations formed therein, and having recesses formed in the lower edge of one of the walls adjacent to each of the perforations therein, in combination with shutters having opposite end trunnions mounted in the perforations, substantially as specified.

3. The frame 1, having the inclined end walls 6, perforated, as at 7, and recessed, as at 8, in combination with the shutters 9, having the trunnions 10, inserted in the recesses, and the short lugs 14, and the link 15, perforated, as at 16*, having the intermediate recesses 21 and lug 19, substantially as specified.

411,991. FROGLESS SWITCH. CHARLES W. JOHNS, Junction, Va. Filed June 6, 1888. Serial No. 313,231. (No model.)



Claim.—1. As an improvement in railroad-switches, the block H, forming a support for the frog-rail, in combination with said frog-rail pivoted to the plate on the outer side of the said rail, substantially as and for the purpose set forth.

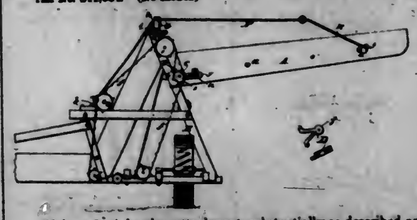
2. As an improvement in railroad-switches, the combination of the main-line rail, the supporting-block *c*, secured to the ties and channeled for the passage of the wheel-flange, the block H, also secured to the ties, and frog-rail pivoted to said plate, all arranged substantially as and for the purpose specified.

411,992. WEATHER-STRIP. JOHN R. JOHNS, New York, N. Y. Filed Mar. 12, 1889. Serial No. 303,062. (No model.)



Claim.—The sash or frame A, cut out at its edge to form the space C, in combination with the thin spring-metal strip B, set into the sash or frame and inclosed in said space and curved from edge to edge, substantially as described.

411,998. HEADER ATTACHMENT FOR HARVESTERS AND REAPERS. GEORGE A. JOY, Bismarck, Dak. Filed Aug. 16, 1888. Serial No. 211,094. (No model.)



Claim.—1. A header attachment substantially as described and shown, consisting of the draper-frame having side-boards provided in one end with slots extended in the direction of their length, the inner roller having its trunnions passed through said slots, whereby the said roller may be adjusted to tighten the draper, the outer roller, the draper, the brackets having bearings for the trunnions of the inner roller, and the plates J J, connected adjustably with the side bars of the draper-frame and arranged to engage the brackets, all substantially as and for the purposes specified.

2. The combination of the harvester-frame, the brackets D, secured thereto, the inner draper-roller having its trunnions journaled in said brackets, the draper-frame having side bars provided in their inner ends with slots passed over the trunnions of the inner roller, the outer roller, the draper, and the plates J J, secured to and adjustable along the draper-frame, said plates being arranged to bear at their inner ends against the brackets, whereby by the adjustment of said plates the draper may be tightened and the weight of the draper-frame may be supported independent of its inner shaft, substantially as set forth.

3. The combination of the harvester-frame, the bearing-brackets having a convex surface, the draper-frame having slots *l l*, the inner and outer rollers, the draper, the plates J J, having slots *n n*, and having their inner ends concaved and conformed to the convex surface of the bearing-brackets, and the bolts passed through the slots *n n* into the draper-frame, substantially as set forth.

4. The combination of the A-frame, the pulley G, the hook I, connected therewith, the bearing-brackets D D, having convex surfaces, the draper-frame having slots *l l*, the rollers B *b*, the draper supported thereon, the plates J J, slotted and having concaved ends, the bolts *m m*, the bail H, and the adjusting-cord connected therewith and extended over pulley G and secured to hook I, substantially as set forth.

411,994. LOCK. OTTO W. LUNDHOLM, Muchachinock, Iowa, assignor to Edward C. Smith, same place. Filed May 22, 1889. Serial No. 311,768. (Model.)

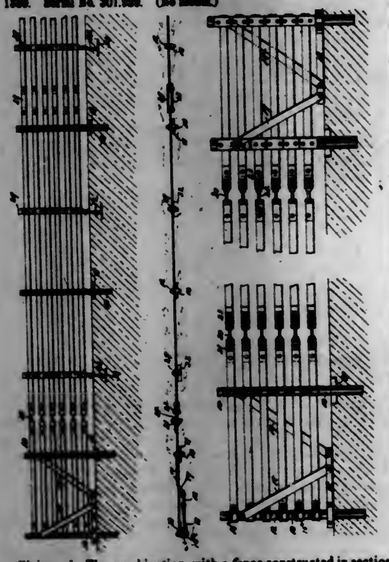
Claim.—1. The combination, in a lock, of a sliding bolt, a post D, guiding said bolt, and one or more swinging tumblers E, pivoted

to the bolt and having notches *d*, adapted to pass over or embrace the post D when thrust back by the key, so as to allow the bolt to be withdrawn, substantially as described.



2. The combination, in a lock, of a sliding bolt having a longitudinal slot at one end and a shoulder at the other, a spring for shooting the bolt to the locked position, a fixed guide-post arranged in the slot of the bolt, and a set of combined tumblers and thrust-bars pivoted to the bolt and provided with registering notches adapted to be projected over the guide-post, substantially as shown and described.

411,995. FENCE. PETER MASE, Waterville, Ohio. Filed Mar. 5, 1889. Serial No. 301,989. (No model.)



Claim.—1. The combination, with a fence constructed in sections, of a spring turn-buckle uniting the several strands of the sections, substantially as shown and described.

2. The combination, with the sections of a fence, of a V-shaped yoke at the ends of each of the strands of one section, apertured spring-plates connecting the diverging ends of the yokes, loops secured to the strands of the next section, bolts passed through the cross-pieces of the loops and through the apertures in the spring-plates, and nuts on the projecting ends of the bolts, substantially as set forth.

3. The combination, in a fence, of a strand having its extremity bent at an acute angle and inwardly at a right angle, an angle piece or plate 21, shaped to correspond to said end and riveted at its inner end to the strand, a spring-plate secured at its ends to the inwardly-projecting ends of the yoke formed by the said plate and bent end of the strand with another strand having a loop at its end, and a bolt passed through the cross-bar of the loop and through the aperture in the spring-plate, substantially as set forth.

4. In a fence, the series of strands and their supporting-posts, in combination with the intermediate supporting-bars 29, twisted axially, as at 30, into a plane at right angles to the upper part, and a T-shaped anchor bolted at the upper end of its vertical arm to said end 30, substantially as set forth.

5. The combination, in a fence, with a post, of a vertically-aligned series of clamping-plates arranged longitudinally of the post, pivoted at one end thereto, and clamping-bolts passing through the post and opposite ends of said plates, the strands being clamped under the plates and between the pivots and clamping-bolts, substantially as set forth.

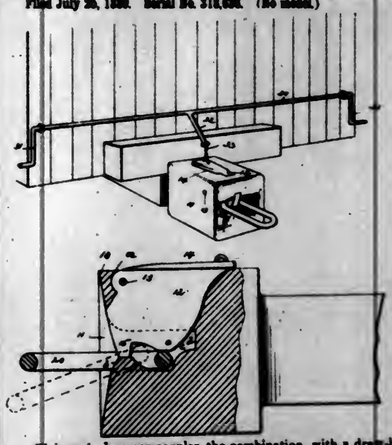
6. The combination, with the end sections of a fence, consisting of two spaced posts and strands uniting the same, of a horizontal rod secured at its outer end to the outer post near the base, a brace-rod secured at its lower end to the horizontal rod near the inner end thereof, and its upper end to the upper end of the outer post, and a draw-rod secured at its lower end to the inner end of the brace-rod and adjustably attached at its upper end to the inner post, substantially as shown and described

411,996. PAN. THOMAS O. MORTON, Brooklyn, assignor of one-half to Willis B. Blackwell, New York, N. Y. Filed Dec. 7, 1888. Serial No. 292,913. (No model.)



Claim.—The pan B, having the fastening-pieces *i* at the upper edge, in combination with the slotted tube C, applied to the upper edge of the pan, substantially as shown and described.

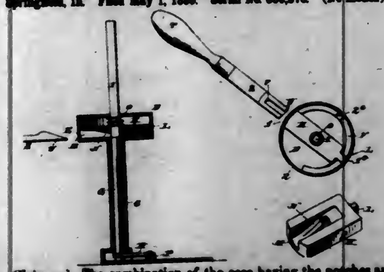
411,997. CAR-COUPLING. WILLIAM C. MCCORD, Springfield, Ky. Filed July 26, 1889. Serial No. 318,636. (No model.)



Claim.—1. In a car-coupler, the combination, with a draw-head formed with a projection *b*, of a pivotally-mounted catch formed with a hook 15 and a projection *c*, and a cut-out portion between said hook and projections, substantially as described.

2. In a car-coupler, the combination, with a draw-head formed with a projection *b*, a shoulder *c*, and a recess *d*, of a catch 12, formed with a hook 15 and a projection *c*, and a cut-out portion between said hook and projections, substantially as described.

411,998. LOCK FOR RAILROAD-SWITCHES. NELSON NEWMAN, Springfield, Ill. Filed May 1, 1889. Serial No. 309,273. (No model.)



Claim.—1. The combination of the case having the notches and the slot, the rock-shaft extending through the case and having the arm connected to the switch-rails, the lock-plate fast to and movable vertically on the rock-shaft and having the cam-opening communicating with the slot and the stud adapted to engage the notches, and the key adapted to enter the cam-opening and raise the lock-plate and to engage the rock-shaft, for the purpose set forth, substantially as described.

2. In a switch-lock, the combination of the rock-shaft having the connections to the switch-rails, the case having the slot and the notches diametrically opposite the ends of the slot, the lock-plate in the case, revoluble with and movable vertically on the rock-shaft and having the cam-opening at one end communicating with the slot and the stud at the opposite end adapted to engage the notches, the spring pressing down on the lock-plate, and the key-lever adapted to be inserted in the cam-opening to raise the lock-plate and to engage and rotate the rock-shaft, substantially as described.

3. In a lock for railway-switches, the combination of the switch-shaft, the case in which the shaft turns, the lock-plate to lock the shaft fast in the case, and the key-lever adapted to simultaneously trip the lock-plate and engage the shaft to operate the switch, for the purpose set forth, substantially as described.

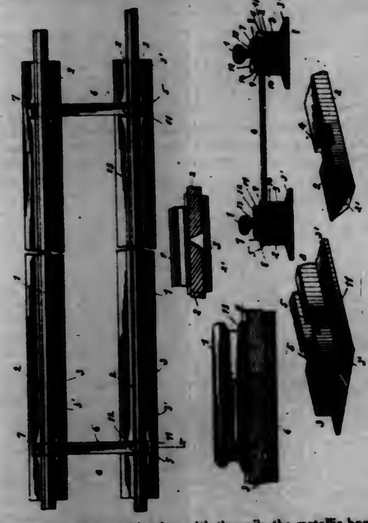
4. In a lock for railway-switches, the combination of the rock-shaft, the case in which the shaft turns, the lock-plate vertically movable on the shaft and revolubly therewith, having the cam N, and further adapted to engage the case and lock the shaft fast therein, and the key-lever having the cam U to engage and trip the lock-plate, and the open slot V to simultaneously engage the shaft and enable the latter to be turned, substantially as described.

411,999. GLOVE. JEAN B. RAY and EMILE DUPAY, Lyons, France, assignors to the Société Noyrez Cohen & Compagnie, same place. Filed Dec. 26, 1888. Serial No. 294,262. (No model.) Patented in France Apr. 23, 1888, No. 189,419, and in England Oct. 26, 1888, No. 16,260.



Claim.—A glove having the body and fingers formed of a single blank, said blank having a series of front finger-pieces and a corresponding series of back finger-pieces wider than said front series, the back of the glove being cut away, whereby when the glove is sewed the increased width of the said back is taken up, substantially as and for the purpose set forth.

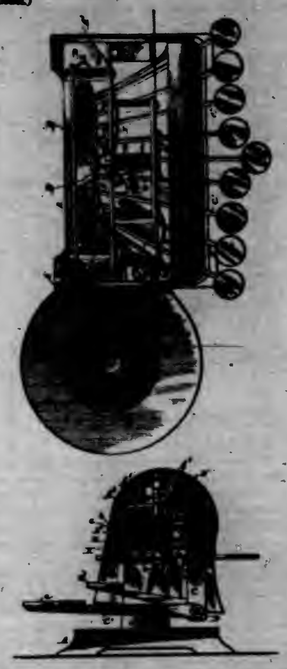
412,000. SUPPORT FOR RAILWAY-RAILS. JOHN M. ROGERS, Leominster, Mass. Filed June 4, 1888. Serial No. 276,004. (No model.)



Claim.—1. The combination, with the rails, the metallic bozings 3, and wooden stringers 2, having coincident recesses 4 and 5, of the metallic ties 6, having hooked end portions that lie in said recesses and embrace the rail-flanges, and means for securing said ties to the bozings, substantially as shown and described.

2. The combination, with rails 1, of bozings 3, having flanges 3', recesses 5, and lugs 11, with screw-holes 10, wooden stringers 2, located in the bozings 3, and having recesses 4, and metallic ties 6, with hooked ends 7, engaging the outer flange of rails 1, and screws 9, with lateral beveled heads 12, engaging the inner flange of rails 1, ties 6, and lugs 11, the wooden stringers 2 and bozings 3, extending the length of the rails, substantially as described.

412,001. MACHINE FOR PERFORATING PAPER. JAMES H. ROGERS, Hedenburg, Md. Filed July 27, 1888. Serial No. 281,282. (No model.)



Claim.—1. The combination, with the punches and their actuating-levers, of the feed-lever provided with a yoke which extends across the path of movement of all of the punch-actuating levers, the vibratory feed-finger actuated by said feed-lever to move rearwardly or to the position from which it starts to feed, and the spring for returning said feed-finger to its forward position, substantially as and for the purposes hereinbefore set forth.

2. The combination, with the slotted plate over which the paper is fed, of the vibrating feed-finger adapted to play back and forth in said slot, and arranged with relation to said plate, so that it shall project beyond the face of the plate as it moves toward the rear of the slot and shall withdraw so as to be flush with the face of the plate as it moves toward the front end of the slot, substantially as and for the purposes hereinbefore set forth.

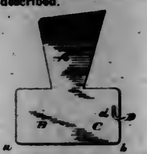
3. The combination of the plates between which the paper passes, the vibrating feed-finger and the reciprocating punches, and the devices for operating said punches and for actuating said feed-finger, one of said plates having a slot within which said feed-finger plays back and forth in acting upon or feeding the paper, substantially as and for the purposes hereinbefore set forth.

412,002. SCRAPER ATTACHMENT FOR BROOMS OR BRUSHES. FRANK C. SHERMAN, Baltimore, Md. Filed Feb. 13, 1889. Serial No. 299,721. (No model.)

Claim.—1. As an improved article of manufacture, a sheet-metal scraper having an expansible and contractible socket on one side of and parallel with the blade and open at both ends, substantially as described.

2. As an improved article of manufacture, a sheet-metal scraper

having an angular front end and an expansible and contractible socket on one side of and parallel with the blade and open on one side and both ends, substantially as described.

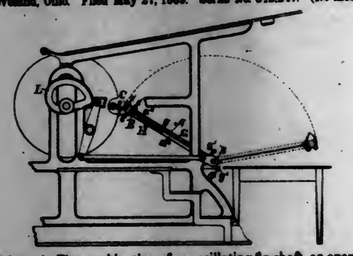


3. As an improved article of manufacture, a sheet-metal scraper having a socket open on one side and at both ends and provided with a slot in the wall of the socket, substantially as described.

4. As an improved article of manufacture, a sheet-metal scraper having a projecting blade provided with an angular front end and a socket open on one side and at both ends, and provided with a slot in the wall of the socket, substantially as described.

5. A scraper having a socket on one side of the plane of the blade and open on one side and at both ends, in combination with a handle upon which said scraper is constructed to slide freely and to be secured on the end thereof, substantially as described.

412,003. SHEET-DELIVERING APPARATUS. FRANK J. SEDER, Cleveland, Ohio. Filed May 27, 1889. Serial No. 312,247. (No model.)



Claim.—1. The combination of an oscillating fly-shaft, an open fly-frame secured thereto, the rock-shaft E, bearing gripping-fingers *e*, and the rock-shaft C, bearing gripper-fingers *c*, with springs for closing said gripper-fingers, and mechanism for opening one set of gripper-fingers when the frame is at one extreme of its movement and for opening the other gripper-fingers when the frame is at the other extreme of its movement, substantially as and for the purpose specified.

2. The combination of an oscillating fly-shaft and an open fly-frame secured thereto, the rock-shafts C E, each bearing gripper-fingers, a crank-arm attached to each of said shafts at opposite ends thereof, rods movably held against the side bars of the frame and pivotally connected to said crank-arms, springs whereby said rock-shafts are rocked to close the gripper-fingers, and stop mechanism to limit the extent of this spring-actuated movement, with mechanism, substantially as described, for rocking one shaft in the opposite direction when the frame is at one extreme of its movement and for rocking the other shaft in the opposite direction when the frame is at the other extreme of its movement, substantially as and for the purpose specified.

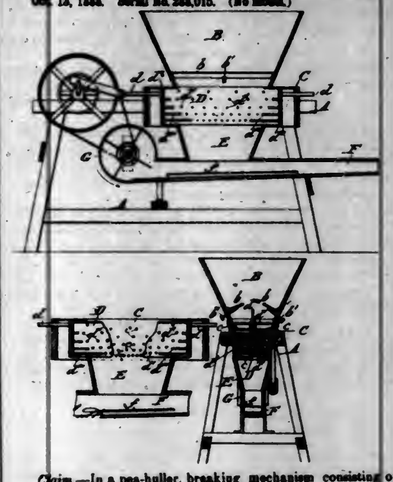
3. The combination of an oscillating fly-shaft and an open fly-frame attached thereto, the rock-shafts C and E, each bearing gripper-fingers, a crank-arm attached to each of said rock-shafts at opposite ends thereof, rods movably secured to the side bars of the frame and connected with said crank-arms, springs for moving said rods to close the gripper-fingers, and stops to limit the extent of this spring-actuated movement, with a sliding bar adapted to engage with the crank-arm upon the rock-shaft C, a revolving cam, and a spring for operating said sliding bar, and a shoulder for engaging with the inner end of the rod attached to the crank-arm on the rock-shaft E, substantially as and for the purpose specified.

412,004. SPINDLE-WHARVE. JAMES SHAW, Paterson, N. J. Filed June 15, 1889. Serial No. 314,349. (No model.)



Claim.—As an improved article of manufacture, the wharve 16, having a chamber 17 in its upper end, provided with an internal annular shoulder 18, and the centrally-apertured disk 19, resting on said shoulder and provided with a depending annular flange 20 around said central opening, substantially as set forth.

412,005. PEA-HULLER. WILLIAM P. SMITH, Helton, Ga. Filed Oct. 12, 1888. Serial No. 288,015. (No model.)

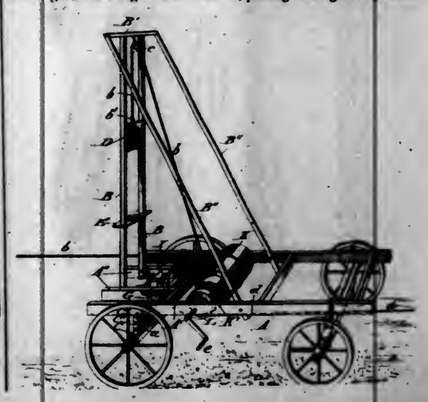


Claim.—In a pea-huller, breaking mechanism consisting of the reciprocating plunger D, having teeth *d'*, and actuating mechanism, and the chamber C, provided with teeth *c*, said teeth *d'* and *c* being nearer to each other in the rows and the rows closer together as they approach the bottom of the said plunger and chamber, substantially as shown and described, and for the purpose specified.

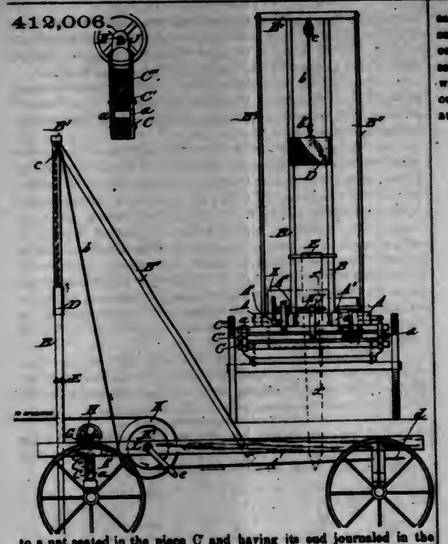
412,006. POST-DRIVING MACHINE. JOHN G. WEBER and ALBERT WEBER, Defiance, Ohio. Filed Mar. 25, 1889. Serial No. 304,826. (No model.)

Claim.—1. As an improvement in post-driving machines, the combination of the wagon-bed, the frame A, supported thereon and carrying the upright B and the braces B^2, the weight D, supported between said upright, the drum having a periphery of different diameters, the rope *b*, suspending the weight and wound on the larger periphery of the drum, the rope *d*, wound on the smaller periphery of the drum, and the crank *e*, for winding said rope *d* on the drum, substantially as and for the purpose set forth.

2. As an improvement in post-driving machines, the combination of the wagon-bed, frame A, carried thereon, supporting the uprights B, the weights suspended between said uprights, the mechanism for operating said weights, and the means for leveling the frame carrying the weight, consisting of the screw G, passing through the piece C^2



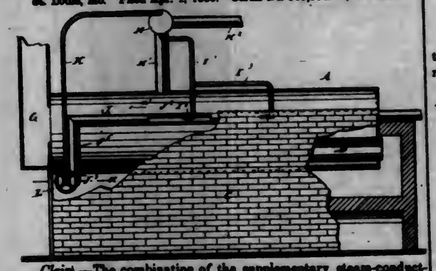
412,006.



to a nut seated in the piece C and having its end journaled in the piece C, said pieces moving vertically in the guides *c c*, substantially as and for the purpose set forth.

3. As an improvement in post-driving machines, the devices for shifting the derrick and frame laterally, consisting in the combination, with said derrick and frame, of the supporting-pieces C C and the screw H, substantially as specified.

412,007. SMOKE-CONSUMING FURNACE. GEORGE W. WILCOX, St. Louis, Mo. Filed Apr. 1, 1889. Serial No. 305,564. (No model.)



Claim.—The combination of the supplementary steam-conducting pipe K K', having nozzles K^2, and valve L, with the steam and air conducting pipes J J^3 J^4, arranged as specified, the steam-pipes I I' P, and the fire-box, boiler, and steam-dome, all as shown and described.

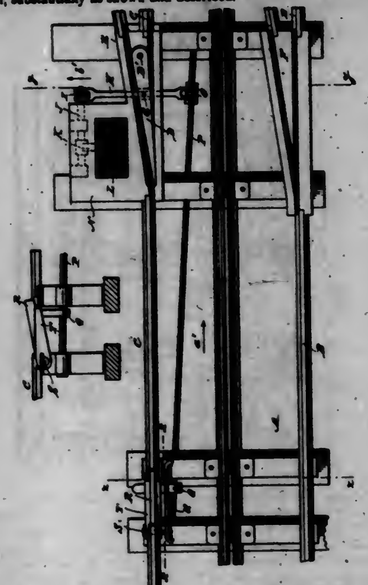
412,008. RAILROAD-SWITCH. JOHN R. WOLFE, New York, N. Y. Filed Dec. 14, 1888. Serial No. 293,501. (No model.)

Claim.—1. A railroad-switch comprising a pivoted switch-rail, a short rail located in and forming a part of the main track, and a platform located alongside the main track, said platform and the said short rail operating and controlling the said switch-rail, substantially as shown and described.

2. A railroad-switch comprising a pivoted switch-rail located between the main and side rails, a short rail pivoted in and forming a part of the main-track rail and connected with the said switch, and a platform held alongside the track, and also connected with the said switch-rail and the said short rail, substantially as shown and described.

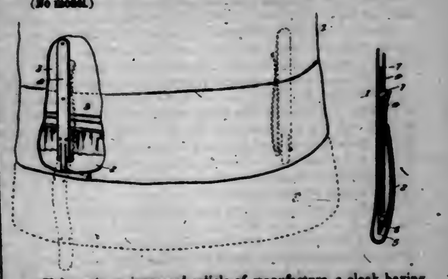
3. In a railroad-switch, the combination, with a switch-rail pivoted between the main and side rails, of a rod connected with the said switch-rail, a shaft having an arm pivotally connected with the said rod, a curved arm held on the said shaft, and a short rail pivoted in one of the rails of the main track and resting at its free end on the said curved arm, substantially as shown and described.

4. In a railroad-switch, the combination, with a switch-rail pivoted between the main and side rails, of a rod connected with the said switch-rail, a shaft having an arm pivotally connected with the said rod, a curved arm held on the said shaft, a short rail pivoted in one of the rails of the main track and resting at its free end on the said curved arm, a second shaft having an arm pivotally connected with the said rod, a curved and forked arm fastened on the said second shaft, and a platform supported on the said curved and forked arm, substantially as shown and described.



5. In a railroad-switch, a short rail pivoted on one of the rails of the main track and provided with a base inclined to the head of the rail, substantially as shown and described.

412,009. CLOAK AND SKIRT PROTECTOR. MARTHA H. ASHLEY, Fishkill-on-the-Hudson, N. Y. Filed Dec. 5, 1888. Serial No. 292,666. (No model.)



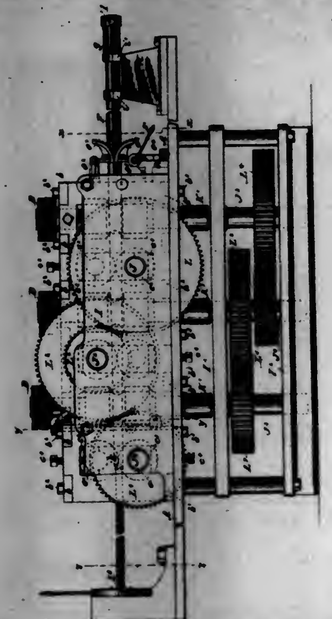
Claim.—As an improved article of manufacture, a cloak having an extension at its bottom to fold up inwardly and envelop the bottom of the skirt, and having also a series of jointed clasps with springs at their hinges secured to the cloak, as described, and serving to hold the extension of the cloak in its upturned position.

412,010. MACHINE FOR ROLLING SEAMLESS TUBING. WILLIAM H. APPLEGEE, New York, N. Y. Filed Nov. 2, 1888. Serial No. 289,816. (No model.)

Claim.—1. The combination, with the rolls of a rolling-machine and a mandrel for co-operation therewith, of a stock for holding the mandrel in proper position with respect to said rolls during the rolling operation, adapted to receive the ingot to be transformed and permit of its transfer to the mandrel, substantially as described.

2. The combination, with the rolls of a rolling-machine, a mandrel for co-operation therewith, and a stock for engaging with the re-

ceiving end of said mandrel, adapted to receive the ingot to be transformed and permit of its transfer to the mandrel, of a strut for acting against the discharging end of each mandrel and a resisting bracket or support against which the strut acts, substantially as described.



3. The combination, with the rolls of a rolling-machine, a mandrel for co-operation therewith, and a stock for holding said mandrel in proper position during the rolling operation, adapted to receive the ingot to be transformed and permit of its transfer to the mandrel, of devices for supporting said mandrel from contact with the rolls when free from an ingot, substantially as described.

4. The combination, with a plurality of pairs of vertical and horizontal rolls arranged in alternate series and a mandrel extending between them, of a stock for holding said mandrel in proper position between the rolls during the rolling operation, provided with suitable means whereby it may be locked to and unlocked from such mandrel, and supporting devices therefor, substantially as described.

5. The combination, with a plurality of pairs of circumferentially-grooved vertical and horizontal rolls arranged in alternate series, and a mandrel extending between them and lying in said grooves, of a stock for holding said mandrel in proper position between the rolls during the rolling operation, adapted to receive the ingot to be transformed and permit of its transfer to the mandrel, and a bracket provided with suitable bearings in which such stock is fitted to slide and rotate, substantially as described.

6. The combination, with a plurality of pairs of vertical and horizontal rolls arranged in alternate series, a mandrel arranged to co-operate therewith, and a stock for holding the mandrel in proper position respecting said rolls during the rolling operation, of a bracket or standard provided with suitable bearings in which the stock is mounted and devices for supporting the mandrel and holding it from contact with the rolls when free from an ingot and when disengaged from the stock, substantially as described.

7. The combination, with a plurality of pairs of circumferentially-grooved vertical and horizontal rolls arranged in alternate series, a mandrel extending between them and provided with a locking member, and a stock for holding said mandrel in proper position between the rolls during the rolling operation, provided with a locking member, whereby it may be locked to and unlocked from said mandrel, of a bracket or standard having a bearing in which said stock is mounted and devices for supporting the mandrel and holding it from contact with the rolls when free from an ingot and when disengaged from the stock, substantially as described.

8. The combination, with the rolls of a rolling-machine, and a mandrel for co-operation therewith, provided with a locking member at its end, of a stock for holding said mandrel in proper position between the rolls during the rolling operation, provided with a locking member, whereby it may be engaged with and disengaged from the mandrel, and a support for such stock, substantially as described.

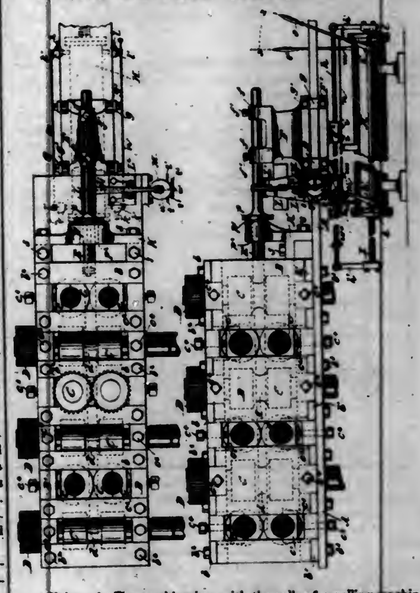
9. The combination, with a mandrel provided with the orifice *f*, having the radial grooves *f' f'* and enlarged chamber *f²*, of the stock provided with the stud *e*, having the lugs *e' e'* formed thereon, substantially as described.

10. The combination, with a plurality of pairs of vertical and horizontal rolls arranged in alternate series and a mandrel extending between them, of a strut for holding said mandrel in proper position between the rolls during the rolling operation and a resisting bracket or standard against which said strut acts, substantially as described.

11. The combination, with a plurality of pairs of circumferentially-grooved vertical and horizontal rolls arranged in alternate series, a mandrel arranged to project between them and lie in the grooves thereof, and a strut for holding said mandrel in proper position between the rolls during the rolling operation, of a resisting bracket or standard against which the strut acts and devices for supporting the mandrel and holding it from contact with the rolls when free from an ingot, substantially as described.

12. The combination, with the strut L, provided with a groove or shoulder at its end, and a resisting bracket or standard M, of suitable jaws and means for causing them to engage with said groove or shoulder or recede therefrom, substantially as described.

412,011. MACHINE FOR ROLLING SEAMLESS TUBING FROM HOLLOW INGOTS. WILLIAM H. APPLETON, New York, N. Y. Filed Nov. 2, 1888. Serial No. 289,817. (No model.)



Claim.—1. The combination, with the rolls of a rolling-machine and a mandrel for co-operation therewith, of a carriage in which said mandrel is mounted, a support for such carriage, and a motor for moving said carriage back and forth to withdraw and insert the mandrel from and between the rolls, substantially as described.

2. The combination, with a plurality of pairs of rolls, a mandrel extending between them, and a carriage in which said mandrel is mounted, of a track or support upon which the carriage is mounted and a motor for moving said carriage back and forth upon its track or support to withdraw and insert the mandrel from and between the rolls, substantially as described.

3. The combination, with a plurality of pairs of vertical and horizontal rolls arranged in alternate relation, a mandrel extending between them and provided with a flange or collar, and a carriage for supporting said mandrel, of a support upon which the carriage is mounted, mechanism for moving the carriage back and forth upon the support to withdraw and insert the mandrel from and between the rolls, and a stop against which the flange on the mandrel abuts to resist the strain put upon the mandrel by the ingot as it is withdrawn therefrom during the rolling operation, substantially as described.

4. The combination, with a plurality of pairs of vertical and horizontal rolls arranged in alternate relation, a mandrel for co-operation with such rolls, a carriage in which the mandrel is mounted, and a track or support upon which the carriage traverses, of a cylinder, a piston, a piston-rod, and connecting devices intermediate such piston-rod and carriage whereby the said carriage may be caused to move back upon its track or support to withdraw the mandrel from the rolls and afterward move forward over it to reinsert it between them, substantially as described.

5. The combination, with the rolls of a rolling-machine, a mandrel for co-operation therewith, and a carriage for supporting the mandrel and permitting of its withdrawal from and insertion between the rolls, of a holder for receiving an ingot and presenting it in the path of movement with the mandrel with its axis coincident with the axis of said mandrel, substantially as described.

6. The combination, with the rolls of a rolling-machine, a mandrel for co-operation therewith, a carriage for supporting said mandrel, and a track or support upon which said carriage is mounted, of mechanism for moving such carriage back and forth upon its track or support to withdraw and insert the mandrel from and between the rolls, a holder for receiving a fresh ingot and presenting it in the path of movement of the mandrel with its axis coincident therewith, and a motor whereby the holder is caused to operate from the mechanism which moves the carriage, substantially as described.

7. The combination, with a holder for the ingot, a lever for supporting the same, and a bracket or support in which such lever is pivoted, of a cylinder, a piston, a piston-rod, a pitman, and devices for controlling the flow of steam or other actuating agent to and from the cylinder, substantially as described.

8. The combination, with a mandrel, a carriage in which it is supported, a track upon which the carriage is mounted, a cylinder, a piston, a piston-rod, connecting devices intermediate the piston-rod and the carriage, provided with suitable dogs, and devices for controlling the flow of steam or other actuating agent to and from the cylinder, of a holder for the ingot, a lever for carrying the same, a bracket in which such lever is pivoted, a second cylinder, a piston and a piston-rod, a pitman, and devices for controlling the flow of steam or other agent to and from such second cylinder, operated from said dogs, whereby the automatic movement of the ingot-holder in proper relation to the movements of the mandrel is insured, substantially as described.

9. The combination, with the cylinder M, the piston-rod a, provided with a suitable piston upon its lower end, the induction and eduction pipes *t t'*, the valves *t²*, and pinions *t³*, the gear *w*, provided with the arm w^3, lever w^4, and mechanism for vibrating said lever upon its pivot, of the mandrel E and the carriage in which it is supported, substantially as described.

412,012. MACHINE FOR ROLLING SEAMLESS TUBING. WILLIAM H. APPLETON, New York, N. Y. Filed Jan. 30, 1888. Serial No. 262,043. (No model.)

Claim.—1. A stock for holding a mandrel between the rolls of a rolling-machine, consisting of a suitable body with a plurality of arms extending therefrom, substantially as described.

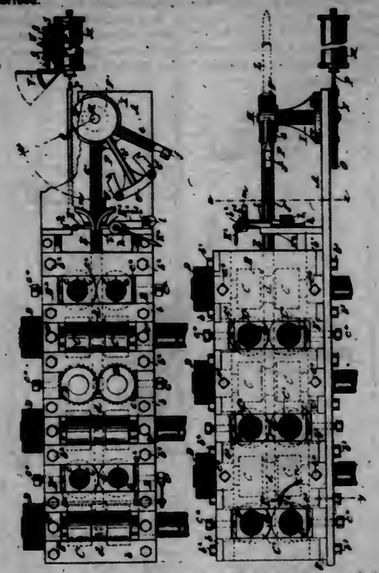
2. A stock for holding a mandrel between the rolls of a rolling-machine, consisting of a suitable body with a plurality of arms extending therefrom radially to its axis, substantially as described.

3. A stock for holding a mandrel between the rolls of a rolling-machine, consisting of a body F, having a plurality of arms *e e'*, extending radially to its axis and provided at their outer ends with T-shaped heads, substantially as described.

4. A stock for holding a mandrel between the rolls of a rolling-machine, consisting of a suitable body F, having a plurality of arms *e e'*, provided with T-shaped heads at their outer or free ends extending radially from its axis, and a third arm e^3, provided with an arc-shaped flange e^4 and hinged sections e^5, substantially as described.

5. The combination, with the rolls of a rolling-machine and a mandrel provided with a suitably-shaped slot through its receiving end, of a stock for holding said mandrel between the rolls and supplying it with fresh ingots, consisting of a suitable body, a plurality of arms extending from such body and provided with suitably-shaped heads at their outer ends for engagement with said slot, and an arc-shaped flange for connecting such heads, provided with hinged sections at its ends, substantially as described.

6. The combination, with the rolls of a rolling-machine, a mandrel provided with a T-shaped slot through its receiving end, and a stock consisting of a suitable body, having a plurality of arms extending from it and provided with T-shaped heads at their outer ends and an arc-shaped flange for connecting such heads, of a piston and cylinder for communicating an oscillating movement to said stock to bring its arms alternately into engagement with the mandrel, substantially as described.



7. The combination, with a stock for holding the mandrel between the rolls of a rolling-machine, consisting of a suitable body F and arms *e e'*, extending radially to its axis, a shaft to which such stock is secured, and a bracket or standard in which the shaft is mounted, of a piston and cylinder and mechanism intermediate such piston and shaft, whereby to impart to the latter an oscillatory motion, and through it to the stock a similar movement, substantially as described.

8. The combination, with the stock consisting of the body F, arms *e e' e² f f*, flange e^4, and hinged sections e^5 e^5, the shaft H, the bracket or standard I, the gear N, the rack O, piston-rod P, having a piston thereon, the cylinder M, and means for controlling the flow of the actuating agent thereto, whereby to impart an oscillating movement to the stock, substantially as described.

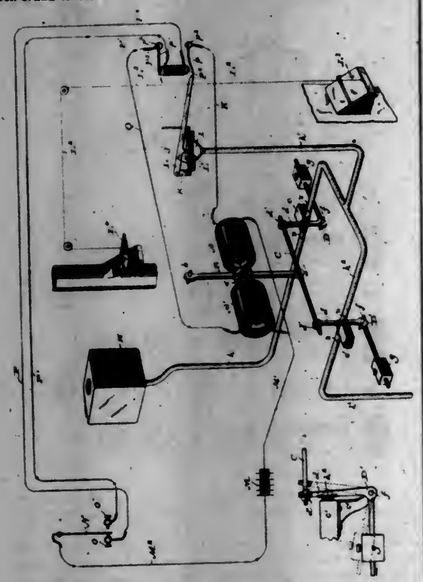
412,013. TEMPERATURE-REGULATOR. ROBERT W. RENNE, Milwaukee, Wis. Filed Apr. 3, 1888. Serial No. 269,627. (No model.)

Claim.—1. The combination, in a temperature-regulator, of a reservoir containing water or fluid under pressure, a pipe leading therefrom having supply and exhaust branches, an armature-lever, and weighted levers connected thereto for keeping these pipes normally closed, an expansion-chamber connected to the supply branch and having a lever connected to the dampers of a furnace, a pair of magnets, each located adjacent to the armature-lever, and a battery wired to but normally out of circuit therewith, a thermostat wired to the battery, contact-points located on each side of the thermostat and wired to contact-posts adjacent to the lever on the expansion-chamber, and circuit making and breaking springs located adjacent to said contact-posts and wired to the said magnets.

2. The combination, in a temperature-regulator, of a reservoir containing water or fluid under pressure, a pipe leading therefrom having supply and exhaust branches, said pipe and branches being compressible at certain points, a pair of magnets, a battery wired to but normally out of circuit therewith, an armature-lever depending between the said magnets, a rod hung to the lower end of said armature-lever, a weighted bell-crank lever suspended from each end of said rod opposite the compressible points of the said pipe and branches, an expansion-chamber at the end of the supply branch, a lever pivoted to said chamber and having a head bearing against the movable wall thereof, and cords or chains at its free end connected to the dampers of a furnace, a thermostat wired to the battery, contact-points located on each side of the thermostat and wired to contact-posts adjacent to the lever on the expansion-chamber, and circuit making and breaking springs located adjacent to said contact-posts and wired to the said magnets.

3. The combination, with a reservoir and expansion-chamber, and a lever operated by the expansion-chamber and connected with a

damper, of a flexible connection between said reservoir and expansion-chamber, and a flexible drain-pipe for said chamber, a thermostat and magnets wired thereto, a lever suspended between said magnets, and a lever connected with the armature-lever at one end and carrying an adjustable weight on its other end, and arms supporting the branches in position to be normally compressed by the bell-crank lever.



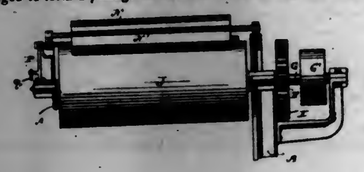
4. The combination, with the reservoir and expansion-chamber and drain and supply pipe, of a thermostat and electro-magnets wired thereto, a swinging armature hung between the magnets, a pair of levers having weights on one end and connected with the armature-levers at their other end, and arms supporting the pipes in position to be compressed by the last-named levers, substantially as described.

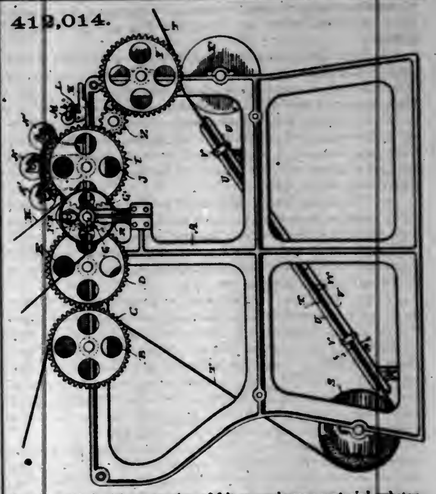
5. The combination, in a heat-regulator, of a fluid-reservoir, a flexible pipe leading therefrom, an expansion-chamber connected with said reservoir by said flexible pipe, a lever connecting the expansion-chamber with a damper or valve, a flexible drain-pipe leading from said expansion-chamber, levers adapted for compressing both flexible pipes, and a thermostat and electro-magnets in circuit, and an armature-lever connected with the compressing-levers and controlling them, substantially as described.

412,014. MACHINE FOR PRINTING AND BRONZING RIBBONS. THOMAS H. BOWEN, Milwaukee, Wis. Filed June 25, 1888. Serial No. 278,071. (No model.)

Claim.—1. A machine for printing and bronzing on a continuous ribbon, that comprises an impression-roller, a printing-cylinder, an inking mechanism for the cylinder, a feeding mechanism for the ribbon, and a perforated hollow cylinder arranged in the path of said ribbon beyond the impression-roller and printing-cylinder, substantially as set forth.

2. A machine for printing and bronzing on a continuous ribbon, that comprises an impression-roller, a printing-cylinder, an inking mechanism for the cylinder, a feeding mechanism for the ribbon, a perforated hollow cylinder arranged in the path of said ribbon beyond the impression-roller and printing-cylinder, and two parallel strips arranged to form a passage for the ribbon and having their opposing





faces provided with a covering of felt or analogous material, substantially as set forth.

3. A machine for printing and bronzing on a continuous ribbon, that comprises an impression-roller, a printing-cylinder, an inking mechanism for the cylinder, a perforated hollow cylinder arranged in the path of the ribbon beyond the impression-roller and printing-cylinder, an inclined way composed of two parallel strips having their opposing faces covered with felt or analogous material, and a pair of friction-rollers arranged adjacent to the upper end of the inclined way, substantially as set forth.

412,015. CORSET. MORRIS P. BRAY, Ansonia, Conn., assignor of one-half to August Feilheimer, New York, N. Y. Filed June 17, 1889. Serial No. 314,536. (No model.)



Claim.—A corset constructed with vertical pockets on the rear and near the rear edges, the said pockets extending from near the bottom upward toward the top and open at the top and bottom, combined with shoulder-straps extending from the front over the shoulders and down through said pockets, with an adjustable attaching device between the straps and the corset below the lower ends of the pockets, substantially as described.

412,016. MANUFACTURE OF ALLOYS OF ZINC. JOHANNES C. BELL, Erith, County of Kent, England. Filed Dec. 3, 1888. Serial No. 293,019. (No specimens.) Patented in England Mar. 16, 1888, No. 4,066.

Claim.—1. The herein-described process of making alloys of zinc and the more refractory metals—as iron, manganese, chromium and wolfram, for example—which consists in combining arsenic with the zinc, whereby arseniureted zinc is produced, and then while the temperature of the zinc is nearly at the point of volatilization adding to the bath of zinc the iron or other metal to form the alloy.

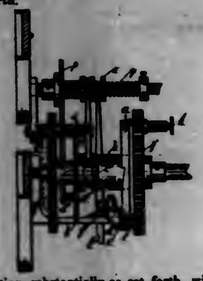
2. The herein-described process of making alloys of zinc and the more refractory metals—as iron, for example—which consists in first combining the respective metals with arsenic and then, while in a molten state, combining the said arseniureted metals with each other.

412,017. PROCESS OF MAKING ALLOYED RAISED GOLD PLATES WITH CORRUGATED BACKGROUND FOR JEWELRY. JOSEPH BULOVA, New York, N. Y. Filed July 19, 1889. Serial No. 318,049. (No specimens.)

Claim.—The process of producing alloyed raised gold plates with corrugated background, which consists in annealing the alloyed-gold plate, removing the oxide from its surface, stamping it out in a female die containing the raised ornament and the corrugated background, and then polishing the raised ornament, substantially as specified.

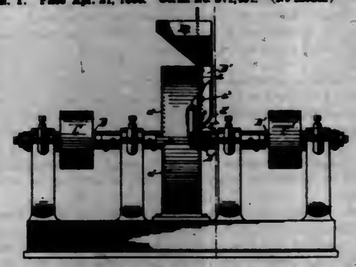
412,018. CLOCK STRIKING MECHANISM. EDWIN B. CARR, Boston, Mass., assignor of one-half to the E. Howard Watch and Clock Company, same place. Filed July 18, 1888. Serial No. 280,312. (No model.)

Claim.—1. The combination, substantially as set forth, with the center wheel *j* and the spur-wheel *g*, of a cam-wheel *a*, having a series of members *a'* and an unlocking-cam *b* connected therewith, said cams receiving motion from the center wheel, a programme-wheel *u*, having lands or projections *u'*, gearing whereby motion is communicated to said programme-wheel from the spur-wheel *g*, the unlocking-lever *p*, having a pin *t*, and intermediate mechanism, substantially as described, whereby the pin *t* and unlocking-cam *b* are brought into operative relation to each other when a land of the programme-wheel and a member of the cam *a* concur in their action on said intermediate mechanism, as set forth.



2. The combination, substantially as set forth, with the center wheel *j* and spur-wheel *g*, of a cam *a*, having a series of members and an unlocking-cam *b* rotatively connected therewith, said cams receiving motion from the center wheel, a programme-wheel *u*, having lands or projections *u'*, gearing whereby motion is communicated to said programme-wheel from the spur-wheel *g*, the unlocking-lever *p*, having a sliding pin *t*, a pivoted lever *r*, engaged at one end with the pin *t*, a sliding spring-pressed collar *o*, engaged with the other end of the lever *r*, a laterally-movable lever *l*, engaged at one end with the collar *o* and arranged to bear at its other end against a land of the programme-wheel, and a pivoted lever *d*, engaged at one end with the lever *l* and having at its other end a pin which is held in yielding contact with the cam *a*, all arranged and operating substantially as described.

412,019. GRINDING-MILL. MORTIMER C. CORNWELL, Brooklyn, N. Y. Filed Apr. 21, 1888. Serial No. 271,431. (No model.)

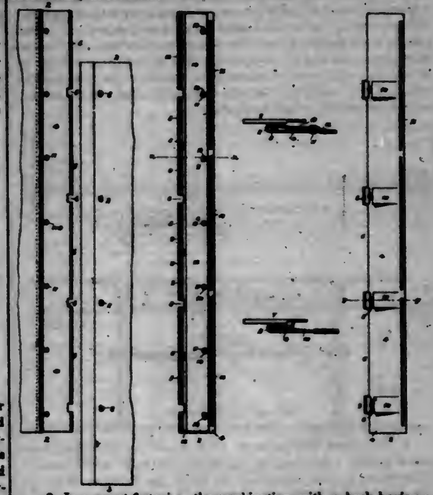


Claim.—In a grinding-mill, the combination, with the inclosing-case A, in the head a^2 of which is the described opening a^3, and the driving-shaft B, passing through said opening, of the hopper-spout D' on the exterior of said case-head and extending thereon to said opening therein, and having the described bottom d' leading into said opening in the case-head alongside said shaft, and provided with the web or lip d^3, carried by said bottom and adapted to fit edgewise into and fill said opening in the case-head between said spout-bottom and the shaft-surface, and to conform to the latter, substantially as and for the purpose specified.

412,020. CORSET-FASTENING. FRANK L. CROSS, New York, N. Y. Filed May 26, 1888. Serial No. 311,921. (No model.)

Claim.—1. In a corset-fastening, the combination, with a busk having a series of studs projecting from its face, of a busk having a series of fixed hooks along its edge, the throats of which are arranged lengthwise of said busk and adapted to receive said studs, and a series of openings between said hooks, adapted to permit the escape of said studs when said busks are moved longitudinally, substantially as set forth.

2. In a corset-fastening, the combination, with a busk having a series of studs projecting from its face, of a busk having a series of fixed hooks along its edge, the throats of which are arranged lengthwise of said busk and adapted to receive said studs, and a spring plate or plates for holding said studs in engagement with said hooks, substantially as set forth.



3. In a corset-fastening, the combination, with a busk having a series of studs, of a busk having a series of fixed hooks the throats of which are arranged lengthwise of said busk, a spring plate or plates adapted to lock or hold said studs in engagement with said hooks, and a series of openings between said hooks, adapted to permit the intentional escape or disengagement of said studs upon an endwise movement of either of said busks, substantially as set forth.

4. In a corset-fastening, the combination, with a studded busk, of a flexible plate or strip provided with a series of hooks, one or more of said hooks being transversely slitted, substantially as set forth.

5. In a corset-fastening, the combination, with a studded busk, of a flexible plate having a series of hooks, a series of openings between said hooks, and a continuous spring-plate connected to said flexible plate, substantially as described, to permit of an independent longitudinal movement of the parts at their ends when bent or bowed, substantially as set forth.

6. In a corset-fastening, the combination, with a studded busk, of a flexible plate having a series of hooks, a series of openings between said hooks, and a continuous spring-plate provided with elongated holes and a series of securing devices, as rivets, whereby the ends of the two plates are adapted when bent or bowed to move independently, and thus avoid all buckling or crinkling, substantially as set forth.

7. In a corset-fastening, the combination, with a studded busk, of a flexible plate having a series of hooks, and a spring plate or plates whose free edge or edges extend toward said hooks and form therewith a slot or space, as 15, for the introduction of the studs, substantially as set forth.

8. In a corset-fastening, the combination of a busk provided with eccentric studs, of a busk having a series of hooks, a spring locking-plate, and a series of openings between said hooks, substantially as set forth.

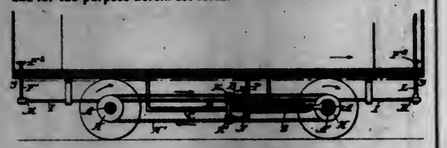
9. In a corset-fastening, the combination of a busk provided with partially-headed studs, and a busk having a series of hooks, and a series of openings between said hooks, the said studs and openings being arranged the same distance apart, so that when the busks are moved endwise the said studs may all simultaneously make their exit from the hooks at the said openings, substantially as set forth.

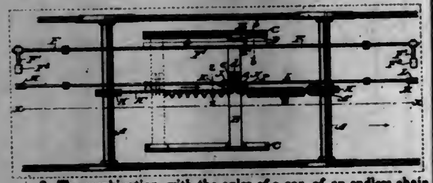
412,021. IMITATION WHITE AND COLORED MARBLE. JEAN M. DARDENAS, Paris, France. Filed Apr. 12, 1888. Renewed Mar. 27, 1889. Serial No. 305,031. (No specimens.)

Claim.—The process for making imitation marbles and other stones by first mixing sulphate aluminum, albumen, alcohol, wax, coloring substance, acids, and potash, and forming the whole into a plastic state, then subjecting it to baths of vaseline and paraffine, and finally carbonizing it, substantially as herein set forth.

412,022. CAR-STARTER. EDWARD DEGENHARDT, Helsingfors, Finland. Filed Feb. 13, 1889. Serial No. 300,570. (No model.)

Claim.—1. The combination, with the axles of a car and with an endless chain geared thereto to revolve therewith, of a bar moving transversely to the chain between the two lengths thereof, gripping-arms pivoted to said bar to swing alternatively into engagement with the chain, a spring interposed between the bar and one of the axles to draw the bar toward the axle, a pawl carried with the bar to engage a rack and thereby prevent the retraction of the bar by the spring, and means, substantially as described, for releasing the pawl and for oscillating the grip-arms, substantially in the manner and for the purpose herein set forth.





2. The combination, with the axles of a car, of an endless chain geared thereto, a bar moving transversely between the two lengths of the chain, a spring actuating the bar in one direction, and gripping-arms pivoted to the bar to engage alternatively the upper and lower lengths of the chain to move the bar in the opposite direction, and stationary fingers placed to engage and detach either arm from the chain when the bar is drawn fully back by the spring, substantially in the manner and for the purpose herein set forth.

3. The combination, with the axles of a car, of an endless chain geared thereto, a bar moving transversely between the two lengths of the chain, an oscillating rod extending parallel with the chain from end to end of the car, a collar sliding longitudinally upon said rod, but made to oscillate therewith and attached to the bar to partake of its movement, grip-arms extending from said collar to engage alternatively in its oscillation one of the lengths of the chain, and means, substantially as described, for producing an oscillation of said rod at either end of the car, substantially in the manner and for the purpose herein set forth.

4. The combination, with the axles of a car, of an endless chain geared thereto, a bar moving upon suitable ways transversely between the two lengths of the chain, a spring actuating the bar in one direction, gripping-arms pivoted to the bar to engage alternatively the upper and lower lengths of the chain to move the bar in the opposite direction, a pawl carried with the bar and having a lateral stud or pin, a fixed rack engaged by the pawl to prevent a movement of the bar under the stress of the spring, an oscillating rod extending the length of the car adjacent to the pawl, having a lateral fin projecting therefrom under the lateral pawl-pin, and means, substantially as described, for oscillating said rod and thereby causing the fin to lift the pawl and disengage it from its rack, substantially in the manner and for the purpose herein set forth.

412,028. KEY-SEATING MACHINE. THOMAS C. DILL, Philadelphia, Pa., assignor to himself, Thomas Y. England, Charles B. Walton, and James W. England, same place. Filed Mar. 7, 1889. Serial No. 302,253. (No model.)

Claim.—1. The combination of the heads adapted to be secured to a pulley, the beam, and traveling cutter-bar with mechanism for moving said cutter-bar, substantially as described.

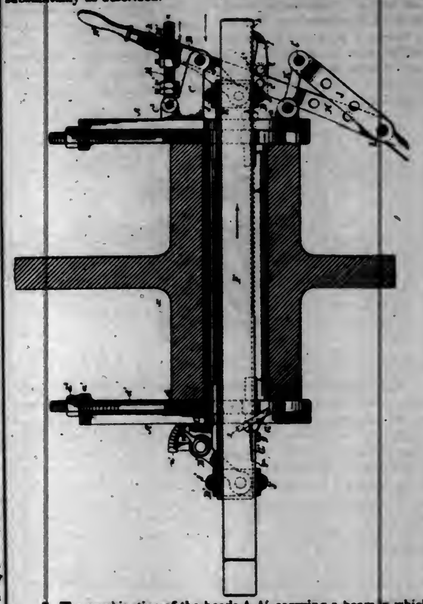
2. The combination of the heads adapted to be secured to a pulley and the beam linked to said heads with a traveling cutting-tool guided by said beam, substantially as described.

3. The combination, in a key-seat-cutting tool, of the head having the bearing-pins *b b* with the movable clamping-jaw *d*, substantially as described.

4. The combination, in a key-seat-cutting tool, of the heads adapted to be clamped to the hub, the beam, the adjustable clamps on said beam connected to said heads, and a cutter-bar guided by said beam and carrying a cutting-tool, substantially as described.

5. The combination of the heads A A', the beam E, adjustable clamps D D', a lever, and links pivotally connecting the clamps to the heads A A', with a threaded rod M, having a nut acting upon the lever for limiting the depth of cut of the key-seat, substantially as described.

6. The combination of the heads A A', the beam linked thereto and carrying a cutting-bar with a cutter, ratchet-teeth in the cutting-bar, and a lever H, having a pawl adapted to said teeth, so that on the movement of the lever the cutter-bar will be intermittently moved, substantially as described.



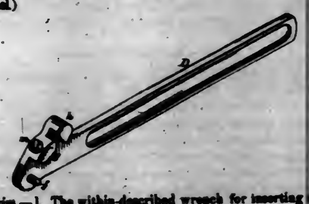
7. The combination of the heads A A', carrying a beam in which is guided a cutter-bar having a series of ratchet-teeth, with a lever H, having a pawl adapted to said teeth, and a lever J, pivoted to said lever H and linked to the head A, substantially as described.

8. The combination of the heads A A', the beam linked thereto and carrying a cutter-bar, with a lever B, provided with a handle B' and carrying a block M', adapted to a rod M, and a lever H, carrying a pawl engaging with teeth on the cutter-bar, said lever H being pivoted to a lever B and to a lever J, which in turn is linked to the head A, substantially as described.

9. The combination of the heads A A', the beam E, carrying the cutter-bar, adjustable clamps D D' on said beam, with levers or links connecting the clamp-plates to the heads, gages on each head, and indicators on the links or levers, substantially as and for the purpose set forth.

10. The combination, in a key-seat-cutting tool, of the heads A A', the beam E, carrying the cutter-bar, adjustable clamps on said beam, a handled lever B, connecting the front clamp to the head A and carrying a block M', and a rod M, projecting from said head A and having a series of graduations therein, with a link B' at the opposite end connecting the rear clamp to the head A', a pointer on the link B', and an indicator on the head, substantially as described.

412,024. DEVICE FOR INSERTING SAW-TEETH. THOMAS S. DENNEN, Philadelphia, Pa., assignor to Henry Disston & Sons, Incorporated, same place. Filed Aug. 2, 1889. Serial No. 319,288. (No model.)



Claim.—1. The within-described wrench for inserting saw-teeth, said wrench consisting of an arm or lever having a pin or projection for engagement with an opening in the teeth, a lag for bearing upon the top of the tooth, and a second lag for bearing upon the front of the tooth, substantially as specified.

2. The within-described wrench for inserting saw-teeth, said wrench consisting of an arm or lever having a pin or projection for engagement with an opening in the teeth, a lag for bearing upon the top of the teeth, and a second lag for bearing upon the front of the tooth, the latter lag being provided with an adjustable set-screw, substantially as specified.

412,025. PNEUMATIC OPERATOR FOR DENTAL PLUGGERS. FRANK I. RAMM, Meriden, Conn. Filed June 26, 1889. Serial No. 315,941. (No model.)



Claim.—1. The combination of the cylinder A, piston O, arranged therein, plate K, hung to vibrate in a plane parallel with the axis of the cylinder, a slot in said plate in a line at substantially right angles to the axis of said cylinder, piston-rod P, extending from the piston and adjustably hung in the said slot N of the plate K, and mechanism, substantially such as described, to impart vibrating movement to said plate, with a tube leading from one end of the cylinder, substantially as described.

2. The combination of the cylinder A, vibrating plate K, constructed with the vertical slots M and N, a piston O in the cylinder, piston-rod P, extending from the piston and adjustably hung in said slot N, a revolving crank I, its crank-pin J working in said slot M of the plate K, with a tube leading from one head of the cylinder, substantially as described.

3. The combination of the cylinder A, the piston O therein, constructed with an adjustable opening S therein, provided with a valve on the operative side of the piston, the vibrating plate K, constructed with a slot N, piston-rod P, extending from the piston O and adjustably hung in said slot N, and mechanism, substantially such as described, for imparting vibratory movement to said plate, substantially as specified.

412,026. HEEL-TRIMMING MACHINE. FRANK H. BURRIDGE, Boston, and CHARLES W. B. FULLER, Malden, assignors to the Acme Heel Trimmer Company, Boston, Mass. Filed May 28, 1889. Serial No. 312,060. (No model.)



Claim.—1. The cutter-head composed of the knives having grooved backs, the holder engaged with said grooves and composed of the part 4, affixed to the shaft, and the part 5, having the cam-shaped hub or collar 8, and the stud 10, having the cam-shaped shoulder formed to engage said cam-shaped hub or collar, as set forth.

2. The combination of the knives having grooved backs, the holder engaged with said grooves and composed of the part 4, affixed to the shaft and provided with the screw-threaded sleeve 6 and the adjustable part 5, the adjustable sleeve 13, movable on the sleeve 6 and having stops 12 for the rear ends of said blades, and a locking-nut 14, engaged with the threaded portion of the sleeve 6, whereby said sleeve 13 may be secured at any point to which it may be adjusted, as set forth.

412,027. LATHE-CHUCK. JAMES HARTNESS, Torrington, Conn., and ELISHA P. SPAULDING, Windsor, Vt., assignors to the Jones & Lamson Machine Company, Springfield, Vt. Filed Jan. 2, 1889. Serial No. 295,185. (No model.)

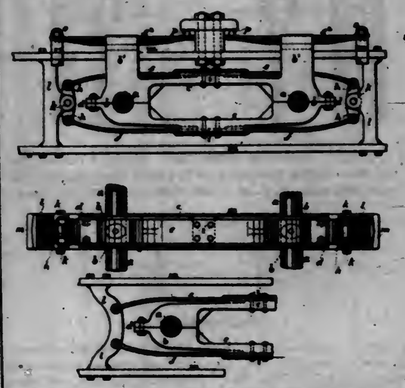


Claim.—1. The chuck-body, the levers having longer and shorter arms pivoted thereto, means for moving said levers, the radially-movable jaws, and the sliding sleeve surrounding the jaws and tapered or wedge-shaped internally, said sleeve being in contact with the shorter arms of the levers, all combined substantially as set forth.

2. The combination of the chuck-body, the sliding sleeve therein, having a tapered or wedge-shaped inner surface, the loose or independent jaws inserted loosely in said sleeve and having their backs shaped to conform to said tapered surface, the latter preventing inward endwise movement or displacement of the loose jaws, the flanged collar screwed upon the body to prevent outward endwise movement or displacement of the jaws, and means for moving said sleeve to compress the jaws, as set forth.

3. The combination of the chuck-body having longitudinal slots, the levers pivoted in said slots and having the inclined arms, the sliding sleeve operated by said levers within the body, the jaws within said sleeve, and studs or projections carried by a slide or ring and bearing on the inclined arms of the levers, as set forth.

412,028. CONNECTION FOR CAR-AXLE BOXES. CHARLES W. HUNT, West New Brighton, N. Y. Filed Aug. 2, 1889. Serial No. 319,569. (No model.)



Claim.—1. The combination, with the axles, of the boxes and yoke connecting such axles, the thrust-bars *e f* above and below the yoke and connected at the middle portions to such yoke, and the levers pivoted upon the frame and to the ends of the thrust-bars, substantially as set forth.

2. The combination, with the axles, of the boxes and yoke made in two parts and bolted together so as to grasp the axles, the thrust-bars above and below the yoke and connected thereto and having curved end portions, and the levers pivoted upon the frame and connected at their ends to the respective thrust-bars, substantially as set forth.

3. The combination, with the axles, of the boxes and yoke connecting the axles, thrust-bars above and below the yoke and connected to the same, levers connecting the ends of the thrust-bars and pivoted upon the frame, and springs for supporting the weight, substantially as set forth.

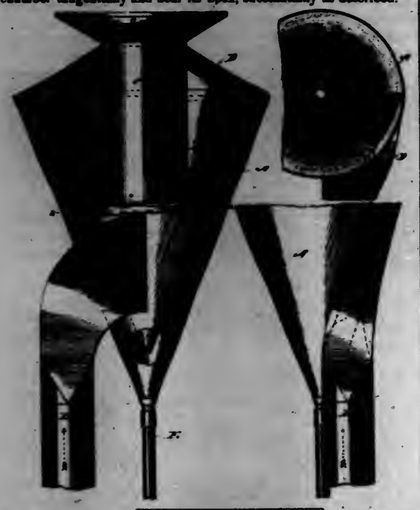
4. The combination, with the axles, of the boxes and yoke made in two parts and bolted together so as to grasp the axles, and the thrust-bars above and below the yoke and connected thereto and having curved end portions connected at their ends to the frame, substantially as set forth.

412,029. STEAM-CONDENSER. OSWALD KUTSCHE, Chicago, Ill. Filed Jan. 21, 1889. Serial No. 297,012. (No model.)

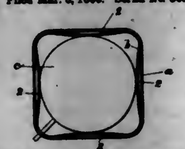
Claim.—1. In a condenser, the combination, with a condensing-chamber having separate outlets for steam and water and a tangential inlet-opening, of a collar or pipe surrounding the steam outlet and projected into the chamber, and a supplementary deflector suspended within the chamber, its upper end surrounding the outlet-pipe and its lower end having an orifice for the escape of water from its interior, substantially as described.

2. A condenser having an inverted cone-shaped condensing-chamber formed by an imperforate peripheral wall and having an outlet for the dry steam at its base, and an outlet for the water of condensa-

tion at its apex, and an inlet for the steam entering the condensing-chamber tangentially and near its apex, substantially as described.



412,080. WATCH-MOVEMENT BOX. WILLIAM B. LEARNED, Boston, Mass., assignor of one-half to the E. Howard Watch and Clock Company, same place. Filed Mar. 8, 1889. Serial No. 302,418. (No model.)



Claim.—A watch-movement box having rounded corners, combined with a sheet-metal lining bent to fit said rounded corners and presenting inwardly-curved sides 2 between said corners, said sides constituting a series of springs or yielding bearings 2 2, which are separated by intervening spaces from the sides of the box, as set forth.

412,081. SUPPORT FOR SPINNING-SPINDLES. THOMAS H. LOGAN, Lowell, Mass., assignor, by direct and mesne assignments, to Horatio R. Fletcher, trustee, same place. Filed June 18, 1888. Serial No. 277,429. (No model.)

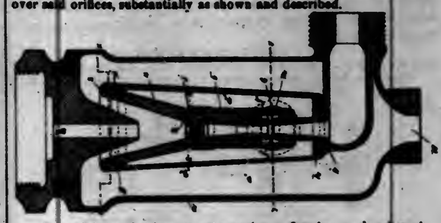


Claim.—1. A spindle and flat step for supporting the same vertically, combined with a bolster-case, a whirl secured to the spindle, and a circle of anti-friction balls constructed and arranged solely to form a lateral bearing or support for the spindle interposed between the whirl and bolster-case, as set forth.

2. A spindle and flat step for supporting the same vertically, combined with a bolster-case, a sleeve-whirl extending over the bolster-case, and a circle of anti-friction balls constructed and arranged solely to form a lateral bearing or support for the spindle interposed between the whirl and bolster-case on a line horizontally with the whirl, as set forth.

412,082. INJECTOR. WILLIAM B. MAGE, Boston, Mass. Filed Sept. 30, 1887. Renewed Mar. 8, 1889. Serial No. 302,587. (Model.)

Claim.—1. In an injector, the combination, with the outer and inner casings, of the combining-cone fitted at its widened end on one end of said inner casing and composed of sections 4 5, the former being provided at its lower end with a reduced threaded portion and with a series of air-vents or relief-orifices, and the section 5 having its upper end fitted on said threaded portion and designed to extend over said orifices, substantially as shown and described.



2. An injector having an outer casing *a*, forming a chamber *a'*, and provided with a steam-cone at its upper end and a water-inlet at its lower end, an inner chamber within, but having no connection with said outer chamber, an overflow-passage extending from said inner chamber through the outer chamber and casing, and combining and delivery cones fitted in said inner chamber, as described, the combining-cone being provided with air-relief orifices *j*, and said delivery-cone having water-overflow orifices, both said orifices communicating with said inner chamber and through the latter with the overflow-passage, as set forth.

3. The herein-described improved injector, comprising the outer casing forming a chamber *a'*, the casing *d*, located within said chamber and forming an inner chamber having no connection with said former chamber, the combining-cone made in sections 4 5, the section 4 having a lower threaded end and air-relief orifices, and the section 5 adjustably secured on said threaded end and designed to extend over said orifices, the delivery-cone secured to the lower end of said combining-cone and having water-overflow orifices, and the overflow-passage extending from said inner chamber and casing through said outer chamber and casing, substantially as shown and described, said air and water orifices opening into said inner chamber, as set forth.

4. In an injector, the combination of the two-part casing comprising the outer casing *a* and the inner casing *d*, forming inner and outer chambers *a' d'*, said inner chamber having no connection with said outer chamber and provided with an overflow-passage *n*, the steam-cone screwed into the end of the outer casing, the combining and delivery cones passing through the inner chamber and having vents communicating directly with the latter and with said overflow, all arranged and operating substantially as described.

412,083. FERRULE. JAMES MACPHAIL, Rockford, Ill. Filed June 18, 1888. Serial No. 277,577. (No model.)



Claim.—1. A ferrule having an opening at any point between the ends thereof, extending transversely therethrough, and a tongue-fastener formed integrally therewith and projecting into said opening from the perimeter thereof, substantially as described, and for the purpose specified.

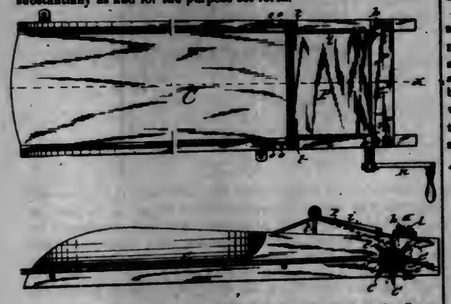
2. The ferrule A, having the tongue-fastener A^3 formed integrally therewith, substantially as described, and for the purpose set forth.

412,084. FEED-CUTTER. JUSTICE W. MARSHALL, Greenwich, N. Y., assignor to Pliabury A. Webster, same place. Filed June 7, 1888. Serial No. 313,623. (No model.)

Claim.—1. In a feed-cutter, the combination, with the trough, of a knife extended across the top of said trough and secured thereto, and a feed-roller arranged across the trough under the aforesaid knife and provided with wings adapted to pass with their free edges in proximity to the said knife, substantially as described and shown.

2. In a feed-cutter, the combination, with the trough, of the knife *c*, extended across the top of said trough and secured at its front edge to the same, the set-screws *b b*, working in screw-threaded openings near the rear edge of the said knife and bearing on top of the trough, and the feed-roller *e*, arranged across the trough under the rear edge of the aforesaid knife and provided with wings adapted to pass with their edges in proximity to the knife, substantially as described and shown.

3. In combination with the trough C, the stationary knife *c*, extended across the top of said trough and secured thereto, the feed-roller *e*, arranged across the trough under the rear edge of the aforesaid knife and provided with wings *d' d'*, disposed longitudinally obliquely in relation to the axis of the roller and adapted to pass with the edges of said wings in proximity to the rear edge of the stationary knife, the plate P, lying movably vertically over the feed-roller *e*, and a spring or springs pressing said plate toward the said roller, substantially as and for the purpose set forth.

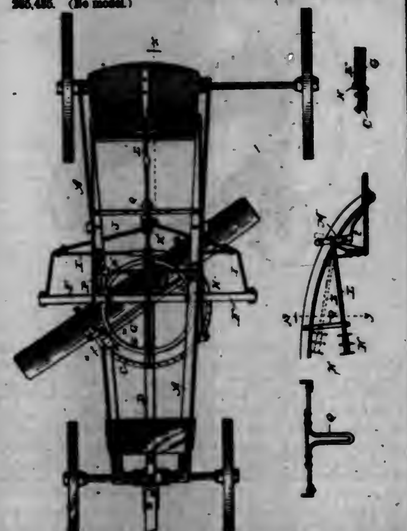


4. In combination with the trough C, knife *c*, and feed-roller *e*, the pivotal supports *t t*, connected to the side plates of the trough adjustably toward and from the aforesaid knife, the plate P, pivoted to the aforesaid supports and resting with its front end upon the feed-roller, and springs *i i*, pressing the said plate toward the feed-roller, substantially as described and shown.

412,085. FIRE AND WATER PROOF COMPOUND. WILHELM MATT, Athens, N. J. Filed May 4, 1888. Renewed Aug. 27, 1889. Serial No. 322,085. (No specimens.)

Claim.—The within-described plastic compound, consisting of a solution of water, glue, pulp, and paste, in about the proportions named, thickened by the admixture therewith of whiting, plaster-of-paris, and coal-ashes, substantially in the proportions set forth.

412,086. ROAD-SCRAPER. OTTO R. MOATS, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Feb. 27, 1888. Serial No. 265,495. (No model.)



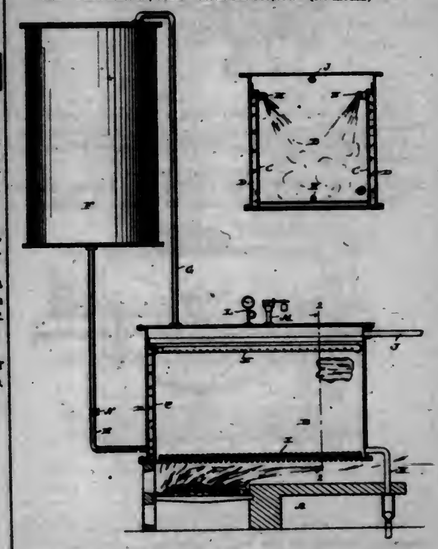
Claim.—1. In a road-scraper, the combination of a frame, a draft-bar, a scraper-blade connected thereto, an adjustable tumbler, and supporting-spring connecting the tumbler and scraper-blade-supporting mechanism, substantially as described.

2. In a road-scraper, the combination of a frame, a draft-bar, a scraper-blade connected thereto, a horizontal drum or worm shaft, and around the drum or worm of which an adjusting-chain is wound, and means for rotating the drum or worm shaft in one direction or the other, substantially as described.

3. In a road-scraper, the combination of a frame, a draft-bar, a scraper-blade connected thereto, a horizontal drum or worm shaft vertically adjustable at its forward end, and around the drum or worm of which an adjusting-chain is wound, and means for rotating the drum or worm shaft in the one direction or the other, substantially as described.

4. In a road-scraper, the combination of a frame, a draft-bar, a scraper-blade pivotally connected thereto, a transverse adjuster-bar moving the draft-bar and scraper-blade to the one side or the other as it is moved, a chain connected with the adjuster-bar near its ends, and a horizontal drum or worm around which the chain passes and by which either end may be shortened or lengthened at pleasure, whereby the scraper-blade and supporting mechanism may be moved toward one side of the machine or the other, substantially as described.

412,087. STEAM-GENERATOR. HOSEA P. GREGORY, Milwaukee, Wis. Filed Mar. 20, 1889. Serial No. 303,937. (No model.)



Claim.—1. A steam-generator comprising a furnace, a generating-chamber supported above the furnace and provided with a water-space, perforated pipes connected to the water-space and arranged in the generating-chamber, a reservoir also connected to said water-space, and a steam-delivery pipe connected to the generating-chamber, substantially as set forth.

2. A steam-generator comprising a furnace, a generating-chamber supported above the furnace and provided with a water-space and corrugated bottom, perforated pipes connected to the water-space and arranged in the generating-chamber, a feed-water supply also connected to said water-space, and a steam-delivery pipe connected to the generating-chamber, substantially as set forth.

3. A steam-generator comprising a furnace, a generating-chamber supported above the furnace and provided with a water-space of limited area, a feed-water supply connected with the water-space, distributer-pipes also connected with said water-space and arranged within the generating-chamber, a corrugated bottom for said generating-chamber constructed to present narrow water-spaces and materially wider fire-spaces, and a steam-delivery pipe, substantially as set forth.

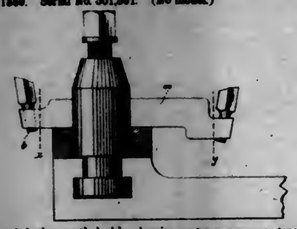
4. A steam-generator comprising a furnace, a generating-chamber supported above the furnace and provided with a water-space, perforated pipes connected to the water-space and arranged in the generating-chamber, a feed-water supply also connected to the said water-space, a steam-delivery pipe, and a valved waste-pipe connected to the generating-chamber, substantially as set forth.

5. A steam-generator comprising a furnace, a generating-chamber supported above the furnace and provided with a water-space, perforated pipes connected to the water-space and arranged in the

generating-chamber, a feed-water supply also connected to the water-space, a steam-pipe connecting said feed-water supply and generating-chamber, and a steam-delivery pipe also connected to said generating-chamber, substantially as set forth.

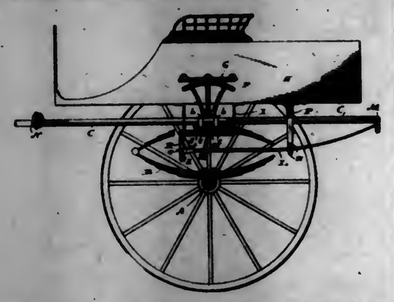
6. A steam-generator comprising a furnace, a generating-chamber supported above the furnace, a lining secured within the generating-chamber to form a water-space, a feed-water supply connected to the water-space, perforated pipes also connected to said water-space and arranged within the generating-chamber, and a steam-delivery pipe also connected to said generating-chamber, substantially as set forth.

412,038. LATHE-TOOL. FRANK S. PECKER, Boston, Mass. Filed Feb. 27, 1889. Serial No. 301,361. (No model.)



Claim.—A lathe-tooth holder having a transverse outwardly-inclined tapering socket, combined with the tool having a tapering shank to fit tightly in the said socket and be retained therein by friction only, substantially as described.

412,039. TWO-WHEELED VEHICLE. PAUL PERSCHEL, Milwaukee, Wis. Filed Mar. 23, 1889. Serial No. 304,539. (No model.)



Claim.—1. A two-wheel vehicle having a transverse rock-shaft connection between its box and running-gear, a longitudinal lever cranked at one end to the rock-shaft and connected at its other end to said running-gear, and a depending bracket on the box loosely connected to the lever, substantially as set forth.

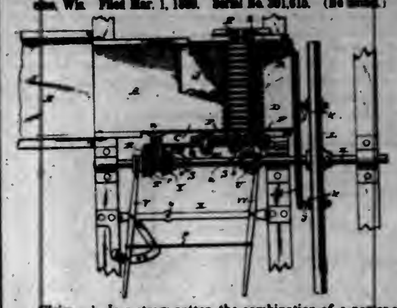
2. A two-wheel vehicle having a transverse rock-shaft connection between its box and running-gear, a longitudinal lever cranked at one end to the rock-shaft and connected at its other end to said running-gear, a depending bracket on the box loosely connected to the lever, and stops for limiting the upward movement of said box, substantially as set forth.

3. A two-wheel vehicle having its box provided with racks, a shaft journaled to the vehicle-springs, toothed segments fast on the shaft and meshed with the racks, a lever cranked at one end to the shaft and connected at its other end to a cross-bar of the vehicle, and a bracket depending from the vehicle-box to have loose connection with the lever, substantially as set forth.

4. A two-wheel vehicle having its box provided with racks, a shaft journaled to the vehicle-springs, toothed segments fast on the shaft and meshed with the racks, an arm extended from the shaft, a depending link pivoted to the arm, a lever having one end thereof shackled to the link and its other end connected to a cross-bar of the vehicle, and a bracket depending from the vehicle-box to have loose connection with the lever, substantially as set forth.

5. A two-wheel vehicle having its box provided with racks, a shaft journaled to the vehicle-springs, toothed segments fast on the shaft and meshed with the racks, a lever cranked at one end to the shaft and connected at its other end with a cross-bar of the vehicle, a bracket depending from the vehicle-box, and anti-friction rollers arranged on the bracket to impinge on opposite sides of the lever, substantially as set forth.

412,040. STRAW-CUTTER. JORAN RAHN and PETER RAHN, Racine, Wis. Filed Mar. 1, 1889. Serial No. 301,615. (No model.)



Claim.—1. In a straw-cutter, the combination of a power-shaft provided with clutch-pins, pinions loosely arranged on the shaft and provided with notches for engagement with said pins, levers connected to the pinions and united by a link, and a double gear-wheel arranged with relation to said pinions, whereby when one of the latter is thrown out of engagement with the adjacent set of gear-teeth on said wheel the other pinion and set of gear-teeth are brought into engagement, substantially as set forth.

2. In a straw-cutter, the combination of a power-shaft, pinions loosely arranged on the shaft, means, substantially as described, for clutching said shaft and pinions, levers connected to the pinions and to each other, a double gear-wheel arranged to be in mesh with one or the other of said pinions, according to the position of the levers, a pinion carried by the gear-wheel, and the lower feed-roller geared to the pinion and upper feed-roller, as set forth.

3. In a straw-cutter, the combination of a power-shaft, pinions loosely arranged on the shaft, means, substantially as described, for clutching said shaft and pinions, levers connected to the pinions and each other, a double gear-wheel arranged to be in mesh with one or the other of the pinions, according to the position of the levers, and an anti-friction roller arranged to support said gear-wheel, as set forth.

412,041. CHILD'S CARRIAGE. MILES C. ROOT, Toledo, Ohio, assignor of one-third to John H. Lloyd, same place. Filed Apr. 15, 1889. Serial No. 307,384. (No model.)



Claim.—1. In a child's carriage, the combination, with the running-gear, of an annulus secured to said gear, the body having rubirons upon its bottom adapted to bear upon the annulus, a pivot-rod passing through the body and the annulus upon which the body turns, a catch secured at either end of the body, and an upwardly-extending spring-dog attached to the running-gear adapted to engage the catch and hold the body in position, substantially as shown and described.

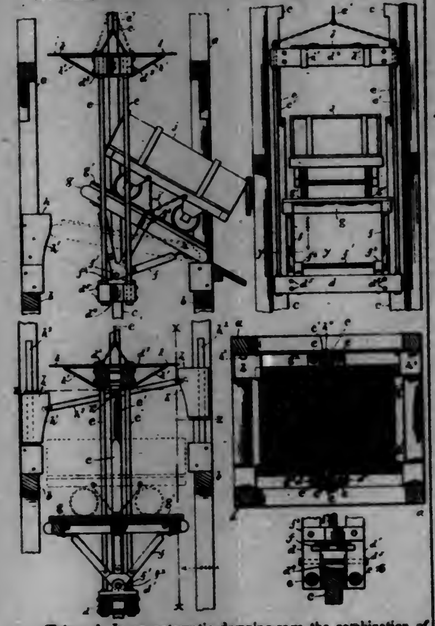
2. In a child's carriage, the combination, with the running-gear, of an annulus attached thereto, intermediate pivotal arms connecting the annulus to the gear, whereby the annulus is adapted to be elevated, and a carriage-body pivotally secured to the annulus by a suitable bolt, all arranged and adapted to operate substantially as shown and described.

3. In a child's carriage, the combination, with the running-gear, of an annulus pivotally connected with said running-gear and adapted to move both vertically and horizontally, and a body pivoted to the annulus and adapted to revolve thereon, substantially as shown and described.

4. In a child's carriage, the combination, with the running-gear, of an annulus attached thereto, intermediate arms pivotally connected to the running-gear and annulus, a body suitably pivoted upon the annulus, a catch arranged at either end of the body, and an upwardly-extending spring-dog adapted to engage with the catch and hold the body in place, substantially as shown and described.

5. In a child's carriage, the combination, with the catch L, arranged at either end of the body, of the spring-dog K, secured to running-gear and extending upwardly to engage the catch, said dog terminating in a suitable handle, whereby it may be thrown out of engagement, as and for the purpose set forth.

412,042. AUTOMATIC DUMPING-CAGE. BENJ. RUSSELL and HARRY T. PARSONS, Braidwood, Ill. Filed May 21, 1889. Serial No. 311,547. (No model.)



Claim.—1. In an automatic dumping-cage, the combination of the cage-frame, vertical guides having cut-away portions *d* and arranged in the shaft upon opposite sides of said frame, a pivotal platform the axis of which is arranged in the plane of said guides, there being notches formed in said platform to receive said guides, and means, such as the cut-away portions *d*, at or near the dump-level, whereby said platform is permitted to tilt upon its axis, substantially as shown and described.

2. The combination, in a dumping-cage, of the tilting platform *g*, provided with notches g^1 g^2, guide-posts *c c*, having cut-away portions *d' d'* at or near the dump-level, and means, such as the inclined-faced block, for tilting said platform in a given direction when opposite to said cut-away portions *d' d'*, substantially as shown and described.

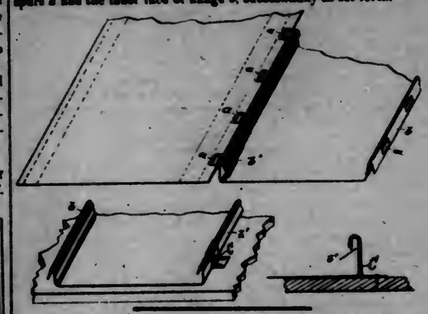
3. The combination, with a cage, of the pivoted platform *g*, notched as described, guide-posts *c c*, having cut-away portions *d' d'*, inclined-faced blocks A A loosely arranged in vertical guides upon opposite sides of the shaft, and means, such as the pivoted bar A^2, for alternately reversing the position of said blocks, substantially as shown and described.

4. The combination, with a cage, of the hinged covers *k k* and means for normally retaining the same in a horizontal position, substantially as shown and described.

412,043. METALLIC ROOFING. LOMBLEY L. SACHSENMEYER, Cincinnati, Ohio. Filed July 11, 1889. Serial No. 317,312. (No model.)

Claim.—1. A sheet of metal roofing provided on one side with an outward-projecting flange having inward-projecting spurs on its downward extension, the opposite side of said sheet having an internal flange, substantially as set forth.

2. In a metal roof, the combination of internal flange *b'*, cleat C, and the outward overlapping flange *b*, the cleat C fitting over flange *b'* and nailed to the sheeting, said flange *b'* engaging between the spurs *a* and the inner face of flange *b*, substantially as set forth.



412,044. EDUCATIONAL APPLIANCE. AUGUSTUS SCARLETT, Newark, N. J. Filed Aug. 20, 1888. Serial No. 311,304. (No model.)



Claim.—1. The improved educational chart herein described, combining with a frame or backing provided with brackets or supports *c* strips *d*, separable from said brackets and grooved in their upper edges, and word-cards, said parts being arranged and combined substantially as and for the purposes set forth.

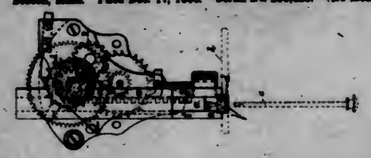
2. The improved educational chart herein described, combining therein a frame or backing having clips at the sides thereof, a series of grooved strips adapted to be separably or removably held in said clips at the ends thereof, and cards having words printed thereon, substantially as set forth.

3. The improved educational chart herein described, combining therein a frame or backing composed of sections or pieces separable from one another, the side sections being provided with brackets or supports for separable strips, said strips having grooves for word-cards, and said word-cards, said parts being arranged and combined substantially as and for the purposes set forth.

4. In combination, in an educational chart, a frame provided with spring-clips, rigid and grooved strips separable from the frame, and word-cards, substantially as set forth.

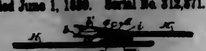
5. In combination, a rack of separable sections having series of spring-clips or brackets secured at the sides thereof, a series of separable card-holders, and a series of interchangeable word-cards, all arranged and combined substantially as and for the purposes set forth.

412,045. WATCHMAN'S CLOCK-STATION. JAMES F. SCHERMERHORN, Newark, N. J., assignor to the E. Howard Watch and Clock Company, Boston, Mass. Filed Dec. 17, 1888. Serial No. 293,525. (No model.)



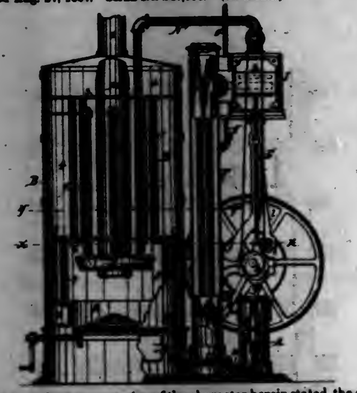
Claim.—The combination, with the mechanism of a watchman's clock-station, said mechanism including the arbor 3, stop-wheels 1 and 2, and spring 4, of the rack *a*, meshing with the wheel 1 and provided with the stud *c*, the guides for said rack, and the key guide or bushing in the bottom of the case arranged with its opening coincident with the stud *c*, as set forth.

412,046. TAILOR'S FITTING-CLASP. NOAH S. SHEIFER, New York, N. Y. Filed June 1, 1889. Serial No. 312,671. (No model.)



Claim.—The combination, in a tailor's fitting-clasp, of a plate having one end doubled or folded back outwardly upon itself, pins secured to said outer end and bent to cause their points to project forward over the same and parallel therewith in the direction of its length, and a second spring-actuated clamping-plate pivoted to the opposite inner side of the folded pin-bearing plate, to close with one end against said pin-plate at a point in front of the pivotal axis and approximately under the pin-points, substantially in the manner and for the purpose herein set forth.

412,047. STEAM-ENGINE. JAMES A. SHEPARD, Havana, N. Y. Filed Aug. 27, 1887. Serial No. 247,998. (No model.)



Claim.—In a steam-engine of the character herein stated, the combination of the following instrumentalities: an upright steam-boiler provided with an annular water-chamber 1, forming the wall of a fire-pot, a cylindrical shell provided with fire-flues extended vertically through a water and steam compartment 4, communicating by means of pipes with said annular water-chamber, a central fuel-supply magazine, a smoke-box, an annular steam-superheater in the fire-chamber provided with vertical pipes rising into the steam-space of compartment 4, a pipe leading from said superheater into one end of a steam-cylinder provided with a reciprocating piston and valve, a vertically-arranged condenser provided with upper and lower chambers H H and pipe-communications, an exhaust-port from the engine-cylinder leading into the upper chamber of said condenser, a cold-water-supply pipe, and a pumping-engine communicating with the condenser and with the annular water-chamber of the boiler, all constructed and adapted for joint operation, substantially as described.

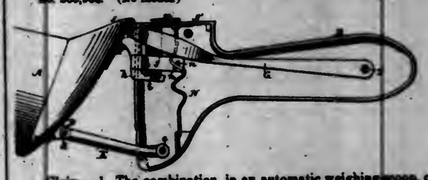
412,048. AIR AND FEED-WATER PUMP FOR CONDENSING-ENGINES. JAMES A. SHEPARD, Havana, N. Y. Original application filed Aug. 27, 1887, Serial No. 247,998. Divided and this application filed Apr. 9, 1889. Serial No. 276,091. (No model.)



Claim.—1. In a feed-water pump for steam-boilers, the combination, with the air-pump A, provided with the piston P, and having the condenser-pipe inlet-opening *n* for the admission of the water of condensation, of the boiler feed-force pump A', provided with the piston P', and the cross-head pin *d*, connecting said pistons and inclosed within said pumps A and A', substantially as described.

2. The combination of the pump-case A, provided with the induction-valve V at the base, the vertical slot *a* in its side, and the port *b* above said slot, the piston P, provided with the lift-valve V', the supplemental pump-case A', provided with the discharge-pipe *n*, and open at its side and secured at said side to the side of the case A, having the aforesaid slot and port, and the piston P', connected with the piston P by the coupling-pin *d*, projecting through the slot *a*, substantially as described.

412,049. AUTOMATIC WEIGHING-SCOOP. EDGAR SIZE, Philadelphia, Pa., assignor, by direct and mesne assignments, to Joseph J. Carr and F. C. Sturgen, Wilkes-Barré, Pa. Filed Aug. 26, 1886. Serial No. 213,009. (No model.)



Claim.—1. The combination, in an automatic weighing-scoop, of the scoop, the handle, the dial thereon, a spring by which the scoop is suspended on the handle, with a helical shaft having a hand, and with an arm on the scoop engaging with the helical shaft.

2. The combination of the scoop-handle having two pivot-pins, the scoop and links connecting the scoop to said pins, with an indicator-shaft, an arm on the scoop engaging with said shaft, and a balance-spring supporting the scoop on the handle, substantially as described.

3. The combination, in an automatic weighing-scoop, of the handle and the scoop pivotally connected thereto, a spring suspending the scoop on the handle, with an indicating-dial the face of which is parallel with the upper face of the scoop, and a pointer geared to the scoop, substantially as described.

4. In a weighing device, the combination of a relatively-fixed handle or base part, a movable weighing scoop or platform, and a rotary indicator with a helical axis controlled by the moving scoop and operating the rotary indicator.

412,050. VEHICLE-AXLE. PHILIP ROSENFELD, San Francisco, Cal. Filed Apr. 5, 1889. Serial No. 306,119. (No model.)

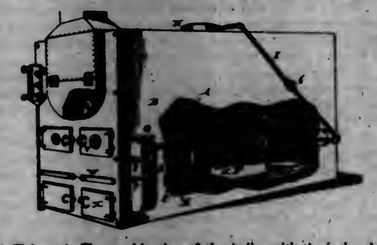


Claim.—1. In an axle, the combination of the tubular body-piece, the fixed tubular bearings screwed into each end of said piece, the independent spindles for carrying the wheels and journaled in the bearings, the flanges on the inner end of the spindles abutting against the inner end of the tubular bearings, and the collars on said spindles abutting against the outer ends of said bearings, substantially as described.

2. In an axle, the combination of the tubular body-piece, the tubular bearings screwed into each end of said piece, the independent spindles journaled in the tubular bearings and having their projecting ends square or angular in cross-section to receive the wheels, the flanges on the inner ends of the spindles and abutting against the inner ends of the tubular bearings, the collars fast on said spindles abutting against the outer ends of said bearings, and the nuts for confining the wheel on the spindles between themselves and the collars, substantially as described.

3. In an axle, the combination of the tubular body-piece, the tubular bearings screwed into each end of said piece, the independent spindles journaled in the tubular bearings, the flanges on the inner ends of the spindles abutting against the inner ends of the bearings, the collars on said spindles abutting against the outer ends of the bearings, the oiling-pieces D, secured to the inner ends of the spindles, the oil-grooves H in said spindles, and the oil-hole F in the body-piece, substantially as described.

412,051. STEAM-GENERATING APPARATUS. WILLIAM L. TEPPER, Philadelphia, Pa. Filed May 20, 1889. Serial No. 312,063. (No model.)



Claim.—1. The combination of the boiler with the inclosed setting having the ash-pit, fire-box, and combustion-chamber, a grate between the ash-pit and fire-box, a superheater filled with a heat-absorbing material in the combustion-chamber, a steam-pipe for supplying steam to said superheater, a pipe for leading the superheated steam to the ash-pit, and air-valves to control the flow of air to the ash-pit.

2. The combination of the boiler, with the inclosed setting having the ash-pit, fire-box, and combustion-chamber, a grate between the ash-pit and fire-box, a superheater filled with a heat-absorbing material in the combustion-chamber, a steam-pipe for supplying steam to said superheater, a pipe for leading the superheated steam to the ash-pit, and air-valves to control the flow of air to the ash-pit, a mixing-chamber in which the air and steam are mixed prior to entering the ash-pit, and a valve to control the flow of the steam to the mixing-chamber.

3. The combination of the boiler, with the inclosed setting having the ash-pit, fire-box, and combustion-chamber, a grate between the ash-pit and fire-box, a superheater having vertical division-plates forming a circuitous passage-way for the steam filled with a heat-absorbing material in the combustion-chamber, a steam-pipe for supplying steam to said superheater, a pipe for leading the superheated steam to the ash-pit, and air-valves to control the flow of air to the ash-pit.

4. The combination of a boiler, a boiler-setting having a fire-grate, an ash-pit, and a combustion-chamber, a superheater in said combustion-chamber, a steam-pipe leading from the boiler to the superheater, a steam injector-mixer, a steam-pipe from the superheater to the steam injector-mixer, valves on the injector to control the flow of steam and air through the mixer, and a passage-way connecting the mixer with the ash-pit under the grate.

5. The combination of a boiler, a boiler-setting having a fire-grate, an ash-pit and combustion-chamber, a superheater in said combustion-chamber, a steam-pipe leading from the boiler to the superheater, a steam injector-mixer consisting of the chamber M and tapering ports *n* O, and valves M and P, for controlling steam and air to the ports or orifices, a steam-pipe from the superheater to the steam injector-mixer, valves to control the flow of steam and air through the mixer, and a passage-way connecting the mixer with the ash-pit under the grate.

6. The combination of a boiler, a boiler-setting having a fire-grate, an ash-pit, and a combustion-chamber, a superheater in said combustion-chamber, a steam-pipe leading from the boiler to the superheater, a steam injector-mixer, a steam-pipe from the superheater to the steam injector-mixer, valves, independent steam and air valves on the injector to control the flow of steam and air through the mixer, and a passage-way connecting the mixer with the ash-pit under the grate, and a sight-window above the superheater in the wall of the boiler-setting.

7. The combination of the boiler, the grate C, the ash-pit under the grate, the bridge-wall D, the combustion-chamber F back of the bridge-wall, a superheater made box shape and filled with fire-brick or other heat-absorbing material and exposed on all sides, a steam-pipe for supplying steam to the superheater, a pipe for conveying the superheated steam from the superheater to the ash-pit, a valve to control the flow of steam to the ash-pit, an air-passage leading to the ash-pit, and a valve to control the flow of air to the ash-pit.

8. The combination of the boiler, the grate C, the ash-pit under the grate, the bridge-walls D, the combustion-chamber F back of the bridge-wall, a superheater made box shape and filled with fire-brick or other heat-absorbing material and exposed on all sides, a steam-pipe for supplying steam to the superheater, a pipe for conveying the superheated steam from the superheater to the ash-pit, a valve to control the flow of steam to the ash-pit, an air-passage leading to the ash-pit, and a valve to control the flow of air to the ash-pit, a mixing-chamber for the steam and air before passing into the ash-pit, and a perforated wall through which the mixed air and steam is caused to pass in entering the ash-pit.

9. The combination of a boiler, a boiler-setting having a fire-box and ash-pit, a steam and air injector-mixer to introduce mixed steam and air to the ash-pit, having independent steam and air valves, doors opening into the fire-box and ash-pit, and a packing of non-combustible material between said doors and boiler-setting to exclude the passage of air through them and cause a forced draft to said ash-pit from said injector-mixer.

10. The combination of a boiler having a grate, ash-pit, and combustion-chamber, with a superheater in the combustion-chamber, an opening through the wall of the combustion-chamber, a plate J, covering said opening, steam inlet and outlet pipes for the superheater extending through and supported by said plate, and an injector-mixer for air and steam for supplying steam and air to the ash-pit.

412,052. LOW-WATER ALARM. DAVID C. WALTER, Toledo, Ohio, assignor of two-thirds to James C. Otis and Samuel F. Bowlus, both of same place. Filed Sept. 3, 1888. Serial No. 284,515. (No model.)



Claim.—1. In a low-water alarm, the combination, with an alarm-whistle, expansion-tube, and couplings at either end, of a cross bar or lever secured to the lower coupling, an elbow-lever pivoted to the upper coupling at one side and adapted to bear upon the valve-stem of the whistle, an extensible rod connecting said elbow-lever with one arm of the cross bar or lever, and a rigid rod connecting the upper coupling with the opposite arm of the cross bar or lever, substantially as shown and described.

2. In a low-water alarm, an expansion-tube carrying an alarm-signal, and a bar or rod pivotally connected with the signal, so as to bring the same into action when the tube is heated to expand longitudinally, said rod being detachably connected at one end with the expansion-tube and arranged to automatically connect therewith, substantially as and for the purposes set forth.

3. The combination, with the expansion-tube and a valve-operating lever secured to the upper end of said tube, of a lever at the lower end of the tube, a rod connected to said lever and to the upper end of the tube, a lever pivotally connected to the valve-operating lever and detachably engaging the lower lever, and a spring for automatically throwing the rod into engagement with the lower lever, substantially as and for the purpose specified.

412,053. RAILWAY TIME-SIGNAL. JAMES WALLACE, Bowart, N. J. Filed Dec. 4, 1882. Serial No. 262,690. (No model.)



Claim.—1. In a railway time-indicator substantially such as described, the combination, with the rail, a standard or post *f*, and a clock arranged thereon and having a hand clamped upon the hand-shaft of said clock, of a wedge for releasing the clamp and a vertically-

movable rod carrying said wedge and connected with and operated by the rail, substantially as and for the purposes set forth.

2. In a railway or time indicator, a clock having a stop projection on the dial-plate, a hand free to move independent of the hand-shaft, a clamp for holding the hand to the clock-work, a lever *k*, for releasing said clamp, a vertically-movable wedge for operating said lever under the influence of the power exerted by the passing train, and a motor for setting the hand back to said stop when released, said parts being arranged and combined substantially as set forth.

3. In combination with the clock-work of a railway-signal, having a hand adapted to move independent thereof, a clamp for holding said hand to said clock-work and a vertically-movable wedge for releasing said hand, substantially as set forth.

4. In combination, rails *b b*, lever *d*, bar *c*, having an incline or wedge, a clock having hand-shaft *m*, sliding friction-clamp, and lever *k*, all arranged and combined substantially as and for the purposes set forth.

5. In combination with rails *b b*, lever *d*, incline or wedge *i*, clock-work hand-shaft *m*, clamp *l*, extension *p*, having head *s*, spring *r*, and weighted cord, all arranged and combined substantially as and for the purposes set forth.

6. In combination, in a combined signal and time indicator, a clock having a hand held on an extension of the hand-shaft by a friction-clamp, a lever *k*, a lever 6, operating a danger-signal, and an incline connected with and operated by the track and adapted to operate both of said levers 6 and *k*, substantially as and for the purposes set forth.

7. In combination with the railway-rail, a lever *d*, engaging the said rail and receiving its depression, a rod *c*, lever 3, spring-crank 9, danger-signal, and a catch controlled by the railway-train, substantially as and for the purposes set forth.

8. In combination with the vertical rod *c* and a wedge at the end thereof, levers and a revolving signal adapted to be turned by the vertical movement of the wedge, substantially as and for the purposes set forth.

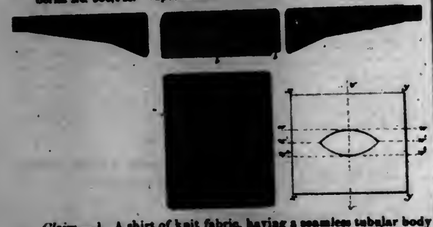
9. In combination, a danger-signal, rails, a train of mechanism for connecting said rails and signal and transmitting the movement imparted by the railway-train to said signal to turn the same to a position indicative of danger, and a catch 13, for holding said signal in the danger-indicating position, said catch being in connection with the rail, whereby it may be released by the movement imparted by the railway-train, substantially as and for the purposes set forth.

10. In combination, a danger-signal, rails, a train for connecting rails and signal and transmitting the movement imparted by the railway-train to said signal to turn the same to a position indicative of danger, a catch 13, having a connection with the railway-track, and a spring for automatically restoring the signal to a normal position, substantially as set forth.

11. In a time-signal for railways, the combination, with a clock-work hand and a clamp for holding the same, of a cone for moving said clamp in its relation to the hand, substantially as set forth.

12. In a time-signal for railways, the combination, with a clock-work hand and a clamp for holding the same, of a wedge having a cylindrical base, substantially as set forth.

412,054. KNIT SHIRT. LOUIS H. D. WILLIAMS, Philadelphia, Pa., assignor of one-half to Robert W. Scott, same place. Filed Apr. 5, 1889. Serial No. 306,046. (Specimens.)



Claim.—1. A shirt of knit fabric, having a seamless tubular body portion and a seamless shoulder-web of substantially uniform character from front to back, said shoulder-web being united at its lower edges to the upper edge of the tubular body, substantially as specified.

2. A shirt of knit fabric, having a seamless tubular body portion and a seamless shoulder-web of substantially uniform character from front to back, the lower edges of said shoulder-web forming a seamless union with the upper edge of the seamless tubular body portion, substantially as specified.

3. A shirt of knit fabric, having a seamless tubular body portion, a seamless shoulder-web of substantially uniform character from front to back and united at its lower edges to the tubular body portion, and sleeves united to the opposite ends of said seamless shoulder portion of the shirt, substantially as specified.

4. A shirt of knit fabric, having a seamless shoulder-web of substantially uniform character from front to back, a seamless tubular body united to the lower edges of said shoulder-web, and sleeves each composed of a shaped seamless tube, said sleeves being united at their inner ends to the armholes at the opposite sides of the seamless shoulder-web, substantially as specified.

412,055. KNITTED SHIRT. LOUIS H. D. WILLIAMS, Philadelphia, Pa., assignor of one-half to Robert W. Scott, same place. Filed May 16, 1888. Serial No. 311,069. (No specimens.)



Claim.—1. The within-described shirt of knit fabric, having the shoulder portion and sleeves composed of one piece of fabric, forming seamless armholes, and having a tubular body portion depending from said shoulder portion, substantially as specified.

2. The within-described shirt of knit fabric, having a seamless shoulder portion and sleeves in one piece therewith, forming seamless armholes, and having a tubular body portion depending from said shoulder portion, substantially as specified.

3. The within-described shirt of knit fabric, having a shoulder portion and shaped tubular seamless sleeves in one piece therewith and a tubular body portion depending from said shoulder portion, substantially as specified.

4. The within-described shirt of knit fabric, having a seamless shoulder portion, shaped tubular seamless sleeves in one piece therewith, and a tubular body portion depending from said shoulder portion substantially as specified.

5. The within-described shirt of knit fabric, having a shoulder portion and sleeves in one piece therewith and a tubular seamless body portion united to the lower edges of the shoulder portion of the shirt, substantially as specified.

6. The within-described shirt of knit fabric, having seamless shoulder portions and shaped tubular seamless sleeves in one piece therewith, and having a seamless tubular body the upper edge of which is united to the lower edges of the shoulder portion of the shirt, substantially as specified.

7. The within-described shirt of knit fabric, having a shoulder portion and sleeves in one piece and a body the upper edges of which are united to the lower edges of the shoulder portion of the shirt, the wales in the shoulder and sleeve portions of the shirt being horizontal and those in the body of the shirt being vertical, substantially as specified.

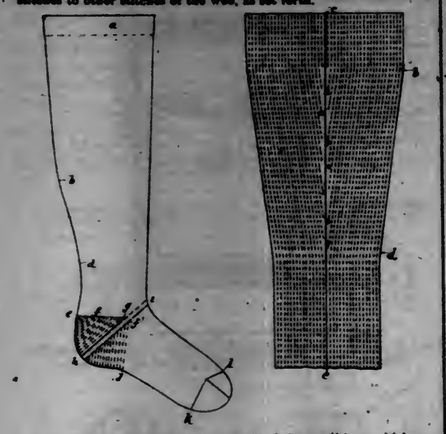
8. The within-described shirt of knit fabric, having a seamless shoulder portion and shaped tubular seamless sleeves in one piece therewith, and a body portion consisting of a seamless tubular web, the upper edge of which is united to the lower edges of the shoulder portion of the shirt, the wales in said shoulder and sleeve portions of the shirt being horizontal and those in the body of the shirt being vertical, substantially as specified.

9. The within-described shirt of knit fabric, having a shoulder portion and sleeves with ribbed cuffs, the whole being in one piece, and a body portion depending from the shoulder portion of the shirt, substantially as specified.

10. The within-described shirt of knit fabric, having a seamless shoulder portion and shaped seamless tubular sleeves with ribbed cuffs, the whole being in one piece, and a body portion depending from the shoulder portion of the shirt, substantially as specified.

412,056. STOCKING AND THE ART OF KNITTING THE SAME. CHARLES H. YOUNG, Manchester, N. H., assignor of two-thirds to William Stark, Ralph Emerson, and William A. Talcott, Rockford, Ill., and A. P. Chesebrough, Manchester, N. H. Filed Apr. 6, 1888. Serial No. 269,669. (No specimens.)

Claim.—1. The improvement in the art of knitting stockings, which consists in knitting a tube for the upper leg portion in any suitable manner, then narrowing for the lower leg portion by dropping stitches in any desired order, then forming the ankle, heel, foot, and toe portions in any suitable manner, and finally uniting the dropped stitches to other stitches of the web, as set forth.

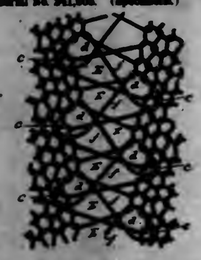


2. The improvement in the art of knitting stockings, which consists in knitting a tube for the upper leg portion in any suitable manner, then narrowing for the lower leg portion by dropping stitches in any desired order on each side of an unbroken or uninterrupted course of stitches, then forming the ankle, heel, foot, and toe portions in any suitable manner, and finally uniting the dropped stitches to other stitches of the web, as set forth.

3. The improvement in the art of knitting stockings, which consists in knitting a tube for the upper leg portion in any suitable manner, then narrowing for the lower leg portion by dropping stitches in any desired order on each side of an unbroken or uninterrupted course of stitches, then forming the ankle portion in any desired manner, then forming the heel by knitting into the tube any suitable number of gores of any desired width and depth, then knitting the foot and toe portions in any known way, and finally uniting the dropped stitches to other stitches of the web, as set forth.

4. As an article of manufacture, a stocking having the upper leg and ankle portions formed tubular in any suitable manner, the lower leg portion being narrowed or shaped to fit the leg of the wearer, there being in said narrowed or lower leg portion an unbroken line of stitches with dropped stitches on both sides thereof united to other stitches of the web, the heel being formed by any suitable number of gores knit integral with the main web and of any desired depth and width, and the foot and toe portions formed in any suitable manner, as set forth.

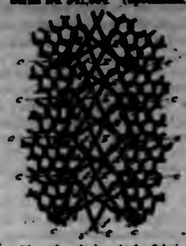
412,057. WIDENED TUBULAR-KNIT FABRIC AND THE ART OF KNITTING THE SAME. CHARLES H. YOUNG, Manchester, N. H. Filed June 17, 1887. Serial No. 241,603. (Specimens.)



Claim.—1. In the art of widening a tubular-knit fabric produced on two rows or ranks of needles, the improvement consisting in bringing into action a new or additional needle, feeding a supplemental yarn thereto and to a needle already in action, retiring such new or added needle and knitting with the main yarn on the needles already in action, then bringing into action the new needle holding a loop of the supplemental yarn, and knitting thereon and on the needles before in action with the main yarn, as set forth.

2. A widened tubular-knit fabric having a supplemental yarn looped or connected with the loops comprising the body of the fabric, said supplemental yarn being drawn across the wide meshes or eyelet-holes formed at the base of the new or widening wales, as set forth.

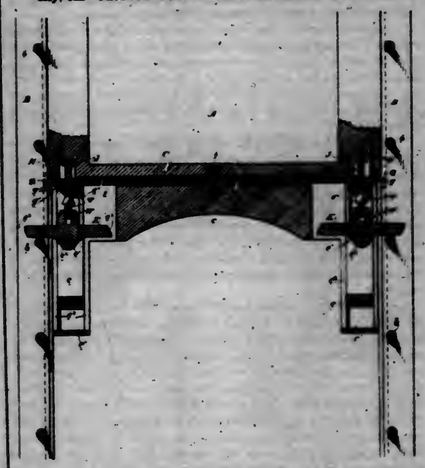
412,058. WIDENED TUBULAR-KNIT FABRIC AND THE ART OF KNITTING THE SAME. CHARLES H. YOUNG, Manchester, N. H. Filed June 17, 1887. Serial No. 241,604. (Specimens.)



Claim.—1. A widened tubular-knit fabric having two supplemental yarns looped or connected with the main or body yarns, said supplemental yarns being drawn across the wide meshes or eyelet-holes formed by the main yarns at the base of the new or added wales, as set forth.

2. In the art of knitting a tubular-knit fabric produced on two rows or ranks of needles, the improvement consisting in widening by bringing into action two new or additional needles, feeding a supplemental yarn to each and to an adjacent needle or needles already in action, retiring each new or added needles and knitting a course with the main yarn on the needles already in action, then bringing into action the new needles holding loops of the supplemental yarns and knitting thereon and on the needles before in action with the main yarn, drawing the supplemental yarns across what would otherwise be an eyelet-hole formed at the base of the new or added wale, and uniting such supplemental yarns with the loops forming the body or main fabric, as set forth.

412,059. ELEVATOR-SAFETY DEVICE. HENRY ALBERT, Crescent City, Cal. Filed Jan. 28, 1889. Serial No. 297,825. (No model.)



Claim.—1. In an elevator, and in combination with the cage or car and the rack-bars or stops in the shaft or well, the reversible catches having their outer ends extending within the plane of the rack-bars or stops and adapted to come in contact therewith, said catches having enlarged centers, and sliding frames having fixed stops with which the enlarged centers of the catches come in contact when said catches are reversed, substantially as described.

2. In an elevator, and in combination with the cage or car and the rack-bars or stops in the shaft or well, the slotted guides secured to the cage or car, the pivoted reversible catches mounted in frames in said guides and having their outer ends extending within the plane of the rack-bars and adapted to come in contact therewith, said catches having enlarged centers, and said frames having fixed stop-flanges with which said centers come in contact when the catches are reversed, substantially as herein described.

3. In an elevator, the cage or car and the rack-bars or stops in the shaft or well, in combination with the slotted guides on the cage or car, the frames, the reversible catches pivoted in said frames and having their ends projecting into the plane of the rack-bars or stops and adapted to come in contact therewith, the balancing-weights formed with the catches and forming enlarged centers therefor, and the said frames having stop-flanges with which the weights are adapted to come in contact and hold the catches when they are reversed, substantially as described.

4. In an elevator, and in combination with the cage or car and the rack-bars or stops in the shaft or well, the reversible catches E, pivoted in frames on the cage or car and having enlarged weighted centers whereby they are held in position, the said frames having stop-flanges with which the weighted centers come in contact to hold the catches when they are reversed, and the adjustable screw in the lower part of the weights for regulating the catches, substantially as described.

5. In an elevator, and in combination with the cage or car and the rack-bars or stops in the shaft or well, the slotted guides *c'*, secured to the cage or car, the carrying-frames *c*, mounted in said guides, the reversible catches E in the carrying-frames, having weighted enlarged centers, the pivot-pins *d'*, passing through the sides of said frames and intervening catches and confined by the guides, and said frames *c* having stop-flanges with which the said centers come in contact, substantially as herein described.

6. In an elevator, and in combination with the cage or car and the shaft-timbers in which it moves, the sliding frames *c*, the oppositely-moving clamps G, carried thereby and playing on each side of the shaft-timbers, the wedge H, carried by the frames *c* and adapted to actuate the clamps to cause them to bind on the shaft-timbers, and stops, substantially as described.

7. In an elevator, and in combination with the cage or car and the rack-bars or stops in the shaft or well, the vertically-movable reversible catches pivoted in the sliding frames with their outer ends extending within the plane of the rack-bars or stops and adapted to come in contact therewith to hold the catches in a reversed position, the movable clamps in the ends of the cage or car and embracing the rack-timbers, and power mechanism—such as the wedge-shaped cams—between the vertically-movable catches and the clamps, whereby when the catches are arrested the clamps are forced together to bind on the rack-timbers, substantially as herein described.

8. In an elevator, the cage or car and the reversible pivoted catches E carried thereby and operating as described, in combination with the sliding frames *c*, by which the catches are carried, the oppositely-moving clamps embracing the guide-timbers of the shaft or well and having slotted shanks, and the wedge-shaped cams engaging said shanks and carried by the sliding frame of the catches, substantially as described.

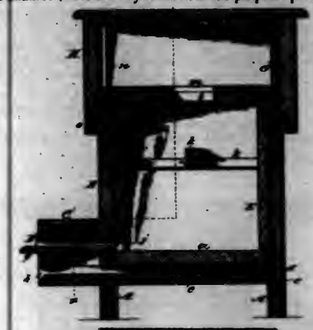
9. The safety appliance for elevator cages or cars, comprising the sliding frames *c*, mounted in guides in the cage or car and having stop-flanges on their inner sides, the reversible catches E, pivoted in and carried by said sliding frames and having enlarged centers adapted to come in contact with the flanges of the frames, whereby the catches are held when reversed, the oppositely-moving clamps on the ends of the cage or car for embracing the sides of the well or shaft-timbers, said clamps having slotted shanks, and the wedge-shaped cams on the top of the frames *c*, engaging said slotted shanks, substantially as described.

10. In an elevator, and in combination with the cage or car and the rack-bars or stops in the shaft or well, the slotted guides *c'*, secured to the cage or car, the sliding frames *c*, mounted in said guides, the reversible catches pivoted in the frames and having their outer ends extending into the plane of the rack-bars or stops and adapted to come in contact therewith, said catches having enlarged and weighted centers, and said sliding frames being provided with stop-flanges with which the enlarged centers of the catches are adapted to come in contact to hold said catches when reversed, the oppositely-movable clamps in the ends of the cage or car and embracing the rack-timbers, said clamps having overlapping slotted shanks, and the wedge-shaped cams on the sliding frames *c*, engaging the slotted shanks and operating the clamps, substantially as described.

11. In an elevator provided with safety-clamps, the means for relieving the cage or car of the binding effect of the clamps, consisting of a rock-shaft having eccentrics or cams on its ends adapted to raise the cage or car by fulcruming on the catches, substantially as described.

412,060. BEE-HIVE. JOHN T. ALEXANDER, Arlington, Ky. Filed June 22, 1889. Serial No. 315,220. (No model.)

Claim.—In a bee-hive, the combination, with the hive, of the extension C, having an inlet-tube D and a moth-passage *h i*, the glass secured beneath the bottom proper of said hive and forming a chamber *b*, communicating with the passage *h i*, and a removable rear side to said chamber, substantially as and for the purpose specified.

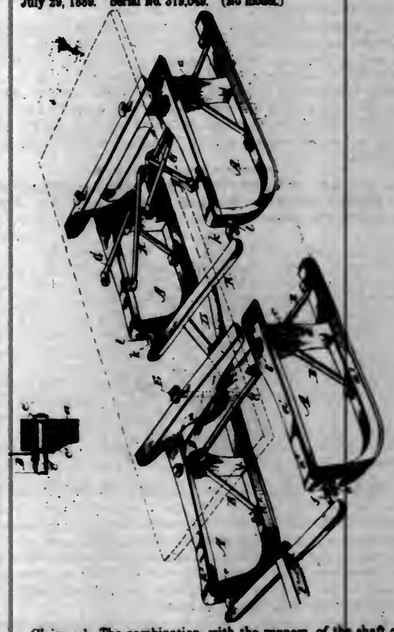


412,061. FERTILIZER-DISTRIBUTER. FRANK H. ALLEN, Port Allen, La. Filed May 28, 1889. Serial No. 312,461. (No model.)



Claim.—In a fertilizer-distributer, the combination, with the axle and gear thereon, of the hopper, the vertical shaft arranged therein, the bevel-gear on the lower end of the shaft, adapted to engage the gear on the axle, the agitator-arms B, secured to the upper ends of the shaft, the arms D, secured to the walls of the hopper on the inner sides thereof, and the curved and outwardly-flaring radially-disposed blades E, having their opposite edges arranged above and below a horizontal line on the vertical shaft, substantially as specified.

412,062. SLED. ROBERT B. ARES, Marlborough, Mass. Filed July 29, 1889. Serial No. 319,049. (No model.)

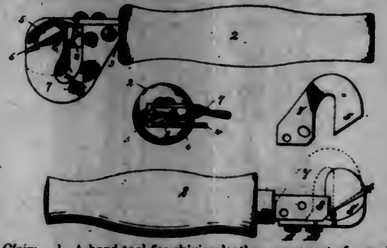


Claim.—1. The combination, with the runners, of the shaft connecting the same, having reduced ends passed through openings in the posts of the runners, nuts on the ends of the shaft, and sleeves *c'* in the openings in the posts and through which the reduced ends of the shaft turn loosely, as and for the purpose specified.

2. The combination, with the runners, of the shaft passed loosely through sleeve-openings in the posts of the runners and provided upon its ends with nuts, the collars on the shaft inside the posts, and the head-block on the shaft inside the collars, substantially as shown and described.

3. The combination, with the runners, the shaft connecting the same and free to turn loosely in the post thereof independent of each other, of the head-block on the shaft, and the king-bolt passed through the head-block and having its lower end securely held therein, as set forth.

412,063. LEATHER-SKIVING TOOL. HENRY H. ARNOLD, Scotland, assignor of one-half to William B. Arnold, North Abington, Mass. Filed Mar. 2, 1889. Serial No. 302,036. (No model.)



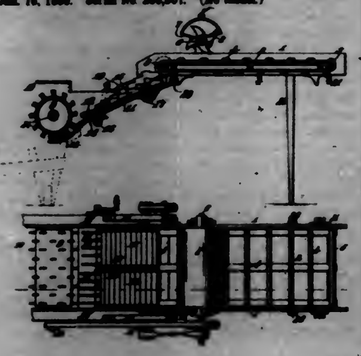
Claim.—1. A hand-tool for skiving leather, composed of a tool-stock squared at the end in part to form a vertical guide and terminating in a fixed horizontal lip or guide, a knife secured to said stock, but above the horizontal guide, and a yielding guard likewise affixed to said tool-stock above the horizontal guide and with its free end juxtaposed and in front of the cutting-edge of said knife, and forced down toward said edge by elastic pressure, substantially as herein described.

2. In a skiving implement, a tool-stock, the fixed horizontal terminal guide thereon, a vertical guide S, formed by the upright end portion of said stock, and the knife adjustable upon said stock with respect to the horizontal guide and above the latter, combined with a spring-guard also affixed independently to said stock and with its free end in front of the knife-edge and adjustable therewith, substantially as and for purposes herein set forth.

3. In combination with a tool-stock 3, the horizontal guide 4 transversely thereon, and the knife 5, fastened to said tool-stock above said horizontal guide and adjustable with the latter, a spring-guard 7, composed of a steel plate provided with a free yielding end equal in width to the cutting-edge of the knife and approximately coincident therewith, but in front of it, the leather traveling between the horizontal guide and the spring-guard substantially as herein specified.

4. The combination, with a tool-stock 3, the horizontal guide 4 transversely thereon upon one side of the material in process, a spring-guard, as described, upon the opposite side of said material, and the adjustable knife co-operating therewith, of a vertical guide S, composed of the end of the tool-stock between the horizontal guide 4 and the innermost cutting-edge of the knife, substantially as herein stated.

412,064. BAND-CUTTER AND FEEDER. VERNON C. BAILEY, Battle Creek, Mich., assignor to the Advance Thresher Company, same place. Filed Jan. 16, 1889. Serial No. 296,807. (No model.)



Claim.—1. The combination of the movable grain-table, the rotating band-cutters, the vibrating grain-delivery pan at the inner end of the grain-table, the fingers or rods extending in the direction of their length from the grain-pan toward the cylinder of the grain-separator and serving to support and carry the grain after it leaves the grain-delivery pan and to conduct such grain to the cylinder, and devices under the fingers or rods for supporting and raising the latter to different heights, substantially as described.

2. The combination of the movable grain-table, the rotating band-cutters, the vibrating grain-delivery pan at the inner end of the grain-table, the fingers or rods extending in the direction of their length from the grain-pan toward the cylinder of the grain-separator and serving to support and carry the grain after it leaves the grain-delivery pan and to conduct such grain to the cylinder, a hinged feed-board located under and supporting the fingers or rods between the grain-delivery pan and the cylinder, and devices beneath the feed-board for lifting the latter and correspondingly raising the fingers or rods, substantially as described.

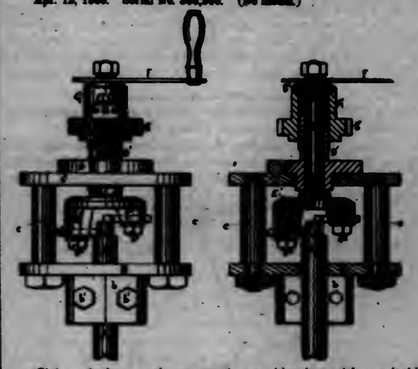
3. The combination of the movable grain-table, the vibrating grain-delivery pan provided at its discharge end with fingers or rods which extend in the direction of their length toward the cylinder of the grain-separator and serve to support the grain leaving the pan, and devices below the fingers or rods for raising the latter with the grain-delivery pan, substantially as described.

4. The combination of the movable grain-table, the vibrating grain-delivery pan located at the inner end of the table and provided with attached fingers or rods which extend lengthwise toward the cylinder of the grain-separator and serve to support and carry the grain which leaves the grain-pan, a vertically-movable feed-board located under and supporting the fingers or rods and grain-pan, and a cam-shaft arranged under the feed-board to raise the latter and correspondingly raise the fingers or rods and grain-pan, substantially as described.

5. The combination, with a grain-thresher and a roller supported at the feed end thereof, of a band-cutter and feeder frame having a pivoted leg and provided with forked arms at its inner and outer ends, adapted to rest on the roller to support the band-cutter and feeder frame on the thresher either in operative position for feeding or for transportation, substantially as described.

6. The combination, with a grain-thresher, of the side arms thereof, the bracket on the side arms, the transverse roller carried by the bracket, and the band-cutter and feeder frame having an adjustable leg and provided with pendent forked arms at both its inner and outer ends, adapted to embrace and rest upon the roller, substantially as described.

412,065. AXLE-CUTTER. FRANK H. BEARDSLEY, Traverse City, Mich., assignor of one-half to Warren R. Sullivan, same place. Filed Apr. 12, 1889. Serial No. 306,969. (No model.)



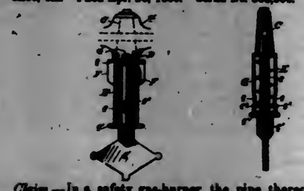
Claim.—1. In an axle-cutter, the combination, with a suitable frame-work adapted to be fastened to the axle, of the tool-head having the cutting-knives located thereon, a shaft for revolving the same, and a movable sleeve embracing said shaft and adapted when moved longitudinally to carry the shaft with it, substantially as described.

2. In an axle-cutter, the combination, with a suitable frame-work adapted to be fastened to the axle, and the shaft E, carrying the tool-head F, of the feeding mechanism, consisting of the sleeve G, screw-threaded on its interior to fit the threaded exterior of the shaft-journal and adapted when moved longitudinally to simultaneously move the shaft in the same direction, the pinion J, for revolving the sleeve G, and means for revolving the pinion J when desired, substantially as described.

3. In an axle-cutter, the combination, with the face-plate C, of an adjusting-plate D, adjustably fastened to the face-plate and carrying the operative mechanism, substantially as described.

4. In an axle-cutter, the face-plate C, having the opening through which the operating-shaft passes considerably larger than the shaft, substantially as described.

412,066. SAFETY GAS-COCK. JOHANNES P. BOEKER, San Francisco, Cal. Filed Apr. 20, 1889. Serial No. 308,006. (No model.)



Claim.—In a safety gas-burner, the pipe thereof having on its under side the notched flange and the valve seated in said pipe and having an outwardly-extending valve-stem, in combination with the sleeve fitted upon said valve-stem and secured thereto and movable thereon by means of elongated slots in said sleeve fitting over pins or studs in the valve stem, catch-plates carried by the upper end of the sleeve and fitting against the flange and adapted to engage the notches thereof to lock the valve in a closed position, and the spring within the sleeve for holding it up and effecting the engagement of the catch-plates, substantially as described.

412,067. SASH-HOLDER. MONTGOMERY BLAIR, Port Jefferson, Ohio. Filed May 10, 1889. Serial No. 310,275. (No model.)

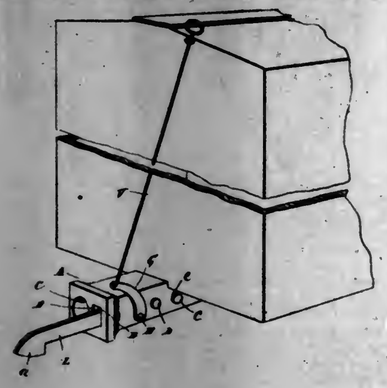


Claim.—1. The herein-described lever A, having the laterally-projecting head C, and having the undercut rim D extending around the head on three sides, that portion of the rim opposite the open side being notched, and the strip E, inserted sidewise in the space inclosed by the rim and held in place by the overlapping portions of the rim, substantially as described.

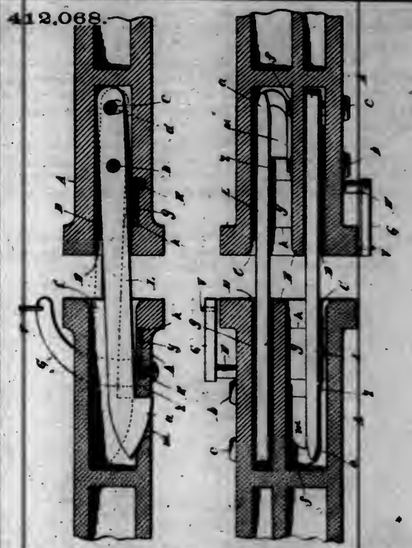
2. The herein shown and described fastener, composed of the base B, having the arm *b*, the lever A, having the handle *a* and hub *d* mounted on the arm *b*, and having the radial arms *c*, which extend in opposite directions and terminate in the lateral heads C, that have the undercut rim D, which rim closes the heads C in on three sides, that portion of the rim opposite the open side being notched, and the strip E, fitted in the space inclosed by the rim, substantially as described.

412,068. CAR-COUPLING. PETER J. BURNS, Florence, Mass. Filed June 20, 1889. Serial No. 314,660. (No model.)

Claim.—In a car-coupling, the combination, with the draw-head having the lateral front chambers C and D, their recessed seats, slotted walls, and the abutment Z, of the coupling-hook, its pivot-pin, and

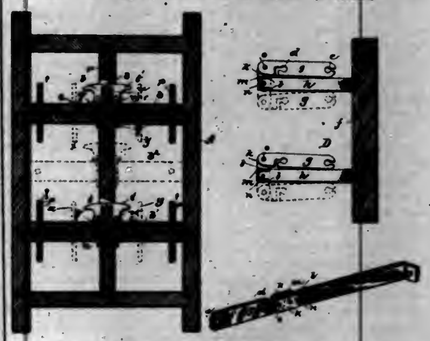


412,068.



auxiliary pin in rear thereof engaging the slotted walls, the transverse shaft, and its lifting-arms and the lever in connection therewith, substantially as specified.

412,069. FENCE-WEAVING MACHINE. ROYAL R. CARTER, Enid, Ohio. Filed May 18, 1889. Serial No. 311,341. (No model.)

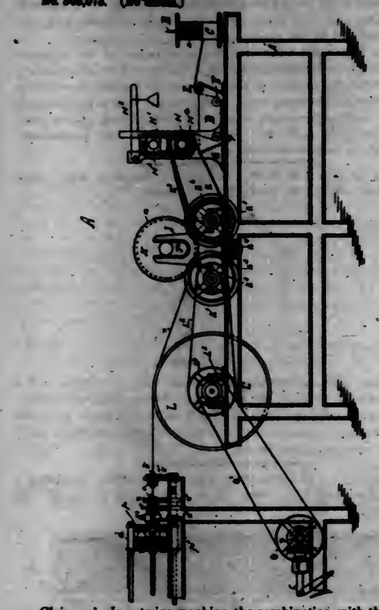


Claim.—1. In a fence-machine of the type described, the twister having a wire-holder *g*, pivoted to a hinge-piece *k*, which in turn is pivoted to an arm *h*, secured to a handle-bar, forming a double hinge and adapted to give the wire a single turn or a whole twist, substantially as and for the purpose set forth.

2. In a hand-weaving fence-machine, the reel-frame combining the following elements: suitable uprights or standards, one of said standards being provided with transverse mortises, pawls passing through said mortises and provided with centrally-elongated slots and extending laterally from the upright, said lateral extensions being notched, rectangular bars passing longitudinally through the stanchions and also passing through the elongated slots of the pawls, the reels adapted to carry wire substantially in the manner described and provided with dowels to regulate the tension of the wire, and the ratchet-wheels attached to the inner ends of said reels, all constructed and combined to operate in connection with the wire and fence-posts substantially as set forth.

3. In a fence-machine of the type described, the twister consisting of the laterally-extending arm provided with a shoulder, the hinge-piece pivoted to said arm and provided with a central stop or guard, and the wire-holders articulating with the hinge-piece and provided with slots having enlarged inner ends, in combination with the handle-bar, substantially as set forth.

412,070. MACHINE FOR FINISHING AND COMPLETING TWINE OR CORD. JOHN CROTON, Paterson, N. J. Filed Mar. 13, 1888. Serial No. 303,073. (No model.)



Claim.—1. In a twine-machine, the combination, with the sizing-trough, the press-rolls H H', the rollers K K', and the roller N, covered with absorbent material and bearing on said rollers, and the drying-cylinder L, all supported on a common frame, of the flier *d*, the spool-tube R', and the grooved face-cam and the traverse-bar T', for reciprocating said spool-tube, all supported on a common frame, a single main driving-pulley, and intermediate driving mechanism connecting the said main driving-pulley, drying-cylinder, flier, and face-cam with the said main driving-pulley, whereby all the said devices are combined to form a single compound machine and are driven simultaneously at appropriate speeds, substantially as set forth.

2. In a twine-machine, the combination, with the supporting-frame, of the sizing-trough, the press-rolls H H', supported over said trough, the rollers K K', provided with toothed wheels K³, the toothed wheel K⁴, intergearing with both of said wheels K³, the cylinder N, covered with absorbent material and bearing on said rollers, the drying-cylinder L, and intermediate driving devices connecting the drying-cylinder and press-roll shafts with the shafts of rollers K K', whereby all the said devices may be driven simultaneously and at appropriate speeds, substantially as set forth.

412,071. THILL-COUPLING. ROBERT M. CRIPPEN and WILLIAM H. LOSCOUT, Sullivanville, N. Y. Filed July 26, 1888. Serial No. 318,699. (No model.)

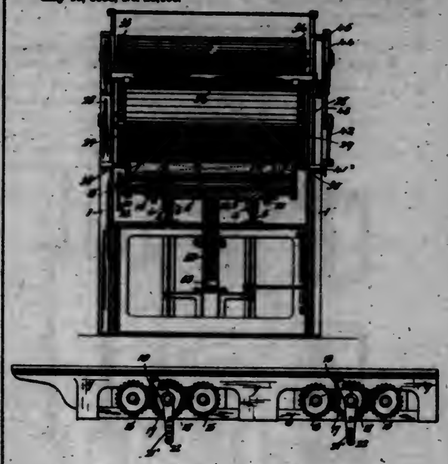


Claim.—1. The combination, in a thill-coupling, of a clip designed to be connected to the axle and having ears permanently carrying the pivot-bolt, a metal section D, having a bolt-channel and end stop, the latter perforated, as described, and a lower section E, having a bolt-channel, an end lug to engage the perforation in the stop, so as to pivotally engage said sections, and a device for connecting the free ends of said sections, substantially as set forth.

2. The combination, in a thill-coupling, of the axle-clip provided with a permanently-attached pivot-bolt, a section D, having the bolt-channel and vertical end stop, the latter provided with an opening having a curved bottom, and the lower section E, provided with a bolt-channel and having the end lug to engage said stop-opening and curved to correspond with the bottom thereof, and a thumb-screw for connecting the free end of said section E to the section D, substantially as set forth.

3. The combination, in a thill-coupling, of the clip having the permanent pivot-bolt and the sections D E, grooved, as described, and pivotally engaged in the rear of said bolt and connected as set forth, the section D having shoulders *d e* to hold the forward portion out of contact with the similar parts of section E, substantially as specified.

412,072. COLOR-PRINTING MACHINE. WILLIAM GIBBONS and THOMAS S. GIBBONS, Lambeth, County of Surrey, assignors to Dunbar Douglas Hunter, John Gilbert Mudge, and Lloyd Salisbury Rawlinson, all of London, England. Filed May 3, 1888. Serial No. 272,703. (No model.) Patented in England Oct. 15, 1887, No. 13,874; in France Apr. 17, 1888, No. 189,062; in Belgium May 3, 1888, No. 81,878, and in Canada May 18, 1888, No. 20,196.



Claim.—1. In a color-printing machine, a table for supporting a color-block, in combination with means for adjusting same vertically in an automatic manner at each impression to compensate for consumption and consequent reduction in the thickness of said block.

2. In a color-printing machine, the combination of a table for supporting a color-block, a cylinder adapted to roll in contact with and to remove color from a color-block on said table, and means, substantially as described, for adjusting said table in an automatic manner in relation to said cylinder to compensate for consumption and consequent reduction in thickness of said color-block.

3. In a color-printing machine, the combination of a table for carrying a color-block that is consumed during printing, means, substantially as herein described, for automatically adjusting the height of said table at each impression to compensate for consumption and consequent reduction in thickness of the color-block, a transfer-cylinder arranged to roll in contact with the color-block and remove color therefrom, and a cylinder for carrying material to be printed and pressing the same in contact with said transfer-cylinder, for the purposes set forth.

4. In a color-printing machine, the combination of a table for supporting a color-block, means, substantially as herein described, for automatically adjusting the height of said table, a second table for carrying a key-block or a second color-block, a transfer-cylinder adapted to roll in contact with said first-mentioned color-block and also with said key-block or with said second color-block and to remove color therefrom, and a cylinder for carrying the material to be printed in contact with said transfer-cylinder, so as to receive color therefrom, for the purposes set forth.

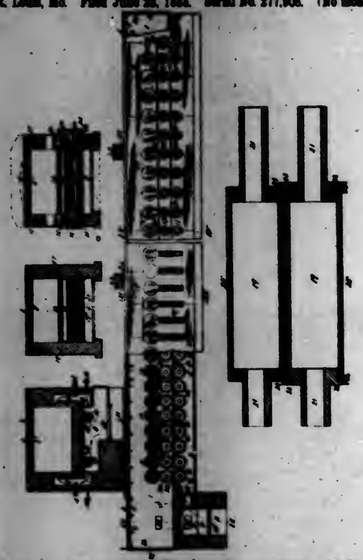
5. In a color-printing machine, the combination of a table for supporting a color-block, means, substantially as herein described, for automatically adjusting its height, a table for carrying a key-block, means, substantially as described, for reciprocating said tables, mechanism for inking said key-block, a transfer-cylinder arranged to roll in contact with said color-block and with said key-block and remove color and ink, respectively, therefrom, and a cylinder for carrying the material to be printed in contact with said transfer-cylinder, substantially as herein described.

6. In a color-printing machine, the combination, with a table for

carrying a color-block, means for reciprocating said table, a transfer-cylinder arranged to roll in contact with said cylinder, and a cylinder for carrying the material to be printed, of stop and brake mechanism, substantially as herein described, for keeping the cylinder that carries the material to be printed stationary during rotary motion of said transfer-cylinder in one direction, substantially as herein described, for the purposes set forth.

7. In a color-printing machine, the combination of a double box or coffin 6 7, adapted to carry one or two color-blocks or a color-block and a key-block, means, substantially as herein described, for reciprocating said box or coffin, means, substantially as herein described, for automatically adjusting the height of said color block or blocks, a transfer-cylinder 26, operated from said box or coffin and adapted to roll in contact with said color block or blocks or with said color-block and key-block, and a cylinder 31, adapted to carry the material to be printed and to be operated in one direction only from said transfer-cylinder, all substantially as herein described, for the purposes set forth.

412,073. LEER FOR ANNEALING GLASS. JOHN K. CUMMINGS, St. Louis, Mo. Filed June 22, 1888. Serial No. 277,908. (No model.)



Claim.—1. In a glass-annealing leer, the combination of the annealing-chamber with the structure that incloses it, the metal casing to said structure, the side walls of said structure and casing provided with circular ports and vertical slots from said ports, the upper and lower series of rolls with journals arranged to enter through said open ports, and the journals stationed in said vertical slots, the collars on the terminals of said journals that keeps the rolls in juxtaposition in non-contact with the side walls of the leer-chamber, the sprocket-wheels on said journals, and the drive-chain and drive-sprocket wheel by which they are driven arranged to carry the glass between the two series of rolls through the leer, substantially as and for the purpose set forth.

2. In a glass-annealing leer, the combination of the structure that incloses the annealing and cooling chamber, the rolls between which the glass passes having journals mounted in said structure, and the transverse T-bars that support the glass between the rolls, substantially as and for the purpose set forth.

3. In a glass-annealing leer, the combination of the structure inclosing the annealing and cooling chamber, two parallel series of rolls and the two series of soft-cushion sleeve-beds of non-combustible material between which the glass lies and is carried, the fire-box at one end of the leer provided with upper and lower flues transmitting heat from said fire-box to said annealing and cooling chamber, and the adjustable dampers in said flues, substantially as and for the purposes set forth.

4. In a glass-annealing leer, the combination of the two series of rolls having journals mounted in said structure, and the cushion-sleeves of incombustible material around each of said rolls, substantially as and for the purpose set forth.

5. In a glass-annealing leer, the combination of the cooling-rolls having journals arranged one above the other, bearings supporting the journals of the lower rolls, and the beveled flanges 24 on the ends of the lower rolls, said upper rolls resting upon the lower rolls, substantially as and for the purpose set forth.

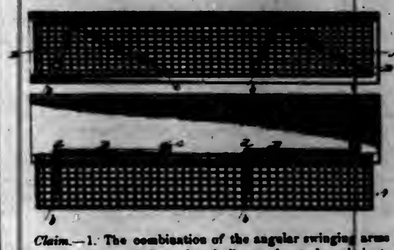
6. In a glass-annealing leer, the combination of the structure with its metal casing that incloses the annealing and cooling chamber, the vertically-sliding doors at each end of said chamber, the rolls, the said structure and casing provided with ports and vertical slots through which to insert and in which to station the tubular rolls, and the shutters inclosing said ports after the insertion of the rolls, substantially as and for the purpose set forth.

412,074. HAT-HOOK. HUGH DARBY, Gloucester, Mass. Filed May 20, 1889. Serial No. 312,466. (No model.)



Claim.—The combination of the bent strip A, provided with a handle or knob at its top and having one of its ends turned horizontally outward, with the spring-clamp C, having the upper end of its longer jaw also turned outward and pivoted to the turned-out end of the strip, substantially as shown.

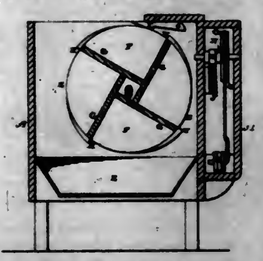
412,075. CRAYON-RACK FOR BLACKBOARDS. ADELBERT J. DOUGLASS, Ilion, N. Y. Filed June 4, 1889. Serial No. 312,982. (No model.)



Claim.—1. The combination of the angular swinging arms having eyes at either end thereof, and elbows, the studs and rivets, and the tray and rack to which swinging arms are secured, substantially as shown, and for the purpose described.

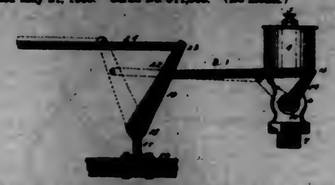
2. The combination of the tray, the rack, and the swinging arms provided with elbows, substantially as shown, and for the purpose described.

412,076. ROTARY GRAIN-METER. JOHN S. DUFFY, BRADDOCK T. DUFFY, WILLIAM O. DUFFY, and CHARLES C. DUFFY, Homestead, Nebr. Filed May 18, 1889. Serial No. 311,207. (No model.)



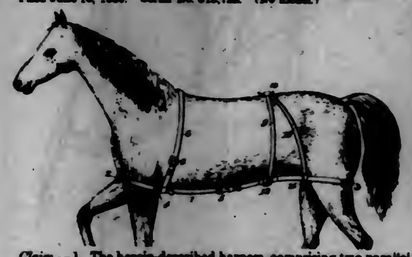
Claim.—The combination of the frame A, provided with the slots C, the rotating weighing device divided into chambers and provided with stops H, stationary stops I, placed in the frame, the pivoted frame J, in which the weighing device is pivoted and by which the device is given a vertical movement, the strap L, secured to one end of the frame J, the shaft N, around which the upper end of the strap is wound, the drum O, secured to the shaft, cord P, and weight Q, substantially as shown.

412,077. LUBRICATOR. BENJAMIN R. RIGBY and KAVANAUGH R. RIGBY, Laramie City, Wyo.; said Rigbys assignor to said Rigby. Filed May 31, 1889. Serial No. 311,889. (No model.)



Claim.—A lubricating device consisting of a cup 4, formed with a stem 6, having a vertical passage 8, and provided with a plug 5, for closing the cup, the rotary plug 10, having right-angle passage 11, the arm 14, secured to the rotary plug, the frame 17, the rod 18, journaled to the frame, having the arm 19, the connecting-bar 21, the pin 15, connecting the bar with the arm 14, the pin 22, connecting the bar to the middle portion of the arm 19, the operating-bar 24, and the pin 23, connecting the operating-bar with the upper end of the arm 19, substantially as described.

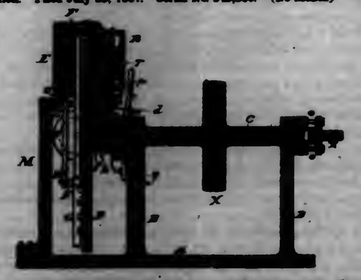
412,078. HARNESS. CHARLES D. ELLIOTT, Wheeling, W. Va. Filed June 10, 1889. Serial No. 313,722. (No model.)



Claim.—1. The herein-described harness, comprising two parallel side straps having an adjustable independent loop at each end, the girth and the flank straps secured to the side straps, extending below the same, and provided between the side straps with buckles for buckling them beneath the body of an animal at points respectively behind the fore legs and in front of the sheath, and the hip or loin straps diverging from the top part of the flank-strap and secured, respectively, at their lower ends to the rear loops of the side straps, substantially as described.

2. The herein-described harness, consisting of the two parallel side straps, each composed of two sections having front and rear independent loops, the girth and the flank straps adjustably connected with the side straps, extending below the same, and having buckles between said side straps for buckling them beneath the body of the animal at points respectively behind the fore legs and in front of the sheath, the buckles connecting the sections of the side straps between the girth and flank straps for adjusting the latter to and from each other, and the hip or loin straps adjustably secured to and diverging from the top part of the flank-strap and connected, respectively, at their lower ends to the rear loops of the side straps, substantially as described.

412,079. ROTARY ENGINE. JULIUS M. FARMER, Cheboygan, Mich. Filed July 25, 1887. Serial No. 245,266. (No model.)



Claim.—1. The combination of the revolving steam-pipe, the disk secured to its end and revolving therewith, the steam-cylinders secured to the disk, the heads, piston-rods connected thereto, the rod K, and the point of resistance L, to which one end of the rod K is attached at one end with the jacket which surrounds the end of the steam-pipe, the live and exhaust steam-pipes, the straps *m n*, placed upon the disk *n*, and the valves and valve-rods, substantially as shown.

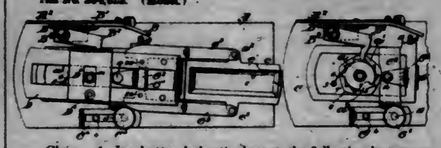
2. In a rotary engine, the combination of the revolving steam-pipe and the disk and its attachment secured thereto, with the revolving jacket *h*, secured to the disk at one end, the steam-pipes *b v*, the eccentric disk *n*, placed upon the jacket, the straps *m n*, the valve-rods and the standard B, having the passage *y* through it, substantially as described.

412,080. PROCESS OF CLEANING ANIMAL-HAIR. ERNEST J. PERRIER, Philadelphia, assignor of two-thirds to John G. Brewer and Francis H. Miller, both of Watsontown, Pa. Filed July 17, 1888. Serial No. 280,282. (No specimens.)

Claim.—1. The process of treating hair or wool to remove the oily matter from the tubular cavities, consisting of a long-continued soaking of the material in clear water until said oily matter becomes softened, then soaking the material so treated in a saponifiable solution to extract said oily matter, then washing in clear water, and finally drying, substantially as described.

2. The process of treating hair or wool to remove the oily matter from the tubular cavities, consisting of a long-continued soaking of the material in successive charges of clear water until it becomes quite soft and somewhat water-soaked, then soaking the material in a saponifiable solution to extract said oily matter from the cavities, then thoroughly washing in clear water, and finally drying, substantially as described.

412,081. BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES. ELIAS FLETCHER, Needham, Mass. Filed Dec. 26, 1888. Serial No. 294,622. (Model.)



Claim.—1. In a button-hole attachment, the following instrumentalities, viz: the base-plate having a stud *a*, the slotted yoke C, the cloth clamp having a shank D, engaged by a projection of the said yoke, the depth-stitch cam *a'*, uniform in cross-section at all points to fill from side to side the slot in the said yoke to thus move the same positively and prevent any lost motion, and a ratchet-wheel connected to it, both being movable together about the said stud, a lever B, a pawl B^3, carried thereby and directly engaging the said ratchet-wheel, and means to move the cloth-clamp longitudinally, to operate substantially as described.

2. The base-plate having the stud *a*, the depth-stitch cam *a'*, uniform in cross-section at all points, and the ratchet-wheel a^3, connected to the depth-stitch cam and both movable upon the said stud, the slotted yoke C, having the projection C', the said depth-stitch cam at all times filling the slot in the said yoke from edge to edge, the cloth-clamp having a slotted shank D engaging the said projection, and the cam D^2, having a slot 10, and the bridge-plate having a roller-stud, combined with means for rotating the said cam-plate and the said depth-stitch cam and means to move the cloth-clamp longitudinally, substantially as described.

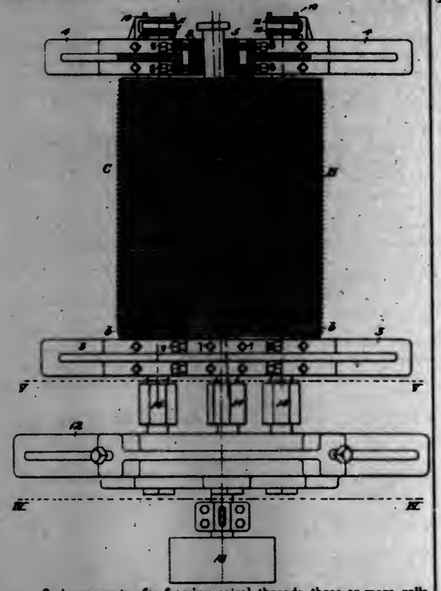
3. The base-plate, its stud *a*, the depth-stitch cam, the connected ratchet a^3, the yoke C, moved by the said cam and having an ear C^2 and a projection C', the fulcrum-plate C^2, the stud 14, serving as a fulcrum for the yoke C, the cam D^2, having a cam-groove 10, means to rotate it intermittingly, the cloth-clamp having the slotted shank D, means to move the cloth-clamp longitudinally, the bridge-plate, the roller-stud D', mounted thereon, entering the said groove 10, means to rotate the said cam D^2 intermittingly, and means to effect the adjustment of the said fulcrum-block, substantially as described.

4. The base-plate A, having the stud *a*, the depth-stitch cam and its ratchet-wheel, means to rotate them, the yoke C, having the projection C', the fulcrum-plate for the said yoke, the bridge-plate having a roller-stud, the cam D^2, means to rotate it, the friction-plate co-operating with the said cam, the cloth-clamp having a slotted shank D, engaged by the said bridge-plate, the slotted plate *m*, secured to the cam D^2, the adjustable screw therein having a cam thereon, and the slotted arm A, secured to the cloth-clamp, the combination being and operating substantially as described.

412,082. APPARATUS FOR MAKING SPIRAL SCREW-THREADS. ERNST H. POPPITZ, Chicago, Ill. Filed Feb. 7, 1888. Serial No. 263,504. (No model.)

Claim.—1. In apparatus for forming spiral threads, rolls axially inclined to the direction of the blank, and having a series of parallel

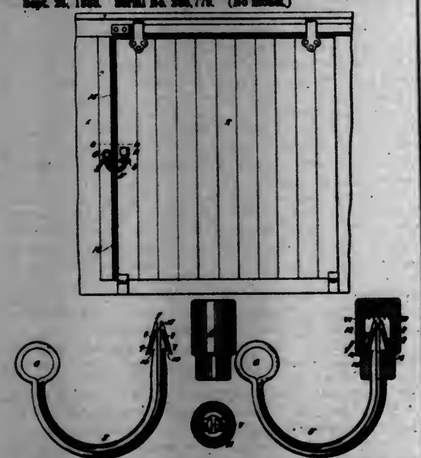
peripheral tongues or teeth, and adjusting mechanism by which the rolls may be adjusted longitudinally and the said tongues or teeth properly correlated, substantially as and for the purposes described.



2. In apparatus for forming spiral threads, three or more rolls, axially inclined and disposed around a central line, substantially as and for the purposes described.

3. In apparatus for forming spiral threads, rolls axially inclined to each other, and having a series of parallel peripheral teeth, said rolls being beveled at the ends to permit insertion of the blank, substantially as and for the purposes described.

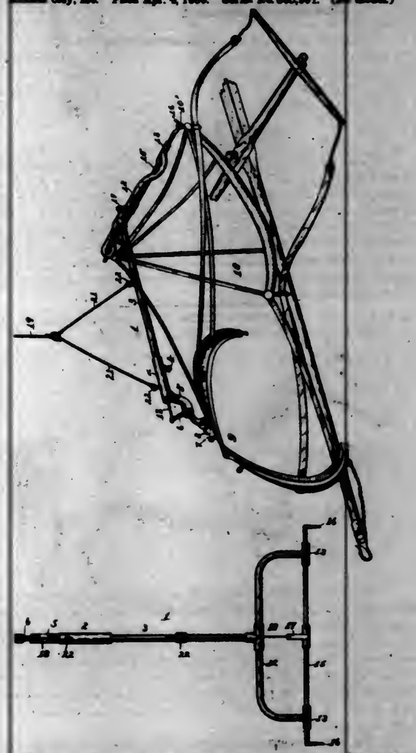
412,083. SEAL-LOCK. Robert W. Gillespie, St. Louis, Mo. Filed Sept. 28, 1888. Serial No. 286,779. (No model.)



Claim.—1. In a seal-lock, the combination of the shank having an arrow-head provided with spring-points 9 and downwardly-projecting barbs contiguous thereto, and a hollow seal having a contracted neck, substantially as set forth.

2. In a seal-lock, the combination of the shank formed of a single piece of half-round metal bent so that the ends are approximately parallel, an arrow-head on one end of the shank and a ring at the other end, and a hollow seal with a contracted neck, substantially as and for the purposes set forth.

412,084. Harness Suspension Device. George T. Hale, Kansas City, Mo. Filed Apr. 4, 1889. Serial No. 305,991. (No model.)



Claim.—1. A harness suspension device consisting of a longitudinal unbroken rod or bar, a lever fulcrumed on one end of said bar and adapted to detachably engage one part of the harness to be suspended, a device movably supported at the opposite end of said bar for engaging the other end or part of the harness, and an intermediate cord or rod connected to said device and the lever, all arranged and combined for service substantially as herein shown and described.

2. A harness suspension device consisting of a longitudinal rod or bar, a lever fulcrumed on one end of said rod or bar and arranged to detachably engage one part of the harness to be suspended, and a rock-shaft having separated harness-engaging devices for spreading the parts of the harness laterally and connected by an intermediate cord or rod with the lever, to be held in such position by the latter and the weight of the harness as to engage and suspend the harness, substantially as and for the purpose described.

3. In a harness suspension device, the combination of a hollow longitudinal rod or bar, a vertically-disposed lever fulcrumed on the front end thereof, a rock-shaft journaled on the opposite end of said rod or bar, a cord or rod passing through the hollow longitudinal bar and connecting the lever and rock-shaft, and a weighted cord or rod connected to the hollow longitudinal bar, substantially as and for the purpose described.

4. A suspension device for harness, consisting of a longitudinally-extensible bar or rod, a lever fulcrumed on one end thereof, and a rock-shaft having devices for engaging the harness and connected by an intermediate cord or rod with said lever, substantially as and for the purpose described.

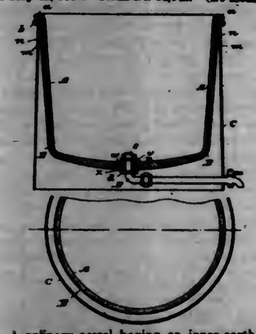
5. A suspension device for harness, consisting of a longitudinal bar or rod, a hanger fixed to the rod, a lever fulcrumed at an intermediate point of its length in the hanger and constructed at its lower end to detachably engage the collar of a harness, the transverse bar fixed to the opposite end of the longitudinal bar and having the bearings, and a rock-shaft journaled in said bearings and connected by an

intermediate cord or rod with the lever, substantially as and for the purpose described.

6. A suspension device for harness, consisting of a tubular bar or rod made in sections which are adjustably fitted together and held in fixed relation to each other by a binding-screw, a hanger fixed to one of the sections of said rod and carrying a lever, a rock-shaft journaled on the other section of the rod, and a cord or rod passing through the tubular rod and connected to the lever and rock-shaft, substantially as and for the purpose described.

7. In a harness suspension device, the combination, with a longitudinal bar or rod, of two catches or hooks pivotally supported at opposite ends of said bar or rod and adapted to be detachably connected to the ends of a set of harness, and an intermediate cord or rod connected to said hooks or catches to adapt the same to move or operate simultaneously, whereby one hook or catch serves through the intermediate rod or cord to hold the other hook or catch in position when both are engaged with the harness, and one hook or catch is automatically operated to lower the harness when that part of the harness connected to the other hook is pulled down on the animal, as set forth.

412,085. Culinary Vessel. Charles Halstead, New York, N. Y. Filed May 13, 1889. Serial No. 311,162. (No model.)



Claim.—1. A culinary vessel having an inner earthenware vessel and an outer metallic casing, and provided with an outlet pipe leading from said inner vessel through said metallic casing, the said pipe having the collar *d*, the elastic packing *w x*, and the nut *e*, said parts being combined substantially as described.

2. A culinary vessel having the earthenware or china bowl A, with a rim, the metallic casing with a bead *n* and handles *o*, and the casing C, open at top and bottom, and provided with an interior supporting-bead *m*, said parts being combined substantially as described.

3. A culinary vessel having an earthenware inner vessel with a metallic encircling-casing, in combination with a metallic casing surrounding the inner vessel, and an outlet-pipe leading from said inner vessel through the inclosing-vessel, the said pipe having the collar *d*, the elastic packing *w x*, the washer *y*, and the nut *e*, substantially as described.

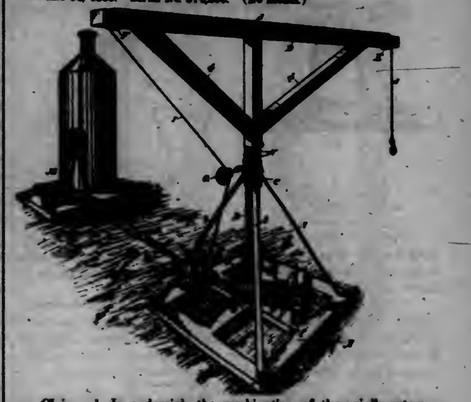
412,086. Shaft-Holder for Vehicles. Philip J. Harran, Rosenfeld, Ind., assignor of one-third to S. Lehman, same place. Filed Aug. 15, 1888. Serial No. 282,961. (No model.)



Claim.—1. The combination, with the thill-coupling having the axle-clip and the shaft or tongue, of the spring-arm herein described, rigidly secured at its forward end to said shaft or tongue and having its rear widened curved end continuously in contact with and bearing against the rear side of said clip, substantially as set forth.

2. The herein-described improved shaft or tongue-holder and anti-rattler, consisting of the combination, with an axle-clip and a shaft or tongue having an inner curved end, of a spring-arm rigidly secured at its forward end to said curved end of the shaft or tongue, and having a rearwardly-inclined curved widened portion provided with two forks constantly in contact with the rear side of said clip, and having end shoulders formed therewith, which, when the shaft or tongue is elevated, engage the under side of the axle, substantially as set forth.

412,087. Derrick. James B. Harrison, San José, Cal. Filed June 14, 1889. Serial No. 314,206. (No model.)



Claim.—1. In a derrick, the combination of the axially-rotary mast, the cross-beam on its top, the sheave in each end of said beam, the hoisting-rope passing from the load end over said sheaves to the power, a pulley on said mast, having ratchet-teeth, a pawl for engaging said teeth, a turning-rope secured to said pulley, whereby the mast may be turned, and a spring for returning the mast, substantially as described.

2. In a derrick, the combination of the axially-rotary mast, the cross-beam on its top, the sheave in each end thereof, a swiveled sheave on the mast, the hoisting-rope passing from the load end over said sheaves to the power, the pulley J on the mast, the turning-rope secured to said pulley, whereby the mast is turned, a retaining-pawl for the pulley, a latch for said pawl, a spring for returning the mast, and a source of power common to both ropes, whereby the load is raised and directed simultaneously, substantially as described.

3. In a derrick, the combination of an axially-rotary mast, the cross-beam on its top, the sheave in each end thereof, the hoisting-rope passing over said sheaves, guide-sheaves for said rope, the pulley J on the mast, having the ratchet-face, the turning-rope secured to said pulley, and a retaining-pawl engaging the ratchet-faced pulley, substantially as described.

412,088. Steam-Heating Coil. Lisle P. Hamphan, New Orleans, La. Filed Apr. 8, 1889. Serial No. 306,573. (No model.)



Claim.—The steam-heating coil consisting of the main outer pipe-coil *a*, having connected therewith at regular intervals apart at their inlet ends the branch involutes D D' D'', the involute continuation *b* of the said main pipe forming the main condensing-pipe, the branch involute D'' connecting with the involute continuation *b*, the involute D'

connecting with involute D″, and involute D connecting with involute D′ about centrally of the plane of the main pipe-coil, substantially as set forth.

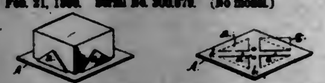
412,089. GLOBE AND REFLECTOR FOR INCANDESCENT LAMPS. THOMAS G. HAWKES, Corning, N. Y. Filed Aug. 31, 1888. Serial No. 284,562. (No model.)



Claim.—1. The combination, with a reflector having an outwardly-extending rim, of an unbroken transparent or translucent shade smaller in diameter than the outwardly-extending rim and secured to the reflector, substantially as set forth.

2. The combination, with a reflector having an outwardly-extending rim and a depending flange, the latter located at the inner edge of the rim, of an unbroken transparent or translucent shade supported by and removably secured to the depending flange of the reflector and completely closing its larger end, substantially as set forth.

412,090. CANDY-HOLDER. MILTON S. HERSHEY, Lancaster, Pa. Filed Feb. 21, 1889. Serial No. 300,679. (No model.)



Claim.—1. A candy-holder made from a single plate having portions of the material in the center cut out, said cut-out portions projecting upward and forming the sides of the holder, and other portions located between said sides extending inward and forming the bottom, substantially as specified.

2. A candy-holder made from a single plate having openings cut through it, the portions of the material cut from the openings projecting upward and forming the sides of the holder, and other portions extending across the holder between the openings and forming the bottom thereof, substantially as specified.

412,091. REVERSIBLE PLOW. JEREMIAH S. HUSER, Pricsburg, Pa. Filed May 20, 1889. Serial No. 312,469. (No model.)



Claim.—1. In a reversible plow, the combination, with a mold-board provided with an apertured projection 17, of a yoke 20, bolted to the inner face of the mold-board, a stud formed upon the yoke and extending forward therefrom, a plow-standard in the heel of which there is an aperture, the plow-standard being provided with a forwardly-extending stud arranged to enter the aperture in the mold-board projection, the yoke-stud being arranged to enter the aperture in the plow-heel, a reversible supporting-bolt 32, said bolt being arranged to engage the yoke, and a hooked bolt 18, which engages the yoke and a hook formed upon the mold-board, substantially as described.

2. A standard 11, integral with the plow-beam and with a handle-plate 12 and a forwardly-projecting stud, and having an eye *k* upon said handle-extension, in combination with the reversible mold-board, the yoke, and the sliding and rotating rocking-rod 33, having a stop 34, and a branch crank-bolt 32, adapted to enter either of the mold-board apertures *g g'*, substantially as set forth.

412,092. SPRAY ATTACHMENT FOR BROOMS. CORNELIA M. JACOBY, St. Louis, Mo., assignor of one-half to Henry L. Heydel, same place. Filed May 20, 1889. Serial No. 310,698. (No model.)

Claim.—1. In combination with a broom, an aspirator secured to the broom and having a nozzle directed away from the broom, and a pressor for working the aspirator, substantially as and for the purpose set forth.



2. In combination with a broom, an aspirator secured to the broom, and a movable sleeve secured to the upper end of the broom, having means for operating the aspirator in the act of using the broom, substantially as and for the purpose set forth.

3. The combination of a broom, an aspirator secured to the broom, a movable arm for compressing the bulb of the aspirator, a movable sleeve located on the handle, and means of connection between the sleeve and arm, substantially as and for the purpose set forth.

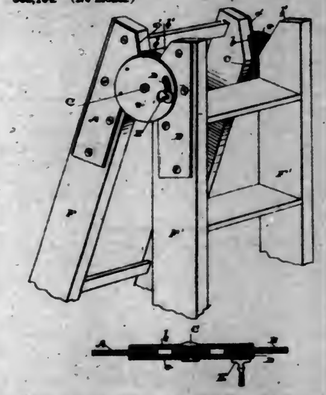
4. The combination of a broom, an aspirator secured to the broom, a spring-retracted arm located over the bulb of the aspirator, a sleeve movably secured to the broom, and means of connection between the arm and the sleeve, substantially as and for the purpose set forth.

5. The combination of a broom, an aspirator secured to the broom, a movable arm located over the bulb of the aspirator, a sleeve movably secured to the broom, the means of connection between the sleeve and arm, and a pulley secured to the broom and over which the connection passes, substantially as and for the purpose set forth.

6. The combination of a broom, an aspirator secured to the broom, a spring-retracted arm located over the bulb of the aspirator, a lever connected to the arm, a cord secured to the lever, a pulley on the upper end of the broom-handle over which the cord passes, and a movable sleeve fitting over the upper end of the handle and to which the cord is secured, and which has a slot-and-screw connection with the handle, substantially as and for the purpose set forth.

7. The combination of the broom, an aspirator secured to the broom, a pressor secured to the broom over the bulb of the aspirator, a lever connected to the pressor by means of a rod, a cord connected to the lever, tube 22, secured to the handle of the broom and through which the cord passes, and a movable sleeve fitting over the upper end of the handle and to which the cord is connected, substantially as and for the purpose set forth.

412,093. HINGE. CARL JAENIG, San Francisco, Cal., assignor of one-half to Max Pauly, same place. Filed Mar. 6, 1889. Serial No. 302,164. (No model.)



Claim.—An adjustable hinge consisting of the straps A B, the disks *a b*, secured to or formed with said straps on relatively opposite sides, whereby each disk overlaps the opposite strap, the central pivot pin or bolt C, uniting the disks, the elongated slot in the overlapping portion of one disk, and the set-screw passing through said slot, substantially as described.

412,094. PHOTOGRAPHIC-PRINTING FRAME. GEORGE A. JAEGER, San Francisco, Cal. Filed Apr. 20, 1889. Serial No. 308,053. (No model.)



Claim.—1. The photographic-printing frame consisting of metallic sides A, with the inwardly-turning flanges A′, and the inclined locking-slots B, with the legs or projections *b*, substantially as and for the purpose herein described.

2. The frame A, having the slots and locking-legs, in combination with the metallic pressure-plate E and the springs D, pivoted thereto, so that the ends of the springs will engage the slots in the sides of the frame and be locked therein, substantially as herein described.

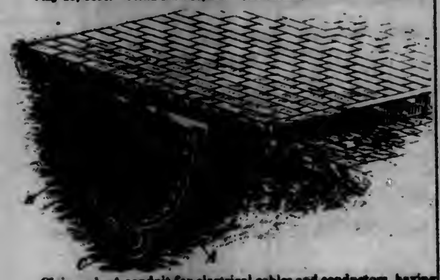
3. The metallic plate made in sections with the adjacent edges meeting, in combination with the facing or covering of felt forming a hinge or flexible connection between the parts and the turned-over edges or flanges of the plates, whereby the flexible facing is held in place, substantially as herein described.

4. The pressure-plate E, held in sections, the re-enforcing bars F, extending across the backs of the sections, and the flexible facing with the turned-over flanges, whereby it is held in place, in combination with the springs having the center portion pivoted to the sections of the plate E, and the outer ends curved upward from the back of the plate, so that the springs may be turned clear of the re-enforcing strips F, substantially as herein described.

5. A photographic-printing frame consisting of the exterior slotted sides stamped from sheet metal and having the inwardly-turned flanges to support the negative and sensitive paper, in combination with the hinged metallic sectional pressure-plates fitting within the frame, and the springs pivoted thereto having their ends adapted to engage the slots and locking-points in the frames, substantially as herein described.

6. The flanged slotted metallic outer frame, the sectional metallic pressure-plate with the flexible front, and the locking or holding springs, together with the yoke or support hinged to the frame and the holding-latch engaging said yoke, substantially as herein described.

412,095. ELECTRIC SUBWAY. ISAAC LA R. JOHNSON, Washington, D. C., assignor of one-half to Oliver T. Thompson, same place. Filed July 29, 1889. Serial No. 318,462. (No model.)



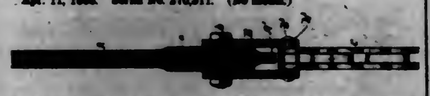
Claim.—1. A conduit for electrical cables and conductors, having a water-repellent non-contacting lining or shell therein which conforms to the outline of said conduit and having brackets thereon for the support of said cables and conductors, substantially as described.

2. A conduit for electric cables and conductors, having a water-repellent non-contacting bracket bearing shell or lining therein, formed of perforated or foraminous material to prevent the collection of moisture beneath the cables, and conductors located on the brackets, substantially as described.

3. A conduit for electrical cables and conductors, having a water-repellent non-contacting lining or shell therein, said lining being divided longitudinally and having dowels and openings for engagement to prevent accidental separation of the sections, substantially as described.

4. In a conduit approximately semi-tubular in form and having an auxiliary drain-pipe, the combination of a water-repellent non-contacting lining or shell therein, longitudinally separable, and having at the meeting edges dowels and orifices for engaging said edges and openings along said edges for the exit of water, substantially as described.

412,096. PIPE-WRENCH. PATRICK H. KANE, Oil City, Pa. Filed Apr. 11, 1888. Serial No. 270,311. (No model.)



Claim.—1. In a chain pipe-tongs, the combination of a lever A, having a toe A′, a link B, pivotally connected with said lever and having one side made movable, as and for the purposes set forth, and a chain C, connected with said link.

2. In a chain pipe-tongs, the combination of a chain for gripping the pipe, an operating-lever having a toe A′, and a link connecting said chain to said lever near said toe, which has one of its sides made movable, as shown, so as to adapt it to receive the chain sidewise.

412,097. SUSPENDERS. JAMES KATZENBERG, New York, N. Y. Filed July 15, 1889. Serial No. 317,324. (No model.)

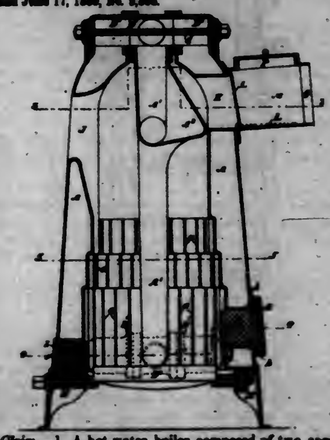


Claim.—1. A suspender having ground straps B connecting the shoulder-straps in the rear, substantially as described.

2. A suspender having the buckles secured to the shoulder-straps on their inner sides and at some distance from their lower front ends and short straps or webs carrying the ends, adjustable in the buckles, substantially as described.

3. A suspender having the buckles secured to the shoulder-straps on their inner sides at some distance from their lower front ends, and short straps or webs carrying the ends adjustable in the buckles, and cord or braid loops at the rear ends of the shoulder-straps and secured directly thereto, substantially as described.

412,098. HOT-WATER BOILER. JAMES KEITH, London, England. Filed July 11, 1888. Serial No. 317,193. (No model.) Patented in England June 17, 1888, No. 8,892.



Claim.—1. A hot-water boiler composed of two approximately semi-cylindrical hollow sections and a central tubular section or heater, constructed and connected substantially as described.

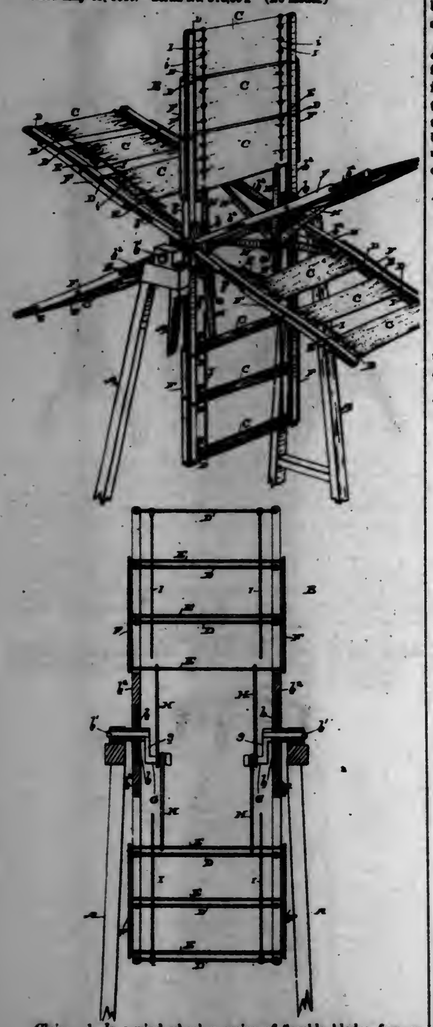
2. In a hot-water boiler, a bifurcated tubular water heater and circulator A′, situated within the combustion-chamber so as to be surrounded by the fire or flame, and having connections at top and bottom to the main water-space of the boiler, substantially as set forth.

3. In a hot-water boiler, the combination, with the double-cased shell recessed to hold a fire-brick, of the ribs or flanges *d* formed in

the outer shell, and the flanged sliding cover H, for securing the fire-brick in place, substantially as described.

4. In a chimney-flue or smoke-pipe for hot-water boilers, a combined draft-regulator, ventilator, and cleaning-door, constructed and arranged to operate substantially as described.

412,099. WIND-WHEEL. JOHN D. KELLER, San Francisco, Cal. Filed May 15, 1889. Serial No. 310,994. (No model.)



Claim.—1. In a wind-wheel, a series of flexible blades, fans, or wings attached at one end firmly to the wheel, pivoted radial arms, the centers of which are eccentric to the center of the wheel, and connections between said arms and the other ends of the blades, fans, or wings, whereby as the wheel rotates said blades, fans, or wings successively open out and fold up, substantially as described.

2. In a wind-wheel, the combination of the series of radial arms b^3 of said wheel, having fixed cross-rods D, flexible or folding wings, fans, or blades secured by one edge to said cross-rods, a series of rotary arms H, the centers of which are eccentric to the center of the wheel, and sliding cross-rods E, connected with said arms and with the other edge of the wings, fans, or blades, whereby the latter successively expand and fold up as the wheel rotates, substantially as described.

3. In a wind-wheel, the combination of the wheel B, consisting of the hubs and radial slotted arms b^3, the fixed cross-rods D between each pair of arms, the flexible or folding wings, fans, or blades C, having one edge attached to said fixed cross-rods, the series of arms H, having pivotal centers located eccentrically to the center of the wheel, the sliding cross-rods E, fitted and guided in the slotted arms of the wheel and connected with the eccentric-arms, and the connecting-bars F, uniting the sliding rods of each series, substantially as described.

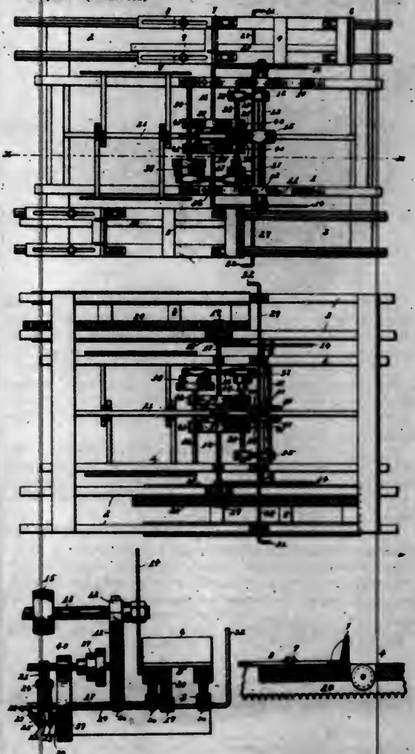
4. In a wind-wheel, the combination of the wheel B, having radial arms b^3, the fixed cross-rods D, secured to the radial arms, the flexible or folding wings, fans, or blades C, secured by one edge to said fixed rods, the series of arms H, having pivotal centers located eccentrically to the center of the wheel, the sliding cross-rods E, to which the other edges of the wings, fans, or blades are secured, said rods being connected with the arms H, the fixed rods I, secured to rods D, and the rings i, secured to the wings, fans, or blades and fitted to slide on the rods I, substantially as described.

412,100. CAKE-CUTTER. GEORGE W. KNAPP, Baltimore, Md. Filed Nov. 23, 1888. Serial No. 292,066. (No model.)



Claim.—A sheet-metal cake-cutter having a vertical fluted cutting-rim A and a top B, said parts A and B being integral, or made of a single piece of sheet metal, substantially as specified.

412,101. PORTABLE CIRCULAR-SAW MILL. JOHN C. LAKE and REUBEN A. LAKE, Big Prairie, Ohio. Filed May 25, 1889. Serial No. 312,100. (No model.)



Claim.—1. In a saw-mill, the combination of a rotary saw-mandrel carrying two saws, two independent carriages arranged to travel in lines at right angles to the axis of said mandrel and at opposite ends thereof, and independent feed-shafts geared to said carriages and rotated in either direction at will from a common feed mechanism, arranged and combined for service substantially as herein shown and described.

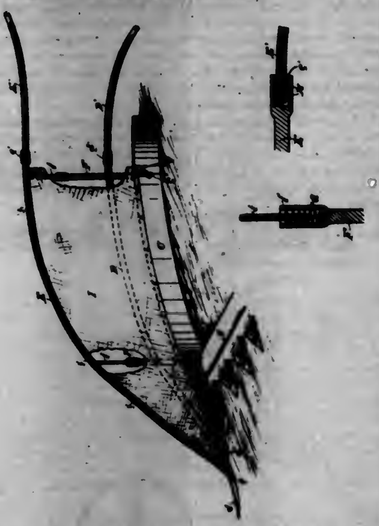
2. In a saw-mill, the combination of a rotary mandrel carrying a saw at each end thereof and two independent carriages arranged at opposite ends of said mandrel in such relation to the saws thereof as to permit the latter to act on the work on the carriage, substantially as described.

3. In a saw-mill, the combination of a rotary mandrel carrying two saws, the carriages, the independent feed-shafts geared to said carriages, and a common feed mechanism driven from the saw-mandrel and adapted to rotate either or both of the shafts in the same or reverse directions at will, substantially as and for the purpose described.

4. In a saw-mill, the combination of a rotary mandrel carrying two saws, the carriages, the independent feed-shafts geared to the carriages and separately mounted in oscillating bearings, a shifting-lever connected to each feed-shaft, and a common feeding mechanism driven from the saw-mandrel and adapted to contact with and rotate either or both of said feed-shafts, according to the adjustment of said feed-shafts, substantially as described.

5. In a saw-mill, the combination of a rotary mandrel carrying two saws, the carriages, the independent feed-shafts geared to said carriages and separately supported in swinging bearings, a shifting-lever connected to each feed-shaft, and a pair of oppositely-rotating shafts located on opposite sides of the feed-shafts and geared to each other and the saw-mandrel, said oppositely-rotating shafts being provided with friction-disks 40 41, against which are adapted to alternately impinge the friction-disk 39 on either of said feed-shafts, according to the adjustment thereof, all arranged and combined for service substantially as and for the purpose described.

412,102. SWATHER. WILLIAM H. LAMBERT, Coyote, Cal. Filed June 26, 1888. Serial No. 278,068. (No model.)



Claim.—1. In a swather, the combination of the board C, secured to the shoe of the mower, the directing-arm E, pivoted at its forward end, the socketed standards F, secured to the board C, the rods *f*, secured to the arm E and fitting in the standards, and the springs G therein supporting the rods, substantially as and for the purpose herein described.

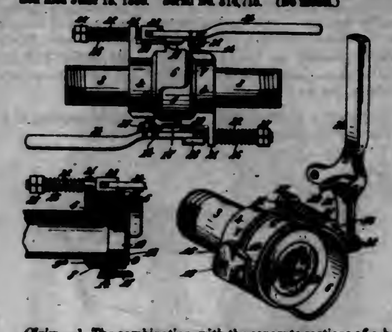
2. In a swather, the combination of the board C, secured to the shoe of the mower, the lower directing-arm D, secured to said shoe, the upper directing-arm E, pivoted to the forward end of the lower arm, the socketed standards F, secured to the board and to the lower directing-arm D, the rods *f*, secured to the upper arm and fitting in the socketed standards, and the springs G in said standards supporting the rods *f*, substantially as described.

3. In a swather, the combination of the board C, the pivoted directing-arm E, the socketed standard F, the thumb-screw or nut fitting in an elongated slot in the board, whereby the standard may be adjusted vertically, the rod *f*, secured to the arm E, and the spring G in the standard supporting the rod, substantially as described.

4. In a swather, and in combination with its directing arms, the extension portions fitted to the rear ends of said arms and axially adjustable, and the springs H, for returning said extensions to position, substantially as described.

5. In a swather, the board C, the directing-arms D and E, and connections F and *f* between said board and arms, in combination with the shield-plate I and the removable portion of the arm E, for clamping the upper edge of said shield to said arm, substantially as described.

412,103. BRAKE-HOSE COUPLING. ERWIN A. LELAND, Brooklyn, N. Y., assignor to Leonard Richardson, same place. Original application filed Apr. 11, 1888, Serial No. 270,787. Divided and this application filed June 18, 1889. Serial No. 314,718. (No model.)



Claim.—1. The combination, with the separate sections of a hose-coupling having side bosses each formed with two convex cam-surfaces struck from different centers, of the pivoted locking-levers each having on its inner side a laterally-projecting and curved cam-flange provided at its upper end with a detent-lug to rest upon the upper side of one of the cam-bosses when the cam-flange of the lever is in engagement with the two convex cam-surfaces of such boss, substantially as described.

2. The combination, with the separate sections of a hose-coupling having side bosses each formed with two convex cam-surfaces struck from different centers, of pivoted lengthwise spring-yielding locking-levers each having on its inner side a laterally-projecting cam-flange provided with a detent-lug to rest upon one of the cam-bosses when the cam-flange on the lever is in engagement with the two cam-surfaces of such boss, substantially as described.

3. In a brake-hose coupling, the combination, with two separate coupling-sections, of locking-levers pivoted upon movable bearings, and springs normally retracting said bearings, each coupling-section being provided with a boss having upon its rearward face two convex cam curves or faces struck from different points and meeting between the top and bottom of the boss, and each locking-lever being provided with a cam-flange having a lug or detent at its upper end to strike the upper side of a boss when the cam-flange is in engagement with the two convex cam-surfaces of such boss, substantially as described.

4. In a brake-hose coupling, the combination, with two separate coupling-sections each having a boss 14, provided with two rearward cam-faces 15 and 16, of locking-levers 24, pivoted upon spring-retracted bearings and provided with cam-flanges 26, having lugs or detents 29 at their ends, substantially as described.

412,104. MOWING-MACHINE. ELLSWORTH M. LEITH, Waverly, N. Y. Filed Aug. 9, 1888. Serial No. 282,308. (No model.)



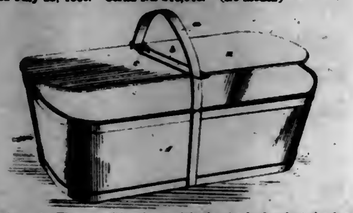
Claim.—1. The combination, in a mowing-machine, of the fixed shear-plate rigidly secured to the finger-bar and provided with teeth

having downwardly and outwardly beveled edges and their points seated in notches in the points of the fingers, the reciprocating cutter-bar located beneath the fixed shear-plate, the teeth of which have upwardly and outwardly beveled edges, and the fingers provided with the open clearing-channel beneath the teeth or blades of the cutter-bar, substantially as described.

2. In a lawn-mower, the main frame constructed as described, having the upper and lower rearwardly-extending brackets *m o*, the lower one of which is provided with the adjustable cup-bearing, in combination with the vertical crank-shaft having the fly-wheel thereon, substantially as and for the purpose described.

3. In a lawn-mower, the combination of the main frame, the drive-wheels, the pinion-shaft mounted in brackets on the main frame and provided with the vertical bevel-wheel in its center and the fixed ratchets near its ends, the pinions loosely mounted on the ends of the pinion-shaft and provided with ratchet-housings containing the spring-controlled dog, the vertical crank-shaft mounted in brackets secured to the main frame, the lower one of which is provided with an adjustable cup-bearing, the fly-wheel mounted on the vertical shaft, the adjustable pitman, and the pivoted lever actuating the sickle-bar, substantially as and for the purpose described.

412,105. FRUIT-BASKET. CHARLES C. LEWIS, Westfield, N. Y. Filed July 25, 1889. Serial No. 318,615. (No model.)



Claim.—1. The combination, with the body having the handle, of the top and a transverse fastening-section looped around the handle and connected to the top at one side of its longitudinal center, substantially as set forth.

2. The combination, with the basket having the handle, of the top and a transverse fastening consisting of a wire looped around the handle, having its ends interlocked and embedded in the top at one side of its longitudinal center, substantially as set forth.

412,106. CULTIVATOR. AUGUST LIENDERS, Moline, Ill., assignor to the Moline Plow Company, same place. Filed Jan. 9, 1889. Serial No. 295,827. (No model.)



Claim.—1. In a cultivator, and in combination with the cross-head having the shovel-standards attached and the fore-and-aft opening therethrough, the beam-plate formed with upper and lower pivot-bearings, substantially as described, adapted to interlock with the cross-head, the upper bearing to resist forward and the lower bearing to resist backward motion of the cross-head, whereby the beam-plate is enabled to hold the cross-head and shovels in operative position without reliance upon a pivot-bolt to receive the strains.

2. In a cultivator, a cross-head provided with a pivot-stud and a seat or cavity, in combination with a beam-plate provided with a cavity to receive the stud and with a journal to enter the seat.

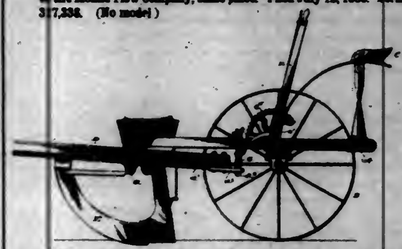
412,107. HARROW. AUGUST LIENDERS, Moline, Ill., assignor to the Moline Plow Company, same place. Filed Mar. 21, 1889. Serial No. 304,129. (No model.)



Claim.—1. The channel-bar and the tooth passing through its edges, in combination with the intermediate spring bearing at its ends on the bar and at its middle on the tooth.

2. In a harrow, the combination of a frame-bar, an upright tooth arranged to slide therethrough, and an intermediate spring acting between the frame and the side of the tooth and held in place by the latter, substantially as shown.

412,108. CORN-PLANTER. AUGUST LIENDERS, Moline, Ill., assignor to the Moline Plow Company, same place. Filed July 12, 1889. Serial No. 317,336. (No model.)



Claim.—1. In a corn-planter, the wheeled frame and the front runner-frame jointed thereto, in combination with two intermediate springs, one resisting the upward and the other resisting the downward movement of the runner-frame.

2. In a corn-planter, the wheeled rear frame and the front runner-frame hinged thereto, in combination with a vertically-adjustable arm on the runner-frame and two springs connecting said arm with the runner-frame, one to resist the upward and the other to resist the downward movement of the runner-frame.

3. In a corn-planter, the wheeled rear frame having the hand-lever, the rock-shaft, the crank-arm, and lever-locking mechanism thereon, in combination with the front runner-frame hinged to the wheeled frame and provided with a rearwardly-extending arm, a vertical bolt passing through the arm of the runner-frame and the crank-arm of the wheeled frame, and two springs applied to said bolt, one to resist the upward and the other to resist the downward movement of the arm of the runner-frame.

4. In a corn-planter, the combination of the wheeled rear frame, the runner-frame jointed to its front and provided with a rearwardly-extending arm, two springs interposed between said arm and the wheel-frame, acting one to resist upward and the other to resist downward motion of said arm, and a bolt for regulating the tension of said springs.

412,109. TOY OR MODEL HORSE. MORITZ LIENDER, Berlin, Ontario, Canada. Filed Dec. 20, 1888. Serial No. 294,057. (No model.) Patented in Canada May 9, 1885, No. 21,630.



Claim.—1. A hollow imitation figure consisting of a flat vertical wooden skeleton having the bulky portions covered with a shell in two halves molded upon a properly-shaped model, said shell consisting of cemented layers of stiffened fabric, the parts of the shell subjected to pressure supported by ribs upon the skeleton, and the slender limbs finished in solid material and secured to said skeleton, substantially as set forth.

2. In hollow toy or model figures, a covering of felt in imitation of natural skin, in combination with a molded shell composed of two halves and consisting of layers of stiffened fabric and solid limbs, all secured to a flat vertical skeleton strengthened by ribs, substantially as set forth.

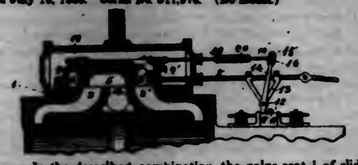
412,110. MOLD-BOARD PLOW. EDWARD P. LYNDE, Davenport, Iowa. Filed Dec. 22, 1888. Serial No. 294,266. (No model.)



Claim.—1. The mold-board plow comprising the share, the solid forward end of the mold-board, the series of independent elastic arms extending rearward from said solid portion and each free at its rear end, and the adjusting devices at the forward ends of the individual arms, whereby the rear end of the mold-board is given a slatted form, rendered elastic, and adapted to be changed in shape at will.

2. In a mold-board, the combination of a series of elastic arms or slats forming the rear part of the board and free to vibrate at their rear ends, a solid support to which the arms are bolted at their forward ends, and intermediate adjusting devices for changing the position of the individual arms to or from the land, whereby an elastic board of variable form is produced.

412,111. CUT-OFF VALVE. ROBERT R. HOOER, Field's Store, Tex. Filed July 19, 1889. Serial No. 317,976. (No model.)



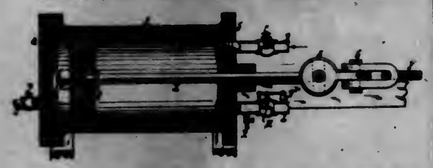
Claim.—In the described combination, the valve-seat 1 of slide-valve 4, the entrances of whose steam-passages 6 6' form seats 8 8' for auxiliary valves 9 9', pivoted to yoke 11 11' on a rod 10, whose stud 16 occupies said slot 15 in upper portion of arm 14, pivoted to pendant 13 from main valve-rod 7 and terminating in tappet 14', the same being combined with the adjustable stops 17 17', substantially as set forth.

412,112. SNAP-HOOK. THOMAS T. MORROW, Carr, Mich. Filed May 14, 1889. Serial No. 310,703. (No model.)



Claim.—The improvement in hooks, substantially as described and shown, consisting of the ferrule or support having one end socketed to fit a whiffletree or the like and provided at its other end with a slot B, the inner wall of which is formed to provide a stop for the shank-arm of the hook proper and the hook proper having a shank-arm *c* and a point-arm *c'*, the said shank-arm *c* being pivoted at or near its extremity to the ferrule or support at a point near the rear edge of the ferrule and close to the inner stop-wall of the slot, whereby, when the hook is closed, its shank-arm will bear against said stop-arm, and when open said arm will rest with its inner side approximately flush with the rear edge of the support, thereby leaving the opening to said hook unobstructed, substantially as and for the purpose set forth.

412,113. SURGE-RELIEVER. WILLIAM MURPHY, New York, N.Y. Filed June 6, 1889. Serial No. 313,269. (No model.)



Claim.—1. The combination of a hawser, a piston connected therewith, and a cylinder containing the piston and having one end provided with two independent valves, one opening to admit a fluid into the cylinder at one side of the piston and the other connected with a pressure attachment and opening at a certain pressure to permit the outlet of a fluid from the cylinder at that side of the piston to which such fluid was admitted, substantially as described.

2. The combination, with the cable or hawser F and a piston-rod and piston connected to said hawser, of a cylinder for said piston, said cylinder being provided at one of its heads with an inlet-valve C, an outlet-valve M, having a pressure attachment, and an opening O and valve P, situated at the other cylinder-head, substantially as described.

3. The combination, with the cable or hawser F and a piston-rod and piston connected to said hawser, of a cylinder for said piston, said cylinder being provided with an inlet-valve C and an outlet-valve M, having a pressure attachment, a cross-head H for the piston-rod, guides I for said cross-head, and springs K, acting on said cross-head, substantially as described.

412,114. ATTACHMENT FOR TYPE-WRITING MACHINES. JOHN MCSWEENEY, Wilmington, Del. Filed Apr. 19, 1888. Serial No. 271,186. (No model.)



Claim.—1. The base-plate 1, the screw 2, and the slotted base-plate 3, the vertical bar 4', the cross-rod 5, the bent rods 6 6, a cross-plate 7, vertical standards 8 8, the levers 9 9, the bearing-plates 10 10, and knee-pieces 11 11, all combined and arranged as and for the purpose described.

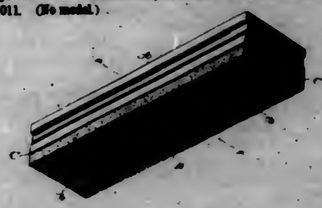
2. The combination of the following elements: the base-plate 3, adapted to rest upon the machine, the vertical standards 8 8 on the base-plate 3, the actuating-levers 9 9, the dependent bar 4', the sliding rod of the levers, and the knee-pieces adapted to actuate the sliding rods, as described.

412,115. THERMOSTAT. JAMES L. NIX, Homer City, Pa. Filed May 8, 1889. Serial No. 310,054. (No model.)



Claim.—The combination of the two arms m and m', secured together rigidly at one end, the rod m^2, attached to the upper arm, with the lever O, having a weighted short arm *o* and a long arm o^2, and the damper h, hanging loosely at the end of the long arm, substantially as and for the purposes set forth.

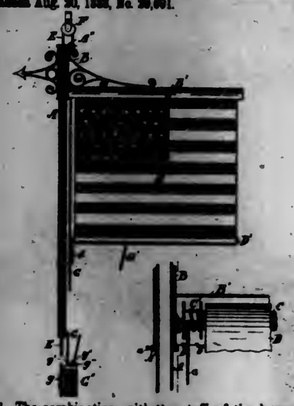
412,116. BLACKBOARD-ERASER. JOHN F. PALMER, Chicago, Ill., assignor to Thomas Kane, same place. Filed May 16, 1889. Serial No. 311,011. (No model.)



Claim.—1. In a blackboard-eraser, the combination of the block or body, the facing of soft material, as felt, and the intermediate sheet cemented to the body and to the facing.

2. As a new article of commerce, the facing for blackboard-erasers, consisting of the erasive fabric and a backing-sheet cemented on one face to the fabric and coated on the other face with a soluble adhesive.

412,117. **FLAG-STAFF.** JOSEPH POIRÉ, St. Joseph de Lovis, Quebec, Canada. Filed Oct. 1, 1888. Serial No. 286,990. (No model.) Patented in Canada Aug. 20, 1888, No. 30,601.



Claim.—1. The combination, with the staff, of the laterally-extending vertically-adjustable arm, and the flag-carrying roller journaled in said arm, substantially as specified.

2. The combination, with the vertical staff, of the horizontal arm having the longitudinal recess in its under side, and the roller for receiving the flag journaled in the recess in the arm, whereby the flag is protected from the weather within the arm when furled.

3. The staff, the horizontal arm thereon, the roller journaled in said arm and having the drum, and the flag on said roller, in combination with the operating-cord having one end connected to the flag and its other end connected to the drum, substantially as described.

4. The staff, the supporting-arm sustained thereby, the roller journaled in said arm and having the winding-drum, the flag attached to said roller, the rod attached to the free end of the flag, and the operating-cord connected, respectively, to the drum and the rod, in combination with the counter-balance suspended loosely from the operating-cord and arranged to permit a relative movement of the cord as the flag is furled and unfurled, substantially as described.

5. The roller, its supporting-arm, the flag on said roller, and its operating-cord, in combination with the counter-balance loosely suspended from said cord and arranged to move thereon, and the clamp on the said counter-balance constructed to engage the cord and hold it in a fixed relation thereto, whereby the flag may be held in varying positions.

6. The staff, the horizontal arm sustained thereby, the roller journaled in said arm and having the drum, the flag carried by said roller, the rod attached to the end of the flag and guided by the staff, and the operating-cord connected, respectively, to the drum and the rod, in combination with the guided counter-balance suspended loosely from the said cord, and the guide on which the counter-balance moves.

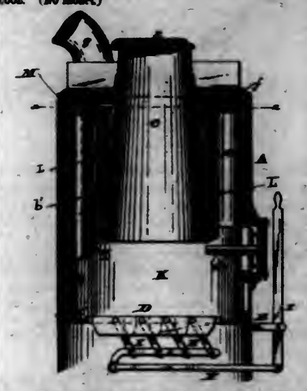
7. The combination of the main supporting-staff, the series of supplementary staffs provided with flag-carrying rollers, and the supports for said supplementary staffs connected to the main staff and to the said supplementary staffs, substantially as described.

8. The combination, with the main central staff, of the series of supplementary staffs grouped thereabout, the vertically-movable arms provided with the flag-carrying rollers, and the disks H' and H, adjustable on the main staff and arranged to sustain the arms and supplementary staffs, respectively.

9. A flag-staff A, having a tube B, centered upon it, held in place by a collar *a*, carrying an arm B', having stirrup-bearing *b*, in which is a roller C, having a pulley C', and carrying a flag or banner D, held steady by means of a weighted rod D', connected to the said staff by means of the sliding bracket *d*, and operated by the cord G G' and weight G^2, substantially as set forth.

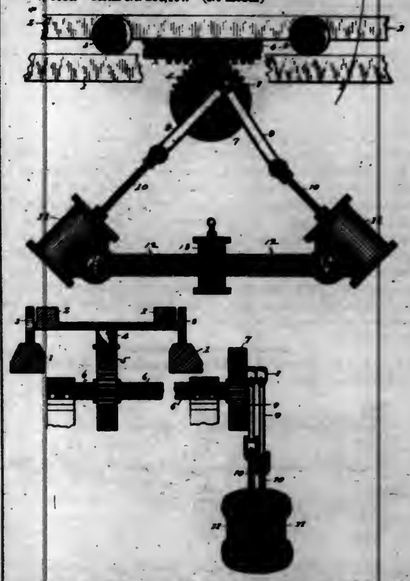
10. The combination, with the staff, of the laterally-extending arm, the flag-carrying roller journaled in said arm, and suitable mechanism, substantially as shown, for revolving said roller to furl and unfurl the flag.

412,118. **BOILER.** HERMAN H. PRAHSE, Akron, Ohio, assignor of two-fifths to C. C. McNeil, same place. Filed May 8, 1889. Serial No. 310,002. (No model.)



Claim.—The herein-described boiler, consisting of the outer annular casing provided near its lower end with an inwardly-extending annular ledge, an annular wall supported by said ledge and extending to within a short distance of the top of the boiler, an inner annular wall concentric with said ledge-supported wall, the connecting cap or dome provided with a series of perforations, the alternating drop water-tubes and smoke-bonnets, said tubes provided with closed bottoms, the circulating-tubes provided with open ends, and a central magazine, the space between the same and the inner annular wall forming a water-leg communicating at its top with a horizontal extension, and the space between the outer ledge-supported wall and the outer casing also forming a depending water-leg communicating with the upper horizontal portion and the space between the two annular walls forming the smoke-flue, substantially as set forth.

412,119. **MECHANISM FOR RECIPROCATING THE LOG-CARRIAGES OF SAW-MILLS.** GEORGE R. RAY, Manistee, Mich. Filed Nov. 7, 1888. Serial No. 290,197. (No model.)



Claim.—1. In a saw-mill, the combination, with a log-carriage provided with a toothed or cogged rack and a track for said carriage, of a shaft journaled with its inner end transversely below said track and provided with a pinion which meshes with said rack, and steam-cylinders provided with piston-rods which are directly connected to the outer end of said shaft and arranged at one side of said track, substantially as and for the purpose described.

2. In a saw-mill, the combination, with a log-carriage provided with a toothed or cogged rack and a track for said carriage, of two steam-cylinders provided with piston-rods, and a horizontal shaft arranged centrally between said cylinders and provided at its inner end with a pinion which meshes with said rack and at its outer end, which projects out from one side of said track, with a crank-disk which is provided with a crank-pin, to which said piston-rods are pivoted, substantially as and for the purpose described.

3. In a saw-mill, the combination, with a log-carriage provided with a cogged rack, a track for said carriage, and a shaft geared to reciprocate said carriage, of a crank-disk mounted upon the outer end of said shaft at one side of said track and provided with a crank-pin, and two steam-cylinders, which are inclined at right angles to each other and provided with piston-rods, which are pivoted to said crank-pin, substantially as and for the purpose described.

4. In a saw-mill, the combination of the track 1, the reciprocating log-carriage 2, provided with the rack 4, the transversely-arranged horizontal shaft 6, provided with the pinion 5, meshing with said rack and with the crank-disk 7, which projects out from one side of said track and is provided with the crank-pin 8, the steam-cylinders 11, inclined at right angles to each other, the piston-rods 10, and the connecting-rods 9, pivoted to said crank-pin, substantially as and for the purpose described.

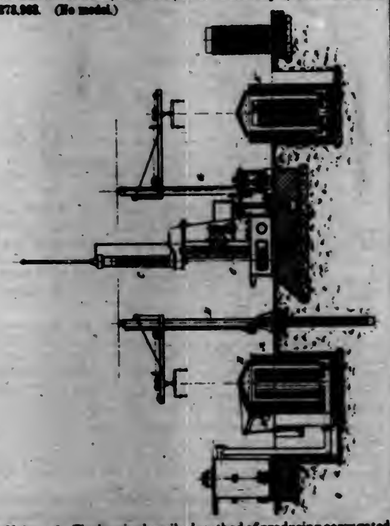
5. In a saw-mill, the combination of the track 1, the log-carriage 2, provided with the rack 4, the two steam-cylinders 11, the piston-rods 10, the connecting-rods 9, and the horizontal shaft 6, provided at its inner end with the pinion 5, which meshes with said rack, and at its outer end with the crank-disk 7, which is projected out from one side of said track and provided with double-journaled crank-pin 8, to which said connecting-rods are directly pivoted, substantially as and for the purpose described.

412,120. **BRUSH FOR MOISTENING THE SHEETS OF COPYING-BOOKS.** GEORGE R. RICKETTS, Goshen, Ind. Filed Feb. 26, 1889. Serial No. 301,220. (No model.)



Claim.—In a letter-press brush, the stock comprising the ovoid handle and the flat flaring holder, the web having the reduced inner portion fitting in the holder, the thumb-nut and screw in the holder for regulating the flow of the liquid to the web, and the band having the bends forming a support for the holder, substantially as described.

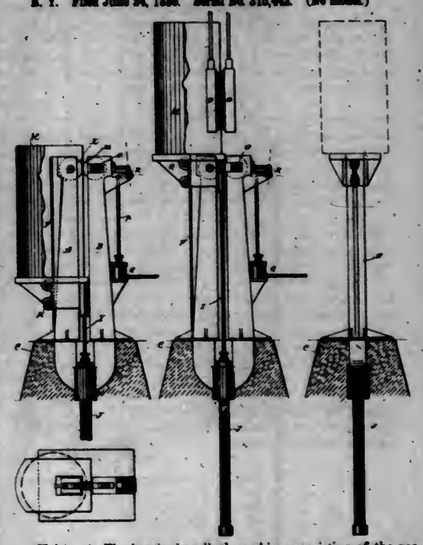
412,121. **METHOD OF PRODUCING CORRUGATED CYLINDERS.** THOMAS P. ROWLAND, New York, N. Y. Filed July 3, 1888. Serial No. 278,262. (No model.)



Claim.—1. The herein-described method of producing corrugated cylinders, consisting in placing a plain cylinder in an upright position in a furnace, and while in such position bringing it to a working-heat, and then, while still maintaining the cylinder in a vertical position, removing it from the furnace to and corrugating it between suitable rolls, substantially as described.

2. The herein-described method of producing corrugated cylinders, consisting in bringing a plain cylinder to a working-heat while in an upright position, and still maintaining the cylinder in the upright position, corrugating it between suitable rolls, and then reheating and annealing it, substantially as described.

412,122. **WELDING-MACHINE.** THOMAS P. ROWLAND, New York, N. Y. Filed June 24, 1889. Serial No. 315,442. (No model.)



Claim.—1. The herein-described machine, consisting of the vertically-arranged arms A B, provided at their upper free ends with welding-rolls.

2. The herein-described welding-machine, consisting of the vertically-arranged arms A B, welding-rolls journaled in said arms, and a vertically-moving blank-carriage.

3. The combination of the vertically-arranged arms A B, the blank-carriage mounted upon one of said arms, and the carriage-operating power-cylinder, the welding-rolls, and the power-cylinder for adjusting them.

4. The combination of the arms A and B, the blank-carriage mounted and moving on one of said arms, the power apparatus for operating the same, the welding-rolls L and M, and the power apparatus P Q R, for adjusting the roll M.

412,123. **CARRIAGE-HINGE.** GEORGE H. ROTH, Rochester, N. Y., assignor to the James Cunningham Son & Company, same place. Filed Jan. 8, 1889. Serial No. 295,761. (Model.)



Claim.—1. The plate F, adapted to be secured to a coach-body and provided on one side with a hinge-arm D, adapted to be secured to the folding pillar and also provided on the same side with flanges to support the detachably-fixed arm *r* of the door-hinge, substantially as set forth.

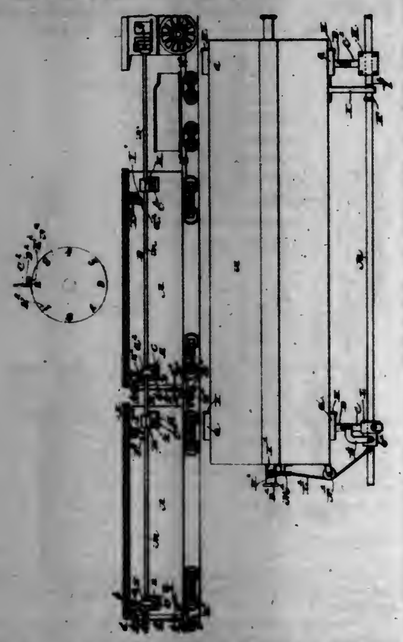
2. The combination, with the body B, of the door A, concealed

bent hinge-arm E E', plate F, and detachable pivot-supporting arm *r*, substantially as described.

3. The combination, with the hinge-plate F of a concealed carriage-door hinge provided with internally-projecting flanges *s f*, of the detachable pivot-supporting arm *r*, inserted between the flanges and secured to the outer face of the plate, substantially as described.

412,124. DEVICE FOR COUPLING AND UNCOUPLING CARS.

JOHN H. SCARBROUGH, Americus, Ga. Filed Feb. 13, 1889. Serial No. 299,723. (No model.)



Claim.—1. In a device for coupling and uncoupling cars, the combination of a longitudinal shaft attached to a car in such a manner as to be capable of longitudinal movement, a hook extending radially from said shaft, a horizontally-arranged arm or lever having a block provided with a downwardly-extending eye adapted to engage the said hook, and a rope passing over suitable guide-pulleys and connecting the said block with the coupling-pin, substantially as herein described.

2. The combination of the longitudinal shaft, the boxes or bearings mounted upon the outer ends of the arms or brackets in such a manner as to be capable of longitudinal movement, and the sockets connected pivotally with the inner ends of the arms or brackets and having flanges whereby they are mounted in and enabled to slide longitudinally in suitable casings attached to the side of the car, substantially as set forth.

3. The combination of the sockets D D, having slots I, the arms C C, mounted pivotally in said slots, and the springs J, arranged in said slots and bearing against the pivot-pins, substantially as set forth.

4. The combination of the arm or bracket C, arranged as herein described, the pin or bolt Q, the lever P', and the block O', connected with the coupling-pin by means of a rope passing over suitable guide-pulleys, substantially as herein set forth.

5. The combination of the shaft-section N, mounted to revolve in the coupling-box L, and having a polygonal recess at its front end, with the shaft-section N, adapted to be mounted detachably in the said coupling-box, and provided with a nipple or extension adapted to enter the said recess in the section N, substantially as set forth.

6. The combination of the coupling-box L, having the flaring mouth V, provided with the tapering rib or flange W, with the shaft-section M, mounted to revolve in said coupling-box, and the shaft-section N, having the flange T, provided with notch U, substantially as set forth.

7. The combination of the coupling-box L, having flaring mouth R, provided with rib or flange W, the shaft-section M, mounted to revolve in said shaft-coupling box and having recess R, and the shaft-section N, having notched flanges T and nipple or extension S, substantially as set forth.

8. In a device for coupling and uncoupling cars, the combination, with suitable supports or bearings, of a longitudinally movable and revoluble shaft extending through the entire length of the train and composed of sections connected to the individual cars thereof, and suitable means for connecting or coupling together the said shaft-sections and for uncoupling or disconnecting them at any particular time when it is desired to break the train, substantially as herein described.

9. In a device for coupling and uncoupling cars, a longitudinal shaft extending through the entire length of the train and composed of longitudinally-movable sections attached to the individual cars, in combination with the shaft-couplings, constructed substantially as described, and so arranged as to admit of the shaft being disconnected only at one particular point at a given time, substantially as set forth.

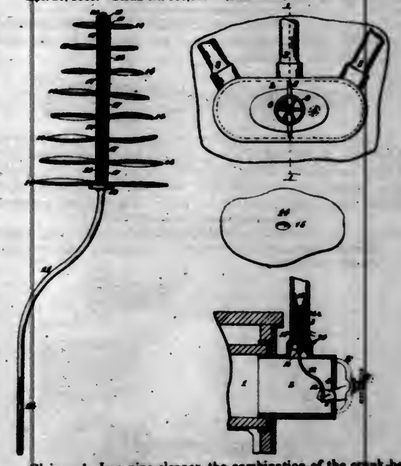
10. In a device for coupling and uncoupling cars, the combination of the longitudinally-movable shaft, the herein-described couplings for connecting the sections of the same, and an indicator-disk at the front end of said shaft accessible to the engineer and having numbered notches that correspond with and may be brought into alignment with the shaft-couplings of any correspondingly-numbered car, substantially as herein described.

11. The hooks and eyes G^3 F^3, extending radially from the shaft-sections M and N, and registering with the notches U, formed in the flanges T upon the shaft-sections N, substantially as and for the purpose set forth.

12. The combination of the shaft B, the brackets N^3, journaled upon the said shaft and having their rack-bar M^3, the transverse shaft B^3, having pinion O^3, and the hand-wheel Q^3, substantially as and for the purpose set forth.

412,125. PIPE-CLEANER.

JOHN SHRIPPEL, St. Louis, Mo. Filed Apr. 20, 1889. Serial No. 308,073. (No model.)



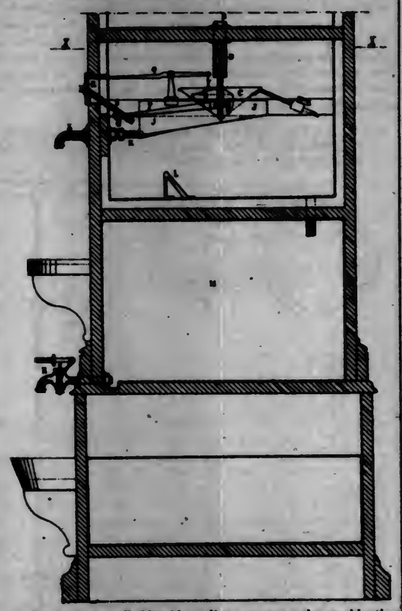
Claim.—1. In a pipe-cleaner, the combination of the crank-bent shank 11, having a handle 12 at one end and an extension disk-bearer rod 13 at the other end, and the succession of disk-cutter bits 14, of diverse diameters, the said disks being secured and spaced on said bearer-rod in respective conical position, the diameter of said disks being reduced toward the point or front of the auger, substantially as described, and for the purpose set forth.

2. In a pipe-cleaner, the combination of the crank-bent shank having a handle at one end, an extension disk-bearer rod at the other, and a flanged shoulder between said shank proper and said disk-bearer rod, the conically-placed disk-bits of diverse diameters, the said disk being bent into a curvilinear form to provide a biting-grip of the auger when worked, and the sleeve-rings 17, that are seated on the disk-bearer rod and space apart the respective distance of the disks, the said disks being held to their seats by a washer and screw-nut, which latter engages on the screw-terminal or point of the disk-bearer rod, substantially as described, and for the purpose set forth.

412,126. COIN-OPERATED LIQUID-VENDING APPARATUS.

HENRI SOULOMBRE and BENJAMIN DÉSIRÉMONT, Marseilles, France. Filed June 11, 1889. Serial No. 313,891. (No model.) Patented in France July 3, 1888, No. 191,374.

Claim.—1. In a coin-controlled liquid-vending apparatus, the combination of an oscillatory delivery-vessel or tipper pivotally supported at an intermediate point of its length, a valved supply-pipe for delivering liquid directly to said vessel or tipper, a vertically-movable float located within said vessel or tipper, and connected by intermediate devices with the valve to regulate the quantity of liquid supplied to the vessel or tipper, and a coin-operated lever carried by said oscillatory vessel or tipper to tilt the latter and cause it to discharge its contents upon the introduction of a coin of proper denomination to said coin-lever, substantially as described.



2. In a coin-controlled liquid-vending apparatus, the combination of an oscillatory delivery-vessel or tipper pivotally supported at an intermediate point of its length, and having means for counterbalancing the same, a stationary trough arranged to receive the contents of the vessel, mechanism, substantially as described, for automatically refilling the vessel with a predetermined quantity of liquid after the vessel has been tilted to discharge its contents, and a coin-operated lever rigidly secured to said vessel to tilt the latter, substantially as and for the purpose described.

3. In a coin-controlled liquid-vending apparatus, the combination of an oscillatory counterbalanced delivery-vessel or tipper, a coin-operated lever connected to said vessel to tilt the latter, a fixed coin-way intermediate the coin-slot and lever to guide the coin to the lever, a float operating in said delivery-vessel, a lever connected at one end to the float and carrying a coin-detaining plate at its opposite end, which plate is adapted to close the coin-slot when the supply of liquid is exhausted, and mechanism, substantially as described, for automatically refilling said vessel with a predetermined quantity of liquid, substantially as and for the purpose described.

4. In a coin-controlled liquid-vending apparatus, the combination of an oscillatory delivery-vessel or tipper, a supply-pipe leading from a suitable tank or reservoir and having an automatic valve, and a float operating in said vessel and connected to the valve to normally close the same and automatically open it when the vessel is emptied of its contents, arranged and combined for service substantially as herein shown and described.

5. In a coin-controlled liquid-vending apparatus, the combination of an oscillatory delivery-vessel or tipper, a supply-pipe having an automatic valve, a float operating in said vessel and connected to the valve to control the latter, and a coin-operated lever connected to said vessel to tilt the latter, substantially as and for the purpose described.

6. In a coin-controlled liquid-vending apparatus, the combination of an oscillatory counterbalanced delivery-vessel or tipper, a supply-pipe having an automatic valve, a float operating in said vessel and connected to the valve, a coin-operated lever fixed to the vessel, and a coiway beneath which the free end of said lever is normally arranged to receive the coin directly therefrom, substantially as and for the purpose described.

7. A fixed inclined coiway having a coin-slot of the proper diameter formed therein, and a lever carried by a tiltable vessel or receptacle and normally held by the latter in position beneath the coiway to receive a coin after it passes through the slot in said coiway, for the purpose described.

8. A fixed inclined coiway having a coin-slot, a tiltable receptacle, and a lever carried by said receptacle and having a coin-holder at its free end, said coin-holder being provided with vertical prongs *g*, for the purpose described, substantially as set forth.

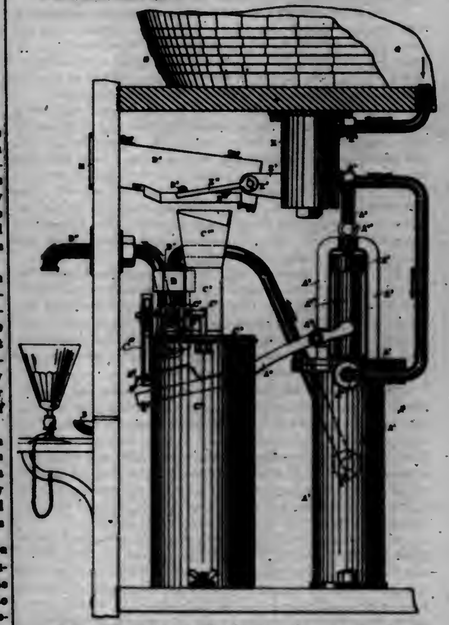
9. In a coin-operated liquid-vending apparatus, the combination of an oscillatory delivery-vessel or tipper, a fixed supply-pipe leading from a suitable tank and having a valve-seat, a float operating in said vessel, and an endwise-movable valve-stem connected to said float and having a valve fitted in the supply-pipe, for the purpose described, substantially as set forth.

10. In a coin-operated liquid-vending apparatus, the combination of an oscillatory vessel or tipper, a supply-pipe leading from a suitable reservoir or tank and having an automatic valve, a float operating in said vessel and connected to the valve, a water-chamber arranged to deliver a predetermined quantity to said vessel, and a water-supply pipe leading to the water-chamber, substantially as and for the purpose described.

11. In a coin-operated liquid-vending apparatus, the combination of an oscillatory vessel or tipper, a water-chamber having an independent supply-pipe and arranged to deliver its contents to said vessel, a supply-pipe leading from a beverage-tank and having an automatic valve, a float operating in the vessel and connected to said valve, a lever controlled by the float and having a coin-detaining plate at one end, an elevated chamber intermediate the beverage-tank and its supply-pipe, and a float in said chamber having a rod which connects with the lever, all arranged and combined for service substantially as described, for the purpose set forth.

412,127. COIN-OPERATED LIQUID-VENDING APPARATUS.

HENRI SOULOMBRE and BENJAMIN DÉSIRÉMONT, Marseilles, France. Filed June 11, 1889. Serial No. 313,892. (No model.) Patented in France Mar. 4, 1889, No. 192,462.



Claim.—1. In a coin-controlled liquid-vending apparatus, the combination of a delivery pressure-cylinder, a valve-chest communicating with said cylinder and having an automatic valve, a coin-controlled lever connected with said valve to automatically open the latter and permit the liquid from the pressure-cylinder to escape through the

valve-chest, and mechanism for closing said valve when the pressure-cylinder is emptied, all arranged and combined for service substantially as and for the purpose specified.

2. In a coin-controlled liquid-vending apparatus, the combination of a pressure-cylinder having a piston, a valve-chest communicating with said cylinder, a coin-operated lever arranged in the path of the coin deposited in the machine, a valve located in said valve-chest and connected with said coin-operated lever to be maintained thereby in a normally closed position, and mechanism connected to said valve and arranged to be operated by the piston to close the valve when the pressure-cylinder is emptied, substantially as and for the purpose described.

3. In a coin-controlled liquid-vending apparatus, a pressure-cylinder having an outlet at or near its lower portion and a piston operating in said cylinder and provided with an inlet-port and a piston-rod, the area of exposed surface on the upper side of the piston being less than the exposed area on the lower side thereof, for the purpose described, in combination with a valve-chest which communicates with the outlet of said pressure-cylinder, a valve, and a coin-operated lever connected to said valve, all arranged and combined for service substantially as described.

4. In a coin-controlled liquid-vending apparatus, a pressure-cylinder, a reciprocating piston operating therein, and an adjusting-screw arranged to limit and vary the stroke of said piston to regulate the capacity of the cylinder for holding liquids, in combination with a valve-chest communicating with the cylinder and having an automatic valve, and a coin-operated lever for operating the valve, substantially as described.

5. In a coin-controlled liquid-vending apparatus, the combination of a pressure-cylinder, a valve-chest communicating with said cylinder, an automatic valve housed within said valve-chest, a coin-operated lever having a trip-pawl, and a lever connected to said valve and normally supported by said trip-pawl, all arranged for service substantially as described, for the purpose set forth.

6. In a coin-controlled liquid-vending apparatus, the combination, with a pressure-cylinder and a valve-chest having a valve, of a coin-tube, a lever arranged in the path of the coin that passes through said coin-tube, and another lever connected to the valve and normally sustained by the coin-operated lever in an elevated position to close the valve, substantially as and for the purpose described.

7. In a coin-controlled liquid-vending apparatus, the combination, with a pressure-cylinder and a valve, of a lever connected to said valve, a coin-operated lever for sustaining the valve-lever in an elevated position, and a lever operated by the piston of the pressure-cylinder to raise the valve-lever after it has been released by the coin-operated lever, substantially as and for the purpose described.

8. In a coin-controlled liquid-vending apparatus, the combination, with a pressure-cylinder and an automatic valve, of a coin-operated lever having a trip-pawl, a lever connected at one end to said valve and resting at its other end on the trip-pawl, and a lever fulcrumed on the pressure-cylinder to be operated by the piston thereof and having its free end arranged to lift the valve-lever, whereby, when said valve-lever is lowered after its disengagement with the coin-operated lever to open said valve, the descent of the piston actuates the piston-lever to elevate the valve-lever and cause it to re-engage with the trip-pawl, substantially as described.

9. In a coin-controlled liquid-vending apparatus, a valve-chest having a valve-seat and the aligned guides, a vertically-movable valve-stem fitted in said guides and carrying a valve, and a rock-shaft having an arm at one end on which the lower end of the valve-stem rests, in combination with a lever fixed to the extended end of said rock-shaft, a coin-operated lever for normally elevating the valve-lever, and a pressure-cylinder, substantially as described.

10. In a coin-controlled liquid-vending apparatus, the combination of a vertical coin-tube having a slot, a counterbalanced lever fulcrumed on an axis C^9 and having its free end fitted in the slot of the coin-tube, a trip-pawl carried by said lever, a valve-lever normally fitted on said pawl, an automatic valve controlled by said valve lever, a pressure-cylinder, and a bifurcated lever fulcrumed on the pressure-cylinder, with one end arranged in the path of a protuberance on the piston of the cylinder and having its other end arranged to lift the valve-lever, substantially as and for the purpose described.

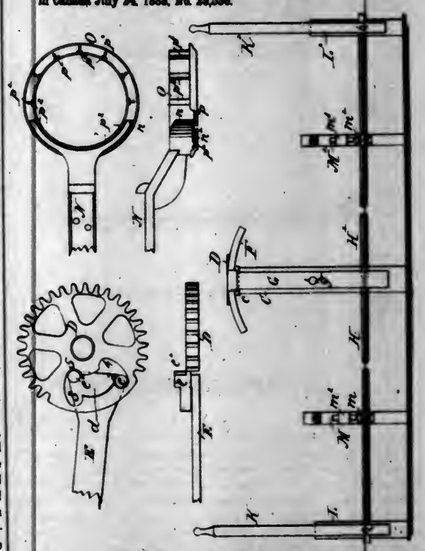
11. A coin-receiver having a longitudinal coin-passage and a transverse opening which extends through one side and the lower edge of said coin-passage, combined with a counterbalanced plate arranged in said transverse opening at the base of the coin-passage and forming a continuation of the bottom of the coin-passage, to sustain a coin of proper denomination as it passes across said opening, substantially as described.

12. In a coin-operated liquid-vending apparatus, a fixed coin-receiver having a longitudinal coin-passage and a series of transverse openings which intersect said longitudinal passage and extend through one side and the bottom of the coin-passage, combined with a counterbalanced plate fitted in each of said transverse openings at the base of the coin-passage and forming a continuation of the bottom thereof, a series of levers, each of which carries one of the plates, and a common fixed support on which all of the levers of the series are fulcrumed, substantially as described.

13. In a coin-operated liquid-vending apparatus, the combination, with a coin-receiver and a counterbalanced plate, of a float-receptacle which communicates with the source of liquid-supply for the vending apparatus, and a float connected by intermediate devices with said counterbalanced plate to hold the latter against movement under the weight of a coin, substantially as and for the purpose described.

14. In a coin-operated liquid-vending apparatus, the combination, with a coin-receiver, of a plate carried by a counterbalanced lever, a float-receptacle having a rock-shaft journaled in one end thereof, a float, an arm carried by the rock-shaft and jointed to the float, and a lever intermediate of the rock-shaft and the counterbalanced lever, substantially as described.

412,128. FARM-GATE. ISAAC S. SHERWIN, Toronto, Ontario, Canada. Filed May 13, 1889. Serial No. 310,662. (No model.) Patented in Canada July 24, 1888, No. 28,536.



Claim.—1. In a farm-gate, the combination, with the posts and levers for opening and closing the gate from either side, of an oscillating bar pivoted to the hinge-post, a curved segmental gear carried by such bar, a slotted gear mounted on such hinge-post, and an arm affixed to the gate and engaging with such slotted gear in such manner that by the operation of the levers the gate will be raised and unlatched at its front end and swung back in either direction, substantially as specified.

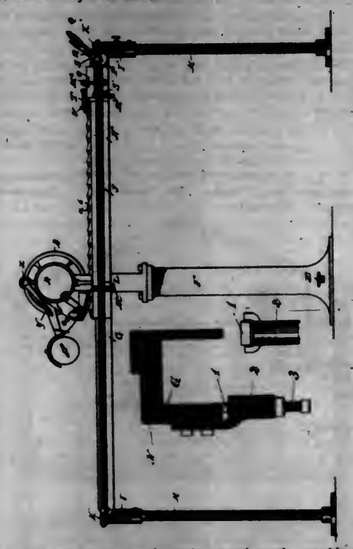
2. In a gate apparatus, the combination, with a segmental gear and levers for operating same, of a horizontal gear having a slot with four recesses, and an arm affixed to the gate and having two pins or projections entering such slot and adapted to be drawn into pairs of such recesses alternately, and thus afford a leverage for lifting and swinging the gate, substantially as described.

3. In combination, the gate, the gate-post, the horizontal segmental gear thereon, a rack having operating-connections to each side of the gate, and a connection between the segmental gear and the gate, substantially as described.

4. The combination, with the gate and its posts and with the gears D and F and their connections, of the pivoted bar G, rods H H', posts L L', and operating-levers K K', substantially as and for the purpose described.

412,129. MACHINE FOR STAPLING PIPE-COVERINGS. JAMES H. SHIELDS, Chicago, Ill. Filed Nov. 19, 1888. Serial No. 291,294. (No model.)

Claim.—1. In a machine for stapling pipe-coverings, the combination, with a wire-stapling machine, of a supporting-bar underlying the stapling devices thereof and mechanism for automatically and intermittently advancing the covering along said bar past the stapling devices, substantially as described.



2. In a machine for stapling pipe-coverings, the combination, with a wire-stapling machine, of a supporting-bar underlying the stapling devices thereof and mechanism for automatically and intermittently advancing the covering along said bar alternately in either direction relative to the stapling devices, substantially as described.

3. In a machine for stapling pipe-coverings, the combination, with a wire-stapling machine, of a removable supporting-bar underlying the stapling devices thereof and mechanism for automatically and intermittently advancing the covering along said bar, substantially as described.

4. In a machine for stapling pipe-coverings, the combination, with a wire-stapling machine, of a removable supporting-bar underlying the stapling devices thereof, vertically-adjustable bearings therefor, and mechanism for automatically and intermittently advancing the covering along said bar, substantially as described.

5. In a machine for stapling pipe-coverings, the combination, with a wire-stapling machine, of a removable supporting-bar underlying the stapling devices thereof, a sliding carriage, a fixed arm and a movable arm projecting therefrom for holding the covering and supporting and guiding said bar, and mechanism for automatically and intermittently advancing said carriage, substantially as described.

6. In a machine for stapling pipe-coverings, the combination, with a wire-stapling machine, of a removable supporting-bar underlying the stapling devices thereof, a sliding carriage, a fixed arm and a movable arm projecting from said carriage and supporting and guiding said bar, mechanism for actuating and locking said movable arm, and mechanism for automatically and intermittently advancing said carriage, substantially as described.

7. In a machine for stapling pipe-coverings, the combination, with a wire-stapling machine, of a removable supporting-bar underlying the stapling devices thereof adjustable bearings therefor, a sliding carriage, a laterally-fixed but vertically-adjustable and a laterally-movable and vertically-adjustable arm projecting therefrom and supporting and guiding said bar, mechanism for actuating and locking said movable arm, and mechanism for automatically and intermittently advancing said carriage, substantially as described.

8. In a machine for stapling pipe-coverings, the combination, with a wire-stapling machine, of a supporting-bar underlying the stapling devices thereof, a sliding carriage, an arm projecting therefrom, a sliding block working on said carriage, an arm projecting therefrom opposing the arm on the carriage for holding the pipe-covering, a lever-cam pivoted to the carriage for actuating said block and a lock device therefor, and mechanism for causing said carriage to automatically and intermittently advance, substantially as described.

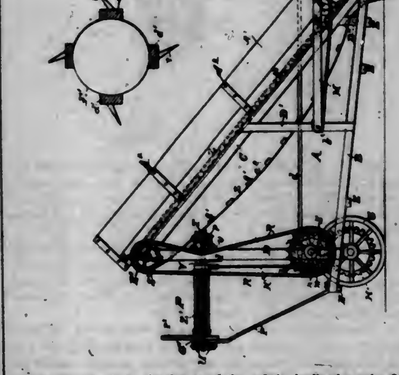
9. In a machine for stapling pipe-coverings, the combination, with a wire-stapling machine, of a support for the covering, a carriage for advancing the covering along said support, having rack-bars thereon, pawls adapted to alternately and respectively engage said racks, spring-actuated shafts having crank-arms at each end thereof, one of which arms carries the pawls, the main shaft of the stapling-machine, and a cam fixed thereon for actuating the other crank-arm, substantially as described.

10. In a machine for stapling pipe-coverings, the combination, with a wire-stapling machine, a supporting-bar underlying the stapling devices thereof, and a carriage for advancing the covering along said bar, having racks *a b* thereon, of pawls *c d*, crank-arms *e f*, carrying said pawls, spring-actuated shafts *g h*, from which said crank-arms project, crank-arms *j k*, also projecting from said shafts, link *n*, lever *o*, cam *l*, anti-friction rollers *m p*, and mechanism for simultaneously oscillating the shafts *g h* in the same direction, so as to throw said pawls alternately in an operative position, substantially as described.

11. In a machine for stapling pipe-coverings, the combination, with a wire-stapling machine, a supporting-bar underlying the stapling devices thereof, and a carriage for advancing the covering along said bar, having racks *a b* thereon, of pawls *c d*, crank-arms *e f*, carrying said pawls, spring-actuated shafts *g h*, from which said crank-arms project, crank-arms *j k*, also projecting from said shafts, link *n*, lever *o*, cam *l*, anti-friction rollers *m p*, levers *q r*, loosely mounted on said shafts, shaft *x*, crank-arm *w*, projecting therefrom, links *u v*, respectively connecting said levers with said crank-arm, a hand-lever for oscillating said shaft, and a lock device for holding the same in its adjusted positions, substantially as described.

12. In a machine for stapling pipe-coverings, the combination, with a wire-stapling machine, a supporting-bar underlying the stapling devices thereof, and a carriage for advancing the covering along said bar, having toothed racks fixed thereon, of a pair of pawls adapted and arranged to alternately and respectively engage said racks, and a revolving cam for alternately operating said pawls, substantially as described.

412,180. HAY-LOADER. JOHN J. SHIVELY, Cerro Gordo, Ill. Filed Dec. 3, 1888. Serial No. 292,808. (No model.)

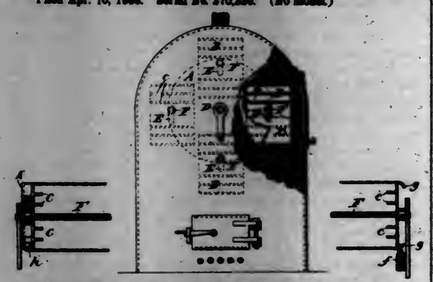


Claim.—1. A hay-loader consisting of the inclined carrier-frame supported at its rear end on wheels and at its front end on runners or shoes, the adjustable transverse carrier pivoted to the rear end and projecting beyond the side of the inclined carrier-frame, the front truck having the trussed side bars pivoted at their rear ends to the inclined frame, the ball connected to the front end of said inclined carrier-frame, the lever mounted on the truck pivoted to the ball, and the segmental catch on the truck, substantially as specified.

2. In a hay-loader, the combination, with the inclined carrier-frame and the transverse carrier pivoted to the rear thereof, of the drive-wheel and the sprocket-wheel S, the sprocket-wheel S' on the upper roller of the inclined carrier-belt, the intermediate sprocket-wheel T, the chain R, engaging said sprocket-wheels, the shaft *p* and its bevel-gear *u*, the shaft V and its bevel-gear *v*, and sprocket W and the sprocket of the transverse carrier connected therewith, substantially as specified.

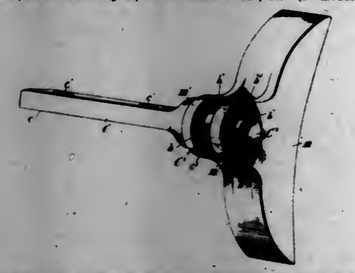
3. The combination of the inclined carrier-frame, its carrier apron and cylinders, the runners on the front end of the frame, and the wheels supporting the rear end of the laterally-projecting adjustable transverse carrier-frame pivoted to the rear end of the inclined frame, its carrier, the front truck, its trussed bars pivoted to the inclined carrier-frame, the lever mounted on the truck and connected to the front of the inclined carrier-frame, and the adjusting-rod journaled in the inclined platform, having means at its front end for its manipulation, its rear end bearing a wheel engaging a rope connected to the transverse carrier-frame, substantially as set forth.

412,131. FRUIT-DRIER. DAVID L. SMITH, San Francisco, Cal. Filed Apr. 10, 1888. Serial No. 270,296. (No model.)



Claim.—The combination, with the revolving frames, of the pivoted reversible hanging cages mounted thereon, having trays above and below their centers, and constructed, as described, so as to retain their upright position when either half is below the central support, substantially as above described.

412,132. BRAKE FOR VEHICLES. THOMAS S. SMITH, Washington, D. C. Filed July 16, 1889. Serial No. 317,717. (No model.)



Claim.—1. In combination with a piece having the stem for supporting the brake-block provided with a lug, the brake-block having the two ears with openings through which the supporting-stem passes situated on opposite sides of the stem-lug, substantially as and for the purpose shown.

2. In combination with the brake-block-supporting stem provided with a lug, the brake-block having the two ears with openings to receive the supporting-stem, and the stop between the ears to engage the lug on the stem to limit the swing of the block around the latter, substantially as and for the purpose set forth.

3. In combination with the supporting-stem having the lug, a brake-block having the ears provided with stem-receiving openings with offsets, and the lug-engaging stop between such ears out of line with the offsets from the stem-receiving openings, substantially as and for the purpose described.

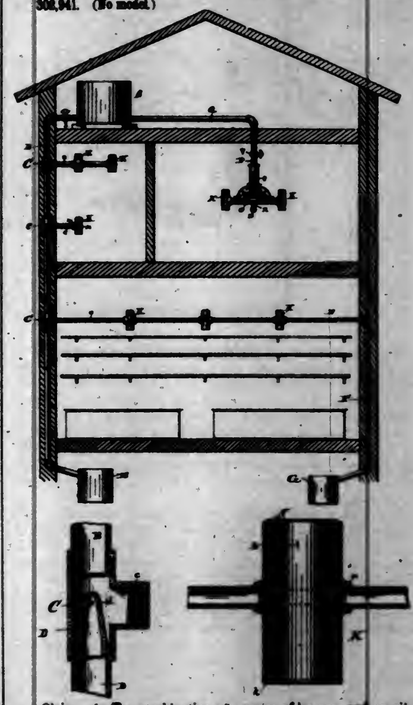
4. In combination with a suitable head provided with a lug, the brake-block provided with the two ears on its back, each having a stem-receiving opening with an offset, and a stop between the ears to engage the stem-lug when the block has been turned to bring the offsets in the ear-openings and the lug on the stem diametrically opposite each other, substantially as and for the purpose specified.

5. In combination with the brake-block-supporting stem having a lug on its under side, the brake-block having the two ears on its back provided with the stem-receiving openings and the offsets from such openings, and with a stop to engage the lug on the under side of the stem, such stop and the offset from the openings in the ears being out of line with each other, substantially as and for the purpose shown.

6. A brake-block having on its back the two ears, with openings for the reception of a supporting-stem and offsets from such openings, and a stop projection between the two ears out of line with the offsets, substantially as and for the purpose set forth.

7. In combination with a head adapted to be attached to a brake bar or lever and having a stem provided with a lug projecting from the stem-periphery between its two ends, a brake-block having the two ears adapted to engage the stem on opposite sides of the lug thereon, each provided with a stem-receiving opening with an offset or notch to admit the passage of the stem-lug as the block is slid longitudinally upon the stem, and the stop on the block between the ears out of line with the offsets or notches adapted to be engaged by the lug on the stem, substantially as and for the purpose described.

412,133. APPARATUS FOR BURNING FLUID HYDROCARBONS. WATSON SNYDER, Petoskey, Mich. Filed Mar. 13, 1889. Serial No. 302,941. (No model.)



Claim.—1. The combination of a series of burners and an oil-receptacle with the supply-pipes connecting said oil-receptacle and burners, and the perforated drip-plugs in said supply-pipes, whereby overflow of the burners is prevented, and a drip-receptacle, all substantially as specified.

2. The combination of the reservoir supply-pipe, the tubular burner, the horizontal pipe connected to said burner and supply-pipe, and the conical drip-plug at the junction of and within said pipes, all substantially as set forth.

3. The combination of the reservoir, the valved supply-pipe connected therewith, the horizontal pipe connected to supply-pipe, the plug D at the junction of said pipes, the series of burners K, connected to said horizontal pipe, and drip-pipe and receiver, all substantially in the manner and for the purpose set forth.

412,134. CAN AND CAN-CLOSURE. RICHARD M. SPENCER, New York, N. Y. Filed May 26, 1888. Serial No. 275,139. (No model.)



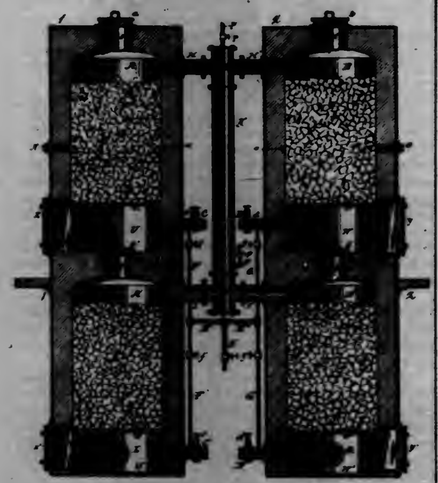
Claim.—1. A can-top having the annular piece extending inward to the can-cover-receiving aperture, curved downward and then upward between its outer portion and inner edge, but having such edge lower than its outer portion, and a can-cover fitting the cover-receiving aperture and engaged by the inner edge of the can-top, substantially as and for the purpose specified.

2. In combination with a can-top having an annular piece extending inward and downward from the edge of the can to the cover-receiving opening, so that its inner edge is below its outer portion and curved or concaved between such inner edge and the outer portion, the can-cover having the upwardly-extending flange or rim fitting the cover-receiving opening and held solely by the engagement of the can-top with the flange and plate of the can-cover, substantially as and for the purpose set forth.

3. In combination with a can-top having an annular piece extending inward and downward from the edge of the can to the cover-receiving opening, so that its inner edge is below its outer portion, and provided with a downwardly-extending flange or rim at its inner edge, the can-cover having the upwardly-extending flange or rim fitting the cover-receiving opening and held solely by the engagement of the can-top with the flange and plate of the cover.

4. In combination with a can-top having an annular piece extending inward and downward from the edge of the can to the cover-receiving aperture and provided at its inner edge with a downwardly-extending flange, the dish-shaped can-cover held solely by the engagement of the can-top with the flange and plate of the cover, consisting of a plate with an upwardly-extending rim engaged by the inner edge of the annular piece and the downwardly-extending flange thereon at a point above the body or plate part of the cover and having on its upper edge an outwardly-extending bead or flange, substantially as and for the purpose specified.

412,135. PROCESS OF AND APPARATUS FOR MANUFACTURING GAS. THEODORE C. SPRINGER and MARCELLUS A. HOBBS, Chicago, Ill. Filed Jan. 28, 1888. Serial No. 262,304. (No model.)



Claim.—1. The process of manufacturing gas which consists in charging bituminous coal or slack upon a body of heated fuel, causing smothered combustion and distillation thereof by admitting a limited supply of air, or air and steam, and converting it into coke, at suitable intervals discharging the hot coke into a fixing-chamber and highly heating it, and passing the gaseous vapors produced in the coking-chamber through the body of highly-heated coke in the fixing-chamber for converting them into dry fixed gas.

2. The process of manufacturing gas which consists in charging bituminous coal or slack upon a body of heated fuel, causing smothered combustion and distillation thereof by admitting a limited supply of air, or air and steam, and converting it into coke, at suitable intervals discharging the hot coke into a fixing-chamber and highly heating it, enriching or carbureting the gaseous vapors produced in the coking-chamber with hydrocarbon oil or vapor, and passing the mixture through the body of highly-heated coke in the fixing-chamber for converting it into dry fixed gas.

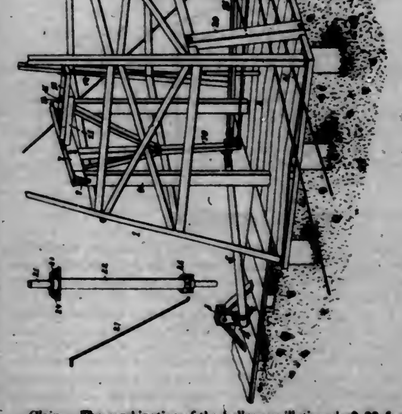
3. A cupola-generator divided into upper and lower fuel-chambers, each having air and steam supply pipes, the dividing-partition being provided with an opening and tight-fitting lid, in combination with the gas-conducting pipe leading from the top of the upper chamber into the top of the lower chamber, and the gas-take-off pipe leading from the lower chamber, for the purpose described.

4. A gas-generating cupola divided by partition 1 having a passage and tight-closing lid, into upper and lower fuel-chambers A A', each provided with an ash-pit and grate, and each having an air and steam supply pipe connecting with its ash-pit, and chamber A, having openings above its grate for the insertion of fake bars, in combination with gas-conducting pipe leading from chamber A to chamber A', and the gas-take-off pipe leading from chamber A', as and for the purpose described.

5. Two cupola gas-generators divided by horizontal partitions, the arches having openings and lids, into upper and lower fuel-chambers, in combination with gas-conducting pipes leading from the top of each of the upper chambers, and each pipe connecting to a flue which leads into each of the lower chambers, and means for supplying all of the chambers with air and steam, whereby producer-gas and vapors generated in two of the upper chambers and either of the lower chambers may be passed through the body of fuel in the other of the lower chambers for producing a fixed gas.

6. Two cupola gas-generators divided into upper and lower fuel-chambers, as described, in combination with gas-conducting pipes leading from the tops of the four chambers and connecting with a vertical pipe having connected with it an oil-supply pipe, a gas-take-off pipe leading from each of the lower fuel-chambers, and supply-pipes for air or steam connecting with the chambers, as and for the purpose described.

412,136. CONNECTING DEVICE FOR WELL-PUMPING RIGS. OSCHAR C. STOVER, Bradford, assignor of one-half to John J. B. Fisk, Pittsburg, Pa. Filed June 14, 1888. Serial No. 277,047. (No model.)



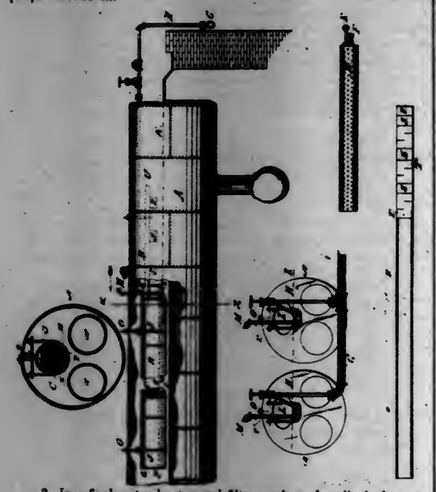
Claim.—The combination of the hollow oscillating shaft 22, fixed upright rod or bar 21, on which it is journaled, bell-crank 17, fixed by means of clamping-bracket 23 to the hollow shaft, perforated castings 26, brasses 27, fixed in the perforations and secured to the bell-crank, and connecting-rods 31 of any number of wells, substantially as shown and described.

412,137. FEED-WATER HEATER AND FILTER. JOHN D. SELLIVAN, New Orleans, La., assignor of one-half to William W. Sutcliffe, same place. Filed Mar. 29, 1889. Serial No. 305,223. (No model.)

Claim.—1. In a feed-water heater and filter such as described, the combination of a boiler with a filter placed therein, the perforated plates in said filter, and the perforated pipe running under filtering-plate and connecting with blow-off pipe F, for the purpose set forth.

2. In a feed-water heater and filter such as described, the combination of a boiler with a filter placed therein, the perforated plates in said filter, and the feed-water pipe leading under filtering-plate and

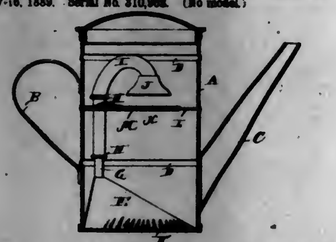
connecting with perforated pipe attached to blow-off pipe, for the purpose set forth.



3. In a feed-water heater and filter such as described, the combination of a boiler with a filter placed therein, the perforated plates in said filter, and the feed-water trough, for the purpose set forth.

4. In a feed-water heater and filter such as described, the combination of a boiler with a filter placed therein, the perforated plates in said filter, the water-trough with partitions, and mineral-chambers therein, for the purpose set forth.

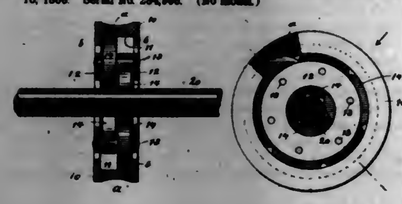
412,138. COFFEE-POT. ROBERT W. TERRELL, Conyers, Ga. Filed May 16, 1889. Serial No. 310,968. (No model.)



Claim.—1. In a coffee-pot, the combination, with the fountain attachment, of the divided spring-ring and the straining-cloth secured thereto, whereby the tube of the fountain attachment may pass upward without cutting the cloth, as set forth.

2. The improved coffee-pot herein described and shown, consisting of the coffee-pot A, having a series of internal annular grooves, the divided spring-ring adapted to engage one of said grooves, the screening-cloth secured to said ring, the false bottom within the coffee-pot, the vertical pipe rising from the said false bottom and consisting of a series of sections detachably fitted together and passing upward between the ends of the divided spring-ring, and the discharging-nozzle removably fitted on the upper end of the said pipe and having a flared mouth, as specified.

412,139. SHEAVE FOR PULLEY-BLOCKS. HOWELL P. TERRY, Brooklyn, N. Y., assignor to George W. Blair, same place. Filed Sept. 10, 1888. Serial No. 284,966. (No model.)



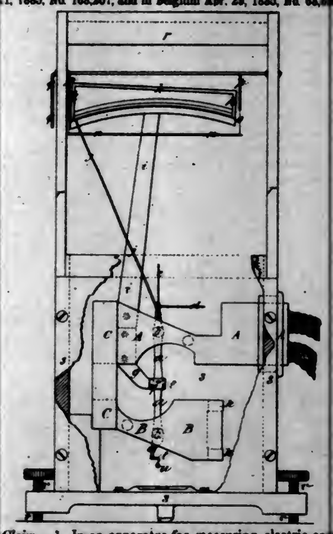
Claim.—1. In an apparatus for measuring electric currents, the combination of a movable mass of soft iron having the ratio of its greatest to its least diameter comparatively small, an indicator connected therewith, and an adjacent conductor having approximately equal fields of electro-magnetic force on both sides of said soft-iron mass, and being wound or shaped so that the current passing through it will produce a non-uniform field of electro-magnetic force about the said soft-iron mass.

2. In an apparatus for measuring electric currents, the combination of a movable mass of soft-iron and an indicator connected therewith, an adjacent electric conductor for producing a magnetic field about said mass, and a reversing-key in circuit with the said conductor, by which any residual magnetism may be dispelled.

3. In an apparatus for measuring electric currents, the combination of a movable mass of soft iron and an indicator connected therewith, and the adjacent electric conductor having approximately equal fields of electro-magnetic force on both sides of said soft-iron mass, and being irregularly shaped or wound, so that the current passing through it will produce a non-uniform field of electro-magnetic force about the said mass.

4. The method of graduating electric meters, which consists in placing the meter under a constant electrical influence, then placing a series of weights upon the movable indicating member, which are inversely proportional to the squares of the forces to be indicated, and marking the different positions of the meter in said indicating member.

412,140. GALVANOMETER. WILLIAM THOMSON, Glasgow, County of Lanark, Scotland. Filed Mar. 20, 1886. Serial No. 197,013. (No model.) Patented in England Aug. 9, 1884, No. 11,106; in France Apr. 11, 1885, No. 168,207, and in Belgium Apr. 29, 1885, No. 68,605.



Claim.—1. In an apparatus for measuring electric currents, the combination of a movable mass of soft iron having the ratio of its greatest to its least diameter comparatively small, an indicator connected therewith, and an adjacent conductor having approximately equal fields of electro-magnetic force on both sides of said soft-iron mass, and being wound or shaped so that the current passing through it will produce a non-uniform field of electro-magnetic force about the said soft-iron mass.

2. In an apparatus for measuring electric currents, the combination of a movable mass of soft-iron and an indicator connected therewith, an adjacent electric conductor for producing a magnetic field about said mass, and a reversing-key in circuit with the said conductor, by which any residual magnetism may be dispelled.

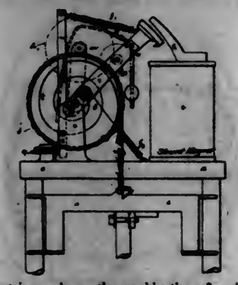
3. In an apparatus for measuring electric currents, the combination of a movable mass of soft iron and an indicator connected therewith, and the adjacent electric conductor having approximately equal fields of electro-magnetic force on both sides of said soft-iron mass, and being irregularly shaped or wound, so that the current passing through it will produce a non-uniform field of electro-magnetic force about the said mass.

4. The method of graduating electric meters, which consists in placing the meter under a constant electrical influence, then placing a series of weights upon the movable indicating member, which are inversely proportional to the squares of the forces to be indicated, and marking the different positions of the meter in said indicating member.

412,141. ARC LIGHT. FRIEDRICH VON HEFNER-ALTENECK, Berlin, and CARL HOFFMANN, Charlottenburg, Prussia, Germany. Filed Apr. 5, 1889. Serial No. 306,051. (No model.) Patented in Germany June 25, 1887, No. 42,900; in Belgium Nov. 16, 1887, No. 78,560; in France Nov. 16, 1887, No. 187,089; in Italy Dec. 31, 1887, No. 22,894; in Norway Jan. 7, 1888, No. 854, and in Austria-Hungary Sept. 30, 1888, No. 17,015 and No. 40,063.

Claim.—1. In an electric-arc lamp, the combination, with a carbon-carrier and a drum, of a flexible conductor of electricity carrying the carbon-carrier and wound upon the drum, from which it is unwound by the weight of the carbon-carrier, a reacting device connected with the said drum which winds the flexible conductor thereon when relieved of the weight of the carrier, a pivotally-mounted frame carrying the said drum, and a pendulous escapement also carried by the frame and regulated in its operation by the inclination thereof, as and for the purposes described.

2. In an electric-arc lamp, the combination, with a movable carbon-carrier and a drum, of a flexible electrical conductor carrying the said carbon-carrier and wound upon the drum, from which it is unwound by the weight of the said carrier, and a reacting device connected with the said drum which winds the flexible conductor thereon when relieved of the weight of the carrier, as and for the purposes described.

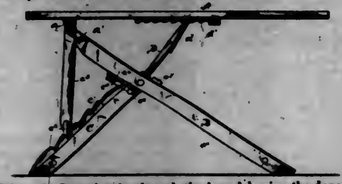


3. In an electric-arc lamp, the combination of a pivoted frame, a carbon carried thereby, a spring drawing the frame in a direction opposite to that in which it is drawn by the weight of the carbon, and an auxiliary spring which, in the consumption and consequent loss of weight of the carbon, stretches and has its strength increased in proportion to the loss of weight of the carbon, as and for the purposes described.

4. In an electric-arc lamp, the combination, with a movable carbon-carrier, of an electro-magnet in shunt-circuit to the lamp, a pivoted frame forming an armature for the said magnet, a drum provided with an escapement mounted in the said frame, and a flexible electrical conductor wound upon the said drum and carrying the carbon-carrier, as and for the purposes described.

5. In an electric-arc lamp, the combination, with a movable carbon-carrier, of an electro-magnet in shunt circuit to the lamp, a pivoted frame forming an armature for the said magnet, a drum provided with an escapement mounted on the said frame, a flexible electrical conductor coiled upon the said drum and carrying the carbon-carrier, and a reacting device opposed to the attraction of the said magnet, as and for the purposes described.

412,142. IRONING-BOARD. WILLIAM WALTERS, Findlay, Ohio. Filed Apr. 5, 1889. Serial No. 306,092. (No model.)



Claim.—1. In an ironing-board, the board having the depending legs, the legs having the casting pivoted in said legs, the eccentric carried by said legs, the legs pivoted to the first-named legs, having rack and cross-bar against which the eccentric bears, and the hanger having the pawl for engaging the rack in said legs, substantially as shown and described.

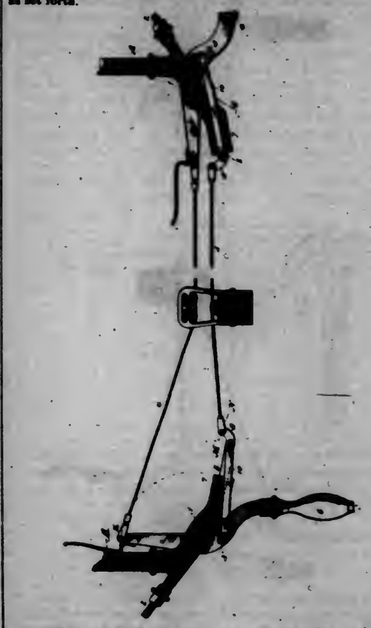
2. In an ironing-board, the combination of the board having the racks d', the legs C, having the rack-plates c' secured thereon, the arm D, carrying a plate d, engaging the racks d' on the board, the hangers c^3, depending from the board, having a pawl c^5, for engaging the rack-plate c' on the legs C, the legs B, pivoted to the legs C, and the eccentric c^4, carried by legs B, for engaging the rod c^6 on legs C, all of said parts being arranged as shown and operating in the manner and for the purpose described.

412,143. CASH AND PACKAGE CARRYING APPARATUS. HENRY M. WEAVER, Mansfield, Ohio. Filed Mar. 6, 1889. Serial No. 302,694. (No model.)

Claim.—1. The combination, with track-wires and supports therefor, of pivoted levers to which the ends of one wire are connected and reciprocating rods connected with the levers and having the ends of the other wire attached thereto.

2. The combination, with track-wires and supports therefor, of pivoted levers to which the ends of one wire are attached and reciprocating rods mounted in inclined bearings and connected to the ends of the other wire.

3. The combination, with a pair of track-wires and supports therefor, of pivoted levers to which the ends of one wire are connected and obliquely-reciprocating rods connected with the levers and having the ends of the other wire connected therewith, substantially as set forth.



4. The combination, with a pair of track-wires and supports therefor, of pivoted levers to which the ends of one wire are connected, reciprocating rods to which the ends of the other wire are secured, and connecting-bars pivotally connecting these rods to the levers, substantially as set forth.

5. The combination, with a pair of track-wires and carrier, of hangers having elbows thereon, levers pivoted to the elbows, to which levers the ends of one wire are secured, rods or sliding bars loosely connected with the elbow and having the ends of one wire connected thereto, and connecting-bars pivotally joining the sliding bars and levers, substantially as set forth.

6. The combination, substantially as hereinbefore set forth, in a store-service system, of the supporting-brackets at the in and out stations, the reciprocating bars sliding therein, the track-wire secured to said reciprocating bars, spreading-levers connected mediately or immediately to said reciprocating bars, whereby the levers and bars are moved concurrently, and a wire stretched between the ends of the spreading-levers.

7. The combination, substantially as hereinbefore set forth, in a store-service system, of supporting-brackets at each station, reciprocating bars mounted in said brackets, the track-wires stretched between said bars, spreading-levers connected mediately or immediately with said bars, whereby the movement of one will operate the other, a wire stretched between the ends of said levers, and hand-levers whereby said bars are reciprocated and the spreading-levers moved.

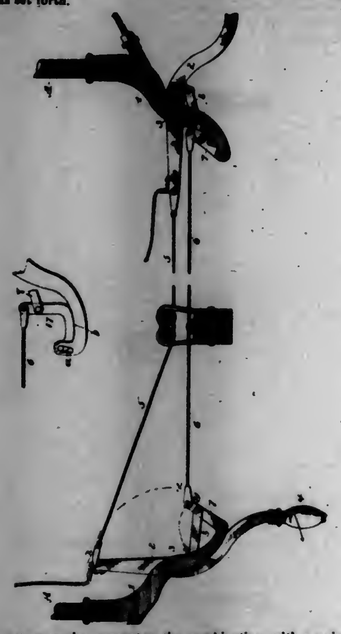
412,144. CASH AND PACKAGE CARRIER. HENRY M. WEAVER, Mansfield, Ohio. Filed Mar. 12, 1889. Serial No. 302,930. (No model.)

Claim.—1. The combination, in a store-service apparatus, of supports, levers pivoted to said supports, a wire attached to said levers, arms pivoted to the supports and connected to the levers, and a wire attached to the arms.

2. In a store-service apparatus, the combination of a longitudinally movable track-wire, a diverging longitudinally-movable track-wire, and devices for changing the direction of inclination of the diverging wire relative to the longitudinally-movable wire and for moving the latter.

3. In a store-service apparatus, the combination, with a horizontal longitudinally-movable wire and a movable wire located normally at an inclination or angle to the horizontal wire, of levers attached

to the opposite ends of the inclined wire for changing the direction of its inclination and arms attached to the ends of the other wire, substantially as set forth.



4. In a store-service apparatus, the combination, with a pair of movable track-wires, one of which is maintained continuously in approximately horizontal position and the other inclined or at an angle to the horizontal wire, of rigid supports, levers pivoted thereto for changing the angle of inclination of the inclined wire, and arms actuated by the levers for moving the horizontal wire longitudinally, substantially as set forth.

5. In a store-service apparatus, the combination, with a track-wire and levers attached to the ends thereof for moving it longitudinally and changing its inclination relative to the lower wire, of a lower approximately horizontal wire and arms connected to the ends of said wire for moving same longitudinally.

6. In a store-service apparatus, the combination, with a track-wire and levers for moving said wire longitudinally and the ends thereof in arcs of a circle, of a second wire maintained continuously in approximately a horizontal plane and arms for moving said second wire longitudinally.

7. The combination, with supports and a pair of track-wires, of a pair of pivoted levers for one wire and a pair of pivoted arms for the other wire, the levers connected to one wire adapted to move in arcs of a circle and the arms connected to the other wire adapted to move in arcs of a circle, and links connecting the levers and arms, substantially as set forth.

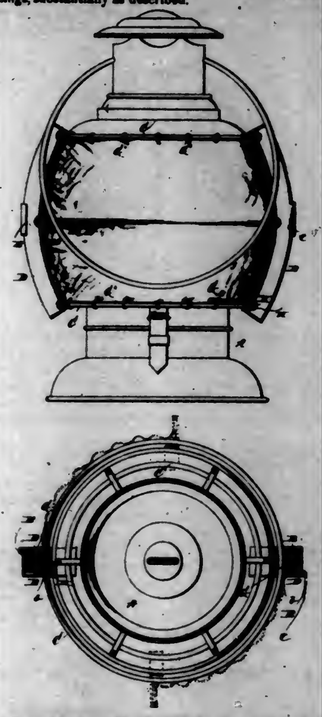
8. The combination, with a pair of track-wires and carriers, of hangers having elbows thereon, levers pivoted to the elbows to which the ends of one wire are secured, arms pivoted to the elbows with the ends of one wire connected thereto, and connecting-bars loosely joining the pivoted arms with the levers, substantially as set forth.

9. The combination, substantially as hereinbefore set forth, in a store-service system, of a reciprocating track-wire extending from station to station operating devices at each station to which it is connected, a wire extending from station to station, and spreading devices at each station to which it is connected, said spreading devices connected mediately or immediately to the mechanism for operating the reciprocating wire.

412,145. SIGNAL-LANTERN. GEORGE C. WHITEHURST and WILLIAM A. WHITEHURST, Oberlin, Ohio. Filed Jan. 30, 1889. Serial No. 298,113. (No model.)

Claim.—1. A lantern provided with the screens attached thereto at diametrically-opposite points and constructed to be simultaneously extended around the lantern, substantially as described.

2. The combination of the lantern, the casings attached thereto at diametrically-opposite points, and the folding screens constructed to be simultaneously extended around the lantern and folded within the casings, substantially as described.



3. In combination with a lantern, the rings surrounding the same and the flexible colored screen running on the rings and constructed to be folded or extended around the lantern, substantially as specified.

4. The combination, with a lantern, of the casing attached thereto, the sliding rings surrounding the lantern, and the flexible screens attached to the rings and adapted to be folded within the casing, substantially as specified.

5. The combination, with a lantern, of the open-sided casings arranged on opposite sides thereof, the sliding rings surrounding the lantern, the caps attached to the rings and carried thereby, and the flexible screens attached at one edge to the casings and at the other edge to the caps, substantially as and for the purpose specified.

6. The combination, with a lantern, of the open-sided casings attached thereto, the sliding rings surrounding the lantern, the caps carried by the rings and adapted to close the open sides of the casings, and provided with spring-catches to engage the same, and the flexible screens arranged on the rings and adapted to be folded within the casings, substantially as specified.

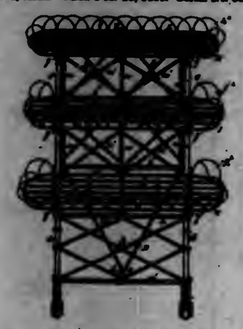
7. The combination, with a lantern, of the casings attached thereto at diametrically-opposite points, the sliding rings operating in guide-apertures in the said casings and surrounding the lantern, and the flexible screen provided with small rings G', fitting on the said sliding rings and attached at one edge to the casings, substantially as specified.

8. The combination, with a lantern, of the sliding rings surrounding the same, the flexible screen sliding on the rings and adapted to be gathered thereon, and the small rings G' G' on the said sliding rings passing through the edge of the screen to secure the latter firmly to the rings, substantially as specified.

9. In a lantern, the two folding screens arranged at diametrically-opposite points and constructed to be simultaneously extended in opposite directions, each screen covering one-half of the lantern proper, so that when both the screens are extended the entire lantern is covered, as set forth.

10. The combination, with a lantern, of the sliding rings surrounding the same, the flexible screen sliding on the rings and adapted to be gathered thereon, the casings secured to the lantern and having openings that form bearings for the sliding rings, the caps secured to the latter, and loops H H, secured to the inner faces of the casings and caps and bent around the stiffening-rods in the ends of the screen, substantially as set forth.

412,146. FOLDING WIRE FLOWER-STAND. ALONZO B. WHITEHOUSE, Boston, Mass. Filed Feb. 26, 1889. Serial No. 301,015. (Model.)



Claim.—1. The combination of two front wire posts with two rear wire posts of greater length than the front posts, the two front posts being connected together at the top and bottom by transverse wire rods hinged at each end to the posts, the two rear posts being connected in a similar way, each front post being connected with its rear post by side rods, the upper side rods being formed with steps and a brace extending from one of the rear transverse rods to one of the front transverse rods, detachably fastened at one end, so that when unfastened the frame may be flattened by pressing two diagonally-opposite corners toward each other, substantially as described.

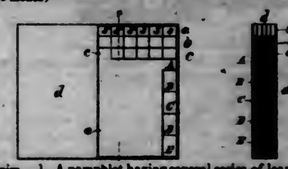
2. The combination of two front wire posts with two rear wire posts of greater length than the front posts, each front post connected with its rear post at the upper end by a wire rod bent to form a series of steps, each front post and its rear post and connecting top rod being formed of one continuous wire, and each front post being connected with its rear post near the bottom by a side rod, the two front posts being connected both at the top and bottom by transverse rods hinged at both ends to the posts, the rear posts being similarly connected, and a brace extending from the rear bottom transverse rod to the front bottom transverse rod, detachably connected to one of the transverse rods, so that when unfastened it allows the frame to be flattened by compressing two diagonally-opposite corners toward each other, substantially as described.

3. The combination of two front wire posts with two rear wire posts of greater length than the two front posts, each front post connected with its rear post at the upper end by a wire rod bent to form a series of steps, each front post and its rear post and connecting top rod being formed of one continuous wire, and each front post being connected with its rear post near the bottom by a side rod, the two front posts being connected both at top and bottom by transverse rods hinged at both ends to the posts, the rear posts being similarly connected, the front and rear being filled in with wire panels hinged to the posts, the sides being also filled in with wire panels, and a brace extending from the rear bottom transverse rod to the front bottom transverse rod detachably connected to one of the transverse rods, so that when unfastened it allows the frame to be flattened by compressing two diagonally-opposite corners toward each other, substantially as described.

4. The combination of two or more folding wire trays of graduated sizes, forming a nest when folded, each of which is formed with a wire rim and suitable wire filling, the front side of the rim of the smallest being connected with the rear side of the rim of the next exceeding and larger tray by wire rods hinged at each end and of suitable length to allow the first tray to shut inside the second tray, the second tray connected with the third tray in the same manner, if more than two trays be used, and so on with each succeeding tray, substantially as described.

5. A folding wire flower-stand consisting of a frame composed of two front wire posts and two rear wire posts of greater length than the front posts each front post being connected with its rear post at the upper end by a wire rod bent to form a series of steps, each front post and its rear post and connecting top rod being formed of one continuous wire, and each front post being connected with its rear post near the bottom by a side rod, the two front posts being connected both at top and bottom by transverse rods hinged at both ends to the posts, the rear posts being similarly connected, and a brace extending from the rear bottom transverse rod to the front bottom transverse rod, detachably connected to one of the transverse rods, so that when unfastened it allows the frame to be flattened by compressing two diagonally-opposite corners toward each other, in combination with a set of folding wire trays to fit the steps formed by the upper side rods, the trays being graduated in size to form a nest when folded, each of which is formed with a wire rim and suitable wire filling, the front side of the rim of the top tray being connected with the rear side of the rim of the next succeeding and larger tray by wire rods hinged at each end and of suitable length to allow the first tray to nest in the second tray, the second tray connected with the third still larger tray in the same manner, if more than two trays be used, and so on with each succeeding tray, the trays seated on the top step and on the bottom step having a rest projecting from the transverse rods, the top step having catches at the rear corners, against which the back of the top tray bears, and each step having at its front corner a catch-hook to hold the tray in position, substantially as described.

412,147. COMBINED INDEX-PAMPHLET AND FILE. RICHARD R. WILLIAMS, Brooklyn, N. Y. Filed Oct. 4, 1888. Serial No. 287,226. (No model.)



Claim.—1. A pamphlet having several series of leaves of uniform width from the hinge outward, and the several series of leaves being successively shortened at the top end of the pamphlet, the leaves in each series having their edges coincident and the outer leaves of each series being notched to expose the inner leaves, as and for the purpose set forth.

2. The combination, with a cover or case, of several pamphlets of the same length and width, consisting each in several series of leaves successively shortened, with the edges of the leaves in each series notched to expose index-spaces upon the inner leaves of the pamphlet, as set forth, and the edges of the pamphlets being provided with a marginal index at the desired points, as and for the purpose set forth.

412,148. PROCESS OF MAKING DYES. ROBERT GREVILLE-WILLIAMS, Albany, N. Y., assignor to the Albany Coal Tar Dye and Chemical Company, same place. Filed June 6, 1889. Serial No. 313,266. (No specimens.)

Claim.—The process for the production of new coloring-matters by combining one molecule of tetrazo-diphenyl or one molecule of one of the other herein-mentioned tetrazo compounds with two molecules of an alkalized acid of the orchilla lichens or halogen or sulpho compounds of the same, substantially as set forth.

412,149. PROCESS OF MAKING DYES. ROBERT GREVILLE-WILLIAMS, Albany, N. Y., assignor to the Albany Coal Tar Dye and Chemical Company, same place. Filed June 6, 1889. Serial No. 313,267. (No specimens.)

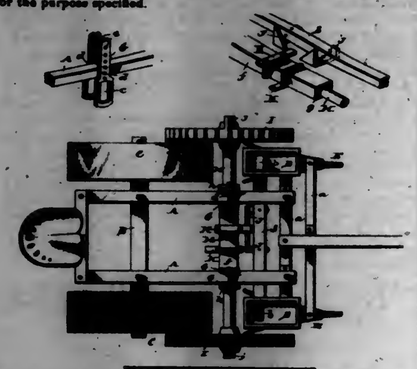
Claim.—The process for the production of mixed coloring-matters by first combining one molecule of tetrazo-diphenyl or one molecule of one of the other herein-mentioned tetrazo compounds with one molecule of one of the herein-mentioned amines or phenols and then combining this intermediate product with one molecule of an alkalized acid of the orchilla lichen or halogen or sulpho compound of the same, substantially as set forth.

412,160. CORN-PLANTER. JOHANN F. A. WIEHLMANN, Sabetha City, Kas. Filed June 26, 1889. Serial No. 315,573. (No model.)

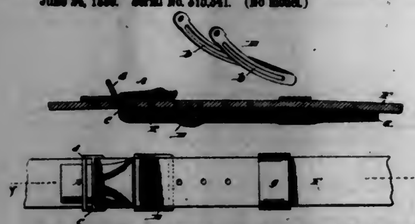
Claim.—1. The combination, with the frame, feed-boxes, and reciprocating feed-slide, of the transverse shaft, the measuring-wheels carried thereby, the plates on the feed-slide embracing the slide upon two sides and formed with oppositely-inclined faces, and the fingers clamped on the shaft of the measuring-wheels and extending in opposite directions to contact directly with the said inclined faces, substantially as and for the purpose specified.

2. The combination, with the frame, the seed-boxes, the reciprocating feed-slide, and the plates secured to the feed-slide and formed with vertical portions having oppositely-inclined faces, of the hangers secured to the frame, the transverse shaft journaled in the hangers and formed with squared portion between the hangers, and the fingers secured to the squared portion of the shaft by clips and extending in

opposite directions from opposite sides thereof, substantially as and for the purpose specified.



412,151. BUCKLE. MILTON I. WHITERS, Atlee's Station, Va. Filed June 24, 1889. Serial No. 315,341. (No model.)



Claim.—1. The combination, with the trace and the hame-tag, of the plate A, having the tongue E, the loop B, pivotally connected with the hame-tag and with the plate in line with the tongue E, and the link C, pivotally connected with the hame-tag and adapted to swing over the end of the plate A, substantially as specified.

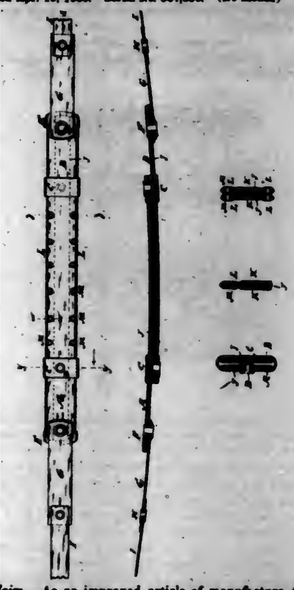
2. The combination, with the trace, the hame-tag, the plate A, having the tongue E and the loop B, of the link C, pivotally connected with the hame-tag and adapted to fit over the end of the plate A and having the supplemental loop *d*, substantially as described.

412,152. DRESS-SPRING. RAPHAEL H. WOLFF, New York, N. Y. Filed Apr. 19, 1889. Serial No. 307,656. (No model.)



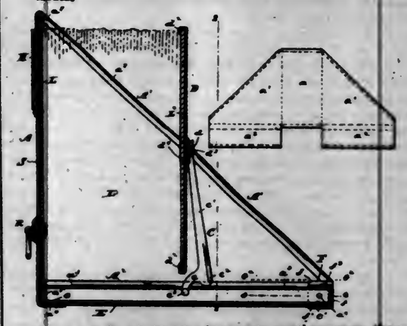
Claim.—The springs A B, in combination with the guide-loops C C and supplementary loops J J, substantially as described.

412,153. DRESS-SPRING. RAPHAEL H. WOLFF, New York, N. Y. Filed Apr. 19, 1889. Serial No. 307,655. (No model.)



Claim.—As an improved article of manufacture, the herein-described dress-spring, comprising the two spring-plates lengthwise adjustable one upon the other and each having at its longitudinal edge a projecting flange of fibrous material provided with a series of eyelets, some of which eyelets in one flange are brought into coincidence with the eyelets in the adjacent flange by sliding one spring-plate on the other, substantially as and for the purposes described.

412,154. FILE OR DOCUMENT HOLDER. REMUS W. WOODRUFF, Washington, D. C. Filed Mar. 26, 1889. Serial No. 304,798. (No model.)



Claim.—1. In a holder for documents or other papers, the combination, with a thin sheet-metal exterior, of the interior lining consisting of sheets of fibrous and elastic material secured in place on the inner side and by means of said sheet-metal portion, and adapted by their elasticity to stiffen the box and preserve its shape and to protect the papers from the condensation and rust upon the inner face of the metal shell, substantially as set forth.

2. The combination, with the sheet-metal bottom, of the stiff flanged slot-piece E, connected therewith, substantially as set forth.

3. The combination, with the sheet-metal bottom portions A^9, separated by the slot B, of the slot-piece E, interlocking with and uniting said portions, substantially as set forth.

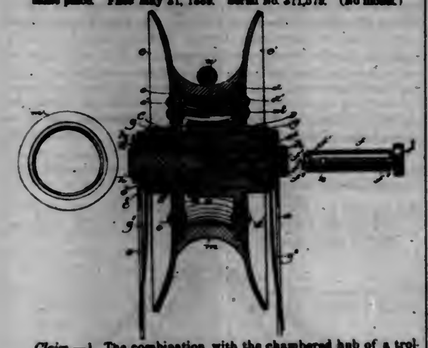
4. The combination, with the sheet-metal front having the flange a^4, the side A', and the bottom A^9, of the slot-piece E, connected with said bottom and with the flange a^4, substantially as set forth.

5. The combination, with the file-board, the lever C, and the slotted bottom, of the end piece having a horizontal portion passing across said slot for supporting the lever, substantially as set forth.

6. The combination, with the sheet-metal bottom and sides of the holder, of the end piece covering the edge of said bottom and having vertical end flanges riveted horizontally to the sides, substantially as set forth.

7. The sheet-metal file-holder blank in one piece having the parts *a a' a⁴*, substantially as set forth.

412,155. TROLLEY FOR ELECTRIC-RAILWAY SERVICE. ALBERT ANDERSON, Boston, Mass., assignor to Charles L. Edgar, trustee, same place. Filed May 21, 1889. Serial No. 311,573. (No model.)



Claim.—1. The combination, with the chambered hub of a trolley-wheel, of an insulating non-metallic bearing, substantially as described.

2. The combination, with the hub of a trolley-wheel, of a detachable annular contact-shield, substantially as described.

3. The divided hub of the trolley-wheel and the attached side flanges, combined with a detachable annular contact-shield clamped between the said hub and side flanges, substantially as described.

4. In a trolley-wheel, a divided hub, chambered as described, combined with a removable tube and a series of non-metallic washers contained therein, substantially as described.

5. The separable trolley-hub, chambered as described, and a series of non-metallic washers therein, combined with a two-part pin or axle *f f'*, to operate substantially as described.

6. The combination, with a trolley-wheel and pivot or axle therefor, of a trolley-frame composed of sheet metal having flanged edges united together, substantially as described, and brushes g^8 to connect the hub of the trolley-wheel with the trolley-frame, substantially as described.

7. The combination, with the trolley-wheel, of a sheet-metal trolley-frame having overturned flanges and made tapering, substantially as described, from its end between which the trolley-wheel runs toward its opposite end, the sides being rigidly connected by straps attached to the flanges, substantially as described.

8. The combination, with a trolley-frame and trolley-wheel, of metallic conducting-brushes g^8 between the hubs of the trolley-wheel and the said frame, to operate substantially as described.

412,156. MANGLE. HENRY ANDERSEN, New York, N. Y., assignor of one-half to Moritz Sandrock, same place. Filed June 6, 1889. Serial No. 313,005. (No model.)

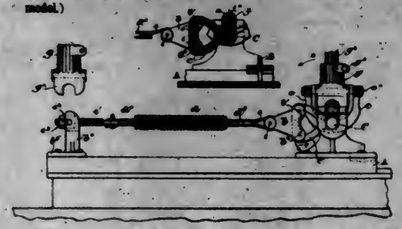


Claim.—1. The combination, with supporting-standards B B, of the rolls C C' C^9 C^9, a fixed abutment D between the rolls C C^9, the face of the abutment being concentric to the roll C', an inclined guide-board F, supported on ledges *f* of the standards B, and an inclined guide-board G in front of the lower roll C^9, substantially as set forth.

2. The combination of supporting-standards B B, rolls C C' C^9 C^9, a fixed abutment D between the rolls C C^9, the face of the abutment being concentric to the axis of the roll C', and an inclined guide-board F, provided with pins and engaging a fixed eye f^2 of the base-board A, substantially as set forth.

3. The combination, with supporting-standards B B, of rolls C C' C^9 C^9, a fixed abutment D between the rolls C C^9, the face of said abutment being concentric to the axis of the roll C', a guide-roller E above the roll C, said guide-roller being supported by curved and pivoted arms E', stop-pins *e* for said arms, and the inclined guide-board F back of the rolls C^9 C^9, substantially as set forth.

412,157. TROLLEY ATTACHMENT FOR ELECTRIC-RAILWAY CARS. JOHAN M. ANDERSEN, Boston, Mass., assignor to Charles L. Edgar, trustee, same place. Filed June 20, 1889. Serial No. 316,031. (No model.)

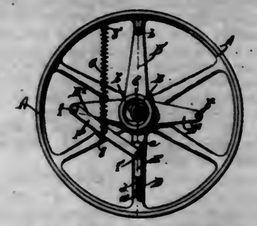


Claim.—1. A rock-shaft, as C, having an arm, as *c'*, and a connected trolley-pole holder, combined with a head having pins or projections shaped to engage the said arms, as described, at opposite sides of a line intersecting the said rock-shaft, and springs co-operating with the said head to keep the trolley-pole holder pressed in the direction to keep the trolley-wheel vertically against the usual wire or conductor whatever may be the direction of movement of the car, substantially as described.

2. The stand, a rock-shaft, as C, therein having ears *c*, and a pivoted trolley-pole holder, combined with springs co-operating with the said holder, whereby it may tip on the said rock-shaft to enable the trolley-wheel to move laterally, as required, and follow along and remain upon the wire or conductor notwithstanding differences of curvature between the track and wire, substantially as described.

3. The stand, the rock-shaft therein having arms *c'*, ears *c*, and lugs 2 3 4, the rod *f*, springs surrounding the rod, the pivoted trolley-pole holder having its lower end placed under the control of the said springs, and the trolley-pole and trolley-wheel, combined with the head and the springs connected thereto, as described, to cause the head to draw upon a part of the said arms in all positions of the trolley-pole holder and pole, substantially as described.

412,158. GOVERNOR. GEORGE G. ARMAMA, Syracuse, N. Y., assignor of one-half to James D. Wheeler, same place. Filed July 13, 1888. Serial No. 317,403. (No model.)



Claim.—1. In a governor, the combination of an oscillating eccentric-operator for changing the throw of the eccentric, a guide arranged diametrically opposite to the pivot-point of said support, a centrifugally-operating weight guided by said guide, a connection between said eccentric-operator and the weight, and a spring for retracting said weight, substantially as described.

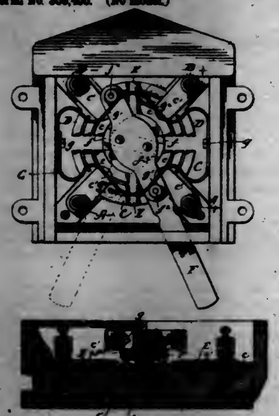
2. In a governor, the combination of a rocking eccentric-operator B for changing the throw of the eccentric, a centrifugally-working weight E, a guide-rod *d* for said weight, and the link F, hinged to the said eccentric-operator and weight E, and also to the spring for retracting the weight, substantially as specified.

3. In a governor, the combination of an oscillating eccentric-operator for changing the throw of the eccentric, a guide arranged diametrically opposite to the pivot-point of said support, a centrifugally-operating weight guided by said guide, a link F, pivoted to the weight and pivoted off the center of the eccentric-operator, and a spring for retracting said weight, substantially as specified.

4. In a governor, the combination of an oscillating eccentric-operator for changing the throw of the eccentric, a guide arranged diametrically opposite to the said eccentric-operator, a weight guided by said guide, connection-p ints on either side of the center of said eccentric-operator, a link connected to said weight and adapted to be connected to either of said connection-points of the eccentric-operator, and a spring for retracting said weight, substantially as described.

5. In a governor, the combination of an eccentric-operator, a projecting arm provided upon said operator and pivoted to the frame mounted on the driving-axle, a centrifugally-operating weight, a guide for said weight, arranged diametrically opposite to the said projecting arm of the eccentric-operator, arms B^2 and B^3, projecting from opposite sides of the said eccentric-operator, a connection F from the weight to either of said arms B^2 and B^3, and the spring for retracting said weight, substantially as specified.

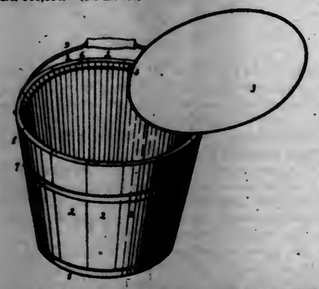
412,159. ELECTRIC SWITCH. FRED M. BURNETT, New York, N. Y., assignor of one-half to William Carroll, same place. Filed Apr. 3, 1889. Serial No. 306,055. (No model.)



Claim.—1. In an electric double-pole switch, four pairs of plates, each pair in electrical connection with a binding-post and forming nearly a quadrant, springs for forcing said plates together, in combination with two circuit-closing plates mounted opposite each other upon a rotatable disk, the said circuit-closing plates being located in a plane coincident with the contact-points between the pairs of quadrant-plates, substantially as described.

2. In an electrical double-pole switch, four pairs of plates, each pair in electrical connection with a binding post and forming nearly a quadrant, springs for forcing said plates together, in combination with two circuit-closing plates mounted opposite each other upon a rotatable disk, the said circuit-closing plates being located in a plane coincident with the contact-points between the pairs of quadrant-plates, a lever connected with said disk, and a spring for imparting a quick motion to the lever, substantially as described.

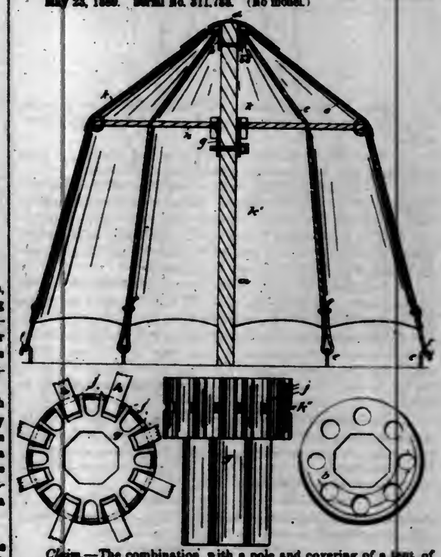
412,160. KIT. WILLIAM H. DUNN, Chicago, Ill., assignor to the Menasha Woodenware Company, Menasha, Wis. Filed May 7, 1888. Serial No. 309,890. (No model.)



Claim.—1. As an article of manufacture, a kit composed of staves having crozings formed near each end of the staves, a bottom inserted in the lower one of said crozings, a hoop secured around the kit near its bottom end and one intermediate between said bottom hoop and the upper crozing, a chamfer formed upon the projecting ends of the staves above said upper crozing, and a cover having a smooth upper surface and its upper and lower surfaces near the edge thereof chamfered, and adapting the cover to enter said upper crozing and also to be inserted therein by being placed upon the aforesaid chamfered ends of the staves, pressed downward, and sprung into said crozing under the positive shoulder 4', and thereby making the removal of said cover impossible except by its breakage or the lowering of the aforesaid upper hoop, all combined and operating substantially as described.

2. As an article of manufacture, a kit composed of staves having crozings formed near each end of the staves, a bottom inserted in the lower one of said crozings, a hoop secured around the kit near its bottom end and one intermediate between said bottom hoop and the upper crozing, said intermediate hoop having corrugations transversely thereof, a chamfer formed upon the projecting ends of the staves above said upper crozing, and a cover having a smooth upper surface and its upper and lower surfaces near the edge thereof chamfered, and adapting the cover to enter said upper crozing and also to be inserted therein by being placed upon the aforesaid chamfered ends of the staves, pressed downward, and sprung into said crozing under the positive shoulder 4', and thereby making the removal of said cover impossible except by its breakage or the lowering of the aforesaid upper hoop, all combined and operating substantially as described.

412,161. TENT. JOSEPH BURRELL, Newark, N. J., assignor of one-half to Emma J. Miller, same place. Filed June 20, 1887. Renewed May 23, 1889. Serial No. 311,733. (No model.)



Claim.—The combination, with a pole and covering of a tent, of a fixed flange-collar on the upper end of the pole, ropes secured to said tent-covering and fastened at one end to the fixed flange and to tent-pins in the ground at the other end, radial arms having one end pivoted to a sliding collar and the other end secured to ropes *a*, a sliding collar adapted to slide on the pole, and a set-screw for holding said collar in position, whereby the said ropes may be spread and made taut, after having been arranged to said pole and pins, without unduly stretching the tent-covering, all as herein described, as and for the purposes set forth.

412,162. ROLL FOR PAPER-MAKING MACHINES. APOLLOS CASTWRIGHT and ALBERT R. CROSBY, Springfield, Mass., assignors to C. H. Smith & Co., same place. Filed Feb. 1, 1888. Serial No. 262,534. (No model.)



Claim.—1. A roll-frame for paper-makers' use, having two spiral coils wound or coiled in opposite directions, substantially as shown.

2. A dandy-roll frame formed of two coils of wire, one coiled in a direction opposite the other and being within the coil of the other and having the larger part of points of contact united, substantially as shown.

3. The combination of spirally-formed cylinders *a b*, having longitudinal wires *c* secured thereto, with heads *d*, journals *f*, and cover-supporting wire *e*, wound upon the longitudinal wire *c*, and a cover, substantially as shown.

4. A dandy-roll having suitable heads and an open-work metal frame therebetween, consisting of a series of wires wound spirally upon each other in reverse directions and having their ends secured to said heads, and a series of rods extending between the latter by the sides of said wires, substantially as set forth.

5. A dandy-roll having suitable heads and an open-work metal frame therebetween, consisting of a series of wires wound spirally upon each other in reverse direction, and a series of rods extending between said heads by the side of said wires, substantially as shown.

6. In a roll, the combination of two or more spiral coils, one within the other, and coiled in the opposite direction, with longitudinal wires, winding-wires, and cover, substantially as shown.

7. A paper-maker's roll having two spirally-formed cylinders, one within the other, one or both being crimped, substantially as shown.

8. A paper-maker's roll having its supporting-body made of two or more spirally-formed cylinders, one within the other, the wires of the inner one being bent or crimped to bring it to the surface of the outer cylinder, substantially as shown.

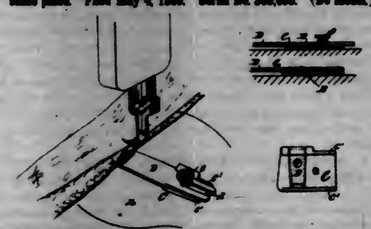
412,163. BOBBIN. ADOLPH CLAUS, Lowell, Mass., assignor of one-half to Joseph S. Ludlam, same place. Filed Feb. 26, 1889. Serial No. 301,244. (No model.)

Brief.—The object of the invention is to facilitate the removal of the base of the cop from the base of the bobbin without the necessity of using a knife.



Claim.—A bobbin having a base and a barrel provided with holding projections, and with a starting portion between the barrel and base, the said starting portion being of greater diameter than the barrel in the line of its holding projections, substantially as described.

412,164. ATTACHMENT-HOLDER FOR SEWING-MACHINES. JAMES CORE, Ogdensburg, N. Y., assignor of one-half to Benjamin C. Algie, same place. Filed May 4, 1889. Serial No. 309,696. (No model.)



Claim.—An attachment-holder for sewing-machines, consisting of two plates located, respectively, the one B in a fixed position upon the bed-plate of a sewing-machine and the other C having an adjustable connection with the attachment, the former of said plates being wedge-shaped and provided with beveled edges, making a dovetail connection with a counterpart opening located in the opposite connecting-plate, substantially as and for the purpose set forth.

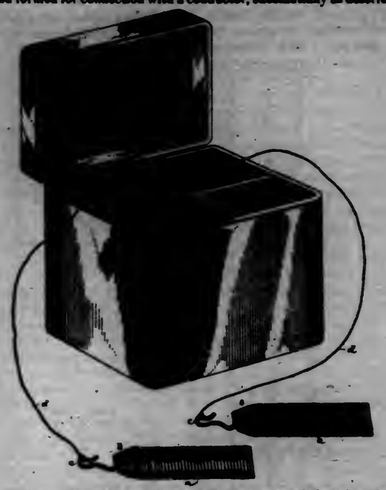
412,165. ELECTRODES FOR MEDICAL BATTERIES. HARRY R. COE, New Haven, Conn., assignor to the H. R. Coe Electric Company, same place. Filed Mar. 8, 1889. Serial No. 302,602. (No model.)

Claim.—1. An electrode consisting of a hollow pliable elastic cylinder formed of coiled spring-wire, substantially as described.

2. An electrode-handle consisting of a single length of tightly-coiled spring-wire forming a flexible handle adapted to conform itself to the interior shape of the hand when grasping the same, substantially as described.

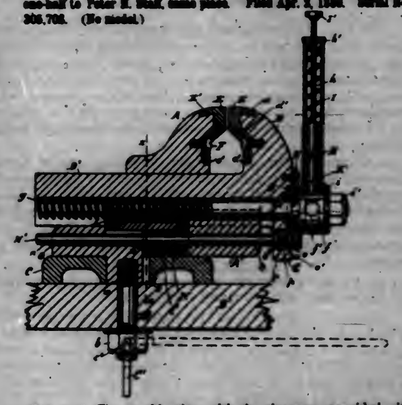
3. As a new article of manufacture, a medical-battery electrode consisting of a pliable coil of wire, one end of the wire being extended to form means whereby the electrode can be connected with a conductor, substantially as described.

4. An electrode-handle consisting of a closed pliable cylinder open at the ends and composed of a single coil of spring-wire having one end formed for connection with a conductor, substantially as described.



5. An electrode-handle consisting of a closed flexible cylinder tapered at one and open at both ends and formed of a single coil of spring-wire having one end extended and bent to form a hook, substantially as described.

412,166. VISE. EDWARD DAWSON, Terre Haute, Ind., assignor of one-half to Peter H. Stalf, same place. Filed Apr. 3, 1888. Serial No. 269,702. (No model.)



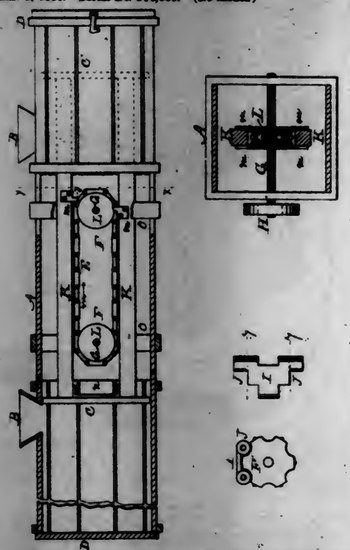
Claim.—1. The combination, with the vise-screw provided with a beveled collar, of the circular retaining-ring formed of two separate parts having overlapping beveled ends and secured in a circular recess in the sliding jaw and provided with a circular beveled recess for the said collar to revolve in, substantially as set forth.

2. The combination, with the vise-screw provided with a beveled collar, of the circular retaining-ring adapted to fit into a circular recess in the sliding jaw, and formed of two separate parts having overlapping beveled ends, and having a circular beveled recess for the said collar to turn in, the upper part being further provided with an oil-hole and a beveled portion at its outer edge, and a removable plate secured to the vise-jaw and engaging with the beveled portion on the edge of the ring and covering the oil-hole, substantially as set forth.

3. In a vise, the combination, with the vise-screw, of the segmental nut arranged beneath it and provided with a nut-stock having cheeks *n* and the leg *n'*, the revolvable double cam-sleeve for raising the nut-stock, the segmental nut arranged above the said vise-screw and provided with cheeks *o*, extending downwardly at each end of the said cheeks *n* upon each side of the screw and joined onto a plate under the cam for receiving the reverse thrust of the said cam, and

the projections T on the said cheeks *c* for the cam to strike against, substantially as and for the purpose set forth.

412,167. RAILING-PRESS. JOSEPH DUNBAR, Dayton, Ohio, assignor of two-thirds to Joseph M. Dunbo and Barton Pickering, same place. Filed Mar. 1, 1889. Serial No. 301,660. (No model.)



Claim.—1. The combination, with the press-frame having a compression-chamber at each end, of the sprocket-wheels journaled in said frame, the endless sprocket-chain carried by said wheels and having a laterally-projecting lug, the plunger-heads, the rails connecting the same, and a projecting plate on each of said rails, so arranged as to be engaged alternately by the lug on the sprocket-chain to reciprocate the plunger-heads and their connecting-rails, substantially as described.

2. The combination, with a suitable supporting-frame, of a pair of sprocket-wheels journaled in said frame, an endless sprocket-chain carried by said wheels and provided with laterally-projecting lugs, rails rigidly connected at their ends, and projecting plates on both sides of said rails, so arranged as to be engaged alternately by the lugs on the sprocket-chain to reciprocate said rails, substantially as described.

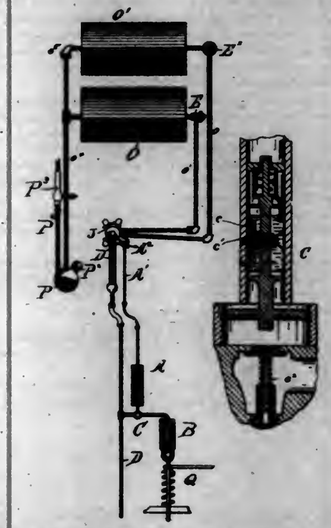
412,168. AIR-BRAKE. THOMAS S. R. DIXON, Hyde Park, Ill. Filed July 22, 1889. Serial No. 318,206. (No model.)

Claim.—1. In a railway-air-brake system, in combination with the main reservoir, train-pipe, connecting-passage, and engineer's valve, a limiting-valve actuated by variations of train-pipe pressure independently of the pressure in the main reservoir, and so arranged that the superior force of the latter pressure tends to hold the valve to its seat when closed, substantially as described.

2. In a railway-air-brake system, the combination of the main reservoir, train-pipe, connecting-passage, and engineer's valve with a valve-seat having a suitable port or ports which, when open, vent air from the main reservoir to the train-pipe, a valve interposed between said valve-seat and the main reservoir, and so constructed and arranged with relation to its port or ports that the main-reservoir pressure tends to hold it to its seat when closed, a diaphragm actuated by train-pipe pressure against the resistance of a spring, and a connection from the diaphragm to the valve, whereby the latter is actuated by variations of train-pipe pressure acting upon the diaphragm, substantially as described.

3. In a railway-air-brake system, the combination of a main reservoir and train-pipe with a connecting-passage controlled by the engineer's valve, and with a limiting-valve device consisting of a diaphragm, valve, and spring, said spring being supplemented in its action by fluid-pressure independent of the main-reservoir pressure, combined and operating substantially as described, whereby the spring, aided by its coacting fluid-pressure, tends to hold the valve-port open, and the train-pipe pressure at a predetermined limit above said coacting fluid-pressure closes it.

4. In a railway-air-brake system, the combination of the main reservoir, train-pipe, connecting-passages, engineer's valve, and auxiliary reservoir with a limiting-valve device consisting of a diaphragm, spring, valve, and air-passage from an auxiliary reservoir, which is independent in its pressure from the main air-reservoir to the back of the diaphragm, combined and operating substantially as described, whereby the spring and auxiliary-reservoir pressure coact to hold the valve-port normally open, and the train-pipe pressure at a predetermined limit above the auxiliary-reservoir pressure closes it.



5. In a fluid-pressure-brake system, the combination of the engineer's valve with a differential valve governed by the pressure of the auxiliary reservoir of one of the brake mechanisms, substantially as and for the purposes described.

6. In a fluid-pressure-brake system, the combination, with the train-pipe or other air-receptacle the pressure of which is to be regulated, of a separate air-chamber and a diaphragm interposed between them and actuated in opposite directions by the two fluid-pressures, a passage communicating with the train-pipe or air-receptacle the pressure in which is to be regulated, an engineer's valve to open and close said passage at will, a valve controlled by said diaphragm to automatically govern said passage when it is opened by the engineer's valve, and a spring to aid one of said pressures in holding the valve-port open against the opposition of the other, substantially as described.

7. In a fluid-pressure-brake system, the combination, with the train-pipe or other air-receptacle the pressure in which is to be regulated, of a separate air-chamber the pressure in which corresponds to the pressure in the auxiliary reservoirs of the brake-mechanism, and a diaphragm interposed between them and actuated in opposite directions by the two fluid-pressures, a passage communicating with the train-pipe or air-receptacle the pressure in which is to be regulated, an engineer's valve to open and close said passage at will, a valve controlled by said diaphragm to automatically govern said passage when it is opened by the engineer's valve, and a spring to aid one of said pressures in holding the valve-port open against the opposition of the other, substantially as described.

8. In a fluid-pressure-brake system having governing-valves provided or combined with refilling-passages to permit the refilling of the auxiliary reservoirs from the train-pipe while the brakes are not without releasing them, the combination of the main reservoir and train-pipe with a feed-passage leading from the source of the fluid-pressure to the train-pipe, an engineer's valve to open and close the same, and means for independently adjusting the capacity of the feed-passage, substantially as described.

9. In a fluid-pressure-brake system having governing-valves provided or combined with refilling-passages to permit the refilling of the auxiliary reservoirs from the train-pipe while the brakes are not without releasing them, the combination of the following elements, viz: a feed-passage leading from the source of fluid-pressure to the train-pipe, an engineer's valve to open and close said feed-passage at will, and means for limiting the head of feed-pressure to a predetermined amount above the train-pipe pressure, substantially as described.

10. In a fluid-pressure-brake system having governing-valves provided or combined with refilling-passages to permit the refilling of the auxiliary reservoirs from the train-pipe while the brakes are not without releasing them, the combination of the following elements, viz: a feed-passage leading from the source of fluid-pressure to the train-pipe, an engineer's valve to open and close said feed-passage at will, means for independently adjusting the capacity of the feed-passage, and means for limiting the head of feed-pressure to a predetermined amount above the train-pipe pressure, substantially as described.

11. In a fluid-pressure-brake system, the combination of the train-pipe with an expansion-chamber arranged between the engineer's valve and the governing-valves, and located at or near the engineer's valve, substantially as and for the purpose described.

12. In a railway-air-brake system, the combination of a way-cock and its casing adapted to be arranged at or beneath the floor of the cab, with a tubular standard extending upward from the engineer's valve-casing, an operating-shaft extending upward from the way-cock through the tubular standard and provided with a handle at its upper end, a curved plate extending from the standard up over the upper end of the shaft, and a screw supported by said plate and bearing down upon the end of the shaft for the purpose of holding the cock to its seat, substantially as described.

13. In a railway-air-brake system, the combination of a way-cock, a curved indicating plate or rim, a handle so arranged as to leave the upper surface of the plate or rim entirely exposed, and a retaining-spring engaging with the inner or concave edge of the plate or rim to retain the handle in its several positions, substantially as described.

14. In a railway-air-brake system, the combination of a way-cock casing, a tubular standard enlarged at its lower end to screw into the top of the casing, a screw or pin to retain the standard in proper relation to the casing, a way-cock arranged in the casing, a shaft extending up from the engineer's valve and provided with a handle, a curved plate extending from the standard up over the top of the shaft and held in proper relation to the standard by a screw or pin, a screw extending through the curved plate and bearing downward upon the upper end of the shaft, and an indicating-plate or retaining-spring, substantially as described.

15. In a railway-air-brake system provided with means for applying the auxiliary-reservoir pressure of the tender to regulate the flow of air to or from the train-pipe at the engine, the combination of the brake-applying rods and levers of the tender with a spring to reduce the effective force of the air-pressure upon the brakes, substantially as and for the purposes described.

16. In a railway-air-brake system provided with means for applying the auxiliary-reservoir pressure of the tender to regulate the flow of air to or from the train-pipe at the engine, the combination of a pipe leading from said auxiliary reservoir, a valve-casing connected to said pipe, branch pipes or passages leading from said valve-casing to the regulating devices, and a cock arranged in said casing adapted to open all the pipes and passages communicating with the casing, or to close any one of them and leave the others open, substantially as described.

17. In a railway-air-brake system, the combination of a valve-casing having a tapering internal chamber circular in cross-section, a pipe A', leading from the auxiliary reservoir of the tender to said chamber, branch pipes or passages leading from said chamber to devices for regulating the flow of air to and from the train-pipe, and a cock arranged in said chamber, provided with a handle and adapted to open all the ports of the chamber or to close any one of them and leave the others open, substantially as described.

18. In a railway-air-brake system operated by varying, by movements of the engineer's brake-valve, the relation between the air-pressure in the train-pipe and the air-pressure in the auxiliary reservoirs along the train, and provided with a valve controlled by a piston or diaphragm for automatically limiting the extent of such variation, the herein-described method of governing the action of said valve, consisting, essentially, in subjecting said piston or diaphragm on one side to an air-pressure whose variations substantially coincide with those of the train-pipe and on the other side to an air-pressure whose variations substantially coincide with those of the auxiliary reservoirs along the train.

19. In an engineer's brake-valve, the combination of a piston or diaphragm and a connected discharge-valve controlling the exhaust of air from a brake-pipe, said piston or diaphragm being adapted to close the discharge-valve by a disturbance of equilibrium of pressure to a predetermined extent on its opposite sides and to open and maintain the opening of the discharge-valve by a restoration of such equilibrium, whereby, when the engineer's valve is opened, the flow of air from the brake-pipe is automatically regulated, substantially as described.

20. In an engineer's brake-valve, the combination of a piston or diaphragm and a connected supply-valve controlling the supply of air from the main reservoir to the brake-pipe, said piston or diaphragm being adapted to close the supply-valve by a disturbance of equilibrium of pressure to a predetermined extent on its opposite sides and to open and maintain the opening of the supply-valve by restoration of such equilibrium, whereby, when the engineer's valve is opened to the reservoir-port, the flow of air into the brake-pipe is automatically regulated, substantially as described.

21. In a railway-air-brake system, the combination of a brake-pipe or other air-receptacle whose pressure is to be reduced, an exhaust-passage therefrom controlled at one point by a hand-valve and at another point by an automatic valve, and a piston or diaphragm connected to the automatic valve and adapted to close the same by a disturbance of equilibrium of pressure to a predetermined extent on its opposite sides and to open and maintain the opening of the same by a restoration of such equilibrium, whereby, when the engineer's valve is opened, the flow of air from the brake-pipe is automatically regulated, substantially as described.

22. In a railway-air-brake system, the combination of a brake-pipe or other air-receptacle whose pressure is to be increased, a supply-passage leading from the main reservoir to said brake-pipe or receptacle, controlled at one point by a hand-valve and at another point by an automatic valve, and a piston or diaphragm connected to the automatic valve and adapted to close the same by a disturbance of equilibrium of pressure to a predetermined extent on its opposite sides and to open and maintain the opening of the same by a restoration of such equilibrium, whereby, when the engineer's valve is opened to the reservoir-port, the flow of air into the brake-pipe is automatically regulated, substantially as described.

23. In an engineer's brake-valve, the combination of a piston or diaphragm and a connected discharge-valve controlling the exhaust of air from a brake-pipe, with a spring or its equivalent to oppose the closing of the valve, said piston or diaphragm being adapted to close the discharge-valve by a disturbance of equilibrium of pressure on its opposite sides sufficient to enable it to overcome the resistance of the spring and to permit the spring to open and maintain the opening of the discharge-valve upon the restoration of such equilibrium, substantially as described.

24. In an engineer's brake-valve, the combination of a piston or diaphragm and a connected supply-valve controlling the supply of air from the main reservoir to the brake-pipe, with a spring to oppose the closing of the valve, said piston or diaphragm being adapted to close the supply-valve by a disturbance of equilibrium of pressure on its opposite sides sufficient to enable it to overcome the resistance of the spring and to permit the spring to open and maintain the opening of the supply-valve upon the restoration of such equilibrium, substantially as described.

25. In a railway-air-brake system, the combination of a brake-pipe or other air-receptacle whose pressure is to be reduced, an exhaust-passage therefrom controlled at one point by a hand-valve and at another point by an automatic valve, and a piston or diaphragm connected to the automatic valve, with a spring to resist the closing of said valve, said piston or diaphragm being adapted to close the automatic valve by a disturbance of equilibrium of pressure on its opposite sides sufficient to enable it to overcome the resistance of the spring and to permit the spring to open and maintain the opening of said valve upon the restoration of such equilibrium, substantially as described.

26. In a railway-air-brake system, the combination of a brake-pipe or other air-receptacle whose pressure is to be increased, a supply-passage leading from the main reservoir to said brake-pipe or receptacle, controlled at one point by a hand-valve and at another point by an automatic valve, and a piston or diaphragm connected to the automatic valve, with a spring to resist the closing of said valve, said piston or diaphragm being adapted to close the automatic valve by a disturbance of equilibrium of pressure on its opposite sides sufficient to enable it to overcome the resistance of the spring and to permit the spring to open and maintain the opening of said valve upon the restoration of such equilibrium, substantially as described.

27. In an engineer's brake-valve, the combination of an automatic discharge-valve controlling the exhaust of air from a brake-pipe or other air-receptacle whose pressure is to be reduced, a piston or diaphragm connected to said valve, adapted to close the same by a disturbance of equilibrium of pressure to a predetermined extent on its opposite sides and to open and maintain the opening of the same by a restoration of such equilibrium, and a valve actuated by hand for effecting an exhaust of air through the passage controlled by the automatic valve at one side of the piston or diaphragm, and for causing by the same movement a slower exhaust of the air at the opposite side of the piston or diaphragm, substantially as described, whereby, when the hand-actuated valve is open, the automatic valve is so controlled by the two varying air-pressures as to initially permit the one to reduce to the predetermined extent below the other, and then to allow

both to reduce together without any substantial disturbance of the difference thus initially established.

28. In an engineer's brake-valve, the combination of an automatic supply-valve controlling the admission of air from the main reservoir to a brake-pipe or other air-receptacle whose pressure is to be increased, a piston or diaphragm connected to said valve, adapted to close the same by a disturbance of equilibrium of pressure to a predetermined extent on its opposite sides and to open and maintain the opening of the same by a restoration of such equilibrium, and a valve actuated by hand for effecting an increase of pressure through the passage controlled by the automatic valve at one side of the piston or diaphragm, and for causing by the same movement a slower increase of pressure at the opposite side of the piston or diaphragm, substantially as described, whereby, when the hand-actuated valve is open, the automatic valve is so controlled by the two varying air-pressures as to initially permit the one to rise to the predetermined extent above the other, and then to allow both to rise together without any substantial disturbance of the difference thus initially established.

29. In a railway-air-brake system, the combination of a brake-pipe or other air-receptacle whose pressure is to be reduced, an exhaust-passage therefrom controlled at one point by a hand-valve and at another point by an automatic valve, a spring to resist the closing of the automatic valve, a piston or diaphragm connected to the automatic valve, adapted to close the same by a disturbance of equilibrium of pressure on its opposite sides sufficient to enable it to overcome the resistance of the spring and to permit the spring to open and maintain the opening of the same upon the restoration of such equilibrium, and an air-passage affecting a communication between the auxiliary reservoir of one of the brake mechanisms and that side of the piston or diaphragm which is most remote from said exhaust-passage, substantially as described.

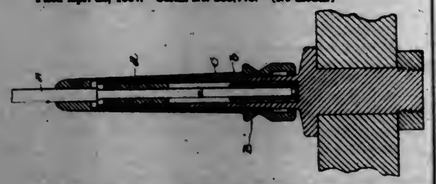
30. In a railway-air-brake system, the combination of a brake-pipe or other air-receptacle whose pressure is to be increased, a supply-pipe leading from the main reservoir to said brake-pipe or receptacle, controlled at one point by a hand valve and at another point by an automatic valve, a spring to resist the closing of the automatic valve, a piston or diaphragm connected to the automatic valve, adapted to close the same by a disturbance of equilibrium of pressure on its opposite sides sufficient to enable it to overcome the resistance of the spring and to permit the spring to open and maintain the opening of the same upon the restoration of such equilibrium, and an air-passage affecting a communication between the auxiliary reservoir of one of the brake mechanisms and that side of the piston or diaphragm which is most remote from said supply-passage, substantially as described.

31. In a railway-air-brake system operated by varying the relation between the air-pressure in the train-pipe and the air-pressure in the auxiliary reservoirs along the train, a controlling-valve for automatically limiting such variation, said valve being so connected as to be operated by the differences of pressure in the train-pipe and auxiliary reservoirs, substantially as and for the purpose set forth.

32. In a railway-air-brake system, the combination of a train-pipe, an engineer's valve, a controlling-valve connected to the engineer's valve, and a pipe or passage connecting the controlling-valve with one of the auxiliary reservoirs of the train, substantially as and for the purpose set forth.

33. In a railway-air-brake system, the combination of a train-pipe, an engineer's valve, a controlling-valve regulating the flow of air through a port or passage leading into the train-pipe, and a pipe or passage connecting the controlling-valve with one of the auxiliary reservoirs of the train, substantially as and for the purpose set forth.

412,169. **SUPPORT FOR SPINNING-SPINDLES.** WILLIAM F. DRAPER, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Apr. 20, 1887. Serial No. 235,773. (No model.)



Claim.—1. A spindle and a bolster case or tube, combined with a rigid upper lateral bearing located in said case or tube and an independent yielding lateral bearing for the lower end of the spindle, located in said supporting-tube, the said bearings being separated, substantially as described.

2. A spindle and bolster case or tube, combined with a rigid upper lateral bearing located in the said case or tube, an independent yielding lateral bearing for the lower end of the spindle, located in the said supporting-tube, and a yielding or elastic support therefor within said tube, substantially as described.

3. A sleeve-whirl spindle and bolster case or tube, combined with a rigid upper lateral bearing located in the said case or tube, an independent yielding lateral bearing for the lower end of the spindle, located in the said supporting-tube, and a yielding or elastic support therefor within said tube, substantially as described.

4. The bolster case or tube, the rigid upper lateral bearing fixed in the upper portion of said case or tube, and a yielding lateral bearing for the lower end of the spindle and located in said case or tube, combined with a sleeve-whirl spindle having the band-receiving groove of its whirl located below the said rigid bearing, substantially as described.

5. A spindle and a bolster case or tube, combined with a rigid lateral bearing fixed in the upper portion of said case or tube and an independent yielding lateral bearing for the lower end of the spindle, located in said supporting-tube, the said bearings being separated, substantially described.

412,170. **SUPPORT FOR SPINNING-SPINDLES.** WILLIAM F. DRAPER, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Jan. 3, 1888. Serial No. 259,618. (No model.)



Claim.—1. The combination, with a sleeve-whirl spindle, of a bearing composed of a block having rising from it a series of independent arms *c*, arranged in a circle and of a thickness to substantially fill the space between the pintle of the spindle and the interior of the sleeve-whirl and having inner rounded corners, the said arms forming a lateral bearing for the spindle at a point below the attachment of the whirl and being extended into the space between the sleeve of the whirl and the spindle, the said arms being entirely unrestricted as to their movement excepting by the whirl, substantially as described.

2. In a spindle-bearing, a sleeve-like support or bolster to receive within it the pintle or lower end of the spindle and slitted longitudinally to constitute a series of independent arms, the inner corners of which are rounded, and provided with a suitable number of grooves cut into it from the outside to render the said support or bolster elastic under the strain of the spindle, substantially as described.

3. In a spindle-bearing, a sleeve-like support or bolster to receive within it the pintle or lower end of the spindle, and provided at or near its base with annular grooves extended well into the substance of the support or bolster to render it elastic under the strain of the spindle, substantially as described.

412,171. **SUPPORT FOR SPINNING-SPINDLES.** WILLIAM F. DRAPER, Hopedale, assignor to the Sawyer Spindle Company, Boston, Mass. Filed Apr. 26, 1887. Renewed Mar. 26, 1889. Serial No. 304,517. (No model.)

Brief.—The object of the invention is to produce a bearing which shall accommodate the movement of the pintle of the spindle at two points of its length below the junction of the sleeve-whirl with the spindle.

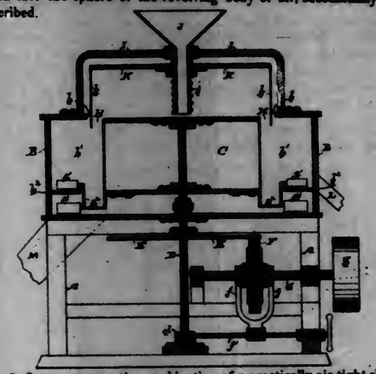


Claim.—1. A spindle and a bolster-case combined with independent yielding lateral bearings therein, one above the other and surrounding the pintle of the spindle, substantially as described.

2. A sleeve-whirl spindle and a bolster-case combined with independent yielding lateral bearings therein, one above the other and surrounding the pintle of the spindle, substantially as described.

412,172. **SEPARATOR.** JOHN H. FINCH, Crockett, assignor of part to John R. Gruen, San Francisco, George Riley, Vallejo, and Frank Miller, Marysville, Cal. Filed May 4, 1888. Serial No. 273,023. (No model.)

Claim.—1. In a separator, the combination of a practically air-tight shell or casing, a disk or wheel mounted therein so as to rotate in a horizontal plane, and having a diameter sufficiently less than that of the shell or casing to leave a surrounding separating-chamber in which a horizontally-revolving body of air accompanies it, and having a diameter sufficiently less than that of the shell or casing to leave a surrounding separating-chamber in which a revolving body of air accompanies said disk or wheel, and a feed-hopper above for directing the material upon the top of said rotating disk or wheel, whereby it is discharged centrifugally over the edge thereof and into the sphere of the revolving body of air, substantially as described.



2. In a separator, the combination of a practically air-tight shell or casing and a disk or wheel mounted therein so as to rotate in a horizontal plane, and having a diameter sufficiently less than that of the shell or casing to leave a surrounding separating-chamber in which a revolving body of air accompanies said disk or wheel, and a feed-hopper above for directing the material upon the top of said rotating disk or wheel, whereby it is discharged centrifugally over the edge thereof and into the sphere of the revolving body of air, substantially as described.

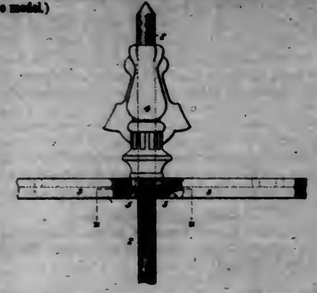
3. In a separator, the combination of a practically air-tight shell or casing and a horizontally-rotating disk or wheel mounted therein, and having a diameter sufficiently less than that of the shell or casing to leave a surrounding separating-chamber in which a revolving body of air accompanies the rotating disk or wheel, separate receiving floors or compartments with separate outlets in said surrounding chamber, scrapers operating on said floors, and a feed-hopper for directing the material upon the top of the rotating disk or wheel, whereby it is directed centrifugally over its edge into the separating-chamber and into the sphere of the revolving body of air therein, substantially as described.

4. In a separator, the combination of a practically air-tight shell or casing having a contracted top opening and a horizontally-rotating disk or wheel mounted in said shell or casing, leaving a surrounding separating-chamber in which a revolving body of air accompanies it, and an annular communicating-aperture between its top edge and the edge of the top of the shell or casing, a feed-hopper above for directing the material upon the top of the rotating disk or wheel, whereby it is thrown centrifugally outwardly and discharged over its edge and through the annular communicating-aperture in the sphere of the revolving body of air, and an adjustable gate or valve for controlling and regulating said communicating-aperture and the feed of the material through it, substantially as described.

5. In a separator, the combination of a practically air-tight shell or casing having a top opening and a horizontally-rotating disk or wheel mounted in the shell or casing, leaving a surrounding separating-chamber in which a revolving body of air accompanies it, and an annular communicating-aperture between its top and the edge of the top opening of the shell or casing, a feed-hopper above having a downwardly-extending neck adapted to direct the material centrally upon the top of the disk or wheel, whereby said material is thrown outwardly by centrifugal force and discharged over its edge through the communicating-aperture into the sphere of the revolving body of air, and the inverted pan-shaped gate or valve seated and vertically movable upon the neck of the hopper and having its rim extending down into the communicating-aperture, whereby the feed of material through said aperture is regulated and controlled, substantially as described.

6. A separator consisting of the combination of the shell or casing, the horizontally-rotating disk or wheel mounted therein and leaving a surrounding separating-chamber between its periphery and the wall of the shell or casing, in which a revolving body of air accompanies it, and an annular communicating-aperture from the top of said disk or wheel into said chamber, a flanged ledge within said chamber, scrapers secured to the disk or wheel and operating in the bottom of the shell or casing and over the flanged ledge separate outlets for said ledge and the bottom of the shell or casing, a feed-hopper adapted to direct the material upon the top of the disk or wheel, whereby it is thrown outwardly by centrifugal force and discharged into the surrounding separate chamber, and the vertically-adjustable gate or valve for controlling the communicating-aperture from the top of the disk or wheel into the separating-chamber, substantially as described.

412,173. **IRON FENCE.** LOUIS FEILG, Pittsburg, Pa., assignor to Taylor & Dunn, same place. Filed Feb. 16, 1889. Serial No. 300,093. (No model.)



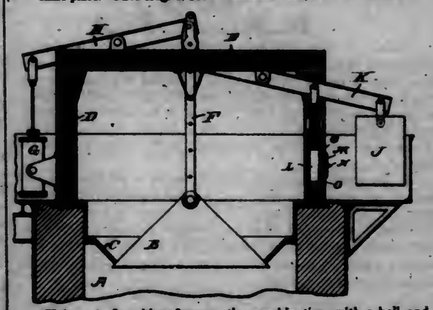
Claim.—An improvement in iron fence, which consists in the combination of a rail, a tubular integral ornament set on the rail and having a lug or legs extending through the rail, the ends of said legs being upset on the under side, and a picket passing through and above the rail and tubular ornament, substantially as and for the purposes described.

412,174. **PEN-HOLDER GUIDING ATTACHMENT.** CASSIUS M. GAY, Oak Park, assignor of one-half to Frank H. Palmer, Maple Park, Ill. Filed May 23, 1888. Serial No. 311,767. (No model.)



Claim.—The herein-described pen-guide, consisting of the sleeve to embrace a pen-holder, and having a side spur or projection which is adapted to pass beneath the finger next to the holder and rest upon the hand at the juncture of said finger and the next adjacent finger, substantially as hereinbefore set forth.

412,175. **BLAST-FURNACE TOP.** FRED W. GORDON and VICTOR O. STRAUBEL, Philadelphia, Pa., assignors to Gordon, Straubel & Laureau, same place. Filed Aug. 1, 1887. Serial No. 245,801. (No model.)



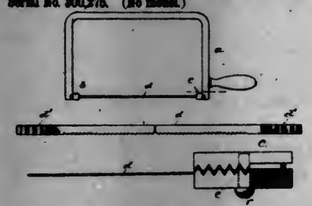
Claim.—1. In a blast-furnace, the combination, with a bell and hopper and actuating-beams, and motor mechanism for raising and lowering the bell, of a resisting air-cylinder provided with a piston having its piston-rod connected to one of said beams, a conduit connecting with the two ends of the cylinder and adapted to have its connections with the cylinder overrun by said piston, a cock in said conduit serving as a means for adjusting the effective conduit area, and cocks at the extreme ends of the cylinder, substantially as and for the purpose set forth.

2. In blast-furnaces, the combination, substantially as set forth, of the columns D, located in pairs at diametrically-opposite sides of the furnace-throat, beams E, supported by said columns, bell and hopper B C, bell-rod F, reaching from the bell upward between said beams, oscillating beams H and K, connected to said bell-rod and disposed between said first-mentioned beams and having their centers supported thereby, and motor mechanism and a counter-balance connected, respectively, with said oscillating beams.

3. In blast-furnaces, the combination, with a bell and hopper, a bell-rod, an oscillating beam connected with the bell-rod, and motor mechanism for raising and lowering the bell through the instrumentality of said beam, of a second oscillating beam connected to the bell-rod, a counter-balance attached thereto, and regulating-cylinder L, connected with said last-mentioned beam.

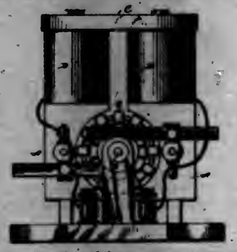
4. In blast-furnaces, the combination of a bell and hopper, a bell-rod, and mechanism for raising and lowering the bell, of two pairs of columns D, beam K, supported thereby and connected to the bell-rod, counter-balance J, attached to said beam, and air-cylinder L, disposed between the two columns of one of said pairs of columns and connected with said beam.

412,176. SAW-BLADE. GEORGE W. GRIFFIN, Franklin Falls, N. H., assignor of one-half to Parker C. Hancock, same place. Filed Feb. 18, 1889. Serial No. 300,275. (No model.)



Claim.—The herein-described jig-saw blade, having at its opposite ends a series of permanent corrugations transverse to the length of the blade, substantially as shown and described.

412,177. ELECTRIC MOTOR. HENRY GROSWITH, Philadelphia, Pa., assignor of three-fourths to Charles W. Kennedy and Ransom F. Rankin, same place. Filed July 30, 1889. Serial No. 319,183. (No model.)



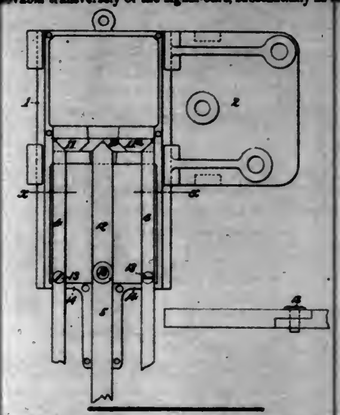
Claim.—1. The combination of the armature proper constructed substantially as described, the removable disk or plate provided with radial metallic conduit-plates or sectors adapted to connect the termini of the wire coils in the manner described, and the removable box or bearing carrying the radial contact or commutator plates arranged in a vertical plane and connected at their inner ends to the corresponding sector-plates, substantially as and for the purpose set forth.

2. The combination, in an electric motor, of an armature constructed substantially as described, the radial connecting-plates or sectors, and the radial commutator-plates arranged in a vertical plane and adapted to bear with their outer sides or faces against commutator-brushes adapted to press against them at right angles, or in a direction parallel to the axis of the motor, substantially as and for the purpose shown and set forth.

412,178. SIGNAL APPARATUS. JAMES T. HANRAY, Wilkinsburg, assignor to the Union Switch and Signal Company, Pittsburg, Pa. Filed July 5, 1889. Serial No. 316,093. (No model.)

Claim.—1. In a signal apparatus, the combination of a movable signal, a movable frame connected to the signal, two or more signal-operating bars, and one or more blocks constructed, when shifted by one or more of the signal-bars, to lock the other bar into engagement with the movable frame, substantially as set forth.

2. In a signal apparatus, the combination of a movable signal, a movable frame connected to the signal, three or more signal-operating bars movable in said frame, a dog pivotally connected to one of said bars, and two or more blocks arranged in grooves in said frame and movable transversely of the signal-bars, substantially as set forth.

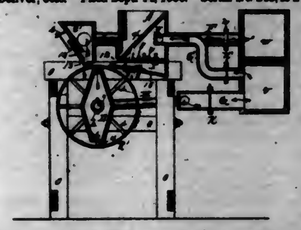


412,179. BALE-TIE. FOSTER B. HARD, Handsborough, Miss. Filed May 28, 1889. Serial No. 312,385. (No model.)



Claim.—The improved bale-tie fastening described, consisting, essentially, of the plate A, bent about midway of its length at *a*, and having the straight portions *b b*, and the loops B struck from the plate, the one on the upper side and the other on the under side of the opposite portions *b b'*, said loops being adapted to receive the ends of a bale-band, substantially as specified.

412,180. ORE-CONCENTRATOR. ROBERT B. HASTINGS, Georgetown, assignor of one-fourth to Charles P. O'Reilly and William E. Ure, both of Denver, Colo. Filed Sept. 14, 1888. Serial No. 213,494. (No model.)



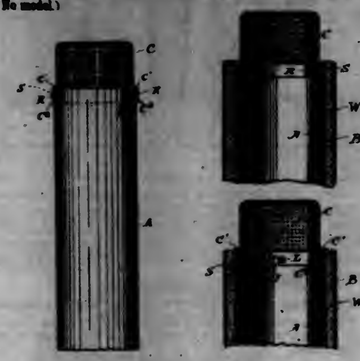
Claim.—1. An ore-concentrator consisting of a rotating porous-covered cylinder, a compressed-air chamber I, located contiguous to said cylinder, having an air-exit passage above the surface of the latter covered with a porous cloth, a hopper located over said chamber having an aperture through which the gangue is delivered onto said porous cloth, a suction-box near said cylinder having an air-inlet near the latter, an air-blast box fixed within said cylinder having an air-exit passage therein from which air flows from the cover of the latter, and means, substantially as described, for forcing air into said blast-box and chamber, and for exhausting the air from said suction-box, combined and operating substantially as set forth.

2. In an ore-concentrator, the rotating ore-bed cylinder R', the blast-box D, fixed within the latter and having the perforated air-pipe *h* therein, the air-box *v*, the pipe G, connecting the latter and said pipe *h*, the hopper A, having an inclined bottom and a discharge-opening at one side thereof, the suction-box *c'*, located over said cylinder, the exhaust-box *w*, the pipe F, connecting the latter with said suction-box, and means, substantially as described, for forcing air into said box *v* and for exhausting the air from said box *w*, substantially as set forth.

3. The hopper A, having an outlet at one side, the air-chamber I, having a pipe-connection, substantially as described, with the air-pressure box *v*, and having an air-outlet contiguous to said hopper-outlet having a porous covering, the valve *o* in the bottom of said chamber, having an arm connected therewith, and the ore-bed cylinder R, having a projection in position for intermittent engagement with said arm, and a suitable spring to close said valve, combined and operating substantially as set forth.

4. The rotating ore-bed cylinder R', the blast-box D, fixed within the latter, the valve 6, pivoted at the lower edge of said box, having an arm 4 thereon, which intermittently engages with a projection on the head of said cylinder, whereby said valve is opened, and a suitable spring to close the latter, combined and operating substantially as set forth.

412,181. LAMP. LEONARD REBELL, Rochester, assignor to Charles Stanford Upton, New York, N.Y. Filed May 27, 1887. Serial No. 239,065. (No model.)



Claim.—1. In a central-draft lamp, a thimble or auxiliary tube C, having perforated vertical walls formed with a shoulder C' and a rim C², substantially as shown and described.

2. In a central-draft lamp, the combination, with a central-draft tube, of a perforated thimble or auxiliary tube having an outwardly-projecting portion seating upon the top of said draft-tube, the perforated portion of said thimble or auxiliary tube setting inwardly, so as to stand off from the line of flame.

3. In a central-draft lamp, the combination, with the central-draft tube, of a perforated thimble or auxiliary tube standing inwardly from the line of flame and seating over the outside of the central-draft tube and being supported thereby, substantially as and for the purpose set forth.

4. In a central-draft lamp, the combination, with a central-draft tube, of a perforated thimble or auxiliary tube supported by said draft-tube and extending inwardly from the upper edge of the draft tube and thence vertically upward, as and for the purpose set forth.

5. In a central-draft lamp, the combination, with the central-draft tube, of the perforated thimble or auxiliary tube, the vertical side walls and top of the thimble or auxiliary tube being of smaller diameter than the draft-tube, and the thimble or auxiliary tube at its lower end seating directly on the draft-tube and adapted to be retained in a central position thereby.

6. In a central-draft lamp, the combination, with a central-draft tube, of a thimble or auxiliary tube having a perforated portion setting inwardly on a line with the top of the outer wick-tube and then upward to the top of the thimble or auxiliary tube, the upper side walls and top of said thimble or auxiliary tube being of a smaller diameter than the draft-tube.

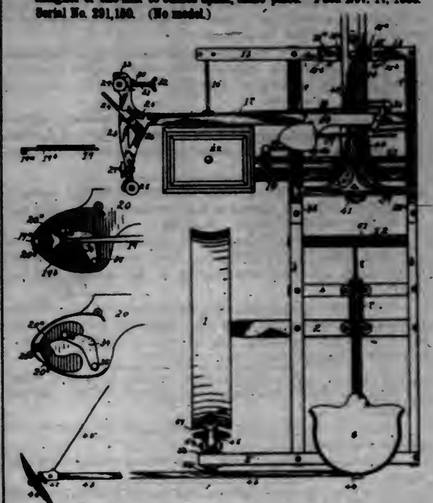
7. In a central-draft lamp, the combination, with a central-draft tube, of a thimble or auxiliary tube supported by said draft-tube closing the upper end of the latter at its edge, the vertical side walls of the thimble or auxiliary tube being perforated, and said walls and top of the thimble or auxiliary tube being of a smaller diameter than the central-draft tube.

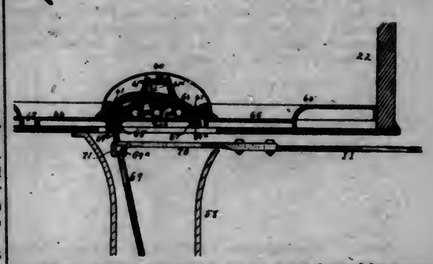
8. In a central-draft lamp, the combination, of a central-draft tube forming the inner-wick tube open for the admission of air, a thimble or auxiliary tube the internal diameter of the lower portion of which corresponds with the external diameter of said draft-tube and adapted to set over the upper end of said draft-tube, the said thimble or auxiliary tube being constructed with an upper portion above the draft-tube of a diameter less than the diameter of the draft-tube, so as to form an annular shoulder as a rest upon the upper end of the draft-tube, the sides of the upper portion being perforated, substantially as described.

9. The combination of the central-draft tube A, having a screw-thread or its equivalent, and the perforated thimble or auxiliary tube C, formed with an outwardly-extending shoulder C', and a rim C², having a screw-thread or its equivalent on the central-draft tube, substantially as described.

10. In a central-draft lamp substantially as hereinbefore set forth, the central-draft tube A, forming a support for a perforated thimble or auxiliary tube C, in combination with said thimble or auxiliary tube having the vertical perforated walls for distributing the air, as described, the said thimble or auxiliary tube standing inwardly from the line of flame and terminating at its lower end in a rim C², formed parallel with the central-draft tube, and adapted to be supported and retained in a central position by said central-draft tube.

412,182. SEED-PLANTER. EDWARD M. HUTLMAN, Havana, Ill., assignor of one-half to James Spink, same place. Filed Nov. 17, 1888. Serial No. 291,180. (No model.)





Claim.—1. In corn-planters, in combination, a forward frame carrying planting mechanism, a rear frame mounted on wheels and having two longitudinal bars on opposite sides of and equidistant from the longitudinal center of the planter, and a universal joint pivotally connected with the forward ends of the bars, and also pivoted to rock laterally on the forward frame, as set forth.

2. In corn-planters, in combination, a forward frame carrying a planting mechanism, a rear frame mounted on wheels and having two longitudinal bars on opposite sides of and equidistant from the longitudinal center of the planter, a universal joint pivotally connected with the forward ends of the bars and also pivoted to rock laterally on the forward frame, and springs interposed between the bars and extensions of the forward frame projected rearwardly under the bars, as set forth.

3. In seed-planters, in combination, the longitudinally-reciprocating bar 19, having pin 19ª and hooks 19ᵇ, the housing 20, having depression 20ª 20ᵇ, and the oblique guide-surface 20ᶜ, lever 34, having pins 35 adapted to the hooks, and means, substantially as described, for imparting the motion of the lever to the seed-slide of the planter, as set forth.

4. In seed-planters, in combination, check-rower head 23, having ways 23ª and recess 23ᵇ, yoke 30ª, having transverse motion in the head and extending outwardly as bolt 30, nut 32 on the end of the bolt, spring 31, interposed between the nut and the head, plate 29ᵇ,

pivoted in the yoke and having knob 29^{c}, and pulley 29, pivoted on plate 29^{b}, as set forth.

5. In seed-planters, in combination, a second drop-valve, a bifurcate shake-bar, lateral pins on the valve, and yoke formations on the forks of the shake-bar adapted to the pins, as set forth.

6. In seed-planters, in combination, seed-plate 66, having cells 67, casing 60, cut-offs 61, presented in opposite directions and pivoting on trunnions in casing 60, upward extensions 61^{a} of cut-offs 61, and spring 63 between said upward extensions, as set forth.

7. In seed-planters, in combination, seed-plate 66, having cells 67, and the upward-projecting cam 72, casing 60, containing cut-offs presented in opposite directions, and rocking frame 64, having ends 64^{a}, adapted to the cells and the cam, as set forth.

8. In seed-planters, the wheel-scraper comprising the bell-crank lever carrying a scraper on its lower end and having its upper end in contact with the wheel, as set forth.

9. In seed-planters, the wheel-scraper comprising the bell-crank lever having its fulcrum adjustable with relation to the wheel, the anti-friction roller in the upper end of the lever, and the scraper on the lower end, as set forth.

10. The lateral adjuster for the tongue of seed-planters, comprising the brackets 15, having the upward extensions 15^{a} and the slots 15^{b}, and the adjusting-bolts 15^{c}, passed through the slots and secured to the frame, as set forth.

412,183. ART OF PRINTING, LITHOGRAPHING, &c. OLIVER G. HOLZ, Louisville, Ky., assignor to MAX RICHENACK, trustee. Filed Apr. 20, 1889. Serial No. 308,073. (Specimens.)

Claim.—1. The herein-described improvement in the art of type and plate printing, lithographing, and doing other impression-work, which consists in printing, lithographing, &c., by means of semi-fluid maltha.

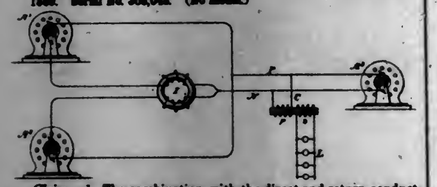
2. The herein-described improvement in the art of type and plate printing, lithographing, and doing other impression work, which consists in printing, lithographing, &c., by means of an ink composed of semi-fluid maltha and of a pigment or pigments.

412,184. INK. OLIVER G. HOLZ, Louisville, Ky., assignor to MAX RICHENACK, trustee. Filed June 15, 1889. Serial No. 314,226. (No specimens.)

Claim.—1. An ink having as its essential and characteristic constituent semi-fluid maltha.

2. An ink composed of semi-fluid maltha and a pigment or pigments.

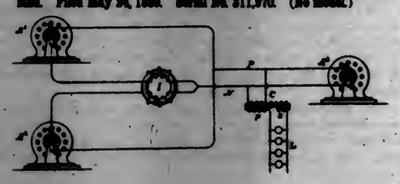
412,185. COUPLING ALTERNATE-CURRENT GENERATORS. JOHN HOPKINSON, Westminster, County of Middlesex, and EDWARD HOPKINSON, Manchester, County of Lancaster, England, assignors to George Westinghouse, Jr., Pittsburg, Pa. Filed June 4, 1887. Renewed Apr. 30, 1889. Serial No. 308,042. (No model.)



Claim.—1. The combination, with the direct and return conductors of an electric circuit, of two or more alternate-current dynamo-electric machines connected thereto in parallel with each other, and one or more self-induction coils included in the circuits of said alternate machines.

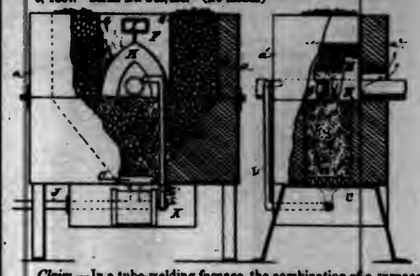
2. The combination, with one or more alternate-current dynamo-electric machines, of another alternate-current dynamo-electric machine serving as a motor, all of said machines being in parallel with the main conductors, and a self-induction coil included within the circuits of said alternate machines.

412,186. METHOD OF SYNCHRONIZING ALTERNATE-CURRENT GENERATORS. JOHN HOPKINSON, Westminster, County of Middlesex, and EDWARD HOPKINSON, Manchester, County of Lancaster, England. Filed May 24, 1889. Serial No. 311,970. (No model.)



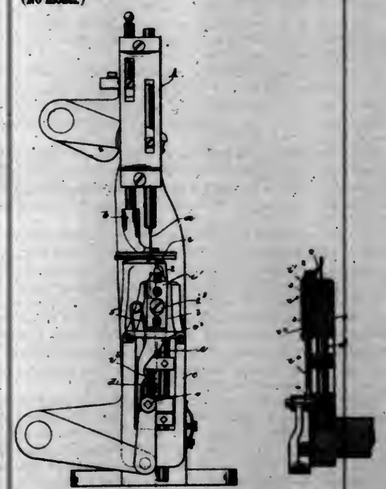
Claim.—The hereinbefore described method of synchronizing alternate-current electric generators, which consists in causing the excess of current from one generator to induce an assisting current in the circuit of the other generator and thereby temporarily lessen the load of that generator.

412,187. TUBE-WELDING FURNACE. HARRY JEWETT, Ludlow, Ky., assignor of one-half to Fred. Hoeflin, Meridian, Miss. Filed Aug. 3, 1887. Serial No. 246,493. (No model.)



Claim.—In a tube-welding furnace, the combination of a furnace-chamber having a V-shaped bottom, the grate C, plates G, forming the inner walls of said chutes E, the removable V-shaped hood H, the blast-pipe J, arranged under the grate, and the branch air-pipe L, opening into the hood H, said branch pipe having a valve L', substantially as specified.

412,188. GROOVE-CUTTING ATTACHMENT FOR SEWING-MACHINES. ALBERT R. JOHNSON, Brockton, Mass., assignor of one-half to C. Herbert Porter, same place. Filed July 3, 1889. Serial No. 316,767. (No model.)



Claim.—1. The combination, with the stitch-forming mechanism of a sewing-machine, comprising the awl, needle and cast-off, the needle-bar and rocker-arm in which it slides, of a laterally and vertically adjustable grooving-tool and an independent carrying-lever loosely connected to the rocker-arm, substantially as described.

2. The combination, with the stitch-forming mechanism of a sewing-machine, comprising the awl, needle and cast-off, the needle-bar, and rocker-arm in which it slides, of an adjustable grooving-tool and an independent lever pivotally connected to the said rocker-arm and provided with a cam-edge, and means, substantially as described, for acting upon said cam-edge and moving the said lever on its pivot while the needle is entering and leaving the work, substantially as described.

3. The combination, with the stitch-forming mechanism of a sewing-machine, comprising the awl, needle and cast-off, the needle-bar, said rocker-arm, of the grooving-tool and pivoted lever F^{3} said grooving-tool being vertically adjustable with the tool-carrier, substantially as described.

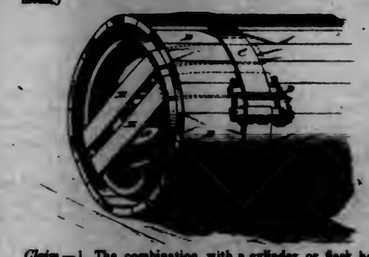
4. The combination, with the stitch-forming mechanism of a sewing-machine, comprising the awl, needle and cast-off, the needle-bar, and rocker-arm, of the grooving-tool and pivoted lever F^{3}, said grooving-tool being laterally adjustable on the tool-carrier, substantially as described.

412,189. SASH-FASTENER. GEORGE KIRKLAND, Stanwood, Mich. Filed June 28, 1888. Serial No. 278,494. (No model.)



Claim.—In a window-fastener, the case A, having side plate G, provided with the guide-plate *b*, flange *c*, and post *i*, in combination with the spindle C, mounted in said case, the collar *c'* on said plate and having shoulder *d*, the actuating lever and cam on said spindle, and the coil-spring surrounding the collar and having one end inserted in the cam and the other end in engagement with the post i, substantially as set forth.

412,190. PROTECTIVE COVERING FOR METALLIC FLASKS. HENRIK J. KREBS, Wilmington, Del., assignor to the Delaware Chemical Company, same place. Filed May 29, 1889. Serial No. 312,633. (No model.)



Claim.—1. The combination, with a cylinder or flask having a concaved end, and a valve secured therein, of the protecting-cover herein described, extending longitudinally of and surrounding said cylinder or flask, and the transversely-arranged straps extending across said concaved end and having bent ends secured between said flask and cover, substantially as set forth.

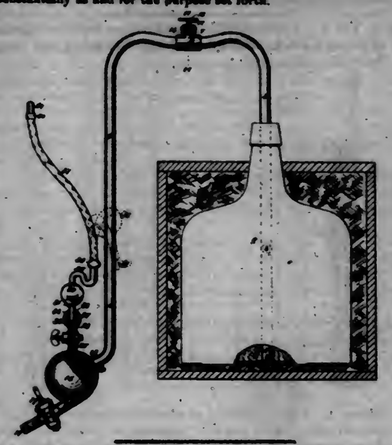
2. The combination, with the cylinder or flask having a concaved end, and a valve secured therein, of the protecting-cover composed of a series of wooden battens extending longitudinally of said cylinder or cask, the retaining-hoops encircling said battens, the end tightening-bars and netted bolts, and the straps extending across said concaved end of the flask and secured at their ends between said flask and cover, substantially as set forth.

412,191. SIPHONIC DISPENSER FOR VITRIOL, &c. HENRY C. KREBS, St. Louis, Mo., assignor of one-half to John Cornwall, same place. Filed Nov. 23, 1888. Serial No. 291,572. (No model.)

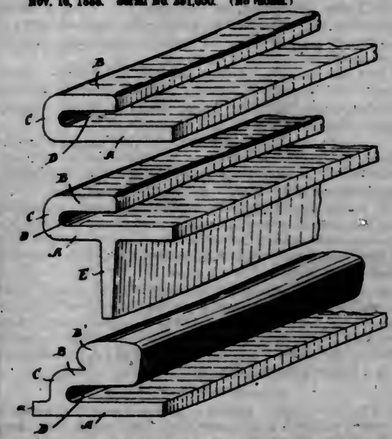
Claim.—1. In a siphonic dispenser, the combination of the siphon conductor-pipe, the globular incasement 16, that incloses the chamber into which said pipe discharges, the surmounting tube 25, having a packing-chamber 27, filled with packing, a gage having a stem embedded in said packing and communicating with tube 25, a section-pipe connected to said gage, the discharge-pipe 18, and the cut-off valve 17, substantially as and for the purpose set forth.

2. In a siphonic dispenser, the combination of the siphon conductor-pipe, the globular incasement that incloses the chamber into which said pipe discharges, the discharge-pipe 18, the cut-off valve 17 in said pipe, the pedestal-tube 25, with its globular incasement that incloses the chamber 26, the glass indicating-pipe with its recording-bulb, the rubber tube 37, and mouth-piece 39, for withdrawal of air from the siphon to cause a vacuum in the siphon and effect the siphonic current therein, substantially as and for the purpose set forth.

3. In a siphonic dispenser, the combination of the sectional pipes, the coupling-pipe joint that connects them, the tubular T-stud that surmounts said joint, provided with air-ports, the pneumatic valve that opens and closes said ports, the globular incasement that incloses the globe-chamber 16, the discharge-pipe 18, the cut-off valve 17 in said pipe, the pedestal-tube 25, with its globular incasement that incloses the chamber 26, the glass indicating-pipe with its recording-bulb, its pendent pipe being seated in the chamber 26, the packing around said pipe in said chamber, the rubber tube 37, and mouth-piece 39, for the withdrawal of air from the siphon to cause a vacuum and effect a siphonic current of the liquid being dispensed therein, substantially as and for the purpose set forth.

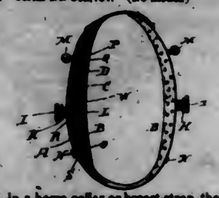


412,192. RAILROAD-RAIL. HOSEA W. LEDOUX, Boston, Mass. Filed Nov. 16, 1888. Serial No. 291,050. (No model.)



Claim.—A railroad-rail consisting of lower portion A, upper portion B, and back portion C, forming a spring, a space D between the lower and upper portions A B, whereby the upper portion is free to yield, substantially as set forth.

412,193. COMBINED COLLAR AND BREAST-STRAP. JACOB LIPP, De Graff, Ohio, assignor of one-half to Wilbur L. Smith, same place. Filed Mar. 9, 1889. Serial No. 302,737. (No model.)

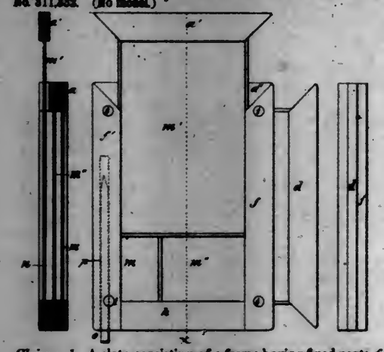


Claim.—1. In a horse-collar or breast-strap, the leather covering, the inside pad, the trace-button, the inside plate, and the thimble K, as and for the purpose set forth.

2. In a horse-collar, an inside plate having secured thereto the detachable trace-button I, thimble K, and a locking device for keeping the button from turning, as and for the purpose set forth.

3. The combination of a horse-collar having the inner plate D, and detachable button I, having thimble K thereon, with the ratchet T, pawl U, and fastening N, as and for the purpose set forth.

412,194. SCHOOL-SLATE. SOLOMON MARKS, Cincinnati, Ohio, assignor to the Paragon Slate Company, of Ohio. Filed May 18, 1889. Serial No. 311,332. (No model.)



Claim.—1. A slate consisting of a frame having fixed parts *f f h* formed with slate-grooves, and the removable parts, and the removable slates secured to the removable parts, substantially as shown and described.

2. A slate consisting of the fixed parts *f*, *f'*, *h*, and *a''*, having slate-grooves, the removable slate *m*, having the removable part *a* secured thereto, the slate *m''* and the button *l* secured to the fixed part *a''*, substantially as shown and described.

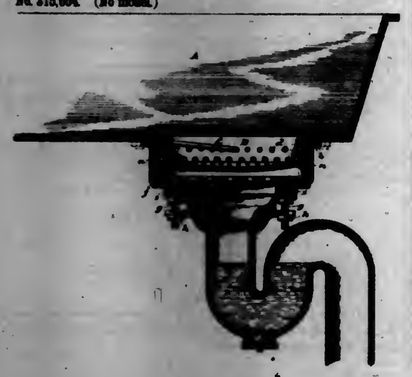
3. A slate consisting of the fixed parts *f*, *f'*, *h*, and *a''*, having slate-grooves, the removable slate *m*, having the removable part *a* secured thereto, and the slate *m''*, having the removable part *d* secured thereto, substantially as shown and described.

4. A slate consisting of the fixed parts *f*, *f'*, *h*, and *a''*, having slate-grooves, the removable parts *a*, *a'*, and *d*, and the removable slates *m*, *m'*, and *m''*, secured, respectively, to the removable parts, substantially as shown and described.

5. A slate consisting of a frame having grooves for three slates, slates removable from said grooves, the outer slates being removed in the same direction and the middle slate being removed in a direction at right angles to the outer slates, substantially as shown and described.

6. A slate consisting of the parts *a*, *a'*, *a''*, *f*, *f'*, *d*, and *h*, which form the frame, said frame having grooves *n* adapted to receive the slates *m*, *m'* *m''*, being securely attached to the parts *a*, *a'*, and *d* of the frame, the parts *a* and *a'* with the slates attached being secured in position by the button *l*, said frame having a socket *p* bored in one side to receive a pencil, substantially as shown and described.

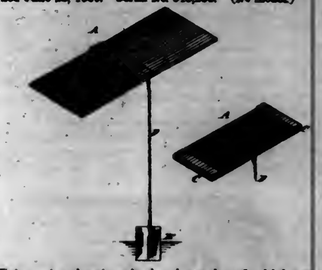
412,195. SINK. STEPHEN A. MARSHS, Newark, N. J., assignor of one-half to Charles B. Bond, same place. Filed June 26, 1889. Serial No. 315,604. (No model.)



Claim.—1. The combination, with the downwardly-extending portion *a*, having an annular shoulder *b*, of the removable strainer B, having perforations in its sides and bottom, and the ball C, formed of springy material, provided with oppositely-extending lateral arms *c*, designed to engage side perforations in the strainer and to be sprung into place therein and to fold within the strainer, substantially as described.

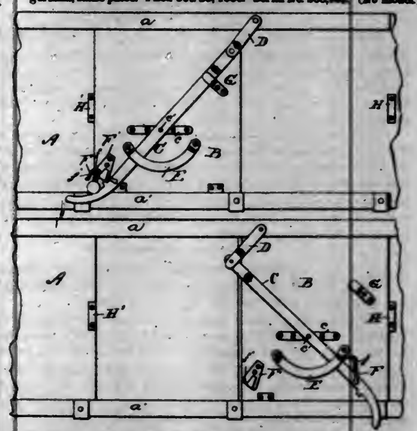
2. The combination, with the downwardly-extending portion *a*, formed with annular depressions *f* and *b* and chamber *i*, of the removable strainer B, having an annular flange *c* resting in the depression *b*, and the strainer D, seated in the depression *f* in the said portion *a* below the strainer B and resting on the inner wall of the chamber *i*, and the bolts *g*, passed through holes in said strainer and through said chamber *i* and provided with suitable nuts, substantially as and for the purpose specified.

412,196. ELECTRO-THERAPEUTIC APPLIANCE. JOHN S. MELLON, St. Louis, Mo., assignor of six-tenths to G. W. Lewis, same place. Filed June 22, 1889. Serial No. 315,263. (No model.)



Claim.—A galvanic pair the electrodes of which are adapted to be artificially excited electrically by the moisture of any part or parts of the human system or that of any other organized life from its contact therewith, in combination with a ground-conductor connecting the pair with the earth, substantially as described.

412,197. CAR-DOOR OPENER AND CLOSER. MYRON MILES, Oxford, Mich., assignor of two-thirds to John D. Hagerman and Clyde Hagerman, same place. Filed Oct. 23, 1888. Serial No. 288,882. (No model.)



Claim.—1. A car-door opener and closer consisting of a lever having its center fulcrumed to the door and its upper end pivoted to a link that in turn is pivoted to the car-body, said lever being thereby adapted to have the power applied to its lower end for opening and closing the door, substantially as described.

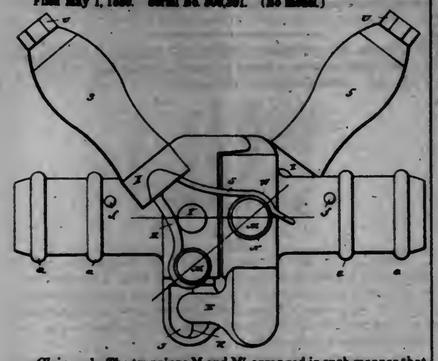
2. A car-door opener and closer consisting of a lever fulcrumed to the car-door and pivotally secured at its upper end to a link or rod, which is in turn pivoted to the car at such a point that the point of connection between the lever and link will fall out of a line drawn between the points of attachment of said lever and link as the direction the door must be moved, substantially as and for the purpose described.

3. In a car-door opener and closer, the combination, with a lever fulcrumed to the door and a rod or link pivotally engaged at one end to the upper end of the lever and pivoted at the other end to the car, of a suitable stop located back of the lever and adapted to keep it in a desired position when the door is closed, and means for additionally locking the door, if desired, substantially as described.

4. A car-door opener and closer consisting of a lever fulcrumed to the car-door, a rod or link pivotally connected to the lever at one end and having the other end pivoted to the car, and a guide adapted to keep the lever in the desired position, substantially as described.

5. In a car-door opener and closer, the combination of the lever C, rod or link D, pivoted to the car, said rod or link and lever being pivotally connected together, door B, lever-guide E, latch F, and hook F', said latch and hook forming means for additionally locking the car-door, and the stops H, H', and G, substantially as described.

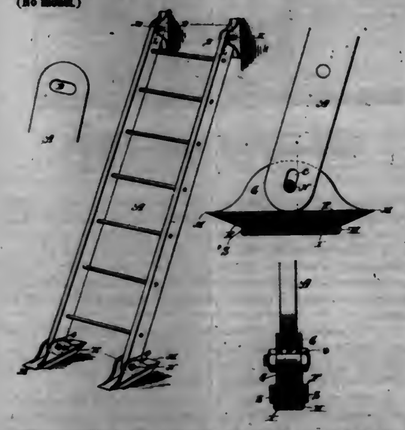
412,198. PIPE-COUPLER. CHARLES F. MERRICK, Detroit, Mich., assignor to the Automatic Car Coupler Heating Company, same place. Filed May 1, 1889. Serial No. 308,901. (No model.)



Claim.—1. The trunnions M and M', arranged in such manner that when on duty they shall stand at an angle of about forty-five degrees with each other, in combination with levers R and S and stop-pin Y, the latter being so arranged with reference to the trunnions that the three shall form a triangle having its base in either two of said bearings, substantially as specified.

2. The combination, with the coupling-heads carrying a lug or stud, of the locking-levers hinged or pivoted to said heads, the levers each carrying a yielding branch adapted to engage a stud or trunnion on the opposite head, and each head also having a stop or lug arranged so as to limit the locking movement of said levers and hold them in a position whereby they may be disconnected by longitudinal draft on the hose, substantially as specified.

412,199. SHOE FOR LADDERS. JAMES S. MCELHENNY, Washington, D. C., assignor of two-thirds to John Irwin, Jr., and Robert L. Middleton, both of same place. Filed May 20, 1889. Serial No. 312,614. (No model.)



Claim.—1. The ladder having the pivoted shoes with their pivots working in slots, whereby lost motion is effected between the ladder and shoes to relieve the pivots of strain when the ladder is erected, substantially as described.

2. The ladder having the slots at its ends, one or both, in combination with the shoe having the pivot-bolts working in the said slots, substantially as described.

3. The shoes adapted to be pivoted to a ladder and having the friction plates or surfaces and the pointed ends M in line with the faces of the shoes, substantially as described.

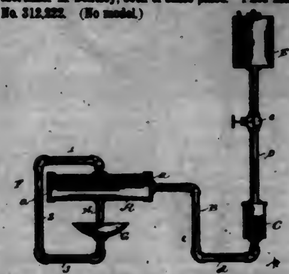
4. The pair of shoes adapted to be attached to a ladder, for the purpose set forth, said shoes having the friction plates or soles provided with diagonal corrugations arranged in reverse relation to each other on the respective shoes, substantially as described.

5. The shoes adapted to be pivoted to a ladder and having the countersunk recesses with roughened surfaces on their lower sides and the friction soles or plates of rubber secured in said recesses, substantially as described.

6. The shoes having the countersunk recesses on their lower sides, the sides of said recesses being inclined and converging downward, and the friction plates or soles arranged in said recesses, substantially as described.

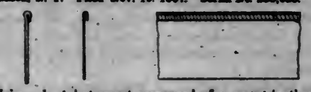
7. The ladder having the transverse slots at its upper end and the longitudinal slots in its lower end, in combination with the shoes attached to said ends of the ladder and having the pivotal bolts working in said transverse and longitudinal slots, substantially as described.

412,200. HYDROCARBON VAPORIZER AND BURNER. THOMAS J. OGLE, Chicago, Ill., assignor of two-thirds to William B. Moore and Mortimer H. Bentley, both of same place. Filed May 27, 1889. Serial No. 312,222. (No model.)



Claim.—In a hydrocarbon generator and burner, the combination, with the generator A, having at each end a removable head, and having depending therefrom a burner having jet-orifices, of the supply-pipe leading from a reservoir and fitting in one head of the reservoir, an intermediate non-conducting chamber between the reservoir and generator, the hollow bracket F, supported from the generator and made up of the parts 1, 2, and 3, united together, and the dished or concave deflector supported by the bracket immediately beneath the burner, substantially as described.

412,201. HAT-SWEAT. GEORGE W. PARKINSON, Fishkill-on-the-Hudson, N. Y. Filed Nov. 19, 1887. Serial No. 255,655. (No model.)



Claim.—1. A hat-sweat composed of a sweat-leather having its edge gummed and rolled, so as to present a solid appearance, as if inclosing a reed, a wire, a cord, or the like, substantially as and for the purpose set forth.

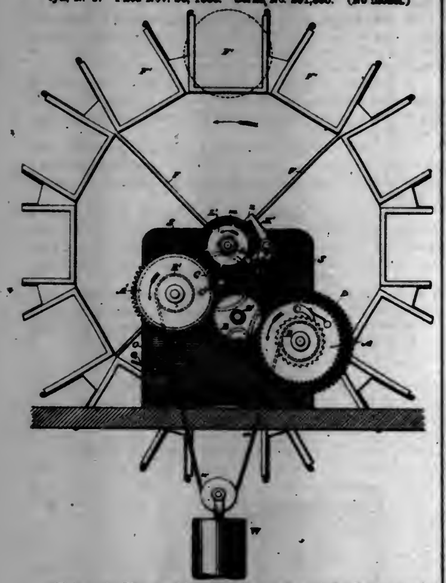
2. A hat-sweat composed of a sweat-leather having its edge gummed, rolled, and colored, so as to present a solid appearance, and as if inclosing a covered reed, wire, cord, or the like, substantially as and for the purpose set forth.

412,202. NEEDLE-GUARD FOR SEWING-MACHINES. JAMES S. PATTEN, Baltimore, Md. Filed Dec. 6, 1888. Serial No. 292,669. (No model.)



Claim.—A needle-guard for a sewing-machine presser-foot, consisting in the parallel vertically-extending plates 10, connected at the lower ends of their rear edges, as shown at 15, formed on their lower edges with apertured flanges 12, and provided with openings 11, extending downwardly from their upper edges.

412,203. AUTOMATIC EXHIBITOR. WILLIAM H. ROGERS, Brooklyn, N. Y. Filed Nov. 26, 1888. Serial No. 291,866. (No model.)



Claim.—1. The combination of a substantially flat vertically-arranged and intermittently-rotating picture-holding disk having a horizontal or substantially horizontal axis, an inclosing-case having a sight orifice or lens before which the picture-holder revolves, and power mechanism to intermittently rotate said disk.

2. The combination of a vertically and intermittently rotating picture-holding disk having a horizontal or substantially horizontal axis, and formed with the pictures arranged substantially in the same plane and radiating from the axis, a magic lantern having a lens before which the picture-holder revolves, and power mechanism to intermittently rotate said disk.

3. The combination of a vertically and intermittently rotating picture-holding disk having a horizontal or substantially horizontal axis, and formed with the pictures arranged substantially in the same plane and radiating from the axis, a magic lantern having a lens before which the picture-holder revolves, power mechanism to intermittently rotate said disk, and an inclosing-case for the disk, power mechanism, and lantern.

4. In an automatic exhibitor, a magic lantern, in combination with an intermittently-revolving exhibiting frame or disk, a catch-wheel carried with said frame, a pallet or catch to catch or release the catch-wheel, and power mechanism to operate both the frame or disk and the pallet.

5. In an automatic exhibitor, a magic lantern, in combination with an intermittently-revolving exhibiting frame or disk, a catch-wheel carried with said frame, a pallet or catch to catch or release the catch-wheel, and independent power devices for operating the frame or disk and the pallet.

6. In an automatic exhibitor, a magic lantern, in combination with an intermittently-revolving exhibiting frame or disk, a catch-wheel carried with said frame, a pallet or catch to catch or release the catch-wheel, independent power devices for operating the frame or disk and the pallet, consisting of gearing and drums and in which a single cord and weight is arranged to operate both motors.

7. In an automatic exhibitor, a magic lantern, in combination with an intermittently-revolving exhibiting frame or disk having a horizontal axis and formed with pictures arranged in substantially the same plane and radiating from said axis, a power mechanism to rotate said disk, and a stop motion to intermittently arrest the rotation of said disk.

8. In an automatic exhibitor, a flat disk or frame having a central axle and provided with pictures arranged in a circle about said axle and radiating at right angles or thereabout from the axle and in substantially the same plane, power mechanism to rotate said disk, and intermittently-actuated stop mechanism to intermittently arrest the rotation of the disk.

9. In an automatic exhibitor, a magic lantern, a flat disk or frame having a central axle and provided with pictures arranged in a circle about said axle and radiating at right angles or thereabout from the axle and in substantially the same plane, power mechanism to rotate said disk in front of the lens of the lantern, and intermittently-actuated stop mechanism to intermittently arrest the rotation of the disk.

10. The combination of a rotating disk F, having openings for pictures around its circumference, power mechanism to rotate said disk, an escapement mechanism to intermittently arrest the rotation of said disk, and having an operating-arm, a crank-pin or its equivalent to operate said arm, and power mechanism to rotate said crank-pin.

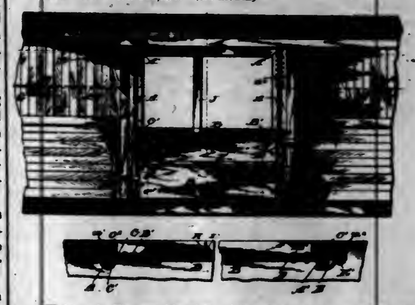
412,204. AUTOMATIC SPRINKLER. CHARLES F. RICHE, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed June 6, 1889. Serial No. 313,567. (No model.)



Claim.—1. In an automatic sprinkler, the combination, with a valve-casing adapted to be secured to a supply-pipe, of a valve fitted into said casing and provided with a stem having a peripheral groove or slot, as b^3, a support having a slot to correspond in position with the slot b^3 when the valve is closed, and a retaining-plate, as c, to operate substantially as described.

2. In an automatic sprinkler, the combination, with a valve-casing adapted to be secured to a supply-pipe and a deflector secured to said casing, of a valve fitted into said casing and provided with a stem having a peripheral groove or slot, as b^3, a support having a slot to correspond in position with the slot b^3 when the valve is closed, and a retaining-plate, as c, having one end secured to the deflector and its other end inserted into said groove, substantially as described.

412,205. GRAIN-CAR DOOR. EDGARD B. STARLIN, Baltimore, Md., assignor of one-fourth to Charles C. Corbin, same place. Filed May 10, 1889. Serial No. 310,337. (No model.)



Claim.—1. The combination, with rods or posts arranged within a car, of doors provided with hinges and catches on their ends to slide on and engage with the rods, respectively, substantially as specified.

2. The combination, with rods arranged at each side of a car-door opening, of doors having hinges at their ends, said hinges sliding on opposite rods, said doors extending across the opening and hinged one above the other to opposite rods, substantially as shown and described.

3. The combination, with rods arranged at each side of a car-door opening, of doors the hinges of which slide on opposite rods, catches on said doors, and pivoted latches bearing on the hinges to hold the doors closed, substantially as specified.

4. The combination, with rods arranged at each side of a car-door opening, of doors extending across said opening and provided at one end with hinges and at the other end with catches, said hinges and catches being alternately arranged, one or more of said doors being provided with a strip or flange and brackets to hold said doors in place when swung out of their normal position, substantially as specified.

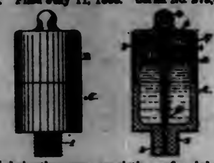
5. A grain-car door having a hinge thicker on one side than on the other, substantially as specified.

6. A grain-car door having a hinge thicker on one side than on the other, in combination with a rod serving as a pivot for said hinge, substantially as specified.

7. A grain-car door having a hinge thicker on one side than on the other, in combination with a rod serving as a pivot for said hinge, and with the studding of a car-door opening, whereby when closed the thicker portion of the hinge serves to prevent the escape of grain, substantially as specified.

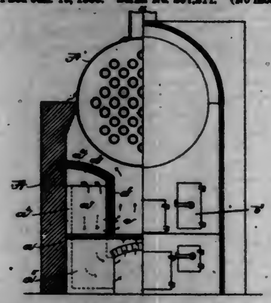
8. In combination with a car-door supported at its extremities, as described, a collar fastened to the outside of the same and provided with a bayonet-slot, a bolt sliding in said collar and provided with a pin sliding in said slot, and a spring surmounted by a cap set into the floor of the car directly under said bolt, substantially as specified.

412,206. LUBRICATING-CUP. JOHN H. SHERWARD, Albany, N. Y., assignor of two-thirds to Robert C. Marshall and James F. Bowers, both of same place. Filed July 11, 1888. Serial No. 278,645. (No model.)



Claim.—A lubricating-cup consisting of a lubricant-receptacle having in its upper end a series of notches, a screw-valve fitted to govern the flow of lubricant from said receptacle, and a cap-piece which covers said receptacle and valve, the head of the stem of said valve being slotted and provided with a radial spring which projects from one side of said stem and is then bent back to pass through the slot in the head of said stem, so as to form a cross-handle for said valve, the outer end of said spring being fitted to engage in the notches in the upper end of said receptacle, so that the cover of the latter will inclose said spring, as and for the purpose herein specified.

412,207. FURNACE. FRANK G. SHERWOOD, Rochester, N. Y., assignor to the Clark's Coking and Smokeless Furnace Company, same place. Filed Jan. 19, 1889. Serial No. 297,211. (No model.)

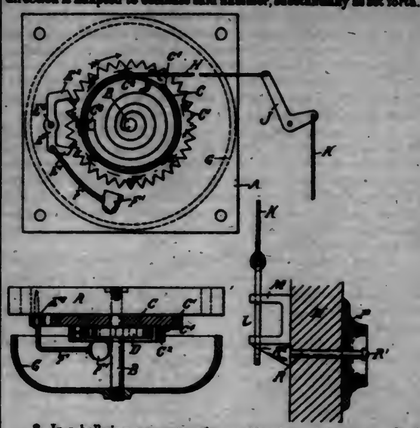


Claim.—1. In a coking-furnace, a combustion-chamber provided with grate-bars, combined with an auxiliary oven having a flue or passage-way leading from it to below the grate-bars of the combustion-chamber, a partition-wall separating said oven and chamber and extended to the said grate-bars, and a series of independent openings in the said partition-wall to form flame-outlets for the said auxiliary oven, substantially as described.

2. In a coking-furnace, a combustion-chamber provided with grate-bars, combined with an auxiliary oven having a flue or passage-way leading from it to below the grate-bars of the combustion-chamber, and a partition-wall separating said oven and chamber and having its lower portion composed of independent pieces provided with openings b to form flame-outlets for the said oven, substantially as described.

412,208. BELL-RINGING APPARATUS. DAVID J. SMITH, Reading, Pa., assignor of one-half to John Schoenfeld, same place. Filed Jan. 7, 1889. Serial No. 295,944. (No model.)

Claim.—1. In a bell-ringing apparatus, the combination, with a scape-wheel and drum connected with an operating-wire and a retracting-spring, of a pivoted anchor E, with dependent hammer, the pallets of said anchor engaging the wheel substantially in the manner described, whereby the movement of said wheel in either direction is adapted to oscillate said hammer, substantially as set forth.

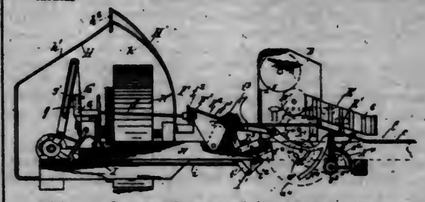


2. In a bell-ring apparatus, the combination, with a scape-wheel and drum connected with an operating-wire and a retracting-spring and having teeth with equally-sloped working-faces, of a hammer operated by a pivoted anchor having correspondingly-shaped pallets engaging said teeth substantially in the manner described, whereby the movement of said wheel in either direction is adapted to oscillate said hammer, substantially as set forth.

3. In a bell-ringing apparatus, the combination, with the scape-wheel, the drum C^2, the retracting-spring D, connecting said wheel to its arbor B, and an operating-wire attached to said drum, of a pivoted anchor E, with dependent hammer, and V-shaped pallets F and F^3, engaging corresponding teeth in the scape-wheel, substantially as described, all arranged to operate as set forth.

4. In a bell-ringing apparatus, the combination, with a scape-wheel connected with an operating-wire and a retracting-spring, of an operating mechanism consisting of a push-button, with wedge-shaped end R^3 engaging a slotted plate L, connected to said operating-wire and moving in a guide M, all substantially as set forth.

412,209. CORN-HARVESTER. GILBERT B. SNOW and JAMES T. SNOW, Sugar Grove, Ill. Filed Oct. 17, 1888. Serial No. 288,204. (No model.)



Claim.—1. In a corn-harvester, the combination, with the stationary guards B^2, of the reciprocating cutting-knives B', arranged above said guards and extending forward of the same, substantially as and for the purpose specified.

2. In a corn-harvester, the combination, with the cutting and binding mechanism, of the vertically-swinging bundle-discharger arranged at the stubble side of the binding mechanism and provided with guards extending downward from its inner end, substantially as and for the purpose specified.

3. In a corn-harvester, the combination, with the cutting and binding mechanism, of the vertically-swinging bundle-discharger arranged at the stubble side of the binding mechanism and provided with fingers, each having a yielding guard, and a suitable spring to press the guard outward, substantially as and for the purpose specified.

4. In a corn-harvester, the combination, with the arm f and cross-bar F', of the fingers F^2, each composed of side plates f^2, attached to said cross-bar, guard F^3, pivoted between said plates, and spring f', interposed between said guard and cross-bar, substantially as and for the purpose specified.

5. In a corn-harvester, the combination, with the binder, of the vertically-swinging bundle-discharger, its operating mechanism, and a trip for throwing said mechanism into connection, substantially as de-

scribed, and a connection between the binder and said trip, whereby the latter is operated by the binder to start the bundle-discharger, substantially as and for the purposes specified.

6. In a corn-harvester, the combination, with the bundle-discharger and its operating mechanism, of the stop-arm I, controlling the same, the rod *i*, connected thereto, the shaft I', having crank-arms i^2 and i^3, the former connected to the rod *i*, the rock-shaft I^4, carrying crank-arm I^5, and the link I^6, connecting said crank-arm and the crank-arm i^3, substantially as and for the purposes specified.

7. In a corn-harvester, the combination, with the vertical shaft E^3, having crank-arm E', of the butt-evener having arm *d'* pivoted to said crank-arm, the arm E^5, connected to said butt-evener, the guide-rod D', pivoted to said arm at one end, the pivoted bearing *d*, through which the other end of said guide-rod passes, and the link e^3, having one end pivotally connected to the butt-evener and its other end adjustably pivoted to a suitable fixed support, substantially as and for the purposes specified.

8. In a corn-harvester, the combination, with the gathering and carrying chains, arranged in vertical planes, and their pivoted dogs, of the shield K, arranged on the inner side of each chain along the forward-moving portion thereof, substantially as and for the purposes specified.

9. In a corn-harvester, the combination, with the main wheel and the bundle-discharger swinging over the same, of the arch H, arranged over the wheel and having the inner part *h* curved to conform to the curved motion of the discharger, an outer part *h'*, inclined downward and outward, and a curved spring H', attached at its lower end to the curved portion *h* of the arch and provided at its upper end with the downwardly-bent arm h^2, substantially as and for the purposes specified.

10. In a corn-harvester, the combination, with the vertically-swinging bundle-discharger and its operating mechanism, of a spring arranged in the path of said bundle-discharger near the outer limit of its motion and adapted to engage with the same and assist its return, substantially as and for the purposes specified.

11. The combination, with the vertically-swinging bundle-discharger F, having arm *f*, of the spring G', attached to a suitable support and provided with an adjustable screw *g'*, arranged in the path of the said arm near the outer limit of its motion, substantially as and for the purposes specified.

12. In a corn-harvester, the combination, with the binding mechanism and the vertically-swinging bundle-discharger arranged at the delivery side thereof, of yielding arms projecting above the binding-deck on each side of the compressor and between the latter and the needle-shaft, substantially as and for the purposes specified.

13. In a corn-harvester, the combination, with the vertically-swinging bundle-discharger and the binding mechanism provided with the rock-shaft I^4, which operates the compressors, of the arms I^8, attached to said rock-shaft and projecting normally upward above the deck on each side of the compressor and between it and the needle-shaft, substantially as and for the purposes specified.

14. In a corn-harvester, the combination, with the gathering and carrying chains and their pivoted dogs, of the shield K, arranged on the inner side of each chain along the forward-moving portion thereof and provided at its rear upper end with a cushioning-spring *k*, against which the dogs strike at the beginning of their forward motion, substantially as and for the purposes specified.

412,210. WEATHER-STRIP FOR WINDOWS. DRAPER STONE, Pittsford, N. Y. Filed June 4, 1888. Serial No. 275,913. (No model.)



Claim.—1. The combination, with a window-sash rail having one of its inner corners rounded and provided with a depression, of a packing-strip attached to said rounded corner and resting in said depression, its free edge standing outward against the jamb, and a metallic stiffening-strip of less width also attached to the corner outside the packing, said stiffening-strip serving the double purpose of a stiffener and a wear-plate, as shown and described, and for the purpose specified.

2. The combination, with a window-sash rail having its two inner corners rounded and provided with a depression, of two packing-strips attached, respectively, to the two rounded corners and resting in the depressions, their free edges standing outward in the same direction against the jamb, and two metallic stiffening-strips also attached to the corners outside the packings, the whole arranged to operate in the manner and for the purpose specified.

412,211. WELL OR CISTERN CLEANING MACHINE. ARTHUR H. TAYLOR, Niles, Mich. Filed Apr. 10, 1889. Serial No. 306,777. (No model.)



Claim.—In a cistern-cleaner, the combination, with the receiving-cylinder C, piston A, and valve B, of the guides *a a*, rods F, sliding therein, and the cross-head and piston-rod connecting said piston to said rods F, substantially as and for the purposes specified.

412,212. PAIL, &c., MADE OF STAVES. HENRY H. THOMPSON, Boston, Mass. Filed Feb. 11, 1889. Serial No. 299,508. (No model.)

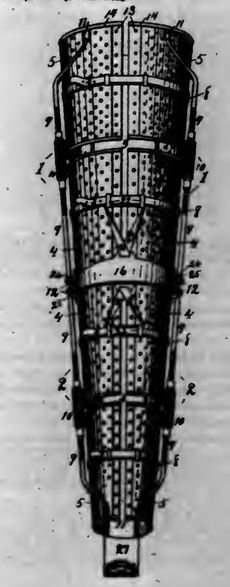


Claim.—1. A hoop comprising a band of metal of even curvature, having cross corrugations or crimps which normally slant in correspondence to the slanting surface of a bilged or slanting vessel, substantially as set forth.

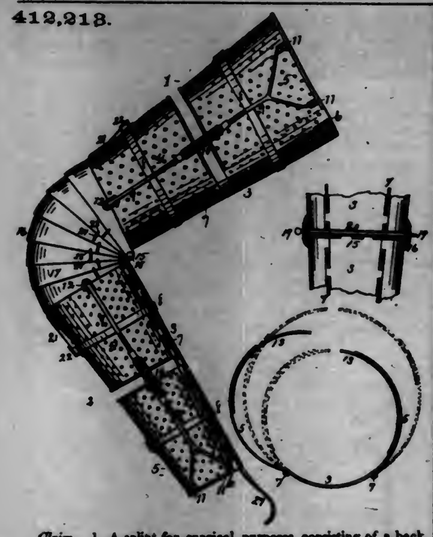
2. A bilged or slanting vessel having circumferential grooves containing hoops of metal of even curvature, having cross corrugations or crimps which normally slant in correspondence to the slanting surface of said vessel, all substantially as set forth and described.

3. A bilged or slanting vessel having circumferential grooves containing metal hoops of even curvature, having cross corrugations or crimps normally slanting in correspondence to the slanting surfaces of said vessel, the lower ends of the staves forming said vessel being rounded, all substantially as described.

412,218. SURGICAL SPLINT. GEORGE W. TURNER, St. Paul, Minn., assignor of one-half to C. H. Parker, same place. Filed Mar. 22, 1889. Serial No. 304,297. (No model.)



412,213.



Claim.—1. A splint for surgical purposes, consisting of a back, two pairs of suitably curved inclosing-plates hinged to the opposite edges thereof and movable longitudinally with reference thereto by means of a sliding hinge, and means, substantially as described, for drawing apart said sets or pairs of plates upon said back when bound upon the limb, as and for the purpose specified.

2. A surgical splint consisting of a series of curved inclosing-plates hinged at their edges to a suitable back, and an extension-plate attached to and movable upon each of said inclosing-plates by means of a lip formed upon the former and overlapping the opposite edges of the latter of said plates, substantially as and for the purpose specified, whereby the lateral extension of said plates may be increased.

3. A splint for surgical purposes, consisting of two sections adapted to inclose the upper and lower portions of the limb, respectively, each of said sections comprising a back having two sets of inclosing-plates hinged to the opposite sides thereof and movable longitudinally with reference thereto by means of a sliding hinge, the said two series of plates in each section having rods attached thereto upon the opposite sides thereof, an elongated nut uniting the adjacent ends of said rods upon each side by means of right and left screw-threads formed upon said rods and in the opposite ends of the nut, respectively, and a hinged joint connecting the ends of the backs of the two sections, substantially as and for the purpose herein specified.

4. In combination, in a splint for surgical purposes, two sections adapted to fit the upper and lower portions of the limb, respectively, and connected by a hinge-joint, a collapsible cap consisting of a series of lune-shaped plates pivoted together at their points and adapted to slide one within another, the said pivotal point being substantially in line with the joint of the hinge, the outer and inner of said plates being respectively connected with the adjacent splint-sections, and a pin or lug 23 in each of said plates working in a slot 24 in the next inner plate, substantially as and for the purpose herein specified.

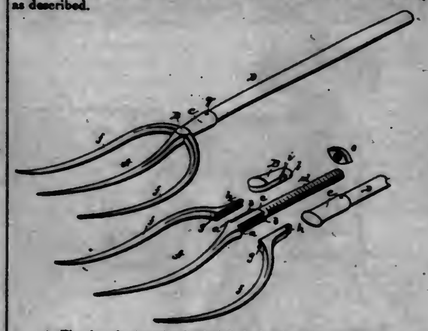
5. In a splint for surgical purposes, two sections adapted to fit the upper and lower portions of the limb, respectively, and connected by a hinge-joint, in combination with a collapsible cap composed of a series of lune-shaped plates pivoted together at their points and adapted to slide one within another, the said pivotal points being substantially in line with the joint of the hinge, a pin or lug 23 in each of said plates, working in a slot 24 in the next inner plate, and lugs upon said splint-sections adapted to engage with the edges of said outer and inner plates when the joint is straightened, substantially as set forth.

412,214. PITCHFORK. ADNER B. VAIL, Hillsborough, Dak. Filed Aug. 17, 1889. Serial No. 321,093. (No model.)

Claim.—1. The herein-described pitchfork, having detachable tines, the center tine having a shouldered and tongued shank and the side tines having grooves adapted to register with the tongues of the center tine, substantially as described.

2. The herein-described pitchfork, having detachable tines, the center tine being shouldered and tongued, the side tines being shouldered and grooved and having a shank attachment, substantially as and for the purpose shown.

3. The herein-described pitchfork, having detachable tines, the center tine being shouldered and tongued and the side tines being shouldered and grooved, having also a shank attachment and ferrule having a perforated division, constructed to co-operate substantially as described.



4. The herein-described pitchfork, having detachable tines, the center tine having a shouldered and tongued shank and a prolongation adapted to enter the handle, and the side tines being shouldered and grooved, also having a shank attachment, substantially as described, a divisioned ferrule, the lower part of which is adapted to receive the shanks and shank attachment and the upper division adapted to receive the handle, substantially as described.

5. The herein-described pitchfork, comprising the following elements: a center tine having a shouldered and tongued shank and an upward and threaded prolongation, side tines having shouldered and grooved shanks, a shank attachment, a ferrule having a division perforated to allow the insertion of the prolongation of the center-tine shank, and a nut adapted to be inserted in the end of the handle and receive the threaded prolongation of the shank, all constructed and combined to co-operate substantially as described.

6. The herein-described pitchfork, comprising the following elements: a center tine having a shouldered and tongued shank and a threaded prolongation, side tines having shouldered and grooved shanks, a shank attachment, a ferrule having a central division perforated to allow the insertion of the prolongation of the shank and having a small exterior perforation, a nut adapted to be inserted in the end of the handle and to receive the said prolongation, a narrow interiorly and centrally thickened ferrule adapted to be placed on the end of the handle to hold said nut and adapted to slide into the divisioned ferrule, and a screw adapted to be inserted through the exterior perforation of the divisioned ferrule into the handle, all constructed and combined to co-operate as and for the purpose set forth.

412,215. MACHINE FOR CUTTING SPIRAL PINIONS. EDWARD P. WALKER and HERBERT C. WALKER, Bridgeport, Conn., assignors to Maging, Maxwell & Moore, New York, N. Y. Filed June 15, 1889. Serial No. 314,262. (No model.)

Claim.—1. The combination, with the bed, the turn-table, the carriage mounted thereon, the chuck arranged upon the carriage, and means, as described, whereby forward motion may be imparted to the carriage and both forward and rotary motion to the chuck, of the cutting-tool and carriage mounted above the work-carriage and adapted to be reciprocated, substantially as set forth.

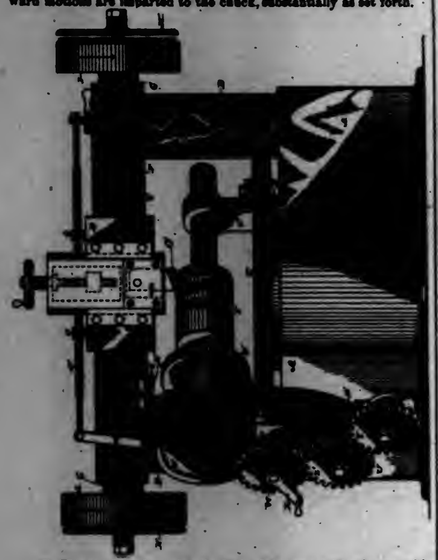
2. The combination, with the tool-carriage and tool adapted to be reciprocated upon the guideway, of the work-carriage adapted to travel upon ways beneath the tool, the chuck mounted upon the carriage, and the gears and pinion whereby rotary motion is imparted to the chuck, substantially as described.

3. The combination with the guideway supported upon columns from the bed, of the screw extended longitudinally through the guideway, the tool-carriage mounted upon the guideway and carried by the screw, and the pulleys and clutch-disks mounted at either end of the screw, substantially as and for the purpose set forth.

4. The combination, with the guideway, of the screw longitudinal thereof and the tool-carriage carried by said screw, the pulleys and clutch-disks, and the shipper-rod, its arms, and connections whereby the engagement of the disks and the movement of the tool-carriage is reversed, substantially as specified.

5. The combination, with the bed of the machine, of the turn-table arranged thereon, the carriage mounted upon the turn-table and supporting the chuck, the driving-screw shouldered in the carriage and threaded in the turn-table, the gears and upright shaft, and the worm meshing with the gear on the chuck, all arranged as and for the purpose set forth.

6. The combination, in a machine of the character described, of the following mechanical element, to wit: the traveling tool-carriage and its tool, the longitudinally-moving work-carriage beneath the tool, the chuck mounted and adapted to rotate upon the work-carriage, and mechanism, as described, whereby the combined rotary and forward motions are imparted to the chuck, substantially as set forth.



7. The combination, with the bed, of the turn-table, the movable work-carriage and the chuck geared at its rear end, the gears and the carriage-driving screw, the vertical shaft, index-plate, and pin, and the worm meshing with the gear upon the chuck, substantially as described.

412,216. BICYCLE. GEORGE T. WARWICK, Springfield, Mass., assignor to the Warwick Cycle Manufacturing Company, same place. Filed Jan. 4, 1889. Serial No. 295,401. (No model.)

Claim.—1. In combination with the fork-spindle and the hollow backbone-head fitting on said spindle, a cone-shaped sleeve on said spindle, an internally cone-shaped bushing in said head fitting said sleeve, and a nut on the end of said spindle holding said bushing and sleeve in operative relations, substantially as and for the purpose set forth.

2. In combination with the rear-fork arms constituting the frame of the machine between the two wheels thereof, a yoke 10, fixed on said frame, a shaft-box 12, attached to each end of said yoke and longitudinally adjustable thereon, and the crank and sprocket-wheel shaft supported in said boxes, substantially as set forth.

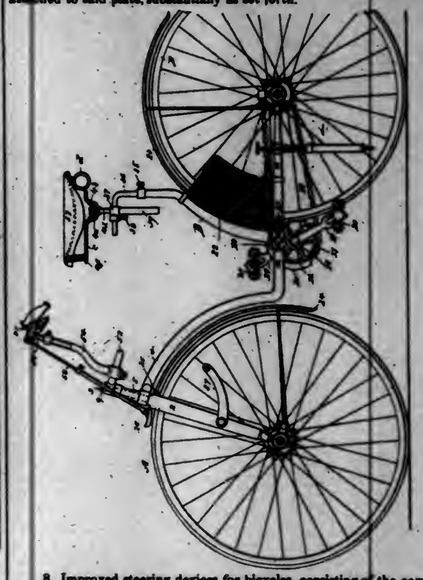
3. The rear-fork arms *a a*, constituting the frame of the machine between the two wheels thereof, a yoke 10, fixed on said frame and having at each end thereof a longitudinal groove, an adjusting screw-bolt 15, in line with said groove, a shaft-box 12, adjustably attached to each end of said yoke, having a rib thereon engaging with said groove, and the crank and sprocket-wheel shaft supported in said boxes, combined and operating substantially as set forth.

4. An improved support for the saddle-post and crank-shaft of a bicycle, consisting of the yoke 10, fixed to the frame of the machine, and the saddle-post B, fixed to said yoke, combined with the shaft-boxes 12, attached to the ends thereof, substantially as set forth.

5. A depressible mounting-step attached to the frame of the machine, having a leg whose lower end engages with the ground when said step is forced downward, a spring-case in which said leg moves and is supported, and a spring to throw said step upward, combined and operating substantially as set forth.

6. A depressible mounting-step attached to the frame of the machine and normally inclined to the plane of rotation of the wheels of the machine, having a leg whose lower end engages with the ground when said step is moved downward, a spring-case in which said leg moves and is supported, and a spring to throw said step upward, combined and operating substantially as set forth.

7. In combination with an arm 36, on which the saddle is supported, a yoke 37, attached to said arm, two tubular spring-cases pendi ng from said yoke containing springs, substantially as described, two plungers 41, having a vertical movement against said springs, a saddle-plate 42, rigidly uniting the upper ends of said plungers, and a saddle attached to said plate, substantially as set forth.



8. Improved steering devices for bicycles, consisting of the combination, with the front-fork spindle thereof and the handle-bar, of a steering-post and a lever, substantially as described, forming an intermediate connection between said handle-bar and fork-spindle, substantially as set forth.

9. Improved steering devices for bicycles, consisting of the combination, with the front-fork spindle thereof and the handle-bar, of a steering-post and a lever, substantially as described, forming an intermediate connection between said handle-bar and fork-spindle, said steering-post being adjustable on said lever from and toward the axis of said fork-spindle, substantially as set forth.

10. In combination with the fork-spindle, the laterally-extending lever 52, secured to said spindle, the steering-post 54, attached to said lever and adjustable longitudinally thereon, the handle-bar spindle 56, adjustable vertically in said post, and the handle-bar 57, substantially as set forth.

412,217. STEAM-ENGINE. CHARLES A. WHEELER, Bridgeport, Conn., assignor of one-half to William F. Healy, same place. Filed June 24, 1889. Serial No. 315,209. (No model.)



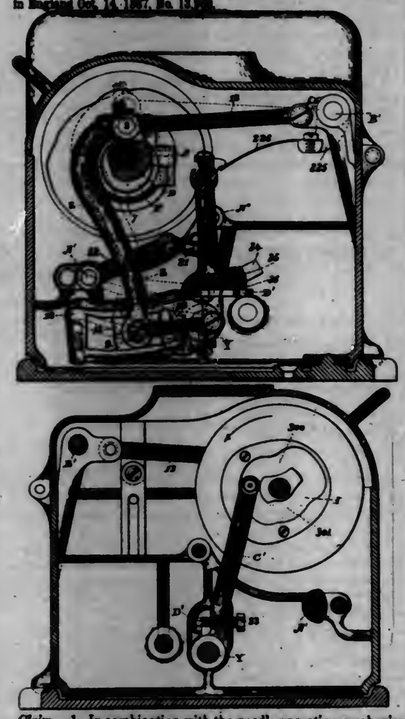
Claim.—1. A steam-cylinder having at opposite ends cams 12 and steam and exhaust pipes, in combination with a piston-rod extending through the ends of the cylinder and a piston secured thereto and provided with inclines 13, adapted to engage the cams, and peripheral grooves each having an arm 7^a, by which steam is taken, and an arm 7^b, and exhaust-openings leading therefrom to the end of the piston, substantially as described and shown.

2. The combination, with a steam-cylinder having at opposite ends cams with portions 12^a and 12^b, substantially as described, and steam and exhaust passages, of a piston having peripheral grooves with arms 7^a, by which steam is taken, and arms 7^b, and exhaust-openings 8, connected therewith, by which steam is exhausted, and at opposite ends thereof inclines having portions 13^a and 13^b adapted to engage the cams, so that the entrance of steam into the cylinder will impart longitudinal reciprocating motion to the piston, and also a complete rotation thereof during each reciprocation.

3. The cylinder having steam and exhaust pipes and cams having portions 12^a and 12^b at opposite ends thereof, in combination with a piston having grooves with arms 7^a and 7^b on the periphery thereof, and steam-passages connected to one of said arms, whereby steam is taken and exhausted, inclines at opposite ends thereof, having portions 13^a and 13^b adapted to engage the cams, and a piston-rod extending through the end of the cylinder and provided with a spline 19, a shaft having a longitudinal opening to receive the piston-rod, and a cross-slot to receive the spline, and a balance-wheel secured to said shaft.

4. The combination, with a steam-cylinder having the usual steam and exhaust openings, and having cams 12 at opposite ends thereof, of a piston having peripheral grooves and passages leading therefrom to the end of the piston and inclines 13 at opposite ends, adapted to engage cams 12, whereby both rotary and longitudinal reciprocating motions are imparted to the piston in use.

412,218. MACHINE FOR SEWING STRAW BRAID. CHARLES H. WILLCOX, New York, N. Y., and GEORGE H. NOBLE, Providence, R. I., assignors to the Willcox & Gibbs Sewing Machine Company, New York, N. Y. Filed Nov. 7, 1887. Serial No. 254,822. (No model.) Patented in England Oct. 14, 1887, No. 13,923.

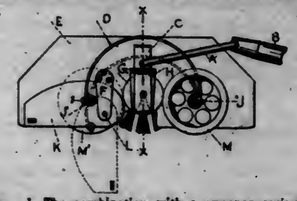


Claim.—1. In combination with the needle-operating mechanism having a part adjustable to regulate the needle-stroke, the controller mechanism for adjusting said part, and the controller-clamping devices, means whereby said clamping devices are released after the needles reach the top of their stroke, said means comprising a moving part of the machine—such as a rotary cam-surface—which releases and restores the clamp periodically and comes into position to effect such release after the needles reach the top of their stroke, substantially as described.

2. The combination, with the needle-operating mechanism, comprising a rock-shaft provided with an operating-arm, a box adjustable lengthwise of said arm, an eccentric and link for vibrating said arm and rock-shaft through said box, and the controller mechanism for adjusting said box, of an automatic intermittent clamp whose pressure is relieved when said operating-arm, eccentric, and link are in position for the force of said eccentric to move the said box in the direction for increasing the needle-stroke, said intermittent clamp having a suitable moving part—such as a rotary cam-surface—which periodically releases and restores the clamp, and which comes into position to effect such release at the time just mentioned, substantially as described.

3. In combination with the looper mechanism, the needle-operating mechanism having a part adjustable to regulate the needle-stroke, the controller mechanism for adjusting said part and the devices for clamping the controller mechanism, and the cam which acts upon said devices and causes them to release the said controller mechanism before the needles are thrust through the work to clamp the same during this operation, to release the clamp after the needles have reached the top of their stroke and before the looper mechanism takes the loop, and to restore the clamp during the time of action of the feed, said cam having inclines which act in succession upon the clamping devices and release and restore the clamp at the respective times stated, substantially as described.

412,219. CARPET-SWEEPER. GEORGE W. GATES, Grand Rapids, Mich., assignor, by mesne assignments, to the Bissell Carpet Sweeper Company, same place. Filed Mar. 21, 1885. Serial No. 159,679. (Model.)



Claim.—1. The combination, with a sweeper-casing, a brush-shaft, and a propelling-handle, of a yielding brush-shaft support lowered by the action of the handle when pressed upon and moving the brush-shaft toward the surface traversed independent of vertical movement of the sweeper-casing, said support automatically rising and restoring the brush-shaft to and sustaining it in its normal position when pressure on the handle is relieved.

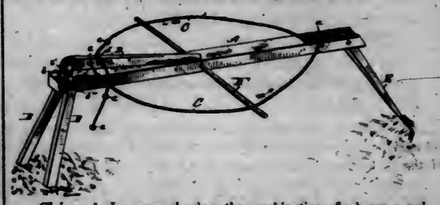
2. The combination, with a sweeper-casing, a brush-shaft, and a propelling-handle, of a yielding brush-shaft support connected with the handle, yieldingly moved downward by pressure exerted on the latter and automatically raised to restore the brush-shaft to and sustain it in its normal position when pressure on the handle is relieved.

3. The combination, with a sweeper-casing, of spring-supports carried by the casing and having bearings for a brush-shaft, and a sweeper-bail journaled to the spring-supports, said spring-supports adapted to sustain the brush-shaft in its normal position and to restore it to such position when relieved of downward pressure on the handle.

4. In a carpet-sweeper, a dust-pan carrying a drive-wheel and hinged to the casing, in combination with the spring which holds the drive-wheel in contact with the brush-shaft, said pan and wheel adapted to turn downward for the purpose of emptying the pan and the spring adapted to hold the pan in an open and closed position, substantially as described.

5. The combination of the dust-pan K and the axle J', said dust-pan inclosing said axle and adapted to protect it from dust, substantially as described.

412,220. MACHINE FOR SHOCKING AND BINDING CORN. ADAM REINHEIT, Tiffin, Ohio, assignor of one-half to John Orr, same place. Filed Dec. 20, 1888. Serial No. 294,207. (No model.)



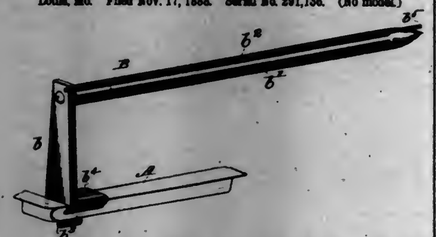
Claim.—1. In a corn-shocker, the combination of a beam, a pulley at one end thereof, a lever pivoted at the other end, and a rope connected at one end to the lever, passed around the pulley, and having its other end adapted to be detachably connected to the lever, substantially as described.

2. In a corn-shocker, the combination of a beam, a pulley, and a pivoted leg at one and the same end, fixed legs and a pivoted lever

at the other end, and a rope connected at one end to the lever, passed around the pulley, and having its other end provided with knots, whereby it is adapted to be detachably connected to the lever, substantially as described.

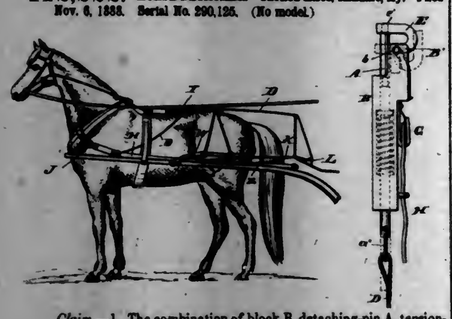
3. In a corn-shocker, the combination of a beam having a slot in one end, a pulley in said slot and a lever at the other end thereof, and a compressive rope passed over the pulley and attached at its ends to the lever, substantially as described.

412,221. TYPE-WRITER COPY-HOLDER. JAMES W. ALLEN, St. Louis, Mo. Filed Nov. 17, 1888. Serial No. 291,136. (No model.)



Claim.—In a type-writing-machine copy-holder, the combination of an upright, and bars or rods extending laterally therefrom, said bars or rods b' b^3 being disunited at the outer end thereof, substantially as described.

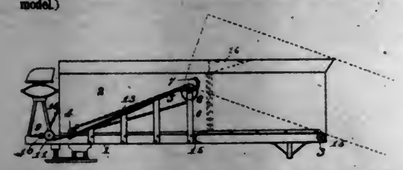
412,222. HORSE-DETACHER. GEORGE ARGO, Millsdale, Ky. Filed Nov. 6, 1888. Serial No. 290,125. (No model.)



Claim.—1. The combination of block B, detaching-pin A, tension-spring C, surrounding pin A, hook E, pivoted in block B and provided with arm e, spring F, bearing against arm e, and trace-hook G, substantially as and for the purposes specified.

2. The combination of block B, detaching-pin A, tension-spring C, surrounding pin A, hook E, pivoted in block B and provided with arm e, spring F, bearing against arm e, trace-hook G, cord D, pulley L, and cords K, attached to the shafts and continuous with cord D, substantially as and for the purposes specified.

412,223. TILTING WAGON. EDWARD O. LYBERTY and ALBERT G. BRAUN, Denver, Colo. Filed Dec. 10, 1888. Serial No. 293,147. (No model.)

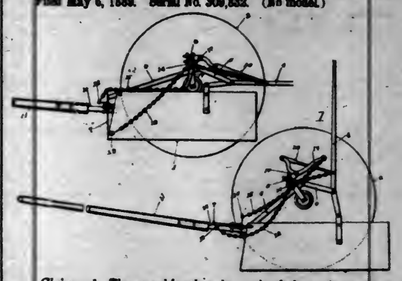


Claim.—1. The combination, with a wagon truck and bed, of inclined ways or tracks rising from the front of the truck to or just beyond the longitudinal center thereof, and supported thereat by standards rising therefrom, pulleys journaled at or near the ends of such standards, wheels or rollers at the front base of the bed taking upon the inclined ways or tracks, a wheel and axle journaled upon the front of the truck, chains passing thence over the pulleys to or near to the front end of the bed for moving it to the rear, and a chain or chains passing directly from the wheel and axle to the front of the bed for moving it to the front, substantially as set forth.

2. The combination of the truck 1, the wheels or rollers 3 3, the inclined ways or tracks 5 5, having stop ends 7 7, the bed 2, having rollers or wheels 4 4 and stops 15 15, the wheel and axle, and the connections 13 14, substantially as set forth.

3. The combination, with the sides of the bed, of auxiliary pieces 16, hinged or pivoted to the flare-boards, substantially as set forth.

412,224. WHEELED SCRAPER. THOMAS ATCHISON, Denver, Colo. Filed May 6, 1889. Serial No. 309,532. (No model.)

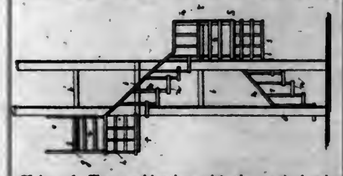


Claim.—1. The combination, in a wheeled earth-scraper, of an end-gate 7, suitably pivoted between the rear branched arms of the tongue and operated by a chain 12, attached to lever 4 at one extremity and to the gate at the other extremity, a chain 15, connected to lever 19, and a rod 18, connecting the gate with lever 4, substantially as set forth.

2. In a wheeled earth-scraper provided with an end-gate 7, pivoted between the rear branched arms of the tongue, the combination, with suitable operating mechanisms consisting of a chain attached at one extremity to the gate below its pivotal point, thence passing over a suitable pulley secured to the axle, and attached to the lever 4 at the other extremity, of another chain connected to lever 19 and rod 18 and connecting the gate with lever 4, substantially as set forth.

REISSUES

11,032. STAIRWAY. PETER REISECK, Allegheny, Pa. Filed May 3, 1889. Serial No. 309,510. Original No. 362,537, dated May 10, 1887.



Claim.—1. The combination, with the vertical columns, of the braces extending from one across the adjacent column and secured to both, and the platforms secured to the projecting portions of the braces, whereby the steps and platforms may be supported entirely by the columns, substantially as specified.

2. The combination, with the independent supporting-columns, of the platforms, and the steps of equal width or tread connecting said platforms, and the braces b, extending from one across the adjacent column and secured thereto and projecting outwardly therefrom to support said platforms, substantially as specified.

3. A stairway consisting of four columns arranged relatively at right angles to each other, a hand-rail surrounding the said columns, platforms supported by the columns, the balusters having their lower ends threaded and provided with nuts for securing the same to the steps, and the clamps embracing the hand-rail and bolted to openings in the upper ends of the balusters, substantially as specified.

4. The combination, in a stairway, of steps having perforations, as described, for changing the tread, balusters adapted to be secured vertically to the said steps, and a clamp at the upper end of said balusters, whereby the hand-rail may be connected at desired points, substantially as specified.

5. In a stairway such as described, the combination consisting of the hand-rails e and g, the balusters h, and the adjustable clamps i, for securing the same to the hand-rails, the threaded portion of the balusters h, and the nuts m, and a step having two or more openings g formed in the same, whereby the tread of the step may be changed or adjusted to any required height and width, substantially as described.

R. PETERS, Photo-Lithographer, Washington, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

PITNEY *v.* SMITH AND EGGE.

Decided September 23, 1889.

1. APPEALS FROM EXAMINERS-IN-CHIEF IN INTERFERENCE CASES—STATEMENT OF REASONS OF APPEAL—RULE 147 CONSTRUED. The brief statement of the reasons which Rule 147 requires should accompany appeals in interference cases is not to be considered of the substance of the appeal in any such sense as that either the omission of such statement or the filing of a defective statement would make the appeal void, and if such statement be defective the opposite party is entitled to a further statement if he desires.

2. SAME—PERMISSION TO SIGN APPEAL NUNC PRO TUNC—RULE 18. Where it appeared that an appeal, taken under Rule 147 by counsel who had repeatedly appeared in the case, was taken in season and with authority of appellant, and the appeal-fee had been paid and accepted by the Office, such appeal was not dismissed simply because the power of attorney of said counsel had not been filed, as called for by Rule 18, and the attorney of record was permitted to sign the appeal *nunc pro tunc*.

3. POWER OF COMMISSIONER TO DETERMINE WHETHER OR NOT AN APPEAL IS INTENDED FOR DELAY. The Commissioner has no power to determine what appeals, seasonably taken, are intended for delay.

MOTION to dismiss appeal.

CORD-CLAMPS.

Application of Albert L. Pitney filed March 29, 1888, No. 268,884. Application of Friend W. Smith and Frederick Egge filed November 30, 1887, No. 256,538.

Mr. Benjamin R. Catlin and *Messrs. Marble & Mason* for Pitney.

Messrs. Smith & Hubbard and *Mr. William H. Finckel* for Smith and Egge.

MITCHELL, *Commissioner:*

This is a motion to dismiss an appeal taken to the Commissioner of Patents from the decision of the Examiners-in-Chief. The reasons alleged are, *first*, because no reasons of appeal or assignments of error appear in the paper purporting to be such an appeal; *second*, because the attorney taking the same was not authorized to make and file an appeal to the Commissioner in said case; *third*, because the pretended appeal appears to have been filed simply for the purpose of delay.

The first reason is based upon Rule 147, which provides that appeals in interference cases must be accompanied by brief statements of the reasons therefor. It appears upon inspection of the record that the appeal and the accompanying statement, suitably addressed, are in the following language:

We hereby appeal to your honor in person from the decision of the Board of Examiners-in-Chief awarding priority of invention to Pitney, and give as our reasons that such decision was contrary to the law and evidence. An oral hearing is requested.

This appeal was signed in the name of the appellant by his counsel, whose name was also affixed.

Undoubtedly the "brief statement of the reasons" accompanying the appeal is exceedingly defective, and is not calculated to subserve the purpose for which the rule exists. It is to be observed, however, that the rule does not state of what the appeal shall consist, but simply provides for a statement of the reasons therefor to accompany the appeal. On the face of the rule, therefore, it would appear that the statement is not to be considered of the substance of the appeal in any such sense as that either the omission of the statement or the filing of a defective statement would make it absolutely void.

But it is claimed that the case is analogous to an appeal from the Commissioner of Patents to the Supreme Court of the District of Columbia, and that in such cases it has been held that the reasons of appeal constitute the ground of jurisdiction, so that in the absence of specific reasons the appeal will be dismissed. (*Blackinton* v. *Douglass*, 1 MacA., 622; *Matthews* v. *Wade*, same, 143.) It is to be remembered, however, that the statute in providing for appeals from the Commissioner (sec. 4912) requires that the appellant shall file "his reasons of appeal *specifically* set forth in writing," and it is further provided (sec. 4914) that the "revision shall be confined to the points set forth in the reasons of appeal."

Manifestly the only matters for consideration are the alleged errors specifically set out, and the court is without jurisdiction to overrule the Commissioner's decision, excepting within the limits of the specific reasons assigned. But the statute, (secs. 4904, 4910,) in providing for an appeal to the Commissioner, contains no such restrictive language, and the provision contained in the rule for a short statement of reasons accompanying the appeal does not constitute the basis of his jurisdiction; it is required simply that the opposite party and the Commissioner may have their attention directed to those features of the case which are supposed to involve errors of law and fact. The two kinds of appeal, therefore, do not stand upon the same basis, and the decisions relating to appeals from the Commissioner are inapplicable to appeals from the Examiners-in-Chief to the Commissioner, to the extent indicated.

I conclude that the defective short statement accompanying this appeal does not render the appeal fatally defective, but that it simply entitles the opposite party to a further statement, if he desires.

The second ground for the motion is based upon Rule 18. It is not claimed that the attorney was not author-

ized by his client to appeal, but that he was not authorized by the rules of the Office to take action of any kind before duly filing a power of attorney in the case. The appeal was taken within the time limited. It was taken by the authority of the appellant. It was taken by his attorney, who had repeatedly appeared in the case as counsel, who had taken the testimony in the interference proceeding, and had appeared upon the brief filed in behalf of his client. The appellant has also paid the appeal-fee, which the Office has accepted. It would be strange, indeed, if under these circumstances it should be found that any lawful interpretation of the rules of practice necessitated the dismissal of the appeal. The act for which the lawful fee was paid and accepted should be treated as a lawful act. Such being the case, I have permitted appellant's attorney of record to sign the appeal *nunc pro tunc*, having to that extent granted the petition of the present appellant, which was heard at the same time with this motion. This done, the appeal, which was seasonably taken, is also regular in form.

The third reason is that the appeal is intended for delay. Neither the law nor the rules, so far as I am aware, confer upon the Commissioner the dangerous power of determining what appeals, seasonably taken, are intended for delay. A hearing will be forthwith granted, if desired.

The motion must be denied.

REYNOLDS *v.* HABERMAN.

Decided September 23, 1889.

1. MOTION TO DISSOLVE INTERFERENCE ON GROUND OF NON-PATENTABILITY MORE THAN TWENTY DAYS AFTER APPROVAL OF PRELIMINARY STATEMENTS—RULE 122.

When a motion to dissolve an interference on the ground of non-patentability is made more than twenty days after approval of the preliminary statements it is not an abuse of discretion on the part of the Examiner of Interferences to grant such motion when it appears that no testimony had been taken, so that the case had not advanced beyond the stage which interference proceedings customarily reach within the first twenty days after approval of the preliminary statements.

2. SAME.

It is no ground for an appeal from a decision of the Examiner of Interferences remanding such motion, filed seasonably in view of the showing made, to the Primary Examiner that the reasons given in support of the claim that the interference issue is unpatentable were fully canvassed by the Primary Examiner before he originally declared the interference. Such motion simply makes a controversy *inter partes* before the examiner as to matter which he had previously considered in an *ex parte* matter.

APPEAL on motion.

WATERING-POTS.

Application of Henry S. Reynolds filed May 18, 1888, No. 274,306. Application of Frederick Haberman filed April 12, 1888, No. 270,452.

Mr. E. C. Webb and *Mr. Marcellus Bailey* for Reynolds.

Messrs. Van Santvoord & Hauff for Haberman.

MITCHELL, *Commissioner:*

This is an appeal from the decision of the Examiner of Interferences upon a motion to dissolve, filed by Reynolds, remanding the above-entitled interference to the Primary Examiner and suspending proceedings therein. The motion to dissolve was based upon a denial of the patentability of the subject-matter of the issue in interference, and this denial was in turn based upon Letters Patent to Reynolds, No. 236,359, January 4, 1881, and Letters Patent to Discho, No. 399,602, March 12, 1889.

The interference was declared on the 31st of August, 1888, and although the usual twenty days allowed for such motions after the approval of the preliminary statements had long since expired, no testimony had been taken, so that the case was in practically the same stage of advancement as if not more than twenty days had elapsed.

The appellant makes two claims: first, that the motion was not seasonably filed, in view of the showing made, and, second, that the reasons given in support of the claim that the interference issue is unpatentable were fully canvassed by the examiner before he originally declared the interference, the Discho patent having been divided out of an earlier patent, to which his attention had been directed.

As to the first question, it has been repeatedly decided that the decision of the Examiner of Interferences, in disposing of interlocutory motions, will not be disturbed, except in cases of abuse of discretion or of disregard of some rule or law. (See *Adams* v. *House and House, Jr.*, 40 MS. Dec., 226; *Daniels* v. *Morgan*, 32 MS. Dec., 73; *Mills* v. *McDonald*, 34 MS. Dec., 228; *Scotford* v. *Sawyer and Force*, 37 MS. Dec., 120.) In the latter case the doctrine was applied to the precise question at issue. Scotford did not file his motion to dissolve until more than twenty days had elapsed. The examiner, however, upon the showing, granted the motion. The Commissioner said:

> The question of remanding such motions rests largely in the discretion of the Examiner of Interferences, and his action should not be disturbed except when there has been an abuse of this discretion or his action is palpably erroneous. The delay involved in appealing from and reviewing such proceedings is generally quite as injurious as the action itself, even when erroneous.

In the present case the length of time before the motion was made would indicate an abuse of discretion on the part of the Examiner of Interferences if it were not for the fact that the parties themselves had postponed the time of taking testimony by stipulation, so that the case has not advanced beyond the stage which interference proceedings customarily reach within the first twenty days. I cannot therefore hold that it was an abuse of discretion to grant the motion under the circumstances, although under ordinary circumstances the delay would be clearly unreasonable.

The second ground upon which the appeal is based presents for consideration a question which could not legitimately come before the Examiner of Interferences upon a motion otherwise seasonable, and which therefore cannot be considered on appeal. Motions to dissolve seem to be based upon the theory that when an applicant is drawn into an interference he is entitled to a hearing upon the same matters which governed the examiner in declaring the interference originally. Thus a motion to dissolve because there is no interference in fact presents to the examiner, as matter of course, precisely the question which was considered by him before the interference was declared. The same is true when a motion is made to dissolve on the ground of want of patentability, the party making the motion being entitled to show the examiner, if he can, that he erred in originally holding in the affirmative upon the subject of patentability.

In the case of *Green* v. *Hall* v. *Siemens* v. *Field* (37 O. G., 1475) occurs the following language:

> Under the provisions of Rule 116, [now Rule 122,] when a regular and seasonable motion to dissolve, based upon one of the grounds recognized by such rule, is filed with the Examiner of Interferences, he seems to have no discretion in the matter, but his clear duty is to transmit such motion for hearing to the Principal Examiner.

The same rule undoubtedly holds as well when the motion is filed seasonably, in view of the showing made, as when it is filed within the twenty days. The motion to dissolve in such a case simply makes a controversy *inter partes* before the examiner as to matters which he had previously considered in an *ex parte* matter. Of course, in many cases questions of which the examiner has not had previous cognizance are brought before him on such motions; but they are not essential to his jurisdiction to give a hearing, nor do they create the duty of the Examiner of Interferences to remand the case.

Inasmuch as there was no abuse of discretion on the part of the Examiner of Interferences in remanding the case upon the showing made, the case having been held from advancing by stipulation, I must decide that there is no error and deny the appeal.

It is not intended by anything in this opinion to hold that newly-discovered matter brought to the attention of the Examiner of Interferences may not be considered for the purpose of determining whether a motion otherwise unseasonable is not thereby rendered seasonable.

EX PARTE MYERS.

Decided September 24, 1889.

1. WITHDRAWAL FROM ISSUE FOR PURPOSE OF AMENDMENT—RULES 78 AND 165.

While it is a general rule that applications which have been allowed will not be recalled for the purpose of amendment, an exception to the rule must be recognised in cases where great hardship or irreparable injury would otherwise result.

2. SAME.

Where the claims sought to be introduced by amendment were so specially pertinent to the subject-matter of the application, and were so inseparable in their nature from the particular invention sought to be patented that if they were to be allowed in another application there would be grave doubt whether the patent therefor would be a valid patent, amendment after allowance was permitted.

ON petition.

HAY-CARRIERS.

Application of Philip A. Myers filed February 15, 1889, No. 299,965.

Mr. Ellis Spear for the applicant.

MITCHELL, *Commissioner:*

This is a petition asking for the withdrawal of the application from issue for the purpose of presenting two new claims for the consideration of the examiner. To this the examiner objects that the amended claims would necessitate a new examination, and that, as no irreparable injury would be done by refusing to grant the petition, that course should be pursued, in accordance with *ex parte Gaboury* (37 O. G., 217) and *ex parte Corning*, (34 MS., 339.) The examiner adds that—

> If cases be permitted to be thus reopened after they have been examined and allowed, the work of examination will be necessarily delayed, and it will be impossible to bring such work as near to dates of filing as desirable.

The effect upon the dispatch of business in the Office by an abuse of the practice of permitting withdrawal for amendment has long been recognized, and certainly no interpretation of Rules 78 and 165 should be adopted which will interfere with that object. On the other hand, it is recognized that cases do arise of a special character warranting the Commissioner in authorizing such withdrawal, and when a great hardship would ensue if the privilege were to be denied. Especially is this true since under modern decisions of the courts the right of reissue has become so restricted that any failure to obtain in the first application full protection for an invention is, in a vast majority of cases, without remedy. While, therefore, it is to be at all times borne in mind that, as a general rule, applications which have been allowed will not be recalled for the purpose of amendment, an exception to the rule must also be recognized in cases where great hardship or irreparable injury would otherwise result.

The rule and the exception are both well stated by Commissioner Hall in *ex parte Page* and *Krausse*, where, in referring to cases like the present, he uses the following language:

> * * * It is the well-settled practice in the Office that such petitions will not be granted unless they show that applicant will sustain some irreparable loss or damage if the amendment be not permitted. An applicant who has had his day in the Office, and whose case has received full consideration and has been passed to issue, ought not to be allowed to withdraw his application from issue and submit amendments which should have been previously submitted, and thus put the Office to the trouble of a re-examination. The practice just alluded to has become settled, and in such cases an applicant is required to file a new application embracing the subject of the proposed amendment, pay the Office the fees contemplated, and he is then entitled to a new and original examination. But it sometimes occurs that public use has intervened, or some other circumstances which render it practically impossible for an applicant to successfully prosecute a new application, and whenever this fact appears the Office with equal uniformity allows the application to be withdrawn from issue and amended. * * * (45 O. G., 1455.)

Applying the rule thus carefully laid down, the question in the present case is whether public use has intervened or some other circumstances render it practically impossible for the applicant to successfully prosecute a new application for the claims which he now seeks to enter. From the showing made before me I am satisfied that if the claims sought were to be allowed in another application there would be very grave doubt whether the patent therefor would be a valid patent. (*Ex parte Roberts*, 40 O. G., 578.) The claims are so specially pertinent to the subject-matter of the application now pending, and are so inseparable in their nature from the particular invention now sought to be patented, that I cannot think the Office would be warranted in insisting upon a course which would result at the best in a patent of doubtful validity.

Under such circumstances, the case is brought fairly within the rule, and therefore the petition is granted. It is not intended to be implied that in all cases where a new application cannot be successfully brought the case will be withdrawn from issue for amendment.

EX PARTE BORGFELDT.

Decided September 23, 1889.

1. REFERENCE TO A PENDING APPLICATION FOR FULLER DESCRIPTION.

A reference in an application for a patent to a contemporaneously-pending application for another patent for a fuller description is not permissible.

2. CORRESPONDENCE BETWEEN LETTERING OF DRAWINGS AND REFERENCE THERETO IN DESCRIPTION.

It cannot be recognized as good practice to refer in the description of a process for which a patent is sought to a very few of the letters upon the drawings which illustrate a complicated machine for carrying out that process. The lettering of the drawings should correspond to the references contained in the descriptive portion of the specification.

ON petition.

PROCESS OF DIVIDING TOBACCO AND OTHER SUBSTANCES IN EQUAL DOSES.

Application of Nicholas H. Borgfeldt, No. 307,919, filed April 20, 1889.

Messrs. Briesen, Steele & Knauth for the applicant.

MITCHELL, *Commissioner:*

The applicant prays that the decision of the examiner requiring a fuller description of the machine shown in his drawings, by which the process claimed may be carried out, may be reversed. In aid of his petition he alleges that his invention consists in a process for dividing tobacco into equal portions for making cigar-fillings, and that it may be carried out by any suitable construction of machine other than the one illustrated in his drawings. He says that his machine is described in another pending application, to which he has referred in his specification. Also, that inasmuch as his process may be carried out by different mechanical constructions he does not deem it necessary to give a more lengthy description of the machine than is sufficient to enable that portion of it to be understood which illustrates the carrying out of the process. He avers further that all the parts essential to the practice of the process are a feed-tube, a plunger therein, and a scale-platform below.

The examiner insists in his statement that the specification not only contains no adequate description, but no description at all of the machine by which the working of the process is intended to be illustrated, and that it is not sufficient to refer to another concurrently-pending application for the full and exact description which the law requires. He further points out that the last step in the process as covered by the claim consists in "then separating from the lower end of the column so pressed a portion of specific weight," and that this function cannot be discharged by either of the three elements which are said by the petitioner to be all that is necessary to practice the process.

The examiner is correct in holding that a reference to a contemporaneously-pending application for a fuller description is not permissible. It cannot be assumed that the application referred to will mature into a patent.

I find on reference to the drawings that they represent an elaborate and complicated machine, and that its parts are designated by a large number of reference-letters. I find on reference to the specification that the description refers to only a very few of the letters upon the drawings. While it may be true that it is unnecessary to refer to the details of mechanism represented by the drawings in order to describe those portions of the machine which illustrate the method of practicing the process sought to be patented, it cannot be recognized as good practice to permit such a want of correspondence between the lettering of the drawings and the references contained in the descriptive portion of the specification. The petitioner may have his option, to file an amended drawing exhibiting those portions of the machine which are essential to the illustration of the process, and to amend his application so as to give a full, clear, and exact description of the drawings as thus amended, or to amend his specification so as to describe fully the present drawings, as he may elect.

As the case now stands I must hold that the examiner's action was correct, and accordingly deny the petition.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 49—NO. 2. TUESDAY, OCTOBER 8, 1889. PRICE—$5 per year.

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Changes in Classification.

(ORDER No. 578.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 2, 1889.

The following changes are directed in Division IV:

New Class 189, Iron Structures, and sub-classes thereunder are established, as follows:

1. Jails.
2. Buildings.
3. Grilles.
4. Metallic ceilings.

The following sub classes are established:

In Class 14, Bridges:
11. Flooring.
12. Truss, Bow-string.

In Class 108, Roofing:
8. Flashing.

In Class 159, Fire Escapes and Ladders:
20. Fluid-check.
21. Fly-check.
22. Escapement-check.
23. Governor-check.

ROBERT J. FISHER,
Acting Commissioner.

Additional Sub-Classes.

(ORDER No. 579.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 3, 1889.

The following additional sub-classes are hereby established in Division XXVI:

In Class 171, Electricity, Generation:
121. Inductoriums—
122. Induction-coils.
123. Transformers, Rotary.
124. Transformers, Stationary.
125. Pyro-magneto-electric devices.

In Class 172, Electricity, Motive-Power:
126. Motors, Reciprocating.

ROBERT J. FISHER,
Acting Commissioner.

Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., September 13, 1889.

SIR: The Secretary of the Interior has ordered that J. M. D. Miller, of Iuka, Miss., be not recognized after this date as attorney or agent in the prosecution of any claim or other matter before this Department or any bureau thereof.

Very respectfully,
E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

Issue of October 8, 1889.

Patents	490	No. 412,225 to No. 412,714, inclusive.
Designs	12	No. 19,340 to No. 19,351, inclusive.
Trade-Marks	12	No. 17,084 to No. 17,095, inclusive.
Labels	4	No. 6,031 to No. 6,034, inclusive.
Reissues	1	No. 11,033.
Total issue	519	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nebraska	3	....
Arizona Territory	....	....	Nevada	1	....
Arkansas	2	....	New Hampshire	5	1
California	10	....	New Jersey	23	1
Colorado	2	....	New Mexico Terri'y	....	....
Connecticut	16	....	New York	102	2
Dakota Territory	3	....	North Carolina	1	....
Delaware	....	....	Ohio	27	1
District of Columbia	2	....	Oregon	....	....
Florida	....	1	Pennsylvania	64	....
Georgia	2	....	Rhode Island	3	....
Idaho Territory	2	....	South Carolina	1	....
Illinois	45	2	Tennessee	2	....
Indiana	12	....	Texas	2	....
Iowa	11	....	Utah Territory	....	....
Kansas	6	....	Vermont	1	....
Kentucky	2	....	Virginia	2	....
Louisiana	1	....	Washington Terri'y	....	....
Maine	1	....	West Virginia	....	....
Maryland	6	....	Wisconsin	13	....
Massachusetts	48	2	Wyoming Terri'y	....	....
Michigan	19	1	U. S. Army	....	....
Minnesota	3	....	U. S. Navy	....	....
Mississippi	1	....			
Missouri	13	....	Total to citizens of the United States	459	12
Montana Territory	....	1			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Australia	....	....	Germany	13	....
Austria-Hungary	....	....	Guatemala	1	....
Belgium	....	....	Netherlands	2	....
Bermuda	....	....	New South Wales	1	....
Brazil	....	....	Norway	1	....
Canada	5	....	Portugal	1	....
Canary Islands	....	....	Scotland	1	....
Colombia, U. S. of	....	....	South Australia	1	....
Cuba	....	....	Switzerland	1	....
Denmark	....	....	Victoria	....	....
Ecuador	....	....			
England	9	....	Total to citizens of foreign countries	43	4
France	7	4			

DESIGNS.

19,340 and 19,341.—CARPET.—*William F. Brown*, Brooklyn, N. Y., assignor to *The Bigelow Carpet Company*, Clinton, Mass. Applications filed September 10, 1889. Serial Nos. 323,560 and 323,561. Term of patents 3½ years.

19,342.—TYPOGRAPHIC VIGNETTE.—*Frederic S. Butler*, San Francisco, Cal. Application filed August 6, 1889. Serial No. 319,947. Term of patent 14 years.

19,343.—BELT-BUCKLE.—*Fred Frazer*, Syracuse, N. Y. Application filed September 11, 1889. Serial No. 323,652. Term of patent 7 years.

19,344.—CARPET.—*Arthur L. Halliday*, Brooklyn, N. Y., assignor to *The Bigelow Carpet Company*, Clinton, Mass. Application filed September 10, 1889. Serial No. 323,559. Term of patent 3½ years.

19,345.—SLATE-FRAME.—*Henry C. King*, Harrison, Ark. Application filed February 26, 1889. Serial No. 301,260. Term of patent 14 years.

19,346.—FONT OF PRINTING-TYPE.—*Ernst Lauschke* and *Julius Schmohl*, Chicago, Ill., assignors to *Barnhart Brothers & Spindler*, same place. Application filed September 14, 1889. Serial No. 323,963. Term of patent 14 years.

19,347.—ORNAMENTATION OF GLASSWARE.—*Joseph Locke*, Toledo, Ohio, assignor to *The W. L. Libbey & Son Company*, same place. Application filed June 7, 1889. Serial No. 313,508. Term of patent 7 years.

19,348.—CARPET.—*William McCallum*, Yonkers, N. Y., assignor to *The Bigelow Carpet Company*, Clinton, Mass. Application filed September 10, 1889. Serial No. 323,558. Term of patent 3½ years.

19,349.—FOUNTAIN-PEN NOZZLE.—*Noyes F. Palmer*, Brooklyn, N. Y. Application filed September 2, 1889. Serial No. 322,793. Term of patent 14 years.

19,350.—BADGE.—*Harry Stites*, Harrisburg, Pa. Application filed June 28, 1889. Serial No. 315,942. Term of patent 3½ years.

19,351.—FONT OF PRINTING-TYPE.—*John West*, Chicago, Ill., assignor to *Marder, Luse & Co.*, same place. Application filed July 25, 1889. Serial No. 318,669. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

17,084.—MEDICAL COMPOUND TO BE USED AS AN INHALENT.—*Aerated Oxygen Co.*, Nashua, N. H. Application filed August 31, 1889. Used since August 1, 1889.

"The words 'AERATED OXYGEN.'"

17,085.—ANÆSTHETICS.—*Charles Pierre Brigonnet* and *Eugène Albéric Naville*, St. Denis, France. Application filed July 22, 1889. Used since March 21, 1889.

"The word 'EXALGINE.'"

17,086.—LIQUOR.—*Jean Paul François Cazanove*, Bordeaux, France. Application filed July 18, 1888. Used since August 31, 1855.

"The words 'LIQUEUR DU PÈRE KERMANN.'"

17,087.—LIQUOR.—*Jean Paul François Cazanove*, Bordeaux, France. Application filed July 18, 1888. Used since August 31, 1855.

"The signature 'OSCAR SIEURAC' in fac-simile."

17,088.—LIQUIDS, POWDERS, OR PASTE FOR DESTROYING INSECTS.—*Arthur Gordon Graves*, Boston, Mass. Application filed August 28, 1889. Used since February 1, 1886.

"The word 'BUFFALINE.'"

17,089.—CHEWING-GUM.—*Charles T. Heisel*, Cleveland, Ohio. Application filed August 28, 1889. Used since June 22, 1885.

"The words 'RED BAND' printed on a strip of red paper."

17,090.—LIQUID REMEDY FOR RHEUMATISM, NEURALGIA, AND GOUT. *Joseph F. Murray & Co.*, Anaconda, Mont. Ter. Application filed July 1, 1889. Used since June, 1888.

"The words 'ORO Y PLATA' and the representation of a placer-mining claim, showing mountains, with the sun rising in the background and a pick and shovel in the foreground."

17,091.—CIGARS.—*D. L. Trujillo & Sons*, Key West, Fla., and New York, N. Y. Application filed August 5, 1889. Used since July 1, 1889.

"The representation of two escutcheons, one bearing the device of a key and having an eagle for its crest, the other bearing the device of a flying dragon and having for its crest a plumed helmet."

17,092.—BATTING OR BATS OF FIBROUS MATERIAL.—*Walker & Williams*, Cohoes, N. Y. Application filed August 26, 1889. Used since February 1, 1888.

"The word 'ELECTRIC.'"

17,093.—LEDGER-PAPER FOR BLANK BOOKS.—*Geo. F. Barnard & Company*, East St. Louis, Ill., and St. Louis, Mo. Application filed July 1, 1889. Used since April 1, 1889.

"The words 'UNIVERSAL LINEN RECORD.'"

17,094.—REMEDY FOR NEURALGIA.—*Eugène Fournier*, Issy, Seine, France. Application filed September 4, 1889. Used since February 1, 1889.

"The word 'CÉRÉBRINE.'"

17,095.—LUNG AND THROAT MEDICINE.—*Clarence A. Pierce*, Woburn, Mass. Application filed May 15, 1888. Used since January, 1887.

"The word 'PNEUMONIC' formed by lines representing flashes of lightning."

LABELS.

6,031.—Title: "COLES PERUVIAN BARK AND WILD CHERRY BITTERS."—*David F. Coles*, Rahway, N. J. Application filed September 14, 1889.

6,032.—Title: "GUARANTEE CASE. 20 YEARS MOVEMENT." (For watch-cases.)—*Arthur Laurence*, Chicago, Ill. Application filed September 14, 1889.

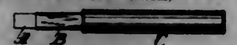
6,033.—Title: "DIRECTIONS." (For a catarrh remedy.)—*Eleanor C. Mann*, Detroit, Mich. Application filed March 11, 1889.

6,034.—Title: "WHITEHEAD BROS'. DYSPEPSIA AND MALARIA PILLS." *Whitehead Brothers*, New York, N. Y. Application filed September 9, 1889.

PATENTS

GRANTED OCTOBER 8, 1889.

412,225. TOOTH-PICK. JAMES ADAIR, New York, N. Y. Filed Apr. 1, 1889. Serial No. 305,892. (Model.)



Claim.—1. A tooth-pick consisting of a flexible inner strip A, rigidly sustained and protected by a covering B, the strip A and covering B being made of material that may be pared or whittled, whereby the end of the pick A B may be sharpened in any desired manner, as and for the uses and purposes set forth.

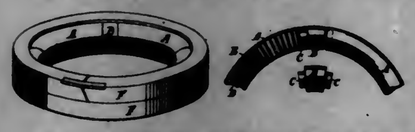
2. A tooth-pick consisting of a flexible inner strip A, rigidly sustained and protected by a covering B, in combination with an incasing-case C, the strip A and covering B being made of material that may be pared or whittled, and adapted and arranged to be withdrawn at will from the case C, as and for the uses and purposes set forth.

412,226. STEAM-PISTON VALVE. ABRAHAM L. ALBERSHEIM, Kansas City, Mo. Filed Jan. 24, 1889. Serial No. 297,748. (No model.)



Claim.—The combination of a steam-chest provided with steam-inlet ports near its respective ends and an exhaust-port intermediate said inlet-ports, valve-seats secured in the ends of said steam-chest, each of said valve-seats being provided with two annular series of apertures, the apertures of one series being larger than the apertures of the other series, the apertures of each valve-seat communicating with the inlet-ports, piston-valves reciprocating within said valve-seats, a steam-cylinder, and steam-ducts communicating with said chest and cylinder, substantially as set forth.

412,227. METALLIC PACKING FOR PISTONS. ARTHUR T. ALLEN, Sheffield, County of York, England. Filed June 13, 1889. Serial No. 314,102. (No model.) Patented in England Aug. 3, 1888, No. 11,220.

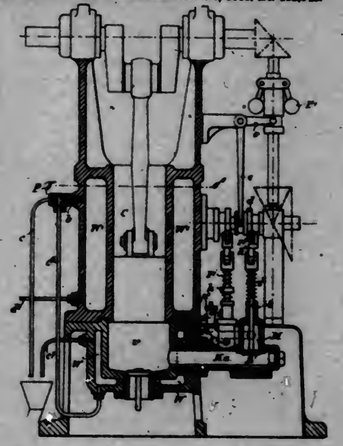


Claim.—1. In combination with expansible packing-rings, an expansible tubular ring within said packing-rings and coiled expanding-springs within said tubular ring, substantially as hereinbefore specified.

2. In combination with circumferentially and radially divided piston-packing having a concave back, an expansible tubular ring within the same having a convex periphery in contact with said concave back, and coiled expanding-springs within said tubular ring, substantially as hereinbefore specified.

3. In combination with expansible packing-rings and short coiled springs for expanding the same, an expansible ring composed of segmental tubes inclosing said springs, sliding connections between said tubes, and intermediate step-pieces within the tubes, substantially as hereinbefore specified.

412,228. PETROLEUM-MOTOR. ADOLPH ALTHANS and PAUL HEFFELMANN, Berlin, Germany. Filed Apr. 24, 1888. Serial No. 272,022. (No model.) Patented in France Nov. 6, 1886, No. 180,948.



Claim.—1. An exploding-chamber v, with the cooling-jacket W separated from the cooling-jacket W' of the cylinder C, in combination with the non-cooled tube K^2, provided with the valve E, and with the mixing-chamber M, provided with the air-inlet L, and the vaporizing-chamber r, bearing the tube n for the petroleum, for the purpose described.

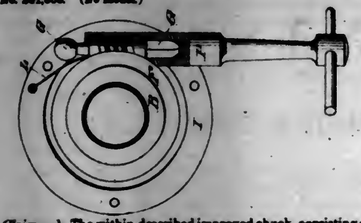
2. An exploding-chamber v, in connection with a tube K^2, provided with the valve E and with the chamber K, having the valves f and F, and the igniting-tube z, the latter being in connection with the outlet-valve g, in combination with the mixing-chamber M, having an air-suction inlet L and a vaporizing-chamber r, the latter being heated by a flame and being in connection with a tube guiding the fluid into the vaporizing-chamber r, for the purpose described.

3. The combination of an explosion-chamber v, having a water-cooled jacket, with chamber K^2, having valve E, governed by a governor F' by means of bent lever e e, cam d, roller r', connecting-piece h', valve-rod s, and spring s^2, valve E, connecting chamber K^2 with mixing-chamber M and vaporizing-chamber r, which receives its petroleum-supply through regulating-valve p^2 from supply-pipe l, K^2 further connected by means of valve f and chamber K with igniting-tube z, in the manner and for the purpose substantially as described.

4. The combination of a non-cooled chamber K^2, adjoining the water-cooled explosion-chamber v, having a valve E opening into the mixing-chamber M and vaporizing-chamber r, and igniting-tube z, with a petroleum-pump p, having a suction-valve d', connected by a spring F^2 and cross-piece h with the valve-rod e and spring s^2, and a delivery-valve d', balanced by a spring s^3, in the manner and for the purpose substantially as described.

5. The combination of the non-cooled chamber K^2, having a valve f, connecting it with the igniting-tube z, a valve F', valve-rod F, spring F', cross-piece h, with the chamber K', having outlet-valve g, valve-rod g^2, and spring g^3, and with a water-cooled explosion-chamber v, in the manner and for the purpose described.

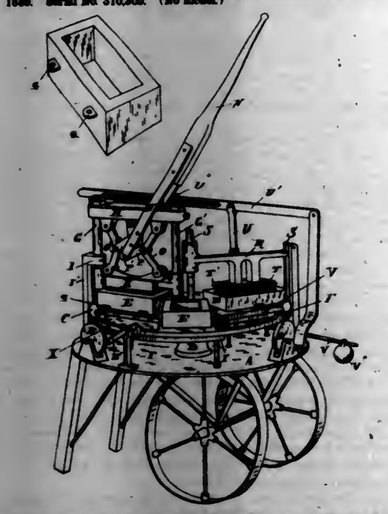
412,229. CHUCK. GEORGE P. ANDREWS and CHARLES R. ANDREWS, Staffordville, assignors to the D. E. Whitton Machine Company, New London, Conn. Filed Jan. 24, 1888. Renewed Nov. 22, 1888. Serial No. 291,609. (No model.)



Claim.—1. The within-described improved chuck, consisting of the combination, with an inner part adapted to be fixed to a spindle, an outer shell adapted to rotate upon the fixed part, and radial jaws combined with the two to be slid to and from a common center by the rotation of the shell upon the fixed part, substantially as shown and described, of a peripheral worm-gear upon the fixed part, a joint in the outer shell over said worm-gear, a cylindrical hole through the outer shell at its joint tangential to the worm-gear, a socket in the joint faces of the sections of the outer shell in prolongation of the hole therethrough, a worm-spindle of smaller diameter than said hole, having one end pivoted in the socket and its free end extending within the mouth of the hole and adapted to be combined with a corresponding wrench end, a spring fixed to the outer shell and bearing the worm-spindle normally away from the worm-gear, and a wrench adapted to enter the hole in the outer shell, grasp the worm-spindle, and center it in the hole to thereby bring its thread into engagement with the worm-gear, all combined and operating as and for the purpose set forth.

2. In a chuck, the combination of a central core engaging with the jaws of the chuck, adapted to be fitted to a mandrel or spindle and provided with a series of worm-teeth around itself, an outer case carrying the jaws and adapted to turn freely on the central core and provided with a circular opening tangential to the worm-teeth of the central core, a worm-spindle having an angular outer shank mounted loosely within said opening and normally disengaged from the worm-teeth, and a wrench accurately fitting the mouth of said opening and having a socket adapted to receive said shank, whereby as the wrench is inserted thereon the spindle is thrown into engagement with the worm-teeth, substantially as described and shown.

412,230. MACHINE FOR RE-PRESSING BRICKS. OLIVER BAIRD, Parkhill, and JONAH CORNELL, Thetford, Ontario, Canada. Filed May 10, 1889. Serial No. 310,208. (No model.)



Claim.—1. In a brick-machine, the combination of the platform carrying detents, the turn-table carrying forms and having notches to receive the detents, the guide-bars having the cross-heads, the dies, the toggle-levers, the power-lever having links connected to said toggle-levers, the lever connected and operated by the power-lever, the follower connected to said lever for expelling the bricks from the forms, and the pallet-board arranged to receive the bricks, substantially as described.

2. In a brick-machine, the combination of the platform carrying detents and anti-friction rollers, the turn-table carrying forms riding on the anti-friction rollers and adapted to be engaged by said detents, the guide-bars on the turn-table, having the cross-heads, the dies, the power-lever connected to and operating the dies, the lever connected to the power-lever, the follower having the lubricator and connected to said lever, the guide-bars for said follower, and the pallet-board for receiving the bricks, substantially as described.

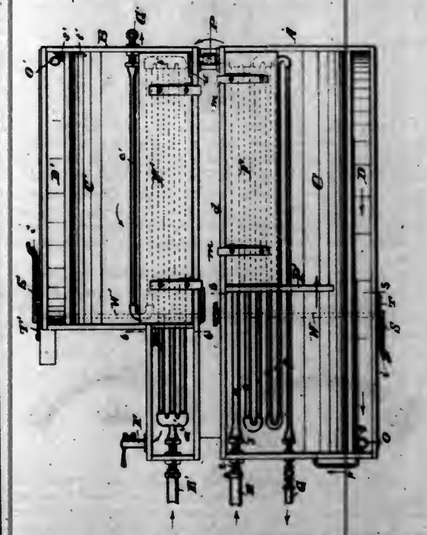
3. In a brick-pressing machine, the combination of the turn-table carrying the forms, the guide-bars having the cross-heads, the dies, the toggle-levers, the power-lever having links connected to said toggle-levers, the lever connected to and operated by the power-lever, the follower connected to said lever, and the guide-bars for said follower, substantially as described.

4. In a machine for the purpose described, the combination, with the turn-table carrying forms, of the follower adapted to coincide with one of the forms and adapted to expel the brick therefrom and of the pallet swung on the lever mounted below said form, substantially as described.

5. In a machine for the purpose described, the combination, with the turn-table carrying the forms, of the press consisting of the vertical guide-bars slidingly secured in vertical bearings, the cross-head uniting the same at the upper end, the upper die carried by the sliding cross-head, the lower die secured to the cross-head, fastened upon the guide-bars, toggle-levers connecting the cross-head of the upper die with the cross-head uniting the guide-bars, and an actuating-lever, substantially as described.

6. In a machine for the purpose described, the combination, with the turn-table carrying the forms, of the press provided with the actuating-lever N, the follower adapted to coincide with one of the forms and carried by the cross-head R, the lever U', the link U, suspending the follower from the lever U', and the wrist U", engaging in the slot on the lever U', all arranged to operate substantially as described.

412,231. EVAPORATING-PAN. JOHN L. BUCKER, Hartwell, assignor to the Hymyer Iron Works Company, Cincinnati, Ohio. Filed Mar. 18, 1889. Serial No. 303,772. (No model.)



Claim.—1. An evaporating-pan provided with a connected and continuous series of steam-heating pipes decreasing uniformly in size from the inlet to the discharge pipe, so that the intensity of the heat distributed may be gradually lessened from the heating to the cooling side of the pan, substantially as and for the purpose described.

2. An evaporating-pan provided with a connected and continuous series of steam-heating pipes arranged longitudinally along the bottom of the pan, each succeeding pipe having a smaller heating surface than the preceding one from the inlet to the discharge pipe, arranged substantially as described.

3. An evaporating-pan of greater length than breadth, having one side inclined outward, and provided with a uniformly-graded set of steam-heating pipes arranged longitudinally in a connected and continuous series along the bottom of the pan, so that the smallest heating-surface is nearest the inclined side, substantially as and for the purpose described.

4. An evaporating-pan having a removable set of steam-heating pipes arranged in a connected and continuous series and graded uniformly in size, lying in the bottom of the pan, and coupled by threaded collars with the steam supply and discharge pipes entering through the end of the pan near the bottom, substantially in the manner and for the purpose described.

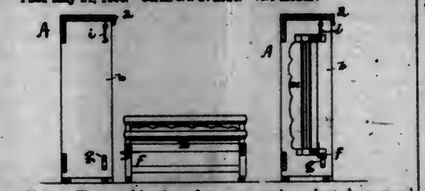
5. An evaporating-pan provided with a graded set of steam-heating pipes arranged in a connected and continuous series, in combination with a partition extending from side to side across said pipes, perforated below, and having its upper edge cut away, substantially as and for the purpose described.

6. An evaporating-pan provided with a graded set of steam-heating pipes arranged in a connected and continuous series and having an outwardly-inclined side, in combination with the partition P and trough D, substantially as and for the purpose described.

7. An evaporating-pan having a system of steam-pipes arranged in a connected and continuous series and uniformly graded in size and lying along the bottom of the pan, the supply and discharge connections being arranged and extended through the end of the pan at the bottom, so that all heated parts of the apparatus shall be beneath the surface of the juice being evaporated, substantially as and for the purpose described.

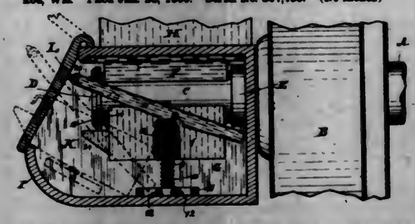
8. In an evaporating-pan, the combination, with the pan, of the axle W, rollers N N, and cams M M, connected by shaft Y and operated by the lever S, so that one end of the pan may be raised or lowered, as required, substantially as and for the purpose described.

412,232. COMBINATION-BED. CHARLES BOSCH, Cincinnati, Ohio. Filed May 31, 1883. Serial No. 274,521. (No model.)



Claim.—The combination of an open casing adapted to stand against a wall, and provided with pintles projecting horizontally inward from the sides of the casing, and a bed provided with folding legs and with open sockets adapted to engage the pintles, whereby, when the bed is shoved into position, the sockets engage upon the pintles and enable the bed to be turned and supported thereon virtually in the casing, with the legs folded against the bed, and upon turning the bed down into a horizontal position the legs may be dropped down to wholly support the bed upon the floor detached from the casing, substantially as set forth.

412,233. CAR-AXLE LUBRICATOR. JOHN F. BINGHAM, Milwaukee, Wis. Filed Jan. 28, 1889. Serial No. 297,755. (No model.)



Claim.—1. The combination of a car-axle and a car-axle box having a chamber therein below the journal of the axle within lubricant-holding box, supporting-springs located in recesses in the sides of the lubricant-holding box, and upright posts fixed in the base-piece adapted to rest on the bottom of the axle-box, the posts being adapted to retain the springs in position and to guide the box in its vertical movements, the lubricant-holding box and frame on which it is supported being collapsible, so as to be removable from the car-axle box, substantially as described.

2. In combination with a removable lubricant-holding receptacle for a car-axle box, two upright posts fixed in a base-piece, box-supporting springs for holding the box up to its work, and locking-bolts having bearings in the walls of the box and adapted to enter sockets in the posts, substantially as described.

3. The combination of a car-axle box with a lubricant-holding receptacle located therein and supported and held yieldingly up to the car-axle in the box by springs thereunder, and two sets of lubricant-supplying wheels consisting of two or more wheels in each set arranged in pairs below and on opposite sides of the car-axle, the wheels being supported loosely, so as to have some travel on axles having their bearings permanent in the walls of the lubricant-holding receptacle, substantially as described.

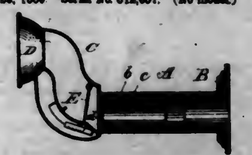
4. In combination with a car-axle, a lubricant-holding receptacle held by springs yieldingly up to the car-axle, and sets of scrapers, one set at each end of the lubricant-holding box, the scrapers having beveled edges and being held yieldingly up to the car-axle by springs thereunder resting in the lubricant-holding box, substantially as described.

5. In combination with a car-axle box and the journal of a car-axle therein, a lubricant-holding receptacle provided with means, substantially as described, for holding it up to the journal-box, and a frame pivoted to the sides of the receptacle and adapted to be tilted and bear at its rear end against the car-axle for the purpose of depressing the lubricant-holding box, substantially as described.

6. In combination with a car-axle box and the journal of a car-axle therein, a lubricant-holding receptacle provided with means, substantially as described, for holding it up to the journal-box, and a frame pivoted to the sides of the receptacle, and locking-bolts having bearings in the frame and adapted to enter sockets therefor in the walls of the axle-box, whereby the receptacle is secured in position with relation to the axle box, substantially as described.

7. In combination with a lubricant-holding receptacle, a funnel 24; secured to the outer end of the receptacle, an aperture therefrom through the end wall of the receptacle, and an obstructing-wall 26 in the funnel in front of the aperture, substantially as described.

412,234. SOUND-TRANSMITTER. ROSE BLAKE, Cornish, Me. Filed Mar. 29, 1889. Serial No. 305,057. (No model.)



Claim.—1. In a sound-transmitter, the radially-movable sensitive diaphragm E, in combination with the tube A, and the interiorly-movable parts *b* and *c*, and the offset C, all in the manner and for the purpose set forth.

2. The sound-transmitter, as described, consisting, substantially, of the tube A, having the offset C, mouth-piece D, and radially-movable sensitive diaphragm E, substantially in the manner and for the purpose described.

412,235. MACHINE FOR LASTING BOOTS OR SHOES. THOMAS BRIDGE, Leeds, County of York, assignor of one-half to George Lister, Headingly, Leeds, England. Filed Dec. 26, 1888. Serial No. 294,606. (No model.) Patented in England Oct. 4, 1887, No. 13,301; in France July 24, 1888, No. 191,986, and in Belgium July 27, 1888, No. 82,702.

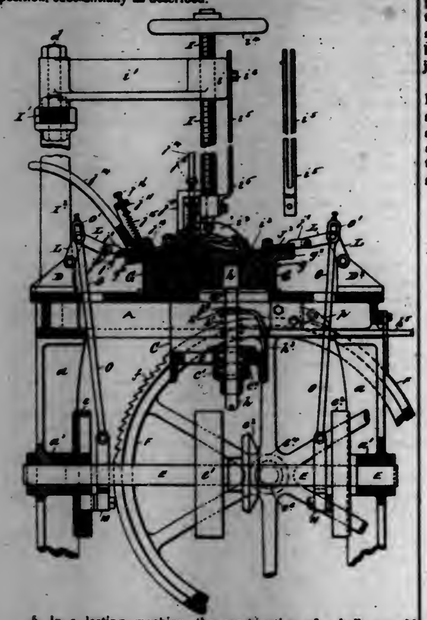
Claim.—1. A machine for lasting boots or shoes, consisting of a hollow mold shaped to conform to the outer contour of the boot or shoe mounted upon frame-work and armed with grippers and wipers for drawing the upper over the last and insole, a screw for forcing the last and upper into the mold, and mechanism, as described, for operating said wipers, all substantially as shown.

2. In a lasting-machine, the combination, substantially as hereinbefore set forth, of a table A, the framing on which it is mounted, a hollow mold having its interior shaped to conform to the contour of a boot or shoe and having a laterally-projecting flange g^{2} on both sides and at each end, and wipers adjustably secured on the upper face of the flange at each end and on both sides of the mold.

3. In a lasting-machine, the combination, substantially as hereinbefore set forth, of a hollow mold having its interior shaped to conform to the contour of the boot or shoe to be lasted, the scarfed or recessed wipers on each side of the mold having their inner edges shaped to conform to the contour of the sides and length of the mold and of the boot or shoe to be lasted, wipers at the toe and heel ends of the mold shaped to correspond with the contour of the toe and heel, and grippers for securing the edges of the uppers to be lasted.

4. In a lasting-machine, the combination of a hollow mold shaped to the outer contour of the boot, the wipers J J^{1} J^{2} J^{3}, each of which is actuated on said mold independently of the others, said wipers hav-

ing grippers j^{10}, substantially as described, for holding the upper in position, substantially as described.



5. In a lasting-machine, the combination of a hollow mold mounted on the table of the machine, the toe and heel wipers adapted to slide on said mold, the hinged plates j^{10}, pins j^{10} j^{10}, and spring adapted to keep the plates open, all substantially as set forth.

6. The combination of a table mounted upon framing, hollow mold-plates J J' J² J³, studs and nuts j j' j^2 j^3, slot-holes j^2 j^2 j^2 j^3, brackets j^3, rods j^3, toggles L, cams e e' e^2, shafts E e^3, bevel-wheels e^4 e^5, bearing e^6, hand-wheel F, ratchet-teeth f, set-screw f', bracket j^{13}, grippers j^{12}, and lever j^{14}, all substantially as shown.

7. The combination, with hollow mold G and with the wipers sliding thereon, of a shaft E, common to all the slides, actuated by mechanism, as described, cam carried on said shaft, levers pivoted to the framing of the machine and armed with runners operating in said cam, and rods having one end attached to levers and the other end loosely and adjustably connected to toggle L, having one of their ends connected to brackets on the table A and their free ends to the slides, said connections having play or lost motion to permit of them operating simultaneously or successively, all substantially as shown.

8. In a lasting-machine, the combination of a table mounted upon framing, hollow mold mounted on said table and armed with wipers, and grippers actuated by mechanism, substantially as described, with a last H and screw I, mounted in a movable arm i', pivoted to a support fixed to said table, said screw being armed at one end with a hand-wheel and at the opposite end with a bridge armed with a flat spring-plate, all substantially as and for the purposes described.

9. In a lasting-machine, the combination of a table mounted upon framing, a hollow mold armed with grippers and wipers actuated by mechanism, substantially as described, screw I and its support, hand-wheel, bridge, and flat spring-plate, last H, supporting-pin h, spring h', bar h^2, bearing c', cap c^3, supporting-piece h^3, and bearer C, provided with slot-hole c, all substantially as shown.

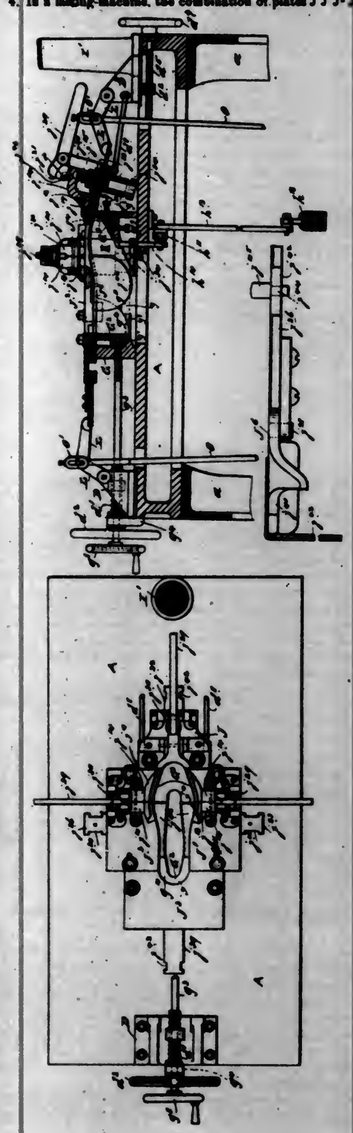
412,236. MACHINE FOR LASTING BOOTS OR SHOES. Thomas Bannon, Leeds, County of York, assignor of one-half to George Lister, Headingly, Leeds, England. Filed Apr. 1, 1889. Serial No. 305,574. (No model.) Patented in England Nov. 20, 1888, No. 16,288; in France Dec. 3, 1888, No. 191,995, and in Belgium Dec. 3, 1888, No. 84,212.

Claim.—1. In a lasting-machine, the combination, with a table A, mounted upon framing, of a hollow mold provided with cavities for the reception of heel and toe pieces, the removable heel and toe pieces adjustable in said cavities, fixed plates with which the mold is armed, grippers carried by the plates, and wipers working in recesses in the plates, substantially as described.

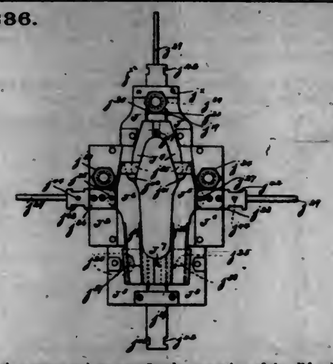
2. In a lasting-machine, the combination, with a hollow mold partially shaped to correspond to the contour of a boot or shoe, of the removable heel and toe pieces adjustable in cavities in the mold, a metal plate fixed to the heel-piece shaped to the contour of the heel portion of a boot or shoe, and screws and hand-wheels for adjusting the heel and toe pieces in the cavities of the mold.

3. In a lasting-machine, the combination, with a removable hollow mold and with removable and adjustable toe and heel pieces and shaped metal plate, the recessed plates J J' J² J³, fixed to the top of said mold, the shaped wipers J⁴ J⁵ J⁶ J⁷, slides to which the wipers are pivoted, and mechanism, substantially as described, connected to the slides for giving them an intermittent reciprocating motion, substantially as described.

4. In a lasting-machine, the combination of plates J J' J² J³, pro-



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vided with recesses and grooves for the reception of the slides j^{10} j^{10} j^{10} j^{10}, notched at one end and pivoted at the other end to hinged toe-wiper J⁴, side wipers J⁵ J⁶, and shaped hinged carrier J⁷, provided with slides j^{10} j^{10} for the reception of the ends of the side wipers, the projecting plates j^{10}, pins j^{10} j^{10}, spring j^{10}, the pieces of flexible material j^{10}, fixed to the side and toe wipers, and pin j^{10}, all substantially as and for the purposes set forth.

5. In a lasting-machine, the combination, with a removable hollow mold, removable and adjustable heel and toe pieces, toe, side, and heel wipers actuated by mechanism, substantially as described, of the plates J J' J² J³, bearings j^{10}, grippers j^{12}, brackets j^{13}, cam-ended levers and pulleys j^{15}, tension-springs j^{16}, tubes j^{17}, and nuts j^{18} j^{18}, as and for the purposes described.

6. In a lasting-machine, the combination, with a removable hollow mold armed with fixed plates J J' J² J³, grippers j^{12}, and mechanism, substantially as described, for opening and imparting the required tension to the same, and with the wipers pivoted to intermittent reciprocating slides actuated by mechanism common to all, substantially as described, of the removable toe-piece adjusted by screws g^4 g^5, and the heel-pieces adjusted by screw g^5, and hand-wheel g^6 on flanges g^6, all substantially as shown.

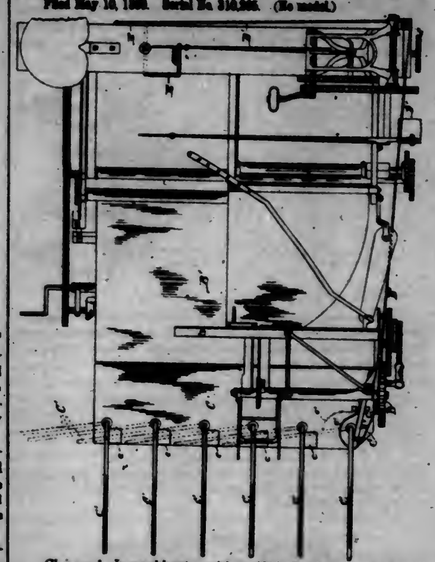
7. In a lasting-machine, the combination of a removable hollow mold, removable toe-piece, and adjustable heel-piece, grippers, and adjustable side wipers pivoted to slides and provided with inclined recesses for closing the hinged jaws of the toe-wipers for gathering in the toe after the edges of the upper have been closed over the insole at the waist of the boot or shoe, all substantially as shown.

8. In a lasting-machine, the combination, with the slides having wipers pivoted thereto at one end and notches formed at the other, of a shaft E, common to all the slides actuated by mechanism, as described, cams carried on said shaft, levers pivoted to the framing of the machine and armed with runners operating in said cams, rods having one end attached to levers and the other end loosely and adjustably connected to toggles L, having one of their ends connected to brackets on the table A and their free ends to the slides, said connections having play or lost motion to permit of them operating the slides simultaneously or successively, all substantially as shown.

9. In a lasting-machine, the combination of a removable hollow mold provided with a removable and adjustable toe-piece, fixed plates armed with grippers, and sliding toe and side wipers armed with pieces of flexible material, with the heel-piece armed with a metal-shaped plate g^{10}, mechanism, substantially as described, for adjusting the plate, the hinged-shaped carrier provided with slides receiving side-wiper ends, said carrier being pivoted to intermittent reciprocating slide j^{10}, adjusted to the movement of heel-piece, toggle L, adjusted bracket D, screw and nut d^2, and hand-wheel d^3, all substantially as shown.

10. In a lasting-machine, the combination of the table A, mounted upon framing, hollow removable and adjustable mold partially shaped to the outer contour of the boot or shoe, removable and adjustable heel and toe pieces G² G³, cavities g' g^2, screws g^4 g^5 g^5, hand-wheel g^6, flanges g^6, shaped metal piece g^{10}, fixed plates J J' J² J³, slides j^{10} j^{10} j^{10} j^{10}, pivoted and hinged toe-wiper J⁴, pins j^{10} j^{10}, spring j^{10}, side wipers J⁵ J⁶, flexible material j^{10}, brackets j^{13}, cam-levers j^{15}, grippers j^{12}, arms j^{14}, tension-springs j^{16}, tubes j^{17}, nuts j^{18} j^{18}, shaped hinged carrier J⁷, provided with slides j^{10} j^{10}, brackets D D' D² D³, adjusting-screws d' d^2, hand-wheels d^3 d^3, rods d^3, toggles L, and mechanism, substantially as described, for operating the same, pin j^{10}, pillar F, screw I, arm i', bridge i^2, hand-wheel i^3, ratchet-teeth i^3, catch i^3, pin h^{10}, double-ended lever h^{11}, rod h^{12}, and treadle h^{13}, all substantially as and for the purposes herein set forth.

412,237. SHEAF-CARRIER. William W. Bennet, Chicago, Ill. Filed May 14, 1889. Serial No. 310,905. (No model.)



Claim.—1. In combination with a self-binding harvester, a receiving-table hinged thereto at right angles to the line of the finger-bar, with means for operating the same, provided with extension-rods pivoted substantially perpendicularly to said table, adapted to receive the sheaves from the binder and to carry them until dumped upon the ground in bunches convenient for shocking, substantially as set forth.

2. In combination with a self-binding harvester, a receiving-table hinged thereto, as described, with means for operating the same, provided with extension-rods pivoted substantially perpendicularly thereto, said rods provided with an upwardly-inclined head and each permitted to move independent of its fellows, the table and rods being adapted to receive the sheaves from the binder, and by the action of the sheaves upon the rods to swing them to their extended position to carry the sheaves and dump them in bunches upon the ground convenient for shocking, substantially as specified.

3. In combination with a self-binding harvester, a receiving-table hinged thereto, as described, with means for operating the same, said table provided with extension-rods pivoted substantially perpendicularly thereto and raised above the plane of the table throughout the greater part of their length and each having a movement independent of its fellows, said table and rods being adapted to receive and carry the sheaves and to dump them on the ground convenient for shocking, substantially as set forth.

4. The combination of a self-binding harvester, the table C, hinged, as described, thereto, the extension-rods C', pivoted perpendicularly thereto, and the operating-cord D', connecting the said table with the foot-lever E, said table and rods being adapted to receive the sheaves from the binder, to carry them together, and to dump them in bunches on the ground, substantially as set forth.

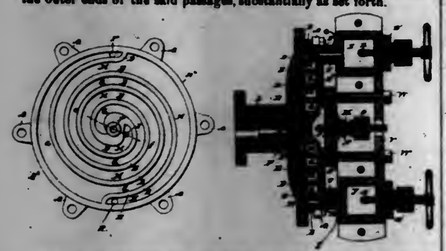
5. The combination of a self-binding harvester, the table C, hinged thereto, as shown, with means whereby the driver can operate the same, provided with stops c, and the extension-rods C', pivoted perpendicularly to said table, substantially as set forth.

412,238. APPARATUS FOR VAPORIZING FUEL-OIL. Samuel P. Crafts, Hamden, Conn. Filed Feb. 20, 1889. Serial No. 300,578. (No model.)

Claim.—1. An apparatus for vaporizing fuel-oil and commingling it with steam or air, consisting of a vaporizing-chamber provided with two spiral or volute ribs forming two spiral passages lying side by side and terminating near the center of the chamber, where each passage has an outlet-port, a port for steam or air leading into the outer end of one passage, an oil-port leading into the outer end of the other passage, and means for commingling the steam or air and vapor as they issue from the inner ends of the said passages, substantially as set forth.

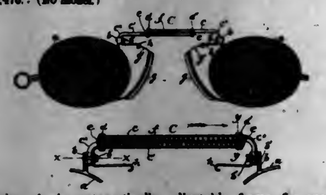
2. An apparatus for vaporizing hydrocarbon oil and commingling it with steam or air, consisting of a vaporizing-chamber provided with

two spiral or volute passages terminating near its center, a chambered nipple projecting from the center of the vaporizing-chamber, a vapor-chamber located behind the said nipple, a passage leading from the inner end of the oil-passage into the said chamber, and ports entering the outer ends of the said passages, substantially as set forth.



3. In an apparatus for vaporizing hydrocarbon oil and commingling it with steam or air, the combination, with a vaporizing-chamber provided with two spiral or volute passages concentric throughout their length, of a chambered nipple located in the center of the chamber, communication between the inner end of one passage and the inner end of the nipple, ports leading into the respective passages, and a cover secured to the chamber over the said passages and forming around the nipple an annular chamber, which communicates with the inner end of the other passage, substantially as set forth.

412,239. EYEGLASSES. JOHN CURRIE, Southbridge, Mass., assignor to Francis A. Hardy, Chicago, Ill. Filed June 15, 1889. Serial No. 314,478. (No model.)



Claim.—1. An automatically-adjustable frame for eyeglasses, consisting of the combination of two sections of a split tube—one attached to each lens—said sections being arranged parallel and loosely attached to each other by means of a sliding contact and a spiral spring interposed in the tubular space between them, substantially as shown and described.

2. The combination, in an eyeglass-frame, of split tubes attached to the respective lenses and arranged in sliding contact with each other, their concave faces being contiguous, stops or bearings *e e* at the respective ends, and inclosed spring *f*, substantially as shown and described.

3. The combination, in an eyeglass-frame, of the bars *c c'*, loosely attached to each other and arranged with their hollow faces contiguous and in sliding contact, means for detachably securing the protruding ends of said bars to the lenses, respectively, and a spiral spring interposed between said hollow faces and in operative contact with said bars, whereby the action of said spring may tend to draw said lenses toward each other in a straight line or permit them to be separated, substantially as shown and described.

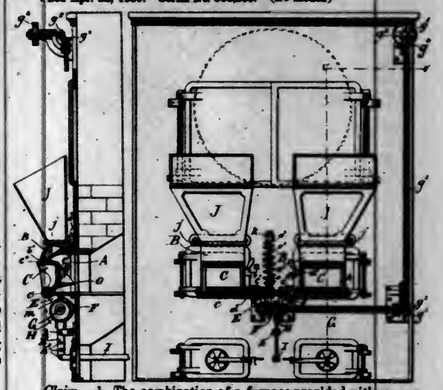
412,240. INKSTAND. WILLIAM H. DANIEL, Englewood, Ill. Filed Apr. 7, 1888. Serial No. 270,153. (No model.)



Claim.—1. A stand for an ink-well, carrying a pen-support consisting of two parts hinged together and connected to the stand at one side thereof, in combination with a lever *f*, an ink-well, and a hinged cover, substantially as and for the purposes specified.

2. A stand for an ink-well, carrying a pen-support consisting of two parts—each as *d e*—which are farther apart at the rear than at the front and are hinged together and connected to the stand, in combination with a lever *f*, an ink-well, and a hinged cover, substantially as and for the purposes specified.

412,241. MECHANICAL STOKER. ISAAC H. DAVIS, Boston, Mass. Filed Apr. 22, 1889. Serial No. 308,233. (No model.)



Claim.—1. The combination of a furnace provided with an opening in the wall thereof, the vibrating shovel C, pivoted at its bottom and provided with corrugations c^3, substantially as described.

2. The combination of a furnace provided with an opening in the wall thereof, the vibrating shovel C, pivoted at its bottom, and provided with a shelf O at its bottom, substantially as described.

3. The combination of the furnace provided with an opening in the wall thereof, the vibrating shovel C, pivoted at its bottom and provided with the valve-plate c^4, and the hopper J, placed above the shovel and adapted to supply fuel thereto, substantially as described.

4. The combination of the furnace provided with an opening in the wall thereof, the vibrating shovel C, pivoted at its bottom, provided with the valve-plate c^4 and with the corrugations c^3, substantially as described.

5. The combination of the furnace provided with an opening in the wall thereof, the vibrating shovel C, pivoted at its bottom, provided with the valve-plate c^4 and with a shelf O at its bottom, substantially as described.

6. The combination of a furnace provided with a door-opening in the wall thereof, a door pivoted to the furnace-front and adapted to close said opening and having an opening through itself, and the vibrating shovel C, pivoted upon the door and adapted to vibrate to and fro through the opening therein and receive and project coal through the opening into the furnace, substantially as described.

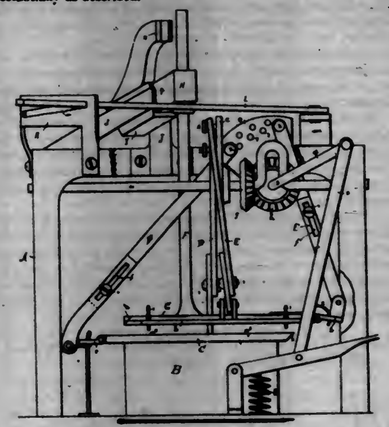
7. The combination of the furnace provided with a door-opening in the wall thereof, a door pivoted to the furnace-front and adapted to close said opening and having an opening through itself, the vibrating shovel C, pivoted upon the door and having the squared end c' of its pivot *c* engaging with the corresponding slot in the rocking shaft D, substantially as described.

8. The combination of the furnace provided with a door-opening in the wall thereof, a door pivoted to the furnace and adapted to close said opening and having an opening through itself, the vibrating shovel pivoted upon the door and adapted to vibrate to and fro through said opening and receive and project coal through the same into the furnace, and the hopper J, mounted upon the furnace-front and formed in two parts, one stationary and the other carried by the door, substantially as described.

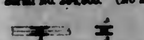
9. The combination of the furnace provided with a door-opening in the wall thereof, a door pivoted to the furnace-front and adapted to close said opening and having an opening through itself, the vibrating shovel C, pivoted at its bottom, having the squared end of its pivot c' engaging with the corresponding slot in the rocking shaft D, and the pawl E, spring-rod *e*, and spring e', and the rotating cam F, provided with the enlargement *f* on or near its point, substantially as described.

412,242. QUADRUPLE TIN-FOLDER. HELMUT H. DAWSON, Oak Hill, Kans. Filed June 14, 1888. Serial No. 277,300. (No model.)

Claim.—In a folder, the combination, with the stationary and movable plates having bending-levers hinged to the sides thereof, of a standard secured to the upper plates, a lever connected with said standard, and a plate having an inclined toothed slot receiving one end of said lever, whereby the lateral movement of the lever in said plate imparts a vertical movement to the standard and movable plates, substantially as described.



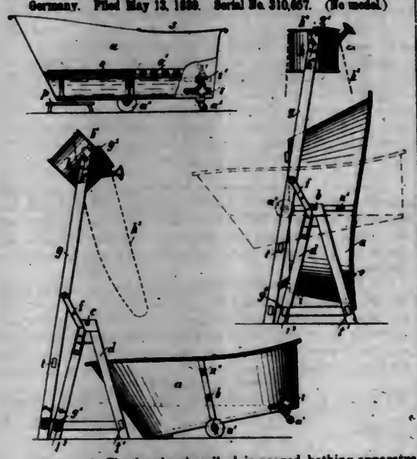
412,243. RIVET. LEVI O. DEAN, Natick, Mass. Filed Sept. 7, 1888. Serial No. 284,805. (No model.)



Claim.—1. The herein-described rivet, it having its opposite ends recessed, substantially as described.

2. The herein-described rivet, it having a waist of small diameter, as *b*, and having its ends enlarged in diameter and recessed, so that both the said ends may be readily upset to form large heads, substantially as described.

412,244. BATHING APPARATUS. CARL F. L. DITTMANN, Altona, Germany. Filed May 13, 1889. Serial No. 310,657. (No model.)

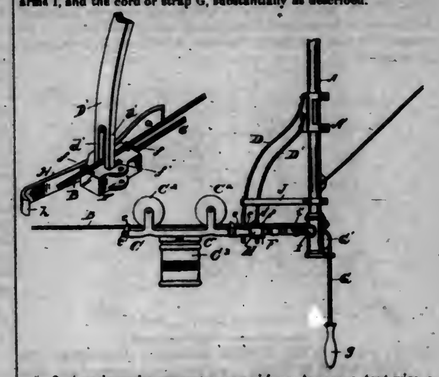


Claim.—1. The herein-described improved bathing apparatus, comprising the portable scaffold or jack, the tilting frame pivoted thereto, a douche-bath vessel having its bearing-rod removably secured to said tilting frame, and the tub, substantially as set forth.

2. The herein-described bathing apparatus, comprising the portable scaffold or jack having upper grooved ends, the tilting frame pivoted thereto, a douche-bath vessel having its bearing-rod secured to said tilting frame, and the tub provided with side trunnions entering said grooves, substantially as set forth.

412,245. CASH-CARRIER. RALPH O. DOUGHTY, Mount Pleasant, Mich. Filed Nov. 30, 1888. Serial No. 292,291. (No model.)

Claim.—1. A cash-carrier apparatus comprising a hanger, an adjustable shoe A', mounted on said hanger, a taut wire, a car, the carriage F, carrying spring-latches H, provided with beveled hooks adapted to engage beveled lugs *c* on the car, the bumper E, the springs D D', attached to the shoe A' and at their lower ends engaging, respectively, with the bumper E and carriage F, the adjustable trip-arms I, and the cord or strap G, substantially as described.



2. A cash-carrier apparatus comprising a hanger, a taut wire, a car adapted to travel thereon, an actuating-spring D, having prongs at its lower end, the bumper E, the carriage F, carrying the latches H, provided with beveled hooks adapted to engage with the beveled lugs *c* on the car, springs *h'*, to hold the latches in engagement with the car, the adjustable trip-arms I, the retracting cord or strap G, the carriage-returning spring D', the shoe A', to which the propelling-springs are secured, and the guard J, all substantially as described.

412,246. SNAP HOOK. CHARLES FAUCHERAUD, St. Amand sur Sevre, France. Filed June 17, 1889. Serial No. 314,503. (No model.)



Claim.—1. In a snap-hook, the combination, with the body or section *a* of the hook provided with an arm a^3, of the latch *b*, pivoted upon a pin *b'*, screwed into the section *a* and having a recess or chamber c^x, and the coiled spring *c*, fitted around said pin within said recess, one end of said spring being inserted in a notch in section *a* and the other end in a notch in the latch *b*, as and for the purpose specified.

2. In a snap-hook, the combination, with the section *a* of the hook provided with an arm a^3, the loop portion a', and the shank a^2, of the latch *b*, pivoted upon a pivot-pin *b'*, screwed into section *a* and having a recess c^x, a coiled spring *c*, fitted around said pin within said recess, one end of said spring being inserted in a notch in section *a* and the other end in a notch in the latch *b*, as and for the purpose specified.

412,247. PROCESS OF PRESERVING LIME. WILLIS W. FRAHM, Waynesborough, Pa. Filed Apr. 4, 1889. Serial No. 305,982. (No specimens.)

Claim.—1. The herein-described process of treating lime, consisting in removing it while hot from the kiln, securing it in boxes, and hermetically sealing said boxes while the lime is hot, substantially as described.

2. The herein-described process of treating lime, consisting in removing the same while hot from the kiln, grinding it, and catching it in boxes, and then hermetically sealing said boxes while the lime is hot, substantially as described.

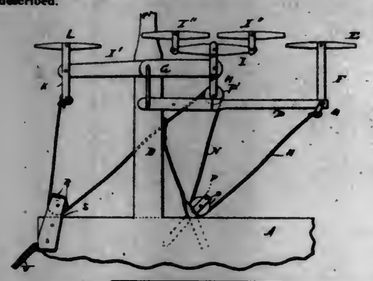
3. The herein-described process of treating lime, consisting in heating the same and boxing it in a hot state in hermetically-sealed vessels, substantially as described.

4. The herein-described process of treating lime, consisting in heating the quicklime, reducing it to powder, putting it into boxes while hot, and hermetically sealing said boxes while the temperature of the lime is above that of the surrounding atmosphere, substantially as described.

412,248. DRAFT-EQUALIZER. ISAAC GUTHRIE, Ashuro, Kans. Filed July 10, 1888. Serial No. 317,977. (No model.)

Claim.—In a four-horse draft-equalizer, the combination, with the

frame A and tongue B, of the levers D, G, and I', pivoted, respectively, to project at opposite sides of said tongue, the singletree E, doubletree I, and singletree L, pivoted to the ends of said levers, the pulleys R and O, arranged at the inner end of the frame and at the tongue, the pulley P' upon the end of lever G, and the chain or rope N, secured to the ends of levers D and I' and passed around said pulleys to run obliquely forward from the inner portion of the frame A, substantially as described.



412,249. KNEE REVERSE-MOVEMENT ATTACHMENT FOR TYPE-WRITING MACHINES. GEORGE GLIDDELL, Oswego, Kans. Filed June 19, 1888. Serial No. 277,603. (No model.)



Claim.—1. In an attachment for writing-machines, the combination, with a longitudinal fixed base-piece disposed to one side of the machine, each end of which is provided with an upright pillar or support, of a shaft journaled therein, a downwardly-projecting arm secured to the front end of the shaft and an upwardly-projecting arm secured to the rear end, and a flexible connecting-piece secured to the upper end of the rear arm for connecting the same with the carriage of the machine, whereby said carriage may be drawn back to its original position after completing a line.

2. In an attachment for writing-machines, the combination, with a base-piece, one end of which is provided with a spring-clamp and having upright pillars or supports at its ends, of a shaft journaled in the pillars; an arm secured thereto at each end, a bell-crank lever pivotally secured to the clamp, one end of which projects down below the attachment and the other one projects laterally, a link connected with the end of the laterally-projecting arm of the lever and with the outer end of the arm secured to the front of the shaft, and a flexible piece for connecting the upper end of the rear arm with the carriage of the machine, substantially as and for the purpose set forth.

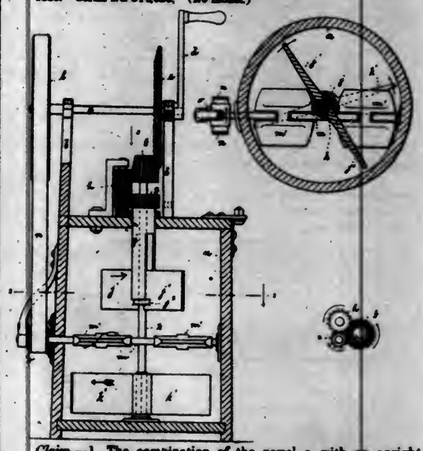
3. In an attachment for writing-machines, the combination, with a base-piece, of a shaft, two arms secured thereto, a clamp at one end of the base-piece, a lug upon the clamp having jaws, a bell-crank lever which at its angle is provided with a lug to fit between the jaws of the lug upon the clamp, a link connecting one arm of the bell-crank lever with the outer end of the arm upon the front end of the shaft, and a flexible piece connecting the other arm with the carriage of the machine, substantially as set forth.

4. In an attachment for writing-machines, the combination, with an operating mechanism, of a collar to fit upon the paper-table support of the machine, a bell-crank lever pivotally secured thereto at one end of one of its arms, a flexible piece secured at one end to the upper end of the other arm of the bell-crank lever and at the other end to the operating mechanism, and a lug or ear secured to the rear portion of the line-space handle and adapted to be engaged by the bell-crank lever, substantially as and for the purpose set forth.

5. In an attachment for writing-machines, the combination, with an operating mechanism, of a collar to fit upon the paper-table support of the machine, a bell-crank tripping-lever which at its angle is provided with a toe, a set-screw through the end of one of the arms of the lever and through the side of the collar, a lug to be secured upon the rear end of the line-space handle of the machine, the rear portion of which is in a line with and below the toe of the lever, and a flexible piece secured at one end to the upper arm of the tripping-lever and at the other end to the operating mechanism, substantially as and for the purpose set forth.

6. In an attachment for writing-machines, the combination, with an operating mechanism, of a collar to fit upon the paper-table support of the machine, a bell-crank lever pivotally secured thereto at one end of one of its arms, and a flexible piece secured at one end to the other arm of the bell-crank lever and at the other end to the operating mechanism, said lever engaging with the rack-lifting mechanism, substantially as set forth.

412,250. CHURN. CARL GRAF, Brooklyn, N. Y. Filed June 17, 1889. Serial No. 314,629. (No model.)



Claim.—1. The combination of the vessel *a*, with an upright dasher-shaft, a surrounding tube, and a horizontal dasher-shaft, and with wings secured to the tube and the shafts, means for revolving the upright dasher-shaft and the tube in opposite directions, and means for revolving the horizontal dasher-shaft, all substantially as specified.

2. The combination of the vessel *a*, with tube *j*, projecting partly into said vessel and carrying wings *j'*, and with shaft *k*, passing through said tube and carrying wings *k'*, and with a power-shaft and a train of gearing for revolving the tube *j* and shaft *k* in opposite directions, and with transverse shaft *m*, carrying wings *m'*, and revolved from the power-shaft at right angles to shaft *k*, substantially as specified.

412,251. SELF-LUBRICATING JOURNAL-BEARING. WALTER L. HALDY, Cincinnati, Ohio. Filed July 1, 1889. Serial No. 316,131. (No model.)



Claim.—1. A journal-bearing embodying, essentially, three elements in combination, viz: first, a hollow pedestal or supporting-box formed with an oil-reservoir beneath the journal-opening; second, an independent journal-sleeve held in said journal-opening by a connection preventing rotation, but permitting oscillations caused by inaccurate alignment of the shaft, and, third, one or more oil-wheels carried upon yielding supports in the oil-reservoir and bearing through a suitable opening or openings of the sleeve against the journal, substantially as set forth.

2. In a journal-bearing, the combination of a journal-box having an oil-reservoir beneath the axis of the journal, an independent detachable journal-sleeve provided with a spherical enlargement at mid-length, adapted to rest adjustably in a corresponding enlargement of the box, and provided with one or more openings at the under side, and one or more oil-wheels mounted on yielding supports in the oil-reservoir and bearing against the journal through the opening or openings of the sleeve, substantially as set forth.

3. In a journal-bearing, the combination of a journal-box having an oil-reservoir beneath the axis of the journal, an independent detachable journal-sleeve enlarged spherically at mid-length to rest adjustably in a corresponding enlargement of the boxing, and with a projecting pin upon the under side of such sleeve enlargement projecting into a corresponding hole in the bottom of the socket-depression of the boxing, and provided with one or more openings at the under side, and one or more oil-wheels mounted on yielding supports in the oil-reservoir and bearing against the journal through the opening or openings of the sleeve, substantially as set forth.

4. In a journal-bearing, the combination of a journal-box having an oil-chamber beneath the axis of the journal, an independent detachable journal-sleeve constructed with a circumferential groove in the inner wall thereof, and a passage leading therefrom through the sleeve into the oil-reservoir below, and two oil-wheels mounted on yielding supports in the oil-reservoir and bearing through suitable openings in the sleeve upon the journal—one at each side of the said groove and passage—substantially as and for the purpose set forth.

5. In a journal-bearing, the combination of a journal-box having an oil-reservoir beneath the journal-axis, an independent journal-sleeve enlarged spherically at mid-length and resting in a correspondingly-enlarged socket-bearing formed in the boxing, said sleeve being provided with a pin at the under side of its spherical enlargement, engaging in a corresponding aperture in the bottom of the socket-bearing to prevent rotation thereof, a circumferential groove in the inner wall of the sleeve with an outlet therefrom leading through said pin into the oil-reservoir below, and two oil-wheels mounted on yielding supports—one at each side of said groove—and bearing against the journal through suitable apertures in the sleeve, substantially as set forth.

6. In a journal-bearing, the combination of a journal-box having an oil-reservoir beneath the axis of the journal, an independent detachable journal-sleeve enlarged spherically at mid-length to rest in a corresponding enlargement of the box, and one or more oil-wheels pivotally mounted in and upon flat spring-plates and revolving in contact with the journal through apertures in said sleeve, said plates having wheel-apertures so conformed to the sectional contour of the wheels as to act as scrapers to remove any excess of oil adhering thereto, substantially as set forth.

412,252. ROLLER ATTACHMENT FOR STOVES. GEORGE D. HAMILTON, Fowlerville, Mich. Filed July 1, 1889. Serial No. 316,163. (No model.)



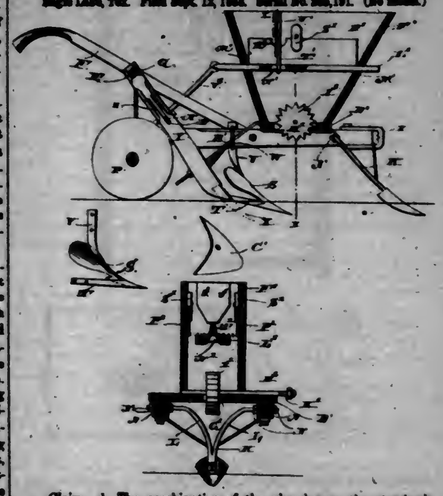
Claim.—1. In a caster attachment for stoves, the combination of the following elements: the bifurcated brackets secured at one end to the stove-legs and at the other end to the stove-base, the levers pivoted between the bifurcations of said brackets, slidingly engaging at one end with the caster-frame and at the other against an adjustable washer provided with lugs between the levers, a central bolt over which said washer is sleeved, and an adjusting-nut on said bolt, substantially as described.

2. In a caster attachment for stoves, the combination of the following elements: the bifurcated brackets D, the levers F, pivoted in said brackets, the casters H, having pins J engaging into yokes K, the sleeves L_2 and means, as the bolt O, washer M, and nut P, for simultaneously operating the casters, the parts being arranged to operate substantially as and for the purpose described.

3. In a caster attachment for stoves, a bracket secured at one end to the legs and at the other end to the stove-base, and levers pivoted to said brackets and carrying at one end the casters and at the other end bearing against an adjustable washer, substantially as described.

4. In a caster attachment for stoves, the combination of the following elements: bifurcated brackets secured at one end to the stove-legs and at the other end to the stove-base, and levers pivoted between the bifurcations of said brackets and slidingly engaging at one end with the caster-frame and at the other against an adjustable collar, substantially as described.

412,253. COTTON OR CORN PLANTER. DEAN C. W. HARDEMAN, Eagle Lake, Tex. Filed Sept. 12, 1888. Serial No. 285,191. (No model.)



Claim.—1. The combination of the plow-beams, the standards secured to said plow-beams and having arms C C, the transverse rods D E, connecting said arms, the adjusting-nuts on said rods, the standard K, having arms L extending transversely through the beams, and the adjusting-nuts N N on said arms, all combined and operating substantially as set forth.

2. The combination of the plow-beams having the standards provided with the arms C, the transverse rods connecting the said arms, the brackets secured to the said arms, and the roller having its shaft journaled in bearings in the said brackets, substantially as described.

3. The combination, in a planter, of the hopper, the shaft H', journaled therein and having the seed-wheel I', the reciprocating slide guided in the hopper and arranged at a distance above the bottom thereof, the width of the said slide being less than the width of the hopper, and the doors or plates P', hinged to the sides of the hopper and adapted to fold downward over the seed-slide, said doors or plates having the opening R', substantially as described.

4. The combination of the hopper, the shaft H', journaled therein and having the seed-wheel I', the seed-slide arranged in the hopper at a distance above the seed-wheel, the said slide being of less width than the hopper, the door or plates P', hinged to the sides of the hopper and adapted to be folded down upon the seed-slide, the buttons S', pivoted to the sides of the hopper and adapted to lock the doors or plates in place, and means, substantially as set forth, to rotate the wheel H' and reciprocate the seed-slide, substantially as described.

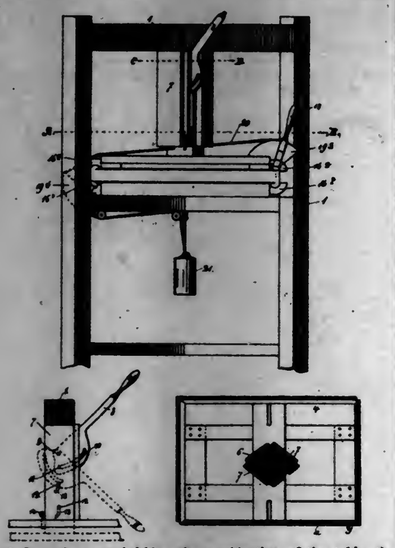
412,254. SHEET-METAL FOLDER. MATTHEW B. HASKINS, New York Mills, N. Y., assignor of one-half to W. Stuart Walcott, same place. Filed May 2, 1888. Serial No. 272,522. (No model.)

Claim.—1. In a sheet-metal-folding machine, the combination of a quadrilateral table, a presser-plate, substantially of the size and form of the table, adapted to descend thereon, brakes upon the two adjacent sides of the table, adapted to work by or around its edge, and brakes upon the two adjacent sides of the presser-plate, being the opposite sides to those having the brakes on the table, the brakes upon the presser-plate being adapted to work by or around its edge, substantially as set forth.

2. In a sheet-metal-folding machine, the combination of the table having a partial bearing affixed thereto, a presser-plate having the complement of the bearing affixed thereto, and the brake working in the bearings.

3. The combination of the table, the presser-plate adapted to descend upon the table and having a vertical and horizontal movement, and the bearings, parts of which are affixed to the presser-plate and table, respectively, and adapted to be brought together when the

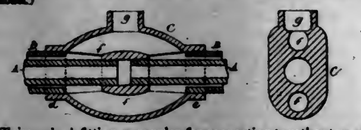
presser-plate descends upon the table, and the brakes in said bearings.



4. In a sheet-metal folder, the combination of the table, the presser-plate adapted to descend upon the table and mounted upon a post movable within guides, the angular slot in the guides, and pin in the post engaging in the slot.

5. In a sheet-metal folder, the combination of the table, the presser-plate adapted to descend upon the table and mounted upon a post movable within guides, the roller upon the guides, and the projection upon the post having a rounded or beveled edge and adapted to engage the roller upon each upward movement, whereby sidewise movement is given to the presser-plate to withdraw it from the fold, substantially as set forth.

412,255. COUPLING FOR GAS OR OTHER PIPES. JOSEPH S. HATFERY, Waterloo, Iowa. Filed Apr. 1, 1889. Serial No. 305,513. (No model.)



Claim.—1. A fitting or coupler for connecting together two pipe-lines placed one inside the other, having the threaded portions or sockets for connection with both pipes made integral with such coupler, and having an outlet leading from the chamber constituting the space between the pipes, such chamber communicating with the outer line of pipes, all substantially as set forth.

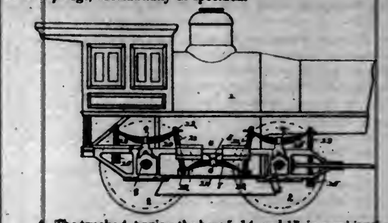
2. In combination with a double pipe-line composed of one line of pipe surrounding another inner and stronger main pipe, a fitting or coupler having independent sockets into which the sections of both sets of pipes are threaded, and also having within it a chamber or passage communicating with the outer line of pipe and having an outlet serving to convey away any leakage from the inner pipe, all substantially as and for the purposes set forth.

412,256. SPRING-GEAR FOR LOCOMOTIVES. JOHN T. HEFFERNAN, Dunkirk, N. Y. Filed June 27, 1888. Serial No. 315,741. (No model.)

Claim.—1. A spring-gear comprising a continuous series of alternately disposed and arranged semi-elliptic bow-springs connected by pivotal couplings, substantially as specified.

2. A spring-gear consisting of a continuous series of alternately-arranged semi-elliptic bow-springs, each alternate spring being arranged out of a plane with the adjacent springs, and pivotal links connecting said springs, substantially as specified.

3. The combination, with a locomotive and its trucks, of standards mounted upon the journals of the trucks and projecting upwardly and provided with yokes, semi-elliptic bow-springs mounted in the yokes, a similar spring mounted intermediate the standards and disposed in an opposite direction, and links pivotally connecting the end of the springs, substantially as specified.



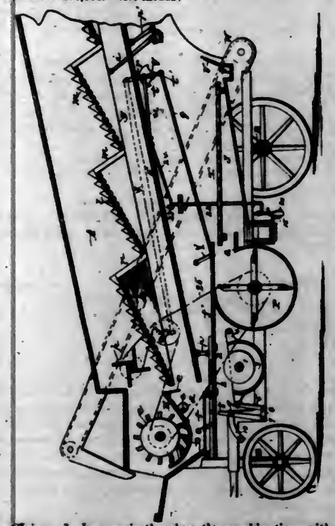
4. The trucks 4, having the bars 5, 14, and 17, in combination with the journals 3, having the yokes 8 and 6, the former having the standards 9, the springs 10, mounted in the yokes 9, and the spring 7, mounted in the yoke 6, depending from the bar 5, the links 11, having the pins 12, connecting the outer ends of the springs 7 with the inner ends of the springs 10, and the links 13, connecting the outer ends of the springs 10 with the end springs 15, mounted in the yoke 16, depending from the bar 17, said spring 15 connecting the series at one side to the series at the opposite side, substantially as specified.

5. A continuous spring-gear consisting of a continuous series of oppositely-disposed springs arranged along the sides and ends of the truck of a locomotive or the like, all the springs being connected together by pivotal couplings, as set forth.

6. A continuous spring-gear for locomotives or the like, consisting of a series of springs connected together by pivotal couplings, as set forth.

7. A continuous spring-gear consisting of a series of oppositely-disposed springs arranged in different horizontal and vertical planes, the ends of one spring being coupled to the ends of the adjacent spring, as set forth.

412,257. COMBINED GRAIN-THRASHER AND CLOVER-SEED HULLER. CHARLES H. HORTON, Wellington, Ohio. Filed Jan. 19, 1889. Serial No. 296,900. (No model.)



Claim.—1. In a grain-thrasher, the combination, with a cylinder, concave, and separator, of a swinging shelf, arms projecting upwardly from said shelf, a discharge-trough centrally supported on said arms, and a crank connected to the trough for tilting it, substantially as set forth.

2. In a grain-thrasher, the combination, with a cylinder, concave, and separator, of a swinging shelf, centrally-located arms thereon, a trough supported at its center on said arms, and a crank for changing the direction of inclination of the trough and connection between the shaking-bottom and shelf, whereby a lateral swinging motion is imparted to the shelf from the shaking-bottom, substantially as set forth.

3. The combination, with the cylinder and concave, of a grate pivoted in proximity to the cylinder, cams for raising or lowering this grate, an apron depending from the rear end of the grate, and a separator for conducting off the straw, substantially as set forth.

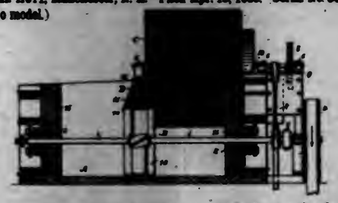
4. The combination, with a cylinder and concave, of a separator composed of movable frames, each frame having oppositely-extending inclines, one series of inclines of each frame being slotted transversely, the other series being slotted longitudinally.

5. The combination, with a cylinder and concave, of a separator composed of a series of frames supported on vibrating arms and a rotating crank-shaft, the upper faces of said frames being in the form of alternate long and short inclines, the former having ribs and slots extending across them and the latter having slots extending longitudinally of the frames, and toothed or stepped strips located on opposite sides of the long inclines, substantially as set forth.

6. The combination, with a cylinder, a concave adjustable grate, and apron depending therefrom, of a separator, substantially as described, and beaters for forcing the straw upon the separator, substantially as set forth.

7. The combination, with a cylinder and concave, of a separator consisting of several shaking-frames, each having oppositely-extending inclines thereon, and toothed strips secured to the sides of said frame, and the beater located near the front ends of the frames, substantially as set forth.

412,258. PULP WASHING AND BLEACHING MACHINERY. JOHN HOTT, Manchester, N. H. Filed Apr. 15, 1889. Serial No. 307,271. (No model.)



Claim.—1. In combination with a partitioned vat and pulp-treating apparatus therein, forcing apparatus, operative with complete immersion, arranged in the vat for creating a circulation therein around the partition, substantially as described.

2. In combination with a partitioned vat and a pulp washer or washers therein, a propeller-screw or forcing apparatus, operative with complete immersion, arranged in the vat for creating a circulation therein around the partition, substantially as described.

3. In combination with a vat and a pulp washer or washers therein, a propeller-screw or forcing apparatus, operative with complete immersion, arranged in the vat for creating a circulation therein, and an additional agitator or agitators also in said vat, substantially as described.

4. In combination with a vat and a pulp washer or washers therein, a propeller-screw or forcing apparatus, operative with complete immersion, arranged in the vat for creating a circulation therein, and an additional agitator or agitators provided with arms set obliquely at different angles, so as to throw the pulp back and forth in opposite directions, substantially as described.

5. In combination with a partitioned vat and pulp-treating apparatus therein, a propeller-screw set in the vat below the pulp-level for creating a circulation therein around the partition, substantially as described

6. In combination with the pulp-vat, a partition provided with an opening, a propeller-screw or forcing apparatus at the opening, whereby the pulp is forced through the said opening from one side of the partition to the other, and a return passage or passages connecting the spaces on opposite sides of said partition, substantially as described.

7. In combination with the pulp-vat, an upright partition provided with an opening at a distance below the top, a propeller-screw or forcing apparatus, operative with complete immersion, arranged at said opening, and a return passage or passages connecting the spaces on opposite sides of said partition, substantially as described.

8. In combination with the pulp-vat, a partition provided with an opening at a distance from both ends of said partition, a propeller-screw or forcing apparatus at said opening, whereby the pulp is forced through the same, and return-passages around both ends of said partition, substantially as described.

9. In combination with a pulp-vat, an upright partition provided with an opening therein, a propeller-screw or forcing apparatus at said opening, a return passage or passages between the spaces on opposite sides of the partition, and an overflow by which the pulp can return directly to the first side of the partition rather than run out of the vat, substantially as described.

10. In combination with an oblong vat divided longitudinally, a propeller-screw or forcing apparatus, operative with complete immersion, placed at an opening in the lower part of a vertical partition in said vat, and a return passage or passages around the end or ends of the partition, substantially as described.

11. In combination with an oblong vat, an upright longitudinal partition provided with an opening therein, a propeller-screw set in said opening and mounted on a shaft transverse to the said vat and partition, and a return passage or passages, substantially as described.

12. In combination with a vat, an upright partition provided with a tube or tubular casing opening into the vat on opposite sides of the partition, a propeller-screw not substantially longer than said tube or tubular casing set therein, and a return passage or passages, substantially as described.

13. In combination with a vat, a partition provided with an opening therein, a renewable lining to said opening, a propeller-screw in said opening, and a return passage or passages, substantially as described.

14. The pulp-vat provided with re-entrant sides, a vertical partition transverse to the line connecting said sides, and return-passages at the ends of said partition, in combination with a shaft across the vat at the re-entrant portion of the sides and a propeller-screw at an opening in said partition, substantially as described.

15. The combination, with the pulp-vat provided with a partition and passages or conduits for the circulation of the pulp, of a propeller-screw in said vat, and beating or mixing arms mounted on the shaft of said screw, substantially as described.

16. The combination of the pulp-vat, a pulp washer or washers therein, a vertical partition provided with an opening at its lower part, a propeller-screw at said opening, and a return passage or passages, substantially as described.

17. The combination of the pulp-vat, a pulp washer or washers therein, a vertical partition provided with an opening at its lower part, a propeller-screw at said opening, a return passage or passages, and beating or mixing arms fixed with the propeller-screw on the shaft of the latter, substantially as described.

18. The combination, with a partitioned vat and pulp washer or washers, of a propeller-screw for creating a circulation in said vat around the partition, the passage or passages from the discharge side of said screw around the said partition to the inlet side thereof being of even depth, substantially as described.

412,259. UNCOUPLING DEVICE FOR RAILWAY-CARS. ELI H. JAMBET, near Alexandria, Va. Filed Mar. 6, 1889. Serial No. 302,097. (No model.)



Claim.—1. The combination of the uncoupling-lever with the slotted hanger, the latter pivoted to the car, and the outer end of the lever passing through the hanger, as set forth.

2. The combination of the uncoupling-lever with a hanger having a slot in which rests the outer end of the lever, the hanger being pivoted to the car, as set forth.

3. A car-coupling uncoupling-lever hanger having the two slots, in combination with the uncoupling-lever, the outer end of which rests in the lower slot, and a pivot-pin passing through the upper slot.

4. The uncoupling-lever pivoted to the coupling-head and having the bend, in combination with the coupling-pin, said bend being under the pin, as set forth.

5. The uncoupling-lever having the flat bend, in combination with the coupling-pin, the bend being below the coupling-pin, as set forth.

6. The coupling-head having the coupling-pin and provided with the bracket, in combination with the uncoupling-lever held at one end in said bracket and passing under the coupling-pin, as set forth.

7. The hanger pivoted to the car, in combination with the limiting-stop, as set forth.

412,260. MEANS FOR MAINTAINING THE GAGE OF RAILWAY-TRACKS. EDWARD A. JESSE, Newport, N. H. Filed Dec. 12, 1888. Serial No. 293,231. (No model.)

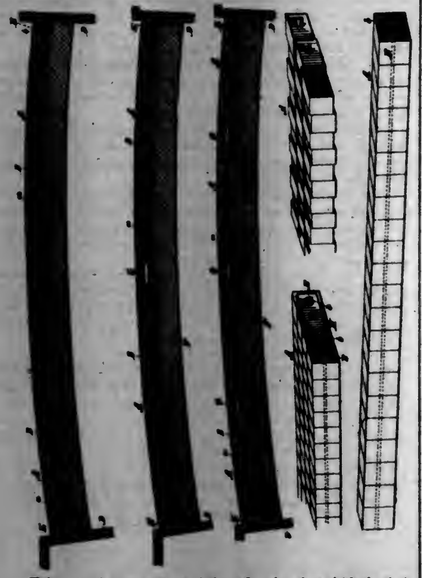
Claim.—1. The combination, with the rails and sleepers, of metallic bed-plates resting under either rail, having a slotted projection grasping the inner portion of the base of a rail, and a metallic tie-bar interposed between the said bed-plates and rails and resting within the said slotted projection of the former and having its end adapted to grasp the outer portion of the base of both rails.

2. The combination, with the rails and sleepers, of metallic tie-

bars having their ends adapted to grasp the outer portion of the base of said rails to prevent their spreading, and metallic bed-plates interposed between said tie-bars and sleepers, having bent projections at each side of said tie-bar for grasping the inner portion of the base of said rails, substantially in the manner and for the purpose specified.



412,261. PAVEMENT. SAMUEL B. JUMPER, New York, N. Y. Filed Nov. 23, 1888. Serial No. 291,643. (No model.)



Claim.—1. A pavement consisting of wedge-shaped blocks A A, united into a continuous curved section by a bar B, substantially as described.

2. A pavement, substantially as herein described, consisting of the perforated wedge-shaped blocks A and the bar B, passing through said blocks, said blocks being held tightly together on the bar B in a curved line, substantially as described.

3. The wedge-shaped blocks A, having apertures *a*, said blocks being placed side by side with their apertures aligned, combined with the rod B, having the nut *b*, said rod passing through the apertures in the blocks A, and the nut *b* drawn up to hold the blocks A rigidly together upon the rod B and in a section having a curved line, substantially as described.

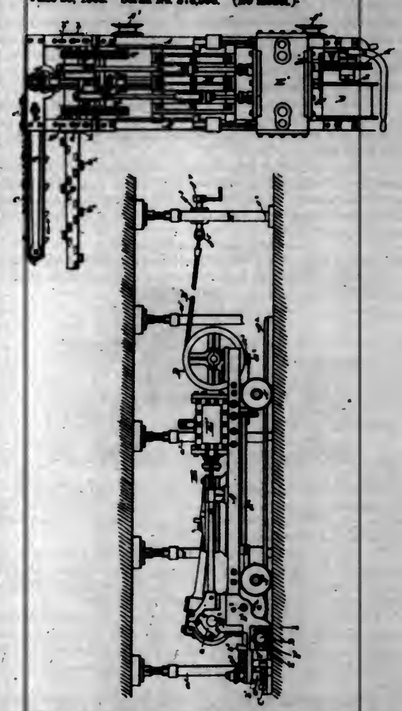
4. The blocks A, having apertures *a*, the apertures in the blocks A being aligned, said blocks tapering from their upper edges downward on both sides, combined with the rod B, having the end nut *b*, the rod B being passed through the apertures in the blocks A and the nut *b* drawn up, whereby the blocks A are rigidly held together and formed into an arch, substantially as described.

5. The blocks A, having apertures *a*, that are aligned with each other, and the rod B, passing through said apertures in said blocks and having nut *b* for holding the blocks on the rod, combined with the recessed blocks E, that rest against the curb and receive the ends of the rod B, substantially as described.

6. The two sections of pavement herein described, each consisting of blocks A, placed side by side and having a rod B passed through them, and the nuts *b* holding said blocks on said rods, combined with the intermediate recessed or apertured block G between said two sections of pavement, the ends of the rods B being passed into the apertures in said block G, whereby the sections of pavement are connected together, substantially as described.

7. A pavement consisting of the perforated blocks A, the upper surface of one block being lower than the upper surface of an adjoining block, and the bar B, passing through said blocks, said blocks being held tightly together on said bar, substantially as described.

412,262. MINING-MACHINE. JOHN KAMSLEY, Streator, Ill. Filed June 20, 1888. Serial No. 277,092. (No model.)



Claim.—1. In a machine such as described, the combination, with the traveling carriage and the cutting mechanism supported upon and projecting laterally therefrom, of a clearing mechanism supported in rear of the cutter, the same comprising an endless belt passing around a supporting-pulley near the outer end of the cutter, and a series of pivoted scrapers or blades depending from said belt on horizontal pivots, substantially as described.

2. In a machine such as described, and in combination with the traveling carriage and cutter-bar mounted thereon and projected beyond the sides, a traveling-belt support parallel with the cut and in rear of the cutter and provided with pivoted scrapers depending below the belt, a support on the belt for each scraper, and a bar for engaging the scrapers to tilt the latter, substantially as described.

3. In a machine such as described, and in combination with the cutting mechanism thereof, a clearing mechanism comprising an endless belt or chain mounted to traverse the cut in rear of the cutting mechanism and provided with a series of blades or scrapers pivotally connected to said belt, shoulders to engage and hold said blades in operative position, and a track-engaging shoulder on the blades to tilt the latter and hold them elevated as they enter the cut, substantially as described.

4. In a machine such as described, and in combination with the cutting mechanism thereof, an endless belt supported to travel parallel with the line of cut and located in rear of the cutters, scrapers or blades pivoted to said belt and depending therefrom, and a track or rail engaging said scrapers to discharge their load and hold them elevated when entering the cut, substantially as described.

5. In a machine such as described, the combination, with a rotary cutter-bar mounted upon and projecting beyond the side of a traveling carriage, of an endless belt encircling a roller supported in rear of the cutter-bar, mechanism for driving said belt, so that the portion

next the cutter-bar shall move in a direction from the outer end of the bar toward the mouth of the cut, a series of pivoted blades or scrapers mounted upon said belt, and a bar engaging the scrapers after they emerge from the cut to discharge the material, substantially as described.

6. As a means for detachably securing the guide-rail for a mining machine in position, a shoe or chair formed in sections, and a jack or extensible prop interposed between the shoe and a superposed support and operating to clamp and hold the shoe and rail firmly in position on the floor, substantially as described.

7. In combination with the rail and the shoe engaging the same, a jack-screw or extensible prop resting upon said shoe and interposed between the latter and a superposed support, substantially as described.

8. In combination with the rail, a sectional shoe, one member provided with a shoulder to engage the flange on one side, a cross-bar extended beneath the rail and an inclined shoulder, the other section fitting between said inclined shoulder and the rail, and a post resting upon said last-named section and engaging a superposed support to clamp the sections onto the rail and hold them firmly in place on the floor, substantially as described.

9. In combination with the rail, the shoe formed in two sections, the one passing beneath the rail and provided with a bearing for engaging the rail and a shoulder on the opposite side of the rail, the other section fitting between said shoulder and rail and provided with lugs projecting beneath the rail, and a prop resting upon said second section, with means for pressing upon a superposed support to clamp the two sections together and hold the chair and rail firmly in position, substantially as described.

10. In combination with a coal-mining machine of the character described, wherein the cutting devices are mounted upon a traveling carriage supported and guided upon one side by a rail, and in combination therewith, a series of shoes engaging and supporting said rail, and a corresponding series of props, each resting upon one of said shoes and against the roof or a superposed support, substantially as described.

11. The combination, with a machine of the character described, wherein the cutting mechanism is mounted upon a traveling carriage, which latter is drawn or carried forward by means of a rope or chain wound upon a drum, the latter supported upon said carriage, of a movable jack or post provided with a longitudinal movable block, and a tension device supported on said block and adapted to receive and hold the end of the rope or chain, substantially as described.

12. In combination with a mining-machine such as described, an extensible prop, a block movable vertically in guides in said prop and carrying a tension device—such as a screw—to which the rope for feeding the carriage forward is attached, substantially as described.

13. In a mining-machine such as described, in which the feeding and cutting mechanism are mounted upon a traveling carriage, the combination of the winding-drum and its shaft, the worm-wheel, the clutch for connecting said worm-wheel to the drum, the worm engaging the worm-wheel, the driving-shaft, and the two sets of gears, with double clutch interposed between the driving-shaft and worm-shaft, substantially as described.

14. In a mining-machine such as described, in which the feeding, cutting, and clearing mechanisms are mounted upon a traveling carriage, and in combination therewith, the counter-shaft, gear-wheels on said counter-shaft connecting and transmitting motion from the pinions on the main or crank shaft to the rotary cutter, and a bevel-gear secured to said counter-shaft and engaging two gears located on opposite sides thereof, the one actuating the clearing mechanism and the other the feeding mechanism, substantially as described.

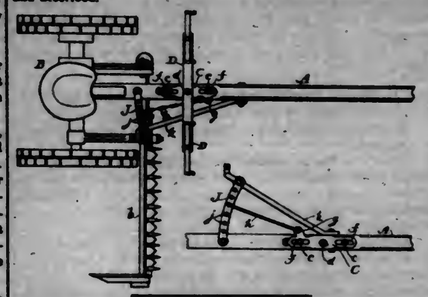
15. In a machine such as described, the combination, with the rotary cutter-bar mounted in bearings on a movable carriage, of a series of cutters spirally disposed about the periphery of the bar, each of said cutters being formed with a diagonal cutting face or edge from the outer side rearwardly and toward the axis of the cutter-bar, substantially as described.

412,263. DRAFT-EQUALIZER. LORENZO KENDALL, Chicago, Ill. Filed Aug. 10, 1888. Serial No. 281,193. (No model.)

Claim.—1. A draft-equalizer for reapers and mowers, consisting of a longitudinally-sliding plate secured to the tongue of the machine, means of attaching a doubletree thereto, a rod attached to said sliding plate and connected with an unyielding point of attachment adjacent to the tongue, and means of laterally varying the distance of said point of attachment from the tongue, substantially as shown and described.

2. The combination, with the tongue of a reaper or mower, of the sliding plate C, loosely attached to the tongue, means of attaching a doubletree thereto, a rigid bar extending laterally from the tongue, a rod or chain for connecting said rigid bar and sliding plate, and means for laterally adjusting the free end of said rod upon said laterally-extended bar, substantially as shown and described.

3. The combination, with the tongue of a reaper or mower, of the sliding plate C, rod A, and graduated bar J, substantially as shown and described.



412,264. VULCANIZED PLASTIC COMPOUND. WILLIAM KIEL, Butler, N. J., assignor to Kiel, Butler & Turnbull, New York, N. Y. Filed Jan. 19, 1888. Serial No. 260,915. (Specimens.)

Claim.—1. A vulcanized plastic compound consisting of wood, sulphur, a comingling vulcanizable substance, and crude rubber united by vulcanization, substantially as described.

2. A vulcanized plastic compound consisting of wood, sulphur, oil, and crude rubber united by vulcanization, substantially as described.

412,265. PROCESS OF MANUFACTURING VULCANIZED PLASTIC COMPOUNDS. WILLIAM KIEL, Butler, N. J., assignor to Kiel, Butler & Turnbull, New York, N. Y. Filed Jan. 19, 1888. Serial No. 260,916. (No specimens.)

Claim.—1. The herein-described process of manufacturing vulcanized plastic compounds of which wood is a constituent part by boiling or soaking wood in oil and subsequently combining by vulcanization the product thus obtained with sulphur and crude rubber, substantially as described.

2. The herein-described process of manufacturing vulcanized plastic compounds of which wood is a constituent part by boiling or soaking wood in oil and subsequently combining by vulcanization the product thus obtained with sulphur, beeswax, and crude rubber, substantially as described.

412,266. PROCESS OF MANUFACTURING VULCANIZED PLASTIC COMPOUNDS. WILLIAM KIEL, Butler, N. J., assignor to Kiel, Butler & Turnbull, New York, N. Y. Filed Jan. 19, 1888. Serial No. 260,919. (Specimens.)

Claim.—1. The herein-described process of manufacturing vulcanized plastic compounds of which wood is a constituent part, which consists in vulcanizing together wood and sulphur and subsequently combining by vulcanization the product thus obtained with a comingling vulcanizable substance—sulphur and crude rubber—substantially as described.

2. The herein-described process of manufacturing vulcanized plastic compounds of which wood is a constituent part by vulcanizing together wood and sulphur and subsequently combining by vulcanization the product thus obtained with oil, sulphur, and crude rubber, substantially as described.

412,267. PROCESS OF MANUFACTURING VULCANIZED PLASTIC COMPOUNDS. WILLIAM KIEL, Butler, N. J., assignor to Kiel, Butler & Turnbull, New York, N. Y. Filed Jan. 19, 1888. Serial No. 260,920. (Specimens.)

Claim.—1. The herein-described process of manufacturing vulcanized plastic compounds of which wood is a constituent part by mixing wood with crude rubber dissolved by any solvent and subsequently combining by vulcanization the product thus obtained with sulphur, oil, and beeswax, substantially as described.

2. The herein-described process of manufacturing vulcanized plastic compounds of which wood is a constituent part by mixing wood with crude rubber dissolved by any solvent and subsequently combining by vulcanization the product thus obtained with sulphur, oil, beeswax, and crude rubber, substantially as described.

412,268. PROCESS OF MANUFACTURING VULCANIZED PLASTIC COMPOUNDS. WILLIAM KIEL, Butler, N. J., assignor to Kiel, Butler & Turnbull, New York, N. Y. Filed Jan. 19, 1888. Serial No. 260,921. (Specimens.)

Claim.—1. The herein-described process of manufacturing vulcanized plastic compounds of which wood is a constituent part by vulcanizing to a hard state wood, sulphur-oil, and crude rubber, and subsequently combining the product thus obtained, reduced to a pow-

der or dust, with sulphur, oil, and crude rubber, substantially as described.

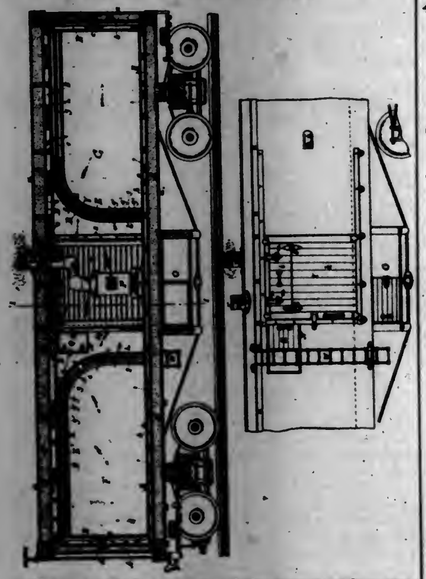
2. The herein-described process of manufacturing vulcanized plastic compounds of which wood is a constituent part, consisting in vulcanizing to a hard state wood, sulphur, oil, and crude rubber, and subsequently combining the product thus obtained, reduced to a powder or dust, with sulphur, oil, beeswax, and crude rubber, substantially as described.

412,269. PROCESS OF MANUFACTURING VULCANIZED PLASTIC COMPOUNDS. WILLIAM KIRK, Butler, N. J., assignor to Kirk, Butler & Turnbull, New York, N. Y. Filed Jan. 19, 1889. Serial No. 296,922. (Specimens.)

Claim.—1. The herein-described process of manufacturing vulcanized plastic compounds of which wood is a constituent part by vulcanizing together wood, sulphur, and a commingling vulcanizable substance, and subsequently combining by vulcanization the product thus obtained with crude rubber, substantially as described.

2. The herein-described process of manufacturing vulcanized plastic compounds of which wood is a constituent part by vulcanizing together wood, sulphur, and oil, and subsequently combining by vulcanization the product thus obtained with crude rubber, substantially as described.

412,270. FREIGHT-CAR. CHARLES H. KIMBALL, Chelsea, Mass. Filed Oct. 20, 1888. Serial No. 289,266. (No model.)



Claim.—1. A freight-car composed of a compartment for a source of heat, one or more compartments for storage, three courses of sheathing around the storage-compartments, and a non-heat-conducting material between the outside and middle courses and between the middle and inside courses, there being an air-space completely closed from the outside, continuing around the compartments, and opening only into the heating-compartment, as set forth.

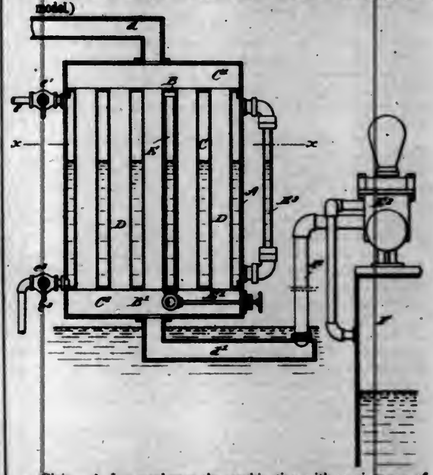
2. The box-car having the top, bottom, and ends and also the sides of it from the doorways therein to the said ends formed of two courses of sheathing *a* and *b*, properly supported and arranged apart, and having the spaces between said courses packed with sawdust or other suitable material, for the purpose set forth, and also having arranged within the inner course *b* another course *c* of the sheathing, a connected air-space being left between said courses *b* and *c* within and throughout the bottom and ends, and also in the top and sides of the car, between the doorways of the car and the said ends, substantially as shown and described.

3. The box-car having the top, bottom, and ends and also the sides of it from the doorways in said sides to the said ends formed of two courses of sheathing *a* and *b*, properly supported and arranged apart, the spaces between the said courses being packed with sawdust or other suitable material, for the purpose set forth, and also having arranged within the inner course *b* another course *c* of sheathing, a connected air-space between the said courses *b* and *c* within and throughout the bottom and ends, and also in the top and sides from the doorways to the said ends of the car, and also having guides secured to each side of the chambers F or G, in grooves between which are arranged to slide slat doors D and E, constructed as described, a series of bulk-head boards *g* also being arranged to slide in the grooves in which the door E slides, all substantially as shown and described.

4. A freight-car composed of two storage-compartments and a heating-compartment, there being doors between them, and completely around the storage-compartments an air-space closed from the outside air and opening into the heating-compartment, and around the entire car outside of the air-space a non-heat-conducting material, as set forth.

5. The box-car having the sliding doors I I, formed in sections provided with air-spaces and hinged together, as shown, an apron being fixed to the inner side of the upper section to cover the joint between them, said sections also having means of locking one to the other, as shown, the slat doors K and L, each arranged in guides in which they are supported either overhead or when drawn down into a vertical position against the inner face of the casing, or so as to close the doorways and form a space S between them, and the sliding doors to receive a packing of sawdust or other proper material, substantially as shown, and for the purpose described.

412,271. CONDENSER. CHARLES KIRK, New York, N. Y., assignor to Louis Hicke, same place. Filed Oct. 3, 1888. Serial No. 287,096. (No model.)



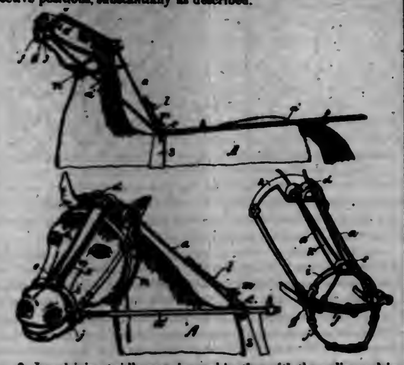
Claim.—1. In a condenser, the combination, with an air-pump, of a casing divided into a central water-chamber and end chambers and having the end chambers connected by tubes extending through the water-chamber, a water-supply pipe leading into the water-chamber, a tube extending from the lower end chamber up into the water-chamber, and a connection between the said lower end chamber and the pump, substantially as herein shown and described.

2. In a condenser, the combination, with an air-pump, of a casing A, divided into a central chamber C and end chambers C' C², and having the end chambers connected by tubes D, extending through the central chamber, a water-supply pipe d^3, connected to the central chamber, a tube E, extending from the lower end chamber up into central chamber and provided with a valve F in the said lower chamber, and a pipe d', leading from the said lower end chamber and connected with the pump, substantially as herein shown and described.

3. In a condenser, the combination, with a casing provided with horizontal partitions dividing the same into a central water-chamber and end steam-chambers, and tubes projected through the central chamber uniting the end chambers, of a water-supply pipe leading into the central chamber, a tube supported within the same opening into one end chamber, a tube connected to the condenser, and a pump attached to said tube adapted to exhaust air therefrom, substantially as and for the purpose specified.

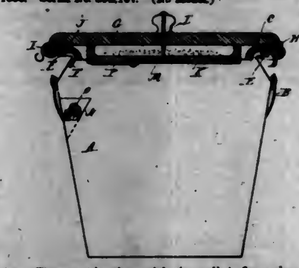
412,272. BRIDLE. ROBERT S. KIRKHAM, Lexington, Ky. Filed Mar. 8, 1889. Serial No. 302,594. (No model.)

Claim.—1. In a driving-bridle gear, the combination, with the ordinary driving-bridle gear and the auxiliary reins *a*, passing through guides *d* and *c*, of the stiff plate *b*, lying along the nose of the horse and adapted to carry the said guides and maintain them in their respective positions, substantially as described.



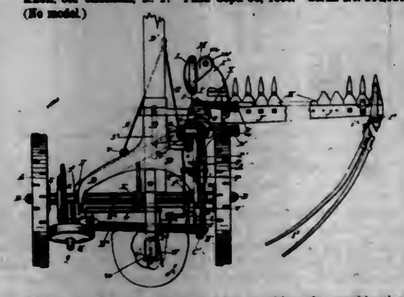
2. In a driving-bridle gear, in combination with the ordinary driving-bridle gear, the muzzle-straps *i j* and guide *c*, the headstall A and guide *d*, the auxiliary bit *f*, auxiliary reins *a*, and the loop-connection *l*, substantially as set forth.

412,273. COMMODE. JAMES KIRKUP, Detroit, Mich. Filed Nov. 23, 1888. Serial No. 292,167. (No model.)



Claim.—The combination, with the pail A, formed near its upper edge with an inwardly-inclined annular portion and horizontal annular flange above said inclined portion, of the seat C on said horizontal portion and provided with the outwardly and downwardly inclined stop-flange F parallel with said inclined portion, and the cover G, hinged to the seat at a point diametrically opposite said flange and carrying a disinfectant-receptacle, substantially as and for the purpose specified.

412,274. MOWING OR REAPING MACHINE. EDWARD M. KIRK, Old Chatham, N. Y. Filed Sept. 30, 1886. Serial No. 214,981. (No model.)



Claim.—1. In a mowing or reaping machine, the combination, with a revolving axle, drive-wheels connected with said axle by friction-clutches, a drive-gear fixed to the axle, and a sleeve loosely mounted on the latter, of the floating frame pivoted on said sleeve so that the said frame can be moved in either way in the direction of said sleeve, and a bracket connected with said floating frame and projecting rearward of the axle and supporting the gears, which are actuated by the drive-gear secured to the axle, whereby the floating frame can at will be made to carry the drive-gear mechanism into or out from engagement with the constantly-revolving drive-gear on the axle, substantially as and for the purposes set forth.

2. In a mowing or reaping machine, the combination, with the drive-gear fixed to the main axle and revolved by drive-wheels, and a sleeve loosely mounted on said axle, of a floating frame pivoted on said sleeve so as to be moved endwise at will in either direction, brackets secured to the rearward end of the floating frame, gear mechanism supported by said brackets, and sprocket-wheel H, actuated by the drive-gear, sprocket-wheel H', secured to the crank-shaft and driven by drive-chain H^2, actuated by sprocket-wheel H, and a lever for moving said floating frame endwise, substantially as and for the purposes set forth.

3. In a mowing or reaping machine, the combination, with the drive-gear fixed to the main axle, a sleeve loosely mounted on said axle, a floating frame pivoted on said sleeve and adapted to be moved in direction of the axis of the latter, the driven-gear mechanism carried by a bracket secured to the rear end of the floating frame so as to be moved with it, of a sprocket-wheel carried by an adjustable arm and driven by the drive-gear mechanism, and the second sprocket-wheel fixed on the crank-shaft and revolved by a chain belt actuated by the first sprocket-wheel, substantially as and for the purposes set forth.

4. In a mowing or reaping machine, the combination, with the crank-shaft, of floating frame pivoted to a sleeve loosely mounted on the main axle, the arm I', suspended and pivoted from portion F' of said floating frame, having the crank-shaft bearings, the inner shoe connected with said suspended arm, the tongue-frame, the progressive coil-shaped cam O, pivoted to a bracket connected with said tongue-frame, chain n', pinion O', segmental gear P, and lever P', all substantially as and for the purposes set forth.

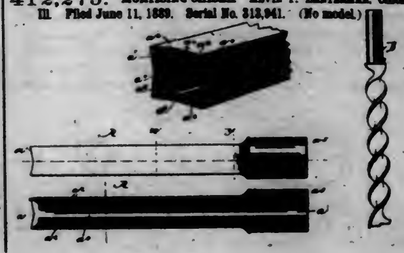
5. In a mowing or reaping machine, the combination, with the floating frame, the sleeve loosely mounted on the main axle to which the said frame is pivoted, the crank-shaft supported in bearings on the floating frame, and a tongue-frame pivoted to said sleeve, of the bifurcated draw-bar connected with the diagonal limb of the floating frame at two points on opposite sides of the tongue, a loop for supporting the forward end of said draw-bar, and a device for attachment of animals to the draw-bar, substantially as and for the purposes set forth.

6. In a mowing or reaping machine, the combination, with the main-axle sleeve loosely mounted thereon, floating frame pivoted on said sleeve, a tongue-frame also pivoted on said sleeve, arm I', suspended and pivoted from said floating frame, inner shoe I, and cutter-bar J, of the bifurcated draw-bar connected with the diagonal limb of the floating frame at two points on opposite sides of the tongue, and means for attachment of animals to said draw-bar, substantially as and for the purposes set forth.

7. In a mowing or reaping machine, the combination, with a drive-gear fixed to the main axle, and a sleeve loosely mounted upon said axle, of a floating frame pivoted on said sleeve and carrying the crank-shaft, driven gearing actuated by the drive-gear fixed to the main axle, sprocket-wheel H, driven by said driven gearing, sprocket-wheel H', secured to the crank-shaft and actuated by the drive-chain H^2, located rearwardly of the sleeve, as described, cam X, rigidly fixed upon said sleeve and provided with a lever, and the notch *x* in the floating frame, whereby the driven gear can at will be thrown into or out of engagement with the drive-gear on the main axle, substantially as and for the purposes set forth.

8. In a mowing or reaping machine, the combination, with the pitman Y, constructed as described, of the lever-jaws *y y*, pivoted together and provided with the tightening-bolt and having conical-formed recessed jaws *z* at one end, and the conical-shaped box-bearing Z, interposed between the wrist-pin and the jaws of the pitman, substantially as and for the purposes set forth.

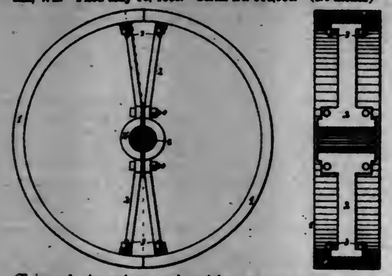
412,275. MORTISING-CHISEL. ALVIN P. LAFFERMAN, Chicago Ill. Filed June 11, 1889. Serial No. 313,941. (No model.)



Claim.—1. A hollow mortising-chisel for the purpose described, having the wall of its bore provided with longitudinally-extending serrations, as set forth.

2. A hollow mortising-chisel for the purpose described, having the wall of its bore composed of longitudinally-extending widths of plain cylindric surface alternating with series of longitudinally-extending serrations, as set forth.

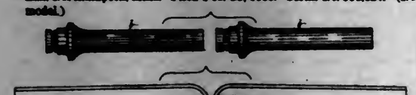
412,276. PULLEY. P. V. LAWSON and WALLACE I. FIELD, Menasha, Wis. Filed May 16, 1889. Serial No. 311,066. (No model.)



Claim.—1. As an improved article of manufacture, a separable pulley divided longitudinally of its bore into two equal sections, the hub and arms of each section being of metallic formation cast integral, and the ends of said arms terminating near the aforesaid dividing-line at a distance from each other slightly greater than the distance between their respective hub-sections, and the arm ends of each section being each provided with circular ribs, a bent wood rim having sockets therein adapted to receive said ribs, the bolts 3, concentric with the ribs and connecting said arms and rim-sections, and the clamp-bolts 4 through the hub-sections, whereby the pulley-sections may be connected one to the other and said hub-sections drawn toward each other and clamped upon a shaft, substantially as described.

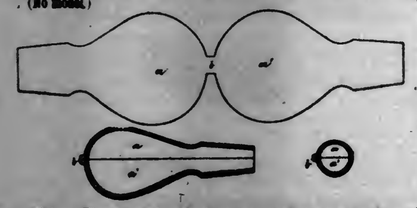
2. In a separable pulley divided longitudinally of its bore into two equal sections and having the hub and arms of each section of metallic formation cast integral, and the ends of said arms terminating near the aforesaid dividing-line at a distance from each other slightly greater than the distance between their respective hub-sections, and the arm ends of each section being each provided with circular ribs, and a bent rim formed of a single thickness of wood, having sockets therein adapted to receive said ribs, the bolts 3, concentric with the ribs and connecting the arms and rim-sections, and the clamp-bolts 4 through the hub-sections, whereby the pulley-sections may be connected one to the other and the hub-sections drawn toward each other and clamped upon a shaft, and in combination a bushing of paper or other slightly-elastic material interposed between said hub-sections and shaft, substantially as described.

412,277. HOLLOW HANDLE FOR IMPLEMENTS. WILLIAM W. LEE, Northampton, Mass. Filed Feb. 23, 1889. Serial No. 300,827. (No model.)



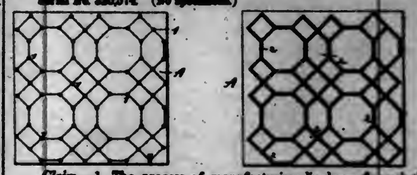
Claim.—The improved blank for hollow-handled implements above described, consisting of the two shells *a a*, stub *b*, and binder *c* united together, substantially as set forth.

412,278. BLANK FOR WELDED HOLLOW HANDLES. WILLIAM W. LEE, Northampton, Mass. Filed Feb. 23, 1889. Serial No. 300,828. (No model.)



Claim.—The blank described, composed of the two shells *a a'*, united by the strip *b*, integral with both shells, substantially as described.

412,279. PROCESS OF MANUFACTURING LINOLEUM FLOOR-CLOTH. DAVID H. MELVIN, Lincolnville, N. Y. Filed Aug. 13, 1889. Serial No. 320,574. (No specimens.)

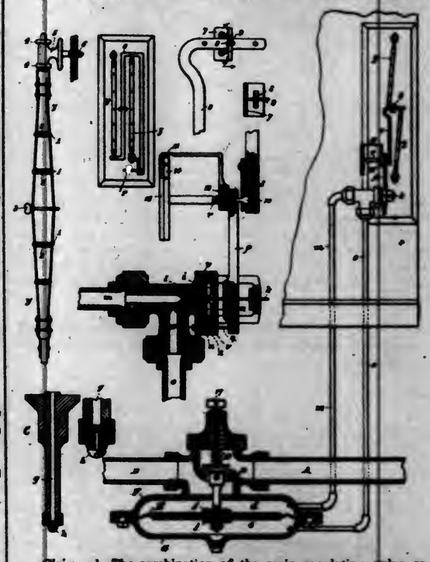


Claim.—1. The process of manufacturing linoleum floor-cloth, consisting in forming granulated linoleum composition into sheets of spongy texture, cutting the sheets into shapes, arranging the shapes on a flexible back or foundation, and pressing these shapes into the foundation, substantially as set forth.

2. The process of manufacturing linoleum floor-cloth, consisting of forming sheets of spongy texture from unheated granulated linoleum composition, cutting the sheets into shapes, arranging the shapes in a block or form, placing the block with the face toward a canvas foundation drawn across a heated table, pressing said block or form until the shapes adhere to the canvas and their edges are partly joined, removing the block or form, and finally subjecting the whole to hydraulic or other pressure until all the interstices are closed, the shapes adhere to one another, and the whole sheet is made compact and smooth, substantially as set forth.

3. The process for the manufacture of linoleum floor-cloth, consisting in forming sheets of spongy texture from linoleum composition, cutting these sheets into shapes, arranging the shapes on a block or form, placing the shapes against a canvas, pressing the block until the shapes adhere to the canvas, removing the block, and finally heating and again pressing the materials, substantially as set forth.

412,280. THERMOSTATIC VALVE-REGULATOR. EDWIN C. MERRILL, Allegheny, Pa. Filed Mar. 16, 1889. Serial No. 303,586. (No model.)



Claim.—1. The combination of the main regulating-valve arranged to vary the size of the valve-aperture, the secondary valve controlling the pressure of the fluid operating said main valve, and the thermostat connected with and actuating said secondary valve when influenced by changes of temperature, substantially as described.

2. The combination of the main valve, the casing, a flexible diaphragm connected with said main valve and dividing said casing into two chambers, a secondary valve controlling the pressure of the fluid in said chambers, and the thermostat controlling said secondary valve, substantially as described.

3. The combination of the supply-pipe, the delivery-pipe, the main valve regulating the pressure of gas from the one to the other, the secondary valve controlling the pressure of gas in a branch pipe connected with the supply-pipe, and thereby operating said main valve, a thermostat connected with the secondary valve, and a return-pipe from the latter communicating with the feed-pipe, whereby the gas whose pressure is controlled by the secondary valve passes onto the furnace to maintain combustion at the burner, substantially as described.

4. The combination of the supply-pipe, feed-pipe, main regulating-valve having a small permanently-open passage, a secondary valve in a branch pipe supplied by said passage, a diaphragm connected with and actuating said main valve to close the same when the secondary valve is open, and a return-pipe from the secondary valve communicating with the delivery-pipe, whereby a constant supply of gas sufficient to maintain combustion is insured, substantially as described.

5. The combination of the main valve, the diaphragm supporting the same, said main valve having a permanently-open passage through the same, the secondary valve in a pipe around said diaphragm and controlling the pressures on opposite sides thereof, its return-pipe communicating freely with the delivery-pipe to the furnace, and the thermostat controlling said secondary valve, substantially as described.

6. The combination of the main valve, the supporting-diaphragm, the secondary valve in a passage around said diaphragm and controlling the pressures on opposite sides thereof, the valve-stem and actuating-lever for said secondary valve, and a thermostat comprising an expansible arm or arms connected with said actuating-lever through an adjustable connection, substantially as described.

7. The combination of the valve, the secondary valve controlling the same, the actuating-lever therefor, and the thermostat-lever for actuating the same, said actuating-lever being pivoted to a part which is held in position with yielding pressure, substantially as described.

8. The combination, with a valve, of a thermostat connected therewith and comprising an expansible arm composed of two metal strips curved in opposite directions, with their concave sides facing each other and held together at several points by means of screws or rivets, substantially as described.

9. The combination, with a valve, of a thermostat for actuating the same and comprising a lever and two expansible arms connected with said lever on opposite sides of its fulcrum, substantially as described.

10. The combination, with a valve, of a thermostat for actuating the same and comprising a lever and two expansible arms connected with said lever on opposite sides of its fulcrum, the said fulcrum being movable in the direction of the pull and thrust of said arms, substantially as described.

11. The combination, with the valve and thermostat-lever, of an expansible arm composed of thin metal plates or strips fastened together at several points by rivets or screws, and provided with an adjusting-screw, substantially as described.

12. The combination of the valve, the actuating-lever therefor, the thermostat-lever and expansible arm or arms for actuating the same, and a screw passing through one of said levers and connected with the other by a flexible joint, whereby the space between said levers may be adjusted, substantially as described.

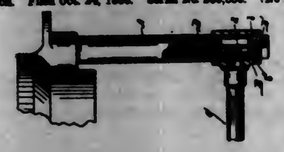
13. The combination of the valve, the actuating-lever therefor, the thermostat-lever, and the adjusting-screw connecting said levers, and provided with graduating-marks corresponding to degrees on a thermometer, substantially as described.

14. The combination of the valve, its actuating-lever, the thermostat-lever, the graduated adjusting-screw connecting the two levers, and the jam-nut carrying the index-finger, substantially as described.

15. The combination of the valve, its actuating-lever, the thermostat-lever, and the adjusting-screw connecting the two levers and having its head composed of two adjacent disks capable of turning independently of each other, one of said disks having graduating lines corresponding with the degrees on a thermometer and the other having figures indicative of such degrees, substantially as described.

16. The combination of the valve and the thermostat for actuating the same, said thermostat comprising a bent lever and two expansible arms connected therewith at the bend and at the free end, respectively, said lever being fulcrumed at a point intermediate between said connections, substantially as described.

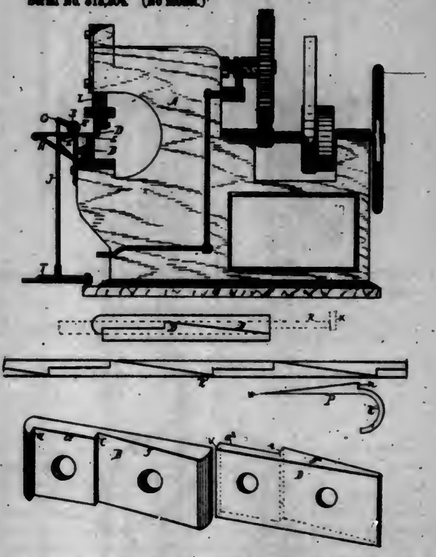
412,281. GASOLINE-VAPOR BURNER. JOHN F. MONAHAN, Detroit, Mich. Filed Oct. 24, 1888. Serial No. 289,050. (No model.)



Claim.—1. The combination, with a gasoline-burner in which the stand-pipe constitutes a part of the gas-generating chamber, of a packing cartridge or plug located in the said stand-pipe and adapted to prevent pulsation, a detachable plug or cap in line with said cartridge, and a stem attached to the latter for facilitating its removal when the cap or plug is detached, substantially as described.

2. The combination, with a gasoline-vapor burner, of a pipe to one end of which the burner proper is directly secured, and provided at its opposite end with a removable cap or plug, and a packing-cartridge located in said pipe and adapted to be inserted or removed through the orifice closed by said cap or plug, substantially as described.

412,282. MACHINE FOR MAKING PLUMBERS' AND GAS-FITTERS' HOOKS. JOSHUA MOORE, Marseilles, Ill. Filed July 22, 1889. Serial No. 318,304. (No model.)



Claim.—1. In the shearing-machine shown and described, the combination of the shears B and D, each having the cutting-edges specified, the clamp H, and spring S, substantially as and for the purpose set forth.

2. In the shearing-machine shown and described, the combination of the shears B and D, each having the cutting-edges specified, the spring S, spring-clamp H, shaft F, having the cam E and arm G, rod J, and treadle T, substantially as and for the purpose set forth.

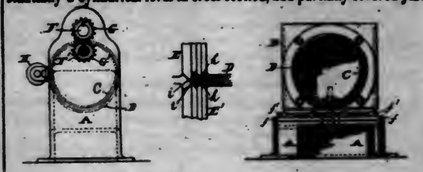
3. In a shearing-machine, the combination of the shear B, having the cutting-edges *a c' c g*, and the shear D, having the cutting-edges *b*, a^2, *r*, and g^2, substantially as and for the purpose set forth.

4. The combination of the shears B and D, each having cutting-edges for conjointly cutting gas-hook blanks formed to have the point W, shoulder *s*, and extending end R, for forming a hook, substantially as and for the purpose set forth.

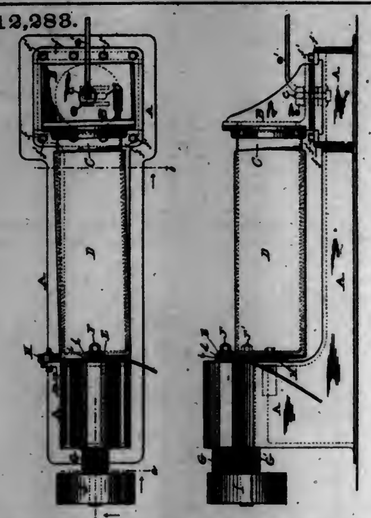
5. The combination of the shears B and D, having respectively the cutting-edges for forming the shoulder *s* of the hook-blanks, substantially as and for the purpose set forth.

412,283. METHOD OF MAKING WIRE. CHARLES H. MORGAN, Worcester, Mass. Filed Apr. 27, 1888. Serial No. 308,982. (No model.)

Claim.—In the manufacture of wire, the production of a continuous strand or series of long strands by cutting narrow strips spirally from a metallic cylinder, the stock being first compressed into substantially a cylindrical form in cross-section, and partially severed just

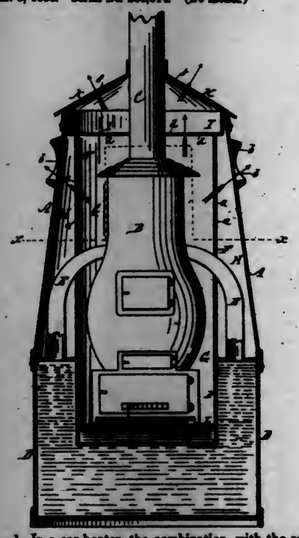


412,288.



in advance of severing the strand, simultaneously and by a continuous operation, substantially as set forth.

412,284. CAR-HEATER. MARTIN H. MORLEY, Rochester, N. Y. Filed Mar. 3, 1888. Serial No. 266,014. (No model.)

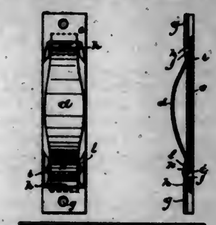


Claim.—1. In a car-heater, the combination, with the casing A, of the vertical partitions F F, perforated at their upper ends, said partitions dividing the casing into three compartments, as shown and described, and for the purpose specified.

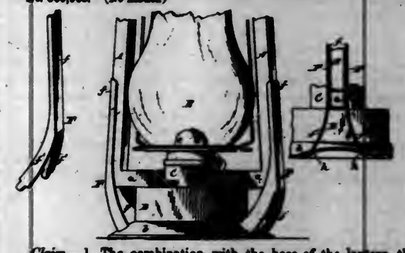
2. In a car-heater, the combination, with the open-topped casing A, of the cover I, fitting over and inclosing the top of the casing, and the conical cap K above the cover, said cover and cap being perforated to allow passage of the hot air from the furnace, and the smoke-pipe C, passing centrally through the cover and cap, as shown and described, and for the purpose specified.

412,285. SASH-HOLDER. ISAIAH H. MULFORD, East Orange, assignor of one-half to George M. Ballard, Newark, N. J. Filed Jan. 31, 1889. Serial No. 298,202. (No model.)

Claim.—The improved sash-holder herein described, combining a bed-plate *c*, having bearings *h h i i* and an abutment *l*, and a spring *d*, bowed and corrugated and arranged in engagement with the bearings and corrugation, substantially as and for the purposes set forth.



412,286. TUBULAR LANTERN. WARREN MCARTHUR, Chicago, Ill., assignor to the Steam Gauge and Lantern Company, Syracuse, and The P. H. Dietz Company, New York, N. Y. Filed May 8, 1888. Serial No. 309,965. (No model.)



Claim.—1. The combination, with the base of the lantern, the side tube, and its lower branch, of a side brace secured to the base of the lantern and to the side tube above the lower branch or elbow, substantially as set forth.

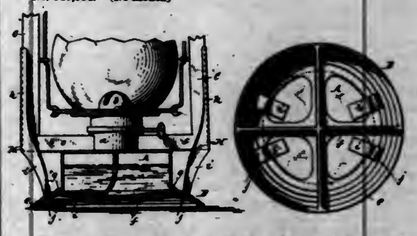
2. The combination, with the base of the lantern, the side tube, and its lower branch, of a bifurcated side brace secured with its shank to the side tube above its lower branch and with its arms to the base of the lantern, substantially as set forth.

3. The combination, with the base of the lantern and the side tube connected therewith, of a brace secured with its upper end to the outer side of the tube and extending downwardly from the outer side of the tube to the base, substantially as set forth.

4. The combination, with the side tube and the base of the lantern, of a brace having its trough-shaped upper portion secured to the outer side of the tube and its lower portion attached to the base of the lantern, substantially as set forth.

5. The combination, with the side tube and the oil-pot having the flange of its bottom plate provided with openings, of a bifurcated brace secured with its shank to the tube and having the reduced ends of its arms passed through the openings in the bottom plate and clinched on the under side, substantially as set forth.

412,287. TUBULAR LANTERN. WARREN MCARTHUR, Chicago, Ill., assignor to the Steam Gauge and Lantern Company, Syracuse, and The P. H. Dietz Company, New York, N. Y. Filed Aug. 2, 1888. Serial No. 319,531. (No model.)

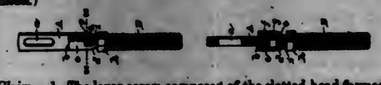


Claim.—1. The combination, with the oil-pot and the air-tubes connected therewith, of a separate base-frame upon which the oil-pot rests and braces connecting the air-tubes with the base-frame, substantially as set forth.

2. The combination, with the oil-pot and the air-tubes connected therewith, of a base-frame upon which the oil-pot rests, and which is provided with openings, and braces secured with their upper ends to the air-tubes and having their lower portions inserted through the openings in the base-frame and secured to the bottom of the oil-pot, substantially as set forth.

3. The combination, with the oil-pot and the air-tubes connected therewith, of a base-frame upon which the oil-pot rests, and which is provided with a raised rim in which the oil-pot is held against lateral displacement, and braces connecting the air-tubes with the base-frame, substantially as set forth.

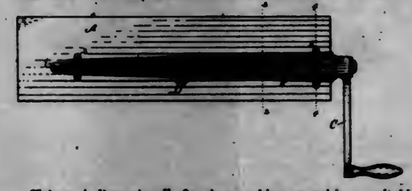
412,288. LEVER-SCREW FOR SPINNING-MACHINES. JOHN F. MCGRATH, Taunton, Mass. Filed May 31, 1889. Serial No. 312,794. (No model.)



Claim.—1. The lever-screw composed of the slotted head formed with a cavity, as shown, and with prongs, and the screw formed with a head held in said cavity by said prongs, substantially as shown and described.

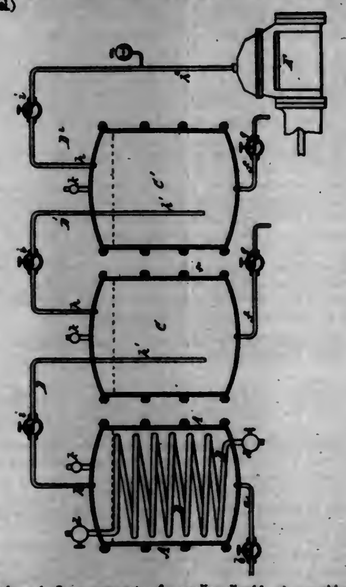
2. The lever-screw composed of the screw having a polygonal portion and a head above said portion, with a groove between the head and polygonal portion, and the slotted head formed with a cavity, as shown, and with prongs adapted to engage the head of the screw and hold the same in said cavity, as set forth.

412,289. DIPPER-HANDLE MACHINE. JOHN A. O'LEARY, Decatur, Mich. Filed May 23, 1889. Serial No. 311,787. (No model.)



Claim.—A dipper-handle-forming machine comprising a suitable base, the adjustable bearing-loops extended through the base and provided with adjusting-nuts, the tapered and longitudinally-channeled shaft detachably confined by said bearing-loops, and a stop at the end of said shaft, substantially as set forth.

412,290. APPARATUS FOR COOLING LIQUIDS. JOHN M. PFAUDLER, Rochester, N. Y. Filed July 26, 1888. Serial No. 280,797. (No model.)



Claim.—1. In an apparatus for cooling liquids, the combination of a closed receiving-tank, a closed condensing-tank containing a cooling-liquid, a pipe leading from the top of the receiving-tank to the interior of the condensing-tank, an exhaust-pump, and a pipe leading from the top of the condensing-tank to the pump, as and for the purpose specified.

2. In an apparatus for cooling liquids, the combination of a closed receiving-tank, a closed condensing-tank, an exhaust-pump, a pipe connecting the top of the receiving-tank with the interior of the condensing-tank, a pipe connecting the top of the condensing-tank with the pump, said pipes provided with check-valves, and a cooling-pipe extending through the receiving-tank, as shown and described, and for the purpose specified.

412,291. CARRIAGE-BOW-SOCKET. WILBUR J. PLANT, Cleveland, Ohio. Filed Aug. 19, 1889. Serial No. 321,203. (No model.)



Claim.—1. In a bow-socket, duplicate plates, as A and B, having their lower extremities welded to the pin of the slat-iron and to an exterior tube, substantially as described.

2. In a bow-socket, an exterior tube, duplicate longitudinal plates placed interiorly to the outer tube, a slat-iron pin welded to the exterior tube and plates at their lower end, and means for uniting the plates at their outer end, substantially as described.

3. In a bow-socket, an exterior socket-tube, interior longitudinal plates conformably fitting the inner surface of the tube, a slat-iron pin welded to the lower ends of the plates and exterior tube, and means, substantially as described, for connecting the upper ends of the plates, all substantially as and for the purpose set forth.

4. In a bow-socket, an exterior tube, a slat-iron provided with an extended pin, interior plates welded to the slat-iron and exterior tube at their lower ends, and a filler, substantially as described, fitting conformably to the inner surface of the plates, all substantially as and for the purpose set forth.

5. In a bow-socket, an exterior inclosing-tube, interior longitudinal plates, a slat-iron welded to the plates and exterior tube, and a filler for separating and re-enforcing the plates, substantially as described.

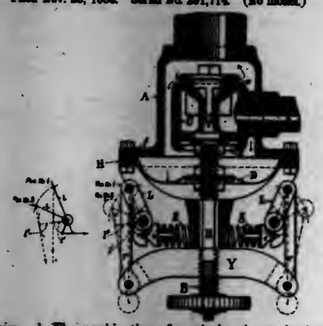
412,292. NAIL-DIE FOR HEELING-MACHINES. JOSEPH H. POPE, Brockton, Mass., assignor to the American Heeling Machine Company, same place. Filed Feb. 20, 1889. Serial No. 300,560. (No model.)



Claim.—A nail-die for heel-nailing machines, consisting of three superposed sections each provided with a series of rows of nail-holes, said sections rigidly but detachably united in fixed relation to each other by a vertical screw and steady-pins, with the several rows in one section in coincidence, respectively, with the several rows in the

other sections, and the central section of greater dimensions than the upper and lower sections and projecting laterally beyond the same to support the nail-die in a groove of the nail-die holder, substantially as shown and described.

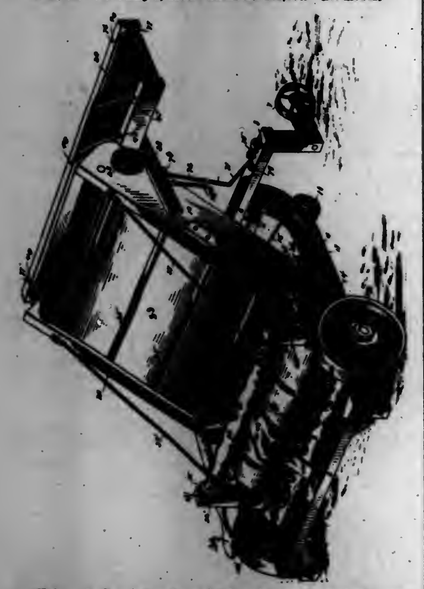
412,293. PRESSURE-GOVERNOR. GEORGE B. PRICE, Philadelphia, Pa. Filed Nov. 23, 1888. Serial No. 291,714. (No model.)



Claim.—1. The combination of a spiral spring and a bent lever, the arms of which shall be of such relative length and arranged at such angles to each other as that the spring shall produce continuously a uniform power in a given direction at the end of longer arm of said lever.

2. In a pressure-governor, the combination of a spiral spring and bent lever mechanism with a balance-valve, flexible diaphragm, and suitable connections between the diaphragm, valve, and spring mechanism, substantially as shown.

412,294. HAY RAKE AND LOADER. RUDOLPH W. REHARD, Hagerstown, Pa. Filed May 3, 1888. Serial No. 272,670. (No model.)



Claim.—1. In a hay rake or loader, the combination of a rotatable main rake, a supplemental rake in front of the main rake, rotatable in an opposite direction and provided with teeth farther from the ground than the main-rake teeth, the teeth of the supplemental rake being removable, whereby it may be used with the teeth on heavy windrows or without the teeth on light windrows, and an adjusting-lever for varying the distance from the ground of the rakes.

2. In a hay-loader, the combination of the elevator, a horizontal side-delivery apron at the discharge end of the elevator, driven by the same source of power as the elevator, said apron being reversible to discharge to either side of the machine, a removable guard to keep the hay upon the apron, and supports for securing the guard to the outside of the apron-frame in either position of delivery.

3. The combination of the elevator-frame, a rotating spindle at the delivery end, a gear-wheel on each end of the spindle, a side-delivery frame and supports therefor, said frame being provided with a gear-wheel at one end, and detachable guards adapted to be secured in suitable supports to either top or bottom side of the frame, whereby the frame may be turned upside down and reversed and used to deliver hay at either side of the machine, as desired.

4. The combination of a main frame carrying a rake, a cross-beam pivoted to said frame at the rear and adapted to be rocked in a vertical plane, casters supporting said beam and located out of a vertical plane cutting the same, and an adjusting-lever secured to the beam and extending to the front of the machine, whereby when the lever is operated the beam will raise or lower the rake, as and for the purpose set forth.

5. In a hay-loader, the combination, with the elevator, of a stay 71, provided with arm 74, forming a hooked end on the stay, notches 72, and a catch 73, secured to the elevator-frame, co-operating with the stay, said catch encircling the stay and adapted to engage the notches.

412,295. SHAWL-STRAP. HOWARD W. REYNOLDS, Rochester, N.Y., assignor of one-half to H. H. Stoneburn, same place. Filed May 23, 1888. Serial No. 311,868. (No model.)



Claim.—1. A shawl-strap handle consisting of a central handle portion terminating in recesses adapted for the reception of and provided with a loosely-inclosed rotatable binding-roller and a superimposed binding-plate, substantially as specified.

2. A shawl-strap handle the ends of which terminate in recesses, a loose roller forming a binding device mounted in the recess, a superimposed binding-plate mounted above the recess, and opposite tape-receiving bars or keepers, substantially as specified.

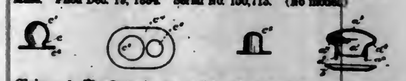
3. A shawl-strap the ends of which terminate in recesses having a corrugated bottom, a superimposed inclined corrugated binding-plate, and a binding-roller the periphery of which is corrugated and mounted in the recess, and of a diameter greater than the depth of the same, substantially as specified.

4. A shawl-handle the ends of which terminate in plates, consisting of side bars and end bars and two intermediate partitions connected at their bottoms to form a recess, and a superimposed inclined binding-plate, in combination with the binding device mounted in the recess and tapes connected to the end bars and adapted to be inserted laterally under the plate and over the binding device, substantially as specified.

5. The handle 1, terminating in the plates 2 and 13, the plate 2, provided with the opposite plates 4, the bars 5, partitions 7, connected with the bar 8, and the spar-roll 11, in combination with the tapes 3, connected to a spar 16 formed on one of the bars 5, passed under the plate 2 and over the opposite bar 5, and inserted laterally between the binding device 11 and the plate 13, substantially as specified.

6. A shawl-strap handle terminating in clamping devices for the straps, consisting of binding-roller and a superimposed binding-plate, the said binding device being separated from the plate by a slight space to receive the strap, which space is open at one side only to allow for the lateral insertion of the straps, as set forth.

412,296. GLOVE-FASTENING. WILLIAM S. RICHARDSON, Boston, Mass. Filed Dec. 19, 1884. Serial No. 150,713. (No model.)



Claim.—1. The fastening comprising the cap a^3, having the yielding sides a', washer b, and the connecting-arms a^3, all substantially as and for the purposes described.

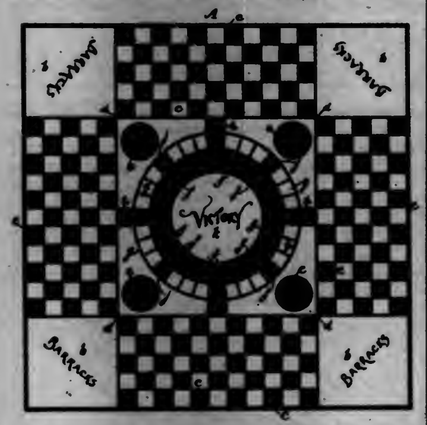
2. The combination of the cap a^3, having the inclined shoulder a^4, with the washer b, inclined as described, and fastening-arms a^3, all substantially as and for the purposes described.

3. The combination, in a fastening device, of a capped cocket comprising the cap a^3, the yielding sides a', integral with the said cap and bent in relation to the same to form the shoulder a^4, as specified, and to extend downwardly from said shoulder, with fastening-arms

for attaching the cap to the material, all substantially as and for the purposes described.

4. The combination of the ball member of the fastening device a', having the flange a^2, the plate a^4, having the holes a^5 a^6, and the cap-eyelet a^7, as specified, as and for the purposes set forth.

412,297. PARLOR-GAME. ALBERT B. RUTHERFORD, Chicago, Ill.; Emily Rutherford administratrix of said Albert B. Rutherford, deceased. Filed Jan. 20, 1888. Serial No. 297,973. (No model.)

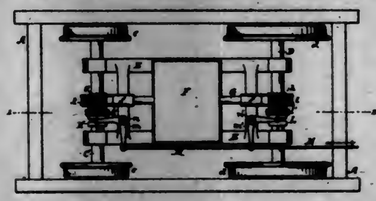


Claim.—1. A game-board provided with four spaces upon the periphery at equal distances from each other, intervening parallelograms inclosing a square and divided into alternate checkered spaces, stations or spaces at or near the respective corners of said central square, a double row of spaces within said central square inclosing a goal or home, ways leading from said parallelograms, respectively, to the outer of said double row of spaces, and intervening ways leading directly to said goal, substantially as shown and described.

2. A game-board consisting of a square having square divisions at the corners, intervening checkered fields connecting with each other at the inner corners, ways leading therefrom to the outer of two spaced rows, a central field or goal, ways leading from said outer spaced row to said goal, and inclosed detached spaces between said outer row and said checkered fields, substantially as shown and described.

3. The combination, in a game-board, of the corner barracks b, intervening checkered skirmish-grounds a, ways h, spaces f, g, j, and f', guard-houses c, and a central goal, substantially as shown and described.

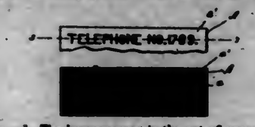
412,298. DRIVING-GEAR FOR CARS. EDWARD SAWOR, Philadelphia, Pa. Filed June 10, 1889. Serial No. 313,715. (No model.)



Claim.—1. The combination, in a power-impelled vehicle, of two or more axles, a motor-shaft, and mechanism whereby said shaft may be connected to or disconnected from either axle, the traction-wheels of one axle differing in diameter from those of the other axle or axles, whereby with a constant speed of motor-shaft different rates of propulsion of the vehicle may be maintained, substantially as specified.

2. The combination, in a power-impelled vehicle, of the axles, a single motor-shaft common to all of the axles, and mechanism whereby said shaft may be connected to or disconnected from either of said axles, the traction-wheels of one axle differing in diameter from those of the other axle or axles, whereby with a constant speed of motor-shaft different rates of propulsion of the vehicle may be maintained, substantially as specified.

412,299. MAKING STEREOTYPE-MOLDS. CHARLES SEARS, Chicago, Ill. Filed July 5, 1888. Serial No. 279,041. (No model.)



Claim.—1. The improvement in the art of preparing stereotype-molds, consisting in making each separate letter in the line successively and one at a time on the end fibers of a wood matrix-block, substantially as specified.

2. The improvement in the art of preparing stereotype-molds, consisting in subjecting the matrix, consisting of a block of dry wood having a smooth surface for receiving the impressions formed upon the ends of the fibers and sufficient body to resist the compacting-pressure, to the successive impact of the type-dies striking in close proximity to each other, substantially as specified.

412,300. HYDRO-METALLURGICAL METHOD OF EXTRACTING METALS. JASPER H. SELWYN, London, County of Middlesex, England. Filed Mar. 24, 1888. Serial No. 268,403. (No specimens.)

Claim.—1. The hydro-metallurgical process of separating sulphur and metals from their combinations, which consists in subjecting the pulverized materials to the action of chloride of sulphur for the purpose of separating the sulphur and forming the soluble chlorides of the metals and simultaneously or subsequently subjecting the charge to solvents of the metallic salts, as and for the purposes described.

2. In the hydro-metallurgical process of separating sulphur and metals from their combinations, which consists in subjecting the pulverized materials to the action of chloride of sulphur for the purpose of separating the sulphur and forming the soluble chlorides of the metals and simultaneously or subsequently subjecting the charge to solvents of the metallic salts, the final recovery of the chlorine and sulphurous acid gases evolved, as and for the purposes described.

412,301. SHADE-HOLDER FOR CANDLES. PETER SLOAN, Marion Station, Pa. Filed Feb. 15, 1889. Serial No. 299,980. (No model.)

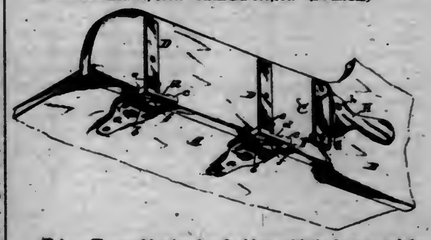


Claim.—1. In a shade-holder for candles, the combination of the band surrounding the candle, the standards attached to the band and carrying the shade-ring, and the horizontal spring-actuated fingers extending upward and bearing upon the upper end of the candle, and composed of a single piece of wire having shanks and coiled at the base of the shanks to force the fingers upward, the coils surrounding the standards, substantially as described.

2. In a shade-holder for candles, the combination, with the metallic band, and the standards carrying the shade-ring and provided with offsets c c above the band, of the spring-supporting fingers E, composed of a single piece of wire and provided with coils G, which fit on the standards and engage the said offsets c, substantially as and for the purpose specified.

3. A shade-holder provided with spring-actuated fingers composed of a single piece of wire and having the shanks, the coils at the lower end of the shanks to force the fingers inward, and the coils surrounding the standards, substantially as described.

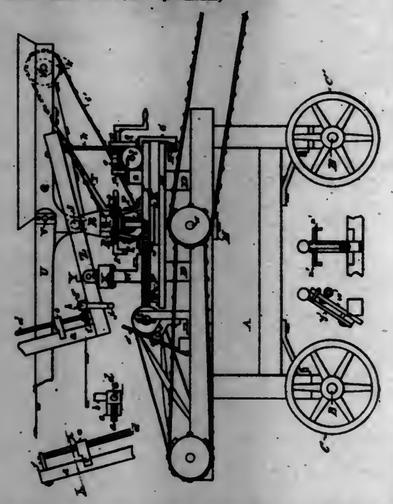
412,302. FEED-CUTTER BOX. CLARENCE C. SHALLEY, Manitowoc, Wis. Filed Mar. 30, 1889. Serial No. 305,324. (No model.)



Claim.—The combination, in a feed-box, with the bottom and the

side, of the plate attached to the under side of the bottom and formed with an elongated slot and recessed cross-bar at its outer end, and the plate attached to the side, with one end provided with lugs *e* and *f* and working in said slot, substantially as shown and described.

412,803. **STRAW-STACKER.** JOSHUA M. SMITH, Springfield, assignor of one-half to Charles F. Wells, Moorefield, Ohio. Filed June 10, 1889. Serial No. 313,602. (No model.)



Claim.—1. In a straw-stacker, the combination, with the main frame, a circular track, one or more supporting-rollers, and a supporting-bracket having a roller engaging said track, of a master-wheel mounted upon said track carrying said bracket and supported by said rollers, motion-transmitting mechanism including a worm geared to said master-wheel, a carrier-frame, its hopper, and a carrier proper incumbent upon said wheel, pivoted levers, a winding-shaft and ropes connected thereto, an adjusting bar, screw-threaded rods, and a crank-shaft and gears therefor carried by said levers, the bar engaging the carrier-frame and the levers and winding devices supported by said wheel, a central shaft and power mechanism geared thereto, and striking and tripping devices for the swinging mechanism.

2. In a straw-stacker, the combination, with the main frame and a circular track, and rollers above and beneath said track engaging therewith, of a master-wheel supported by said track and rollers, the lower of said rollers being connected by a suitable bracket with the said master-wheel.

3. In a straw-stacker, the combination, with the main frame and a supporting-table, of a master-wheel supported above said table; a carrier and its elevating mechanism mounted upon said wheel, a shaft upon the main frame carrying a worm-gear that meshes with the said master-wheel and having pulleys and operating mechanism to rotate the pulleys in different directions, a clutch to engage the pulleys alternately with the shaft, tripping devices to actuate said clutch, and strikers carried by the master-wheel to engage the tripping-arm.

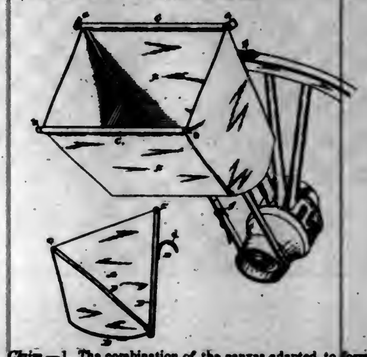
4. In a straw-stacker, the combination, with a master-wheel, of a hopper-frame incumbent upon the same, a carrier-frame pivoted to the hopper-frame, pivoted levers having bars at one end adjacent to the carrier-frame, a transverse crank-shaft having worms, screw-threaded shafts geared to said worms and connected by said bars, a transverse rod operated by said bars and in engagement with the carrier-frame, and a drum-shaft, its drums, a crank-shaft carried thereby, and ropes or chains connecting the levers with the drums of said shaft, the said elevating mechanism being also incumbent upon said master-wheel.

5. In a straw-stacker, the combination, with the main frame, a worm-shaft supported thereby and having two pulleys thereon, a clutch to engage them alternately with the shaft, and tripping devices connected with the clutch, of a master-wheel mounted upon said main frame and having worm-teeth meshing with said worm, a carrier, elevating mechanism therefor superincumbent upon said master-wheel, and strikers also carried by said master-wheel and adapted to engage with the tripping devices and to throw it in first one direction and then in the other.

6. In a straw-stacker, the combination, with the main frame, a shaft mounted therein, pulleys on the shaft, a clutch to engage the pulleys alternately with the shaft, and tripping mechanism including a pivoted weighted bar with projections to engage the tripping-arm, of a master-wheel geared to said shaft and carrying adjustable strikers.

7. In a straw-stacker, the combination, with a master-wheel, of carrier elevating and adjusting mechanism consisting of pivoted levers having perpendicular bars at one end, screw-threaded rods guided by said bars, a transverse bar carried by said rods and having jaws and engaging the perpendicular bars, and a crank-shaft geared to said screw-threaded rods, a drum-shaft, a crank-shaft geared thereto, and ropes or chains connecting said levers with the drums of said drum-shaft.

412,804. **FEED-BOX.** WALSO V. SNYDER, Canton, Ohio. Filed Jan. 14, 1889. Serial No. 296,261. (No model.)

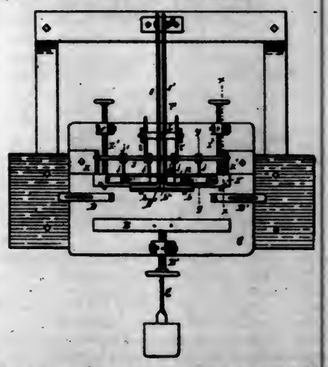


Claim.—1. The combination of the canvas adapted to form the sides and ends of a feed-box, the bottom B, the bars C and C', located at the top of the box and provided with the extensions *b*, the links *a*, and the bars D and D', hinged together at their bottom or lower ends, substantially as and for the purpose set forth.

2. The herein-described feed-box, consisting of the canvas ends and sides, the hinged arms D and D', the bars C and C', located at the top of the box, and the supporting-hooks E, substantially as and for the purpose set forth.

3. The combination of the bars C and C', having the extensions *b*, the links *a*, the arms D and D', hinged together at their bottom ends, and the strap F, attached to the bottom B, and adapted to engage the hub of a vehicle, substantially as and for the purpose specified.

412,805. **BRUSH-NAILING MACHINE.** LOUIS STEGNER, Detroit, Mich., assignor of one-half to George C. Wetherbee, same place. Filed Mar. 2, 1889. Serial No. 301,772. (No model.)



Claim.—1. In a brush-nailing machine, the combination, with a supporting-frame, of the movable arm F, having a nail-bar engaged therewith, and a driving-bar, substantially as set forth.

2. In a brush-nailing machine, the combination, with a supporting bed or frame, of a movable arm F, having a nail-bar H engaged therewith, a driving-bar, and operating-lever, said bar mounted in brackets K K', said nail-bar and brackets constructed with inclined recesses and slots, respectively, substantially as set forth.

3. In a brush-nailing machine, the combination, with a supporting bed or frame, of a movable arm F, having a nail-bar engaged therewith, a driving-bar, and means for reciprocating said bar, said nail-bar provided with a spring H^3, substantially as set forth.

4. In a brush-nailing machine, the combination of the supporting bed or frame, the movable arm F, provided with a nail-bar H, removably engaged therewith, an adjustable nail-bar I, and a reciprocatory driving-bar, substantially as described.

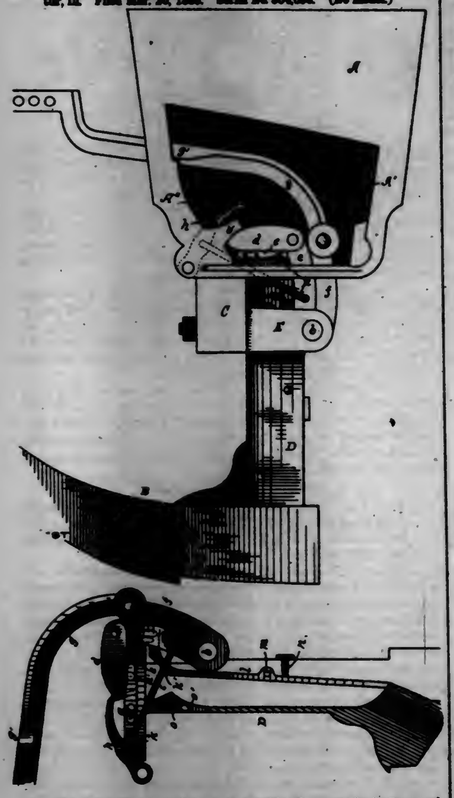
5. In a brush-nailing machine, the combination of the supporting bed or frame, the movable arm F, provided with a nail-bar H, constructed with inclined orifices *h*, a nail-bar I, constructed with horizontal orifices *i*, and a reciprocatory driving-bar arranged to operate with either of said nail-bars, substantially as set forth.

6. In a brush-nailing machine, a driving-bar adjustable relatively to a horizontal plane, substantially as set forth.

7. In a brush-nailing machine, an adjustable nail-bar, in combination with a driving-bar adjustable relatively to a horizontal plane, substantially as set forth.

8. In a brush-nailing machine, the combination, with a supporting-bed, of a driving-bar provided with driving-fingers projecting therefrom and an operating-lever, said bar supported independently of said lever, substantially as set forth.

412,806. **CORN-PLANTER.** FELIX R. TAFT and JOHN GREEN, Decatur, Ill. Filed Mar. 20, 1889. Serial No. 304,096. (No model.)



Claim.—1. In corn-planters, in combination, a rock-shaft, a seed-disk having peripheral teeth, an arm fixed on the shaft and carrying a pawl adapted to the teeth of the disk, and a secondary arm mounted loosely on the shaft behind the pawl-carrying arm, as set forth.

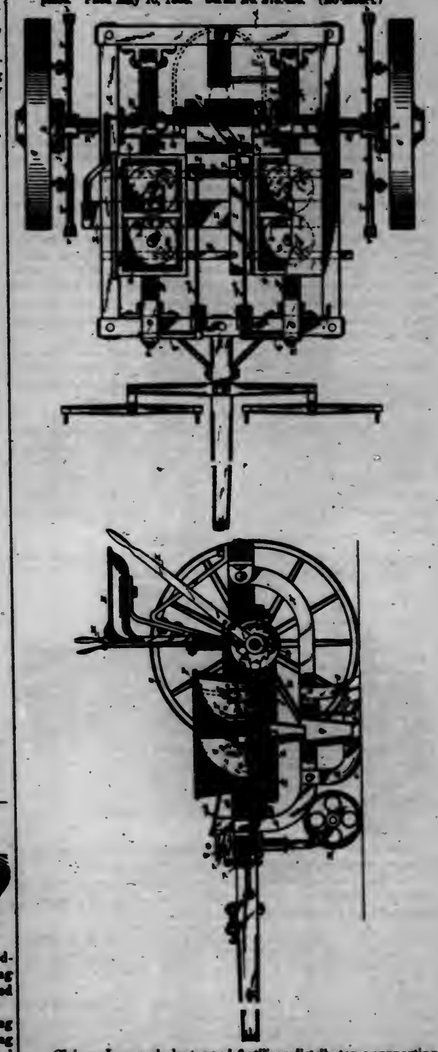
2. In corn-planters, in combination, a rock-shaft, a disk having seed-cells and peripheral teeth, an arm fixed on the shaft and carrying a pawl adapted to the teeth of the disk, a secondary arm mounted loosely on the shaft behind the pawl-carrying arm, a finger-bar adapted to the cells of the seed-disk, and a rod connecting the pawl-carrying arm with the finger-bar, as set forth.

3. In corn-planters, in combination, a seed-disk having peripheral teeth, a rock-shaft, an arm fixed on the shaft and carrying a pawl adapted to the teeth of the disk, a second drop-valve connected at its upper end with the pawl-carrying arm, and a secondary arm mounted loosely on the shaft behind the pawl-carrying arm, as set forth.

4. In corn-planters, in combination, a seed-disk, a disk-actuating arm fixed on a shaft, an arm loosely mounted on the shaft in contact with the fixed arm, and a bar to connect the loose arm with check-row mechanism, as set forth.

5. In corn-planters having a first and second drop, the intermediate corn-retarder, comprising the inclined upper end of the second drop-bar and the opposed yielding projection, as set forth.

412,807. **SEED-PLANTER AND FERTILIZER-DISTRIBUTER.** JOHN B. TAYLOR, Bartle, Ind., assignor of one-half to Dennis Gray, same place. Filed May 10, 1888. Serial No. 272,426. (No model.)



Claim.—In a seed-planter and fertilizer-distributer, a supporting-frame, drive-wheels supporting said frame, and two sets of seed and

fertilizer compartments supported on each side of said frame, the planting mechanism of which is actuated by a cam on the axle of said drive-wheels, in combination with two beams N N, each pivoted at one end to the rear of said frame, passing beneath one set of said compartments and above and out of contact with the ground, and adjustably and yieldingly supported at its front end at the front of said frame, independent treadles P P, for controlling the adjustment of each of said beams, a guiding-funnel Q, carried by each of said beams beneath the discharge-passage leading from the set of compartments above it for conducting the seed to the ground, a furrow-opener R, carried by each beam in front of said funnel, and a hill-coverer S, carried by each beam in the rear of said funnel, substantially as set forth.

412,808. CASTER. JOHN R. TERRY, Orion, Mich. Filed Aug. 2, 1888. Serial No. 281,777. (No model.)



Claim.—1. A ball-caster composed of the segmental sections E E' and provided with one or more grooves *d*, substantially as and for the purposes described.

2. A caster consisting of two semi-spherical segments united rigidly by an axis, a plate with a thickened central portion at right angles to the said axis, said axis journaled through the plate, and large ends formed integral with the extremities of the plate beyond the peripheries of the segments, and in connection with said enlarged ends a forked support, said ends and forked supports adapted for engagement with each other by bending the ends of the fork toward the ends of the plate, thereby causing large spuds on one part to enter large spud-orifices in the other part, substantially as described, said plate being of less breadth than the diameter of the segments.

3. In a ball-caster, the combination, with the segments E E', each of said segments struck up from a single piece of metal, of the strengthening-pieces *e*, also struck up from pieces of metal and united with the inner faces of the segments E E', substantially as described.

412,809. PROCESS OF MAKING PASTE. GUSTAV TÜRK, Leuwarden, Netherlands. Filed Jan. 2, 1889. Serial No. 295,338. (Specimens.)

Claim.—The method of extracting adhesive paste from straw-boilings by filtering the boilings and evaporating the superfluous water, and then purifying the crude paste by mixing it with blood or albumen and afterward with a solution of sulphide of calcium, substantially as described.

412,810. CATTLE-GUARD. JOSEPH VAIL, Garden Grove, Iowa. Filed Mar. 21, 1888. Serial No. 304,217. (No model.)



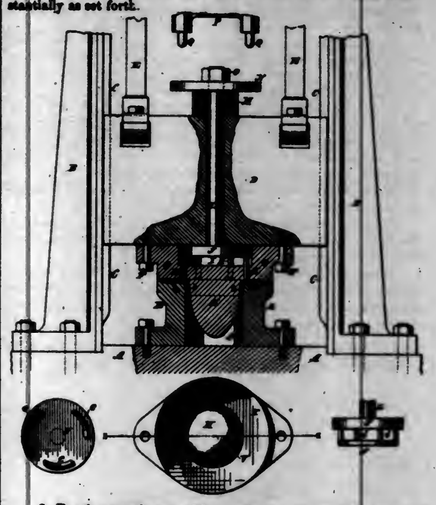
Claim.—1. A cattle-guard for the purpose set forth, consisting of pipes set upright in the road-bed, substantially as described.

2. The combination, substantially as hereinbefore set forth, of pipes set upright in the ground between the cross-ties, and projections arranged upon the cross-ties, for the purpose described.

412,811. MACHINE FOR MANUFACTURING WROUGHT-METAL FLANGES FOR PIPE-COUPLINGS. GEORGE VAN WAGENEN and JOHN GRAVES, New York, N. Y. Filed July 27, 1889. Serial No. 318,616. (No model.)

Claim.—1. For the manufacture of flanges from sheet metal, the male and female dies hereinbefore described, the male dies having the spreader, one pair of said dies being adapted to form the hub portion of the flanges and the other pair to upset said hub preparatory to the same being threaded, substantially as and for the purposes set forth.

2. For the manufacture of flanges from sheet metal, the male and female dies adapted to form the hub on the centrally-apertured blank, the male die having the spreader, combined with the ejector for stripping the flange from the spreader after the hub has been formed, substantially as set forth.



3. For the manufacture of flanges from sheet metal, the male and female dies for forming the hub of the flange and the male and female dies for upsetting said hub, combined with ejectors for stripping the flanges from said male dies, substantially as set forth.

4. The male and female dies for forming the hub, the former having the spreader and the latter the central opening, combined with the male and female dies for upsetting the hub, the former having the annular groove and spreader and the latter the central opening, substantially as and for the purposes set forth.

5. The male and female dies for forming the hub of the flange and upsetting said hub, the male dies being secured to a drop-carrier arranged between guides, combined with ejectors for stripping the flanges from the male dies, said ejectors being connected with the drop-carrier and having a more limited movement than the same, substantially as and for the purposes set forth.

6. The male die having the spreader and secured to the drop-carrier and the female die having the central opening, combined with the ejector secured to the spindle passing upward through said carrier, the cushion and disk on the upper end of said spindle, and the frame for arresting the ejector while the carrier continues its upward movement, substantially as set forth.

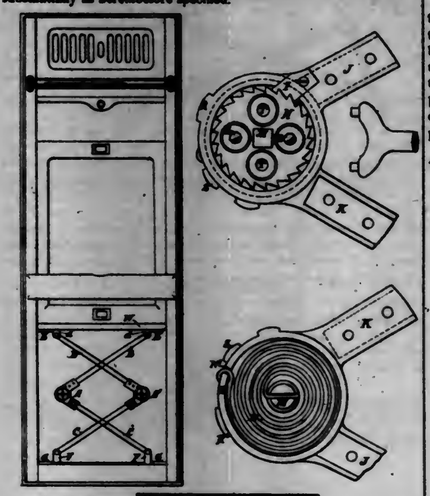
412,812. SASH-HOLDER. HARRY S. WADSWORTH, Ashford, County of Kent, and ROBERT HYDE, Sheffield, County of York, England. Filed May 31, 1889. Serial No. 311,985. (No model.) Patented in England Oct. 1, 1888, No. 14,072.

Claim.—1. In combination with a vertically-sliding window, window sash or shutter, a pair of levers beneath the same, a pivotal coupling uniting said levers in compass shape, a lifting-spring carried by the levers at said coupling and reacting against the respective levers, and pivotal attaching devices at the other extremities of the respective levers, substantially as hereinbefore specified.

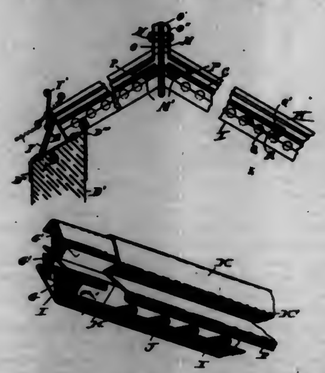
2. In combination with a vertically-sliding window, or the like, two pairs of levers beneath the same, pivotal couplings uniting the levers of each pair in compass shape, the respective pairs being reversed relatively to each other, lifting-springs carried by the levers at said couplings and reacting against the respective levers, and pivotal attaching devices at the other extremities of the several levers, substantially as hereinbefore specified.

3. In combination with a vertically-sliding window and a dust-excluder bar beneath the same, two pairs of levers beneath said bar, pivotal couplings uniting the levers of each pair in compass shape, lifting-springs carried by the levers at said couplings and reacting against the respective levers, and pivotal attaching devices at the other extremities of the several levers, the upper attaching devices carried by the said bar, substantially as hereinbefore specified.

4. The combination, with the levers and lifting-springs, of the within-described spring-boxes forming pivotal couplings, which unite the levers in compass shape and within which said springs are coiled, each box having a center pin to which one end of the spring is attached, an adjusting-wheel fast on said pin and adapted to be turned by a key, and a catch which engages with said wheel to fasten it within the box, substantially as hereinbefore specified.



412,813. SKYLIGHT. JOHN R. WEIR and BELL BERNDT, Toledo, Ohio. Filed Jan. 7, 1889. Serial No. 295,607. (No model.)



Claim.—1. In a skylight, the combination, with a ridge formed of a central portion and longitudinal edges at an obtuse angle thereto, of a ridge-plate inclosing the same and having its sides bent outwardly and downwardly to correspond with the longitudinal ledges, said ridge-plate being secured to the ridge by suitable bolts and spacing-blocks, and having its sides apertured and the rafters slotted at their upper ends, adapted to engage the longitudinal ledges and enter the apertures formed in the sides of the ridge-plate, substantially as shown and described.

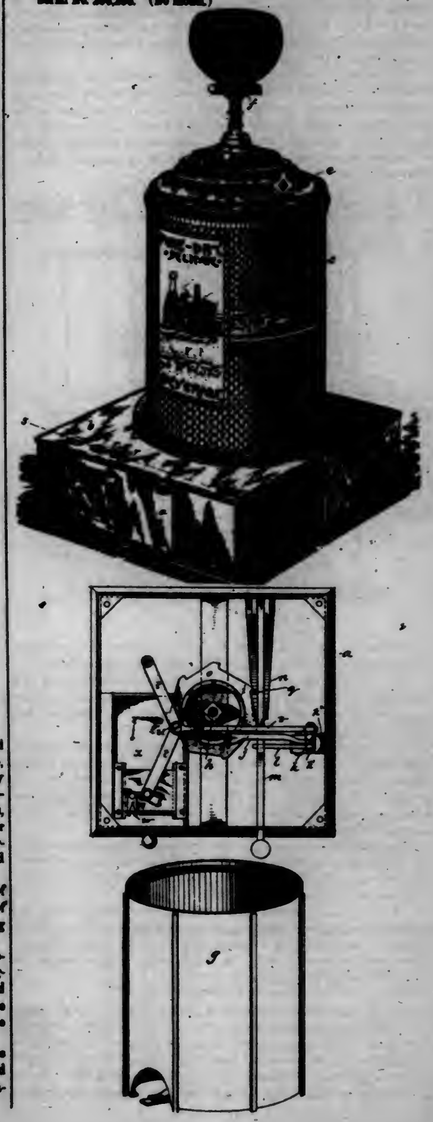
2. In a skylight, the combination, with a wall-covering plate, of a perforated flue secured to the same, dampers pivoted to the side of the flue to open or close the perforations, and metallic rafters resting upon the covering and flue, substantially as shown and described.

3. In a skylight, a wall-covering plate provided with an upwardly-turned angle portion, a perforated flue secured to the covering-plate, recesses formed in the angled plate, and coincident rests secured to the flue, in combination with rafters adapted to rest within the recesses and rests and abut against the flue, as and for the purpose set forth.

4. In a skylight, a rafter formed of the central piece G, the plates G' G', secured to each side of the same, the central portions of said plates being bent to form the shoulders H and provided with perforations, the upper portions being bent at acute angles to the central piece, the cap-piece G'' upon the upper ends, and gutter I, secured to the lower ends of the plates, all arranged and adapted to operate substantially as shown and described.

5. In a skylight, a rafter formed of a central piece, plates secured to each side of the same, the central portion of said plates being bent to form shoulders and provided with perforations, the upper portions being bent at acute angles to the central piece, the gutter secured to the lower ends of the plates, and the spring cap-plate formed with the inverted-V-shaped cops bent to clasp the upper portions of the plate, the lower ends of said cap-plate being bent outwardly and then downwardly to bear upon the glass held upon the shoulders of the plates, substantially as shown and described.

412,814. COMBINED ADVERTISING DEVICE AND CIGAR-TIP CUTTER. FREDERICK R. WHITE, Boston, Mass. Filed Jan. 14, 1889. Serial No. 296,598. (No model.)

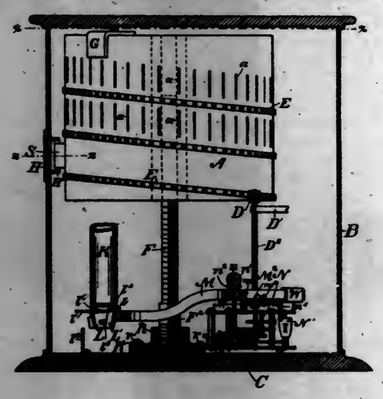


Claim.—1. A combined advertising device and cigar-tip cutter consisting of an outer stationary cylinder *c*, provided with an opening, at or through which an advertisement may be displayed at the opening in the outer cylinder, a shaft connected with said inner cylinder, a ratchet-wheel on said shaft, a pawl engaging said ratchet-wheel, a lever and connections to operate said pawl, a sliding blade or knife to cut off the cigar-tip, and connections between said knife or blade and lever, whereby when the latter is operated the former will also be moved, substantially as set forth.

2. A combined advertising device and cigar-tip cutter consisting of a bed-plate and casing or support therefor, said bed-plate being provided with openings through which cigar-tips may be passed, a stationary cylinder provided with an opening supported on the bed-plate, a rotary cylinder arranged within the stationary cylinder, a shaft connected with said rotary cylinder, a ratchet-wheel on said shaft, a pawl engaging said ratchet-wheel, a lever and connections to operate said pawl, a blade arranged to slide beneath the bed-plate and on a line across the holes in said bed-plate, and connections between said knife and blade, whereby when the latter is operated the former will also be moved, as set forth.

3. In a cigar-tip cutter, the combination, with the cigar-tip-cutting mechanism, of the outer stationary cylinder provided with an opening through which advertisements may be displayed and an inner rotary cylinder containing a series of advertisements to be successively displayed at the opening in the outer cylinder, said inner cylinder being connected with the said cutting mechanism to be operated thereby, substantially as hereinbefore set forth.

412,315. COIN-OPERATED APPARATUS. HORACE M. WILSON, Cambridge, Mass. Filed Apr. 3, 1889. Serial No. 305,895. (No model.)



Claim.—1. In a coin-operated apparatus, a drum having slits spirally arranged around its periphery, substantially as described.

2. In a coin-operated apparatus, a revoluble delivery-drum provided with a supporting-screw, in combination with a protecting-casing provided with a mouth-piece, all arranged and operating substantially as and for the purposes described.

3. In a coin-operated apparatus, a counterbalanced lever provided with a coin-bucket made in two parts L L′, pivotally secured together, one of which is provided with a pin *l*′, in combination with a stop *P* and a revoluble disk M³, provided with a cam-shaped protuberance engaging with a pin *m*′ on said lever, all arranged and operating substantially as and for the purposes described.

4. In a coin-operated apparatus, a revoluble drum having a shutter, in combination with a coin-tube provided with a shutter-receiving opening *k*, whereby the said tube is automatically closed, substantially as and for the purposes described.

5. In a coin-operated apparatus, a delivery-drum having slits spirally arranged around its periphery, in combination with a protecting-casing provided with a mouth-piece, and mechanism whereby, when a coin is inserted, the drum is caused to revolve spirally, substantially as and for the purposes described.

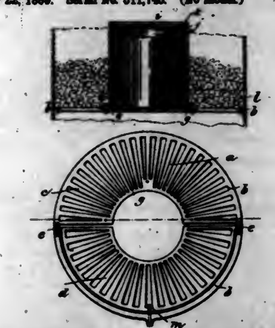
412,316. FOLDING TABLE. NATHANIEL WEBB and ALDEN C. PETERSON, Arcadia, La. Filed June 26, 1889. Serial No. 315,304. (No model.)

Claim.—1. The combination, with the table-top, of the legs E, pivotally secured to the under side of the same, the legs I, adapted to bear against and disconnected from the under side of the table-top, the crossed braces between the said legs provided with longitudinal slots, and the securing-bolt mounted in the slots of the braces, as set forth.



2. The combination, with the table-top, of the legs E, pivoted to the under surface thereof, and the upper and lower leg-connecting rungs F, the legs I, adapted to bear against and disconnected from the under side of said top, and connected by the upper and lower rungs H, of the diagonal braces G, having their upper ends pivoted to the upper rungs F and H, and their lower ends to the lower rungs F and H, and provided with longitudinal slots J, and notches K between their upper pivot and slots and adapted when the legs are folded upon the table to receive the two lower rungs, and the set-bolt L mounted in the slots, substantially as specified.

412,317. GRATE. ELIJAH B. WOOLSTON, Cropwell, N. J. Filed May 22, 1889. Serial No. 311,740. (No model.)



Claim.—1. The combination, with the fire-pot of a stove or similar device, of a grate consisting in a lower portion composed of a rigid and drop section having a central opening common to both sections, a vertical cylinder having closed vertical walls, and an open bottom registering with said central opening, and a removable grate in the top of the cylinder, all arranged and adapted to operate in the manner and for the purpose substantially as described.

2. The combination, with the fire-pot of a stove or similar device, of a grate composed of a rigid and drop section having a central opening common to both, a vertical cylinder resting upon and secured to the rigid section and registering with said central opening, and a removable grate seated in the top of the cylinder, all arranged and adapted to operate as described.

3. In a grate for stoves and similar devices, a lower portion composed of a rigid and drop section having a central opening common to both, a vertical cylinder resting upon and secured to the rigid section and surrounding said central opening, said cylinder having closed vertical walls, in combination with a removable grate located in the upper part of the cylinder, in the manner and for the purpose substantially as described.

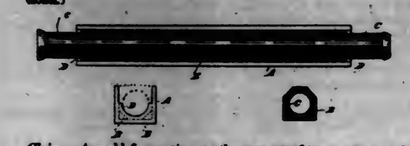
412,318. MOP. ISRAEL B. YOUNKCOB, Mitchell, Dak. Filed Apr. 3, 1889. Serial No. 305,980. (No model.)



Claim.—1. In a mop, the combination of the handle, the stationary member secured thereto and provided at its end with hooks adapted to engage the scrubbing-cloth, and the sliding member moving on the handle and provided at its end with a loop to receive the scrubbing-cloth, and having an eye G near said loop encircling the stationary member, substantially as set forth.

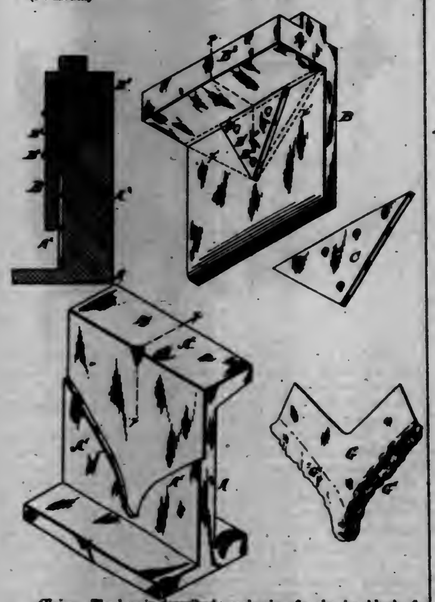
2. In a mop, the combination of the handle, the stationary member secured thereto and composed of twisted wire having its ends bent laterally and doubled on themselves to form hooks, and the sliding member moving on the handle and composed of twisted wire, the outer end of said sliding member being bent to form a loop adapted to engage the scrubbing-cloth, and an eye encircling the stationary member, as set forth.

412,319. MOLD FOR CEMENT WROUGHT-IRON PIPES. LAMBERT B. BATTIN, Elizabeth, N. J. Filed Oct. 14, 1888. Serial No. 288,234. (No model.)



Claim.—A mold for casting on the cement of "cement wrought-iron pipe," which consists of a box square in cross-section, the strips B B filling the lower corners of said box, and end pieces in said box having circular bearings divided horizontally through the center for support of the iron pipe, and the sides of said box being sufficiently high to extend a distance above said iron pipe when the latter is in its place, as set forth.

412,320. MECHANISM FOR MAKING SHARES FOR LISTING-PLOWS. GEORGE S. BIXBY, Rockford, Ill., assignor to the L. A. Weyburn Company, same place. Filed Nov. 10, 1887. Serial No. 254,696. (No model.)

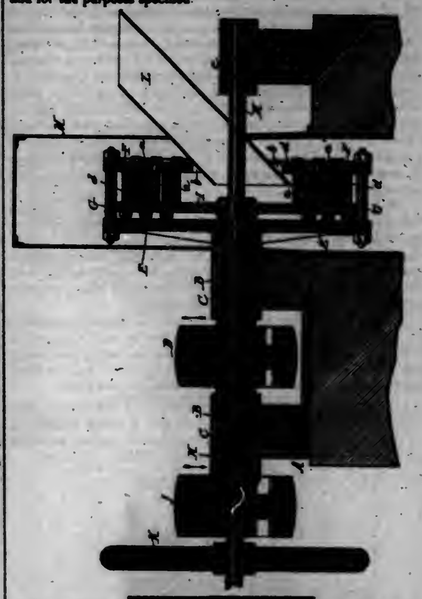


Claim.—The herein-described mechanism for shaping blanks for shares of listing-plows, consisting of a die-block A, provided with the die-section A′, the die-block B, and the interchangeable upsetting and spreading die sections B′ and C, all constructed and to be operated substantially as described.

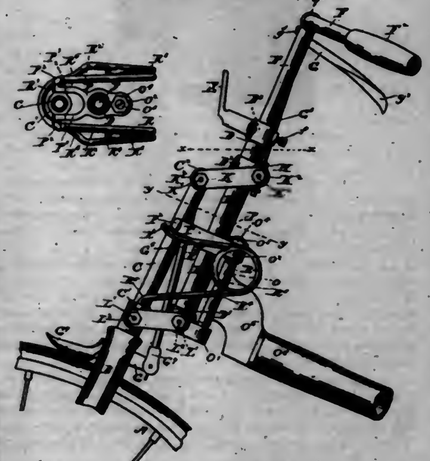
412,321. CLAY-REDUCER. WALFRID BERGMAN, Los Angeles, Cal., assignor to Charles H. Frost, same place. Filed Apr. 5, 1889. Serial No. 306,111. (No model.)

Claim.—1. In a reducer and disintegrator, the combination of a rotating disk E on a shaft and a disk F, connected with and supported by the disk E and carrying rows of pins *a*, and the disk F, having a central feed-opening *b*, substantially as and for the purpose specified.

2. In a reducer and disintegrator, the combination of a disk E, mounted on a hollow shaft B, a disk F, supported by the disk E and provided with pins *a* and with a feed-opening *b*, a disk I, provided with pins *d*, and a shaft H, which carries the disk I, substantially as and for the purposes specified.



412,322. VELOCIPEDE. JAMES S. COPELAND, Hartford, Conn., assignor to the Pope Manufacturing Company, Portland, Me. Filed May 21, 1888. Serial No. 274,000. (No model.)



Claim.—1. In a velocipede-spring-frame mechanism having a fore pillar and an after pillar and connecting-links and a limiting-spring, the upper pair of links, as K K, longer than the lower pair, as L L, and constructed and combined essentially as set forth.

2. In a velocipede-spring-frame mechanism having a fore pillar and an after pillar and connecting-links and a limiting-spring, the tubular after pillar, as D, the encircling transverse lug, as D′, a lower center lug, as O′, and the intermediate encircling leg P, and the upper center lug, as O², constructed and combined substantially as set forth.

3. In a velocipede-spring-frame mechanism having a fore pillar and an after pillar and connecting-links and a limiting-spring, the up-

per center lug O^2, constructed and combined between the transverse lugs and the upper and lower links, essentially as set forth.

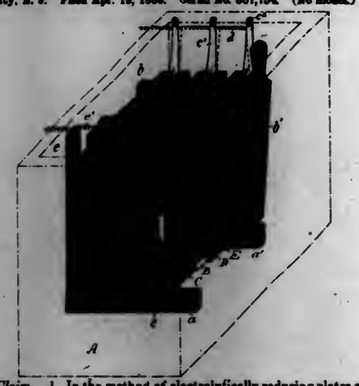
4. In a velocipede-spring-frame mechanism having a fore pillar and an after pillar and connecting-links, a spring, as R, with its ends R^1 R^2 secured to one of the pillars, and its middle part bent to form a loop, as R', above the same, and with the arms, as R^3 R^3, operating against stops, as P^2 P^2, connected to the other pillar, and with the coils R^2 R^2 and arms R^4 R^4, substantially as shown and described.

5. In a velocipede-spring-frame mechanism having a brake mechanism with the handle-lever at the handle-bar and connected with one portion of the frame and having the brake-spoon lever connected with another portion of the frame, a connecting rod or rods, as G^2 G^2, and a rocking link, as G^4, pivoted at or near the center of motion between the two parts of the frame, and constructed and combined to operate essentially as set forth.

6. In a velocipede-spring-frame mechanism having a fore pillar and an after pillar and connecting-links and a limiting-spring, and having a brake mechanism with the handle-lever connected with the handle-bar and with one of the pillars, and having a brake-spoon lever connected with the other pillar, connecting-rods, as G^2 and G^2, and a rocking link, as G^4, pivoted at a point between the pillars, and constructed and combined essentially as set forth.

7. The combination of the handle-bar and supporting mechanism and fork of a velocipede, a brake-handle lever, as G, fulcrumed in a bracket on the under side of the handle-bar, jointed connecting-rods, as G^2 G^2, rocking link, as G^4, and brake spoon and lever, as G^2 G^2, constructed and combined to operate essentially as set forth.

412,823. METHOD OF ELECTROLYTICALLY REDUCING PLATES FOR SECONDARY BATTERIES. STANLEY G. C. CURRIE, Philadelphia, Pa., assignor to the United Electric Improvement Company, Gloucester City, N. J. Filed Apr. 19, 1889. Serial No. 307,754. (No model.)



Claim.—1. In the method of electrolytically reducing plates composed of one or more salts of a metal or metals to a metallic state, mounting the plates to be reduced in contact with perforated plates, and which latter plates are insulated from solid metal plates, substantially as and for the purposes set forth.

2. In the method of electrolytically reducing plates composed of a salt or salts of a metal or metals to a metallic state, mounting in a fluid in contact with the faces or sides of the plates to be reduced perforated metal plates, insulating-plates interposed between said perforated plates and solid metal plates, and causing the reduction of said plates composed of a metallic salt or salts, substantially as and for the purposes set forth.

3. The method of reducing crystallized plates to a metallic state, which consists in immersing in a fluid a system of perforated plates in contact with the crystallized plates forming cathodes and insulated from a system of solid metal plates forming the anodes, and then connecting said cathodes and anodes with a generator, substantially as and for the purposes set forth.

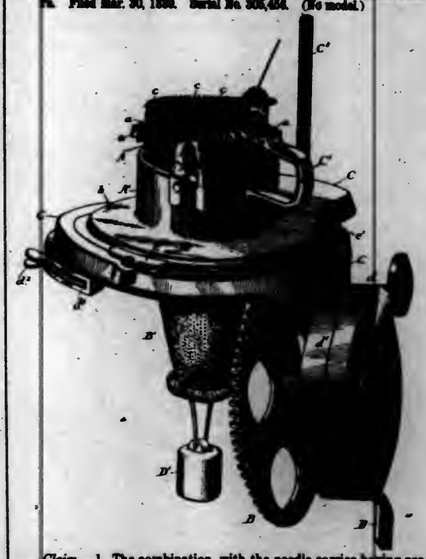
4. The method of electrolytically reducing crystallized plates to a metallic state, which consists in immersing in a fluid a system of perforated metal plates in contact with the crystallized plates and a system of solid metal plates insulated from said perforated opposing plates of similar material, and then connecting the cathodes and anodes with a generator, substantially as and for the purposes set forth.

5. The method of electrolytically reducing crystallized plates to a metallic state, which consists in immersing in a fluid a system of crystallized plates having perforated metal plates in contact with the faces thereof and perforated insulating-plates interposed between said perforated metal plates and solid metal plates, and then causing the reduction of said crystallized plates, substantially as and for the purposes set forth.

6. The method of electrolytically reducing crystallized plates to a metallic state, which consists in immersing in a fluid a system of crystallized plates in contact with perforated metal plates or devices and with perforated insulating-plates or devices interposed between said perforated metal plates and a system of solid metal plates of the same or other material, and then causing said crystallized plates to be reduced to a metallic state, substantially as and for the purposes set forth.

7. The method of electrolytically reducing plates composed of one or more salts of a metal or metals to a metallic state, which consists in immersing in a fluid the salt plates in contact with perforated metal plates, which latter are insulated from solid metal plates, and then causing reduction to a metallic state of said salt plates and elimination of extraneous matter therefrom, substantially as and for the purposes set forth.

412,824. KNITTING-MACHINE. GEORGE B. ELLIS, Philadelphia, Pa. Filed Mar. 30, 1889. Serial No. 305,464. (No model.)

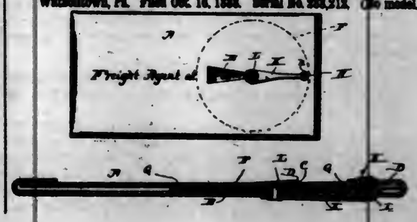


Claim.—1. The combination, with the needle-carrier having vertical slots formed therein for the reception of sinkers, and a series of sinkers having portions fitting in said slots, of the cam-carrier and a cam carried thereby for moving said sinkers vertically, substantially as hereinbefore set forth and described.

2. The combination, with the needle-carrier formed with vertical slots for the reception of sinkers, as described, a series of sinkers having portions fitting in said slots, and the cam-carrier, of the cam-plate A^3 and means for clamping said plate upon the cam-carrier, substantially as hereinbefore set forth and described.

3. The combination, with the needle-carrier having vertical slots formed therein for the reception of sinkers, and a series of sinkers having portions fitting in said slots, of the cam A^3, coming in contact with the horizontal portion of the sinkers and adapted to raise them vertically, substantially as hereinbefore set forth and described.

412,825. ENVELOPE. LOU. H. FETHERS and FULLER S. DEER, Watsontown, Pa. Filed Oct. 16, 1888. Serial No. 288,212. (No model.)



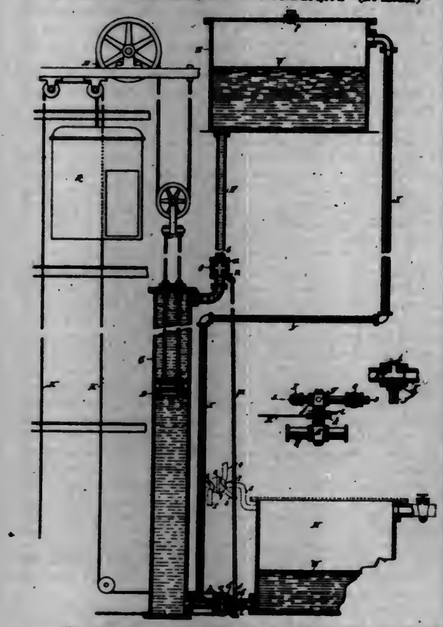
Claim.—1. The combination, with an envelope provided with an opening in its side, of the address-disk arranged within the envelope and having a portion of its surface opposite, so as to be exposed through the said opening, substantially as specified.

2. The combination, with an envelope provided with an opening E in its side, of the rotary disk pivoted to the inner side of the envelope and having its surface divided into sections adapted to be successively exposed through the said opening, substantially as described.

3. The combination of the envelope provided with an opening E, the disk pivoted within the envelope and provided with a series of perforations, and the clip, hook, or fastening engaging one of the said perforations and a corresponding perforation in the side of the envelope, substantially as specified.

4. The combination, with the envelope provided in its face with the opening E and with a perforation H near its open end, the flap B, covering said end and provided with the opening I, registering with the opening H, the disk F, pivoted, as at L, and provided with a series of perforations G, adapted to align with perforations H and I, and the pliable clip-hook K, pivoted to the envelope and extending at its free end through the registering perforations, substantially as specified.

412,826. PNEUMATIC ELEVATOR. WILLIAM P. GURNEE, New York, N. Y. Filed Dec. 31, 1888. Serial No. 294,994. (No model.)

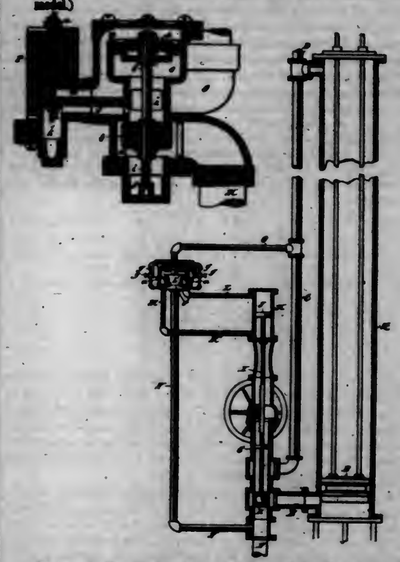


Claim.—1. The combination, with the cylinder and piston of a pneumatic elevator, of a closed tank containing a body of liquid interposed between the pressure side of the piston and the compressed air for operating the same and filling the cylinder, a tank communicating with the cylinder upon the opposite side of the piston and containing a body of liquid sufficient to fill the cylinder upon that side of the piston, valves *a d*, for controlling the flow of the two bodies of liquid to and from the cylinder, and a hand-rope for operating said valves from the car, substantially as described.

2. The combination, with the cylinder and piston of a pneumatic elevator, of a closed tank containing a body of liquid interposed between the pressure side of the piston and the compressed air for operating the same and filling the cylinder, a tank communicating with the cylinder upon the opposite side of the piston and containing a body of liquid sufficient to fill the cylinder upon that side of the piston, valves *a d*, for controlling the flow of the two bodies of liquid to and from the cylinder, a valve *g*, for controlling the supply and exhaust of compressed air to and from said closed tank, and a hand-rope for operating said valves from the car, substantially as described.

3. The combination, in a pneumatic elevator, of a cylinder and piston, closed tanks communicating with the cylinder upon the opposite sides of the piston and containing bodies of liquid sufficient to fill the cylinder upon said respective sides of the piston, pipes and valve mechanism for admitting air under pressure to one of said tanks to drive the piston in one direction and for allowing said air to circulate from said tank to the other tank as the piston moves in the other direction and for allowing the air to escape from said last tank, and connections for operating said valve mechanism from the car, substantially as described.

412,827. VALVE MECHANISM FOR ELEVATORS. WILLIAM P. GURNEE, New York, N. Y. Filed Dec. 31, 1888. Serial No. 294,995. (No model.)



Claim.—1. The combination, with the cylinder K and piston J, of valves *b*, controlling the supply and discharge of the fluid to and from the cylinder upon the opposite sides of the piston, the pistons *d*, connected to said valves *b*, and constantly subjected upon one side to the fluid-pressure to close the valves, ducts leading from the supply side of said valves to the opposite side of said pistons, valves *l*, controlling said ducts, so that the pressure can be equalized upon the opposite sides of said pistons to allow the valves *b* to open the supply and close the discharge to the respective sides of the piston J, and discharge-passages for allowing the fluid to escape to reduce the pressure upon one side of the pistons *d*, substantially as described.

2. The combination, with the cylinder K and piston J, of valves *b*, controlling the supply and discharge of the fluid to and from the cylinder upon the opposite sides of the piston, the pistons *d*, connected to said valves *b*, and constantly subjected upon one side to the fluid-pressure to close the valves, ducts leading from the supply side of said valves to the opposite side of said pistons, and valves *l*, controlling said ducts, so that the pressure can be equalized upon the opposite sides of said pistons to allow the valves *b* to open the supply and close the discharge to the respective sides of the piston J and permanently-open discharge-passages *g* for allowing the fluid to escape from the discharge side of said valves *l*, substantially as described.

3. The combination, with the cylinder K and piston J, of valves *b*, controlling the supply and discharge of the fluid to and from the cylinder upon the opposite sides of the piston, the pistons *d*, connected to said valves *b*, valves *l*, controlling the supply of the fluid to one side of said pistons, permanently-open discharge-passages *g* for the discharge of the fluid so supplied, and adjustable valves *y* for regulating the rate of discharge, substantially as described.

412,828. AUTOMATIC STOP MECHANISM FOR ELEVATORS. WILLIAM P. GURNEE, New York, N. Y. Filed Dec. 31, 1888. Serial No. 294,997. (No model.)

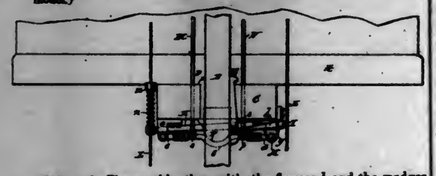
Claim.—1. The combination, with an elevator-car, its hoisting-cable, and the sheave over which said cable passes at the top of the shaft, of a threaded shaft D, provided with abutments and fixed to said sheave, a sheave E and barrel H, turning freely upon said shaft, a traveling nut *i*, working upon said threaded shaft between the abutments and connected to said barrel to lock it and the sheave E to the

shaft when it engages with either abutment, and a stopping-rope F, passing around said sheave E, substantially as described.



2. The combination, with an elevator-car, its hoisting-cable, and the sheave over which said cable passes at the top of the shaft, of a threaded shaft D, fixed to said sheave, a sheave E and barrel H, turning freely upon said shaft, a traveling nut *i*, working upon said threaded shaft between adjustable abutments and connected to said barrel to lock it and the sheave E to the shaft when it engages with either abutment, and a stopping-rope F, passing around said sheave E, substantially as described.

412,329. SAFETY DEVICE FOR ELEVATORS. William P. Gibson, New York, N. Y. Filed Dec. 31, 1888. Serial No. 294,966. (No model.)



Claim.—1. The combination, with the fingers A and the wedges for stopping the car, of the rods H, having the cams *g* formed to operate said fingers when the rods H are rocked in either direction, the arms G, fulcrumed upon bearings beneath the car and connected upon opposite sides of said bearings to the respective hoisting-cables and pivotally connected at one end to arms *d*, extending from said rods H, substantially as described.

2. The combination, with the rod I, carrying fingers A, and the wedges for stopping the car, of the rods H, having the cams *g* formed to operate said fingers when the rods H are rocked in either direction, the arms G, fulcrumed upon bearings beneath the car and connected upon opposite sides of said bearings to the respective hoisting-cables and pivotally connected at one end to arms *d*, extending from said rods H, and the arm K, extending from the rod I and connected to the governor-cable L, substantially as described.

3. The combination, with the elevator-car and its guides B, of wedges E, the fingers A, entering openings in the wedges, so as to move said wedges in either direction, the rods H, having the cams *g* formed to operate said fingers when the rods are rocked in either direction, the arms G, fulcrumed against bearings beneath the car and connected upon opposite sides of said bearings to the respective hoisting-cables, and pivotally connected at one end to arms *d*, extending from said rods H, substantially as described.

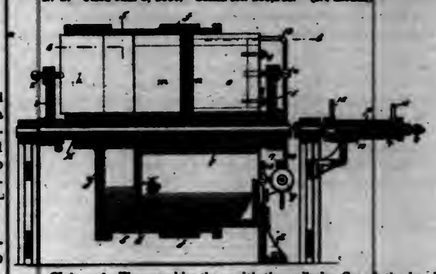
412,330. VALVE-OPERATING DEVICE FOR ELEVATORS. William P. Gibson, New York, N. Y. Filed Dec. 31, 1888. Serial No. 294,969. (No model.)



Claim.—1. The combination, with a rope B, connected to operate the stopping and starting mechanism of the elevator, of gripping-pulleys arranged to grip the rope with a moderate pressure and a movable deflecting-pulley for deflecting the rope upon one side of said gripping-pulleys, substantially as described.

2. The combination, with a rope moving freely over a pulley at the top of the elevator-shaft and having its ends connected to operate the stopping and starting mechanism to cause the car to ascend and descend as the rope is moved in opposite directions, of gripping-pulleys arranged to grip the rope with a moderate pressure and movable deflecting-pulleys located above and below said gripping-pulleys and arranged to deflect the rope upon opposite sides of said gripping-pulleys, substantially as described.

412,331. HYDRAULIC MOTOR. William P. Gibson, New York, N. Y. Filed Jan. 5, 1889. Serial No. 295,542. (No model.)



Claim.—1. The combination, with the cylinder G and the head K, fitting into the cylinder, one of said parts being fixed and the other oscillating, and one being capable of longitudinal movement with relation to the other, of the movable plate A, carried by the cylinder and fitting against the head K, the movable plate *m*, carried by the head K and fitting against the head of the cylinder at one side of the plate A, and the port 15, for admitting and exhausting the liquid to and from the cylinder between the plates, substantially as described.

2. The combination, with the oscillating and longitudinally-moving cylinder G, of the fixed head K, fitting into said cylinder, the plate A, carried by the cylinder G and movable in the direction of the length of the cylinder, so as to maintain contact with the head K, the plate *m*, carried by the head K and entering the cylinder at one side of the plate A and movable longitudinally with the cylinder, and a port 15, for admitting and exhausting the liquid to and from the cylinder between the plates, substantially as described.

3. The combination, with the oscillating and longitudinally-moving cylinder G, of the fixed head K, fitting into said cylinder, the plate A, carried by the cylinder G and movable in the direction of the length of the cylinder, so as to maintain contact with the head K, the plate *m*, carried by the head K and entering the cylinder at one side of the plate A and movable longitudinally with the cylinder, a port 15, for admitting and exhausting the liquid to and from the cylinder between the plates, and the cylinder *p*, having a piston 10 connected to the cylinder G to move the same longitudinally, substantially as described.

4. The combination, with the cylinder G and the head K, fitting into the cylinder, one of said parts being fixed and the other oscillating, and one being capable of longitudinal movement with relation to the other, of the movable plate A, carried by the cylinder and fitting against the head K, the movable plate *m*, carried by the head K and fitting against the head of the cylinder at one side of the plate A, and ports 14 15, for admitting and exhausting the liquid to and from the cylinder upon the opposite sides of the plate *m*, substantially as described.

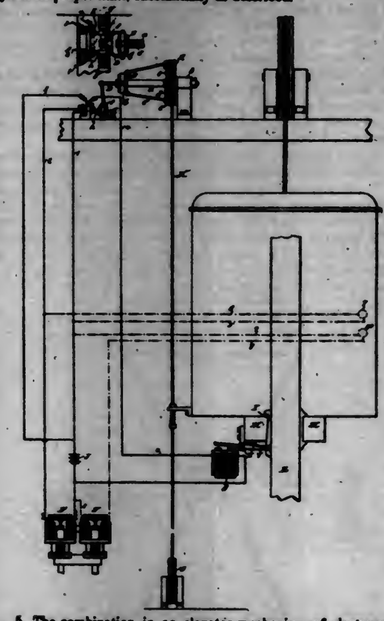
412,332. ELECTRICALLY-CONTROLLED SPEED-GOVERNOR MECHANISM FOR ELEVATORS. William P. Gibson, New York, N. Y. Filed Jan. 5, 1889. Serial No. 295,543. (No model.)

Claim.—1. The combination, in an elevator mechanism, of an electro-magnet for operating a valve mechanism to stop the car, an electric circuit including said magnet and a circuit-closer, and a speed-governor operated by the movement of the car and arranged to operate said circuit-closer to close the circuit through said magnet when the speed of the car increases beyond the proper limit, substantially as described.

2. The combination, in an elevator mechanism, of an electro-magnet for operating a valve mechanism to stop the car, an electro-magnet G, for operating the safety appliances of the car, electric circuits including said respective magnets, a circuit-closer for each of said circuits, and a speed-governor operated by the movement of the car and arranged to operate said circuit-closers to close the circuits through the respective magnets successively when the speed of the car increases beyond its proper limit, substantially as described.

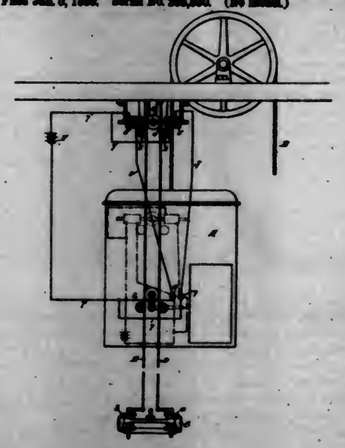
3. The combination, in an elevator mechanism, of a rope P, connected to operate a valve mechanism to stop the car, a deflecting-pulley *q*, for deflecting said rope to operate the valve mechanism, an electro-magnet for operating said deflecting-pulley, an electric circuit including said magnet and a circuit-closer, and a speed-governor operated by the movement of the car and arranged to operate said circuit-closer to close the circuit through said magnet when the speed of the car increases beyond the proper limit, substantially as described.

4. The combination, in an elevator mechanism, of a rope P, connected to operate a valve mechanism to stop the car, a deflecting-pulley *q*, for deflecting said rope to operate the valve mechanism, an electro-magnet for operating said deflecting-pulley, an electro-magnet G, for operating the safety appliances of the car, electric circuits including said respective magnets, a circuit-closer for each of said circuits, and a speed-governor operated by the movement of the car and arranged to operate said circuit-closers to close the circuits through the respective magnets successively when the speed of the car increases beyond its proper limit, substantially as described.



5. The combination, in an elevator mechanism, of electro-magnets F N, for operating the valve mechanism to control the up and down movements of the car, electric circuits including said respective magnets, a cable K, driven by the car and passing over a sheave A, a threaded shaft *l*, driven by said sheave, and a nut *n*, traveling upon said shaft and operating to close the circuit through the respective magnets as the car reaches the limit of its up and down movements, substantially as described.

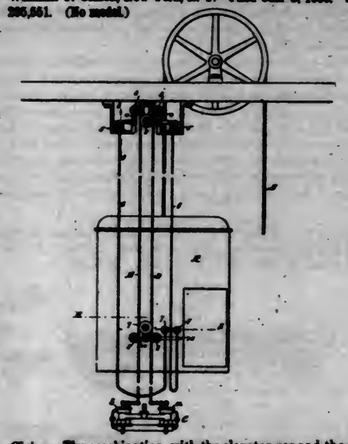
412,333. ELECTRICALLY-CONTROLLED VALVE-OPERATING MECHANISM FOR ELEVATORS. William P. Gibson, New York, N. Y. Filed Jan. 5, 1889. Serial No. 295,560. (No model.)



Claim.—1. The combination, with the elevator-car, of an auxiliary valve mechanism for controlling the movements of the car, ropes suspended from the top of the shaft and connected to said auxiliary valve mechanism to control the same, a deflecting mechanism consisting of deflecting-pulleys for deflecting said ropes, electro-magnets for operating said deflecting mechanism, and electric circuits, including said magnets and push-buttons, located upon the car, substantially as described.

2. The combination, with the elevator-car, of an auxiliary valve mechanism for controlling the movements of the car, ropes suspended from the top of the shaft and connected to said auxiliary valve mechanism to control the same, a deflecting mechanism consisting of deflecting-pulleys for deflecting said ropes, electro-magnets for operating said deflecting mechanism, electric circuits, including said magnets and push-buttons, located upon the car, a deflecting mechanism consisting of deflecting-pulleys carried by the car, and a hand-lever for operating said deflecting mechanism, substantially as described.

412,334. VALVE-OPERATING MECHANISM FOR ELEVATORS. William P. Gibson, New York, N. Y. Filed Jan. 5, 1889. Serial No. 295,561. (No model.)



Claim.—The combination, with the elevator-car and the auxiliary valve mechanism for controlling its movements, of ropes suspended from the top of the elevator-shaft and connected to said auxiliary valve mechanism to operate the same, a deflecting mechanism consisting of deflecting-pulleys for deflecting said ropes to cause the car to move in opposite directions, expansible bulbs connected to act upon said deflecting mechanism to deflect the respective ropes, collapsible bulbs carried by the car, and tubes containing a fluid and connecting the bulbs upon the car with the respective bulbs of the deflecting mechanism, substantially as described.

412,335. PULLEY. Robert Gilman, Kansas City, Mo. Filed Jan. 7, 1889. Serial No. 295,637. (No model.)

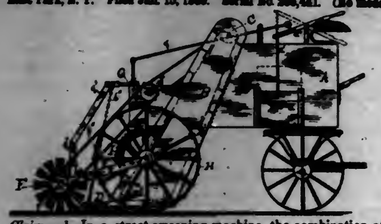


Claim.—1. The combination, with a pulley having a flanged peripheral portion, of a series of interchangeable rings keyed to the said peripheral portion, substantially as shown and described.

2. A pulley having its peripheral portion provided with transverse flanges, in combination with a bearing composed of interchangeable rings, said rings having transverse grooves adapted to register with and receive said flanges, as shown and described.

3. A pulley consisting of separate detachably-secured parts having a transverse flange, and a peripheral bearing consisting of a series of interchangeable rings, said pulley having a concentric groove in the periphery and at the line of division of said detachable parts, for the purpose described.

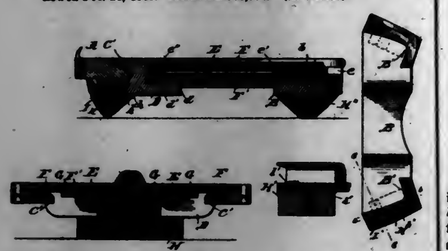
412,836. STREET-SWEEPING MACHINE. CHARLES GILLHAM, Rust Park, N. Y. Filed Jan. 15, 1889. Serial No. 296,441. (No model.)



Claim.—1. In a street-sweeping machine, the combination of a hinged dirt-pan, a finger-apron hinged to said pan and consisting of a series of ribs or fingers and an apron stretched across and connecting the same, a series of spiral springs equal in number to said ribs or fingers, their outer ends being connected thereto, respectively, a rod journaled on the under side of said dirt-pan and to which said springs are attached, and shoes fastened to the pan and situated between the springs, substantially as described.

2. In a street-sweeping machine, the combination of a storage-box, an elevator having an endless belt running over a pair of guide-rollers parallel with the floor of the elevator, a dirt-pan pivoted to said elevator, a revolving brush pivoted to the main driving-axle, a cog-wheel keyed to said axle and actuating a shaft journaled above the same, a pair of sprocket-chains passing around said shaft and actuating said brush and said endless elevator-belt, respectively, and mechanism, substantially as described, for elevating said brush and said dirt-pan simultaneously, in the manner and for the purpose set forth.

412,837. HORSESHOE. ALBERT B. HOLSEN, Chicago, Ill., assignor to the Holsen Horseshoe Company, same place. Filed Jan. 18, 1888. Renewed Feb. 26, 1889. Serial No. 301,582. (No model.)



Claim.—1. In a horseshoe, the combination of a beveled shoe, a bar having a curved edge thereon with a groove fitting upon the beveled edge of said shoe at the forward end thereof, sockets in said bar, a thread in each of said sockets extending a portion of the way thereinto from the outer edge thereof, a bar having a groove at each end fitting upon said beveled shoe near the heel portion thereof, said bar having screw-threaded holes therein, and bolts having a like thread at one end passing through said holes, and having a thread at the other end thereof extending a short distance on said bolts and fitting into said thread in said sockets in the front bar, all substantially as described, and for the purpose set forth.

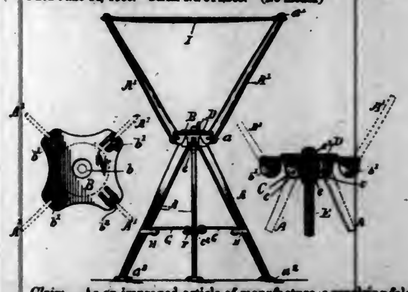
2. The combination of a horseshoe with a bar having a curved grooved edge fitting over the inner beveled edge of the shoe at the forward end thereof, sockets in said bar, a thread extending a short distance into each of said sockets from the outer edge thereof, a bar having a groove at each end fitting over the beveled edge of the shoe near the heel of said shoe and having a beveled edge or side interlocking with a lug on said heel of said shoe, the said bar also having screw-threaded holes therein, and bolts having a like thread thereon at one end passing through said holes and also having a thread at the other end thereof extending a short distance from said end and fitting into the thread in said sockets, all substantially as described.

3. The combination of a horseshoe having a beveled inner edge with a bar having a curved grooved edge fitting over the beveled edge of said shoe at the forward part of said shoe, sockets in said bar having a thread extending a portion of the way thereinto from the outer edge thereof, a bar having a groove at each end thereof fitting over the beveled portion of said shoe near the heel thereof, said bar having screw-threaded holes therein, bolts having a like thread near one end thereof passing through each of said holes and also having a thread at the other end thereof extending a short distance from said end and fitting into the thread in said sockets, and a guard through which said bolts may pass and by which that portion of said bolts not in said sockets or passing through said bar is covered and protected, all substantially as described, and for the purpose specified.

4. The combination of a horseshoe with a bar having a curved grooved edge fitting over the inner beveled edge of the shoe at the forward end thereof, sockets in said bar, a thread extending a short distance into said sockets from the outer edge thereof, a bar having a groove at each end thereof fitting over the beveled edge of the shoe near the heel of said shoe and screw-threaded holes therein, the said bar also having a beveled side or lug thereon interlocking with a beveled edge or lug on the heel of said shoe, bolts having a like thread near one end thereof passing through the holes in said bar and also having a thread at the other end thereof extending a short distance from said end on said bolt and fitting into the thread in said sockets on said curved bar, and a guard through which said bolts may pass and by which they are protected from contact with rocks and other substances, all substantially as described.

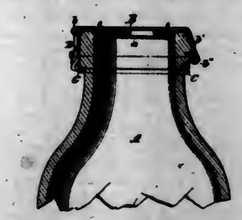
5. In a horseshoe consisting of a main shoe, an auxiliary shoe, and calks secured to said main shoe by said auxiliary shoe, the combination of bolts passing through one of the bars forming said auxiliary shoe and into sockets in the other of the bars forming said auxiliary shoe, and a guard consisting of a strip of leather or other flexible material and a strip of zinc or other suitable material secured to said leather strip by copper or other suitable bolts, whereby an electric action may be obtained in said guard, all substantially as described, and for the purpose set forth.

412,838. FOLDING CHAIR. KELLOG T. HUELBURT, Lakewood, N. J. Filed June 14, 1889. Serial No. 314,285. (No model.)



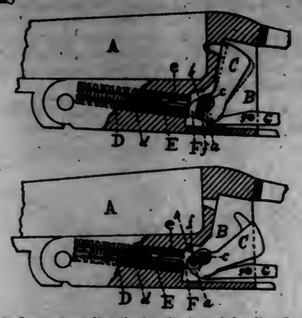
Claim.—As an improved article of manufacture, a revolving folding stool consisting of the stationary plate C, having an annular boss *b* on its upper surface and radial grooved bearings *c* on its lower surface, the legs A, suitably held in such grooved bearings, the plate B, superposed over the plate C and adapted to revolve around the annular boss *b*, the standard E, whereto the plates B C are secured between threaded nuts *c' c'*, so as to permit a horizontal rotary motion of the seat portion on the leg portion of said stool, the reciprocating plate F, whence the connecting-rods G radiate that serve to regulate the angle of the legs to the axial center, and the seat I, the whole co-operating as and for the purpose herein fully shown and described.

412,839. MILK-JAR. LYMAN D. JOHNS, New York, N. Y. Filed Apr. 17, 1889. Serial No. 307,544. (No model.)



Claim.—In a milk-jar, the double shoulders *d' d'* and *e' e'*, extending around the neck of the jar, the former having the recess *d d* extending from the shoulder *d' d'* to the top of the jar, whereby the lower shoulder *d' d'* keeps the cover-holding wire in a fixed vertical position, and the recess *d d* allows the hinge portion D of the cover-holding wire to hug closer to the neck of the jar, and the upper shoulder *d' d'* provides the means for holding the catch F, substantially in the manner and for the purposes set forth.

412,840. REBOUND MECHANISM FOR BREECH-LOADING GUNS. CHARLES A. KING, Meriden, Conn. Filed Apr. 17, 1889. Serial No. 307,600. (No model.)



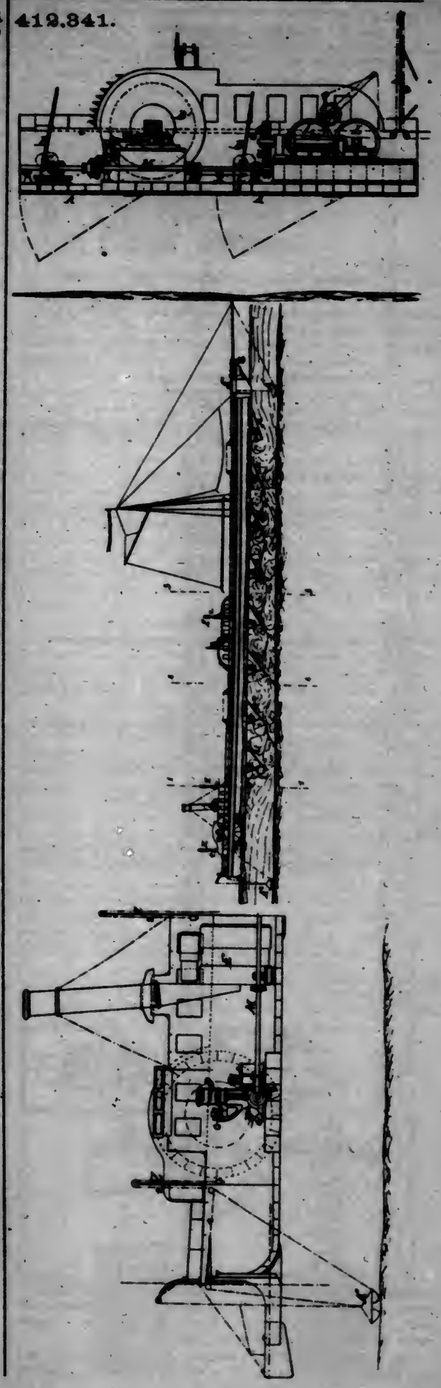
Claim.—1. In a rebounding device for breech-loading fire-arms, a strut pivoted near one end to the tumbler or hammer, the opposite end of said strut being seated against the end of the mainspring, said strut being provided with a projecting lug or stop adapted to limit its movement by contact with the pivot upon which the tumbler or hammer is hung, and a sear adapted to retain the hammer in its normal position by reason of frictional contact, all arranged to operate substantially as described, and for the purpose set forth.

2. In a rebounding device for breech-loading fire-arms in which the barrel is hung forward to be tilted up at the breech in opening, the combination therewith of a hammer hung to the frame at the rear of the barrel, a longitudinal recess in the frame, a spring in said recess, a strut pivoted to the tumbler or hammer, its free end extending within and resting against the rear end of said spring, the said strut being provided with a projecting lug or stop adapted to limit its rearward movement by contact with the pivot upon which the tumbler or hammer is hung, an elongated hole or slot in the rear end of said strut to admit of the free forward and backward movement of the hammer after the other parts have stopped, and a sear adapted to retain the hammer in its normal position by reason of frictional contact, all arranged and operating substantially as shown, and for the purpose set forth.

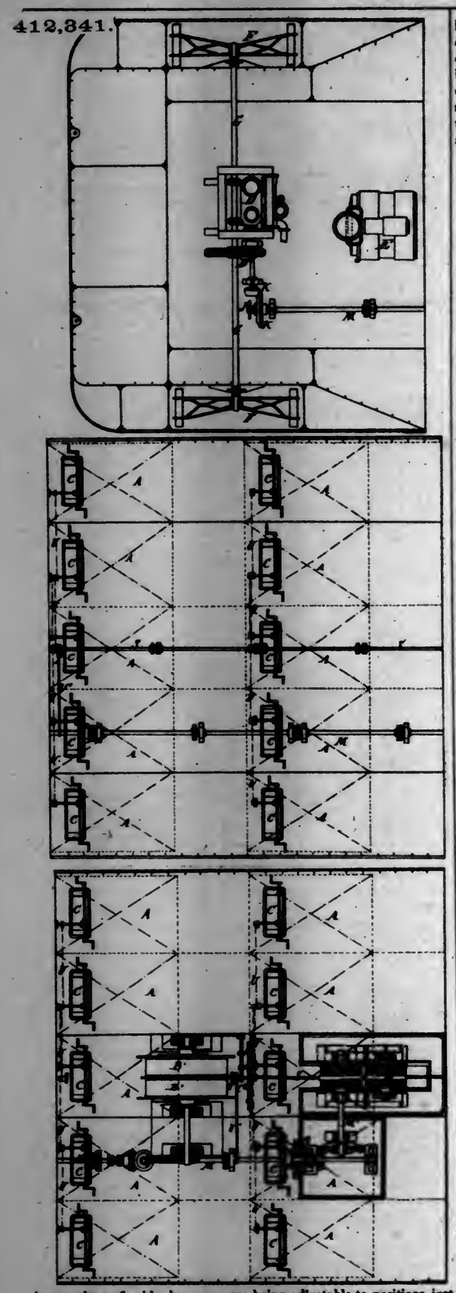
3. In a breech-loading fire-arm in which the barrel is hung forward to be tilted up at the breech in opening, the combination therewith of the hammer hung in the frame at the rear of the barrel, a longitudinal recess in the frame forward of the hammer and in line below the pivot of the hammer, a helical spring in said recess, a follower in said recess and resting against the rear end of said spring, the said follower constructed with a recess from its rear end inward, and a strut hung by its rear end to the hammer below its pivot and extending into the recess in the follower, the forward end of the strut taking seat at the forward end of the recess and near the forward end of the follower, the said strut being provided near its rear end with an upwardly-projecting lug or stop adapted to limit its rearward movement by contact with the hammer screw or pivot, an elongated hole in said strut to admit of the free forward and backward movement of the hammer after the strut has stopped, substantially as shown and described.

412,841. DREDGING-BOAT. ALPHONSE LAMBERT, Paris, France. Filed Sept. 4, 1888. Serial No. 284,357. (No model.) Patented in France Sept. 6, 1887, No. 186,670, and in England July 2, 1888, No. 9,668.

Claim.—1. A boat for dredging the channels of rivers and the like, having a closed bottom, in combination with a plurality of rows of downwardly-extending independently-adjustable wings or vanes on said bottom, each row containing a plurality of wings or vanes, the



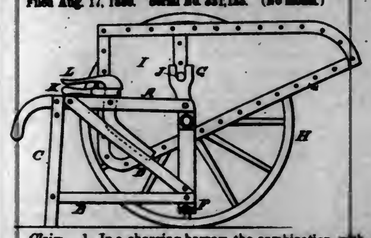
412,341.



lower edges of said wings or vanes being adjustable to positions just above an obstruction or bar, whereby the force of the current or tide passing between the wings or vanes and the obstruction or bar removes the latter, substantially as set forth.

2. A boat for dredging the channels of rivers and the like, having a closed bottom and a plurality of rows of downwardly-extending independently-adjustable wings or vanes on said bottom, each row containing a plurality of wings or vanes, the lower edges of said wings or vanes being adjustable to positions just above an obstruction or bar, in combination with anchoring devices, rotary drums on said boat, and cables connecting said drum with said anchoring devices for moving said boat against the current or tide, substantially as set forth, whereby the force of the current or tide passing between the vanes or wings and the obstruction or bar is increased.

412,342. CHARGING-BARROW. GRANT C. MCNEIL, AKRON, OHIO. Filed Aug. 17, 1888. Serial No. 281,122. (No model.)



Claim.—1. In a charging-barrow, the combination, with a frame having wheels journaled on axles projecting from its sides and provided with journal-bearings located below the plane of the top of the wheels to support the box, of a box mounted in said frame between said wheels by means of journals projecting from its side and resting in said bearings, substantially as shown, and for the purpose specified.

2. In a charging-barrow, the combination of a frame consisting of two side pieces united at the rear by a cross-bar and at the front by an axle, the axle being bent to form three sides of a rectangle, the central part being horizontal and placed near the bottom of the side pieces, and the ends rising vertically and terminating in journal-bearings and having journals projecting from their sides and having wheels mounted thereon, with a box having side journals resting in said journal-bearings, substantially as shown, and for the purpose specified.

3. In a charging-barrow, the combination, with a hand-frame having side journals with wheels mounted thereon, and journal-bearings for the box located below the plane of the top of the wheels, of a box suspended between said wheels by means of side journals which rest in said bearings, the rear of said box when empty overbalancing the front, substantially as shown and described, and for the purpose specified.

4. In a charging-barrow, the combination, with a supporting-frame having wheels mounted on axles projecting from its sides, and journal-bearings to support the box located below the plane of the top of the wheels, of a box mounted thereon between said wheels by means of side journals resting in said bearings, and a movable latch to retain and release said box, substantially as shown and described.

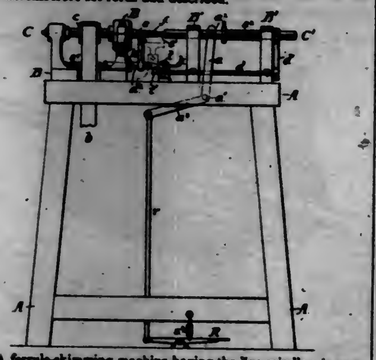
412,343. HAME-FASTENER. MARSH HOE, Davenport, Iowa. Filed Oct. 20, 1888. Serial No. 288,463. (No model.)



Claim.—In combination with a hame, the rim 6, extended to form the part 8, with pendent side pieces 9 and 10 attached, the female hook 11, pivoted between such side pieces, the spring 14, secured between such side pieces and acting against the free under side of said hook, and the rim 7, recessed upon its upper surface and extended beyond the end 5 of the hame, and terminating in the engaging-hook 18, substantially as described.

412,344. MACHINE FOR SKIMMING FERRULES. CORLY S. SMITH, Philadelphia, Pa. Filed July 24, 1889. Serial No. 318,502. (No model.)

Claim.—1. In a lathe or ferrule-skimming machine, an adjustable dead spindle or chuck for forcing on and securing by pressure the ferrule to the live-spindle and releasing the same when desired, and an adjustable stripper provided back of the ferrule for forcing off the ferrule from the live-spindle when the dead-spindle is removed, substantially as hereinbefore set forth and described.

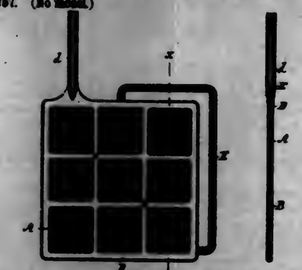


2. A ferrule-skimming machine having the live-spindle *a*, in combination with the spindle *d'*, connected with the shaft C', the shaft *d*, connected by the arm *d'* with the shaft C', operated by the elbow-lever *a*^{6} *a*^{6}, the rod *r*, and the lever R, the shaft *d*^{3}, the stripper A, connected with the shaft *d*^{3}, the triggers *t t'*, the cam *h*, and the springs *d*^{3} *a*^{6}, secured and adjusted to the frame A, substantially as hereinbefore set forth and described.

3. In a ferrule-skimming machine, a live-spindle *a*, mounted upon the frame A through the medium of the journal-bearings B, in combination with the spindle *d'*, the shaft C', the shaft *d*, connected by the arm *d'* with the shaft C', mounted on the frame A, having a lateral motion to and fro, the shaft *d*^{3}, mounted, as in the journal-bearing B, below the spindle *a*, the stripper A, connected with the shaft *d*^{3}, the trigger *t*, the catch *t'*, the cam *h*, and springs *d*^{3} *a*^{6}, in the manner and for the purpose substantially as hereinbefore set forth and described.

4. A ferrule-skimming machine having a live-spindle *a*, upon which the ferrule is adapted to fit, in combination with a dead-spindle for holding the ferrule on the live-spindle during the skimming operation and adjustable to release it when desired, a stripper A, adjusted back of the ferrule and adapted to throw it off the spindle *a* when the dead-spindle is released, the stripper A being operated by the same movement or motion which withdraws the dead-spindle, and an automatic trigger device by which the stripper is released from its connection with the dead-spindle and returned after forcing off the ferrule by means of a spring to its normal position, while the dead-spindle may remain open to receive the next ferrule, in the manner and for the purpose substantially as hereinbefore set forth and described.

412,345. FRAME FOR SECONDARY-BATTERY PLATES. WALTER F. SMITH, Philadelphia, Pa., assignor to the United Electric Improvement Company, Gloucester City, N. J. Filed Apr. 2, 1889. Serial No. 305,787. (No model.)

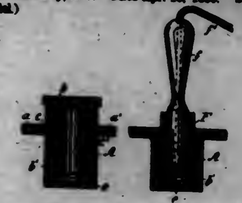


Claim.—1. The herein-described supporting-frame for a battery plate or element, provided with an auxiliary loop, substantially as and for the purposes set forth.

2. The herein-described supporting-frame, provided with a lug and partition-walls between and around plates composed of the salts or chlorides of a metal or metals to form an electrode, and said frame having a loop secured thereto, substantially as and for the purposes set forth.

3. The herein-described frame, supporting in position a series of plates to form an electrode, and provided with a permanent lug and an auxiliary loop or extension, substantially as and for the purposes set forth.

412,346. CONDUCTOR FOR BATTERIES. WALTER F. SMITH, Philadelphia, Pa., assignor to the United Electric Improvement Company, Gloucester City, N. J. Filed Apr. 12, 1889. Serial No. 307,703. (No model.)



Claim.—1. The herein-described device for connecting electric batteries, consisting of a vertically-divided male thimble having lateral strips attached to each half thereof, a female thimble, and a cap fitted to the ends of said male thimble and said female thimble, adapted to receive a material for preventing interruption of the current through the same, substantially as and for the purpose set forth.

2. The herein-described device for connecting electric batteries, consisting of a male thimble having strips attached thereto, a female thimble, gasket interposed between said female thimble and strips, and said thimble adapted to receive and hold mercury, substantially as and for the purposes set forth.

3. The herein-described device for connecting electric batteries, consisting of a male thimble having lateral strips and with a female thimble secured thereto, and a plug mounted in said male thimble with a conductor, substantially as and for the purposes set forth.

4. The herein-described device for connecting electric batteries, consisting of a male thimble having secured thereto a cup capable of containing mercury or other material, a gasket interposed between said cup and lateral strips formed integral with said male thimble, and a plug having a flexible conductor, substantially as and for the purposes set forth.

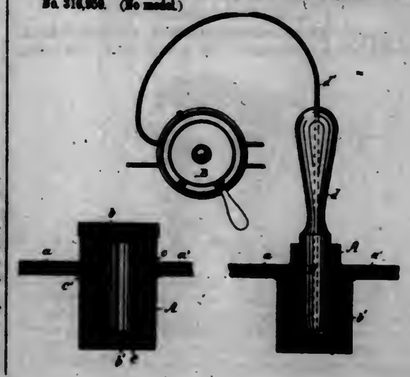
5. The herein-described device for connecting electric batteries, consisting of a divided male thimble having a tapering lower portion and lateral strips or ribbons, a female thimble fitting snugly onto said male thimble, and a plug connected with said male thimble having a flexible conductor, substantially as and for the purposes set forth.

6. The combination of two or more batteries, each composed of a series of plates or elements having lugs or terminals connected with a device consisting of a male thimble provided with lateral strips or ribbons, a cup and a cup secured to the respective ends of said thimble, and said cup adapted to receive a material for preventing the interruption of the electric current or currents through said device.

7. The combination, with two or more batteries, of a device consisting of a male thimble with strips, a cup secured to said thimble, and a plug having a flexible conductor connected with a switch-board or transmitting device, substantially as and for the purposes set forth.

8. The combination, with two or more batteries, of a device having a male thimble with lateral strips, a female thimble, a gasket or gaskets interposed between said strips and female thimble, and said female thimble arranged in connection with said male thimble to receive and hold mercury or other material, and a plug having a flexible conductor, substantially as and for the purposes set forth.

412,347. CONNECTING DEVICE FOR ELECTRIC BATTERIES. WALTER F. SMITH, Philadelphia, Pa., assignor to the United Electric Improvement Company, Gloucester City, N. J. Filed July 9, 1889. Serial No. 316,959. (No model.)

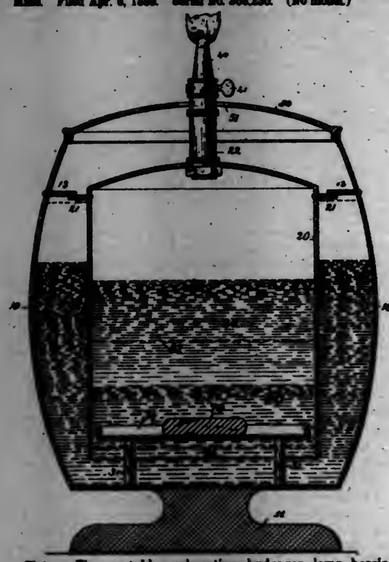


Claim.—1. The herein-described device for connecting electric batteries, consisting of a divided male thimble provided with a cap, a cap, and lateral ribbons or strips and the parts coated with a conducting material, substantially as and for the purposes set forth.

2. The herein-described device for connecting electric batteries, consisting of a divided male thimble with lateral ribbons or strips, a female thimble fitted thereto and adapted to contain mercury or other material, and said parts coated by electrolysis with nickel or other material, substantially as and for the purposes set forth.

3. The herein-described device for connecting electric batteries, consisting of a divided male thimble with strips or ribbons, a female thimble secured thereto, a gasket interposed between the strips or ribbons and the female thimble, and the parts of the device coated with a conducting material, and a plug with a flexible conductor mounted in said male thimble, substantially as and for the purposes set forth.

412,848. CARBURETING-LAMP. JAMES W. TALLMADGE, Boston, Mass. Filed Apr. 6, 1889. Serial No. 306,220. (No model.)



Claim.—The portable carbureting hydrogen lamp herein described, consisting of the portable lamp-body 10, provided with inwardly-projecting lugs 13, a supporting-stand 11 at its bottom, and a removable cover 50 at its top, said cover having a central aperture 51, the pan 30, supported on lugs 31 within said body, the gas-holder 20 also within said body and inclosing said pan, said gas-holder being provided with outwardly-projecting lugs for engaging the lugs of said body, and the pillar-cock burner 40, detachably secured to the top of said gas-holder and extending loosely through the central aperture of said cover, substantially as set forth.

412,849. DYNAMO-ELECTRIC MACHINE. CHARLES F. WIESLER, Hoosick Falls, N. Y. Filed Jan. 26, 1889. Serial No. 297,661. (No model.)



Claim.—1. An armature for dynamos or motors, consisting of coils or convolutions of flat plates, strips, bars, or ribbons of iron, in combination with a core for supporting the same, formed of wood or other non-conducting material upon which said conductors are wound.

2. In a dynamo or motor, an armature provided with a core of wood or other non-electro-magnetic material, in combination with a conductor wound thereupon, consisting of a continuous flat strip of iron having secured to one of its sides a flat strip of insulating material, the said conductor being wound on edge, substantially as and for the purpose described.

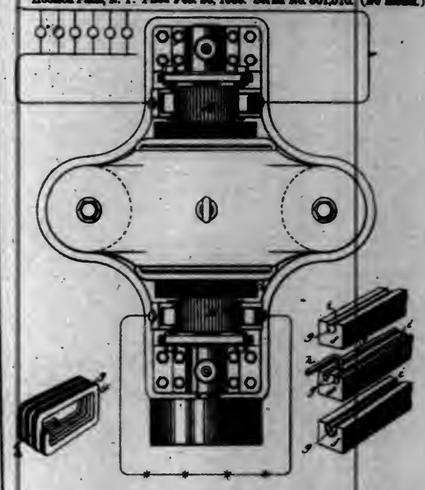
412,850. COMMUTATOR. CHARLES F. WIESLER, Hoosick Falls, N. Y. Filed Jan. 26, 1889. Serial No. 297,662. (No model.)



Claim.—1. A commutator formed by joining the extended ends of the coils on the armature in couples, and re-enforcing said ends by attaching thereto a block of metal, a segment of insulation being placed between the adjoining re-enforced ends, substantially as described.

2. The combination, with an armature, of a commutator formed of the joined extended ends of the coils of the armature, said ends being re-enforced by metal blocks secured thereto by means of pins, substantially as described.

412,851. DYNAMO-ELECTRIC MACHINE. CHARLES F. WIESLER, Hoosick Falls, N. Y. Filed Feb. 23, 1889. Serial No. 301,510. (No model.)



Claim.—1. An armature wound with two separate conductors, one embedded within the other, substantially in the manner set forth.

2. An armature wound with two separate conductors, one embedded within the other, one being of comparatively large cross-section and having grooves formed in it, the other being embedded in said grooves.

3. An armature having wound upon it the conductors of two separate circuits, one of said conductors having a rectangular cross-section and having its outer face grooved to receive the conductors of the other circuit.

412,852. DYNAMO-ELECTRIC MACHINE. CHARLES F. WIESLER, Hoosick Falls, N. Y. Filed Apr. 23, 1889. Serial No. 308,302. (No model.)

Claim.—1. In a dynamo or motor, a field-magnet made up of a series of spools arranged concentrically, one outside of the other, each spool being wound with a layer of insulated wire, the spools being rigidly secured together, in combination with pole-pieces secured against the flanges at each end of the magnet, and a bolt extending through the hollow core and securing the parts of the magnet and the pole-pieces together.

2. In a dynamo or motor, a field-magnet made up of a number of concentrically-arranged iron sleeves or spools, each spool carrying a layer of insulated wire, an air-space being left around each spool, and lateral openings or perforations in the sleeves to allow access of the air in said spaces to the adjacent winding of wire.



3. In a dynamo or motor, a field-magnet made up of a series of spools arranged concentrically one outside of the other, each spool being wound with a spool of insulated wire, the spools being all rigidly secured together by means of pins passing radially through the flanges of the spools, in combination with pole-pieces secured against the flanges at each end of the magnet.

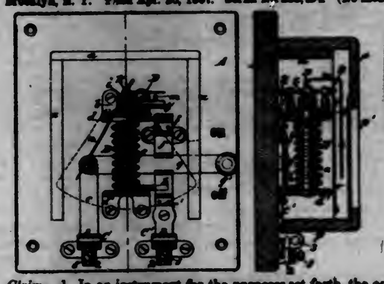
412,853. DYNAMO-ELECTRIC MACHINE OR MOTOR. CHARLES F. WIESLER, Hoosick Falls, N. Y. Filed May 20, 1889. Serial No. 311,483. (No model.)



Claim.—1. In an electric motor or dynamo, the field-magnets formed of insulated spiral conductors arranged between the layers of a volute magnetizable metal, the heads of the roll or volute being grooved or scored radially and the inner ends of the conductors occupying said grooves, as set forth.

2. In an electric motor or dynamo, field-magnets formed of a layer of separate conductors woven together by cross-threads in the manner described and a layer of iron placed together and wound spirally upon themselves.

412,854. ELECTRIC-CURRENT INDICATOR. JAMES J. WOOD, Brooklyn, N. Y. Filed Apr. 20, 1887. Serial No. 235,454. (No model.)



Claim.—1. In an instrument for the purpose set forth, the combination, with a magnet, of a pivoted repellent armature having both pivoted and free ends in proximity to the same pole of the magnet, but with the pivoted end in a stronger magnetic field than the free end, substantially as set forth.

2. In an instrument for the purpose set forth, the combination, with a magnet, of a pivoted repellent armature having both pivoted and free ends in proximity to the same pole of the magnet, but with the pivoted end in a stronger magnetic field than the free end, and a stop for limiting the movement of the free end of the armature toward the magnet, adapted to prevent the movement thereof so close to the magnet as to cause it to be attracted thereto, substantially as set forth.

3. In an instrument for the purpose set forth, the combination, with a magnet having a polar prolongation or branch of diminished mass extended outside of the most intense field, of a pivoted repellent armature arranged with its pivoted end in proximity to the pole of the magnet and in the concentrated field thereof, and with its free end in proximity to said polar prolongation and in a weaker field, substantially as set forth.

4. In an instrument substantially such as set forth, the combination, with a magnet, of a pivoted repellent armature having both pivoted and free ends in proximity to the same pole of the magnet, but made most massive at the pivoted end and diminished toward the free end, and arranged with its pivoted end in a stronger magnetic field than the free end, whereby repulsion at the free end is insured, substantially as herein set forth.

5. In an instrument substantially such as set forth, the combination, with an electro-magnet, of a repellent armature D, pivoted near the pole thereof, a polar prolongation extending under the free end of the armature, and a non-magnetic stop between the free end of the armature and the prolongation, substantially as shown and described.

6. In an instrument for the purpose set forth, the combination, with a magnet, of a pivoted repellent armature, an index connected to and deriving motion from the armature, a scale traversed by said index and so arranged that when the armature is in equilibrium and is not repelled the index stands at zero, and a stop for limiting the movement of the free end of the armature toward the magnet, arranged to stop the armature at a point between its position of equilibrium and a position in which the free end of the armature would be attracted by the magnet, whereby the armature is movable between its zero position and said stop for test purposes, substantially as set forth.

7. In an instrument for the purpose set forth, the combination, with a magnet, of a pivoted repellent armature, an index connected to and deriving motion from the armature, a scale traversed by said index and so arranged that when the armature is in equilibrium and is not repelled the index stands at zero, and said scale marked with a test-point, such as T, beyond the zero, and a stop for limiting the movement of the free end of the armature toward the magnet, arranged to stop the armature with the index at the test-point, substantially as set forth.

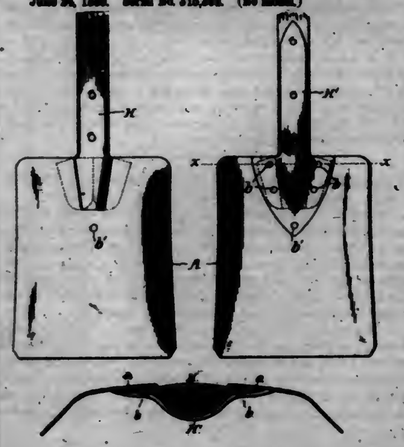
8. In an instrument substantially such as set forth, the combination, with an electro-magnet, of a pivoted repellent armature made in two or more longitudinal bifurcations or divisions, substantially as shown and described.

9. An astatic electro-magnetic testing-instrument consisting of a magnet having two active poles of opposite kinds, with two armatures, both pivoted on the same axis, and arranged, respectively, over the respective poles of the magnet, with the opposite free ends of said armatures adjacent to a portion or prolongation of the same poles, an index extending from said armatures or their axis, and a graduated scale over which the same moves, substantially as and for the purpose set forth.

10. In an instrument such as set forth, the combination, with an electro-magnet, of a pole-piece thereon having a curved concave face and a pivoted repellent armature pivoted concentric to said curve, with its free end adjacent to a portion or prolongation of the same pole, substantially as and for the purpose set forth.

11. In an electric testing-instrument such as set forth, the combination, with the electro-magnet, the pivoted repellent armature, and a stop, such as *m*, of an index-point extending from the armature on its axis and a fixed scale *o*, having a test-point, such as T, beyond the zero of the scale, with which the index registers when the armature is in contact with the stop, substantially as and for the purpose set forth.

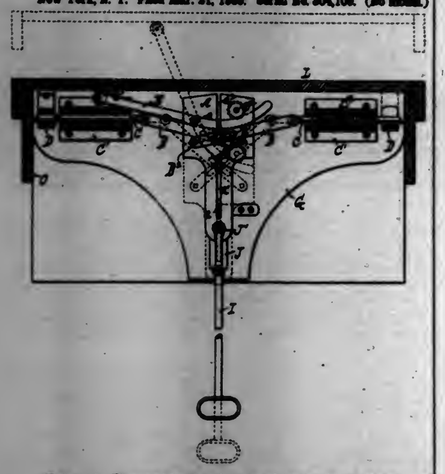
412,855. SHOVEL OR SPADE. CHARLES W. WEBER, Philadelphia, Pa., assignor of one-half to Richard P. Wright, same place. Filed June 24, 1889. Serial No. 315,202. (No model.)



Claim.—1. In a shovel or spade, the flanges *a*, the back strap H, and the front strap H', secured together by riveting or otherwise, in the manner and for the purpose substantially as hereinbefore set forth and described.

2. In a shovel or spade, a blade having flanges *a* bent forward and down against the face of the blade, and having back and front handle-straps secured to the said flanges by riveting or otherwise, substantially as hereinbefore set forth and described.

412,856. SCUTTLE-LOCK. JOSEPH ERRAS and WILLIAM R. STEIN, New York, N. Y. Filed Mar. 21, 1889. Serial No. 304,109. (No model.)



Claim.—1. The combination, in a scuttle safety-lock consisting of the combination of the metal plate G, having attached thereto the draw-plate A, said draw-plate being provided with the slots a' a^2 and the roller c^2, of the bolt-bars B B, having slots B' and connecting the draw-plate A with the spring-bolts C, said spring-bolts having the spring C^2 and casing c', the lever E, having the roller c' at an end and the pivot *e* near the curved end, the guide-stud *a*, the wedge-stop, and the rod I, all substantially arranged as shown and described.

2. The combination, in a scuttle safety-lock consisting of the combination of the metal plate G, having attached thereto the draw-plate A, said draw-plate being provided with the slots a' a^2 and the roller c^2, of the bolt-bars B B, having the slots B' and connecting the draw-plate A with the spring-bolts C, said spring-bolts having the spring C^2 and casing c', the lever E, having the roller c' at an end and the pivot *e* near the curved end, the guide-stud *a*, the wedge-stop, and the rod I, with the scuttle-lid L, having the staples D D, and the spring F, substantially as described and set forth.

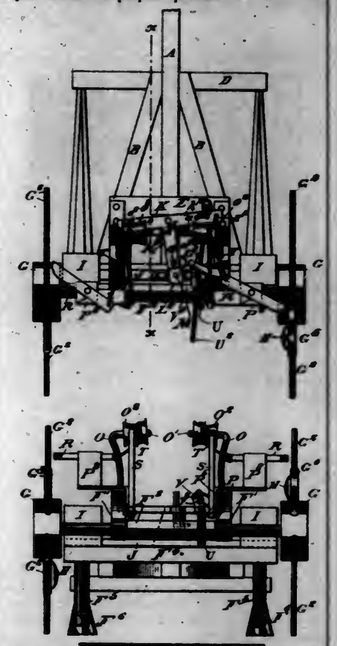
3. In a scuttle safety-lock, the combination of the draw-plate A, having the slots a' a^2, the bolt-bars B B, spring-bolts C C, the stud *a*, the rod I, the roller c^2, and pivoted lever E, having curved end, with the hinged lid L, provided with the staples D, all arranged substantially as described, and for the purpose set forth.

4. In a scuttle safety-lock, the combination of the draw-plate A, having pivoted thereto the slotted bars B B, said bars operating spring-bolts C C, guide-stud *a*, operating in the slot a', and the pin B^2, connecting the bars B B and operating in the slots a^2 and B' B', with the rod I, with the hinged lid L, having the staples D D, and spring F, substantially as described and set forth.

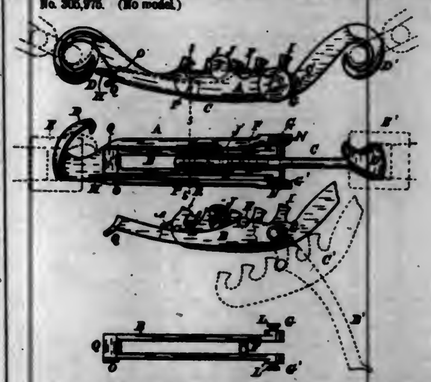
412,857. CHECK-ROW PLANTER. GEORGE AMES, Ottleyville, Kans. Filed Mar. 26, 1888. Serial No. 268,197. (No model.)

Claim.—1. The combination, with the main frame, the runners, the seed-boxes, and the reciprocating slide, of the walking-wheels provided with marking-spokes and with operating-spokes having projections upon their inner sides, the lever R, pivoted to the rear of the seed-boxes, one upon each side of the machine, the pivoted vertical levers S, and the ropes connecting the upper ends of the levers S with the inner ends of the levers R, substantially as described.

2. The combination, with the main-frame runners, walking-wheels, seed-boxes, and slide, of the T-shaped horizontal lever pivoted to the frame and having one of its arms adjustably connected with the slide, and the pivoted lever R, the levers S, drums C^2, and the ropes T, connected to the levers S, wound on the drums and connected to the lever R, interposed between the wheels and the other arms of the lever, whereby the slide is reciprocated by the movement of the lever, substantially as and for the purpose specified.



412,858. HAME-FASTENER. JAMES S. BAKER, Rochester, N. Y., assignor to Stewart & Baker, same place. Filed Apr. 4, 1889. Serial No. 305,975. (No model.)



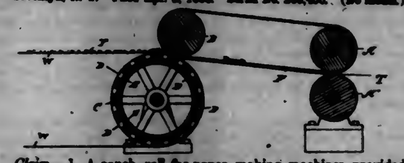
Claim.—1. The combination, with the slotted body A, having hook D, of the toothed strap C, provided with hook D', the slotted lever B, pivoted in the ends of the slotted body and provided with pin F, and the retaining-spring H, adapted to retain the lever in the locked position, substantially as described.

2. The combination, with the slotted body A, having hook D and provided with cross-bar J, of the toothed strap C, provided with hook D', the slotted lever B, pivoted in the ends of the slotted body and provided with the pin F, and the spring H, by which the lever is secured to the body, substantially as described.

3. The combination, with the slotted body A, having hook D and provided with cross-bar J, of the toothed strap C, having hook D', the slotted lever B, pivoted in the ends of the slotted body and provided with pin F, the said cross-bar being adapted to engage with one of the teeth of the strap to prevent its disengagement from the pin of the slotted lever, substantially as and for the purposes set forth.

4. The combination, with the slotted body A, having hook D, of the toothed strap C, provided with hook D', and the slotted lever B', pivoted in the ends of the body on the pins G G', having collars L L' on their extremities, substantially as described.

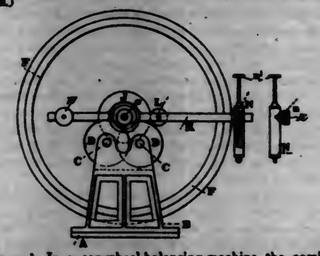
412,859. COUCH-ROLL FOR PAPER-MAKING MACHINES. JAMES BOYER, Whippany, N. J., assignor of one-half to George W. Thompson, Brooklyn, N. Y. Filed Apr. 2, 1888. Serial No. 269,402. (No model.)



Claim.—1. A couch-roll for paper-making machines, provided with longitudinal grooves or depressions in its surface, running in planes parallel to the axis of the roll, substantially as described, and for the purposes set forth.

2. A couch-roll for paper-making machines, provided with longitudinal grooves or depressions in its surface, and having therein holes or apertures, substantially as described, and for the purposes set forth.

412,860. CAR-WHEEL-BALANCING MACHINE. WILLIAM P. BARCLAY, Chicago, Ill. Filed Sept. 24, 1888. Serial No. 286,181. (No model.)



Claim.—1. In a car-wheel-balancing machine, the combination of the standards B, each having a pair of pivotal wheels D, situated so that their peripheries form a revolving bearing to the journals *e*, a mandrel E, and a tapered sleeve G, adapted to the central inclined part of mandrel E, substantially as shown and described.

2. In a car-wheel-balancing machine, a mandrel E and friction-wheel J, combined with movable lever K, supporting a pivotal eccentric friction-wheel L, with spring *l*, adjusted to hold friction-wheel L in contact with friction-wheel J, substantially as shown and described.

3. In a car-wheel-balancing machine, the combination of the journals *e*, a mandrel E, a lever K, and a spring-balance N, for indicating the resistance or pressure required to move said mandrel in a curvilinear direction when suspended from its journals *e*, substantially as shown and described.

4. In a car-wheel-balancing machine, the combination of a mandrel E, perforated with oblong holes *d'*, having projecting cotter *i*, the circular ring H, adjustable screws A, taking over mandrel E, and the screw-bolts S S, taking into ends of mandrel to actuate the ring H through the cotter *i*, so that sleeve G can be removed or forced up the central inclined part of mandrel, substantially as shown and described.

5. In a car-wheel-balancing machine, the combination of a mandrel E and divided sleeve G with circular plate *g*, attached by bolts *g'*, and the rubber rings *r*, encircling sleeve G, whereby expansion and contraction of said sleeve are permitted with reference to mandrel, substantially as shown and described.

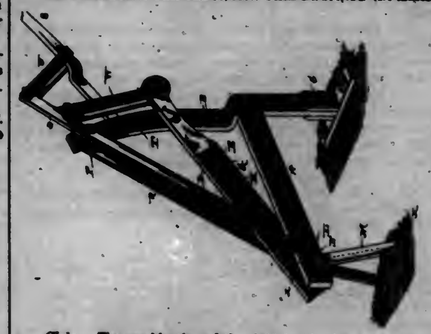
6. In a car-wheel-balancing machine, the combination of the standards B, provided with pivotal wheels D, the mandrel E, bearing upon and revolving from peripheries of wheels D, and the sleeve G, taking onto mandrel E, so that a car-wheel can be suspended from its bore and revolved with the mandrel E, suspended from the peripheries of carrying-wheels D, substantially as shown and described.

412,861. CEILING-BLOCK FOR INCANDESCENT LIGHTS. ALFRED BRESSANI, New York, N. Y. Filed June 2, 1888. Serial No. 275,951. (No model.)

Claim.—In an electric cut-out, the combination, with a base-piece having a central recess and binding-posts and a cover adapted to close said recess, of contact-closers comprising resilient strips having connection with the binding-posts and having their ends extended away from the wall of the recess and provided with notches, retaining portions for the cover integral with the circuit-closers extending outwardly adjacent to the wall of the recess at approximate right angles to the circuit-closers, and having hook ends adapted to extend over the outer surface of the cover, substantially as specified.

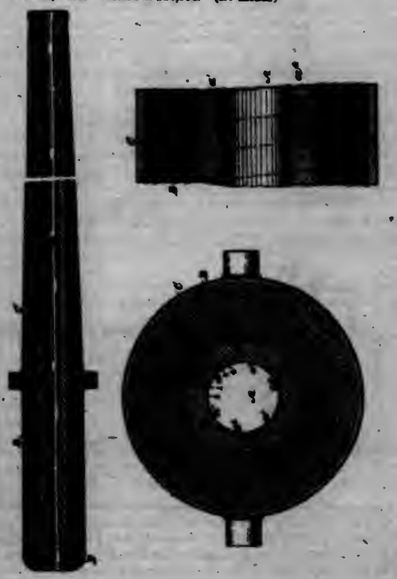


412,862. SHEARS FOR CUTTING METAL. JAMES M. BROWN, New Market, Iowa. Filed Jan. 16, 1889. Serial No. 296,734. (No model.)



Claim.—The combination of the rigid jaw having the standard B formed integral with one end, the movable jaw pivoted to the rigid jaw, the braces R, extending from the standard to the pivot of the movable jaw, the link-lever O, pivoted to the standard, the operating-lever pivoted to the standard below the lever O, the links U, connecting the lever O with the operating-lever, and the links W, connecting the lever O with the movable jaw, as set forth.

412,863. ORDNANCE. JOHN H. BROWN, New York, N. Y. Filed Feb. 14, 1887. Serial No. 227,551. (No model.)



Claim.—1. A gun having its core formed in longitudinal sections, and its body formed of wire wound around the said longitudinal sections, substantially as set forth.

2. A gun having a core formed of longitudinal sections, a body portion formed of wire wound around the said core-sections, and an exterior jacket to protect the wire, substantially as set forth.

3. A piece of ordnance having a core-section composed of sections fitted together laterally, and a wire or ribbon wound around the same and externally screw-threaded or spirally ribbed, substantially as specified.

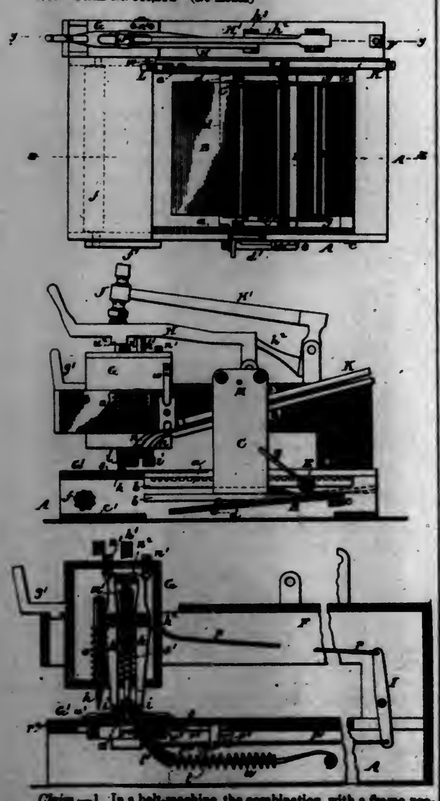
4. A piece of ordnance having a core-section composed of sections fitted together laterally and screw-threaded circumferentially, and a wire or ribbon screw-threaded or spirally ribbed and wound around the same, substantially as specified.

5. A piece of ordnance having a core-section composed of sections fitted together laterally, and several coils of wire or ribbon which is screw-threaded or ribbed upon contiguous surfaces, said coils of wire or ribbon being so disposed as to break joints, substantially as specified.

6. A piece of ordnance having a core-section composed of sections fitted together laterally, a screw-threaded wire or ribbon wound around the same, and an external screw-threaded outer shell engaging with the said wire or ribbon, substantially as specified.

7. A piece of ordnance having a core-section composed of sections fitted together laterally and screw-threaded circumferentially, a wire or ribbon wound around said inner part and screw-threaded or spirally ribbed, and an outer shell engaging with the screw-thread or rib of the wire or ribbon, substantially as specified.

412,864. BELTING-MACHINE. JOSEPH H. BROWN, Farwell, Mich., assignor of one-half to Frank H. Presley, same place. Filed July 1, 1889. Serial No. 316,214. (No model.)



Claim.—1. In a belt-machine, the combination, with a frame provided with horizontal guides, of a movable frame provided with a cutting-blade D, a pivoted table B, and means for adjusting said table in inclination, substantially as and for the purposes described.

2. The combination, with a supporting-frame, of the sliding frame provided with the blade D, the pivoted table B, the roller R, connected with said sliding frame, and a cam-shaft by which said table is adjustable in inclination, and operating mechanism, substantially as set forth and described.

3. The combination, with a supporting-frame, of a movable head-block, two punches loosely mounted in said head-block and provided with springs, a cross-form mounted in said head-block and provided with a spring, two pivoted arms which are carried by said cross-form and are provided at their upper ends with a spring and at their lower ends with jaws adapted for holding a rivet, and a punch-block located under the head-block and provided with an opening for a punch and another opening for rivets, substantially as and for the purposes described.

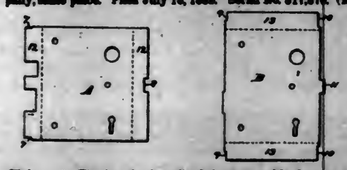
4. The combination, with the head-block G, of two punches *h h'*, which are loosely mounted therein and are provided with springs, a cross-form *m*, mounted within the head-block and provided with a spring, two arms *k*, which are pivoted to the cross-form and beveled at their upper extremities, which are provided with a spring, the lower extremities of said arms being provided with jaws *i*, which are adapted to hold a rivet, screws *n n'*, in position above said arms *k*, and a punch-block provided with apertures for the punch A and for rivets, substantially as set forth and described.

5. The combination, with a movable head-block, of a cross-form which is mounted therein and is provided with a spring, two arms pivoted to said cross-form and provided at their lower ends with jaws which are adapted for holding a rivet, two screws in position for contact with said pivoted arms at their upper extremities, which are provided with a spring, a punch-block provided with a slot *z*, an aperture *v'*, and a covering-plate *s*, a slide which is adapted to move in said punch-block and is connected by a rod *p'* with a pivoted lever I, which is connected by a rod with the head-block, a tool located under the slot *z* in position for contact with the end of a rivet when the latter is driven, said tool being loosely connected by a rod with said rod *p'* and actuated by the movement of *p'*, and a barr-holding rod *t*, fixed in position in said punch-block and provided with a spring, the free end of said rod being turned up to the aperture *v'*, substantially as set forth and described.

6. A movable punch-block provided with a stamping-punch which is mounted therein, in combination with a cross-form provided with a spring, two arms pivoted to said cross-form and provided at their lower ends with jaws which are adapted to hold a rivet, and two curved guides extending from said jaws, an inclined way adapted to hold rivets and conduct them to said curved guides, a tongue which is rigidly attached to the head-block, and a pivoted notched block in position to be engaged by said tongue and to pass the rivets severally from said inclined way to said curved guides, substantially as and for the purposes described.

7. The combination, with the movable head-block provided with one or more punches, of the pivoted arm H, provided with a contact-surface, a pivoted arm H', provided with a hammer, and a hook *h''*, which is pivoted to the arm H' and is adapted to connect with arm H, substantially as set forth and described.

412,865. SHEET-METAL LOCK-CASE. CHARLES M. BURROWS, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed July 16, 1888. Serial No. 317,870. (No model.)

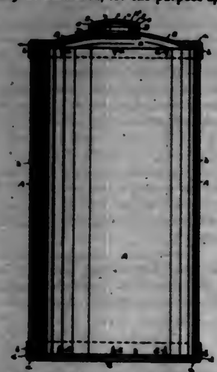


Claim.—1. The herein-described sheet-metal lock-case, consisting of two plates, each provided with flanges on two opposite side edges and fitted together, with the said flanges of each plate covering the edge of the case at the unflanged edges of the companion plate, substantially as described, and for the purpose specified.

2. The herein-described sheet-metal lock-case, consisting of two plates, each provided with flanges on two opposite side edges and fitted together, with the said flanges of each plate covering the edge of the case at the unflanged edges of the companion plate, the corners of the case being notched at the ends of said flanges, with the ends of the interlocking flanges received in said notches and forming rabbets, substantially as described, and for the purpose specified.

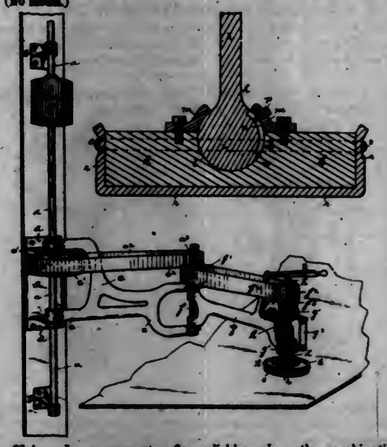
412,866. BOTTLE FOR LIQUID BLUING. JONATHAN C. CHAMBERLAIN, Chelsea, Mass., assignor to the Smyrar Crystal Blue Company, Saco, Me. Filed July 14, 1888. Serial No. 280,127. (No model.)

Claim.—1. A bottle or package for liquid bluing, &c., composed of a body A, made of paper-board, having notches *d* at its ends, heads B C, made of sheet metal and each having a groove *c*, to receive the ends, and a flange *b*, to surround the outside of the body, and a lining A, of resinous or other bituminous cement, filling said notches *d* and grooves *c*, substantially as described, for the purpose specified.



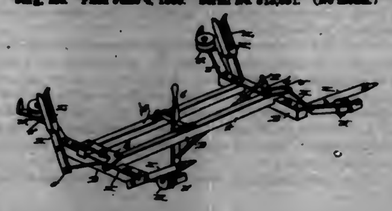
2. A bottle or package for liquid bluing, &c., having a discharge-tube D, in combination with a flange or ring *g*, separate from and inserted in and tightly fitting said tube, a layer *f* of paper cemented to said flange and closing said tube, and a perforated cap E, fitting over said tube and seated on said paper layer *f*, substantially as described, for the purposes specified.

412,867. APPARATUS FOR POLISHING PLATE-GLASS. AMASA F. CHAMBERS, Allegheny, Pa. Filed May 20, 1889. Serial No. 311,397. (No model.)



Claim.—In an apparatus for polishing glass, the combination, with an adjustable frame formed of hinged arms extending out from a bracket or support, and having a power-driven shaft at the forward end, of a polishing-disk mounted at the base of the shaft by a ball-and-socket joint having a feather-and-groove connection, substantially as and for the purposes set forth.

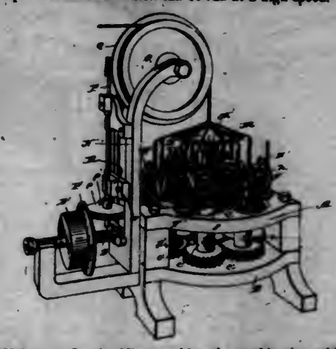
412,868. CHECK-ROW CORN-PLANTER. EDWARD CREEK, Strasburg, Ills. Filed June 4, 1888. Serial No. 313,091. (No model.)



Claim.—As an improvement in check-row corn-planters, the combination of the frame, the horizontal angle-levers G, pivoted thereon, the oscillating levers H I, the pitmen connecting the oscillating levers with the angle-levers, the lever C, mounted on the frame, and the pitmen pivoted at one end to said lever C, and provided at its free end with a T-head F, adapted to engage a perforation in either one of the angle-levers G, as specified.

412,869. BRAIDING-MACHINE. DANIEL DRAWBAUGH, Shanty's Mills, Pa., assignor of two-thirds to John A. Herman, Harrisburg, Pa., and Marcus Marx, Brooklyn, N. Y. Filed Apr. 27, 1889. Serial No. 308,722. (No model.)

Brief.—The object of the invention is to provide a compact and easily-operated machine which can be run at a high speed.



Claim.—1. In a braiding-machine, the combination, with the bed-plate and series of rotating disks working therein, having their upper faces flush with the faces of the bed-plate and the notches in their edges, of the series of spool-carriers having the extended bases resting on said bed-plate and disks and having the downward projection entering said notches, and the latches for guiding said carriers from one disk to the other, substantially as described.

2. In a braiding-machine, the combination, with the bed-plate, the series of rotating disks therein, having their upper and lower faces flush with the faces of the bed-plate, with notches in the edges of such disks, and the pivoted latches within the bed-plate, of the spool-carriers having the extended bases resting on said bed-plate, with the downward projections entering the notches and engaging the latches, and the nuts on the lower ends of said projections working against the lower face of the bed-plate and disks, substantially as described.

3. In a braiding-machine, the combination, with the bed-plate having the series of arc-shaped recesses and the series of circular apertures in the same, and the series of rotary disks in said apertures, and the spool-carriers moved by said disks, of the series of latches pivoted in said recesses, having the arc-shaped rear ends, substantially as and for the purpose set forth.

4. In a braiding-machine, the combination, with the bed-plate A, plate B, and series of rotary disks in plate A, with the upper and lower surfaces flush with surfaces of said plate, of the shafts on which said disks are mounted, journaled in plate B and having the intermeshing gear-wheels thereon, and the spool-carriers moved by said disks, and the latches E within the plate A, substantially as described.

5. In a braiding-machine, the combination, with the spool-carriers and means for moving them, substantially as described, of the enlarged vertically-adjustable central disk over which the braid is formed, as set forth.

6. In a braiding-machine, the combination, with the spool-carriers and means for moving them, substantially as described, of the vertically-adjustable central disk and the removable former at the center over which the braid is formed, substantially as described.

7. In a braiding-machine, the combination, with the spool-carriers and means for moving them, substantially as described, of the vertically-adjustable central disk and removable former at the center having an aperture through the same for the passage of a core, as and for the purpose set forth.

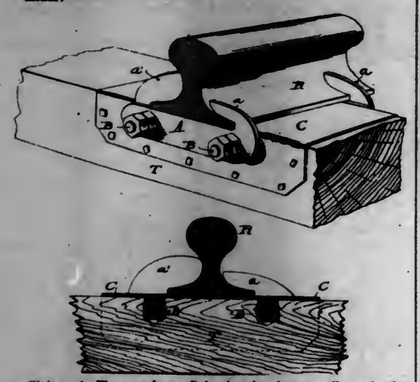
8. In a braiding-machine, the combination, with the drum over which the braid passes, having the gear-teeth thereon, of the gear engaging said teeth, the shaft in which said gear is mounted, the wheel adjustably mounted on said shaft, and the disk on the drive-shaft with which said wheel engages, substantially as described.

9. In a braiding-machine, the combination, with the drum over which the braid passes, having the gear-teeth thereon, of the worm-gear engaging said teeth, the worm-shaft, the wheel adjustably mounted on said shaft, the disk on the drive-shaft with which said wheel en-

gages, and the adjustable bearing for the worm-shaft for pressing said wheel and disk together, substantially as described.

10. In a braiding-machine, the combination, with the carrying mechanism, of a spool-carrier having the extended plate with the downward projection and nut, the spool-spindle, thread-guide, and spring, with the outwardly-turned upper end at the top, substantially as described.

412,370. **FASTENING FOR RAILROAD-RAILS.** WILLIAM R. DURRINE, Geneva, N. Y. Filed Feb. 20, 1889. Serial No. 300,559. (No model.)

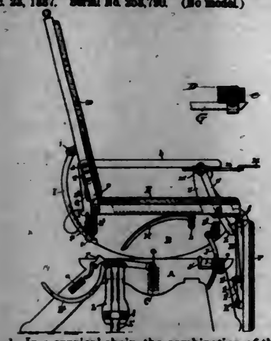


Claim.—1. The metal cap C, having its downwardly-projecting flanges provided with holes for securing the cap to the tie by means of spikes, and also with holes for the reception of the bolts B to secure the hooks A to the cap, substantially as shown and described.

2. In combination with the tie T, having the metal cap C secured thereon, the hook or hooks A, and bolts B, arranged to hold the rail R, substantially as shown and described.

3. The tie T, having notches cut in its upper edge, in combination with the metal cap C and bolts B, the parts being arranged as shown, whereby the bolts are kept from contact with the tie, substantially as and for the purpose set forth.

412,371. **SURGICAL CHAIR.** HENRY H. RIEBER, Indianapolis, Ind. Filed Dec. 22, 1887. Serial No. 258,780. (No model.)



Claim.—1. In a surgical chair, the combination of the platform, the rocking frame and spring-coupling connecting the two, the back, seat, and leg sections hinged together, the pivots securing the back-section to the rear of the rocking frame, the pivoted links connecting the seat section to the front of said frame, the pivoted segment I, its guide and locking-lever, for securing the back and seat sections in the desired position, and the pivoted segment J, with its guide and locking-lever, to lock the platform and rocker, substantially as shown and described.

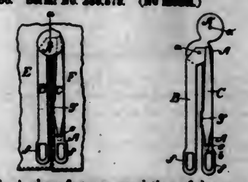
2. The combination, in a surgical chair, of the supporting-frame, the adjustable back and seat sections pivotally secured in said frame, with the elevating device for one side of the chair, consisting of the plate L, its sliding prop L', the lever L^2, and dogging-lever l', substantially as hereinbefore set forth.

3. The combination, substantially as hereinbefore set forth, of the supporting-frame, the back-section pivotally secured in said frame, the seat-section, and links c, for hinging the said sections together, the links c' for swinging the front end of the seat-section to the supporting-frame, locking-bolts for holding the links c parallel with the back-section, and the arm H and rock-shaft h, to elevate and gradually lower the seat-section independent of the back-section, for the purpose set forth.

4. The combination, substantially as hereinbefore set forth, of the platform A, rocking frame B, and spring-connection C, with the back, seat, and leg sections hinged together, as shown, and pivotally connected to the rocking frame, the segment I, hinged to the back-section, guide-box i', secured upon the cross-stretcher b^2 of frame B, the lever I', also pivoted to said cross-stretcher, the segment J, hinged to the rocking frame, the guide-box j', secured upon the cross-stretcher of the platform, and the lever J', said parts being arranged as set forth.

5. The pivotal connections for surgical chairs, consisting of the plate d, having a pin or trunnion projecting from it, the plate d^2, for receiving said pin, and the link c, hung upon said pin between said plates, in combination with the supporting-frame and adjustable back and seat sections.

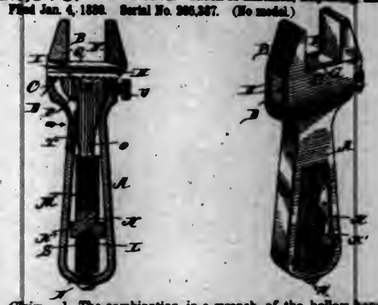
412,372. **GLOVE-FASTENER.** ARALDO M. BRIGGS, Boston, Mass., assignor to the International Fastening Company, Portland, Me. Filed Nov. 3, 1888. Serial No. 289,579. (No model.)



Claim.—1. A glove-fastener consisting of the arms A and B and a spring C, having the end b and bracing-edge g, all joined together, substantially as described.

2. A glove-fastener consisting of two pivoted arms A B, one of which A is provided with a separate spring C, partially held between the arm A and the retaining portion A', riveted thereto, and partially by being buckled to said arm A, substantially as described.

412,378. **NUT-WRENCH.** PETER R. BRENNER, Ishpeming, Mich. Filed Jan. 4, 1889. Serial No. 295,367. (No model.)



Claim.—1. The combination, in a wrench, of the hollow handle having the rigid jaw, the movable jaw having the guide-arm, and the longitudinally-movable arm O in the hollow handle, adapted to engage and lock the arm of the movable jaw and be withdrawn from such engagement and having limited lateral movement, substantially as described.

2. The combination, in a wrench, of the hollow handle having the rigid jaw B, the movable jaw F, having the guide-arm with ratchet-teeth, the thumb-nut K, arranged in the hollow handle, the arm O, secured thereto, and provided with the ratchet-teeth adapted to engage those of the movable jaw and having limited lateral movement, and the spring pressing inward on the arm O, for the purpose set forth, substantially as described.

3. The combination of the hollow handle having the rigid jaw, the movable jaw having the guide-arm with ratchet-teeth, the thumb-nut having the socket L, the arm O, screwed to the thumb-nut, and having the head provided with ratchet-teeth, for the purpose set forth, the pin or screw engaging the socket L, the spring S in said socket bearing on the said pin, the spring T, bearing against one side of the arm O, and the adjusting-screw U, engaging the opposite side of said arm, substantially as described.

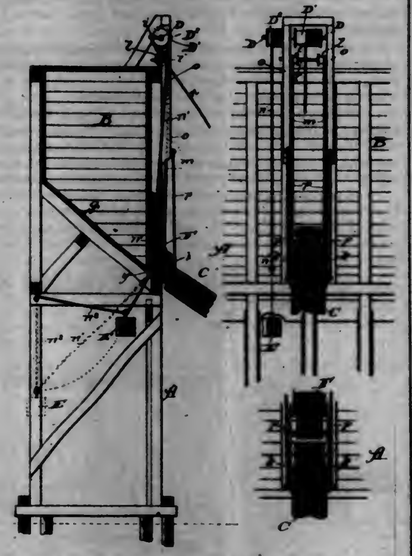
4. The combination, in a wrench, of the hollow handle having the rigid jaw B, the movable jaw F, having the guide-arm with ratchet-teeth, the thumb-nut K, arranged in the hollow handle, the arm O, secured thereto, and having the ratchet-teeth adapted to engage those of the movable jaw, said arm O being capable of vertical movement to bring said ratchet-teeth into and out of engagement with the movable jaw and having limited lateral movement, substantially as described.

5. The combination, in a wrench, of the hollow handle having the rigid jaw B, the movable jaw F, having the guide-arm with ratchet-teeth, the thumb-nut K, arranged in the hollow handle, the arm O, secured thereto and having the ratchet-teeth adapted to engage those of the movable jaw, the thumb-nut having a threaded connection with the arm O, and the adjusting-screw U, bearing against the arm O, substantially as described.

6. In a wrench, the handle having the rigid jaw B, combined with the movable jaw F, having the guide-arm O, provided with ratchet-teeth, the thumb-nut K, having threaded socket M, the arm O within the handle, and having the ratchet-teeth engaging those on the guide-arm and provided with a threaded end received in the threaded socket M, the spring bearing against the thumb-nut, and the spring bearing against the arm O, as set forth.

7. In a wrench, the handle having the rigid jaw B, combined with the movable jaw F, having guide-arm O provided with ratchet-teeth, the arm O, provided with ratchet-teeth engaging those on the arm O, and the adjusting-screw U, bearing against the arm O to move the same slightly, for the purpose set forth.

412,374. **DISCHARGE APPARATUS FOR COAL OR ORE BINS.** JOHN V. BENNER, Escanaba, Mich., assignor to the Pettibone, Mulliken & Company, Chicago, Ill. Filed May 21, 1889. Serial No. 311,097. (No model.)



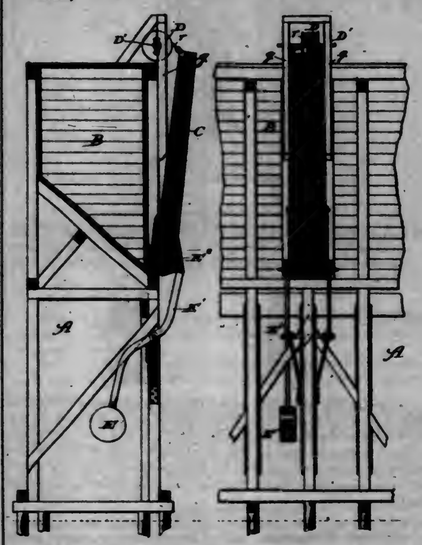
Claim.—1. In a discharge apparatus for coal and ore bins, the combination, with the chute C, pivotally supported at its inner end, crank-shaft D, supported above the pivoted end of the chute and carrying the drum D', and cable n, connecting the chute from toward its free end with the drum D', of the auxiliary drum D^2 upon the crank-shaft D, weight E behind the pivoted end of the chute, a support for the weight guiding it in a defined arc during its rise and fall, and cable n', connecting the drum D^2 with the weight E and winding upon its drum in a direction contrary to that of the cable n, substantially as described.

2. In a discharge apparatus for coal and ore bins, the combination, with the chute C, pivotally supported at its inner end, crank-shaft D, supported above the pivoted end of the chute and carrying the drum D', and cable n, connecting the chute from toward its free end with the drum D', of the auxiliary drum D^2 upon the crank-shaft D, weight E, pendulously supported behind the pivoted end of the chute, and cable n', connecting the drum D^2 with the weight E and winding upon its drum in a direction contrary to that of the cable n, substantially as described.

3. In a discharge apparatus for coal and ore bins, the combination, with the bin B, of a counterbalanced chute C, pivotally supported near its inner end on a horizontal bar m, to permit of its movement through a vertical arc, and movable on the said bar laterally through an arc, a pivotal bridge G, and means for raising and lowering the bridge, substantially as described.

4. In a discharge apparatus for coal and ore bins, the combination, with the bin B, having a discharge-opening, and a chute C, pivotally supported at the mid opening, of a door F, hinged at the discharge-opening, a rotary shaft l', supported on the bin and connected from near its free end with the door, and a hook k, secured to a stationary support, around which to pass the connecting medium between the door and shaft, substantially as and for the purpose set forth.

412,375. **DISCHARGE APPARATUS FOR COAL OR ORE BINS.** JOHN V. BENNER, Escanaba, Mich., assignor to the Pettibone, Mulliken & Company, Chicago, Ill. Filed May 21, 1889. Serial No. 311,098. (No model.)



Claim.—1. In a discharge apparatus for coal and ore bins, the combination, with the pivotal chute and means for operating it, of a counter-balance having an eccentrically-pivoted pulley E connected with the chute and raised and lowered on its pivot through an arc by the lowering and raising of the chute, substantially as and for the purpose set forth.

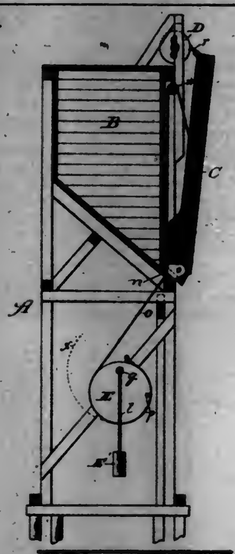
2. In a discharge apparatus for coal and ore bins, the combination, with the pivotal chute and means for operating it, of a counter-balance comprising a pulley E, eccentrically pivoted to a stationary support and provided with a leg p on its side, a cable or chain o connecting the pulley with the chute, and a weight E', suspended from a pivotal support and having its suspending medium in the path of the leg p, substantially as and for the purpose set forth.

412,376. **DISCHARGE APPARATUS FOR COAL OR ORE BINS.** JOHN V. BENNER, Escanaba, Mich., assignor to the Pettibone, Mulliken & Company, Chicago, Ill. Filed May 21, 1889. Serial No. 311,099. (No model.)

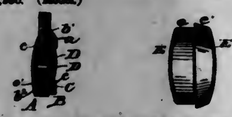
Claim.—1. In a discharge apparatus for coal and ore bins, the combination, with the pivotal chute and means for operating it, of a lever E', pivotally connected at one end with the chute and carrying a weight E below and behind the chute and fulcrumed between the weight and its pivotal connection, substantially as and for the purpose set forth.

2. In a discharge apparatus for coal and ore bins, the combination, with the pivotal chute and means for operating it, of a lever E', fulcrumed between its extremities and linked from one end to the chute and carrying at its opposite end a weight E, extending below and behind the chute, substantially as and for the purpose set forth.

412,876.

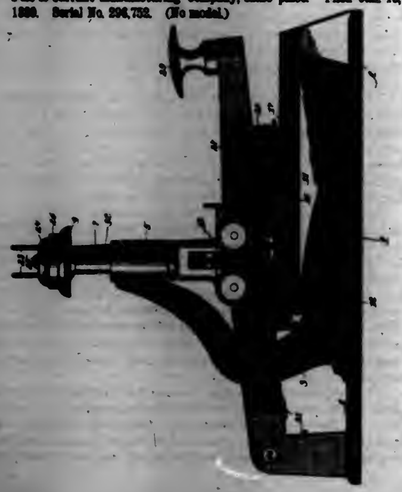


412,877. COP-HOLDER FOR SEWING-MACHINE SHUTTLES. ALBERT H. FARNSWORTH, Yonkers, N. Y., assignor, by mesne assignments, to the Willimantic Linen Company, Hartford, Conn. Filed Oct. 31, 1887. Serial No. 253,980. (Model.)



Claim.—The cop-holder herein described, consisting of heads or disks E E', to be applied on opposite sides of a cop, the head or disk E, having a substantially cylindric flange *c*, fitting on a part of the width of the cop, and the head or disk E', having a flange of lesser width, which is flared outward slightly from the periphery of the cop to permit of the passage of thread from the cop, substantially as herein set forth.

412,878. MACHINE FOR RECEIPTING BILLS AND SEVERING COUPONS THEREFROM. DORR E. FELT, Chicago, Ill., assignor to the Felt & Tarrant Manufacturing Company, same place. Filed Jan. 14, 1889. Serial No. 296,752. (No model.)



Claim.—1. The combination of two dating-stamps, a severing device consisting of a fixed cutter and a movable cutter, a lever carrying the movable cutter and adapted to simultaneously operate the the movable cutter and both of the dating-stamps, and delivery-arms, as 37 and 38, substantially as and for the purposes specified.

2. In a dating-machine, the combination of a fixed latch, as 43, secured to a moving part of the machine, pivoted delivery-arms, as 37 and 38, an arm, as 39, connected with one of the delivery-arms, and a pivoted hook, as 44, substantially as and for the purpose specified.

3. In a dating-machine, the combination of a bed A, two dating-stamps, a guide and shield, as 11, a guide, as 15, and stops 17 and 18, substantially as and for the purpose specified.

4. In a dating-stamp, the pivoted delivery-arms 37 and 38, in combination with a hook 44, latch 43, and spring 42, substantially as and for the purpose specified.

5. In a dating-machine, the combination of two stamps, a fixed knife, as 19, a movable knife, as 30, an operating-lever, one or more springs, as 31, and a guard, as 50, substantially as and for the purpose specified.

412,879. COMBINATION WALKING-CANE. WILLIAM FLAH and ANDREW G. BRANDT, Scranton, Pa. Filed May 13, 1889. Serial No. 311,302. (No model.)



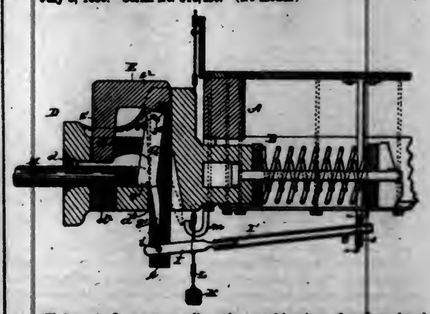
Claim.—1. A walking-stick having a ferrule provided with a fan adapted to be withdrawn from the ferrule and pushed therein, substantially as specified.

2. A walking-stick provided with a ferrule having a sliding sleeve adapted to be forced within the ferrule and carrying a fan counteracted to open when the sleeve is drawn out and to close within the same when the sleeve is pushed in, substantially as specified.

3. The herein-described walking-stick, consisting of the sections 2, pivoted, as at 3, and having at their upper ends the seat 4, secured, as at 5, and having the handle 6, adapted to receive the seat and serve as a drinking-cup, and having at their lower ends the ferrule 7, terminating in a whistle 8 and carrying the fan 10, substantially as specified.

4. A combination walking-stick consisting of the pivoted sections 2, carrying the seat 4 at the top, the hollow handle 6, in the form of a cup, to confine the seat and the upper ends of the sections, and the ferrule 7 at the bottom carrying the sliding and folding fan 10, as set forth.

412,880. CAR-COUPLING. ALEXANDER FOX, Galesburg, Ill. Filed July 5, 1889. Serial No. 316,460. (No model.)



Claim.—1. In a car-coupling, the combination of a draw-head, a coupling-pin having a shorter limb to engage with the coupling-link and a longer limb provided with a pin g^3, and a trigger having a shoulder *g* engaging with the draw-head and a slot g^2 engaging with pin g^3, substantially as described.

2. In a car-coupling, the combination of a draw-head, a coupling-pin having a shorter limb to engage with the coupling-link, and a longer limb provided with a pin g^3, and a trigger having a shoulder *g* engaging with the draw-head, a slot g^2 engaging with pin g^3, and the tail-piece or stop g', substantially as described.

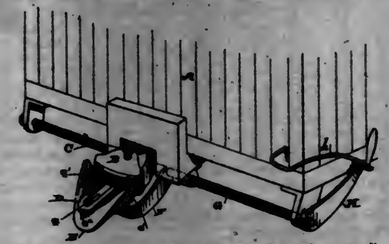
3. In a car-coupling, the combination of a draw-head, a coupling-pin having a shorter limb to engage with the coupling-link and a longer limb provided with a pin g^3, a trigger having a shoulder *g* engaging with the draw-head and a slot g^2 engaging with pin g^3, and

a lifting-bar extending across the car and adapted to raise the coupling-pin, substantially as described.

4. In a car-coupling, in combination with a draw-head and a vertically-sliding coupling-pin having limbs *c d* and a swinging catch or trigger hinged thereto, a rod I, hinged beneath the car, and a rod transversely of the car and carried by suspending-chains, substantially as and for the purpose specified.

5. In a car-coupling, in combination with a draw-head and a vertically-sliding coupling-pin having limbs *c d* and a swinging catch or trigger hinged thereto, a rod I, hinged to the coupling-pin, a hinged rod F, in which it slides endwise, and a lifting-bar extending across the car, substantially as and for the purpose specified.

412,881. LINK-ADJUSTER FOR CAR-COUPLINGS. THOMAS H. GILMAN, WILLIAM C. HUEBEL, and LEROY GILMAN, Beaver, Nev. Filed May 8, 1889. Serial No. 310,179. (No model.)

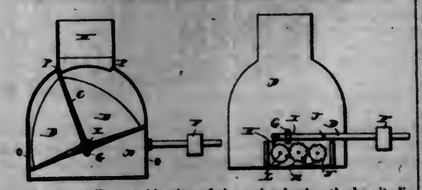


Claim.—1. An adjuster and guide for the links of car-couplings, consisting of the swinging piece or block E, having a central bed or plane surface for holding and guiding the link, and upwardly-flaring side flanges for centrally adjusting said link, the distance between the tops of said flanges being greater than the distance between the limits of side play of the coupling-link, substantially as described.

2. An adjuster and guide for the links of car-couplings, consisting of the swinging piece or block E, having a central bed or plane surface for holding and guiding the link, upwardly-flaring side flanges for centrally adjusting said link, the distance between the tops of said flanges being greater than the distance between the limits of side play of the coupling-link, and a downwardly-inclined front lip joining the front edges of said flanges and the front of the bed-surface, substantially as described.

3. In an adjuster and guide for the links of car-couplings, the combination of the piece or block E, having a central bed or plane surface for holding and guiding the link, upwardly-flaring side flanges for centrally adjusting said link, said flanges having inclined fronts, and a downwardly-inclined front lip joining the inclined fronts of the flanges and the front of the bed-surface, the rock-shaft under the car, the lever for rocking said shaft, and the arm connecting the piece or block with said shaft, whereby it is thrown up under the link, substantially as described.

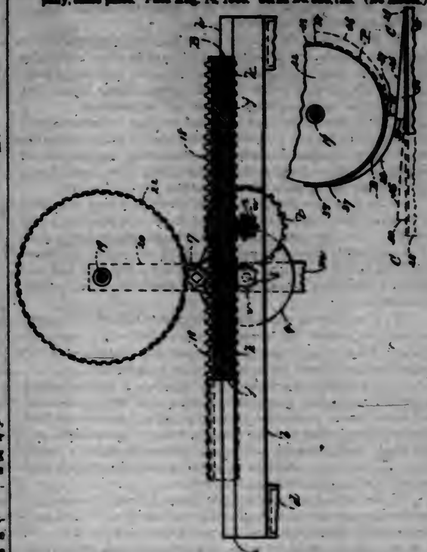
412,882. GRAIN-WEIGHER. LOUIS A. GILLET, Lawrenceville, Kans. Filed Nov. 6, 1888. Serial No. 289,145. (No model.)



Claim.—1. The combination of the casing having the longitudinally-arranged cross-bar near its mouth or upper end, the oscillating pan or receptacle arranged within the casing and having a transverse shaft extending through vertical slots in the sides of said casing and journaled in the arms of a bifurcated counterweighted lever, and a partition extending upward from the bottom of said pan or receptacle and adapted to engage notches or recesses between the longitudinal cross-bar and the sides of the casing, substantially as set forth.

2. In a grain-meter, the combination of a box or casing having vertically-slotted sides, a forked lever the arms of which are pivoted to the side of the casing and the outwardly-extending arm of which is counterweighted, the oscillating pan or receptacle within the casing having a vertical partition adapted to engage notches between the sides of said casing, and a cross-bar arranged near its mouth or upper end, and a transverse shaft extending through the slots in the sides of the casing and journaled in the arms of the forked lever, and a registering device actuated by a pawl attached to one of the arms of said lever, substantially as set forth.

412,888. MACHINE FOR MAKING ROLLED FORGINGS. CHARLES H. GOULD, Leominster, Mass., assignor to the Gould Rolling Machine Company, same place. Filed Aug. 14, 1888. Serial No. 282,726. (No model.)



Claim.—1. In a machine for making rolled forgings, companion forming-dies having, respectively, a horizontal and rotary movement, substantially as described.

2. In a machine for making rolled forgings, a horizontally-moving bed-die and a vertically-rotating companion die, substantially as set forth.

3. In a machine for making rolled forgings, companion forming-dies comprising a horizontally-reciprocating bed-die and a vertically-reciprocating rotary die, substantially as described.

4. In a machine for making rolled forgings, a horizontal bed-die and a vertically-rotating companion die moving in opposite directions, substantially as set forth.

5. In a machine for making rolled forgings, a horizontally-moving platen bearing a bed-die and driving a rotating shaft bearing a wheel provided peripherally with a companion die convex in longitudinal section, substantially as described.

6. In a machine for making rolled forgings, a body, a platen sliding horizontally thereon, a bed-die on said platen, a rotary shaft geared to the platen, a die-wheel on said shaft, and a convex die on said wheel registering with said bed-die, substantially as set forth.

7. In a machine for making rolled forgings, a body, a platen sliding horizontally thereon, a rotary shaft, a wheel thereon bearing a convex die registering with a bed-die on said platen, and mechanism for reciprocating the platen, substantially as described.

8. In a machine for making rolled forgings, a body, a horizontally-sliding platen provided with a rack, a shaft having a pinion meshing therewith and geared to the driving-shaft, a rack on the upper face of the platen, a shaft provided with a die-wheel and gear, a stub-shaft having a pinion meshing with said gear and rack, a horizontal die on the platen, and a convex die on the wheel, substantially as described.

9. In a machine for making rolled forgings, the dies C D, in combination with the body A, platen B, shaft 19, bearing the wheel 22 and gear 23, and mechanism, substantially as specified, for reciprocating said shaft and platen.

10. In a machine for making rolled forgings, a body, a horizontally-sliding platen bearing a bed-die and driving a shaft having an adjustable journal, a wheel on said shaft bearing a companion die convex in longitudinal section, and mechanism for reciprocating said platen, whereby said dies are moved in opposite directions in the same vertical plane, substantially as described.

11. In a machine for making rolled forgings, a bed-die fixed to a horizontally-moving platen, said die having longitudinally-diverging and vertically-inclined cutting-bosses, in combination with a companion

die having a similarly-constructed working-face convex in longitudinal section and arranged to rotate vertically, substantially as described.

12. In a machine for making rolled forgings, a horizontally-reciprocating bed-die and vertically-reciprocating rotary companion die, said dies moving in opposite directions in the same vertical plane and provided with longitudinally-diverging vertically-inclined cutting-bosses, substantially as described.

13. In a machine for making rolled forgings, a horizontally-reciprocating bed-die and a vertically-reciprocating rotary companion die, said dies being provided with working-faces comprising longitudinally-diverging vertically-inclined cutting-bosses having outwardly-inclined spreading faces, substantially as described.

14. In a machine for making rolled forgings, a horizontally-reciprocating bed-die and a vertically-reciprocating rotary companion die convex in longitudinal section, said dies having longitudinally-diverging vertically-inclined cutting-bosses arranged in diametrically-opposite positions, substantially as described.

15. In a machine for making rolled forgings, a body, a horizontally-sliding platen bearing a bed-die and driven by a pinion on a shaft geared to a driving-shaft, means for reciprocating said driving-shaft, a rotating shaft journaled in standards above said platen and geared thereto to revolve in an opposite direction, and a wheel on said shaft bearing a companion die convex in longitudinal section, substantially as described.

16. A machine for making rolled forgings, having a horizontally-reciprocating bed-die and vertically-reciprocating rotary companion die, said dies moving conjointly in diametrically-opposite directions and in the same vertical plane, substantially as described.

17. In a machine for making rolled forgings, a body, a reciprocating driving-shaft, an intermediate shaft geared thereto, a horizontally-sliding platen having a rack meshing with a pinion on said shaft, a stub-shaft and pinion meshing with a rack on said platen, and a gear on a rotary shaft journaled in standards above said platen, a bed-die on the platen, and a wheel on the rotating shaft bearing a convex companion die, substantially as described.

18. The body A and reciprocating platen B, bearing the die C, in combination with the shaft 19, geared to said platen to move in opposite directions thereto, the wheel 32 on said shaft, and the convex die D, secured on said wheel, all being arranged to operate substantially as described.

412,384. BRUSH. AUGUSTUS E. GRIESWALD, Chicago, Ill. Filed Jan. 24, 1889. Serial No. 297,365. (No model.)



Claim.—The combination, with a whisk-brush A, of a band B, extending around the brush, and a staple *p*, passed into the broom through the adjacent ends of the band and securing the said ends together, and a retaining medium for the staple, substantially as and for the purpose set forth.

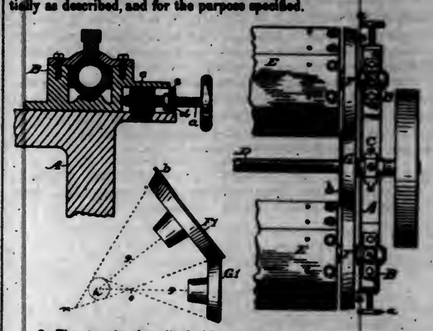
412,385. MANUFACTURE OF WINE. WILLIAM P. HAMLIN, Rogers, Ark. Filed June 13, 1889. Serial No. 313,909. (No specimens.)

Claim.—1. The herein-described method of manufacturing wine from the juices of fruits, consisting in adding to the juice bran, subjecting the same to the action of the bran for a period of time, then separating the juice from the bran and sweetening, next skimming and allowing the same to stand, as specified.

2. The herein-described method of manufacturing wine from the juices of fruits, consisting in adding to the juice wheat-bran, subjecting the same to the action of the bran, separating the juice by straining from the bran, sweetening, skimming, and next setting aside for fermentation, these steps being performed in the order named and in the manner described, as specified.

412,386. FRICTION-GEARING. JOHN HENDERSON, Jr., Waterbury, Conn. Filed Apr. 26, 1887. Serial No. 236,978. (No model.)

Claim.—1. The combination of the driving-shaft D, the driving-wheel G, the driven wheel F, and its shaft arranged parallel to said driving-shaft, the wheels G and F having single treads each parallel to each other and out of parallelism to said parallel shafts, substantially as described, and for the purpose specified.

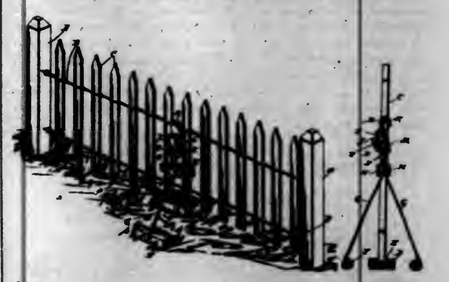


2. The herein-described friction-gearing for communicating power, consisting of the driving-shaft, the driving-wheel mounted thereon, the driven wheel on a carrying-shaft, each wheel having a single thread, one wheel being provided with a holding-flange, the treads of the two wheels being parallel to each other and out of parallel to a line running through their meeting point at the same proportionate distance from the axis of each wheel, substantially as described, and for the purpose specified.

3. The combination of a frame, the beveled friction-gearing mounted thereon, the pillow-block B, having a bearing for the driven wheel of said friction-gear, the nut *c*, and the shipping-screw *a*, substantially as described, and for the purpose specified.

4. The combination of a frame, the friction driving-gearing mounted thereon, the pillow-block B, having a bearing for the driving-wheel and carrying one end of the barrel-shaft, said block being adapted to rise and fall on the frame, and shipping mechanism that bears upon the pillow-block at a point below the axis of the barrel-shaft, whereby the weight of the barrel may be thrown on said friction-gearing, substantially as described, and for the purpose specified.

412,387. FENCE. HIRAM A. HOLDAHOR, Marlborough, Ohio. Filed June 26, 1889. Serial No. 315,503. (No model.)



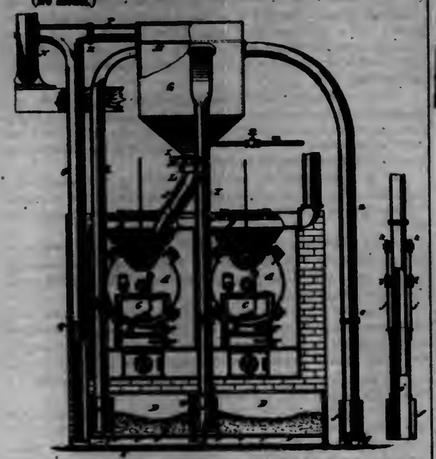
Claim.—1. The combination of the tension-block adapted to be hung on the upper fence-wire, the brace-wire, and the tension-wire secured to the brace-wire and adjustably secured in the tension-block, as set forth.

2. The combination, with the fence, of the base-blocks D, having grooves in their upper sides to receive the lower ends of the pickets, the blocks H, secured to the pickets, the brace-wire passing upward between said blocks, the tension-block hung on the upper fence-wire, and the tension-wire secured to the brace-wire and adjustably fitted in the tension-block, as set forth.

3. The tension device consisting of the block J, provided with a hook K at its upper end and provided in its lower portion with the slot L, the groove M, and the opening N, the lug O on the side of the block, and the set-screw mounted transversely in the block and passing through the slot L, as set forth.

4. The combination, with the fence, of the blocks A, secured to the pickets, the brace-wire passing upward between said blocks, the tension-block hung on the upper fence-wire, and the tension-wire secured to the brace-wire and adjustably fitted in the tension-block, as set forth.

412,388. APPARATUS FOR USE IN CONNECTION WITH COFFEE-ROASTERS. GEORGE S. HENDERSON, Syracuse, assignor to the Hungerford Company, New York, N. Y. Filed Apr. 26, 1888. Serial No. 271,633. (No model.)



Claim.—1. The apparatus hereinbefore described for use in connection with coffee-roasters, said apparatus consisting of the elevated hopper having a discharge-pipe at its lower end, combined with an exhaust in communication with the hopper, an elevating-pipe for green coffee leading into the hopper, a box having a perforated bottom to receive the roasted coffee from the roaster, a pipe connected with the exhaust for creating a cooling draft through the coffee, and an elevating-pipe for returning the roasted coffee to the hopper, leaving the gravel and stones in the box, substantially as set forth.

2. In apparatus for handling coffee by air-suction, an exhaust, combined with the hopper and a conveying-pipe leading from the hopper to the coffee, the lower end of this pipe being provided with a sleeve *f*, having legs *g* and lugs h, and forming an air-space between it and said pipe, substantially as set forth.

3. The elevated hopper having the discharge-pipe at its lower end, combined with an exhaust in communication with the hopper, the cooling-box for holding the coffee and having a perforated bottom, a draft-pipe extending from the exhaust to a point below said perforated bottom, and an elevating-pipe extending from said box to the hopper for conveying the coffee after being cooled to the hopper, leaving the gravel and stones in the box, substantially as set forth.

4. In apparatus for handling coffee by air-suction, the exhaust, combined with the hopper and a conveying-pipe leading from the hopper to the coffee, that portion of the pipe turning from a vertical line being reduced in diameter in one direction, substantially as set forth.

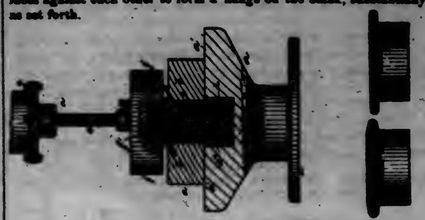
5. In apparatus for handling coffee by air-suction, the elevated hopper having a discharge-pipe at its lower end and an exhaust-pipe, combined with an elevating-pipe leading into said hopper and a weighted flexible apron suspended within the hopper over the mouth of said pipe, substantially as set forth.

6. The hopper having a discharge-pipe at its lower end and the perforated gate I', covering said discharge, combined with an exhaust connected with the hopper and a conveying-pipe leading from the base of the apparatus to said hopper, substantially as set forth

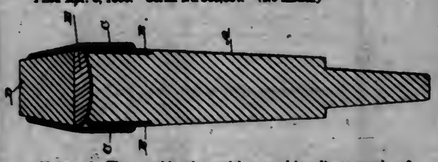
7. The apparatus for use in connection with coffee-roasters, said apparatus consisting of a hopper having the discharge-pipe at its lower end, combined with a receptacle to receive the roasted coffee from the roaster, an elevating-pipe for conveying the roasted coffee to the hopper, and an air-exhaust in communication with said hopper and with said receptacle, the exhaust-connection being separated from the roasted coffee in the receptacle while the coffee is being cooled by a perforated partition, substantially as set forth.

412,389. METHOD OF MAKING COLLARS FOR AXLES AND SKEINS. JOHN J. HENNWOOD, Allegheny, Pa., assignor to William P. Patterson, same place. Filed Feb. 26, 1889. Serial No. 301,120. (No model.)

Claim.—The herein-described process of forming flanged collars for axles and axle-skeins and other purposes, consisting in first swaging or compressing a tubular blank open at both ends longitudinally and so forming an annular swelled portion at one end thereon, and then compressing and flattening said swelled portion and forcing its faces against each other to form a flange on the blank, substantially as set forth.



412,390. TOOL-HANDLE. JONATHAN S. JAQUITH, Sierra City, Cal. Filed Apr. 3, 1889. Serial No. 305,867. (No model.)

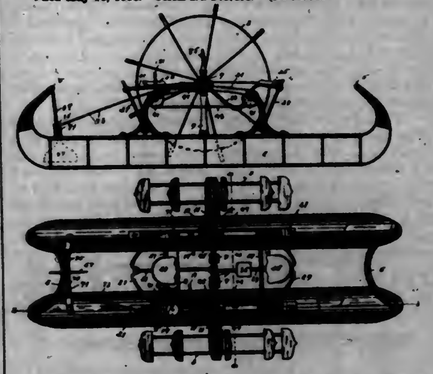


Claim.—1. The combination, with a tool handle or stock, of a threaded band fitted to the handle, a hollow nut adapted to be screwed upon said band, a cushion-block fitted in the projecting end of the hollow nut, and a loose metal bearing-plate between the cushion and handle or stock, substantially as described.

2. In combination with a tool handle or stock having a threaded band, a hollow nut seated on said band, a cushion-block seated in the nut with its outer end projecting therefrom, and the bearing-plate lying between the inner end of the cushion-block and the end of the handle or stock, said plate having a convex inner side fitting a concave seat in the end of said handle or stock, substantially as described.

3. In combination with a tool hand or stock, a threaded band or ring secured on its end, a hollow nut screwed on said band or ring and having its interior tapering, a tapering cushion-block seated in said nut with its outer end projecting therefrom, and a bearing-plate lying between the inner end of the cushion-block and the handle or stock, and having a convex inner side fitting a concave seat in the end of said handle or stock, substantially as described.

412,391. WATER-BICYCLE. CHARLES JOHNSTON, St. Paul, Minn. Filed May 10, 1888. Serial No. 273,462. (No model.)



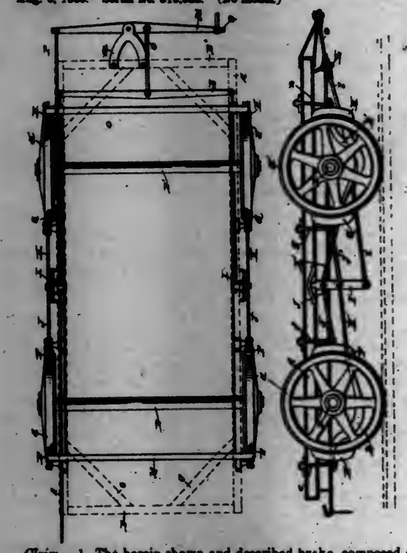
Claim.—1. In a boat or water-bicycle having two independent hulls properly joined together, the combination, with a crank-shaft carrying and driving side paddle-wheels, of adjustable bearings for said shaft adapted to slide in or upon their supports longitudinally with the boat and to carry the paddle-wheels of the boat forward or aft, as desired, substantially as described.

2. In a boat or water-bicycle having two independent hulls properly joined together, the combination, with a crank-shaft carrying and driving side paddle-wheels, of the adjustable bearings 47, adapted to slide in or upon their supports longitudinally with the boat and to carry the paddle-wheels forward or aft, as desired, and the seats 23 and 25, supported upon the connecting rods or bars 31 and 33, joined, respectively, at one end to the crank-shaft and at the other end to the

bell-shaped supports 27 and 29, so that the seats are moved forward and backward with the paddle-wheels and shaft, substantially as described.

3. In a water bicycle or side-wheel boat, the combination, with the shaft 9, supporting and driving the paddle-wheels 3, and having adjustable sliding bearings 47, of the sprocket-chains 43, rigidly fastened to the bearing-boxes at 45, the sprocket-carrying shafts 37 and 39, and the lever 51, fixed to one of the shafts 37 and 39, by means of which the shaft is turned in either direction, so as to drive the sprocket-chains and shift the position of the paddle-wheel shaft, substantially as described.

412,892. CAR-BRAKE. WILLIAM JOSLIN, Cleveland, Ohio. Filed Aug. 6, 1888. Serial No. 319,982. (No model.)



Claim.—1. The herein shown and described brake, composed of the suspended brake-shoes E F and G H, the shoes E F being disposed on opposite sides of the wheel *d* and the shoes G H on opposite sides of the wheel *d'*, the vertical lever I between the wheels *d d'*, the rods J and J' connecting lever I with the shoes F and G, and the rods K and K', connecting the shoes E and H with the said lever I in line with the points of connection of the rods J and J' with the said lever, substantially as and for the purpose described.

2. The hereinbefore-described system of brake-levers, composed of the corresponding pairs of suspended brake-shoes E F and G H on opposite sides of the car-truck, the vertical levers I, connected by rods J J' with the shoes F and G, and by rods K and K' with the shoes E and H, the brake-beams N and O, connecting the shoes E and H on opposite sides of the truck, the lever L, connected with the levers I, and the lever M, pivoted between its ends and connected with the lever L, and adapted to have its ends connected with the crank-bars on the opposite sides of the car, substantially as set forth.

412,893. STEAM-ENGINE LUBRICATOR. HENRY R. KAY, Fall River, Mass., assignor of one-half to Albert S. Palmer, same place. Filed June 7, 1889. Serial No. 313,676. (No model.)



Claim.—1. In a lubricator, the combination of an oil-reservoir and tubular connections leading from its upper and lower extremities into the steam-pipe, the said reservoir having a supplemental chamber provided with an oil-inlet for supplying the reservoir, substantially as described.

2. In a lubricator, the combination, with an oil-reservoir, of a supplemental chamber attached to the same, having a lateral hollow projection and a sight-feed glass supported at one end by said hollow projection and connected therewith, the opposite end of said glass being held in place by a vertically-adjustable connection, substantially as described.

3. In a lubricator, the combination, with an oil-reservoir, of a supplemental chamber opening into the same, having a lateral hollow projection, a valve and valve-seat within said projection, a sight-feed, and an oil-guide within the same, the said oil-guide being supported by the valve-seat, substantially as described.

4. In a lubricator, the combination, with an oil-reservoir, of a sight-feed glass and an adjustable support for one end of the same, whereby glasses of different lengths may be used, substantially as described.

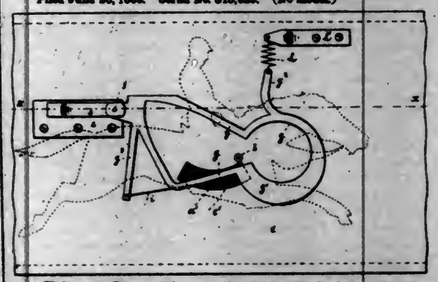
5. In a lubricator, the combination, with an oil-reservoir, of a support extending from the same and a lateral projection from said support, adjustable thereon, for the reception of one end of the sight-feed, substantially as described.

6. In a lubricator, the combination, with an oil-reservoir, of a support extending from the same and a lateral projection from said support, adjustable thereon, for the reception of one end of a sight-feed glass, the said lateral projection being adapted to permit the passage through it of a pipe connecting the sight-feed glass with the steam-pipe, substantially as described.

7. In a lubricator, the combination, with an oil-reservoir, of a supplemental chamber above the same, a rod secured to the top of said chamber, screw-threaded a portion of its length near the upper extremity, a movable part fitting loosely upon said rod and extending laterally and adjustable thereon by means of nuts, a sight-feed glass, one end of which is supported by said movable part, and a pipe passing through said movable part, adjustable thereon, for the purpose of connecting the sight-feed glass with the steam-pipe, substantially as described.

8. In a lubricator, the combination, with an oil-reservoir, of a water-supply for forcing the oil into the steam-pipe, a sight-feed glass, pipe connecting said reservoir and said sight-feed glass with said steam-pipe at two points, one above the other, both of said points being above the reservoir, and a wire extending through the sight-feed glass for guiding the oil, substantially as described.

412,894. MOVABLE SIGN. EDWARD K. KELLY, New York, N. Y. Filed June 26, 1889. Serial No. 315,620. (No model.)



Claim.—1. The combination of a slotted back plate with a sign pivoted thereto, a lever *g*, also pivoted thereto and connected to the sign, and with a spring *h*, by which the free end of the lever is suspended, the sign and the lever turning on different pivots, substantially as specified.

2. The combination of a pivoted sign *a* with an oscillating pivoted lever *g*, a spring *h*, by which the free end of the lever is suspended, and with a rod *i* and pin *d'* for connecting the lever to the sign, substantially as specified.

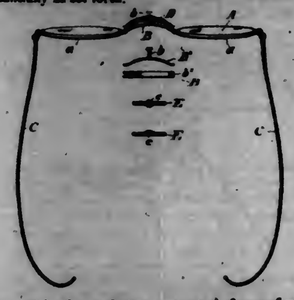
412,895. SPECTACLE-FRAME. HENRY E. KIRSTEIN, Rochester, N. Y. Filed June 19, 1889. Serial No. 314,797. (No model.)

Claim.—1. As an article of manufacture, a spectacle-frame having a self-adjustable nose-rest or uniting-bridge.

2. In combination with the lens-frames, lenses, and temples of spectacles, a spring-controlled nose-piece adjustable with respect to said lenses and lens-frames, substantially as set forth.

3. As an article of manufacture, a spectacle-frame of which that portion which rests upon the nose of the wearer is capable of an independent movement with respect to the lenses, substantially as set forth.

4. As an article of manufacture, a spectacle-frame of which that portion which rests upon the nose of the wearer is free to move with respect to the lenses, and is controlled in such movement by a spring device, substantially as set forth.



5. As an article of manufacture, a spectacle-frame of which that portion which rests upon the nose of the wearer is mounted upon side-bearings, so as to be capable of an independent movement with respect to the lenses, and is controlled in such movement by spring devices, substantially as set forth.

6. As an article of manufacture, a spectacle-frame within the uniting-bow of which is resiliently secured a supplemental nose bearing-piece, substantially as set forth.

7. As an article of manufacture, a spectacle-frame, a uniting-bow, a supplemental nose bearing-piece extremitally fitted to slide upon the sides of the uniting-bow, and a spring interposed between said supplemental nose bearing-piece and a rigid portion of the spectacle-frame, substantially as set forth.

8. As an article of manufacture, a spectacle-frame, a uniting-bow embodying an aperture, a supplemental nose bearing-piece mounted within said uniting-bow and provided with a stem which is entered within the aperture of the uniting-bow, and a spring interposed between said uniting-bow and supplemental nose bearing-piece, substantially as set forth.

9. As an article of manufacture, a spectacle-frame, a uniting-bow embodying an aperture, a supplemental nose bearing-piece extremitally fitted to slide upon the sides of the uniting-bow and provided with a stem which is entered within the aperture of the uniting-bow, and a spring interposed between said uniting-bow and supplemental nose bearing-piece, substantially as set forth.

412,896. INKSTAND. JOHN LARKIN, Bradford, Pa. Filed May 20, 1889. Serial No. 312,491. (No model.)

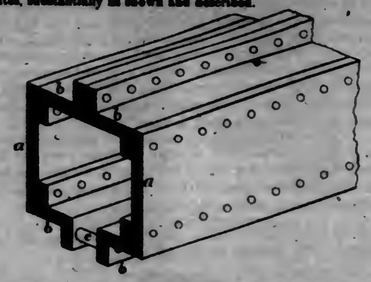


Claim.—1. An inkstand the reservoir of which is composed wholly of rubber, the bottom and sides of the reservoir being formed of thick rubber and the top of thin collapsible rubber, substantially as shown.

2. The combination, with an inkstand the reservoir of which is composed wholly of rubber, the bottom and sides of the reservoir being formed of thick rubber and the top of thin collapsible rubber, of an endwise-moving tube which extends down through the top into the body and provided with a cone or funnel at its outer end, whereby the top is depressed by a pressure upon the cone and the ink forced therein automatically, substantially as shown and described.

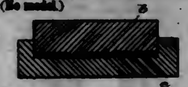
412,897. COLUMN, STRUT, GIRDER, &c. WILLIAM J. LEE, Trenton, N. J. Filed May 16, 1889. Serial No. 310,962. (No model.)

Claim.—1. A metallic column, strut, girder, or similar structure substantially rectangular in form, having one or more partly-open sides formed of flanged bars arranged with flanges projecting so that they may be fastened together by means of rivets or bolts and washers or similar contrivances without the use of lattice-bars or batten-plates, substantially as shown and described.



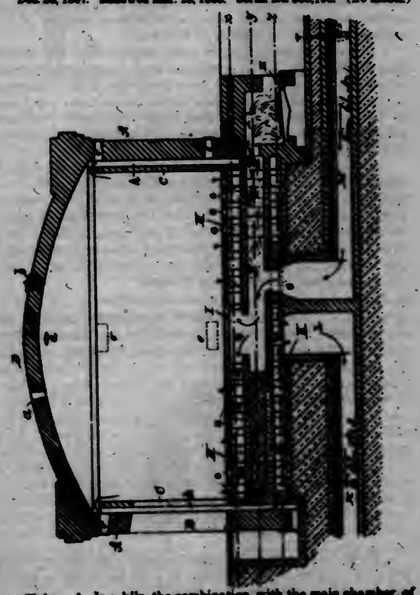
2. In a metallic column, strut, girder, or similar structure substantially rectangular in form, one or more sides thereof constructed of angle or Z-shaped bars with flanges placed back to back.

412,898. METHOD OF MANUFACTURING ARTICLES FROM SHELL, &c. GEORGE T. LINDELL, Leominster, Mass., assignor to the Shelton Comb Company, Huntington, Conn. Filed Feb. 11, 1887. Serial No. 227,267. (No model.)



Claim.—The improvement in the art of making open-work manufactured articles of horn, shell, celluloid, and like substances, which consists in first softening the blank or sheet of material to be treated, then compressing the same between suitably-engraved dies, whereby a deeply-depressed pattern is formed on one side, and finally abrading and removing the rear portion, leaving the article with openings or interspaces forming the desired pattern, substantially as described.

412,899. BRICK-KILN. FRANK P. HEYBURN, Chicago, Ill. Filed Dec. 26, 1887. Renewed Mar. 13, 1889. Serial No. 303,196. (No model.)



Claim.—1. In a kiln, the combination, with the main chamber, of a mixing-chamber in communication with the kiln-furnace and a distributing-chamber arranged beneath the main chamber and connected with the mixing-chamber by a flue, substantially as described.

2. In a kiln, the combination, with a main kiln-chamber, of a mixing-chamber in connection with the kiln-furnaces, an interposed distributing-chamber, and a return-flue practically surrounding the main kiln-chamber, substantially as described.

3. In a kiln, the combination, with a main kiln-chamber, of a mixing-chamber, an interposed distributing-chamber, and a return-flue practically surrounding the main kiln-chamber and leading to the mixing-chamber of the next succeeding kiln, substantially as described.

4. In a kiln, the combination, with the main kiln-chamber, of a mixing-chamber in communication with the furnace of the kiln, a fresh-air passage leading to the mixing-chamber, and an interposed distributing-chamber, substantially as described.

5. In a kiln, the combination, with the main kiln-chamber, of a mixing-chamber in connection with the kiln-furnace and with the escape-flue of the preceding kiln, an interposed distributing-chamber, and a return-flue surrounding the main kiln-chamber and provided with air-passages *o o*, substantially as described.

412,400. FOLDING CHAIR. ARNIS B. MILLIKEN, Chicago, Ill. Filed June 11, 1889. Serial No. 313,837. (No model.)



Claim.—1. A chair having its back and rear legs formed integrally, the back divided vertically into two sections hinged at their upper ends to a separating-block, a seat divided into two sections extended at right angles to the back-sections and pivotally connected thereto, front legs hinged to the forward ends of the seat-sections, and suitable brace-rods adapted to secure the parts of the chair in their extended position, substantially as described.

2. A folding chair having its back constructed in two sections, hinged, respectively, to an intermediate block or section and provided with a ledge to receive the rear edge of the seat, a seat constructed in two sections hinged to the back-sections, respectively, legs hinged to said seat-sections at their front edges, and suitable brace-rods adapted to secure the parts in their extended position, substantially as described.

3. A folding chair having its back and rear legs constructed integrally, the back divided vertically into two sections hinged at their upper ends to a separating-block, a seat constructed of two sections extended at right angles from the back-sections and hinged thereto at their rear edges, front legs hinged at their upper ends to the front ends of the seat-sections, longitudinal brace-rods connecting the front and rear legs, and diagonal brace-rods connecting the seat-sections and the front legs, substantially as described.

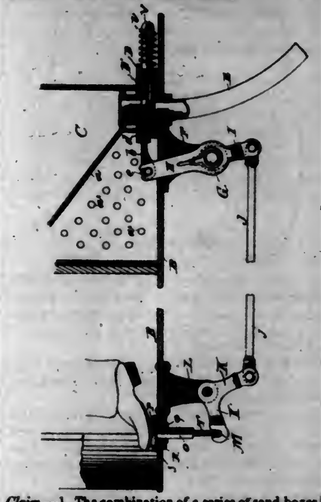
412,401. COMBINED CRAYON-SHARPENER, CUSHION, AND WEIGHT. GEORGE W. MILLS, Elizabeth, N. J., and JAMES MORPHETT, Brooklyn, N. Y. Filed Aug. 17, 1888. Serial No. 282,906. (No model.)



Claim.—1. In a combined crayon-sharpener, pin-cushion, weight, and crayon-holder, the combination of a flat top E with a knife H and the guide F, substantially as described.

2. In a combined crayon-sharpener, pin-cushion, weight, and crayon-holder, the combination of a flat top E with the knife H, guide F, and receptacle J, substantially as described.

412,402. SANDING APPARATUS FOR RAILWAY-CARS. HENRY MILLER, Jr., New York, and MARY A. COMBS, Brooklyn, assignors to the Jordan-Mills Manufacturing Company, New York, N. Y. Filed Dec. 24, 1888. Serial No. 294,512. (No model.)



Claim.—1. The combination of a series of sand-boxes having horizontal valves, said valve and box being located above the car-floor, with a vibrating shaft having rocker-arms extending through the car-floor and engaging with the said valve, and a treadle mechanism, the said shaft and treadle being connected, substantially as described.

2. The sand-box C, provided with a horizontal valve D', located above the car-floor, in combination with the vibrating shaft G, arm H, connecting the said shaft and valve, arm I and treadle being connected, substantially as described.

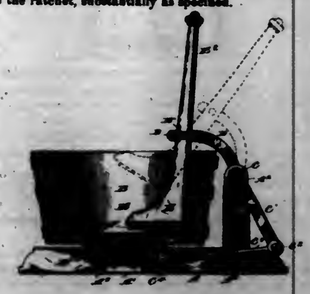
3. In a treadle mechanism, the combination of a push-pin reduced in diameter at one end, and a bell-crank lever provided with a transverse depression and a longitudinal slot in one of its arms for interchangeable engagement with the push-pin, substantially as described.

4. The combination, with a sand-box, of a vibrating shaft operatively connected thereto, a push-pin reduced in diameter at one end, and a bell-crank lever provided with a transverse depression and a longitudinal slot in one of its arms, the said lever and shaft being connected, substantially as set forth.

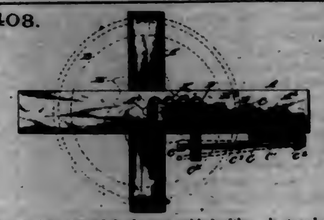
5. The combination, with a sand-hopper, of a valve located beneath the hopper, a spring connected directly to the valve, a vibrating shaft operatively connected thereto, a push-pin reduced in diameter at one end, and a bell-crank lever provided with a transverse depression and a longitudinal slot in one of its arms, the said lever and shaft being operatively connected, substantially as set forth.

412,403. WASHING-MACHINE. JOHN W. MULLINS, London, Ky. Filed May 17, 1889. Serial No. 311,116. (No model.)

Claim.—1. The combination, with a base having a pivot and an upright, of a tub having a ratchet bearing on said pivot, arms pivoted to the upright, a pounder pivoted to the free end of one of said arms, and the pawl O', pivoted at one end, and its other end, after passing through a keeper on the base, turned up to form a vertical portion to engage the ratchet, substantially as specified.

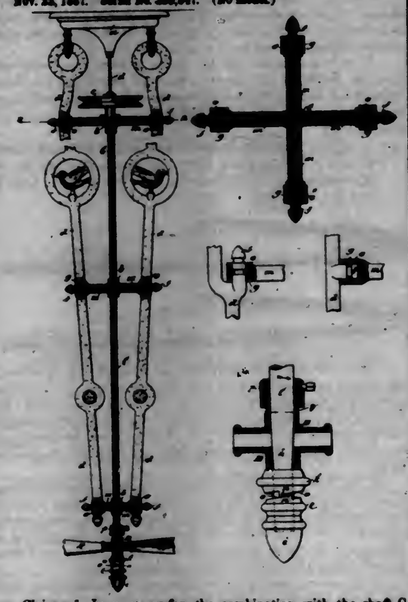


412,408.



2. The combination of the base provided with a pivot and standard, a pounding-lever pivotally connected to a curved arm, a straight arm, a pivot or shaft common to both arms and rigidly connected with the same, a pawl pivoted to the straight arm and mounted in a staple constructed to permit lateral movement therein of the pawl, and the tab provided with the ratchet, substantially as specified.

412,404. POWER-FAN. PETER MURRAY, Jr., Newark, N. J. Filed Nov. 22, 1887. Serial No. 255,947. (No model.)



Claim.—1. In a power-fan, the combination, with the shaft C, having the head *i*, of the hub B, mounted to turn freely upon said shaft, and the loose collars *k l*, having the coacting inclines or cam-surfaces *o*, substantially as described.

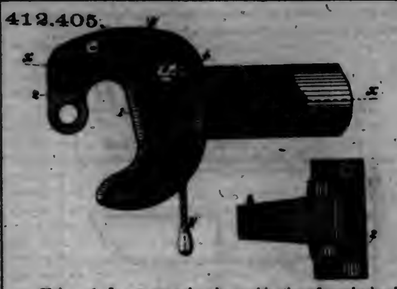
2. In a power-fan, the combination, with the shaft C, having the head *i*, of the hub B, mounted to turn freely upon said shaft, and the loose collars *k l*, having the coacting inclines or cam-surfaces *o* and engaging shoulders *n*, substantially as described.

3. In a power-fan, the combination, with the shaft C, having the tapered end portion A, of the hub B, mounted to turn freely upon said tapered portion, and the loose collars *k l*, having the coacting inclines or cam-surfaces *o*, substantially as described.

412,405. CAR-COUPLING. WILLIAM MCCONWAY, Pittsburg, Pa. Filed Aug. 8, 1889. Serial No. 320,062. (No model.)



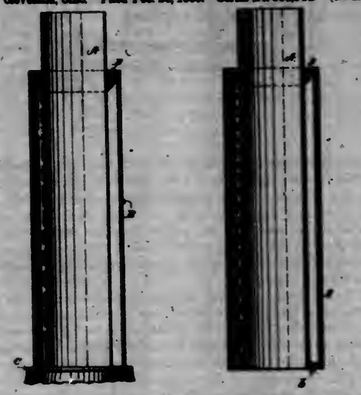
412,405.



Claim.—1. In a car-coupler, the combination of a swinging hook provided with a tail, and a ball for locking the hook in a closed position, substantially as set forth.

2. In a car-coupler, the combination of a swinging hook provided with a tail, a ball for locking the hook in a closed position, and a lifting device for moving the ball out of the path of travel of the hook, substantially as set forth.

412,406. JACKET FOR LAMP-CHIMNEYS. THOMAS MCGOWAN, Cleveland, Ohio. Filed Feb. 26, 1889. Serial No. 301,544. (No model.)



Claim.—1. The combination, with a lamp-chimney, of a jacket surrounding the chimney leaving an air-space between the two, such space being hermetically sealed at both top and bottom, substantially as set forth.

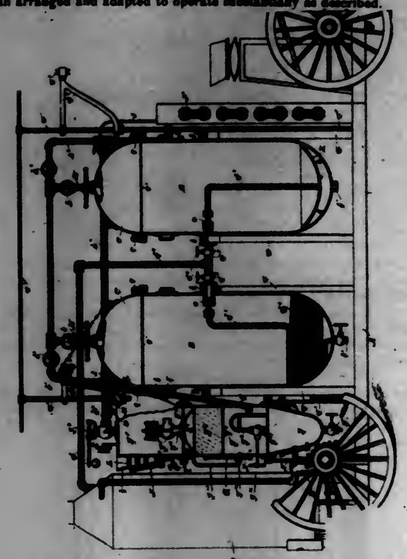
2. The combination, with a lamp-chimney, of a jacket surrounding the chimney leaving an air-space between the two, such space being hermetically sealed at the bottom and having a packing-ring between the jacket and chimney at or near the top of the latter for closing such air-space at the top, such packing-ring being adapted to serve as a reflector, substantially as set forth.

412,407. DISTILLING APPARATUS. PEDRO HAPELIN, Napa, Cal. Filed Mar. 6, 1888. Serial No. 302,151. (No model.)

Claim.—1. In a distilling apparatus, the combination of a series of boilers, the independent steam-boiler, the rectifier and the condenser, pipes connecting the steam-boiler with the boilers of the series, and controlling-cocks in said pipes whereby the steam may be directed in any or all of the boilers of the series, pipes connecting the boilers of the series with the rectifier and condenser, and cocks controlling said pipes whereby the vapor may be directed from any or all of the boilers into the rectifier or into the condenser, and a pipe connecting the rectifier with the condenser, substantially as described.

2. In a distilling apparatus, the series of swinging boilers having pivotal trunnions, the steam-boiler, the rectifier, and the condenser, in combination with the horizontal steam-pipe *d* from the boiler, the horizontal branches *d'* of said pipe, the vertical pipes d^3, extending downwardly between the boilers from the branch pipes, the coupling-pipes d^5 d^5, extending from the vertical pipes into the boilers through their trunnions, the controlling-cocks d^6 in the pipes d^5 d^5, the pipes H from the tops of the boilers, the controlling-cocks h in said pipes, the pipes h', connecting the pipes H with the rectifier, the pipes h^2, connecting said pipes H with the condenser, the cocks h^3, controlling-pipes h' h^3,

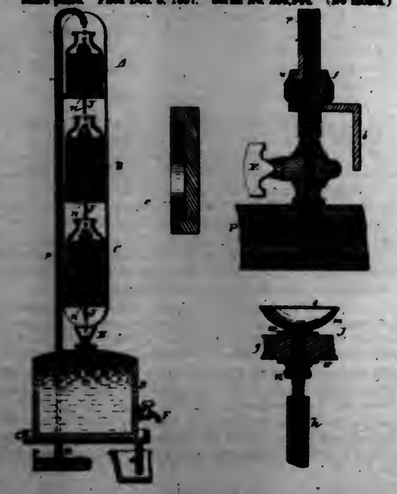
and the pipe h^4, connecting the top of the rectifier with the condenser, all arranged and adapted to operate substantially as described.



3. In a distilling apparatus and in combination with its distilling-boiler, the rectifier G, consisting of the chest g, to which steam is admitted, the cylinder g' above, connected with the distilling-boiler and having perforated diaphragms with intervening charcoal, the valve-controlled siphon connecting the cylinder with the chest below, the cylinder g^2 above, having the valve-controlled outlet, and the valve-controlled passage connecting said cylinder with the lower cylinder g', substantially as described.

4. In a distilling apparatus, the boilers having side trunnions pivotally mounted, whereby said boilers may be tilted, in combination with the removable covers or lids of said boilers having side handles, the fixed frame-work a' above the boilers, the brackets a^3 of the frame-work, the pulleys a^4 in the ends of the brackets, and the chains connected with the handles of the covers or lids and passing over the pulleys, whereby the covers or lids are supported when the boilers are tilted from under them, substantially as described.

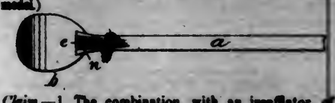
412,408. **FILTERING AND CLARIFYING WATER.** ALBERT G. HOWARD, Springfield, Mass., assignor of one-half to Stephen W. Bowles, same place. Filed Dec. 3, 1887. Serial No. 256,944. (No model.)



Claim.—1. The combination, with a jar or receptacle provided with an eduction pipe or outlet, of an induction-pipe comprising a water-passage and a transverse diaphragm in such passage, each side of which is a plane surface at right angles to the walls of passage, said diaphragm having a fine central perforation, substantially as described.

2. In an apparatus for filtering and clarifying water, the combination, with a jar or jars containing a material for filtering, clarifying, and deodorizing the water, of a water-supply pipe and a valve therein provided with a water-passage and a transverse diaphragm in such passage, each side of which is a plane surface at right angles to the walls of passage, said diaphragm having a fine central perforation, substantially as described.

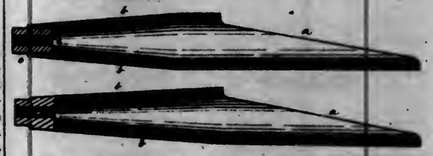
412,409. **TONGUE-DEPRESSING INSUFFLATOR.** JOSEPH D. GROSSER, Newark, N. J. Filed Feb. 1, 1889. Serial No. 298,302. (No model.)



Claim.—1. The combination, with an insufflator, of a spoon-shaped tongue-depressor having a highly-polished surface curved downwardly at its outer end and attached tangentially to the nozzle of the insufflator, as and for the purpose set forth.

2. The combination, with the convex polished tongue-depressor b, of the insufflator-tube having a flattened nozzle with the central depression c, forming the outlet-channels d d, and attached tangentially to the convex side of the tongue-depressor, as and for the purpose set forth.

412,410. **METHOD OF SECURING PLUGS IN TUBULAR SKEINS.** WILLIAM F. PATTERSON and JOHN J. IRSENWOOD, Allegheny, Pa.; said Isherwood assignor to said Patterson. Filed Feb. 26, 1889. Serial No. 301,118. (No model.)

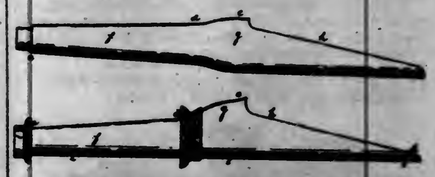


Claim.—1. The herein-described improvement in the art of securing plugs in and forming the spindle portions of axles or axle-skeins, consisting in first partially tapering or reducing a tubular blank, then inserting and welding the plug in the end thereof, and then completing the tapering or reduction of the blank to bring the spindle portion to the finished shape, substantially as and for the purposes set forth.

2. The herein-described improvement in the art of securing plugs in and forming the spindle portions of axles or axle-skeins, consisting in first partially tapering or reducing a tubular blank, then inserting the plug in the end thereof, and then completing the tapering or reduction of the blank to bring the spindle portion to the finished shape, substantially as and for the purposes set forth.

3. The herein-described step in the art of securing plugs in the ends of and forming the spindle portions of axles or axle-skeins, consisting in inserting the plug in the hollow end of the blank, welding it therein, and then tapering or reducing the spindle portion of the blank and bringing it to its finished shape, substantially as and for the purposes set forth.

412,411. **METHOD OF MANUFACTURING HOODED SKEINS.** WILLIAM F. PATTERSON, Allegheny, Pa. Filed Feb. 25, 1889. Serial No. 301,113. (No model.)

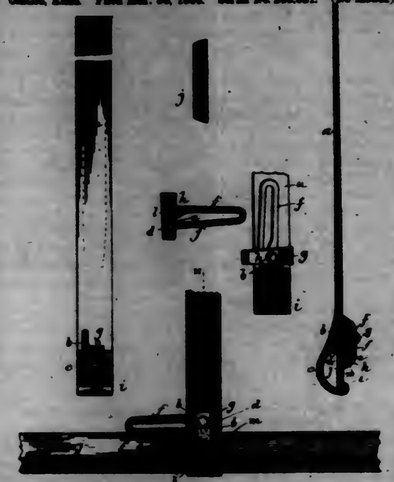


Claim.—1. The herein-described improvement in the manufacture of hooded axle-skeins, consisting in reducing or tapering a wrought-metal tube on two different lines, forming the spindle portion and an enlarged tapered portion for the hood above the same, and drawing or setting the metal in said hood portion to one side of the blank, so as to form the hood of the skein, substantially as and for the purposes set forth.

2. The herein-described improvement in the manufacture of hooded axle-skeins, consisting in reducing or tapering a wrought-metal tube on two different lines, forming the spindle portion near an enlarged tapered portion for the hood above the same, and then drawing the metal in said hood portion to one side of the blank and setting the spindle, hood, and tail of the skein in proper line, substantially as and for the purposes set forth.

3. The herein-described step in the art of forming hooded axle-skeins, consisting in reducing or tapering a wrought-metal tube on two different lines, forming the spindle portion and an enlarged tapered portion above the same for the hood, substantially as and for the purposes set forth.

412,412. **GRIPPER FOR PRINTING-PRESSES.** WILBUR C. PAUL, Olathe, Kans. Filed Mar. 30, 1889. Serial No. 305,081. (No model.)



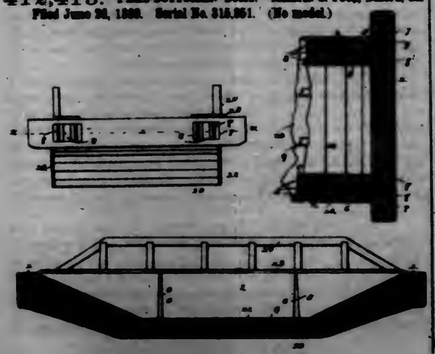
Claim.—1. The combination of a solid gripper-bar having a key-stone shape, and a gripper having a bend to encircle the lower side of the bar, and means for securing the same in position, substantially as described.

2. The combination, with the gripper-bar and gripper, of a clutch for securing the latter to the bar, said clutch comprising a pivoted spring-lever having a clutch-tooth d, to clamp the upper edge of the bar, and a cross-bar h, to ride on the face j of the bar, said clutch coacting with the clutch i on the gripper to firmly lock the latter on the bar, substantially as described.

3. The combination of a bar of a gripper, and a spring-lever clutch for locking the same on the bar on printing-presses or other machines wherein such a combination may be required, and operating as set forth in the specification.

4. The combination of a gripper-bar j and a gripper, Fig. 1, of a platen press with a spring-clutch, Fig. 2, for securing said gripper in place on the bar, all substantially as described.

412,418. **FLAT-BOTTOMED BOAT.** MARTIN S. PEEK, Buford, Ga. Filed June 20, 1888. Serial No. 316,851. (No model.)



Claim.—1. In a flat-bottom boat, the herein-described frame-beams, composed of several layers of planks breaking joints with each other, and having beveled ends, in combination with wedges driven upwardly into the joints between the adjacent ends of the planks, as set forth.

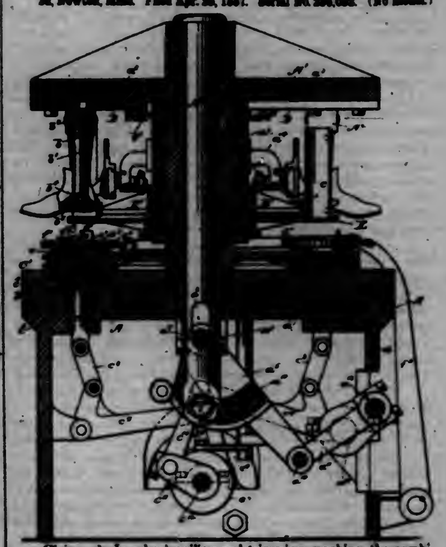
2. In a flat-bottom boat, the herein-described frame-beams, composed of several layers of planks breaking joints with each other, and wedges driven upwardly into the joints between the adjacent ends of the planks, in combination with the head-blocks having mortises to receive the tenoned ends of said side beams, and the bottom planks secured to the under sides of the side beams, thereby retaining the wedges in position in their respective joints, substantially as set forth.

3. The combination, with the head-blocks having outwardly-beveled mortises, of the side beams composed of several layers of planks breaking joints with each other, and having tenoned ends entering the said mortises, and the wedges driven into the outer ends of said tenons, substantially as set forth.

4. The combination of the head-blocks, the side beams composed of several layers of planks breaking joints with each other and having wedges driven upwardly into the joints between the adjacent ends of the planks, the bottom frame, the bottom planks secured to the under side of the latter and to the lower edges of the side beams, and the floor laid upon the upper side of the said flooring-frame, substantially as set forth.

5. In a flat-bottom boat, the combination of the mortised head-blocks, the tenoned side beams composed of several layers of planks breaking joints with each other, and having wedges driven upwardly into the joints between the adjacent ends of the planks, the flooring-frame, the two layers of bottom planks secured to the latter and to the lower edges of the side beams and breaking joints with each other, the guard-cleats secured over the joints between the bottom planks and the side beams and on the upper edges of the latter, the floor and the railings, all arranged and operating substantially as and for the purpose herein shown and specified.

412,414. **HEEL-BALING MACHINE.** FREEMAN F. RAYMOND, 2d, Newton, Mass. Filed Apr. 26, 1887. Serial No. 236,092. (No model.)



Claim.—1. In a heel nailing and trimming machine, the combination of two or more jacks having a horizontal and vertical adjustment and each of which supports or carries a work-support, said lasts or work-supports, two or more nail-driving devices, a heel-trimming apparatus adapted for use with each heel-nailing device, the main shaft of the machine, and intermediate connecting mechanism, substantially as specified, whereby the nail-driving devices are first simultaneously operated to attach two or more heels to as many shoes and the heel-trimming devices then simultaneously operated to trim said attached heels, as and for the purposes set forth.

2. In a heel nailing and trimming machine, the combination of two or more horizontally-adjustable jacks, each of which supports a last or work-support, the last or work-supports, two or more gangs of nail-drivers, a carrier having devices, substantially as described, for

applying the top lift to the attached heels, as set forth, and a heel-trimming apparatus, as set forth, for each gang of drivers, as and for the purposes specified.

3. In a heel nailing and trimming machine, the combination of two or more jacks having a horizontal and vertical adjustment, the lasts or work-supports carried by said jacks, a carrier provided with two or more devices for automatically delivering the top lifts from a stack to position for adjustment to the heels of the boot or shoe, two or more heel-trimming devices, and the mechanism, as set forth, intimately connecting and simultaneously operating the devices in the order named, as and for the purposes specified.

4. In a heel nailing and trimming machine, the head A, carrying two or more jacks A', in combination with rod A^2, the cam-lever c^3, having the cam-groove c^{14}, the cam-pin c^{12}, the crank c^{13}, and connecting-rod c^{11}, substantially as described.

5. In a heel-nailing machine, two or more templets C, mounted upon a common bed or table C', and a cam-actuated lever for lifting and lowering said table or bed, as and for the purposes specified.

6. The combination of two or more templets C, mounted upon a table or bed C', the movable plate D, having the inclined surfaces d, and the bed A, having the inclined surfaces d', as and for the purposes specified.

7. The combination of two or more templets C, mounted upon a common bed C', a lifting plate or device D, and a cam connected with said plate or lifting device for operating the same at any predetermined interval to cause it to lower and lift the table C', as and for the purposes described.

8. The combination, in a heel-nailing machine, of two or more templets C, mounted upon a common table C', a head c^4, supporting a gang or group of drivers c^5 for each templet, and a shaft c^{23}, connected with each head by means of a crank c^{11}, link c^{10}, lever c^9, and toggles c^7, as and for the purposes described.

9. The combination of a top-lift carrier-plate E, adapted to present simultaneously a number of top lifts to as many attached heel-blanks, with a cam e^3 and connecting mechanism, substantially as described, for moving the plate at a predetermined time, as and for the purposes specified.

10. The combination of the head A', two or more jacks suspended therefrom, each of which carries a last or work-support, and devices for moving the head and jacks vertically in relation to the templets C, said templets C mounted upon a bed C', and means, substantially as described, for changing the level of the said templets, and a reciprocating head for each templet carrying a gang or group of drivers, and operative mechanism, substantially as specified, whereby the head A and jacks are first moved downward to compress two or more heel-blanks to the soles of the boot or shoe, the heads supporting the nail-drivers simultaneously moved upward to drive the attaching-nails, the jacks then lifted and the templets lowered to permit the insertion or placing of the top lifts and their holding-plates, and the head A' again moved downward to cause the top lifts to be spanked to the attached heel-blanks, as and for the purposes described.

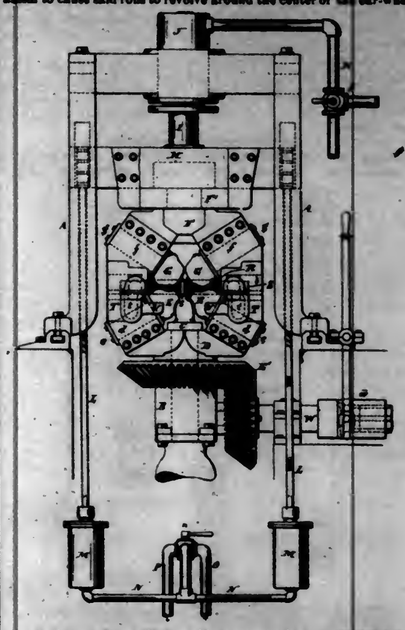
11. The combination, in a heel-nailing machine, of a jack A^2, a last or work-support c^2, the head A', carrying the jack, a cam c^{14}, controlling the vertical movements of the said head, a templet C, and devices for lowering and raising the same, a head carrying a gang or group of drivers operated by a toggle c^7, lever c^9, crank c^{11}, and link c^{10}, connecting the crank with the lever, the shaft c^{13}, carrying said crank c^{11}, and the shaft c^{15}, operating the cam c^{14}, whereby the head A' is caused to make two or three full vertical movements for each complete vertical movement of the head c^4, as and for the purposes described.

12. The combination, in a heel nailing and trimming machine, of the head A', adapted, by mechanism substantially as described, to have two or more vertical movements imparted to it, and a period of rest at the end of the downward vertical movement, two or more templets C, the heads c^4, each of which carries a gang or group of drivers adapted to have upward vertical movements imparted to them immediately upon the completion of the first downward movement of the head A', means, substantially as described, for varying the height of the templets C, after the driving of the attaching-nails and before the spanking of the top lifts to the attached heel, a separate trimming mechanism for each nail-driving device, adapted to be operated upon the end of a second or third downward movement of the head A' and while it remains stationary, as and for the purposes described.

13. In a heel nailing and trimming machine, two or more jacks having a vertical and horizontal adjustment, each of which supports a last or work-support, two or more nail-driving devices, two or more heel-trimming devices, a common prime motor intimately connected, respectively, with said jacks, nail-driving devices, and heel-trimming devices, whereby they are caused to be operated simultaneously, substantially as set forth.

412,415. ROLLING-MILL FOR CAR-WHEELS. BENJAMIN F. REYNOLDS, Norristown, Pa. Filed Mar. 8, 1889. Serial No. 302,491. (No model.)

Claim.—1. In a rolling-mill for rolling car-wheels, a support for the car-wheel, whereby the wheel is held stationary, in combination with rolls arranged above and below the car-wheel, and power mechanism to cause said rolls to revolve around the center of the car-wheel.



2. In a rolling-mill for rolling car-wheels, a stationary support for the car-wheel, whereby the wheel is held stationary, in combination with rolls arranged above and below the car-wheel and between the hub of the wheel and periphery, rolls arranged about the periphery of the car-wheel and between the plane of the upper and lower rolls for rolling the tire or tread portion of the wheel, and power mechanism to cause said rolls to revolve around the center of the car-wheel.

3. In a rolling-mill for rolling car-wheels, a support for the car-wheel, whereby the wheel is held stationary, in combination with rolls arranged above and below the car-wheel, power devices to move said rolls toward or from each other, and power mechanism to cause said rolls to revolve around the center of the car-wheel.

4. In a rolling-mill for rolling car-wheels, the combination of a central stationary support for the car-wheel, whereby the wheel is held stationary, with two rotary frames and one or more rolls carried in each frame and caused thereby to revolve around the central support and each made to conform in shape to the corresponding surfaces of the car-wheel to be rolled.

5. In a rolling-mill for rolling car-wheels, the combination of a central stationary support for the car-wheel, whereby the wheel is held stationary, with two rotary frames, one or more rolls carried in each frame and caused thereby to revolve around the central support and each made to conform in shape to the corresponding surfaces of the car-wheel to be rolled, a connection between the two frames, and power devices to move said frames to or from each other.

6. In a rolling-mill for rolling car-wheels, the combination of a central stationary support for the car-wheel, whereby the wheel is held stationary, with two rotary frames, one or more rolls carried in each frame and caused thereby to revolve around the central support and each made to conform in shape to the corresponding surfaces of the car-wheel to be rolled, a connection between the two frames, power devices to move said frames to or from each other, and one or more rolls carried by said frames and arranged to roll the periphery of the car-wheel.

7. In a rolling-mill for rolling car-wheels, the combination of a central stationary support for the car-wheel, whereby the wheel is held stationary, with two rotary frames, one or more rolls carried in each frame and caused thereby to revolve around the central support and each made to conform in shape to the corresponding surfaces of the car-wheel to be rolled, a connection between the two frames, power devices to move said frames to or from each other, one or more rolls carried by said frames and arranged to roll the periphery of the car-wheel, a slide supporting each said last-mentioned rolls on one of the frames, and cam mechanism carried by the other frame to operate the slide to move the said last-mentioned rolls to or from the periphery of the car-wheel.

8. In a rolling-mill for rolling car-wheels, the combination of a central stationary support for the car-wheel, whereby the wheel is held stationary, with two rotary frames, one or more rolls carried in each frame and caused thereby to revolve around the central support and each made to conform in shape to the corresponding surfaces of the car-wheel to be rolled, a connection between the two frames, power devices to move said frames to or from each other, one or more rolls carried by said frames and arranged to roll the periphery of the car-wheel, a slide supporting each said last-mentioned rolls on one of the frames, cam mechanism carried by the other frame to operate the slide to move the said last-mentioned rolls to or from the periphery of the car-wheel, and wheel-lifting devices operated by the last-mentioned frame to lift the wheel off its support simultaneously with the separations of the rolls.

9. In a rolling-mill for rolling car-wheels, the combination of a central stationary support for the car-wheels, whereby the wheel is held stationary, with two rotary frames, one or more rolls carried in each frame and caused thereby to revolve around the central support and each made to conform in shape to the corresponding surfaces of the car-wheel to be rolled, power mechanism to reciprocate one of said frames and its rolls with respect to the other frame and its rolls, and wheel-lifting devices moved with said reciprocating frame to lift the wheel off its central support when the rolls are separated.

10. The combination of a stationary support for a car-wheel casting or blank, whereby the wheel is held stationary, with a rotating frame, and one or more rolls carried thereby and made to conform to the curvature of the car-wheel face to be rolled and caused to revolve around the stationary support and car-wheel.

11. The combination of a stationary support for a car-wheel casting or blank, whereby the wheel is held stationary, with a rotating frame, and one or more loose or idler rolls having oblique axes and carried thereby and made to conform to the curvature of the car-wheel face to be rolled and caused to revolve around the stationary support and car-wheel.

12. The combination of a central support for a car-wheel casting or blank, whereby the wheel is held stationary, a rotary frame above and another below said support and car-wheel, supported thereby and concentric with respect therewith, and rolls having rolling ends made to conform to the faces of the car-wheel and journaled on axles arranged obliquely in the plane of rotation of the frames, whereby said rolls are caused to revolve about the axis of the wheel and also about their own oblique axis.

13. The combination of a central support for a car-wheel casting or blank, whereby the wheel is held stationary, a rotary frame above and another below said support and car-wheel, supported thereby and concentric with respect therewith, and rolls having rolling ends made to conform to the faces of the car-wheel and journaled on axles arranged obliquely in the plane of rotation of the frames, whereby said rolls are caused to revolve about the axis of the wheel and also about their own oblique axis and in which the obliquity of the axles of the rolls of one frame is greater than that of the axles of the rolls of the other frame.

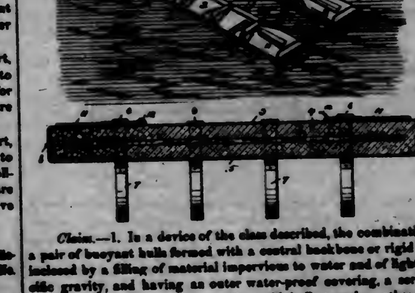
14. The combination of a central support for a car-wheel casting or blank, whereby the wheel is held stationary, a rotary frame above and another below said support and car-wheel, supported thereby and concentric with respect therewith, rolls having rolling ends made to conform to the faces of the car-wheel and journaled on axles arranged obliquely in the frames, whereby said rolls are caused to revolve about the axis of the wheel and also about their own oblique axis, and power mechanism to force said frames and their rolls toward each other.

15. The combination of a central stationary car-wheel support, whereby the wheel is held stationary, a rotary frame adapted to travel around said support, and one or more rolls carried thereby for rolling the periphery or tread of the car-wheel, whereby said rolls are caused to revolve about said car-wheel.

16. The combination of a central stationary car-wheel support, whereby the wheel is held stationary, a rotary frame adapted to travel around said support, one or more rolls carried thereby for rolling the periphery or tread of the car-wheel, whereby said rolls are caused to revolve about said car-wheel, and power devices to move said rolls toward or from the car-wheel.

412,416. TRY-GAGE FOR BOILERS. GEORGE W. REDMAN, Bellefonte, Pa. Filed June 3, 1887. Renewed Sept. 13, 1889. Serial No. 323,616. (No model.)

Claim.—1. In a try-gage, the combination of the gage-body A, having the valve-seat A' at its inner end, and the tube or stem F, movable longitudinally in the gage-body, and the valve G, loosely fitted on the said tube and adapted to move thereon, for the purpose set forth, substantially as described.



2. The combination, in a try-gage, of the gage-body A, having the projecting valve-seat A' on its inner end, the longitudinally-movable tube F in the gage-body, and the valve G, secured to the inner end of the said tube and provided with the packing-ring of soft metal adapted to be compressed against the valve-seat A', for the purpose set forth, substantially as described.

3. The combination, in a try-gage, of the gage-body A, having the annular beveled or sharpened valve-seat A' at its inner end, the tube F, movable longitudinally in the gage-body, for the purpose set forth, and the valve G, pivoted or loosely secured to the inner end of the tube F, the said valve having the annular packing-ring I, of soft metal, for the purpose set forth, substantially as described.

4. The combination, in a try-gage, of the gage-body A, having the discharge-opening O, the gland fitting in the gage-body and having the opening M, communicating with the opening O, and the longitudinally-movable tube or stem F, closed at its inner and outer ends and provided with the openings a and b, the said tube or stem having the pivoted valve at its inner end adapted to bear against the inner end of the gage-body, for the purpose set forth, substantially as described.

5. The combination of the gage-body having the openings E and D, the latter being provided with the grooves D', and the opening O, extending through one side of the gage-body, the stem or tube F, fitting in the opening E and extending through the opening D, the said tube having the openings a and b, the gland surrounding the tube and fitting in the opening D and provided with the stud to enter the groove D' and the slot registering with the opening O, the sleeve screwed to the front end of the gage-body and bearing against the gland, the valve secured to the inner end of the stem or tube, and the discharge-pipe R, communicating with the opening I, substantially as described.

6. The combination, in a try-gage, of the gage-body having the projecting arm S, provided with the slot P, the longitudinally-movable tube or stem fitting in the gage-body and having the openings a and b, for the purpose set forth, and the knob secured to the front end of the tube and having the pin working in the slot T to limit the movement of the tube and knob, substantially as described.

412,417. LIFE-SAVING APPARATUS. OLE REMMEN, Minneapolis, Minn. Filed Apr. 27, 1889. Serial No. 308,982. (No model.)

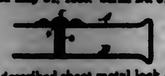
Claim.—1. In a device of the class described, the combination of a pair of buoyant hulls formed with a central hook-bone or rigid core, inclosed by a filling of material impervious to water and of light specific gravity, and having an outer water-proof covering, a series of centrally-depending loops connecting said hulls together, other flexible connections at the ends of said hulls shorter than said loop connections, but equal to each other in length, series of circumferential

bands surrounding each of said hulls and secured thereto, hand-ropes arranged horizontally on the outer and inner sides of said hulls and longitudinally thereof, and series of independent loops secured to the circumferential bands of said hulls and adapted to be thrown outward from said hulls to support persons on the outside of said hulls, or when turned inward to support persons between said hulls, substantially as described.

2. The combination, with a pair of buoyant hulls of substantially uniform size and arranged parallel with each other, of the rope S, surrounding both said hulls horizontally and connecting their ends together and forming convenient hand-loops on the outer side of said hulls, the inner hand-rope 9, arranged on the inner side of the hulls longitudinally thereof and secured to the rope 6 at either end midway between the ends of the hulls, the series of circumferential bands 6, surrounding said hulls, the depending loops 7, secured at either end to the bands 6 on the under side of said hulls at points substantially in the medial line of said hulls, and the loops 10, secured, respectively, to the bands 6 and adapted to be thrown either outward or inward of said hulls and to serve as a support for persons clinging thereto, substantially as and for the purposes set forth.

3. The combination, with a pair of buoyant hulls arranged parallel with each other and having flexible end connections with each other, hand-ropes secured longitudinally thereof on their inner and outer sides, circumferential bands surrounding each of said hulls and secured thereto, depending loops secured at either end to said bands on the under side of said hulls and substantially along their medial lines, independent hand-loops secured upon the upper side of said hulls to said circumferential bands, and suitable hand-paddles attached to said hulls and adapted to be clipped under said circumferential bands when not in use, substantially as and for the purpose set forth.

412,418. SHEET-METAL LATCH-CASE. HENRY R. RUSSELL, Jr., New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed May 31, 1889. Serial No. 312,672. (No model.)



Claim.—The herein-described sheet-metal lock or latch case having a post or posts secured to the body thereof and a cap provided with a socket swaged upon its inside for receiving the ends of said posts, substantially as described, and for the purpose specified.

412,419. SHEET-METAL LOCK-CASE. HENRY R. RUSSELL, Jr., New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed July 16, 1889. Serial No. 317,991. (No model.)



Claim.—1. The herein-described sheet-metal lock-case, having screw-seats swaged or struck up in its plates in the form of perforated hollow bosses projecting inwardly, substantially as described, and for the purpose specified.

2. The herein-described sheet-metal lock-case, having screw-seats swaged or struck up in its plates in the form of perforated hollow bosses projecting inwardly about half the thickness of the case, and having also the reversely-swaged central portion, substantially as described, and for the purpose specified.

412,420. VEHICLE. WILLIAM H. SHAFFER, Curtisville, Ind. Filed Apr. 26, 1889. Serial No. 308,903. (No model.)

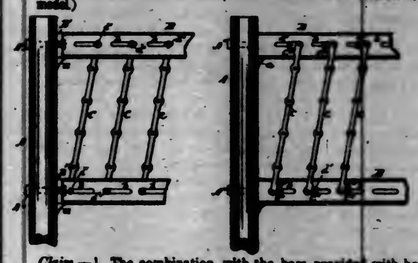


Claim.—1. In a vehicle of the class described, the combination, with the axle, of the downwardly-bowed side springs C, each comprising a plurality of leaves clipped at their centers to bolsters *d*, the upper leaf *e* projecting forwardly and connecting with the shafts, and the vehicle-body B, supported from the ends of the next leaf below, substantially as specified.

2. In a vehicle of the class described, the combination, with the axle, of the downwardly-bowed side springs C, each comprising a plurality of leaves clipped at their centers to bolsters *d*, the upper leaf *e* projecting forwardly and connecting with the shafts, and the leaf *f* next below having transverse eyes e^1 in its end, pins *g*, passing through said eyes, stirrups G, hooked to the projecting ends of said pins, the vehicle-body E, its bottom standing normally below said eyes, pad rods G', connected to said bottom at their lower ends and pivotally connected to said stirrups at their upper ends, as and for the purpose set forth.

3. In a vehicle of the class described, the combination, with the axle, of the downwardly-bowed side springs C, each comprising a plurality of leaves clipped at their centers to bolsters *d*, the upper leaf *e* projecting forwardly and connecting with the shafts, and the leaf *f* next below having transverse eyes e^1 in its end, pins *g*, passing through said eyes, stirrups G, hooked to the projecting ends of said pins, the vehicle-body E, downwardly-bowed end springs F, secured thereto, said springs having longitudinal eyes *f'* in their ends, pins A, passing through said eyes, stirrups H, hooked to the projecting ends of said pins, and rods G', having eyes in each end loosely engaging the bodies of said stirrups, whereby the upper stirrup will permit a longitudinal movement and the lower a transverse movement of the body independent of the axle, substantially as described.

412,421. SPOOL-HOLDING FRAME FOR LOOMS. OTTO W. SWAHN, Philadelphia, Pa. Filed Mar. 30, 1889. Serial No. 305,695. (No model.)

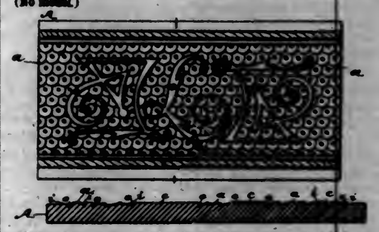


Claim.—1. The combination, with the bars provided with horizontal slots and set-screws or bolts, of uprights or stringers having slots, as set forth.

2. The combination, with the bars provided with horizontal slots and set-screws or bolts, of the uprights or stringers having ears *C C* on their ends and slots C^2 C^2 in the ears, into which the set-screws or bolts take, as set forth.

3. A spool-holding frame for Jacquard looms, having suitable supports, and bolts in said supports, longitudinal bars having bent slotted ends set over the aforesaid bolts and longitudinal slots in the body thereof, and stringers or uprights having slotted ends and bolts for attaching them to the longitudinal bars, as set forth.

412,422. ORNAMENTAL WOOD STRIP OR PANEL. WILLIAM SCHRAMME, Brooklyn, N. Y. Filed Nov. 5, 1888. Serial No. 290,262. (No model.)



Claim.—As a new article of manufacture, wood strips or panels having ornamental paper pressed into the surface thereof, the edges *e e* of the paper being pressed below the surface of the wood, and the main or entire surface of the paper between the depressed edges being raised and embossed, substantially as described.

412,423. MACHINE FOR GRINDING VALVES OF TUBE-SHAFTS. ELIJAH U. ENGELS, Minden, N. Y. Filed July 31, 1889. Serial No. 321,004. (No model.)

Claim.—1. In combination with the stationary valve-seat holders arranged in a row, the oscillatory head A, extended lengthwise over said row, the slide C, mounted on said head and arranged to reciprocate lengthwise thereof, and the valve-carriers connected to said slide, substantially as described and shown.

2. In combination with the stationary valve-seat holders arranged in a row, the oscillatory head A, extended lengthwise over said row, the slide C, mounted movably longitudinally on said head, the valve-carriers *b b*, connected to said slide, the block *a*, arranged movably in the direction of the length of the slide, and the arm *c*, connecting the said block, with the slide C, substantially as described and shown.



3. In combination with the frame, cranks, or eccentrics, and pitmen D D', stationary valve-seat holders connected to the frame, the oscillatory head A, connected to the pitmen D, the slide C, mounted on said head, the valve-carriers connected to said slide, the slide *l*, connected to the pitman D' and provided with the diagonal slot *l'*, the block *a*, sliding longitudinally in said slot, and the arm *c*, pivoted to said block and connected to the slide C, substantially as described and shown.

4. In combination with slide C and the valve *v*, provided with the leg *v'*, the valve-carriers consisting of the stem *s*, extending through the slide and provided at one end with the head *i* and socket *t* in said head, the eccentric *r*, connected to the opposite end of the stem *s*, and the spring *o*, interposed between the slide and head of the stem, substantially as described and shown.

412,424. CAR-AXLE LUBRICATOR. GEORGE P. SHERMAN, Milwaukee, Wis., assignor of one-half to John R. Mitchell, Saigus, Iowa. Filed Feb. 12, 1889. Serial No. 300,022. (No model.)



Claim.—1. In a device for lubricating journals, the combination, within the inclosing journal-box, of a rotating lubricating-wheel provided with a series of teeth projecting from the surface of its periphery, with the journal provided with corresponding depressions for the reception of said series of teeth, and an elastic or flexible support for retaining the peripheries of said lubricating-wheel and journal in contact, substantially as and for the purpose specified.

2. The combination, within a journal-box C, of a lubricating-wheel D, provided with a series of teeth E and lubricant-conveying grooves G, and journal B, provided with series of depressions or apertures F, formed for the reception of said series of teeth E, and supporting-bearings for retaining said wheel D in contact with said journal, substantially as and for the purposes specified.

3. The combination of the journal-box C, lubricating-wheel D, provided with a series of teeth E, wheel-supporting axle H, axle-supporting journal-bearings I I, located upon the respective sides of said axle H, adapted to permit of the lateral movement of said axle with the thereon-supported wheel D, supporting-springs J, affixed at one end to the inclosing-box C and at their opposing ends to said journal-bearings I, and journal B, provided with a series of depressions F for the reception of said series of teeth E, all substantially as and for the purpose specified.

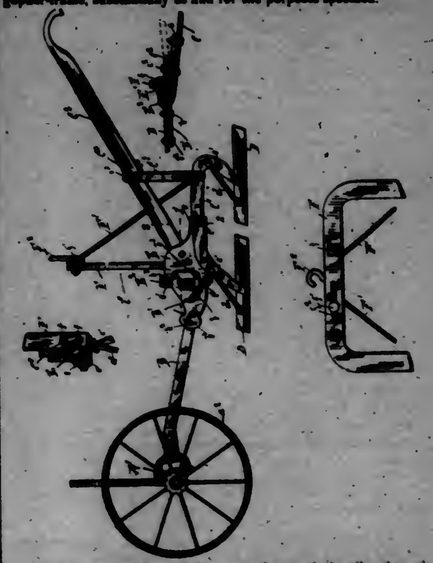
412,425. LAMP-LIGHTER. HERMANN SMITS, Germantown, N. Y. Filed Feb. 20, 1889. Serial No. 300,655. (No model.)



Claim.—A lighting implement consisting of a stem provided with V-shaped ribs *c*, and at one end having a loop *a* and at the other end a holder *c*, substantially as described.

412,426. SOPHER CULTIVATOR. DAVID SNELLING, Freedom, Ill. Filed Apr. 8, 1889. Serial No. 306,491. (No model.)

Claim.—1. The combination, with the cultivator-frame, of the gopher-frame consisting of two beams provided with shovels and the arch rigidly connecting the same, and the draft-beams, substantially parallel and of equal length and pivoted at their rear ends to the gopher-frame, substantially as and for the purposes specified.



2. The combination, with the gopher-beams, the handles, the arch, and the draft-beams, of the castings E, adapted to receive and support said parts, which are connected thereto, substantially as and for the purposes specified.

3. The combination, with the gopher-frame having apertured lugs *c'*, of the draft-beams B, the castings E', adjustably connected to the rear end of the draft-beams and provided with apertured lugs b^2, and the pivot-bolts B^2, passing through said lugs, substantially as and for the purposes specified.

412,427. MUFF. CHRISTIAN SCHAFFHAUS, St. Paul, Minn. Filed Mar. 15, 1889. Serial No. 303,026. (No model.)



Claim.—In a muff, the rubber-tube end rings A A', covered with fur, and the body of the muff made of fur covering B, silk lining C, and hair filling D, and secured between these rings A A', substantially as set forth.

412,428. HARROW. LE ROY W. SNYDER, Auburn, N. Y. Filed Apr. 27, 1889. Serial No. 308,817. (No model.)



Claim.—1. In a harrow, the arrangement and combination of bars crossing each other and being connected at their points of intersection by means of rivets, one of said bars being corrugated, substantially as described.

2. In a harrow, the combination and arrangement of corrugated draft and cross bars connected at their points of intersection by means of rivets, substantially as described.

3. A harrow-frame provided with bars grooved or channeled at their points of crossing and rigidly secured to each other at their intersection by metallic fastenings clinched at a point exterior to the surface of the bars, substantially as described.

4. A harrow-frame provided with arched bars grooved or channeled at their points of crossing and rigidly secured to each other at their intersection by rivets, substantially as described.

5. In a harrow, the combination and arrangement of corrugated metallic draft and cross bars having their flat facial surfaces at their point of intersection in direct contact with each other and being secured together by means of rivets, substantially as described.

6. A harrow-frame provided with arched bars rigidly secured to each other by metallic fasteners clinched at a point exterior to the surface of the bars, substantially as described.

412,429. PACKING-BOX. ALBERT H. STILWELL, Philadelphia, Pa. Filed July 15, 1889. Serial No. 317,626. (No model.)

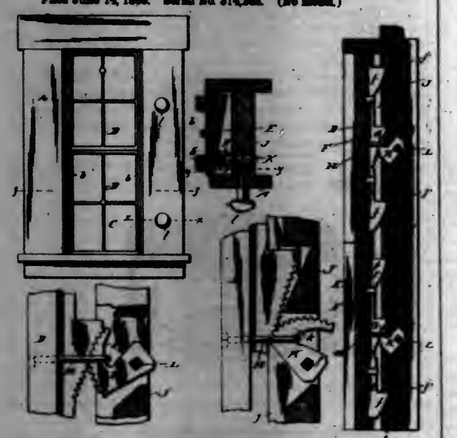


Claim.—1. A box A, having the staggered bulk-heads secured to its walls, substantially as and for the purpose set forth.

2. A box A, having the staggered bulk-heads secured to its walls, in combination with the secondary bottom G, as and for the purpose set forth.

3. A box A, having the staggered bulk-heads secured to its walls, in combination with the secondary bottom G, having bulk-heads secured thereto, as and for the purpose stated.

412,430. WINDOW-CASING. ALLEN SWAB, Elizabethville, Pa. Filed June 14, 1889. Serial No. 314,262. (No model.)



Claim.—1. The combination, with a window-casing having a movable section and the sliding sash, of the sliding bar having cams *f* placed between the said section and a fixed part of the casing, the keeper H, the shaft, and the segment on the shaft, substantially as described.

2. The combination, with the window-casing having a movable section for the purpose described and having a board J, of the bar F, having cams *f*, and the toothed incline G of the shaft and the correspondingly-toothed segment K on the said shaft, substantially as set forth.

3. The combination, with the window-casing having a movable section D and a board J, of the keeper H, secured to section D, the shaft L, and the cam K on shaft L, adapted to move section D out and having the cam-edge *k*, which acts on the keeper H and draws the said section D back, substantially as set forth.

4. In a window-casing, the combination, with the movable section and the board J, of the bar F, having cams *f*, and a toothed incline G, the keeper H, and the shaft having a toothed segment, which segment is provided with a rear cam-edge *k*, substantially as described.

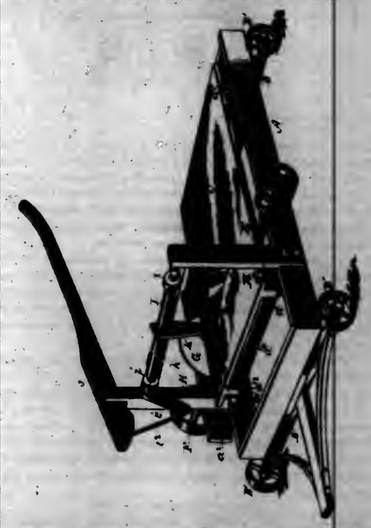
5. In a window-casing having a board J, the combination of the movable section, the bar F, held to the section by keepers, and having cams *f* and a toothed incline, the keeper H, the shaft, and the toothed segment on the shaft, having a cam-edge *k*, substantially as described.

412,431. CATTLE-TAG. DANIEL H. TALBOT, Sioux City, Iowa. Filed Feb. 7, 1889. Serial No. 299,094. (No model.)



Claim.—A cattle-tag formed in two sections, each having an integral tube or sleeve, one tube or sleeve having a reduced portion adapted to enter and be upset in the other sleeve or tube, and formed at the inner end of said reduced portion with an annular step-shoulder for the inner end of said second or outer tube or sleeve to abut, the joint between the two sleeves being at about the center of the button when the two sections are secured in place on the animal, substantially as set forth.

412,432. FIRE-WOOD-SAWING MACHINE. ANOS TALMER, Truro, Ill. Filed Mar. 18, 1889. Serial No. 303,708. (No model.)



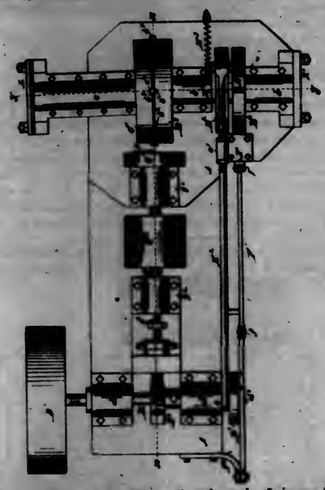
Claim.—1. In a fire-wood-sawing machine, in combination with a carrier-frame supported on wheels which run on ways on a main frame, a lever J on said frame, shaft I and its supports, and having crank-arms *i*' and K, a link *i*², connecting the lever J and crank *i*', and a carrier-plate connected with crank K by a link L, substantially as described.

2. In a fire-wood-sawing machine, in combination with a main frame and a carrier-frame located thereon, a shaft I, carried on a bar A, which is supported on standards H, crank-arm *i*', link *i*², and lever J, and crank-arm K, and link L, which connects it with the carrier-frame, substantially as described, and for the purpose specified.

3. In a fire-wood-sawing machine, in combination with a frame

A, mounted on wheels, and having side bars *a*, with ways *a*', the carrier-plate C, having wheels *c*², and legs *d* and *m* integral therewith, the shaft I, journaled in brackets *i*, which project from a bar supported on standards H, and provided with a crank *i*' and link *i*², which connects said crank with a lever J, a crank K, and link L, which connects it with legs *m*, integral with the carrier-plate, and a saw G, fixed to a shaft E, which is journaled in the frames A and *a*', substantially as described, and for the purpose specified.

412,433. MACHINE FOR TURNING THE ENDS OF PIECES OF METAL. HARRISON H. TAYLOR, Detroit, Mich., assignor to the Detroit Machine Screw Works, same place. Filed May 15, 1886. Serial No. 273,091. (No model.)



Claim.—1. In a machine for turning the ends of pieces of metal, the combination, with the rotatable jaws C' B², constructed to receive the pieces of metal between their adjacent faces, of a disk located between the jaws to limit the engagement of said pieces therewith, substantially as set forth.

2. In a machine for turning the ends of pieces of metal, the combination, with the rotatable jaws C' B², constructed to receive the pieces of metal between their adjacent faces, of a removable intermediate disk, substantially as set forth.

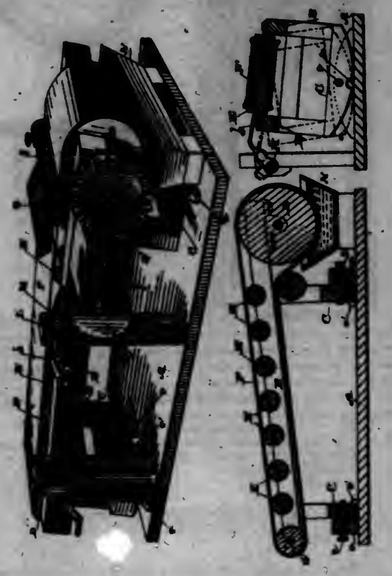
3. In a machine for turning the ends of pieces of metal, the combination, with the rotatable shafts B and C, provided with metal-holding jaws upon their adjacent ends, of a ratchet-wheel and a stop-wheel mounted upon one of said shafts, reciprocating rods F² and F', a pivoted lever E', connected to one of said rods, a pawl pivoted to said lever, a spring secured to said lever for retracting the same, a reciprocatory and rotatable cutter-spindle, a main drive-shaft provided with a cam for reciprocating the cutter-spindle, and means secured to said drive-shaft for reciprocating the rods F² F', substantially as set forth.

4. In a machine for turning the ends of pieces of metal, the combination, with the rotatable shafts B and C, provided with metal-holding jaws upon their adjacent ends, of a ratchet-wheel and a stop-wheel mounted upon one of said shafts, the drive-shaft provided with a crank having projecting pins, rods F² F', one of which is provided with a bolt for engaging the stop-wheel and the other connected with a lever carrying a pawl to engage the ratchet-wheel, said rods being reciprocated by the pins upon the said crank when the drive-shaft is rotated, thereby operating the metal-holding jaws, substantially as set forth.

5. In a machine for turning the ends of pieces of metal, the combination, with the rotatable shafts B and C, provided with metal-holding jaws upon their opposing ends, of a ratchet-wheel and a stop-wheel mounted upon one of said shafts, the drive-shaft provided with a crank having projecting pins, rods F² F', one of which is jointed and pivoted at one end and provided with a bolt at its opposite end to engage the stop-wheel, the other rod provided with a lever at one end, said lever carrying a pawl to engage the ratchet-wheel, both of said rods being operated by the pins upon the said crank when the drive-shaft is in motion, substantially as set forth.

6. In a machine for turning the ends of pieces of metal, the combination, with the rotatable shafts B and C, provided with metal-holding jaws upon their opposing ends, of a ratchet-wheel and a stop-wheel mounted upon one of said shafts, a drive-shaft, a cam, and a crank engaged therewith, the crank being provided with projecting pins, rods F² F', one of which is connected with a pawl to engage the ratchet-wheel and the other provided with a bolt to engage said stop-wheel, and a rotatable and reciprocatory spindle provided with a cutter, said rods and spindle being operated simultaneously by the crank and cam, respectively, on the drive-shaft, substantially as set forth.

412,434. ORE-CONCENTRATOR. JAMES TELLOCK, Angel's Camp, Cal. Filed July 24, 1888. Serial No. 280,933. (No model.)



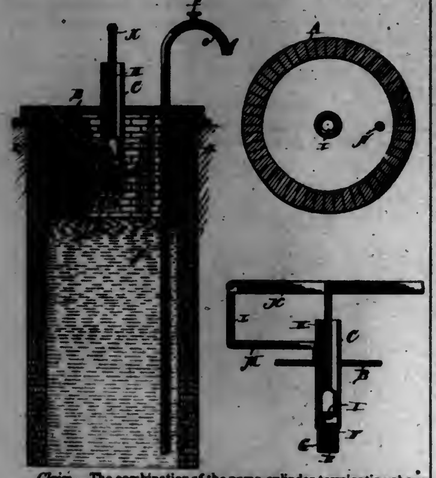
Claim.—1. In an ore-concentrator, a frame having rockers by which it is supported, and power mechanism connected with said frame for moving it on its rockers, in combination with an endless belt mounted on the frame, the drums D D', the former having the gear I, a counter-shaft on the frame parallel with the travel of the belt, a pinion and ratchet-wheel on said counter-shaft, and a pawl engaging the ratchet, whereby an intermittent or periodical travel is imparted to said belt, substantially as herein described.

2. In an ore-concentrator, a frame having rockers on which it rests, and a power mechanism connected with the frame for moving it on its rockers, in combination with an endless belt mounted on the frame, a counter-shaft on the frame parallel with the belt-gearing between said belt and one of the driving-drums, a ratchet on the counter-shaft, and a stationary pawl adapted to engage and partially rotate the ratchet as it comes in contact with it by the rocking movement of the frame on which the belt is mounted, substantially as herein described.

3. In an ore-concentrator, a laterally-rocking frame and an endless belt mounted thereon, in combination with a driving-drum carried by the frame and over which the belt passes, a gear on the shaft of the driving-drum, a pinion on a counter-shaft carried by the frame at one side of the belt and parallel with its travel and meshing with the said gear, and a ratchet on said counter-shaft, and a stationary pawl adapted to engage and partially turn said ratchet by the movement of the rocking frame, whereby a periodical travel is imparted to the endless belt, substantially as herein described.

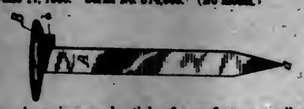
4. In an ore-concentrator, a frame having rockers on which it rests and an endless belt mounted upon said frame, in combination with a crank-shaft and connecting-link for moving the frame on its rockers, a driving-drum carried by the frame and over which the endless belt passes, a counter-shaft at one side of the belt and parallel with its travel, a ratchet carried by said counter-shaft for rotating said driving-drum, the pinion J and gear I, and a stationary pawl for engaging and partially turning the ratchet by the movement of the rocking frame, whereby a periodical travel is imparted to the belt, substantially as herein described.

412,435. PUMP. WILLIAM THORNE, Moscow, Idaho. Filed Apr. 26, 1889. Serial No. 308,698. (No model.)



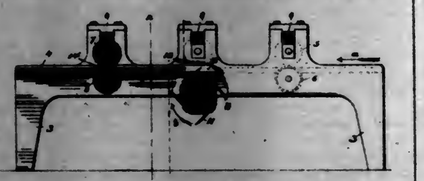
Claim.—The combination of the pump-cylinder terminating above the water-level and having downwardly-extending brackets connected by a cross-piece, an elastic cushion mounted upon the said cross-piece and bearing against an annular elastic packing-ring at the lower end of the cylinder, and the vertically-moving piston fitting in the cylinder and having a downwardly-opening valve, substantially as herein described, and for the purpose specified.

412,436. RAILROAD-SPIKE. HENRY M. WALTHAM, Lomira, Wis. Filed June 17, 1889. Serial No. 314,662. (No model.)



Claim.—As an improved article of manufacture, a railroad-spike whose body A is uniformly straight centrally and tapers downwardly at one-fifth of the distance from the bottom to a point *a*, which is in the axial line of the body A, its upper terminus being provided with a shoulder *b* at right angles to the axis of the body A, surmounted by a head B, parallel therewith, and projecting on the side opposite said shoulder a greater distance beyond the body A than on the side adjacent thereto, to secure a more stable joinder, as herein set forth and illustrated.

412,437. HOOP-KNOTTING MACHINE. PETER B. WARNER, Green Bay, Wis. Filed Apr. 11, 1889. Serial No. 306,820. (No model.)

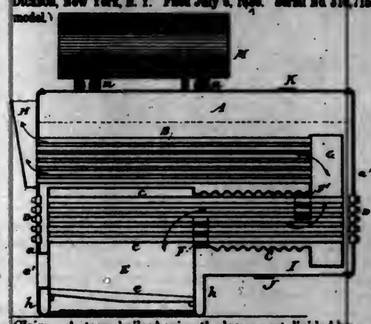


Claim.—1. In a hoop-knotting machine, the combination of a longitudinally-grooved bed-plate having a transverse series of longitudinal slots opening into the grooves in said bed-plate, a rotatable shaft or arbor arranged transversely of said bed-plate and underneath said slots, a series of knives adjustably secured to said shaft and adapted to be carried in the rotation of said shaft through said slots in the bed-plate and having bits of the form of cross-section of said grooves, and a pressure-roll arranged transversely of said bed-plate and above said knife-shaft, and adapted to hold the hoops passing through the machine in said grooves, and to bring any knots or other projections on said hoops in contact with said knives, substantially as described.

2. In a hoop-knotting machine, the combination of a bed-plate provided with half-oval longitudinal grooves on its upper surface, a series of longitudinal slots opening into said grooves, and a transverse slot in the body of the bed-plate at one side of said series of slots, a knife-cylinder journaled transversely of said bed-plate and underneath said series of slots, and adapted to rotate its knives through said slots, said knives being adjustably secured on said cylinder and having bits corresponding in form to the cross-sections of their respective grooves, a spring-controlled presser-roll arranged above said knife-cylinder and adapted to hold the hoops passing through the machine upon the bottom of the grooves and knots upon their under surfaces in contact with said knives, a spring-controlled feed-roll arranged above said transverse slot, and an under feed-roll rotated in said slot and provided with annular grooves corresponding in form to the grooves in the bed-plate and in alignment with said grooves, substantially as and for the purpose set forth.

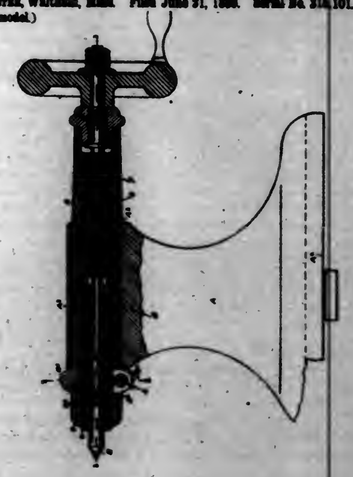
3. In a hoop-knotting machine, the combination, with the bed-plate 2, having the half-oval longitudinal grooves 4, the series of longitudinal slots 13, opening into said grooves, and the transverse slots 14, of a series of knives having bits corresponding to the cross-sections of said grooves adapted to be rotated in said slots 13 in vertical planes parallel with said grooves, the presser-roll 12, arranged transversely of said bed-plate and above said series of slots 13, and provided with a spring 9, the feed-rolls 5 and 7, journaled above the slots 14 transversely of the bed-plate, and the feed-rolls 6 and 8, journaled underneath said bed-plate and rotating in the slots 14, and having annular grooves corresponding in form and aligning with the grooves of said bed-plate, substantially as and for the purposes set forth.

412,438. WATER-TUBE BOILER. RICHARD WATKIN and JOHN DICKSON, New York, N. Y. Filed July 6, 1889. Serial No. 316,715. (No model.)



Claim.—A steam-boiler having the lower part divided by a water-leg partition into two compartments, and having in each of these compartments a separate furnace, a separate fire-flue, and the water-tube *c*, the latter running through said flues from head *a* to head *a'*, as and for the purpose set forth.

412,439. TAIL-STOCK SPINDLE FOR LATHES. ANDREW WEBSTER, Waltham, Mass. Filed June 21, 1889. Serial No. 315,101. (No model.)



Claim.—1. The combination, with a lathe-spindle, of a bushing B, surrounding it, and constructed with transverse slits B^1 B^2, and a longitudinal slit B^3, in combination with a screw E, joining and engaging the walls of the longitudinal slit, substantially as described, for the purposes specified.

2. The combination, with a lathe-spindle, of a bushing B, surrounding said adapted to be fastened to and released from it, and having a shoulder B^3, in combination with the tail-stock of the lathe adapted to receive said bushing and to make a rest for its said shoulder B^3, substantially as described, for the purpose specified.

412,440. AZO COLORING-MATTER. ARTHUR WEINBERG, Frankfort-on-the-Main, Germany, assignor to Leopold Cassella & Co., same place. Filed Jan. 8, 1889. Serial No. 296,267. (Specimens.)

Claim.—As a new article of manufacture, the new coloring-matter of the general formula

$$R(SO_3Na)x—N=N—C_6H_3—N=NC_{10}H_5NH_2$$

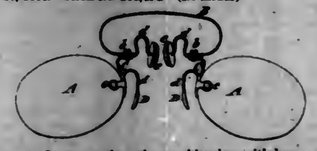
soluble in water, nearly insoluble in spirits, and produced by the action of diazoic derivatives of compounds obtained from naphthylamine and diazo-sulphonic acids upon alpha or beta naphthylamine.

412,441. SUSPENSORY-BANDAGE. ARTHUR J. WELLS, Syracuse, N. Y. Filed July 1, 1889. Serial No. 316,223. (No model.)



Claim.—The combination, with a suspensory-pouch, of a loop *c*, secured to said pouch, a pouch-supporting strap supported by said loop *c*, and a protecting-apron *f*, substantially as and for the purpose described.

412,442. EYEGLASSES. WALTER S. WELLS, New York, N.Y. Filed Nov. 10, 1883. Serial No. 290,494. (No model.)



Claim.—1. In an eyeglass, the combination, with lenses, of posts or standards secured to said lenses and having portions extending upwardly beyond the axes of said lenses, and pads for the nose mounted upon and rigidly secured to said upwardly-extending portions, substantially as specified.

2. In an eyeglass, the combination, with lenses, of posts or standards secured thereto, and bearing-pads for the nose, and other pads for the nose mounted upon and rigidly secured to upwardly-extending portions of said posts or standards, substantially as specified.

3. In an eyeglass, the combination, with lenses, of posts or standards having portions extending upwardly above the axes of said lenses, nose-pads adapted to grip the nose and secured to said posts or standards, and other nose-pads rigidly secured to said upwardly-extending portions above the pads first named and having a backward and downward extension, said last-named pads being also adapted to grip the nose, substantially as specified.

4. In an eyeglass, the combination, with lenses, of posts or standards secured thereto, nose-pads secured to said posts or standards and adapted to grip the nose, and other nose-pads rigidly secured to said standards above and to the rear of the nose-pads first named, and also adapted to grip the nose, substantially as specified.

5. In an eyeglass, the combination, with lenses, of posts or standards secured thereto, pads for the nose rigidly secured to said posts or standards, certain of said pads being arranged in the same plane as the lenses and other of said pads being arranged above the other pads and to the rear thereof, substantially as specified.

6. In an eyeglass, the combination, with lenses, of posts or standards secured to said lenses and having upwardly-extending portions above the axes of the lenses, pads secured to said posts or standards, and other pads above the pads first named and also secured to said posts or standards, said pads having a bearing upon the nose approximately at the points of a triangle, substantially as specified.

412,443. HEATER. ELIJAH S. WILSON, Englewood, Ill. Filed Nov. 26, 1888. Serial No. 291,853. (No model.)



Claim.—1. In a heater substantially of the nature set forth, in combination with the shell and fire-chamber, a pair of intercommunicating fluid-receptacles forming, respectively, a receptacle for the cooler or return fluid and a receptacle for the discharge or heated fluid, the latter being nearest and the former further from the fire-chamber, and partitions for the said receptacles, one extending from the lower part of the return-fluid receptacle toward its top and the other from the upper part of the discharge-fluid receptacle toward its base, substantially as described.

2. In a heater substantially of the nature set forth, in combination with the shell and fire-chamber, a pair of intercommunicating fluid-receptacles supported one above the other within the shell, a manifold for the return fluid communicating with the upper of said receptacles, a manifold for the supply of heated fluid communicating with the lower of said receptacles, and partitions for the said receptacles, one extending from the lower part of the return-fluid receptacle toward its top and the other from the upper part of the discharge-fluid receptacle toward its base, substantially as described.

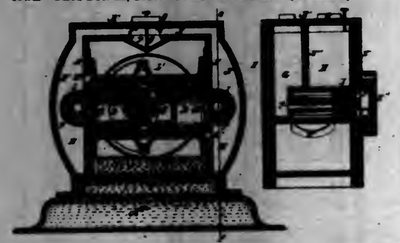
3. In a heater substantially of the nature set forth, in combination with the shell and fire-chamber, a pair of intercommunicating fluid-receptacles I and K, the latter supported above the former within the shell, a partition I' for the receptacle I, extending from its upper side short of its base, a partition K' for the receptacle K, extending from its base short of its upper side, a return-fluid inlet *f* leading into the receptacle K near its base, and an outlet *e* for the heated fluid, leading from the receptacle I near its top, substantially as described.

4. In a heater substantially of the nature set forth, in combination with the shell and fire-chamber, a series of receptacles I, supported within the shell near the fire-chamber at intervals affording intervening spaces A, a cover *i*, surmounting the said receptacles and closing the spaces A, an open passage *g* between two of the rearmost receptacles, a series of receptacles K, supported above the receptacles I at intervals affording intervening spaces *h'* and each communicating with one of the last-named receptacles, a cover *i'*, surmounting the receptacles K and closing the spaces *h'*, an open passage *g'* between two of

the foremost receptacles K, an inlet-opening *d'* for return fluid in each receptacle K, and an outlet-opening *e* for the heated fluid in each receptacle I, substantially as described.

5. In a heater substantially of the nature set forth, in combination with the shell and fire-chamber, a series of receptacles I, supported within the shell near the fire-chamber at intervals affording intervening air-spaces *h*, a cover *i*, surmounting the said receptacles and closing the spaces *h*, an open passage *g* between two of the rearmost receptacles, a partition I', and an outlet *e* for the heated fluid in each receptacle I, a manifold M, communicating with the outlets *e*, a series of receptacles K, supported above the receptacles I at intervals affording intervening spaces *h'* and each communicating with one of the last-named receptacles, a cover *i'*, surmounting the receptacles K and closing the spaces *h'*, an open passage *g'* between two of the foremost receptacles K, a partition K', and an outlet *e* for the return fluid in each of the last-named receptacles, and a manifold N, communicating with the inlets *d'*, substantially as described.

412,444. STEAM-ENGINE. WILLIAM O. WORTH, Cedar Rapids, Iowa. Filed Dec. 22, 1887. Serial No. 258,763. (No model.)



Claim.—1. In an engine of the class described, the herein-described improvement in the shell, consisting in providing the same with outwardly-curved ends A", contiguous plane bearing-faces A' for the heads of an inclosed cylinder, and intermediate steam-chests adapted to receive a steam-valve, all substantially as and for the purpose set forth.

2. In an engine substantially as described, the combination of a rectangular shell having suitable steam and exhaust ports, crank-shaft mounted centrally with respect to said shell, pistons and cylinders having reciprocal motions perpendicular to each other on said crank, an eccentric mounted on the crank-shaft within said shell, and steam-valves arranged opposite the outer ends of the cylinders and actuated by said eccentric, substantially as and for the purpose set forth.

3. In an engine of the class described, the shell A, having the steam-ports G G, adapted to communicate with the end of valve I, and the exhaust-ports H H, adapted to communicate with the open ends of the cylinders, substantially as and for the purpose set forth.

4. In an engine of the class described, the shell A and the receptacle P, t ranged substantially as set forth, and adapted to catch surplus oil from the exhaust-steam.

5. The combination in an engine, substantially as described, of the shell A, steam-ports H H, receptacle P, the downwardly-extending projection *c* to deflect the steam, and means for letting the oil out of said receptacles, substantially as described.

412,445. CULTIVATOR-TOOTH. HIRAM ADAM, Rome, N. Y., assignor of one-half to Alfred Ehrhart, same place. Filed June 12, 1889. Serial No. 313,969. (No model.)



Claim.—The improved cultivator or harrow tooth formed integral with the shank, and having a horizontal V-shaped point-section curving sharply upward to a practically-vertical main portion, said main portion beginning slightly convex and increasing in convexity to the top of the tooth or blade, substantially as shown and described.

412,446. COMBINED CUPPING DEVICE AND VACUUM-PUMP. HOBART R. ALLEN, Indianapolis, Ind. Filed Jan. 3, 1889. Serial No. 295,868. (Model.)

Claim.—1. In a cupping device, a cup-shaped casing of elastic rubber corrugated vertically at its lower portion to stiffen that portion and having an annular outwardly-projecting flange at its lower open end, substantially as described.

2. In a cupping device, the one-piece elastic body A, open at its lower end and having an opening in its upper portion, the diaphragm-plate B, dividing the body into compartments, with a valve-closed port between them, the disk F, secured to the inner upper side of the casing, and the handle connected therewith, substantially as and for the purpose described.



3. In a cupping device, a one-piece cup-shaped elastic casing divided by a plate with a valve-closed port therein into two compartments, and having an exhaust-port in its upper portion, in combination with a handle secured to the upper portion by a disk or plate upon the inside, having a conical valve thereon to close the exhaust-port in the casing, and a washer upon the outside to tightly impinge the casing between it and the disk, substantially as shown and described, and for the purpose set forth.

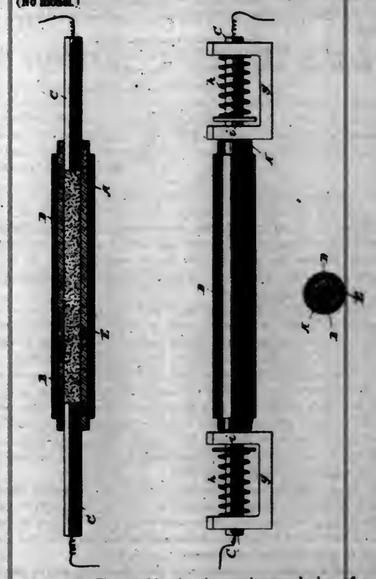
412,447. PROCESS OF DEPHOSPHORIZING IRON. GEORGE ARCHBOLD, New York, N. Y., assignor to Hiram Gilbert Bond, same place. Filed Aug. 23, 1889. Serial No. 321,769. (Specimens.)

Claim.—The method, substantially as herein described, of smelting iron ores, which consists in reducing the charge in the presence of the above-described oxysalts of barium.

412,448. PROCESS OF DEPHOSPHORIZING IRON AND STEEL. GEORGE ARCHBOLD, New York, N. Y., assignor to Hiram Gilbert Bond, same place. Filed Aug. 23, 1889. Serial No. 321,770. (Specimens.)

Claim.—The process of refining crude or pig iron and converting the same into malleable iron and steel, which consists in subjecting the crude molten metal to the action of the oxysalts of barium, substantially as described.

412,449. ARTIFICIAL RESISTANCE FOR ELECTRIC CIRCUITS. CHARLES R. ARNEW, Chicago, Ill. Filed June 27, 1889. Serial No. 315,799. (No model.)

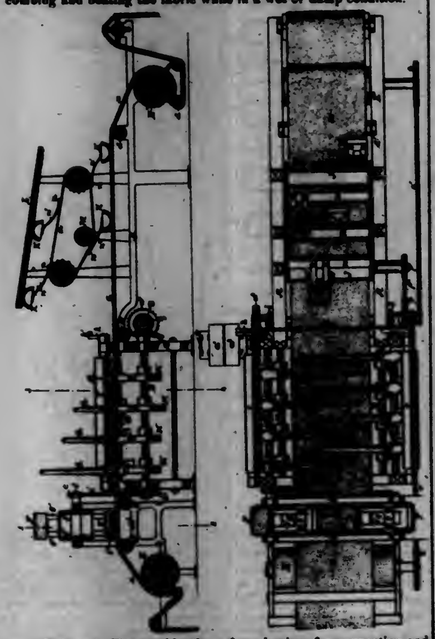


Claim.—1. The combination, in a resistance device, of a refractory tube containing a refractory resistance material and inclosed in a refractory casing, substantially as set forth.

2. As a new article of manufacture, an artificial resistance device consisting of a tube of porcelain, powdered plumbago in the tube, plugs forming terminals of the electric circuit and confining the plumbago, a protecting-covering of metal, and a non-conducting material between the porcelain tube and the protecting-covering, substantially as described.

412,450. MACHINE FOR BEATING AND COMBING OUT PILE FABRICS. JOHN BARR, Philadelphia, Pa. Filed Nov. 5, 1888. Serial No. 289,964. (No model.)

Brief.—The object of the machine is to raise the nap or pile by combing and beating the fabric while in a wet or damp condition.



Claim.—1. The combination of mechanism for supporting and traversing the strip of fabric with two sets of combs, mechanism for traversing one set of combs crosswise of the fabric and the other set lengthwise of the same, a set of beaters, and means for operating the same, said set of beaters being located between the two sets of combs, whereby the final action upon the fabric is that of one of the sets of combs, substantially as specified.

2. The combination of means for supporting and traversing the strip of fabric with a belt or equivalent carrier, means for operating the same, and a toothed comb supported on said carrier by means of a spring stem or shank, substantially as specified.

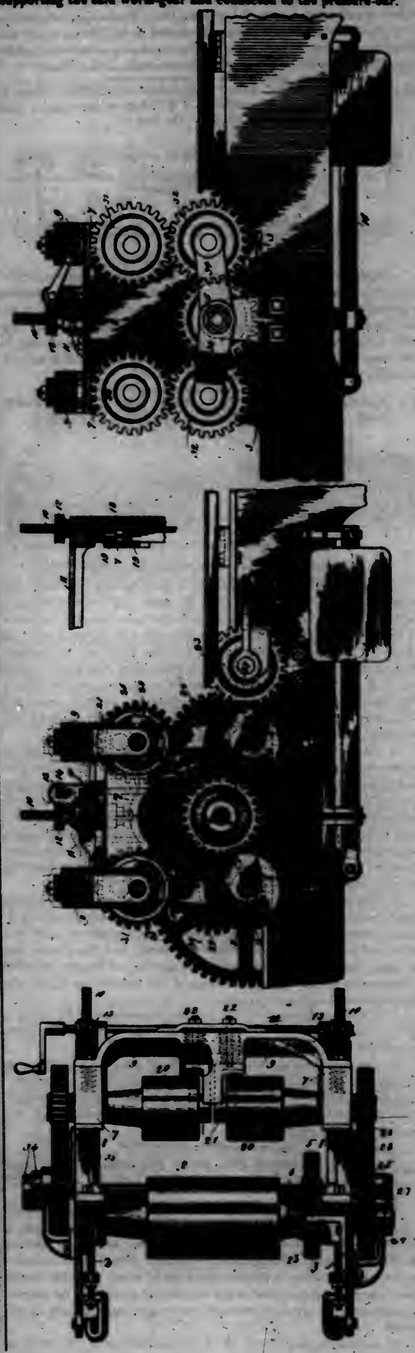
3. The combination of means for supporting and traversing the fabric, a belt or equivalent carrier, means for operating the same, and combs supported on said carrier by means of spring stems or shanks, said combs having toothed convex faces for acting on the fabric, substantially as specified.

4. The combination of means for supporting and traversing the fabric, a belt or equivalent comb-carrier, means for operating the same, combs having spring stems or shanks connected to said carrier, and a toothed plate or table with which the combs are brought into contact in their passage, substantially as specified.

5. The combination of means for supporting and traversing the strip of fabric, belts having spring stems or shanks carrying combs for acting upon the fabric, opposite drums for carrying said belts, means for operating the belts, and a directing-roll located between the drums and in a lower plane than the rear drum, whereby the belts will rise at an angle from the fabric on approaching said rear drum, all substantially as specified.

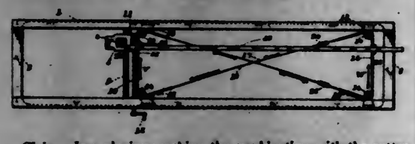
412,451. FEED-WORKS FOR WOOD-WORKING MACHINES. EDWIN BENJAMIN, South Evanston, Ill., assignor to the Benjamin Machine Company, of Illinois. Filed Dec. 12, 1888. Serial No. 293,127. (No model.)

Claim.—1. The combination, in a wood-working machine, of a movable frame-work carrying the top rolls, an elevating-screw partaking of the upward and downward movement of said frame-work, a worm-gear fitted on said screw, and a cross-piece resting loosely upon the stand or fixed portion of the frame-work, said cross-piece supporting the said worm-gear and connected to the pressure-bar.



2. The combination, in a wood-working machine, of standards attached to the bed, a cross-piece, as 11, resting loosely upon said standard and connected to the pressure-bar, a frame-work adapted to slide upon said standards, feed-rolls carried in said frame-work, and devices, as screw 10 and gear 12, for connecting said frame rigidly but adjustably with said cross-piece, substantially as described.

412,452. GUIDE-BAR FOR PLANING-MACHINES. ROWIN P. HOWLES, Buffalo, N. Y., assignor to H. & R. Holmes, same place. Filed June 12, 1888. Serial No. 276,883. (No model.)



Claim.—In a planing-machine, the combination, with the cutter-head, the screw for actuating the same, and a guide-bar extending longitudinally of the machine-frame, of an actuating-belt for the guide-bar running over pulleys at the sides of the machine and crossed centrally between the pulleys, and a guide-bar connected at one end to one strand of the belt and at the opposite end to the cutter-head, substantially as and for the purposes described.

412,453. CARRIAGE-AXLE. JOSEPH BLAIR, St. Charles, Quebec, Canada. Filed Mar. 16, 1887. Serial No. 231,011. (No model.)



Claim.—1. The combination, with a carriage-axle provided with an annular offset I and a collar C on the inner end of the axle B, of a bearing D, fitting on the said axle-spindle and provided with an annular flange at its inner end having grooves and slots on the inside and segmental offsets on the outside, and a collar fitting on the annular offset of the axle and having segmental projections engaging the said groove of the flange, and a collar also fitting on the annular offset I of the axle and having grooves into which fit the external segmental projections on the flange of the bearing D, substantially as shown and described.

2. The combination, with the axle A, the spindle B, formed thereon and grooved on its upper side, the collar C on the inner end of the spindle and the offset I in the rear of the collar, an aperture L, extending through the offset and collar, the bolster or beam O on top of the axle and having a vertical reservoir N leading into the aperture L, and the cover P therefor, of the bearing D, fitting on the spindle and having a securing-collar at its inner end in rear of the collar C, and the guard Q, secured to the axle and covering the oil-reservoir and joint between the said securing-collar, substantially as set forth.

3. The combination, with the spindle B, having an annular groove near its outer end and a collar C near its inner end, of the bearing D, having inner and outer securing-collars J K at its rear end, the said collars and bearing having interlocking recesses and projections, and the projections D' on the outer end of the bearing of the cap or collar G, having recesses G' for the passage of the projections D and the securing-screws.

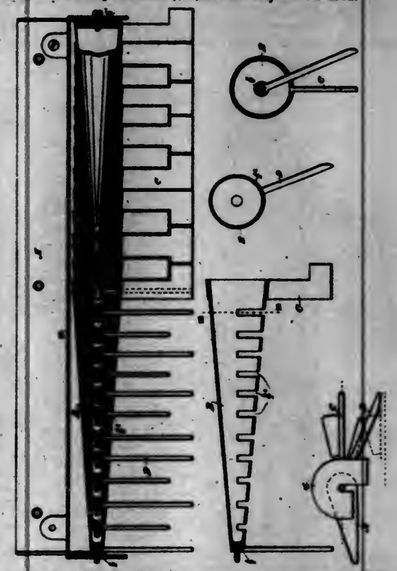
4. The combination, with the spindle, of the bearing D, having a cap G on its outer end, and the spring H between the end of the spindle and the cap, substantially as set forth.

5. The combination, with the spindle B, having the collar C at its inner end and the annular groove E near its outer end, of the bearing D, having securing-collars at its rear end, screws F, passing through it into the groove E, and the collar or cap G on the outer end of the bearing, substantially as set forth.

412,454. COUPLING KEY-BOARD FOR ORGANS. CARL BRÖSSEL, Pasadena, Cal. Filed Mar. 30, 1889. Serial No. 305,454. (No model.)

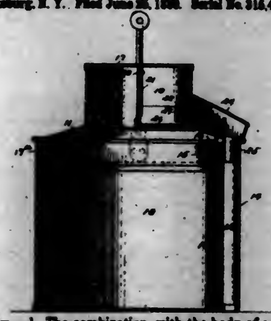
Claim.—1. A coupling key-board for organs, consisting of a series of supplementary keys placed above the main keys of the organ, a series of arms or levers adapted to extend over and lie in contact with the main keys, and a series of concentric slotted tubes connecting the supplementary keys with the arms or levers, whereby as the former are pressed down the latter are forced down also to operate the corresponding keys of the main key-board, substantially as described.

2. A coupling key board for organs, consisting of the series of supplementary keys placed above the main keys of the organ, the series of arms or levers adapted to lie over and in contact with the main keys of the organ, and the concentric series of axially-rotating tapering and slotted tubes connecting the supplementary keys with the arms or levers, whereby as the former are operated the latter press down the main keys of the organ, substantially as described.



3. A coupling key-board for organs, comprising a frame adapted to be attached to the organ-face and having a front casing, the concentric series of tapering slotted tubes mounted and adapted to be axially moved in said casing, the series of keys attached to said tubes, and the series of arms or levers attached to said tubes, arranged and adapted to operate substantially as described.

412,455. COOKING OR HEATING VESSEL. HENRY BOSWORTH, Canandaigua, N. Y. Filed June 26, 1888. Serial No. 316,471. (No model.)

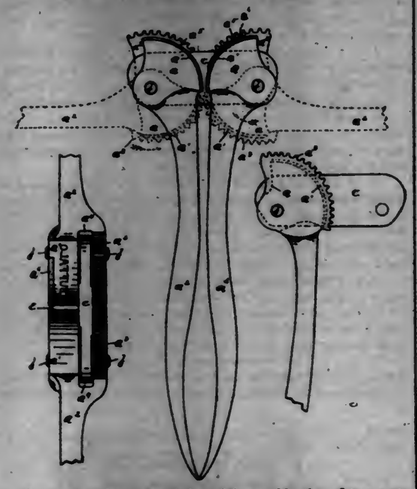


Claim.—1. The combination, with the body of a vessel provided with a peripheral passage extending from top to bottom, of a cover provided with a dome having open and closed compartments, an inclosed angled channel formed upon the cover, connecting with the closed dome-compartment and capable of connection also with the body-passage, and a valve-connection between the compartments of the dome, substantially as shown and described.

2. The combination, with the body of a vessel provided with a peripheral passage extending from top to bottom, and an interior sealing-chamber, of a flanged top or cover provided with a dome having open and closed compartments, an inclosed channel formed upon the cover, communicating with the closed dome-chamber and the body-passage, and a valve-connection between the compartments of the dome, substantially as described.

3. The combination, with the body of a vessel provided with a peripheral vertical passage extending from top to bottom, and an interior trough or sealing-chamber near the top, of a cover provided with a flange capable of entering the trough or sealing-chamber, and a dome having an open compartment and closed compartment provided with a detachable wall, a valve-connection between the dome-compartments, and an angled inclosed chamber formed upon the cover, connecting the closed dome-compartment and body-passage, substantially as described, and for the purpose specified.

412,456. SEAL-PRESS. CLARENCE V. BOSWORTH, Buffalo, N. Y. Filed July 3, 1888. Serial No. 277,886. (No model.)



Claim.—A seal-press consisting of the combination of two parts, each composed of a handle, a segmental compression-piece, and a segmental gear, having a slot between the compression-piece and the gear, with a connecting-strip within the slots between the gears and compression-pieces, and pivot-pins whereby the connecting-strip is pivoted at its opposite ends to the two parts.

412,457. SHIFTING MECHANISM FOR STEM WINDING AND SETTING WATCHES. FERDINAND DOUBRIN, D. Saint, Switzerland. Filed Apr. 4, 1889. Serial No. 306,026. (No model.) Patented in Switzerland Dec. 24, 1888, No. 220.



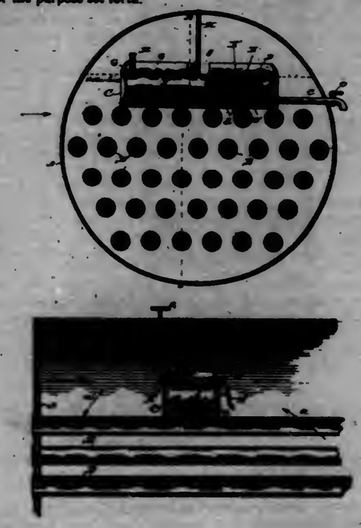
Claim.—1. The combination, with the winding and setting mechanism in a watch, of a pivoted bar or lever H and the bezel G, notched to engage one end of the lever H and capable of being partially rotated, substantially as and for the purposes set forth.

2. The combination, with the stem A, crown-pinion B, pivoted swinging plate D, and wheels C in the winding and setting mechanism, of the pivoted bar or lever H and the movable bezel G, notched on its inner edge and adapted to engage and move the lever H, substantially as and for the purposes set forth.

412,458. BOILER-CLEANING DEVICE. CLARK BROWN, Prospect, Ill. Filed June 16, 1888. Serial No. 314,698. (No model.)

Claim.—1. In a device of the class described, the combination, with a box provided with a discharge-pipe and having a top formed with an opening or openings, of a cover adapted to close or expose said opening and means for operating said cover for the purpose of opening or closing the same, substantially as and for the purpose set forth.

2. The combination, with a boiler, of a box set therein and having its upper margin approximately at the water-level and having its top partly open, a discharge-pipe extending from the box through the boiler-shell and provided with means for opening and closing it, a cover adapted to close or expose the opening in the top of the box, and means for operating the cover from a point outside the boiler for the purpose of closing or exposing such opening, substantially as and for the purpose set forth.



3. The combination, with the boiler A, of the box C, set therein and provided with a discharge-pipe c, extending outward through the shell of the boiler and having a stop-cock c', the grating-top D D', the cover E E', resting on the top D D' and adapted to close or expose the openings in the top, and the operating-rod H, extending outward through the shell of the boiler and connected with the cover E, whereby the cover may be adjusted with reference to the top of the box for the purpose of closing or exposing the openings thereto.

4. The combination, with the boiler, of the box C, having the discharge-pipe c, and the grating-top D D', provided with the dependent flanges d, the cover E E', resting on the top D D', the operating-rod H, extending outward through the shell of the boiler and adapted to operate the cover D D', and means, substantially as shown and described, for admitting steam to the box, substantially and for the purpose set forth.

5. The combination, with the box C, provided with the discharge-pipe c, apron F, and wings G, and having the grating-top D D', of the sliding cover E E', resting on the top, and the operating-rod H, extending through the shell of the boiler, substantially as and for the purpose set forth.

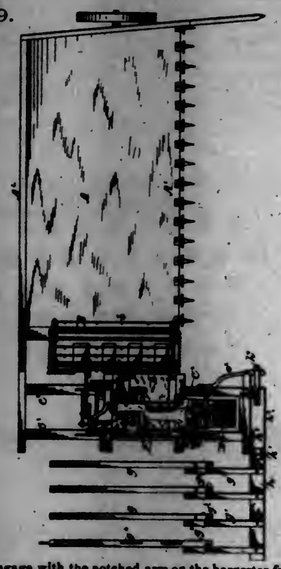
6. The combination, with the box C, having the discharge-pipe c and grating-top D D', of the cover E, resting on the top, the operating-rod H, and the pipes K K, connecting the interior of the box with the steam-space above the water-level of the box, substantially as and for the purpose set forth.

412,459. SELF-BINDING HARVESTER. DAVID R. BROWN, St. Louis, Mo., assignor to the Walter A. Wood Mowing and Reaping Machine Company, Hoosick Falls, N.Y. Filed Apr. 6, 1888. Serial No. 269,797. (No model.)

Claim.—The combination of a harvester-frame having a grain-binding mechanism mounted thereupon, a notched arm c' secured thereto, and a bundle-carrier-supporting arm also hinged to said frame and carrying a series of slats having other slats hinged to these slats secured to the hinged carrier-supporting arm, and a hand-lever

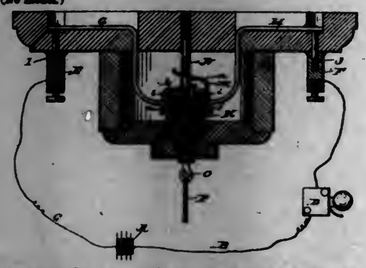


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adapted to engage with the notched arm on the harvester-frame, substantially as and for the purpose described.

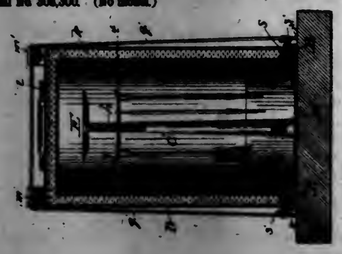
412,460. CIRCUIT-CLOSER FOR SIGNALING APPARATUS. GEO. D. BURTON, New Ipswich, N. H. Filed July 3, 1888. Serial No. 307,150. (No model.)



Claim.—1. In a system of train-signaling, the combination, with an electric generator and conductors leading therefrom, of a circuit-closer consisting of a frame having an insulated post, to which the terminals of the circuits are connected, the one terminal overlapping the other and the two fitting in a notched rod, said rod terminating in a ring or handle.

2. As a new article of manufacture, a circuit-closer consisting of a frame having an insulated post, to which the terminals of the circuits are connected, the one terminal overlapping the other and the two fitting in a notched rod, said rod terminating in a ring or handle.

412,461. BRUSH-KEEPER. ABRAM L. CARON, Chicago, Ill., assignor of one-half to Jules Bourst, Auburn, Ind. Filed Apr. 23, 1889. Serial No. 308,300. (No model.)



Claim.—1. In a brush-keeper, the combination of a base A, a cover fitting closely upon the base, a fastening device for securing the cover in place upon the base, and a brush-support inclosed by the cover, substantially as described.

2. In a brush-keeper, the combination of a base A, a cover fitting closely upon the base, a fastening device for securing the cover in place upon the base, and a brush-support and dish C, inclosed by the cover, substantially as described.

3. In a brush-keeper, the combination of a base A, a cover supported on the base to rest upon a seat B of yielding material, a fastening device for securing the cover in place upon the seat, and a brush-support inclosed by the cover, substantially as described.

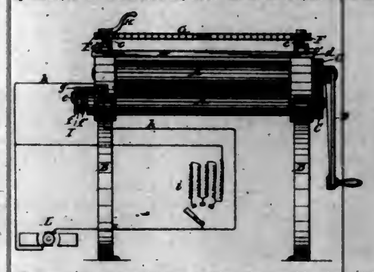
4. In a brush-keeper, the combination of a base A, a cover B, formed of two thicknesses of metal, and an intermediate chamber *k*, a fastening device for securing the cover in place upon the base, and a brush-support inclosed by the cover, substantially as described.

5. In a brush-keeper, the combination of a base A, a cover, a fastening device for securing the cover in place upon the base, a brush-support C, inclosed by the cover, and a plate E upon the support, substantially as and for the purpose set forth.

6. In a brush-keeper, the combination of a base A, a cover supported on the base and provided with mechanism for securing it thereon against the admission of air, comprising a lever *g*, fulcrumed upon the base, a stirrup *g'*, pivotally secured to the lever to engage the top of the cover and press the latter upon its seat when the lever is lowered, and a brush-support inclosed by the cover, substantially as described.

7. In a brush-keeper, the combination of a base A, a removable dish C upon the base, and a brush-support C' above the dish, a ring B of yielding material about the dish, a cover D to inclose the brush-support resting upon the ring, and a fastening device for securing the cover in place upon the base, substantially as described.

412,462. PHOTOGRAPH-BURNISHER. CLARENCE T. CARLEY, Syracuse, N. Y. Filed June 21, 1889. Serial No. 315,068. (No model.)



Claim.—1. In a burnishing-machine, the combination, with the burnishing-roller, of an electric heater connected with said roller to heat the same, as set forth.

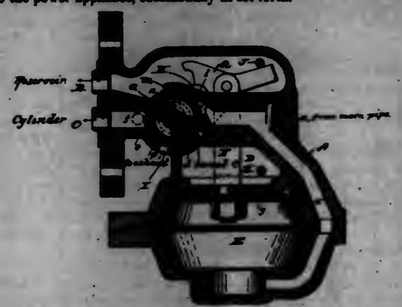
2. In a burnishing-machine, the combination of a hollow burnishing-roller and an electric heater inclosed by said roller, as set forth and shown.

3. In a burnishing-machine, the combination of a hollow burnishing-roller, a non-metallic core in said roller, metallic collars attached to said core, an electric coil surrounding said core and out of contact with the roller and connected to the collars, and conductors connecting the collars with the electric generator, substantially as set forth and shown.

4. In combination with the hollow burnishing-roller, a hollow non-metallic core seated in said roller, metallic collars on the ends of said core, and an electric heat-developing conductor surrounding the core and extending longitudinally through the interior thereof and connected to the aforesaid collars, brushes bearing on the collars, and conductors connecting the brushes with the electric generator, substantially as described and shown.

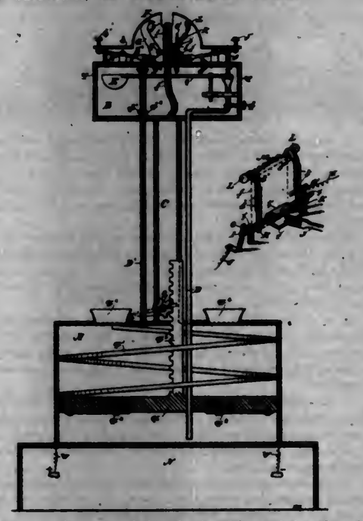
412,463. AUTOMATIC COCK-VALVE. JESSE F. CARPENTER, Berlin, Germany. Filed June 11, 1888. Serial No. 313,945. (No model.)

Claim.—1. A valve mechanism comprising a box, a diaphragm dividing the same into two chambers and in open communication by means of a main pipe with a primary source of fluid-pressure on both of its sides, and also in communication with a secondary source of fluid-pressure on one side and a valve mechanism interposed between this secondary source of fluid-pressure and one side of the diaphragm, and also interposed between both sources of fluid-pressure, and an apparatus for utilizing the motive fluid for the application of force, and provided with an outlet to the atmosphere, all constructed and arranged substantially as described, whereby the main pipe may be automatically exhausted at each valve apparatus of a series at the first part of the stroke and before the first slight application of force to the power appliance, substantially as set forth.



2. A valve-box having a pressure-chamber, a diaphragm arranged in said chamber, a stem rising from such diaphragm, a lever pivoted to such stem, a valve pivotally connected to such lever, a secondary container of pressure, and a power-applying apparatus, the valve having suitable ports for controlling the passages from the main pipe to the secondary container and to the atmosphere, and other passages leading from the secondary container to the power appliance, and other passages leading from the power appliance to the atmosphere, all combined and arranged substantially as described, whereby upon reduction of pressure at the main station the main pipe at each valve apparatus will be exhausted automatically at the first part of the stroke and before the first slight application of power by the power appliance and without the intervention of check-valves or equivalent medium, substantially as set forth.

412,464. ELECTRIC IGNITING DEVICE FOR LAMPS. MANUEL CARRANZA, Guatemala, Guatemala, and JOSÉ M. TIBOCO, San Francisco, Cal. Filed Oct. 11, 1888. Serial No. 287,962. (No model.)



Claim.—1. In a lamp, a lighter for the wick, consisting of a swinging frame adapted to be moved forward and backward to close and open an electric circuit, said frame having a spiral platinum wire in said circuit, whereby it is heated to incandescence, the said wire being in contact with the top of the wick, substantially as herein described.

2. In a lamp, a rocking or swinging frame in an electric circuit and adapted to be moved forward and backward to close and open said circuit, a wire carried by said frame and adapted by the movement of the frame to be thrown into contact with the wick, and an electric circuit including the wire, whereby it is heated to incandescence, thereby lighting the wick, substantially as herein described.

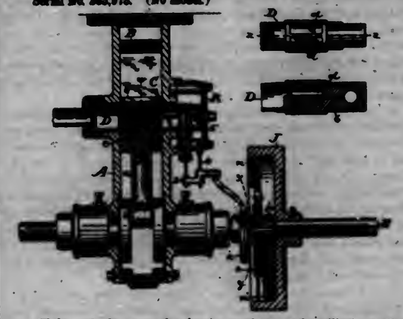
3. In a lamp, and in combination with the wick thereof, a swinging frame carrying the wire M, adapted by the movement of the frame to be thrown into and out of contact with the wick of the lamp, the wires of an electric circuit, and connections between said wires and the swinging frame, whereby the circuit is alternately closed and opened by the swinging of said frame, substantially as and for the purpose herein described.

4. In a lamp, the rock-shaft I and the lever-connections and button by which it is operated, in combination with the arms of the rock-shaft, the wire M, secured between the tops of the arms and adapted to be thrown into contact with the top of the wick by the movement of the shaft, and an electric circuit, including the wire, whereby it is heated to incandescence and lights the wick, substantially as herein described.

5. In a lamp, and in combination with its wick-tube and contained wick, the rock-shaft I, the button and lever-connections by which said shaft is moved, and the spring by which it is returned, the arm secured to said shaft, the wire M, secured between the arms, and an electric circuit, including the wire, for rendering it incandescent, substantially as and for the purpose herein described.

6. In a lamp, and in combination with its wick-tube and contained wick, the sectional insulated rock-shaft, the button and lever-connections, and the spring by which said shaft is operated, the arms secured to said shaft, the wire M, secured between the tops of the arms and adapted to be thrown into and out of contact with the wick, the electric-circuit wires *w*, the contact-piece O, connected with one wire and bearing on one end of the shaft, and the contact-piece O', connected with the other wire and with which one of the arms of the shaft is adapted to come in contact when the wire is thrown over into contact with the wick, whereby the circuit through the wire is closed and said wire rendered incandescent to light the wick, substantially as herein described.

412,465. STEAM-ENGINE. JOHN T. CARR, Bristol, assignor to the J. T. Carr Engine Company, New Britain, Conn. Filed Feb. 14, 1888. Serial No. 263,973. (No model.)



Claim.—1. In an engine having a piston and oscillating cylinder, the herein-described balanced valve, consisting of a movable part which rocks with the oscillating movement of the cylinder and is provided with radial ports, and a stationary part having radial ports, and which serves as the seat or bearing for said rocking part, the confronting walls of said stationary and moving parts being also provided with the balancing-chamber communicating with the interior of said cylinder, substantially as described, and for the purpose specified.

2. In an engine, the combination of the hollow axle having radial ports and the rocking block or piston fitted thereon, having ports acting in connection with the ports of said hollow axles as valves, said axle and piston having between their confronting faces the balancing-chamber, substantially as described, and for the purpose specified.

3. In an engine having a piston and oscillating cylinder, the valves consisting of a movable part which rocks with the oscillating movement of the cylinder and is provided with radial ports, and a stationary part having radial ports, in combination with a cut-off in the steam-passage leading to said ports, and a governor connected with said cut-off for varying the time of operating said cut-off relatively to the opening and closing of the valves proper, substantially as described, and for the purpose specified.

4. The combination of an engine of the class described with the steam-chamber K, a pipe inclosed in said chamber—as, for instance, the end of hollow axle D—the middle partition 6 within said pipe, the cut-off 5, sliding in said pipe and partition, and the governor for operating said cut-off, substantially as described, and for the purpose specified.

412,466. APPARATUS FOR RAISING DOUGH. JOHN F. CASE, Brooklyn, N. Y. Filed Feb. 15, 1889. Serial No. 300,077. (No model.)

Claim.—1. A bread-raiser consisting of a dough-chamber having

a water-vessel set into and forming part of the bottom wall thereof, a permanent shelf immediately beneath the water-vessel, and a lamp or other equivalent source of heat upon said shelf and beneath said vessel and adapted to apply heat directly thereto.



2. A bread-raiser consisting of a dough-chamber having a water-vessel set into and forming a part of the bottom wall thereof and so mounted therein that it is capable of being slid forward out of said wall for refilling or cleaning.

3. A bread-raiser consisting of a dough-chamber having a water-vessel set into and forming part of the bottom wall thereof and so mounted therein that it is capable of being slid forward out of said wall, and a door adapted to close against such water-vessel and retain the latter in position.

4. A bread-raiser consisting of a casing divided by a closed horizontal partition into an upper dough-chamber and a lower heating-chamber, said partition having a water-vessel set thereinto and constituting a portion thereof, a permanent shelf in the lower part of said heating-chamber immediately beneath said water-vessel, a lamp upon said shelf and immediately beneath said water-vessel, and a door covering one side of said dough-chamber and extending down to and covering the front of said partition, but arranged to leave the front of the heating-chamber open, so that the lamp therein is accessible and the products of combustion may escape therefrom while the dough-chamber is closed to the outer air.

5. A bread-raiser consisting of a casing open on one side and divided by a closed horizontal partition into an upper dough-chamber and a lower heating-chamber, said dough-chamber having a door covering its front side, a water-vessel set into the bottom of the dough-chamber and forming part of the closed horizontal partition and so mounted that it can be slid out of the dough-chamber and adapted to be held in place by the said door, said heating-compartment being open at its front side and having openings in the lower part of its closed sides, a shelf in the heating-chamber immediately beneath said water-vessel, and a lamp on said shelf arranged directly under said water-vessel and adapted to heat the latter.

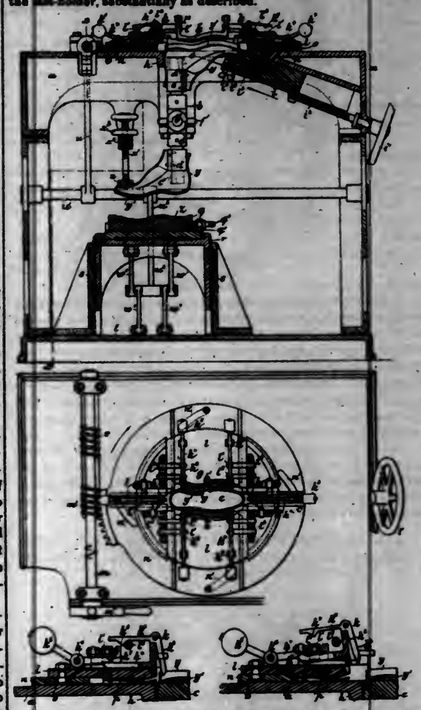
6. A bread-raiser consisting of a casing open throughout its entire extent on one side, a horizontal closed partition dividing said casing into an upper dough-chamber and a lower heating-chamber, said dough-chamber having steam-outlet apertures in its upper part, shelves in said dough-chamber for supporting the dough-pans, a removable water-vessel set into the bottom of the dough-chamber and constituting a portion of the said closed horizontal partition and mounted therein so that it can be slid out of the dough-chamber, a shelf in the heating-chamber immediately beneath the water-vessel, a lamp on said shelf directly under said water-vessel, whereby the water in said vessel is heated, and a door on the open side of said casing, said door closing the dough-chamber entirely and terminating just below said closed partition, whereby said heating-chamber is left open on one side and said water-vessel is held in place.

412,467. LASTING-MACHINE. JOHN CAVE, PAUL CAVE, ARMS CAVE, FREDERICK CAVE, and ARTHUR CAVE, Rushden, County of Northampton, England. Filed June 28, 1888. Serial No. 277,895. (No model.)

Claim.—1. In a shoe-lasting machine, the combination, with a last-holder pivoted intermediate its ends and adapted to receive a last at each end, of lasting devices and sole-pressing devices in planes separated by a space substantially equal to the length of the last-holder, whereby when the said last-holder is turned to its operative position the lasting devices may operate in connection with one last and the sole-pressing devices in connection with the other, substantially as described.

2. The combination, with a last-holder pivoted intermediate its ends and adapted to receive a last at each end, of stationary separated lasting devices and sole-pressing devices and two stationary toe-supports, substantially as described.

3. In a shoe-lasting machine, a last-holder pivoted intermediate its ends and separated lasting devices and sole-pressing devices, the said sole-pressing devices moving and exerting pressure longitudinally of the last-holder, whereby the pressure of the lasting devices tends to neutralize the pressure of the sole-pressing devices on the trunnion of the last-holder, substantially as described.



4. In a shoe-lasting machine, a last-holder pivoted intermediate its ends and adapted to receive a last at each end, the last-receiving portion of each end being adjustable to and from its pivot, in combination with lasting devices and sole-pressing devices in planes separated by a space substantially equal to the length of the last-holder, substantially as described.

5. In a shoe-lasting machine, a last-holder composed of three parts, the central part being pivoted and a right and left hand screw extending longitudinally thereof and engaging the end parts, whereby the end parts of the last-holder may be simultaneously adjusted, substantially as described.

6. In a shoe-lasting machine, a last-holder composed of three parts, the central part having the yoke B, the right and left hand screw, and the hand-wheel *f* on said screw located within said yoke, and the ends *e e*, engaging the outer ends of the screw, substantially as described.

7. The combination, with a last-holder pivoted intermediate its ends and adapted to receive a last at each end, of separated lasting devices and sole-pressing devices, a driving-shaft, intermediate gearing connecting said shaft and said lasting and sole-pressing devices, substantially as described.

8. The combination, with a last-holder pivoted intermediate its ends and adapted to receive a last at each end, of separated lasting devices and sole-pressing devices, a driving-shaft provided with a worm, a cam-ring for operating the lasting devices, having a segment engaging the worm on the driving-shaft, a lever provided with a gear-segment engaging a worm on said driving-shaft, and a toggle connecting said lever and said sole-pressing device, substantially as described.

9. In a lasting-machine, the combination, with a last-holder, of lasting devices comprising upper-holding pinchers, one pair on each side of the shoe, having jaws conforming to the shape of the shoe and adapted to grasp the upper throughout the main portion of its length, and straight heel and toe pinchers intermediate said side pinchers, substantially as described.

10. In a lasting-machine, the combination, with a last-holder, of slides mounted radially with respect to the center of the sole of the last, pinchers pivoted on said slides adapted to be held in an elevated position, and cams and toppets for depressing said pinchers, one of said devices being mounted on the slides and the other mounted rigidly on a stationary part of the machine, whereby a movement of the slides effects the downward movement of the pinchers, substantially as described.

11. In a shoe-lasting machine, the combination, with a last-holder, of a slide arranged radially with relation to the center of the sole of the last, a pair of pinchers pivotally mounted on said slide and adapted to be held in an elevated position, a cam for lowering said pinchers, and a cam for closing the movable jaw of said pinchers, substantially as described.

12. In a shoe-lasting machine, the combination, with a last-holder, of a slide mounted radially with respect to the center of the sole of the last, pinchers for grasping the upper on the last pivotally mounted on said slide, a clamp for engaging and pressing down the edge of the upper, and a cam for closing and releasing the movable jaw of said pinchers, substantially as described.

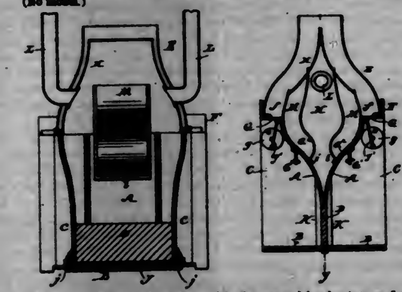
13. In a shoe-lasting machine, the combination, with a last-holder, of slides mounted radially with respect to the center of the last, pinchers mounted on said slides, cams for depressing the pinchers, cams for operating the movable jaws of the pinchers, a cam-ring engaging and operating all of said slides, and a driving-shaft operating said ring, whereby a movement of the driving-shaft effects the moving of the slides and the gripping and releasing of the upper, substantially as described.

14. In a shoe-lasting machine, a toe-support separated from the lasting devices and consisting of a movable body provided with a pivoted portion for engaging the toe, a set-screw for adjusting the pivoted toe-supporting portion, and a screw for adjusting said movable body, substantially as described.

15. In a shoe-lasting machine, a toe-support separated from the lasting devices and provided with a pivoted portion for engaging the toe, said pivoted portion having mounted therein a sliding spring-pressed block provided with spring-jaws for directly engaging the toe of the shoe, a screw for adjusting the pivoted portion, and a screw for adjusting the support, substantially as described.

16. In a shoe-lasting machine, the combination, with a toe-support mounted in inclined guides, of a screw for moving and retaining the same, said toe-support having a pivoted portion provided with inclined portion P^1, and a sliding spring-pressed block provided with spring-jaws for directly engaging the toe of the shoe, and a screw for adjusting the pivoted portion, substantially as described.

412,468. FIRE-PLACE AND HEATER. JOSEPH S. CLOUD and SAMUEL D. DRAHAM, Spartanburg, S. C., assignors to themselves and John C. White, Norfolk, Va. Filed Feb. 26, 1889. Serial No. 301,188. (No model.)



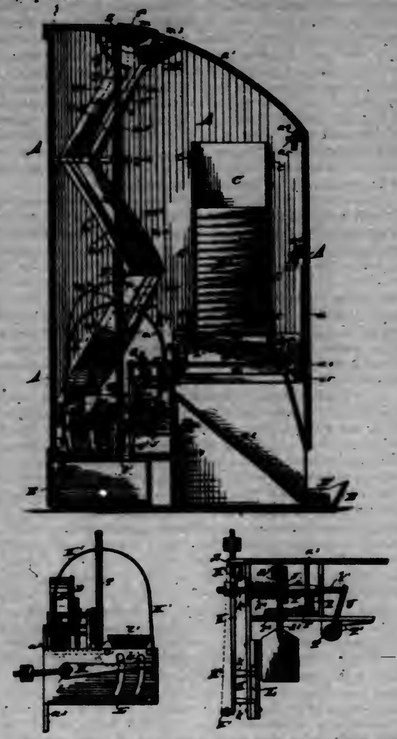
Claim.—1. The combination, with the curved back plates, of an air-heater H, having flues M, substantially as described.

2. The back plates A, having the openings G^2 and the dampers *f*, in combination with the air-heater H, held above the back plates, and provided with the flues M, coinciding with the openings G^2, and the dampers G', controlling the openings G^2, substantially as described.

412,469. COIN-OPERATED VENDING-MACHINE. FREDERIC B. GUMAER, New York, N. Y., assignor to the American Automatic Vending Machine Manufacturing Company, of New York. Filed Dec. 19, 1888. Serial No. 294,023. (No model.)

Claim.—1. In a coin-operated vending-machine, the combination, with a clock-works mechanism tripped into action by a coin, of a table, a goods-box held thereat, a slide reciprocating on the table at the discharge end of the box, gearing at the table actuated from the clock-works, and one or more toppets on said gearing operating the slide to deliver the goods.

2. In a coin-operated vending-machine, the combination, with a clock-works mechanism tripped into action by a coin, of a table having a series of slots, a series of goods-boxes held at the table, a series of slides reciprocating on the table at the discharge ends of the boxes, gearing near the table actuated from the clock-works, and toppets on said gearing operating the slides to deliver the goods, said clock-works mechanism geared with the coin-lever-tripping devices to operate one slide to deliver one piece of goods at each tilting of the coin-lever by the proper coin.



3. In a coin-operated vending-machine, the goods-delivery apparatus comprising a table, one or more goods-boxes arranged thereat, and one or more slides reciprocating between the table and boxes, and provided with edge-guards, preventing abstraction of goods, substantially as herein set forth.

4. In a coin-operated vending-machine, the combination, with a clock-works mechanism tripped into action by a coin, of a table F, having slots *f*, one or more goods-boxes C at the table, slides C', fitted between the table and boxes and provided with pins or shoulders *c'*, one or more shafts A, journaled near the table, toppets *h'* on said shafts, and gear-wheels on said shafts actuated from the clock-works and operating the slides, substantially as herein set forth.

5. In a coin-operated vending-machine, the combination, with a clock-works mechanism tripped into action by a coin, of a table F, having slots *f*, one or more goods-boxes C at the table, slides C', fitted between the table and boxes and provided with pins or shoulders *c'* and guards C^3, one or more shafts A, journaled near the table, toppets *h'* on said shafts, and gear wheels or pinions H on said shafts actuated from the clock-works and operating the slides, substantially as herein set forth.

6. In a coin-operated vending-machine, the combination, with a clock-works mechanism, of a table, one or more goods-boxes thereat, one or more delivery-slides reciprocating on the table at the box or boxes, gearing near the table carrying toppets actuating the delivery slide or slides and operated from the clock-works mechanism, a pivoted or tilting coin-lever, a notched disk or plate on the rock-shaft of said lever, and a detent or arm on the clock-works, stopping them when it is out of alignment with the notch of the coin-lever-shaft disk and allowing operation of the clock-works and delivery-slides when the lever tilts and holds the notch in the path of the detent, substantially as herein set forth.

7. In a coin-operated vending-machine, the combination, with a clock-works mechanism, of a table, one or more goods-boxes thereat, one or more delivery-slides reciprocating on the table at the boxes, gearing near the table carrying tappets actuating the delivery slide or slides and operated from the clock-works mechanism, a slotted coin chute or guide, a coin-lever held to an endwise-movable rock-shaft having a radial pin or arm, said lever provided with coin-holding fingers or coin-support entering the coin-passage of the chute or guide, retracting devices for the endwise-movable shaft and for the lever, a notched disk or plate on said shaft, a detent or tappet on the clock-works adapted to stop them when out of alignment with the notch of the disk or plate, a pin on one of the clock-works gear-wheels, and a retracting trip-lever engaged by the latter pin and engaging the coin-lever shaft to move it endwise, substantially as described, whereby, as the coin-lever is tilted, the disk-notch may be brought into register with the clock-works detent to trip said works and the goods-delivery slides into action, and when one package of goods is delivered the coin-lever will be moved bodily to drop the coin and will rise and stop the clock-works, as and for the purposes set forth.

8. In a coin-operating vending-machine, the combination, with a coin-lever held to an endwise-movable rock-shaft provided with a radial pin and with a device for retracting it endwise, a notched disk or plate on said shaft, and a rotating tappet in a clock-works mechanism adapted to stop at said disk and work through its notch when the coin-lever is tilted, of a pin on one of the clock-works wheels, a trip-lever having tappet-arms, one engaged by the clock-works pin and the other engaging the coin-lever-shaft pin, substantially as described, whereby, when the coin-lever is tilted by a proper coin, the clock-works will be started to actuate a goods-delivery mechanism, and after a package is delivered the coin-lever is moved bodily to discharge the coin, as set forth.

9. In a coin-operated vending-machine, the combination, with a coin-lever held to an endwise-movable rock-shaft provided with a radial pin and with a device retracting it endwise, a notched disk or plate on said shaft, a retracting device restoring the lever to normal position, and a rotating tappet in a clock-works mechanism adapted to stop at said disk and work through its notch when the coin-lever is tilted, of a pin on one of the clock-works wheels, and a trip-lever having tappet-arms, one engaged by the clock-works pin and the other engaging the coin-lever-shaft pin, said latter tappet having a shoulder opposing the shaft-pin as the shaft and tilted coin-lever receive bodily movement from the trip-lever, substantially as described, whereby, when the coin-lever is tilted by a proper coin, the clock-works will be started to actuate a goods-delivery mechanism, and the coin-lever will be shifted bodily to discharge the coin, and the shoulder on the tappet will assure passage of the clock-works pin clear of the trip-lever before the coin-lever resumes its normal position, as herein set forth.

10. In a coin-operated vending-machine, the combination, with a clock-works mechanism, of a table, one or more goods-boxes C thereat, one or more delivery-slides at the boxes, gearing *h* H at the table, operated by the clock-works, tappets *K'*, driven by said gearing and actuating the slides, a coin-lever, a notched disk or plate J *i* on the lever rock-shaft, and a detent I on the clock-works adapted to stop them when out of line with the disk-notch *i*, substantially as described, for the purposes set forth.

11. In a coin-operated vending-machine, the combination, with a clock-works mechanism, of a table, one or more goods-boxes C thereat, one or more delivery-slides at the boxes, gearing *h* H at the table, operated by the clock-works, tappets *K'*, driven by said gearing and actuating the slide or slides, a coin-lever held to an endwise-movable rock-shaft retracted by a spring, a radial pin R and notched disk-plate J *i* on the lever-shaft, a coin chute or guide having slots *l l*, said coin-lever having tapering fingers entering said slots, and a tappet I on the clock-works, stopping them by contact with the disk J, but allowing their operation when the coin-lever is tilted to bring the notch *i* of the disk into the path of the tappet, all arranged for operation substantially as herein set forth.

12. In a coin-operated vending-machine, the combination, with a clock-works mechanism, of a table, one or more goods-boxes C thereat, one or more delivery-slides at the boxes, gearing *h* H at the table, operated by the clock-works, tappets *K'*, driven by the gearing and actuating the slides, a coin-lever held to an endwise-movable shaft adapted to be retracted by a spring, a radial pin R and notched disk J *i* on the lever-shaft, a coin chute or guide, said coin-lever having laterally-projecting fingers or coin-support entering the coin-passage of the chute, a tappet I on the clock-works, stopping them by contact with the disk, but allowing their operation when the coin-lever is tilted to bring the notch *i* of the disk into the path of the tappet, a trip-lever P, having arms *p p'*, the arm *p'* acting on the coin-lever-shaft pin R, and a pin *o* on the clock-works, acting on the arm *p* of said trip-lever, all arranged for operation substantially as herein set forth.

13. In a coin operated vending-machine, the combination, with a coin-chute, goods-receptacles, and mechanism delivering the goods, of a coin-lever having a laterally-projecting coin-support and adapted to lower or tilt by lodgment of a coin on it at the chute to trip the goods-delivery mechanism into action, and adapted, also for bodily lateral movement to strip or dislodge the coin from it, substantially as herein set forth.

14. In a coin-operated vending-machine, the combination, with an endwise-movable shaft provided with a retracting device, of a coin-lever held to said shaft and having lateral fingers or support on which the coin lodges, and a coin chute or guide into which the coin-support of the lever passes to sustain the coin, substantially as described, whereby the lever coin-support has motion in the chute as the lever tilts and the bodily lateral movement of the lever will discharge the coin from it, as set forth.

15. In a coin-operated vending-machine, the combination, with the coin-lever and clock-works mechanism, of a spring which sustains the coin-actuated lever in position to allow operation of the clock-works, substantially as herein set forth.

16. In a coin-operated vending-machine, the combination, with clock-works mechanism and a coin-lever fulcrumed at a normal balance, of a spring which sustains the coin-actuated lever in position to allow operation of the clock-works, substantially as herein set forth.

17. In a coin-operated vending-machine, the combination, with the coin-lever and clock-works mechanism, of a spring connected at one end to the coin-receiving end of the lever and at the other end to an adjacent support and sustaining the coin-actuated lever in position to allow operation of the clock-works, substantially as herein set forth.

18. In a coin-operated vending-machine, the combination, with a clock-works mechanism and a coin-lever, of a spring sustaining the coin-actuated lever in position to allow operation of the clock-works, and connected at one end to the lever and connected at its other end to a plate adjustable for setting the lever by the spring relatively to the weight of the coin and to a tripping mechanism of the clock-works which the lever controls, substantially as herein set forth.

19. In a coin-operated vending-machine, the combination, with a clock-works mechanism and an endwise-movable rock-shaft having a retracting device, of a coin-lever held to said shaft and provided with lateral fingers or support on which the coin lodges, a coin chute or guide into which the coin-support of the lever passes, and a spring connected to the coin-lever and sustaining it when actuated by a coin in position either to allow or to prevent operation of the clock-works, substantially as herein set forth.

20. In a coin-operated vending-machine, the combination, with a clock-works mechanism and an endwise-movable rock-shaft having a retracting device, of a coin-lever held to said shaft and provided with lateral fingers or support on which the coin lodges, a coin chute or guide into which the lever coin-support passes, and a spring sustaining the lever, when actuated by a coin, in position either to allow or to prevent operation of the clock-works, and connected at one end to the lever and connected at its other end to a plate adjustable for setting the lever by the spring relatively to a coin, and a tripping mechanism of the clock-works which the lever controls, substantially as herein set forth.

21. In a coin-operated vending-machine, the combination of a coin-lever held to an endwise-movable shaft provided with a retracting device and a radial pin, a notched disk or plate on said shaft, and a tappet in a clock-works mechanism adapted to stop at said disk and work through its notch when the coin-lever is tilted, a pin on one of the clock-works wheels, a trip-lever having tappet-arms, one engaged by the clock-works pin and the other engaging the coin-lever shaft, said coin-lever having a lateral support on which the coin lodges, a coin chute or guide in the coin-passage of which the coin-lever support moves while sustaining the coin, and a spring connected to the coin-lever and sustaining it prior to delivery of goods through the medium of the clock-works, which the tilting of the coin-lever trips into action, substantially as described, for the purposes set forth.

22. In a coin-operated vending-machine, the combination, with a coin chute or guide having side slots *l l*, of a coin-lever K, fulcrumed at an even balance by a rock-shaft *k'* and provided with fingers *k k*, said shaft having a notched disk J *i* and a pin R, a trip-lever operated by clock-works and shifting the coin-lever shaft endwise, and a bowed spring K', connected at one end to a suitable support, as the clock-works frame, and connected at its other end to the coin-lever to sustain it and trip the clock-works and a connected goods-delivery mechanism into action, substantially as herein set forth.

23. In a coin-operated vending-machine, the combination, with a coin chute or guide having side slots *l l*, of a coin-lever K, having fingers *k k* entering said slots and geared to start a clock-works and goods-delivery mechanism by its tilting movement, and a spring K', connected at one end to the coin-lever and connected at its other end to an adjustable plate S, substantially as described, for the purposes set forth.

24. In a coin-operated vending-machine, the combination, with a coin-chute and a coin-receiving lever movable bodily to discharge coins from it, of a rod movable by or through the insertion of a coin at the chute and provided with an arm opposing the coin-lever, substantially as described, whereby when the rod is turned by inserting a coin the coin-lever will be moved bodily to discharge a counterfeit coin or other substance previously lodged thereon, as and for the purposes set forth.

25. In a coin-operated vending-machine, the combination, with a case having a coin-admitting slot and a coin-chute, a valve closing said slot, and a coin-receiving lever movable bodily to discharge a coin from it, of a rod movable axially and provided with an arm normally closing the coin-slot valve and provided with another arm opposing the coin-lever, substantially as described, whereby when the coin-slot valve is opened by a coin inserted in the chute the rod will be operated to shift the coin-lever and discharge a counterfeit coin or other substance from it, substantially as herein set forth.

26. In a coin-operated vending-machine, the combination, with a case having a coin-admitting slot and a coin-chute, of a rod T, having an arm *t*, extending to be acted on by or through the medium of a coin passed into the slot for turning the rod axially, a spring T' on said rod normally retracting it, and a laterally-movable lever adapted to tilt after receiving a coin from the chute, said rod T having an arm opposing and giving bodily movement to the lever to discharge a coin or other substance from it each time the rod is actuated by inserting a coin, substantially as herein set forth.

27. In a coin-operated vending-machine, the combination, with a case having a coin-admitting slot and a coin-chute, of a valve closing the slot and having an inclined or cam face, a rod T, having an arm *t*, extending for operation by the valve to turn the rod axially through the medium of a coin passed into the slot, and a laterally-movable lever lowered by receiving a coin from the chute, said rod T having an arm opposing and giving bodily movement to the lever to discharge a coin or other substance from it each time the rod is actuated by inserting a coin, substantially as herein set forth.

28. In a coin-operated vending-machine, the combination, with a coin-chute, and a laterally-movable coin-lever lowered by receiving a coin, and having lateral fingers or coin-support entering the coin-passage of the chute, and adapted by its downward movement to trip a goods-delivery mechanism into action, substantially as specified, of a rod T, having an arm extending to be acted on by or through the medium of a coin passed into the coin-chute for turning the rod axially, said rod also having an arm opposing the coin-lever and shifting it laterally to discharge a coin or other substance from it each time the rod T is operated, substantially as herein set forth.

29. In a coin-operated vending-machine, the combination, with a clock-works mechanism operating a goods-delivery mechanism and a rod T, having an arm extending to be acted on by or through the medium of a coin passed into a coin-chute for turning the rod axially, said rod having an arm or tappet *v*, substantially as specified, of a tappet *x*, carried by a shaft of the gearing which actuates the goods-delivery mechanism, and a toothed wheel W, actuated from the clock-works, and which is turned as the goods are delivered, said wheel W having an arm *w*, which intercepts the rod-tappet *v* when the last piece of goods is sold from the machine, and thereby locks the coin-slot against insertion of coins, substantially as herein set forth.

30. In a coin-operated vending-machine, the combination, with a clock-works mechanism operating a goods-delivery mechanism consisting of one or more slides reciprocating at the goods-boxes and actuated by tappets driven from the clock-works mechanism, substantially as specified, of a tappet *x*, rotated by or from the goods-delivery mechanism, a rod T, having an arm extending to be acted on by or through the medium of a coin passed into a chute for turning the rod axially, said rod having a tappet *v*, a toothed wheel W, which the tappet *x* turns one tooth each time one package of goods is delivered, and a tappet *w* on the wheel W, which intercepts the rod-tappet *v* when the last piece of goods is sold from the machine, and thereby locks the coin-slot against insertion of coins, substantially as herein set forth.

31. In a coin-operated vending-machine, the coin-chute made with a passage having opposite edge walls presented to the edges of a coin, a side wall holding the coin between these opposite edge walls, and a ledge fixed to one edge wall and forming another partial opposite side wall, leaving a space m^2 next the other edge wall for exit of coins, wires, or other bodies from the chute, substantially as herein set forth.

32. In a coin-operated vending-machine, the coin-chute made in zigzag form, with a correspondingly-shaped coin-passage having opposite edge walls presented to the edges of a coin, a side wall holding the coin between these opposite edge walls, and a ledge fixed to one edge wall and forming another partial opposite side wall, leaving a space m^2 next the other edge wall for exit of coins, wires, or other bodies from the chute, and a cutter, as m^3, located at one or more angles or bends of the chute, substantially as herein set forth.

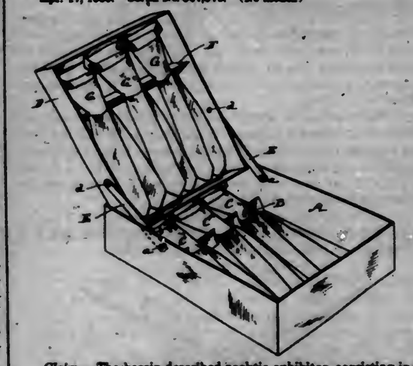
34. In a coin-operated vending-machine, the coin-chute made with strips $m' m^3$, held to a suitable backing, and a ledge or wall m^4, held to the strip m^3 and overhanging the coin-passage, but providing a side slot m^2 next the strip m', substantially as herein set forth.

35. In a coin-operated vending-machine, the coin-chute made in zigzag or sinuous form, with strips $m' m^3$, held to a suitable backing, said strips $m' m^3$ arranged at opposite edges of the chute at necessarily lower angular sections of it, and ledge or wall sections m^4, held to the strips m^3 and overhanging the coin-passage, but providing side slots m^2 next the strips m', substantially as described, for the purposes set forth.

36. In a coin-operated vending-machine, the coin-chute made in zigzag or sinuous form, with strips $m' m^3$, held to a suitable backing, said strips $m' m^3$ arranged at opposite edges of the chute at necessarily lower angular sections of it, ledge or wall sections m^4, held to the strip m^3 and overhanging the coin-passage, but providing side slots m^2 next the strip m', and a cutter m^5, held at one or more angles of the chute, substantially as herein set forth.

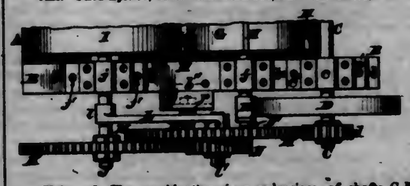
37. In a coin-operated vending-machine, the casing of its mechanism provided with a coin-deposit box or drawer and with a goods-delivery tray, and a removable section having hook and-eye connection with the fixed section thereof, and a lock whose projected bolt locks the removable section by opposing a hook, substantially as herein set forth.

412,470. NECKTIE-BOX. JOSEPH COHN, New York, N. Y. Filed Apr. 17, 1889. Serial No. 307,576. (No model.)



Claim.—The herein-described necktie-exhibitor, consisting in the outer or main box A, having a series of necktie-supports between its ends, the inner shallower box also having a series of necktie-supports, and opposite links E between the sides of the two boxes and pivoted at their forward ends, as at *c*, to the sides of the box A toward its outer end, and pivoted at their inner ends, as at *d*, to the inner ends of the sides of the inner box D, whereby, when the inner box is raised and swung forward until its inner or lower end passes the pivots *c* and the necktie-supports, its bottom will rest against the forward end of the outer box, substantially as shown and described.

412,471. CLAY-PULVERIZER. JONATHAN GERAGHTY, Cincinnati, Ohio. Filed Apr. 13, 1889. Serial No. 307,162. (No model.)

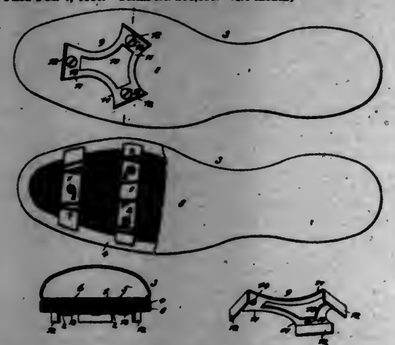


Claim.—1. The combination, in a pulverizer, of shafts C F J, driving-wheel D, wheel E, pinions *d* N, spur-wheels K M, vertically and longitudinally shiftable radius-rod L *l*, stud-shaft *l'*, and a fastener, as P, for retaining said rod at any specific adjustment, the spur-wheel

M and pinion N being journaled on said stud-shaft *I*, for the purpose described.

2. The combination, in a pulverizer, of cylinder G, blade H, slots *h h'*, bolts E E', and adjusting-screws S S', which screws bear against the inner edge of said blade, for the purpose described.

412,472. BASE-BALL SHOE. WILLIAM CRESSE, Brooklyn, N. Y. Filed Feb. 7, 1889. Serial No. 299,289. (No model.)

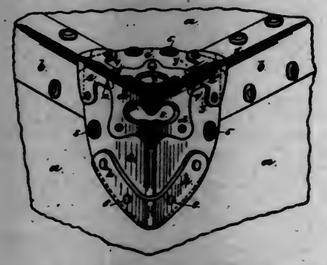


Claim.—1. A base-ball shoe constructed with metallic plates located between the insole and the sole of the shoe, with their ends resting beneath the welt, and having internally-screw-threaded lugs projecting through the sole of the shoe for attachment of the screws of the spike-plate, substantially as shown and described.

2. A base-ball shoe constructed with the narrow metallic plates 1, formed with internally-threaded lugs 2, the plates 1 extending across the sole of the shoe, with their ends resting against the welt 4 and secured by threads 7 to the insole 6 of the shoe, and the lugs 2, projecting through the sole 8 of the shoe, substantially as shown and described.

3. The combination, with a shoe 3, constructed with narrow metallic plates 1, secured between the insole 6 and sole 8, with their ends resting against the welt 4, and internally-threaded lugs 2, projecting through the sole 8, of a spike-plate 9, formed with the arms 11, having spikes 12, and secured to shoe 3 by screws 13 engaging the lugs 2, substantially as shown and described.

412,473. TRUNK-CORNER. GEORGE CROWN, New York, N. Y. Filed Apr. 15, 1889. Serial No. 307,260. (No model.)

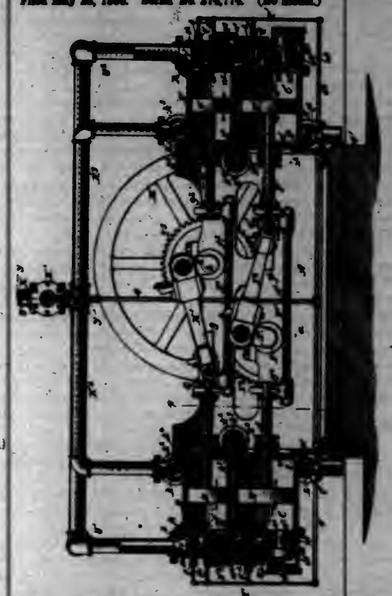


Claim.—1. The trunk-corner, of rawhide or vulcanized fiber, in two parts, in combination with metallic corner and angle frames covering the lap-joint of the two-part corner, and secured by rivets with said two-part corner to the body of the trunk, substantially as set forth.

2. The trunk-corner, of rawhide or vulcanized fiber, in two parts, in combination with corner and angle frames covering the lap-joint of the two-part corner, and secured by rivets with said two-part corner to the body of the trunk, and a metal strap *h*, covering and conforming to the lower edge of the corner-piece, substantially as set forth.

3. The combination, in a trunk-corner, with the two-part rawhide or vulcanized-fiber corner *c c'*, of the corner-frame *d* and the angle-frames *e e'*, said corner-frame having concave ends 9, and said angle-frames having one end 10 tapering and a projection or lip at *f* upon the other end, the corner-frames and angle-frames covering and protecting the lap-joint of the two-part rawhide or vulcanized-fiber corner, substantially as and for the purposes specified.

412,474. AIR-COMPRESSOR. URIAH CRESSLER, Buffalo, N. Y. Filed May 28, 1888. Serial No. 274,774. (No model.)



Claim.—1. The combination, with a high-pressure and a low-pressure actuating cylinder and the pistons working in the same, of steam-valves whereby steam is admitted into the high-pressure cylinder, exhausted therefrom into the low-pressure cylinder, and discharged from the low-pressure cylinder, air-valves whereby the air is admitted into the low-pressure cylinder and from the latter into the high-pressure cylinder and discharged from the latter, a fly-wheel shaft rotated from said pistons, and valve mechanism, substantially as described, whereby the steam-valves are actuated from said shaft, substantially as set forth.

2. The combination, with the high-pressure cylinder and the low-pressure cylinder arranged side to side, pistons working in the same, and connecting mechanism, substantially as described, whereby the pistons are caused to move in opposite directions, of a steam-induction valve, an intermediate steam-valve, and a steam-exhaust valve, all arranged at one end of said cylinders, and an air-inlet valve, an intermediate air-valve, and air-discharge valve, all arranged at the opposite ends of said cylinders, substantially as set forth.

3. The combination, with a pair of high-pressure and low-pressure cylinders arranged side to side at each end of the machine and the pistons working in said cylinders, of two geared shafts arranged between the two pairs of cylinders, one shaft connected with the pistons of the high-pressure cylinders and the other shaft with the pistons of the low-pressure cylinders, steam-induction valves, intermediate steam-valves, and steam-exhaust valves arranged at the inner ends of the cylinders, and air-inlet valves, intermediate air-valves, and air-discharge valves arranged at the outer ends of the cylinders, substantially as set forth.

4. The combination, with a compressing-cylinder provided with a cylindrical air-inlet passage having air-inlet openings in its side, of a cylindrical air-valve arranged in said passage and provided at its outer end with an enlarged piston, a cylinder in which said piston moves, a valve-chamber, ports connecting said valve-chamber with the piston-cylinder on opposite sides of the piston, and a valve arranged in said valve-chamber, whereby a fluid under pressure can be admitted to the cylinder on either side of the piston, substantially as set forth.

5. The combination, with the low-pressure cylinder provided with an air-inlet valve, a high-pressure cylinder, a positively-controlled intermediate valve whereby the compressed air is excluded from and admitted to the high-pressure cylinder, and a check-valve arranged in the air-passage between the intermediate valve and the low-pressure cylinder, substantially as set forth.

6. The combination, with the low-pressure cylinder provided with an air-inlet valve, a high-pressure cylinder, a positively-controlled intermediate valve whereby the compressed air is excluded from and admitted to the high-pressure cylinder, a check-valve arranged in the air-passage between the intermediate valve and the low-pressure cylinder, and an air-inlet valve connected with the high-pressure cylinder and admitting external air thereto, substantially as set forth.

7. The combination, with the compressing-cylinder, of an air-inlet valve provided with an actuating-piston, a cylinder in which said piston moves, a valve whereby the flow of the actuating-fluid to and from opposite ends of the valve-cylinder is controlled, valve-gear whereby said valve is actuated, and an automatic regulator whereby the fluid-pressure can be shut off from said valve, thereby suspending the action of the air-inlet valve and allowing it to be opened and to remain open for the passage of air in both directions until the fluid-pressure is again applied, substantially as set forth.

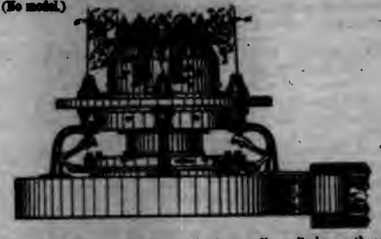
8. The combination, with the air-compressor and its steam-supply pipe, of the regulator-casing connected with the steam-supply pipe and provided with steam-inlet openings v^3 and steam-outlet openings v^4, a piston-valve adapted to open and close said openings and receiving the steam-pressure in the casing on its front side, and the air-pipe V^2, admitting the compressed air to the valve-casing on the rear side of the valve, substantially as set forth.

9. The combination, with the compressor and its steam-supply pipe, of a regulator-casing receiving steam from said pipe, a piston-valve arranged in said casing, and whereby the steam-passage is opened and closed, an air-pipe connecting said casing with a conduit containing compressed air, whereby the air-pressure tends to move the valve in the direction in which the steam-passage is closed, while the steam-pressure tends to move the valve in an opposite direction, and a stop whereby the closing movement of the valve is limited, substantially as set forth.

10. The combination, with the compressor, its steam-supply pipe and its air-valves and their actuating mechanism, of the regulator-casing connected with the steam-supply pipe and provided with steam inlet and outlet openings, a piston-valve arranged in said casing, an air-pipe admitting compressed air to the casing on one side of said valve, a hollow stem projecting from the opposite side of said valve and receiving steam from the casing, a chamber receiving the steam from the hollow stem, and a pipe conducting this steam to the actuating mechanism of the air-valves, substantially as set forth.

11. The combination, with the compressor, its steam-supply pipe, its air-valves, and their actuating mechanism, of the regulator-casing provided with steam inlet and outlet openings v^3 v^4, and an air-pipe V^2, a piston-valve arranged in said casing and provided with a hollow stem *w*, having steam-inlet openings w^2, an adjustable sleeve *w'*, surrounding the open end of the hollow stem and provided with steam-passages w^4, a steam-chamber surrounding said steam-passages, and a pipe O, connecting said chamber with the actuating mechanism of the air-valves, substantially as set forth.

412,475. THREAD-GUIDING DEVICE FOR KNITTING-MACHINES. HENRY CHEEK, Little Falls, N.Y. Filed Jan. 26, 1889. Serial No. 297,269. (No model.)

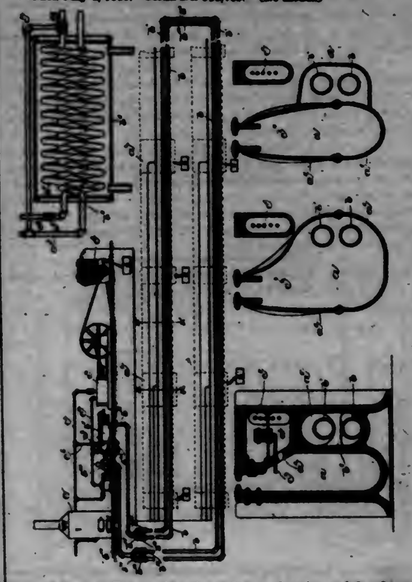


Claim.—1. In combination with the needle-cylinder, a thread-guide support of circular form in cross-section of its body sustained at the outside of the needle-cylinder, a bracket provided with a corresponding circular eye and mounted thereby on the aforesaid support and adapted to turn thereon toward and from the needle-cylinder, and a set-screw clamping the thread-guide in its position, substantially as described and shown.

2. In combination with the needle-cylinder and reciprocating needles, the bracket C, formed with the lugs C C', perforated in line with each other, the tube *t*, inserted in the lug C', the set-screw *u*, retaining the tube in the lug, and the arm *a*, extending from the bracket and provided with a passage through which the thread runs, as set forth and shown.

3. In combination with the needle-cylinder and reciprocating needles, the ring B, of circular form in cross-section of its body, sustained at the outside of and concentric with the needle-cylinder, brackets O O, provided, respectively, with a circular eye *b'*, and mounted thereby on the aforesaid ring, set-screws *b b*, attached to the brackets and engaging the ring, and tubes *t t* on the brackets and having their inner ends over the path of the needles, substantially as described and shown.

412,476. ELECTRIC CONDUIT. JAMES P. CROMPTON, Beverly, Mass. Filed July 8, 1889. Serial No. 316,725. (No model.)



Claim.—1. The combination, with an electric conduit, of a main and return circulating-pipe extended the length of the conduit to convey a heating medium to heat the said conduit, a heater connected to said pipes, and a pump to maintain a circulation through the said heater and circulating-pipes, whereby the electric conduit is heated, substantially as described.

2. The combination, with an electric conduit having a slot-chamber, a communicating accessible chamber, and an auxiliary chamber, of circulating-pipes located in said auxiliary chamber, a heater connected to said pipes, and a pump to maintain a circulation through said heater and pipes, substantially as described.

3. The combination, with an electric conduit having a slot-chamber, a communicating accessible chamber, and an auxiliary chamber, of circulating-pipes located in said auxiliary chamber, a heater consisting of an inclosing-case b^2, connected to said circulating-pipes, and heating-coils b^3 b^3, located within said case, and a pump to maintain a circulation through said heater and pipes, substantially as described.

4. The combination, with two electric conduits laid side by side, of circulating-pipes for each conduit connected at the terminal of the conduit, a heater connected to said pipes, and a pump to maintain circulation of fluid through said pipes, substantially as described.

412,477. WIRE-DRAWING MACHINE. FRED H. DANIELS, Worcester, Mass. Filed May 24, 1888. Serial No. 311,988. (No model.)



Claim.—1. In a wire-drawing machine, a spool and an operating-drum for supporting and revolving the spool at uniform speed as the coil of wire thereon increases, a guide for directing the wire onto the spool, and means, substantially as described, for moving said guide, in combination with a series of wire-drawing dies and rotatable draft-pulleys arranged for reducing the wire in continuous successive order.

2. In a wire-drawing machine, the combination, with the series of wire-drawing dies and draft-pulleys, of a winding-on spool, an advance draft-pulley between the finishing-die and spool, and a traversing guide for leading the wire onto the spool.

3. In a wire-drawing machine, the combination of a spool, an operating-drum for revolving the spool by peripheral contact with the

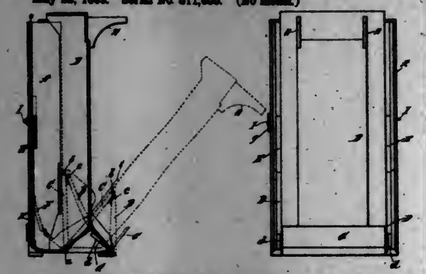
barrel of the spool or wire wound thereon, and an advance draft-pulley disposed between the spool and the final wire-drawing die for exerting the strain required for drawing the wire, substantially as set forth.

4. In a wire-drawing machine, the combination of a spool, an adjusting support or hanger for retaining the spool-axis, and an operating drum or roll for revolving the spool at uniform peripheral speed as the coil of wire thereon increases in diameter, as set forth.

5. In a wire-drawing machine, the combination of a spool and operating drum for revolving the spool by peripheral contact, a hanger for maintaining the spool in proper relation to the drum, and a spring for giving pressure of the spool against the surface of the drum, substantially as and for the purpose set forth.

6. In a wire-drawing machine, the combination, with a series of wire-drawing dies and draft-pulleys, of a spool for winding the finished wire, an operating-drum for revolving said spool by peripheral contact, an adjustable frictional operating-wheel for imparting rotative motion to said drum, and means, substantially as set forth, for adjusting said frictional operating-wheel for varying the speed of the drum, as and for the purpose set forth.

412,478. FOLDING BED. JACOB DAVIS, Brooklyn, N. Y. Filed May 22, 1889. Serial No. 311,603. (No model.)



Claim.—1. In a folding bed, the combination of a stationary casing, a movable bed, hinge-arms connected with the bed and casing, and legs or props hinged near the upper or outer pivotal points of the hinge-arms, the same being arranged to touch the floor and transfer the weight of the bed from the casing to the floor, substantially as and for the purposes set forth.

2. In a folding bed, the combination of a stationary casing, a movable bed, hinge-arms connected with the bed and casing, and legs or props hinged upon said arms and arranged to touch the floor and transfer the weight of the bed thereto, substantially as and for the purposes set forth.

3. In a folding bed, the combination of a stationary casing, a movable bed, hinge-arms connected with the bed and casing, legs or props hinged near the upper or outer pivotal points of the hinge-arms, and guides or directors for said legs located in the spaces between the bed and casing, substantially as and for the purposes set forth.

4. In a folding bed, the combination of a stationary casing, a movable bed, hinge-arms connected with the bed and casing, legs or props hinged near the upper or outer pivotal points of the hinge-arms, the said legs or props arranged to touch the floor and transfer the weight of the bed thereto, and the vertically-moving back-board hinged upon the bed, substantially as shown and described.

5. In a folding bed, the combination of the casing A, bed B, pivoted thereto, the head-board pivoted to the head of the bed and provided with projections *h h'*, a rod I, revolubly attached across the back of the casing and provided with a doubly-notched catch adapted to engage the projections *h h'*, said rod having also one end bent at an angle, and a spring-plate attached to the side of the casing, adapted to engage with the angle end of the rod, substantially as shown and described.

412,479. HANDLE FOR TOOLS OR OTHER ARTICLES. CHARLES A. DAVIS, Washington, D. C. Filed Nov. 9, 1888. Serial No. 290,378. (No model.)



Claim.—The herein-described method of fitting handles to the head, which consists in forming or providing the handle with a body of material capable of being rendered plastic, softening said material, grasping the same in the manner of grasping it in use, applying pressure sufficient to cause the material to conform accurately to the hand or hands, and, finally, causing or permitting the material to harden.

412,480. PUMP. JOHN O. DAVIS, Hartford, Conn. Filed Jan. 6, 1887. Serial No. 223,503. (No model.)



Claim.—In combination with a pair of suction and forcing pumps, a frame-work chambered out to form a common reservoir to supply both pumps, and having a suction-duct leading from the chamber to each pump, a valve seated in each suction-duct with an upward-projecting stem fitting a socket in the frame-work to insure its seating itself properly, a channel leading from one suction-duct to the other, a valve seated in an enlargement of said channel, said valve having a portion of its stem threaded to fit a threaded socket in the frame-work, with its end projecting beyond the frame-work and terminating in a handle, whereby the capacity of the connecting-channel may be regulated by turning the handle of the valve-stem, substantially as described, and for the purpose specified.

412,481. HYDROCARBON-BURNER FOR FURNACES. JOHN B. DENIS, Terre Haute, Ind., assignor of one-half to John C. Watson, same place. Filed Aug. 9, 1888. Renewed Aug. 15, 1889. Serial No. 320,794. (No model.)



Claim.—1. A hydrocarbon-burner consisting of a suitable retort or pan having a curved top, and a portion thereof elevated and provided with an escape opening for the generated gases, and also having air-inlet K and liquid-fuel-supply pipe, in combination with a steam or air injector, whereby a current of steam or air may be injected into the ignited gases to increase the draft and insure perfect combustion, substantially as specified.

2. The combination, with a furnace, of a hydrocarbon-burner having a curved top and a portion thereof elevated and provided with an opening at the apex of the elevated portion, and the same also having inlet K, a suitable liquid-fuel-supply pipe, and an injector, whereby air or steam may be injected into the said furnace into the ignited gas or vapor, substantially as specified.

412,482. WARP-PLAITING MACHINE. CLAYTON DAVIS, Philadelphia, Pa. Filed July 15, 1889. Serial No. 317,510. (No model.)

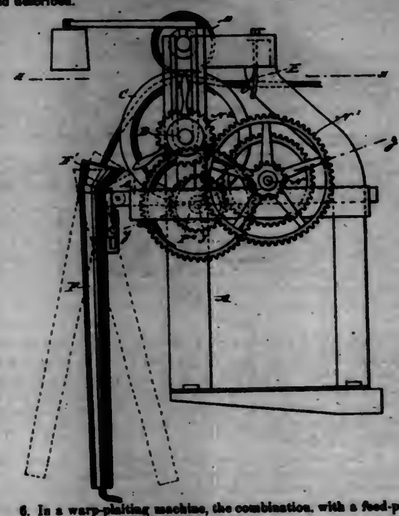
Claim.—1. The combination, with a vibrating tube or warp-guide, of mechanism for moving the tube or guide simultaneously slowly in a direction at right angles to its vibratory path, substantially as set forth.

2. The combination, in a warp-plaiting-down machine, with the warp tube or guide, of mechanism for vibrating the tube and simultaneously moving it slowly in a direction at right angles to the direction of its vibrations, and mechanism for changing the said two movements and vibrating the tube at right angles to its first vibrations and moving it simultaneously slowly at right angles to its first slow movement, substantially as set forth.

3. The combination, in a warp-plaiting-down machine, with the warp tube or guide, of mechanism for vibrating the tube and simultaneously moving it slowly in a direction at right angles to the direction of its vibrations, and an automatically-operated mechanism for changing the said two movements and vibrating the tube at right angles to its first vibrations and moving it simultaneously slowly at right angles to its first slow movement, substantially as set forth.

4. In a warp-plaiting machine, the combination, with a tube and a warp-feeding mechanism discharging the warp into the said tube, of means, substantially as described, for vibrating the tube and simultaneously moving it slowly in a direction at right angles to the direction of its vibrations, and mechanism for changing the said two movements and vibrating the tube at right angles to its first vibrations and moving it simultaneously slowly at right angles to its first slow movement, as described.

5. In a warp-plaiting machine, the combination, with a feed-pulley mounted to rotate and a tube mounted to swing in two directions at right angles to each other and into which discharges said feed-pulley, of a mechanism operated in conjunction with the said feed pulley and serving to impart an alternate fast and slow sidewise motion to the said tube, and a mechanism operated in conjunction with the said feed-pulley and serving to impart an alternate slow and fast transversely-swinging motion to the said tube, substantially as shown and described.



6. In a warp-plaiting machine, the combination, with a feed-pulley mounted to rotate and a tube mounted to swing in two directions at right angles to each other and into which discharges said feed-pulley, of a mechanism operated in conjunction with the said feed-pulley and serving to impart an alternate fast and slow sidewise motion to the said tube, a mechanism operated in conjunction with the said feed-pulley and serving to impart an alternate slow and fast transversely-swinging motion to the said tube, and means, substantially as described, for alternately shifting said mechanisms from a fast to a slow motion, as set forth.

7. In a warp-plaiting machine, the combination, with a tube mounted to swing longitudinally and transversely, of a heart-shaped cam mounted to rotate, connections between the said cam and tube to impart to the latter a transverse swinging motion, a cam-wheel rotated simultaneously with the said heart-shaped cam, connections between the said cam-wheel and tube to impart to the latter a longitudinal swinging motion, and means, substantially as described, for rotating the said heart-shaped cam and the said cam-wheel slowly and fast alternately, as set forth.

8. In a warp-plaiting machine, the combination, with a tube mounted to swing longitudinally and transversely, of a heart-shaped cam mounted to rotate, connections between the said cam and tube to impart to the latter a transverse swinging motion, a cam-wheel rotated simultaneously with the said heart-shaped cam, connections between the said cam-wheel and tube to impart to the latter a longitudinal swinging motion, gear-wheels connected with the said heart-shaped cam and the said cam-wheel for imparting an alternate fast and slow motion thereto, and a clutch mechanism for connecting the said gear-wheels with and disconnecting them from the said heart-shaped cam and cam-wheel to reverse said motion, substantially as shown and described.

9. In a warp-plaiting machine, the combination, with a tube mounted to swing longitudinally and transversely, of a heart-shaped cam mounted to rotate, connections between the said cam and tube to impart to the latter a transverse swinging motion, a cam-wheel rotated simultaneously with the said heart-shaped cam, connections between the said cam-wheel and tube to impart to the latter a longitudinal swinging motion, gear-wheels connected with the said heart-shaped cam and the said cam-wheel for imparting an alternate fast and slow motion thereto, a clutch mechanism for connecting the said gear-wheels with and disconnecting them from the said heart-shaped cam and cam-wheel to reverse said motion, and means for shifting the said clutch mechanism, as set forth.

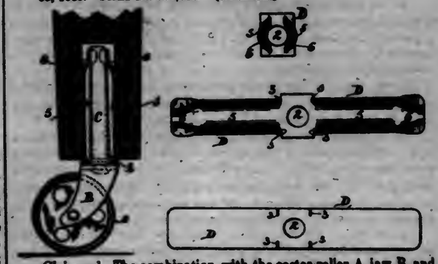
412,483. ADJUSTABLE CLEVIS-ARM FOR ICE-PLOWS. HERMAN F. DURRELL, Athens, N. Y. Filed Nov. 30, 1888. Serial No. 292,949. (No model.)

Claim.—1. The combination, with an ice-plow having an inclined clearing-tooth with a point located beyond the forward end of the plow-beam, of a vertically-swinging arm pivoted at its rear end to the forward end of the plow-beam and projecting beyond the same clevis at the forward end of the projecting arm located in advance of the point of the clearing-tooth, and means for holding the projecting arm in vertically-adjusted position, substantially as shown and described.



2. The combination, with the ice-plow 1, having the inclined clearing-tooth 2' projecting beyond the forward end of plow-beam 3, of the vertically-swinging arm 4, consisting of bars 5, connected at their forward end by a bolt 6 and 7, and pivoted at their rear end to a bolt 8 on the forward end of plow-beam 3, with depending arms 12 located adjacent to their rear end and having curved slots 13, a bolt 14, passing through beam 3 and slots 13, with a nut 16 and washer 17, and a clevis 11, mounted on bolt 6, substantially as shown and described.

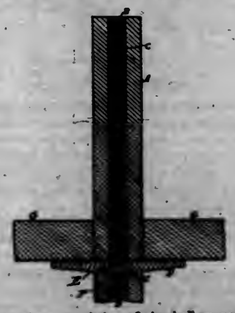
412,484. CASTER. ALBERT R. DEN, Brooklyn, N. Y. Filed Apr. 15, 1889. Serial No. 307,311. (No model.)



Claim.—1. The combination, with the caster-roller A, jaw B, and pintle C, of a sheet-metal socket formed in one piece, having a flat caster with a hole 2 through it, and the end portions bent into semicircular tapering troughs and brought together at their upper ends for receiving and supporting the pintle C, substantially as set forth.

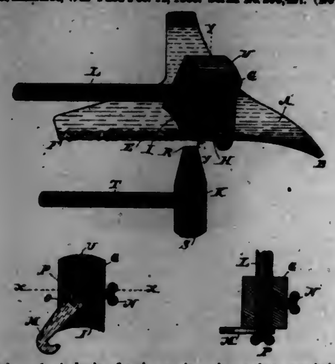
2. The sheet-metal socket for a caster-pintle, formed of sheet-metal in one piece, having a central hole 2, notched at 3, bent to form semicircular troughs at 5, and having the contracted semicircular bearings at 6, with the edge portions of the sheet metal projecting outside the semicircular bearings and adapted to be received within the hole in the bedstead or other leg, substantially as set forth.

412,485. COMPOUND FIRE-PROOF BEAM. WILLIAM H. DRAKE, Chicago, Ill. Filed June 1, 1889. Serial No. 312,863. (No model.)



Claim.—A column consisting of the hollow wood portion and a metal post cemented within the same and the post extending below the wood portion, in combination with a girder-iron provided with a socket to engage the lower end of the iron post, and the girder-iron provided centrally on its under side with a projection to engage the top end of a lower metal post which is below the top end of the wooden portion, as and for the purpose specified.

412,486. DEVICE FOR SHARPENING PLOW-POINTS. JOHN BIRT, Amherst, Wis. Filed Feb. 11, 1889. Serial No. 299,427. (No model.)



Claim.—1. A device for sharpening plow-points, consisting of a metal anvil having a straight edge, a handle, and a hook rigid to the handle, the handle being so fitted into the anvil as to be revolubie therein, substantially as described.

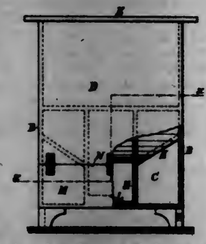
2. An anvil for sharpening plow-points, constructed of metal and having a straight edge H, a concave face I, a revoluble handle L, and a hook M, the hook being rigid to the handle, and the handle being capable of adjustment in the anvil by means of a thumb-screw N, substantially as described.

3. An anvil for sharpening plow-points, having a concave face I and a convex face U, in combination with a revoluble handle, and hook M rigid thereto, substantially as described.

4. In a device for sharpening plow-points, a metal anvil having a face or faces adapted to bear against the side of a plow-point, and a hook secured adjustably to a handle revolubie in the anvil, the hook being provided with a slot and secured to the handle by means of a thumb-screw passing through the slot and turning into the handle, whereby the hook is made adjustable, substantially as described.

5. A device for sharpening plow-points, consisting of an anvil having a straight edge H, a concave face I, and a hook M, rigid on a handle revolubie in the anvil, in combination with a hammer having a narrow flat face R and a large flat face S, substantially as described.

412,487. COAL-RECEPTACLE. EDWARD S. FARLEY and MILFORD R. STRONG, Jersey City, N. J. Filed Dec. 24, 1888. Serial No. 294,497. (No model.)



Claim.—1. The box-shaped receptacle having bottom A, sides B, back C, front D, and a swinging flap M between the lower edge of the front and the bottom A, in combination with the vertical partitions H, having inclined upper edges, and the inclined partitions G and K, resting upon such partitions H and forming a hopper-shaped bottom to the coal-receptacle, with an opening at the back and between the partitions H, substantially as specified.

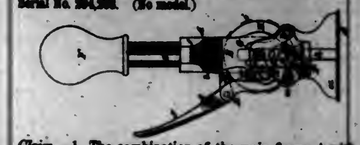
2. The box-shaped receptacle having bottom A, sides B, back C, front D, and a swinging flap M between the lower edge of the front and the bottom A, in combination with the vertical partitions H, having inclined upper edges, and the inclined partitions G and K, resting upon such partitions H and forming a hopper-shaped bottom to the coal-receptacle, with an opening at the back and between the partitions H and the ledge L at the front part of the bottom and between the partitions H, substantially as specified.

412,488. LABEL ATTACHMENT FOR CIGAR-BOXES. GARDNER H. FREEMAN, Syracuse, N. Y. Filed May 27, 1889. Serial No. 312,302. (No model.)

Claim.—The combination, with the box, of a label pasted at its back lengthwise to the inner side of one of the vertical walls of the body of said box, and having its main portion free and adapted to sustain itself independently in an erect position above the box, and to fold across the top of the interior of the box on a line parallel with and in proximity to the top edge of the box, substantially as described and shown.



412,489. CONSECUTIVE-NUMBERING MACHINE. WILLIAM A. FORCE and WILLARD W. SAWYER, Brooklyn, N. Y. Filed Dec. 31, 1888. Serial No. 294,302. (No model.)

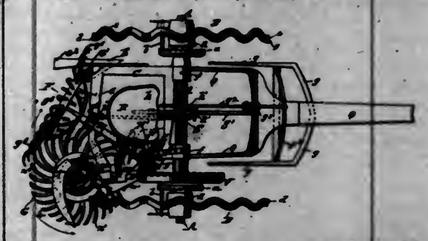


Claim.—1. The combination of the main frame A with the sliding frame B, having the shaft G, pad-yoke P, having arms Q, that straddle the frame B, and the plates R, having slots *v*, said plates being pivoted each at one end to the arms Q and at the other end to the frame A, the shaft G, passing through the slots *v*, whereby as the shaft G is depressed the pad-yoke P will be moved to one side, substantially as described

2. The combination of the frame B, having shaft G, and the disks H, carried by said shaft, with the lever J, pivoted in the frame B, said lever having projections S, and with the pad-yoke P, having arms Q, that straddle the frame B, the projection S on the lever J being adapted to engage the pad-yoke and to push said pad-yoke from the disks H, substantially as herein shown and described.

3. The combination of the frame A, sliding frame B, and spring E, with the shaft G, type-disks H, disk-actuating lever J, inking-pad O, pad-yoke P, slotted plates R, pivots *t u* of said plates, and with the projection S on lever J, as specified.

412,490. POTATO-DIGGER. ELIAS T. FOSS, Stillwater, N. Y. Filed Feb. 3, 1881. Serial No. 26,267. (No model.)



Claim.—1. In a potato-digging machine, an earth-penetrating rotary digging-wheel having tines bent backward from their shank ends on curved inclines and divergent in reverse direction to their rotation and terminated in spirally-twisted ends turned toward the line of draft of the machine, substantially as and for the purpose described.

2. In a potato-digging machine, an earth-penetrating rotary digging-wheel F, having an incline-surfaced hub F' and tines f^3, bent backward from their shank ends on curved inclines and divergent in reverse direction to their rotation and terminated in spirally-twisted ends turned toward the line of draft of the machine, substantially as and for the purpose described.

3. In a potato-digging machine, an earth-penetrating rotary digging-wheel F, having an incline-surfaced hub F', with discharge-openings *m* through it, and armed with tines f^3, bent backward from their shank ends on curved inclines and divergent in reverse direction to their rotation and terminated in spirally-twisted ends turned toward the draft of the machine, substantially as and for the purpose described.

4. In a potato-digging machine, a rotary conveyer separator-wheel which is inclined from its outer highest portion to its lower lowest portion downwardly, inwardly, and forwardly, and has its tines divergent in reverse direction to their rotation, said conveyer discharging the potatoes and adhering substances laterally on one side of the machine, substantially as described.

5. In a potato-digging machine, in combination, a driving-gear V, a gear J, a diagonal shaft H, a supporting-frame C, and a rotary digging-wheel F, having tines f^3 bent backward from their shank ends on curved inclines, and divergent in reverse direction to their rotation, and terminated in spirally-twisted ends turned toward the line of draft of the machine, substantially as described.

6. In a potato-digging machine, in combination, a conveyer separator-wheel, a shielding and discharging diverter arranged transversely of the said wheel and the line of draft, and a backwardly and laterally inclined revolving shaft carrying the conveyer separator-wheel, substantially as and for the purpose described.

7. A rotary conveyer separator-wheel having all of its upper surface, outside its hub, on the same plane from its inner lowest point of contact with the ground to its upper outer highest point, in combination with a shielding and discharging diverter arranged transversely of the said wheel and the line of draft, substantially as and for the purpose described.

8. In a potato-digging machine, in combination, the supporting-frame C, hung to vibrate on the axle A, a diagonal shaft H, an oblique shaft I, a shaft J', inclined from its upper to its lower end from a vertical line both backwardly and sidewise, gears for operating said shafts, a rotary digging-wheel, and a rotary conveyer separator-wheel, substantially as described.

9. In a potato-digging machine, a rotary conveyer separator-wheel, a rotary digging-wheel, and the specified gearing for driving the wheel and separator and giving a relatively faster revolution to the separator than to the digging-wheel, substantially as described.

10. In a potato-digging machine, in combination, the frame C, carrying plows and digging and separator wheels, and hung on the axle, and having pendent hangers made in two parts, and the pole or tongue Q, substantially as described.

11. In a potato-digging machine, in combination, the frame C, hung on the axle A, compound lever S S', one part pivoted on the axle and extended under the pole or tongue, and also forming a standard for the driver's seat, and the other part connected to said frame, digging and separator wheels, and plows, substantially as described.

12. In a potato-digging machine, in combination, a vibrating frame C, hung upon and in rear of a transverse axle A, a tongue or pole pivoted to said frame, two supporting-wheels, one or both of which being capable of actuating the driving mechanism of the machine, a diagonal shaft H, gear V on the axle and gear J on the shaft H, a rotary digging-wheel which penetrates the earth to a depth sufficient for digging the potatoes out of the row and discharges the potatoes, vines, and other adhering substances obliquely on one side of the machine, and two plows D E, preceding the digging-wheel, for plowing, respectively, under the right and left sides of the potato row, substantially as described.

13. In a potato-digging machine, in combination, the axle A, supporting-wheels B, vibrating supporting-frame C, pivoted tongue Q, vine-gatherers *g g*, plows D E, digging and conveyer separator-wheels F G, shielding and discharging diverter T, gearing for operating said wheels, and levers and clutch for controlling the parts, substantially as described.

14. In a potato-digging machine, in combination, a vibrating frame C, hung on axle A and carrying digging and conveyer separator-wheels, and a plow E, having an adjustable sole-plate e^3 and arranged on the left-hand rear portion of said frame, whereby the frame with its attached parts is mainly sustained on the left side of the machine, and the plow and digging-wheel and separator-wheel can be adjusted to operate at different depths, substantially as described.

15. In a potato-digging machine, in combination, the plow E and a tined digging-wheel F on an inclined diagonal shaft, the tines of said wheel serving for clearing the plow-standard and its mold-board of vines and trash, substantially as described.

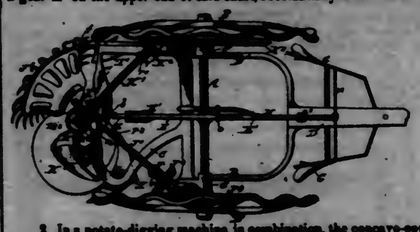
16. The traction-wheels having a serpentine rim *c* and extended in diameter by a narrow serpentine flange *d*, substantially as described.

17. In a potato-digging machine, in combination, a conveyer separator-wheel G and a backwardly and laterally inclined revolving shaft J' on one side of the machine, carrying said separator, substantially as described.

18. In a potato-digging machine, in combination, the main rotary conveyer separator-wheel G and the auxiliary separator U beneath it, substantially as and for the purpose described.

412,491. POTATO-DIGGER. ELIAS T. FOSS, Stillwater, N. Y. Filed Feb. 26, 1889. Serial No. 300,991. (No model.)

Claim.—1. In a potato-digging machine, in combination, the axle A, ratchet-connected traction-wheels B B, frame C, gears K^2 J^2, fixed on the axis, diagonal shafts J K', gears J^3 K^3 on said shafts, a rotary conveyer separator-wheel, shaft K^4, carrying said separator-wheel, and a gear K^5 on the upper end of said shaft, substantially as described.



2. In a potato-digging machine, in combination, the concave-convex conveyer separator-wheel set inclined to the horizon, an inclined shaft, a hinged frame, a diagonal shaft, gears on axle, and the traction-wheels, substantially as described.

3. In a potato-digging machine, in combination the concave-convex conveyer separator-wheel K and the transverse directing and discharging shield L, conforming on its under side with the concave form of the separator, substantially as described.

4. In a potato-digging machine, in combination, the concave outwardly and forwardly flared continuous-edged digging-wheel J, diagonal and inclined shaft J', hinged frame C, gears J^2 J^3 for operating said wheel, the axle A, and supporting ratchet-connected traction-wheels B B, substantially as and for the purpose described.

5. In a potato-digging machine, the concave outwardly and forwardly flared continuous-edged digging-wheel J, having spaced arms *p*, which are united forward of the wheel upon a conical hub and extended backward on segmentally curved and inclined lines upward and forward and united to the cutting-rim *j* of the wheel, the diagonal shaft J' for producing a rotary shearing cut with said wheel, gears J^2 J^3 for operating said shaft, a hinged frame C, an axle A, and ratchet-connected traction-supporting wheels, substantially as and for the purpose described.

6. In a potato-digger, in combination, a rotary concave conveyer separator-wheel and a continuous-edged rotary digger-wheel, each of said wheels being driven by an independent diagonal shaft, one of said shafts crossing the other, substantially as and for the purpose described.

7. In a potato-digger, in combination, the digging-wheel, inclined diagonal shaft J', hinged frame C, and adjustable bearing-box r^4, substantially as and for the purpose described.

8. In a potato-digger, in combination, the double bearing-box bracket *n'*, hinged frame C, diagonal shaft K', and inclined shaft K^5, carrying the conveyor separator-wheel K, substantially as and for the purpose described.

9. In a potato-digging machine, in combination, the double mold-board I, provided with an upright rod *s* forward of its standard, a hinged frame C, and a revolving conveyor separator-wheel K in rear of the plow, substantially as described.

10. In a potato-digger, in combination, a hinged frame C, a left-hand plow I', having a pivoted sole-plate *f*, means for raising, lowering, and holding the heel of said sole-plate, a digging-wheel, a conveyor separator-wheel, and a right-hand plow I, substantially as and for the purpose described.

11. In a potato-digger, in combination, a digging-wheel, the conveyer separator-wheel, diagonal driving-shafts, a vertical inclined shaft, and gears which give the conveyor, separator, and the digging-wheel different speeds, substantially as described.

412,492. CAR-COUPLING. SIMON J. FREEMAN, Bradford, Pa. Filed Feb. 16, 1889. Serial No. 300,114. (No model.)

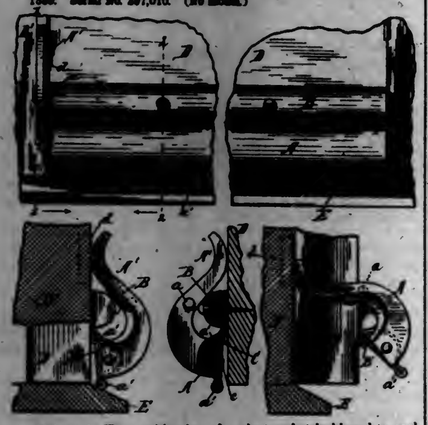


Claim.—1. A car-coupler comprising the draw-bar A, the horizontal hook E, pivoted to swing vertically on the front end of said draw-bar, the lever L, pivoted to the side of the draw-bar to swing at right angles to the hook E, and having its front end L' projecting forwardly alongside the hooked end F thereof, and a spring pressing the rear end of the said lever outward, substantially as set forth.

2. The combination, with a draw-bar having horizontal coupling-hooks on its front end pivoted to swing vertically only, of a spring-pressed lever pivoted on the side of the draw-bar to swing horizontally toward and from the hooked end of said coupling-hook, said

lever and hooked end being independent one of the other, substantially as set forth.

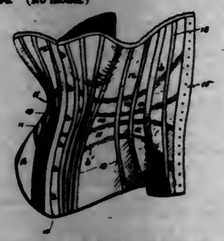
412,493. WEATHER-STRIP. WILLIAM H. PYE, Chicago, Ill., assignor of one-half to Frederick W. Meyer, same place. Filed Jan. 21, 1889. Serial No. 297,010. (No model.)



Claim.—1. The combination of a cleat and strip hinged to each other edge to edge, a spring connecting them so as to force their free edges out of their common plane, felt or other elastic material secured to corresponding sides of the strip and cleat and extending beyond the edge of the strip opposite to the cleat, and a lever rigidly secured to one end of the strip at right angles to the same, having its free end beveled or carved and having a stop on its side next to the strip and cleat, as and for the purpose stated.

2. The combination of the door D, the door-jamb D', the cleat B, secured to the door near its bottom, the strip A, hinged to the cleat on its lower edge, the spring C, connecting the cleat and strip and adjusted to throw the lower edge of the strip from the door, felt or other elastic material a', secured to like sides of the strip and cleat and to the lower edge of the strip, and the lever A', rigidly secured at one end to the strip at the end of the same next to the latch-edge of the door and adjusted to act across the said edge and to strike the door-jamb above the strip, substantially as and for the purpose specified.

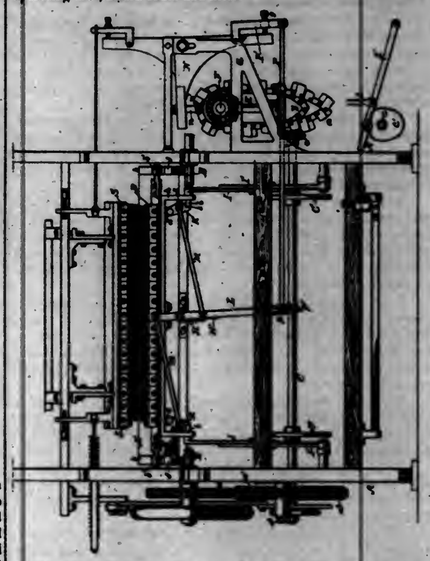
412,494. CORSET. THOMAS S. GILBERT, New Haven, Conn., assignor to Weingarten Brothers, New York, N. Y. Filed Mar. 7, 1889. Serial No. 302,396. (No model.)



Claim.—As an improved article of manufacture, a corset having the sides thereof built up of a transverse gore at the waist-line having oppositely-concaved longitudinal edges, a transverse gore at each side of the waist-gore of greater width than the said waist-gore, provided with a convexed inner longitudinal edge and a concaved outer opposite edge, and a gore of greater width than the intermediate gores at each side of the intermediate gores, having the inner longitudinal edge conforming to the concavity of the intermediate gores, substantially as shown and described.

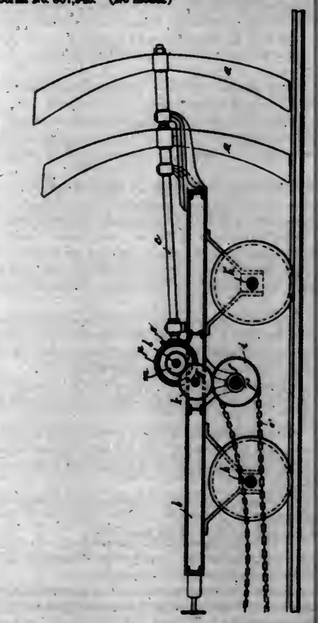
412,495. STRAIGHT-FRAME KNITTING-MACHINE. SAMUEL H. GOODMAN, Philadelphia, Pa., assignor to Conyers Button and Martin L. Finckel, both of same place. Filed Sept. 15, 1888. Serial No. 285,405. (No model.)

Claim.—1. The combination of the needle-bar of a knitting-machine, a reciprocating lifter therefor, a stopped jack, through the medium of which the lifter acts on the bar, a pattern-chain, means whereby the same is caused to adjust the jack, and mechanism for operating the pattern-chain and lifter.

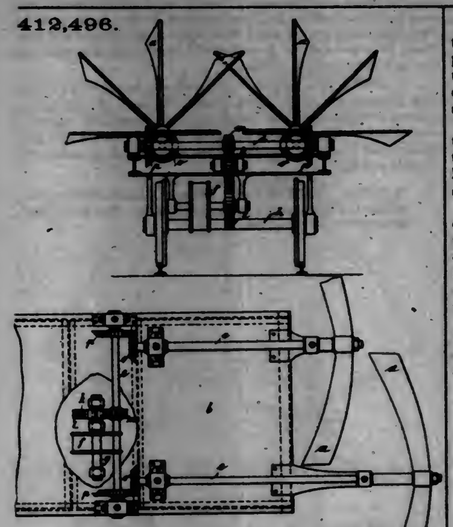


2. The combination of the needle-bar of a knitting-machine, a guide-frame therefor, vertically-reciprocated lifters, stopped jacks carried by the needle-bar and adapted to engage with said lifters, a pattern-chain, and mechanism actuated thereby for adjusting the jacks, and means for operating said pattern-chain, substantially as described.

412,496. APPARATUS FOR CLEANING SNOW FROM RAILROAD-TRACKS. PAUL GRAHL, Berlin, Germany. Filed Apr. 20, 1889. Serial No. 307,943. (No model.)



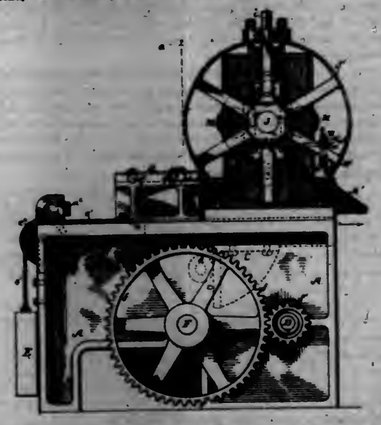
412,496.



Claim.—1. A snow-plow consisting of a carriage having mounted thereon rotary shafts of different lengths and projecting forward from the carriage, helical blades mounted on the projecting ends of the rotary shaft, the blades on one shaft being in advance of and at one side of the blades on the other shaft, and a driving mechanism connected with the rotary shafts, substantially as shown and described.

2. A snow-plow consisting of the carriage *b*, the rotary shafts *c*, of different lengths, projecting forward from the carriage and mounted thereon, the pairs of helical blades *a* on the outer ends of shafts *c*, one pair of blades being in advance and at one side of the other, a gearing on the carriage *b*, connected with shafts *c*, and a pulley *f*, substantially as shown and described.

412,497. HORSESHOE-MACHINE. PETER F. GARNETTSON, Richmond, Va. Filed May 1, 1889. Serial No. 308,167. (No model.)



Claim.—1. The combination, in a horseshoe-hammering machine, of the hammers, the traveling table carrying the horseshoes to be hammered, said table having a projection or knee with which engages an arm on a disk or disks secured to a power-driven shaft, substantially as described.

2. The combination of the hammers, the moving table, mechanism for moving the same, said table carrying the horseshoes, pivoted levers for holding the said horseshoes on the table, with cam-plates so cut as to hold the shoe as it passes under the hammer and to release the shoe at the end of both the forward and backward movement, substantially as described.

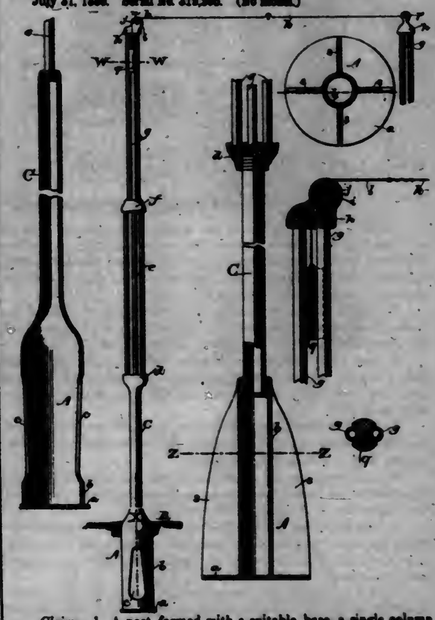
3. The combination of the movable table having projections of the contour of the outside heel portion of the shoe, and having levers pivoted to said table, one arm of each of said levers bearing against the inner portion of the shoe and the other arm bearing upon the cam-faces of the cam-plates, the whole acting substantially as described.

4. The combination, in a horseshoe-hammering machine, of the traveling table, and the hammers, with a beveling-die situated on the table in a position directly under the front portion of the shoe to be hammered, so that said shoe will receive the necessary inner bevel, substantially as described.

5. The combination of the table, the hammers, mechanism for operating the hammers and table, with a die for the shoe to be hammered, devices for retaining the shoe on the die with the finger pivoted to the head, so that the shoe to be removed can ride under said finger, but will be withdrawn on the return movement of the table, and devices for releasing the shoe on its return movement, substantially as described.

6. The combination, in a horseshoe-hammering machine, of the hammers with a traveling table carrying the shoe to be hammered, said table having water-passages, substantially as and for the purpose set forth.

412,498. METAL POST. GEORGE B. HALL, Malden, Mass. Filed July 31, 1888. Serial No. 282,266. (No model.)



Claim.—1. A post formed with a suitable base, a single column or tube rising from said base to the requisite height and terminating with a head formed to receive a plurality of rods or tubes, and one or more sections above said head, having a plurality of tubes or rods in each section, substantially as specified.

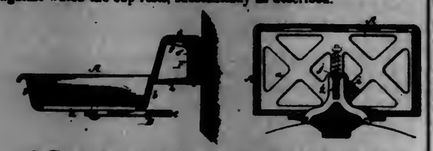
2. A metal post formed with a suitable base and subdivided into lengths or sections, the lower section being formed of a single tube or column, and the other and upper lengths being formed with a plurality of tubes or rods in each length, said several lengths being coupled together, in manner substantially as specified.

3. A metal post provided with a sheave or truck, pivoted and arranged in manner substantially as specified, and a weight arranged in and to be guided and supported by the post and to coact with said sheave, substantially in manner as specified.

412,499. SOAP DISH OR CUP. WILLIAM A. HAMILTON, Philadelphia, Pa. Filed Feb. 1, 1889. Serial No. 298,317. (No model.)

Claim.—1. The combination of the soap-cup having a projecting lip with a central depending lug and a removable plate provided with arms projecting beyond the under edge of the soap-cup, said projecting arms forming with the lug a support for the soap-cup when applied to a bucket or light receptacle, substantially as described.

2. The combination of the soap-cup having a lip with depending leg and a socket-piece having an orifice for the reception of the leg, and provided with projections at the top and base of said socket-piece, against which the cup rests, substantially as described.



3. The combination of the soap-cup with a lip having a central depending leg and a slotted adjustable plate removably secured to the under side of the soap-cup, substantially as described.

4. The combination of the soap-cup having a central depending lug with a slotted adjustable plate removably secured to the under side of the said soap-cup, and a spring to force the plate outward from the cup, substantially as described.

412,500. HEN-HOUSE. SOLOMON HARBAUGH, Geneva, Nebr. Filed Apr. 19, 1889. Serial No. 307,982. (No model.)



Claim.—1. In a hen-house, the combination, with the elevated entrance E, of the combined stairway and nest-boxes composed of the horizontal boards H, of different lengths, the vertical partition-boards I, formed with the openings *i*, and the rear boards J, formed with the openings *j*, substantially as set forth.

2. In a hen-house, the combination, with the floor M N, of the V-shaped supports O O', formed with the notches *o*, the hanger P, and the removable roost-bars W, substantially as set forth.

3. In a hen-house, the combination of the hinged longitudinal door S and the lever T, centrally pivoted to the inner side of the said door and formed with the wide end and the narrow end *t*, substantially as set forth.

4. In a hen-house, the combination of the hinged longitudinal door, the centrally-pivoted lever having the narrow and the wide ends, and the strip U, substantially as set forth.

5. In a hen-house, the combination, with the joists, of the floor composed of the loose wide planks and the narrow upper planks and the longitudinal door, substantially as set forth.

6. In a hen-house, the combination of the notched V-shaped supports, the roost-bars, the floor composed of the loose wide lower boards and narrow upper boards, and the longitudinal door, substantially as set forth.

7. In a hen-house, the combination, with the entrance, of the combined stairway and nest-boxes, the stairway leading from the same to the upper floor, the floor composed of the loose wide lower boards and the narrow upper boards, the notched V-shaped supports, the removable roost-bars, and the hinged door having the pivoted lever, substantially as set forth.

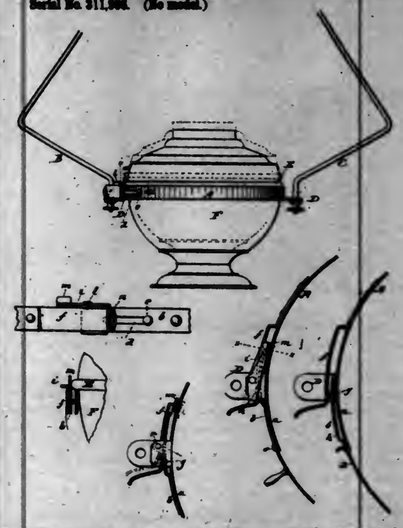
412,501. LIFT-PUMP. CHARLES A. HOLLAND, Maxton, N. C. Filed Apr. 20, 1889. Serial No. 308,073. (No model.)



Claim.—1. A lift-pump having a valved piston provided with a conical seat, a poppet-valve thereon having its upwardly-extending stem loosely socketed in the lifter-head, and the two heads or disks with their coupling-rods, which form the cargeon or frame of said piston, the lower disk being of greater diameter than the upper and provided with a suitable packing.

2. A lift-pump having an inlet-valve frame formed with a conical seat, a double-disk poppet-valve located thereon, a plunger having a frame of tapering form, a conical elongated valve-seat thereon, a poppet-valve with a loosely-socketed upwardly-extending stem thereon, and a disk at the lower section of said frame provided with suitable packing.

412,502. HANGING LAMP. WILLIAM C. ROMAN, Meriden, Conn., assignor to Edward Miller & Company, same place. Filed May 24, 1889. Serial No. 311,906. (No model.)



Claim.—1. In a hanging lamp, the ring for the support of the fount, divided, its ends overlapping, and adapted for expansion and contraction, the ring supported upon the frame, and the overlapping ends of the ring, the one provided with a latch and the other constructed to engage said latch when in the contracted position, substantially as described.

2. The fount-supporting ring of a hanging lamp, constructed from a strip of metal, its two ends overlapping, the one constructed with a circumferential slot and the other with a corresponding headed stud through said slot, to permit the expansion and contraction of the ring, combined with a spring-latch upon one end, the other end constructed for engagement with said latch when the ring is in the contracted position, substantially as described.

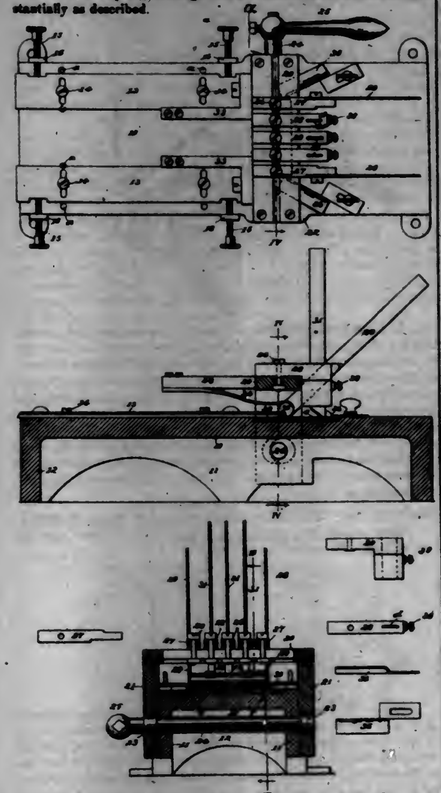
3. The fount-supporting ring of a hanging lamp, constructed from a strip of metal, its ends overlapping, combined with a latch upon one of said ends adapted to engage the other of said ends when in the contracted position, and a guard between the said latch and fount, substantially as described, and whereby when the fount is in place the said guard is brought into contact therewith to hold the latch in its engaged position, substantially as described.

4. The fount-supporting ring of a hanging lamp, constructed from a strip of metal, its ends overlapping, combined with a spring-latch upon one of said ends and adapted to engage the other of said ends when the ring is in the contracted position, a guard hung upon said ring to swing in a horizontal plane, one end of said guard adapted to bear upon the back of said spring-latch, the other end of said guard adapted to bear against the fount when the fount is set upon the ring, substantially as and for the purpose described.

412,503. LEATHER-STRIPPING MACHINE. WILLIAM H. HOOPER, Brooklyn, N. Y. Filed May 29, 1889. Serial No. 312,492. (No model.)

Claim.—1. In a leather-stripping machine, the combination, with a base-plate, of a plate 20, arranged above the base-plate, blades carried by the plate 20, a friction-roller 35, arranged beneath the plate 20, and springs 34, arranged in connection with the roller, substantially as described.

2. In a leather-stripping machine, the combination, with a base-plate, of a plate 20, carried thereby, a plate 20, standards by which the plate 20 is supported, a shaft 24, eccentrics carried by said shaft and arranged to engage the standards, blades carried by the plate 20, a roller 35, and springs arranged in connection with the roller, substantially as described.



3. In a leather-stripping machine, the combination, with a base-plate, of guides 13, carried thereby, a plate 20, also carried by the base-plate and formed with recesses *c* and *c'*, a plate 20, a means for raising and lowering said plate, blades 29 and 31, brackets by which said blades are supported, adjustable connections between the brackets and plate 20, a roller 35, springs arranged in connection with the roller, and deflecting-plates 36, substantially as described.

412,504. CROCK-PRESS. MARTIN J. HOUSE, Akron, Ohio, assignor to the Akron Stoneware Company, same place. Filed Oct. 21, 1887. Serial No. 253,081. (No model.)

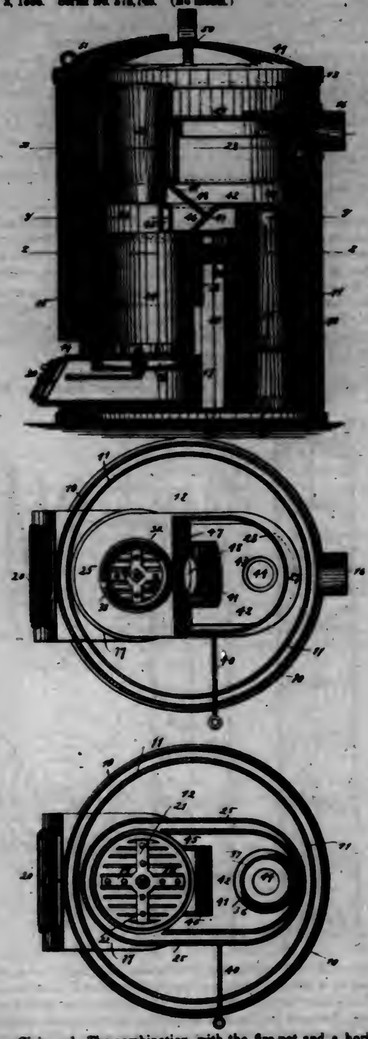


Claim.—1. In a press of the kind designated, the combination, with the lower cylinder-head and the mandrel suspended centrally therein and having for its base a revolving disk receiving motion from a shaft disposed centrally within said cylinder and mandrel, of a knife mounted in said disk capable of radial reciprocating movement and mechanism within said mandrel for communicating movement to said knife, substantially as shown and described, and for the purpose specified.

2. In a press of the kind designated, the combination, with the revolving disk forming the base of the mandrel and a knife arranged to slide radially in said disk and project beyond its periphery, of a cam to actuate said knife and devices for causing said cam to engage and actuate said knife, substantially as shown, and for the purpose specified.

3. In a crock-press of the kind specified, the combination, with the disk J, of the radially-sliding knife O, spring P, and movable cam R, all constructed and arranged substantially as shown, and for the purpose specified.

412,505. STOVE. DANIEL HUBBARD, Oswego, N. Y. Filed July 3, 1888. Serial No. 278,703. (No model.)



Claim.—1. The combination, with the fire-pot and a horizontal casing, forming a combustion-chamber, extending rearwardly from the fire-pot and provided with an outlet, of a burner in the rearward-projecting part of the said chamber and provided with spaced air-channels opening over the fire-pot, and a jacket surrounding the fire-pot provided with an air-inlet and connected with said channels, substantially as set forth.

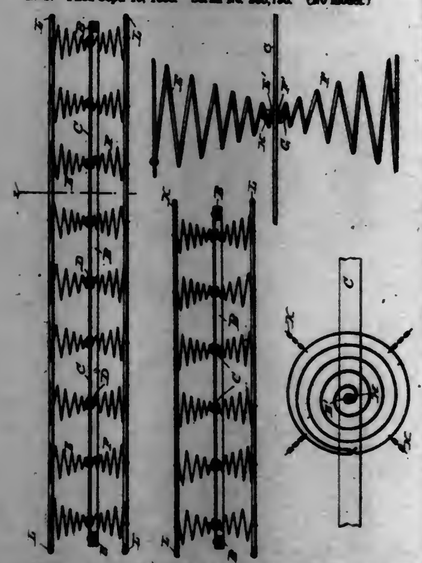
2. The combination, with the fire-pot and horizontal casing, forming a combustion-chamber, extending rearwardly from the fire-pot and having an outlet, of the horizontal burner having spaced air-channels opening over the fire-pot, an apertured partition dividing

the combustion-chamber above the burner and in rear of the fire-pot, and through which aperture the products of combustion pass to the outlet, and the jacket surrounding the fire-pot, open at its lower end to receive the air and connected with the burner to supply its channels with heated air, substantially as set forth.

3. In a stove, the combination, with an inner and an outer cylinder, a fire-pot within the inner cylinder, an oblong casing supported above said fire-pot, extending horizontally beyond the same and forming the combustion-chamber, and a burner horizontally supported within the said combustion-chamber at one side of the fire-pot, provided with conducting-channels extending into the fire-pot and an aperture in the upper face, of an apertured partition dividing the combustion-chamber into two compartments, a jacket surrounding the fire-pot, an air-tube connected with said jacket and burner, a fire-tube provided with a ring surrounding the opening in the burner and passing downward within the air-tube to a connection with the space intervening the inner and outer casing, and means, substantially as shown and described, for introducing air between the jacket and the burner, as and for the purpose specified, whereby hot air is supplied to the products of combustion within the fire-pot and the escaping carbonic-oxide gas is consumed, as set forth.

4. In a stove constructed substantially as herein shown and described, the combination, with a fire-pot, and a casing supported above said fire-pot, extending beyond one side of the same and forming the combustion-chamber, of a burner supported in the said combustion-chamber, having tubular channels projected from the ends adjacent to the fire-pot and leading into the fire-pot, and a centrally-apertured partition resting upon said burner and the walls of the casing, dividing the chamber into two sections, and means for supplying air to said burner and conducting the products of combustion from the fire-pot, substantially as and for the purpose specified.

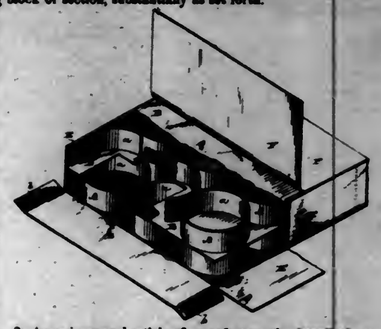
412,506. SPRING BED-BOTTOM. ANTHONY HUBER, New York, N. Y. Filed Sept. 19, 1888. Serial No. 285,790. (No model.)



Claim.—A reversible spring bed-bottom composed, as herein described, of a rectangular frame, metallic cross-strips, and substantially double-cone springs, wherein the said double-cone springs are each really made of two separate single-cone springs placed apex to apex on opposite sides of the said metallic cross-strips, and the apices of the opposite springs rigidly but detachably fastened to each other and to the interposed metallic strips by bolts, as and for the purpose specified.

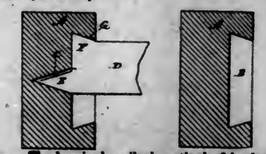
412,507. NON-CONDUCTING LINING. OLIVER P. HUBBARD, Chicago, Ill., assignor to James P. Hunt, same place. Filed May 31, 1888. Serial No. 312,767. (No model.)

Claim.—1. As an improved article of manufacture, a series of cell-slices each consisting of a number of independent cells united at their contiguous external surfaces, arranged between and hermetically sealed by series of flat separating-plates, and the whole inclosed in and hermetically sealed by an outer covering forming a non-conducting block or section, substantially as set forth.



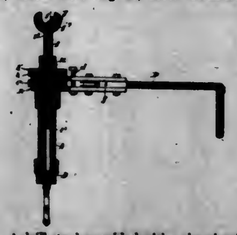
2. As an improved article of manufacture, the described non-conducting block or section, consisting of an outer covering of felt paper or analogous material and inner alternate layers of flat plates of straw-board or analogous paper-board coated with silicate of soda or analogous adhesive substance, and cell-slices of similar material, each slice consisting of a number of independent cells united together at their contiguous external surfaces by the said water-proof adhesive substance, and hermetically sealed by the said coated plates, the outer covering being coated at all points of contact with the inner series of plates and cell-slices with the said water-proof adhesive substance, substantially as set forth.

412,508. METHOD OF BORING UNDERCUT HOLES IN METAL. HENRY JAMES, New Haven, Conn. Filed July 15, 1889. Serial No. 317,583. (No model.)



Claim.—The herein-described method of boring holes undercut or of gradually-increasing diameter, consisting in first forming a cavity in the center of the surface where the hole is to be formed, the said cavity gradually diminishing in diameter corresponding to the increase in diameter required for the hole to be cut, then introducing the cutter so that one side may work upon the surface of the said cavity as a guide, while the cutter from the other side will operate upon the surface, the said cavity serving to force the metal radially against the cutter as the depth of the cut advances, substantially as described.

412,509. RATCHET-DRILL. GEORGE JOHNS and JOHN L. JOHNS, Chattanooga, Tenn. Filed Aug. 20, 1889. Serial No. 321,782. (No model.)



Claim.—1. A drill-stock provided with a chamber in its upper end, the walls of which are plain, in combination with a removable feed-screw carrying a nut, the hub of which is adapted to fit within said chamber, substantially as set forth.

2. A ratchet-drill stock enlarged at its upper end to form a chamber, in combination with a removable feed-screw having a nut provided with ratchet-teeth, said nut having an extended hub adapted to fit within the chamber, substantially as set forth.

3. A ratchet-drill stock provided with a chamber at its upper end, in combination with a removable feed-screw and a nut carrying reversely-arranged ratchet-teeth, and provided with an extended hub on each side of said ratchet-teeth, substantially as set forth.

4. A feed-screw for ratchet-drills, provided with a squared portion at each end, in combination with a dog having a bifurcated portion adapted to be secured on either end of said screw, substantially as set forth.

5. A ratchet-drill stock enlarged at the upper end to form a chamber and provided with the usual fixed ratchet-wheel, in combination with a feed-screw, a nut on said screw provided with ratchet-teeth and with an extended hub, a handle sleeved on the drill-stock, and a pawl having an extended face adapted to engage the ratchets on the stock and feed-screw, substantially as set forth.

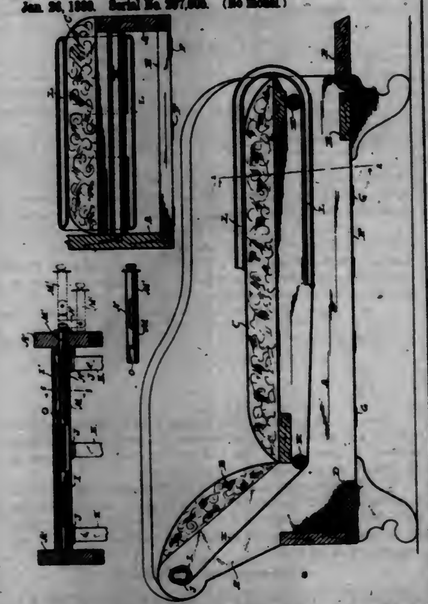
6. In combination with a ratchet-drill stock, a reversible feed-screw having a cone point or center at each end, a nut provided with reversely-arranged ratchets, a handle sleeved on the drill-stock, a pawl having an extended face carried by the handle, and a second pawl, also mounted on the handle and normally held out of contact with the upper of the reverse ratchets on the feed-nut, substantially as set forth.

7. The combination, with a ratchet-drill stock and a handle sleeved thereon, of a pawl pivoted within the handle and having an extended face, a feed-screw, a nut provided with reversely-arranged ratchet-teeth, a pawl mounted on a vertical pivot in the handle, and a spring for holding said pawl normally out of contact with the ratchet on the feed-nut, substantially as set forth.

8. In combination with a ratchet-drill stock having a chamber at its upper end, a handle sleeved to said stock, a spring-actuated pawl with an extended face carried by the handle, a feed-screw, a nut provided with reverse ratchets and with an extended hub, a pawl-lever pivoted to the top of the handle and having an extended perforated arm, and a spring-actuated bolt passing through a perforation in the handle, substantially as described.

9. In combination with the stock A, having ratchet C, and provided with the chamber K, the handle D, sleeved to said stock, the spring-actuated pawls E F, pivoted on said handle, the nut H, having extended hubs and carrying the reversely-arranged ratchets *h h'*, and the reversible feed-screw I, having a cone point or center at each end, substantially as described.

412,510. LOUNGE. HERMANN KAUFMANN, Milwaukee, Wis. Filed Jan. 26, 1889. Serial No. 297,603. (No model.)



Claim.—1. The combination of a lounge or analogous piece of furniture, a spindle journaled in the frame of the device, a blanket or analogous covering normally supported beneath the furniture, and flexible connections uniting the spindle and covering, whereby the latter may be drawn out by hand and returned to its normal position by rotation of said spindle, substantially as set forth.

2. The combination of a lounge or analogous piece of furniture, a hollow spindle journaled in the frame of the device, a blanket or analogous covering normally supported beneath the furniture, flexible connections uniting the spindle and covering, and a jointed crank telescopically arranged with relation to said hollow spindle, substantially as set forth.

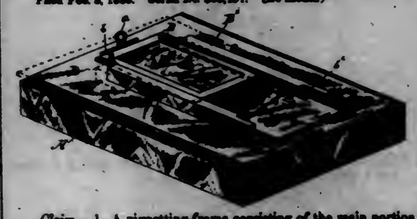
3. The combination, with a lounge or analogous piece of furniture, of a hollow spindle journaled in the frame of the device and provided with a radial extension, a blanket or analogous covering flexibly connected to the spindle, and a jointed crank loosely arranged in said spindle and provided with a lug that engages the radial extension thereof, substantially as set forth.

4. The combination, with a lounge or analogous piece of furniture, of a spindle journaled in the frame of the device, a blanket or analogous covering flexibly connected to the spindle, and rollers journaled in said lounge to facilitate the movement of the covering, substantially as set forth.

5. The combination of a lounge or analogous piece of furniture, a series of tapes secured to the frame of the device, a spindle journaled in said frame, a blanket or analogous covering normally supported on the tapes, and flexible connections uniting the spindle and covering, substantially as set forth.

6. The combination, with a lounge or analogous piece of furniture, of a spindle journaled in the frame of the device, a blanket or analogous covering flexibly connected to the spindle, and a door connected to the foot end of said frame, substantially as set forth.

412,511. VIGNETTING-FRAME. JOHN H. KELLER, Kokomo, Ind. Filed Feb. 2, 1889. Serial No. 298,157. (No model.)



Claim.—1. A vignetting-frame consisting of the main portion B, provided with a central aperture, the slides B' on each side thereof, having the two sets of grooves *b' b²* formed therein, the sliding part C, mounted in one set of grooves, and the shade E, mounted in the other set, substantially as set forth.

2. The combination of the printing-frame A, the vignetting-frame B, provided with the transverse slot *b* in each end thereof, the set-screws *a*, one extending through each of said slots into said printing-frame, and the sliding part C, mounted in slides over an aperture in said vignetting-frame, substantially as set forth.

412,512. BUTTON OR ORNAMENT. FRANK KERSHAW, Chicago, Ill., assignor of one-half to J. J. Allpoter, same place. Filed Dec. 3, 1888. Serial No. 292,050. (No model.)



Claim.—1. The combination of the base-plate C, stem D, and disk E with the removable crown A and indicating-card H, substantially as shown and described.

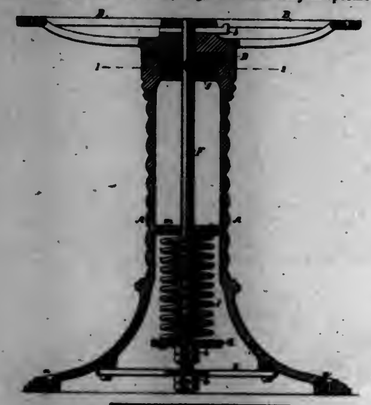
2. The combination of a base-plate C, stem D, disk E, stem G, and crown A, removably secured to the stem G, substantially as shown and described.

412,513. REVOLVING CHAIR. FRANCIS D. KRAMER and GEORGE LOUIS, Philadelphia, Pa. Filed Nov. 15, 1888. Serial No. 290,919. (No model.)

Claim.—1. The combination of the hollow standard having an internal bearing, the seat-rod carried within the standard and having a collar, a spring interposed between said collar and the bearing in the standard and serving to depress the rod, and a seat-frame and rigid friction-disk carried by the upper end of the rod, said friction-disk being seated upon the upper end of the standard and held in frictional contact therewith by the downward pressure of the spring, substantially as specified.

2. The combination of the hollow standard having an internal bearing, the seat-rod carried within the standard and having a collar, a spring interposed between said collar and the bearing in the standard and serving to depress the rod, and a seat-frame and rigid friction-disk independent of each other and independently secured to the upper end of the seat-rod, said friction-disk being interposed between the seat-frame and the upper end of the standard and being held in frictional contact with the latter by the downward pressure of the spring, all substantially as specified.

3. The combination of the hollow standard having an internal bearing, the seat-rod carried within the standard and having a collar, a spring interposed between said collar and the bearing in the standard and serving to depress the rod, a seat-frame detachably secured to the upper end of the rod, and a rigid friction-disk permanently secured to said rod, interposed between the seat-frame and the standard, and held in frictional contact with the upper end of said standard by the downward pressure of the spring, all substantially as specified.



412,514. CLASP. FRANCOIS LAMBERT, New York, N. Y. Filed Feb. 1, 1889. Serial No. 298,282. (No model.)



Claim.—1. In a clasp, the combination, with a main plate provided with a stud having a lip or projection, of an outer plate hinged to the main plate and provided with a catch, which has a laterally-ranging notch and engages the stud-lip by a lateral movement, substantially as herein set forth.

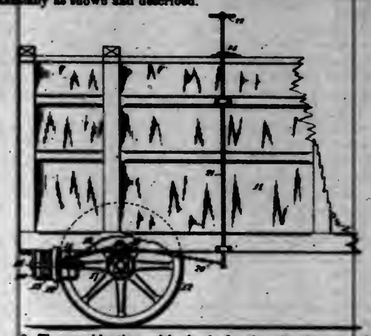
2. In a clasp, the combination, with a main plate provided with a stud having a lip or projection, of an outer plate having a catch adapted to engage the lip-stud and hinged to the main plate by a spiral or coiled spring, which normally opens the clasp when the catch is disengaged from the stud, substantially as herein set forth.

3. In a clasp, the combination, with a main plate provided with a stud having a lip or projection, of an outer plate hinged to the main plate and having a catch provided with a laterally-ranging notch and adapted to engage the stud by a lateral movement and projecting at the side of the stud when the clasp is closed, substantially as shown and described, whereby a loop or other object drawing on the stud when the clasp is closed will also draw on the catch to hold it to the stud, as set forth.

4. The combination, in a clasp, of a main plate A, provided with a stud D, having a lip d', and an outer plate B, hinged to the plate A by a spiral or coiled torsion-spring C, and provided with a catch E, adapted to lock with the stud-lip d', substantially as described, for the purposes set forth.

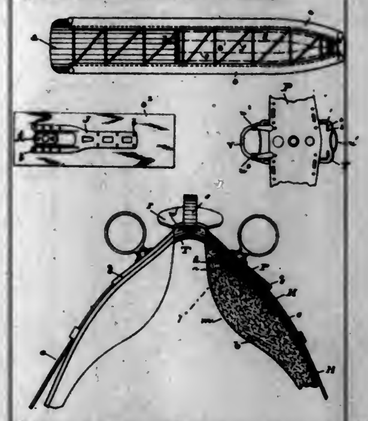
412,515. BRAKE FOR THRASHING-MACHINES. JOHN W. LEFEVRE and LORENZO D. YOUNG, Jr., Toledo, Iowa. Filed June 26, 1889. Serial No. 315,637. (No model.)

Claim.—1. The combination, with the body of a vehicle, the axle 17, pulley 18, pivoted upon the axle, and the brackets 10, secured to the under side of the vehicle-body at each end, of a brake-beam 13, confined at each end in the brackets and sliding freely within the same, said brake-beam being provided at each end with the brake-shoes 14, the link-rods 19, secured to the brake-beam at suitable points and connected at their opposing ends, the chain 20, connected to the link-arms passing over the pulley 18, and a vertical brake-rod 21, journaled upon the side of the body and provided with a pawl-and-ratchet attachment, said brake-rod being connected at its lower end to the chain 20, substantially as shown and described.



2. The combination, with the body of a thrashing-machine, a brake-rod journaled upon one side of the same, provided with a pawl-and-ratchet attachment, brackets secured to the bottom—one near each side—at the rear of the axle of the machine, and a pulley pivoted upon the said axle, of a bolt passing through the brackets, a brake-beam provided with brake-shoes adapted for lateral movement in the bracket upon the said bolts, a spring coiled around each bolt, contacting with the bracket and the beam, links projected from the forward face of the brake-beam, and a chain secured to the said links at one end, passing over the said pulley and attached to the brake-rod at the other end, substantially as shown and described.

412,516. HARNESS-SADDLE. HUGO LEHR, Baltimore, Md. Filed May 23, 1889. Serial No. 312,431. (No model.)



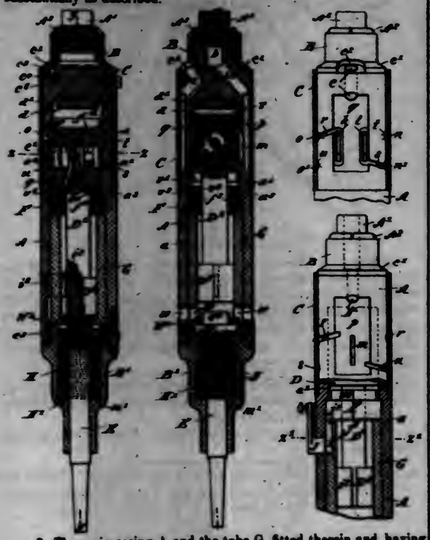
Claim.—1. A harness-saddle having a pad provided with the stuffing b and cover c, and a pad-spreader in separate lower and upper sections c' c^2, placed end to end, and the latter section having the inside tree-plate J and terret-nut k attached to it.

2. A harness-saddle having a checkrein-hook s and a crupper-loop v, and below these a finishing-plate T, having holes at each side and a wire passed through said holes and forming a loop w, which fits the said hook, and having its ends secured tightly about the said crupper-loop, as set forth.

412,517. PNEUMATIC TOOL. JAMES S. MACOUN, New York, N. Y., FRANK H. MARSH, Newark, N. J., and GEORGE H. WILLIAMS, New York, N. Y., assignors to the American Pneumatic Tool Company, of New York. Filed Jan. 3, 1889. Serial No. 295,293. (No model.)

Claim.—1. The piston having a transverse slide-valve fitted therein and formed with passages f g, leading from the valve-chamber to the upper and lower ends of the piston, respectively, the ends of the piston being capped to shorten the said passages f g, and yet retain sufficient length of exterior surface to prevent escape or blowing through of air at the contact of the piston with the casing, substantially as described.

2. The main casing in one piece, containing tube G and washer F, in combination with the piston D, having shank D' and head D^2, substantially as described.



3. The main casing A and the tube G, fitted therein and having corresponding openings w, in combination with the washer F and piston having shank D' and head D^2, substantially as described.

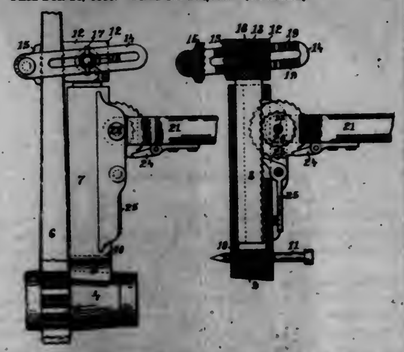
4. The pneumatic tool herein shown and described, having a reciprocating piston and slide-valve carried by the piston, in combination with the rotating valve B, applied to the end of the main casing and formed with a flange c', having an opening c^2 formed therein, substantially as and for the purposes set forth.

5. The main casing A and tube G, having flange w', in combination with the spindle E, having flange e^2 and projection e^3, substantially as described.

6. The piston or striker formed with a slot, the casing having a corresponding slot, and the tube G, in combination with a spline fitted in the tube and entering both slots for aligning the ports of the striker with the ports of the main casing, substantially as described.

7. The piston or striker formed with a valve-chamber and with passages h i j and vertical passages f g, the latter being of greater area than the passage f, in combination with the slide-valve having the ring e, which partially closes the passage g at induction and fully opens it for eduction, substantially as described.

412,518. POWER-JACK. GEORGE W. MATHEWSON, Coventry, R. I. Filed Dec. 26, 1888. Serial No. 294,616. (No model.)



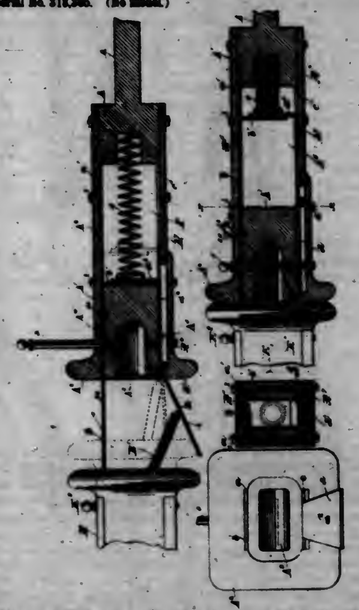
Claim.—1. The combination, in a power-jack, of a head provided with the bolt 16, clamp-nuts 17, the disk 18, links 14, and clamp 15, constructed to operate as and for the purpose described.

2. The combination, with the head of a power-jack provided with the bolt 16 and clamp-nuts 17, of the ribbed disk 18, the grooved links 14, and the clamp 15, as described.

3. A power-jack consisting of the standard 7, the rack-bar 8, provided with saw-tooth-sectioned teeth and with the head 12, the pinion 20, the ratchet-wheel 23, the lever 21, the pawl 24, connected with the lever 21, and the spring-pressed stop-pawl 25, pivoted in the standard 7, constructed to engage with the saw-tooth-sectioned rack of the rack-bar, as described.

4. In a power-jack, the combination, with the standard 7, provided with the concaved end 9, the rack-bar 8, provided with the head 12, the pinion 20, ratchet-wheel 23, the lever 21, pawl 24, and stop-pawl 25, of the bolt 16, clamp-nuts 17, disk 18, links 14, and clamps 15, constructed to extract the spokes from the hub, as described.

412,519. CAR-COUPLING. ROBERT MATHESON, Oxford, County of Cumberland, Nova Scotia, Canada, assignor of one-half to Rufus Wood, Allan Haigh, and John Robb, all of same place. Filed July 23, 1889. Serial No. 318,305. (No model.)



Claim.—1. In a car-coupling, the draw-bar and its draw-head, combined with a movable buffer and a pivoted sliding link-lifter operated thereby, substantially as described.

2. The draw-bar and its draw-head, combined with a movable buffer b and a movable plate c^3, having a hinged link-lifter d, substantially as described.

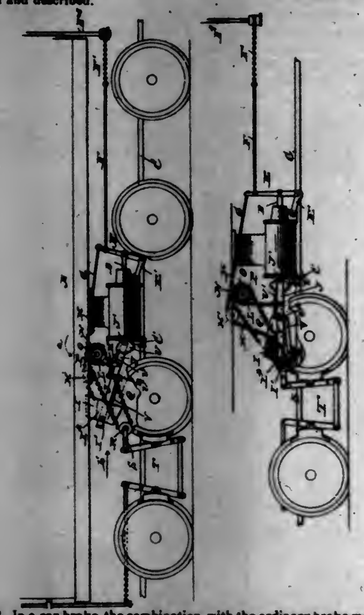
3. The draw-bar and its draw-head A', having a link-receiving recess A^3, a flange A^5, and openings a and c above and below the said recess A^3, and the movable buffer b in the said opening a, combined with the link-lifter in the said opening c below the said recess A^3, the lower side of the opening being shaped to allow the said link-lifter to drop down at its free end below a horizontal plane when the same is in its outermost position, and a spring to keep the buffer and link-lifter normally in their outermost positions, substantially as described.

4. The draw-bar and its draw-head A', having a link-receiving recess A^3, and a vertical passage intercepting the said recess for a coupling-pin, combined with a movable buffer located above the said recess and a link-lifter located below the said recess, the said buffer being provided with a hole which registers with the said vertical passage when the said buffer is in its innermost position only, substantially as described.

412,520. CAR-BRAKE. FREDERICK MILLER, Johnstown, and GEO. GREGORY, Braddock, Pa.; said Miller assignor to said Gregory. Filed May 14, 1889. Serial No. 310,899. (No model.)

Claim.—1. In a car-brake, the combination of a pivoted lever connected to one of the brake-levers, a weight pivoted on the said pivoted lever, and means, actuated by the said weight, for locking the lever in position, substantially as and for the purpose set forth.

2. In a car-brake, the combination, with a lever and a weight held on the free end of the said lever, of a chain connected with the said weight and under the control of the operator to support the weight when the brakes are off, a second chain connected at one end with the said lever, a double pulley on the periphery of which the other end of the said second chain is secured, and a third chain held on the said double pulley and connected with the brake-lever, substantially as shown and described.



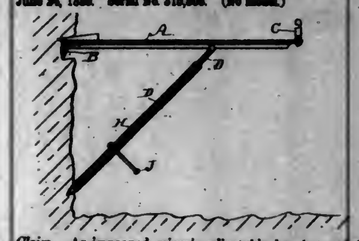
3. In a car-brake, the combination, with the ordinary brake mechanism, of a chain connected with one of the brake-levers of the said brake mechanism, a double pulley on which winds the said chain, a second chain held on the said double pulley, and a weighted lever connected with the said second chain, substantially as shown and described.

4. In a car-brake, the combination, with the ordinary brake mechanism, of a chain connected with one of the brake-levers of the said brake mechanism, a double pulley on which winds the said chain, a second chain held on the said double pulley, a weighted lever connected with the said second chain, and a locking device to hold the said lever in place when the brakes are on, substantially as shown and described.

5. In a car-brake, the combination, with a lever and a weight pivoted on the outer end of the said lever, of a fixed segmental ratchet held on the pivot of said lever and a pawl adapted to engage the said fixed segmental ratchet and actuated by the said weight, substantially as shown and described.

6. In a car-brake, the combination, with a lever and a weight pivoted on the outer end of the said lever, of fixed segmental ratchets held on the pivot of said lever, a pawl adapted to engage the said fixed segmental ratchets and actuated by the said weight, a second lever pivoted on the said first-named lever and connected with the said pawl, and a link pivotally connecting the weight with the said lever, substantially as shown and described.

412,522. MINER'S GRIP OR BRACKET FOR SUPPORTING COAL-DRILLING MACHINES. ANDREW T. MOATE, Pleasantville, Iowa, assignor to the Black Diamond Mining Tool Company, same place. Filed June 24, 1889. Serial No. 315,209. (No model.)

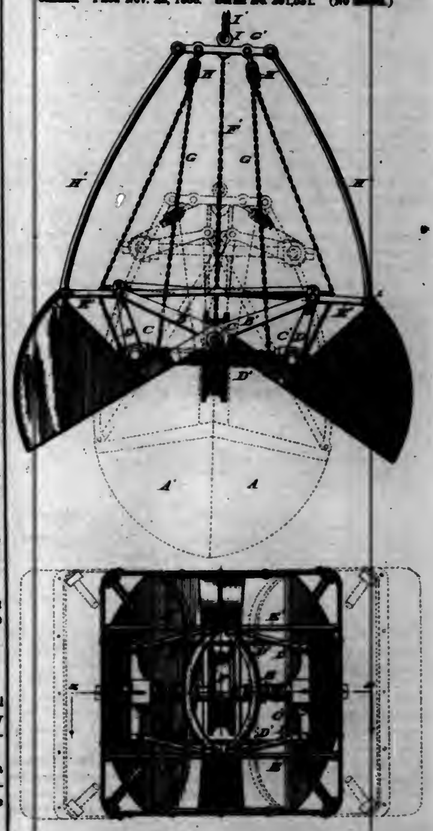


Claim.—An improved miner's adjustable bracket and drill-support comprising a straight bar having a hook at one end adapted to be fixed in a perpendicular wall, and a swiveled drill-support at the other end, a screw-threaded bar hinged to the straight bar near the drill-support, a screw-threaded sleeve fitted to the hinged bar, and means for rotating the sleeve on the hinged bar, in the manner set forth, for the purposes stated.

412,523. ROLLED RYE. EDWARD B. MOWER, Cedar Rapids, Iowa, assignor to Douglas Brothers & Mower, same place. Filed Mar. 28, 1889. Serial No. 305,170. (No specimens.)

Claim.—As a new article of manufacture, rolled rye, substantially as set forth.

412,524. DEVICE FOR EXCAVATING COAL, &c. THOMAS MCBRIDE, Philadelphia, Pa., and RASMUSSEN FISHER, Kinmartine, Ontario, Canada. Filed Nov. 22, 1888. Serial No. 291,831. (No model.)



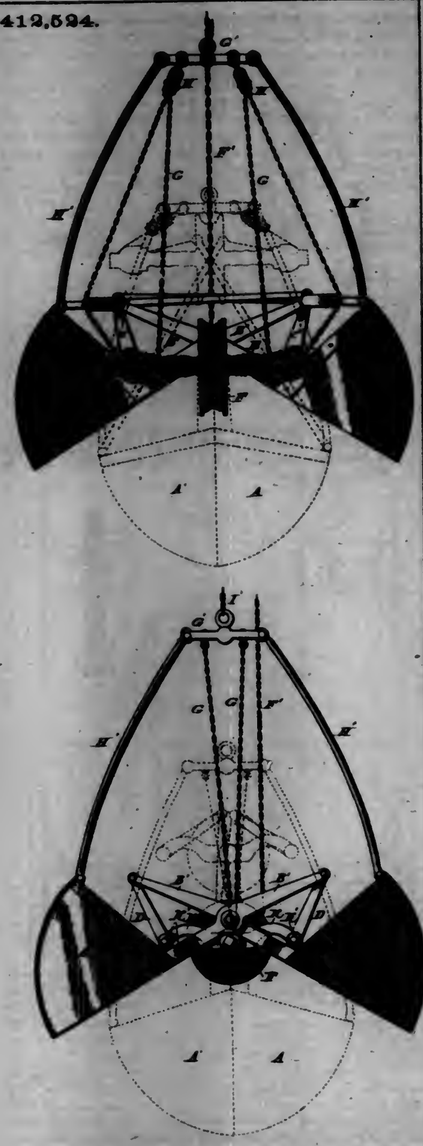
412,521. SCALE FOR TYPE-WRITING MACHINES. WALTER P. MILLER, Denver, Colo. Filed June 3, 1889. Serial No. 312,455. (No model.)



Claim.—1. A scale for type-writers, provided with the usual graduations and with an additional mark or sign opposite every fourth graduation, dividing the scale into divisions of three graduations each, substantially as and for the purpose set forth.

2. The combination, with a type-writer, of a carriage having a pointer, a scale having the usual graduations, and a mark or sign opposite every fourth graduation, substantially as and for the purpose set forth.

412,524.



Claim.—1. In an excavating device of the character described, the scoops provided with the lever-arms crossed and pivoted together, as described, the upper ends of said levers being pivoted to one end of toggle-levers, the other end of said toggle-levers being pivoted to the frame which supports the chain-operating drum.

2. In an excavating device of the character described, the chain-operating drum mounted in suitable bearings in end bars, said bars being connected to the arms or levers at the scoops by toggle-levers, whereby the raising and lowering of the drum operates to open and close the scoops, as set forth.

3. In an excavating device of the character described, the combination, with the winding-drum, the winding-wheel located thereon, and the operating-chains, of the scoops, the crossed levers carrying the same, the toggle-levers connecting with the crossed levers and with the edges of the scoops, the curved arms pivotally connected to the said edges of the scoops, and the connecting-bar to which the upper ends of said arms are pivotally connected, whereby the scoops may be lowered or elevated and opened or closed automatically, substantially as specified.

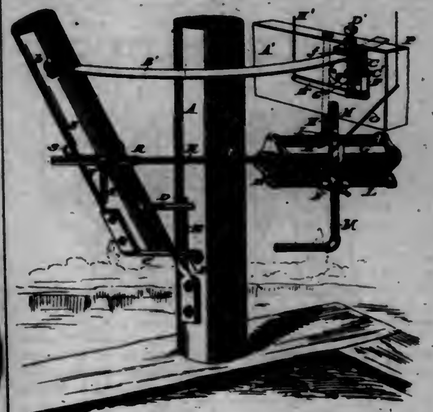
4. In an excavating device of the character described, the combination, with the crossed levers fulcrumed at their intersections and carrying the scoops, of the toggle-levers connecting the said crossed levers with the shaft of the winding-drum, the cross-bars connecting the ends of the scoops being curved to permit the drum to settle well down between the scoops, substantially as specified.

5. In an excavating device of the character described, the combination, with the scoops and the system of operating levers and chains, of the cross-bars having a portion thereof bent, as described, to permit the winding-drum to settle well between the scoops, substantially as specified.

6. In an excavating device of the character described, the combination of a winding-drum having spiral grooves on its periphery near each end, a winding-wheel mounted on said drum, the chains adapted to wind on and unwind from the drums and winding-wheel, respectively, and the scoops, crossed levers, and connecting toggle-levers, whereby the scoops are operated, substantially as specified.

7. In an excavating device, the scoops A and A', provided with the levers E', pivoted together, in combination with the levers D, the connecting-bars E, to which said bars D are hinged, the scoops at the lower ends of the levers E', the rods H' H', connecting the outer ends of the bars E to the top bar G', the chains G G, connected to the drum E, passed through the suspended pulleys H and secured at their lower ends to the ends of the shaft of the winding-drum, and the chain F', connecting the winding-drum with the top bar G', substantially as specified.

412,525. APPARATUS FOR OPERATING DERRICKS OR CRANES. THOMAS MCBRIDE, Philadelphia, Pa., and RASMUSSEN FISHER, Kinmartine, Ontario, Canada. Filed May 22, 1889. Serial No. 311,705. (No model.)



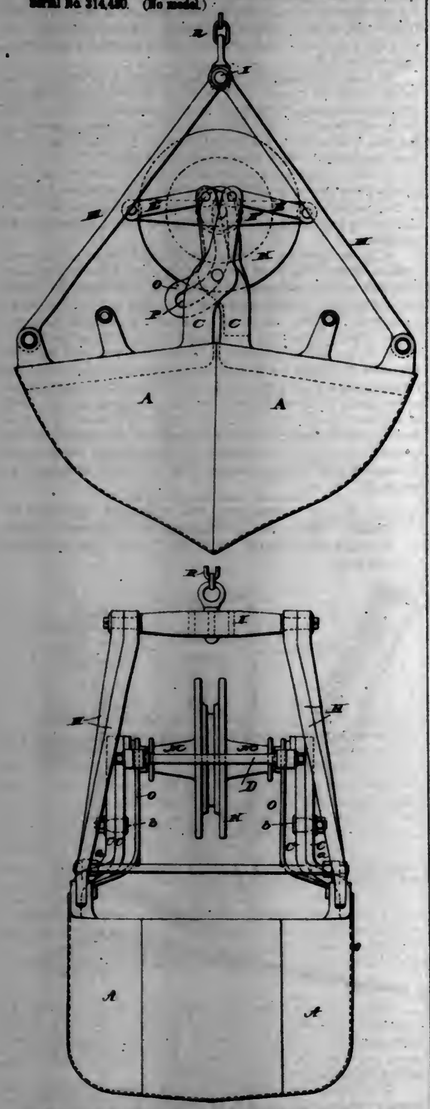
Claim.—1. In a device for swinging derricks, the cylinder G, hung on pivots so as to have a vertical movement and supported by a bar adapted to turn in its support to admit of a horizontal movement, in combination with the piston-rod and means for connecting it with the boom of the derrick, as set forth.

2. In a device for swinging the booms of derricks laterally, the boom B, pivoted to the mast A, as described, the piston-rod K, having a rack at its forward end gearing with a segmental rack on the boom, and a cylinder in which the piston-rod is moved by steam, water, or compressed air, as set forth.

3. In devices for swinging the booms of derricks, a cylinder hung in pivotal bearings, the piston-rod of said cylinder being connected to the boom, in combination with a brake or snubbing device substantially such as described, whereby the derrick is under the full control of the operator at all times, as set forth.

4. In a device of the character described, the curved bar B', secured at one end to the boom B, the other end of said bar being passed through slots in the hanger C, and supporting-bar A', in combination with the brake-block *f*, lever E', and snubbing-bar *g*, as set forth.

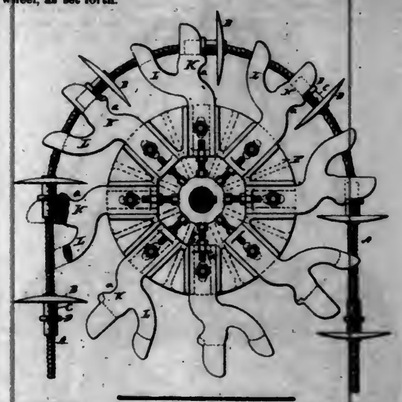
412,526. EXCAVATOR. THOMAS McBRIDE, Philadelphia, Pa., and BENJAMIN FISHER, Kincardine, Ontario, Canada. Filed June 15, 1889. Serial No. 314,480. (No model.)



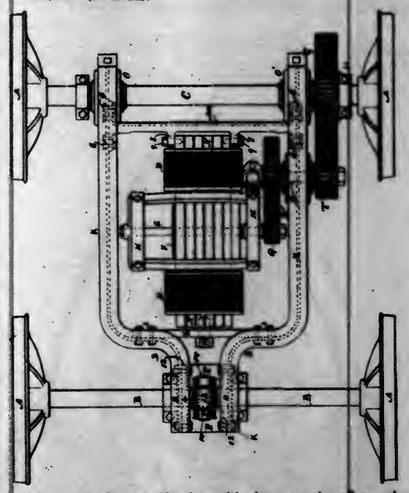
Claim.—In an excavating device of the character described, the chain-operating drum mounted in suitable bearings in a frame, said frame being connected to the arms or levers of the scoops by toggle-levers, and segmentally-slotted guide-bars adapted to receive the axis of the winding-drum, whereby the drum is centrally guided in its rising and falling motion to open and close the scoops, as set forth.

412,527. EXPANSIBLE WHEEL FOR ENDLESS CARRIERS, &c. THOMAS McBRIDE, Philadelphia, Pa., and BENJAMIN FISHER, Kincardine, Ontario, Canada. Original application filed Mar. 5, 1888, Serial No. 266,106. Divided and this application filed July 23, 1888. Renewed Aug. 20, 1889. Serial No. 320,902. (No model.)

Claim.—A wheel for endless conveyors having adjustable bifurcated arms, said arms being provided with bifurcated extensions to support the cable between the carrying-disks as it passes around said wheel, as set forth.



412,528. ELECTRIC MOTOR FOR RAILWAY-CARS. WILLIAM M. MCDOUGALL, East Orange, N. J. Filed May 23, 1889. Serial No. 311,813. (No model.)



Claim.—1. The combination, with the two pairs of car-wheels and their axles and an electric motor, of a frame formed of two bars K K, bent at 2 3, so as to come together, or nearly so, the electric motor being secured between the said bars, and two bearings O on one axle at one end of the frame and one bearing on the other axle and at the other end of the frame, substantially as specified.

2. The combination, with an electric motor having a frame for supporting the field-magnets and the armature-shaft, of the main frame composed of bars K and cross-bars L M, and the bolts 9 for connecting the frame of the electric motor at one end to the cross-bar M, and the bolt 10 for connecting the frame of the electric motor to the cross-bar L at the other end, substantially as set forth.

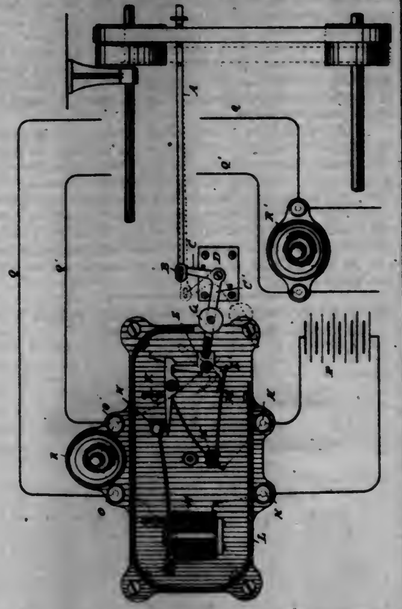
3. The frame for receiving the electric motor and connecting the same to the axles of the railway-car, consisting of the bars K, with the bends 2 and 3 and the straight portions 4, the cross-bars L and M, bolted to the bars K, bearings O O' for connecting the frame K to the axle C, and single central bearing P for connecting the straight portions 4 of the frame K to the axle B, substantially as set forth.

4. The combination, with an electric car-motor and its frame, of the main frame K, composed of bars bent at 2 and 3, and having parallel portions 4, the cross-bars L M, to which the electric-motor frame is bolted, the bearings O O', connecting the frame K to the axle C, and a single central bearing P, connecting the frame K to the axle B, substantially as set forth.

5. The combination, with the frame K and car-axles B and C, of the bearings O O', connecting the frame K to the axle C, the single central bearing P, connecting such frame to the axle B, the pinions Q and T, and gears R and U for connecting the armature-shaft to the axle C and the counter-shaft S, supported by the frame K, and carrying the wheel R and pinion T, substantially as specified.

6. The combination, with the electric motor and the car-axles B and C, of the frame composed of the bars K, having bearings O O' at their ends for the axle C, and the single bearing P upon the axle B, and a yielding connection between the central bearing and the frame to allow the axle B to change its position in relation to the axle C without straining or injuring the frame of the electric motor, substantially as set forth.

412,529. ELECTRIC MOTION-CONTROLLER. GUSTAVE S. HILL, New York, N. Y. Filed Aug. 28, 1888. Serial No. 284,018. (No model.)



Claim.—1. In an electric machinery controller, the combination, with a gear-coupler, as specified, of a reacting device to operate the gear-coupler, a catch to restrain the gear-coupler, a vibratory hammer to trip the catch, and electro-magnetic devices to operate the hammer, substantially as described.

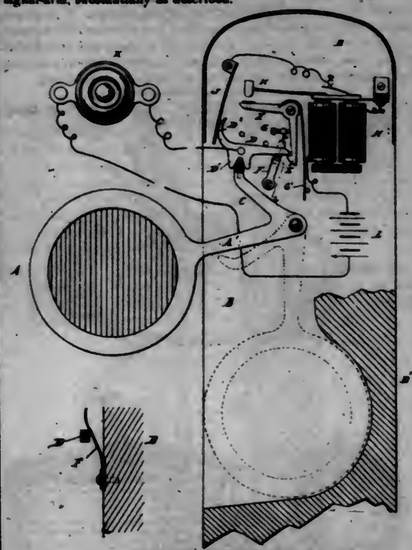
2. In a machinery controller, the combination, with a gear-coupler, as specified, of an arm to operate the gear-coupler, a reacting device to work the said arm, a forked lever to engage said arm, a catch to engage the forked lever, and a catch-tripping device, substantially as described.

3. The combination, with a gear-coupler, of a reacting device, a pin-and-slot or equivalent loose operating connection between the gear-coupler and the reacting device, a catch to restrain the gear-coupler, and a catch-tripping device, substantially as described.

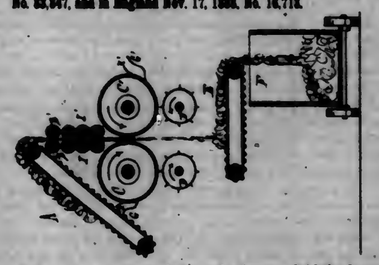
412,530. ELECTRIC SIGNAL-CONTROLLER. GUSTAVE S. HILL, New York, N. Y. Filed Aug. 28, 1888. Serial No. 284,019. (No model.)

Claim.—1. In an electric signal-controller, the combination, with a self-acting signal, of a catch to restrain the signal, a vibratory hammer to trip the catch, an electro-magnet and intermittent circuit-breaker to vibrate the hammer, and a circuit-controller included in the circuit with the electro-magnetic hammer-vibrating devices, the said circuit-controller being automatically closed by the setting of the signal for operation and opened by the operation of the signal, substantially as described.

2. In an electric signal-controller, the combination, with a self-acting signal having an arm, of a two-armed lever pivoted to a fixed point and having a forked arm to engage the signal-arm, and a self-acting catch to engage the other arm of the lever, the arrangement being such that in setting the signal for operation the signal-arm strikes one prong of the fork and throws the lever into engagement with the catch and the other prong of the fork then restrains the signal-arm, substantially as described.

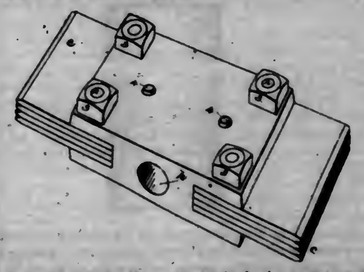


412,531. APPARATUS FOR REMOVING BURRS AND THISTLES FROM WOOL AND SIMILAR FIBERS. BENOIST HOUVILLET, Wignehies, France. Filed May 25, 1889. Serial No. 312,167. (No model.) Patented in France Oct. 19, 1886, No. 183,686; in Belgium Nov. 6, 1886, No. 73,947, and in England Nov. 17, 1886, No. 16,713.



Claim.—In an apparatus for removing burrs and thistles from wool and similar fibers, the combination and arrangement of the vertically-disposed carding, drawing, crushing, and doffing rollers with the knives H H', the receptacles O O', and the endless traveling apron E, all substantially as hereinbefore described and shown.

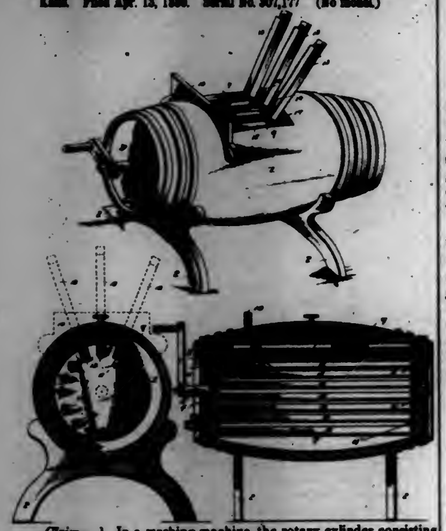
412,532. BUSH-HAMMER. LUTHER M. NUTTING, Concord, N. H., assignor of one-half to Henry W. Hayden, same place. Filed Mar. 12, 1888. Serial No. 266,813. (No model.)



Claim.—In a bush-hammer, the head *c*, having a cutter-receiving slot at one or both ends, cutters having a groove 5 in their bases placed

in the slots, and bolts 2, passed through the said head and cutters for holding the cutters in position, combined with the hardened-steel gib *b*, placed in the cutter-receiving slot in the direction of its length, against which the bases of the cutters bear, and provided with a groove to register with the groove 6, and the key 4, interposed between the gib *b* and the cutters in the said registering grooves to prevent lateral displacement of the gib and cutters, substantially as described.

412,533. WASHING-MACHINE. NORMAN D. OLIPHANT, Meade, Kans. Filed Apr. 13, 1889. Serial No. 307,177. (No model.)



Claim.—1. In a washing-machine, the rotary cylinder consisting of the heads, the longitudinal continuous bars fixed thereto, and the sectional bars, said sectional bars having members which are fixed to the heads of the cylinder and other members which are hinged to the fixed members, said hinged members being confined at their free ends, when they lie substantially parallel with the axis of the cylinder, by suitable fastening devices, whereby the series of sectional bars are adapted to provide an opening for the introduction or removal of fabrics when they are raised, and to form a part of the cylinder when closed and locked in position, substantially as described.

2. In a washing-machine, the rotary cylinder consisting of the heads, the continuous longitudinal bars fixed thereto, and the sectional longitudinal bars having the end members thereof likewise fixed to said heads, the middle member of each sectional bar being hinged to one of the end members, while the unconfined end of said middle member is adapted to be confined in line with the two end members of said bar by a sliding sleeve which fits over the meeting lapped ends of the middle and end members, substantially as and for the purpose described.

412,534. PRESERVING-VESSEL. ADOLF OTTO, Neubukow, Germany. Filed Dec. 5, 1888. Serial No. 292,701. (No model.)



Claim.—As an improved article of manufacture, a preserving-vessel consisting of two parts adapted to telescope together, with a gasket between them, one section having a flaring mouth to admit the gasket, and an adjustable vent-valve on one of the parts to facilitate the union and separation of the parts, as set forth.

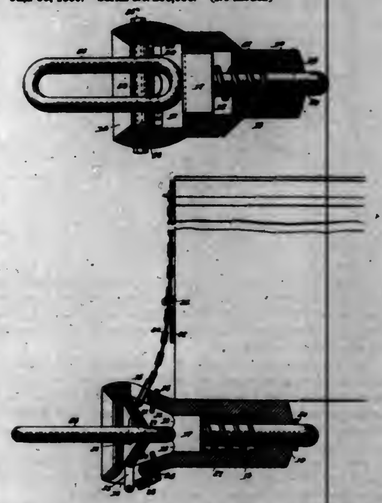
412,535. BIT-HOLDER FOR BRACES. HOMER H. PARKER, Winchendon, Mass., assignor to William M. Caldwell, Brooklyn, N. Y. Filed Oct. 15, 1888. Serial No. 288,107. (No model.)



Claim.—1. The combination, in a bit-holder, of the cylindrical head having longitudinal recesses in its periphery, a jaw mounted within each recess to rock, without longitudinal movement, upon a transverse pivotal support, so that one or other of its ends shall necessarily project beyond said periphery, and a sleeve fitted to move longitudinally upon the head into engagement with either projecting end of the jaw to force said end inward, substantially in the manner and for the purpose herein set forth.

2. The combination, in a bit-holder, of the cylindrical head having longitudinal recesses in its periphery, an extended jaw fitted in each recess to rock without longitudinal movement upon a transverse pivotal support, so that one or other of its ends shall necessarily project beyond the periphery, and having a screw-thread projecting from its outer face over its pivotal bearing, and a sleeve encircling the head and formed with an internal thread to engage the thread on each pivoted jaw and be thereby carried, as it revolves thereon, longitudinally over the jaws and head, substantially in the manner and for the purpose herein set forth.

412,536. CAR-COUPLING. FRANK FARNER, Hamburg, Pa. Filed Jan. 30, 1889. Serial No. 298,060. (No model.)



Claim.—1. The combination, with a draw-head provided with a link-opening, of an upper and a lower jaw pivoted in the said draw-head contiguous to the link-opening, said jaws having their approaching surfaces beveled in opposite directions and recessed at each side of the center, substantially as shown and described.

2. The combination, with a draw-head having a link-opening, of an upper and a lower jaw pivoted in said draw-head contiguous to the link-opening, having their contiguous edges beveled in opposite directions and provided with a recess at each side of the center, and a lip integral with one jaw capable of engaging with a lug integral with the other jaw, all combined for operation substantially as shown and described.

3. The combination, with a draw-head provided with a link-opening, of an upper and a lower jaw pivoted in the said draw-head contiguous to the link-opening, having their free or contiguous edges beveled in opposite directions and provided with a recess at each side of the center, a spring attached to the lower jaw and to the draw-head, and a chain secured to the upper jaw and leading out through the draw-head, all combined for operation substantially as shown and described.

4. The combination, with a draw-head provided with a link-opening, an upper and a lower jaw pivoted in the said draw-head contiguous to the link-opening and having their free or contiguous edges beveled in opposite directions, and also having a semicircular recess at each side of the center, of a lip integral with the outer face of the said jaws at opposite sides engaging with a lug upon the opposite jaw, a spring attached to the draw-head and to the lower jaw, and a link projecting outward from the draw-head secured to the upper jaw, all combined for operation substantially as shown and described.

5. The combination, with a draw-head having a link-opening and an upper and a lower jaw pivoted in the said draw-head contiguous to the link-opening, having their free or contiguous edges beveled in opposite directions and provided with recesses at each side of the center, and a lip integral with each jaw adapted to engage with the opposite jaw, of a sliding spring-actuated buffer-lock provided with a series of transverse grooves or channels upon its outer face, a spring connecting the lower jaw and the draw-head, and means for limiting the movement of the said jaws, substantially as shown and described.

6. The combination, with a draw-head having a link-opening and an upper and a lower jaw pivoted to the draw-head contiguous to the link-opening, the contiguous or free edges of which jaws are recessed at each side of the center and beveled in opposite directions, of a lip attached to opposite sides of each jaw engaging with lugs upon the opposite jaw, stop-pins passed through the draw-head at top and bottom to the rear of the jaws, a spring connecting the lower stop-pin of the lower jaw, and a link projected from the rear surface of the upper jaw, all combined for operation substantially as shown and described.

7. The combination, with a draw-head having a link-opening and an upper and a lower jaw pivoted in the draw-head contiguous to the link-opening, the contiguous or free edges of which jaws are recessed at each side of the center and beveled in opposite directions, of a lip attached to opposite sides of each jaw engaging with lugs upon the opposite jaw, stop-pins passed through the draw-head at top and bottom to the rear of the jaws, a spring connecting the lower stop-pin of the lower jaw, and a link projected from the rear surface of the upper jaw, a spring-actuated buffer-block held to slide in the said draw-head to the rear of the jaws and provided with a series of transverse grooves or channels in the forward face, substantially as shown and described.

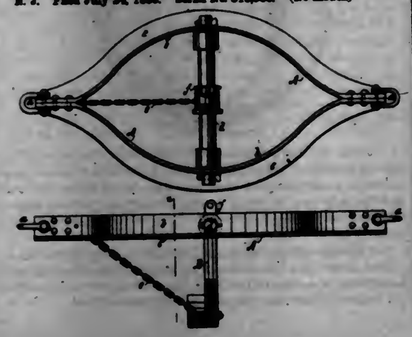
412,537. DRAWER-PULL. DAVID H. PLIMER, Waterbury, Conn. Filed Aug. 12, 1889. Serial No. 320,670. (No model.)



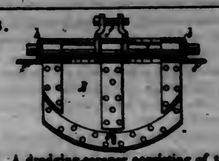
Claim.—1. The combination, with the plate and handle, of the eyes and their threaded shanks, and sleeves or bands held firmly upon the shanks at the back of the plate, substantially as and for the purpose set forth.

2. The combination, with the plate and handle, of the eyes and their threaded shanks, a sleeve or band around each shank having a flange at one end at the back of the plate and held firmly upon the shank, substantially as and for the purposes set forth.

412,538. DREDGING-SCRAPER. THOMAS POTTER, Jersey City, N. J. Filed July 24, 1889. Serial No. 318,508. (No model.)



412,538.



Claim.—1. A dredging-scraper consisting of the combination of the elliptical frame and the scoop B, hinged thereto, substantially as and for the purpose described.

2. A dredging-scraper consisting of the combination of the elliptical frame A, made of angle-iron, having on each side the vertical section *b* and the horizontal section *c*, and the scoop B, hinged to the vertical sections *b b* of the frame, the outer edges of the horizontal sections constituting the outermost portion of the frame, substantially as and for the purpose described.

412,539. REVOLVING DRIER FOR DESICCATING BREWERS' GRAINS, &c. WILLIAM P. PRESTON, FRANK J. HUBNER, and JAMES J. KELLEY, New York, N. Y.; said Kelley assignor to said Preston and Hubner. Filed Dec. 13, 1888. Serial No. 293,053. (No model.)



Claim.—1. The combination, in a drying apparatus, of a furnace, a revolving drying-chamber formed with longitudinal compartments or recesses opening and radiating from its axial center, external hot-air flues placed between said compartments to extend the length of said drying-chamber and communicate mediately therewith at one end and with the furnace at the other, a hopper communicating with the end of the drying-chamber at which the hot air enters the same, and a discharge-flue and a discharge-spout communicating with the opposite end of said chamber, substantially in the manner and for the purpose herein set forth.

2. The combination, in a drying apparatus, with a revolving drying-chamber formed with longitudinal compartments opening or radiating from its axial center, of longitudinal flues constituting the partitions between said radial compartments and which are made to extend outwardly beyond the same, a closed outer chamber formed at each end of the drying chamber and into which said longitudinal flues open, a furnace connected with one of said end chambers, a flue connecting the opposite end chamber with the compartments of the revolving drying-chamber through peripheral ports in the proximate end of the latter, a hopper communicating with the same peripheral ports, a discharge-spout and a discharge-flue both communicating with said compartments through peripheral ports therein at the opposite end of the drying-chamber, and stationary bands covering and closing the peripheral ports at each end of the drying-chamber when they are not in register with the hopper, the discharge-spout, or the discharge-flue, all substantially in the manner and for the purpose herein set forth.

3. The combination, in a grain-drying apparatus, of the revolving cylinder having peripheral ports in its ends, diametrically-divided apertured bands inclosing said ends and covering said ports, bolts passing through lateral lugs or flanges in the divisions of the band to unite them, and spiral springs encircling the bolts to permit an automatic expansion of the divided bands, substantially in the manner and for the purpose herein set forth.

4. The combination, in a grain-drying apparatus, of the revolving cylinder having peripheral ports in its ends, diametrically-divided apertured bands inclosing said ends and covering said ports, suspension-bolts by which said bands are upheld, and spiral springs encircling the bolts to permit of an independent play of the bands thereon, substantially in the manner and for the purpose herein set forth.

412,540. CORN-PLANTER ATTACHMENT. WALTER PRICE, Lyons, Nebr. Filed July 12, 1889. Serial No. 317,276. (No model.)



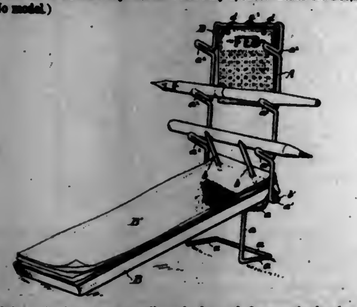
Claim.—1. In devices of the class described, the combination, with a compound or jointed bar adapted for attachment to a planter-runner, of a breaking-pin passed through the bar and resisting flexure of its joint, substantially as set forth.

2. In devices of the class described, the combination, with a bar adapted for attachment to a planter-runner to project into the path thereof in advance of the runner, of a ball fixed to the lower end of said bar, whereby the bar is prevented from piercing and accumulating stalks and the like.

3. In devices of the class described the combination of the bars A A', united at their lower ends and provided, respectively, with the slots I and J, and the squared bolt D, substantially as set forth.

4. The combination, with the bars A A', slotted as described, and the bolt passing through the slots, of the bar B, pivoted between the lower ends of the bars first named and terminating in the ball H, and the breaking-pin passing through the three bars and resisting the rotation of the bar B upon its pivot, substantially as set forth.

412,541. COMBINED PENCIL-RACK AND TABLET-HOLDER. BENJAMIN PRESSER, Philadelphia, Pa. Filed July 1, 1889. Serial No. 316,302. (No model.)



Claim.—1. A pen or pencil rack formed from a single piece of wire or the like bent to form a base or support *a*, to retain the rack in an upright position, and one or more sets of rests a^2 a^3, formed by doubling the wire upon itself nearly at right angles with the frame A, and its meeting ends hooked, soldered, or otherwise suitably joined together, as described, and for the purposes set forth.

2. The combined pen or pencil rack and tablet-holder described, consisting of a single piece of wire bent to form a base or support *a*, to retain the rack in an upright position, small loops or eyes *a' a'*, one or more sets of pencil-rests a^2 a^3, and their ends hooked, soldered, or otherwise suitably joined together, a tablet-base B, provided with pins *b b*, bent, respectively, to an L shape, one end of each pin extending laterally beneath said base, secured thereto, projecting beyond the side thereof, and engaging an eye *a'* in the rack A, and the other ends respectively extending through and above said base and adapted to hold a tablet, scratch-book, or the like, as set forth.

3. In a pen or pencil rack and tablet-holder, the following elements in combination: the rack A, formed from a single piece of wire bent to the form described, a tablet-holder B, provided with pins *b b*, a tablet, scratch-book, or the like B', and a card, calendar, or the like D, suspended from the rack in a convenient manner, as described, and for the purposes set forth.

412,542. SELF-CLOSING FAUCET. LEWIS J. ROSE, Indianapolis, Ind. Filed May 20, 1889. Serial No. 311,492. (No model.)

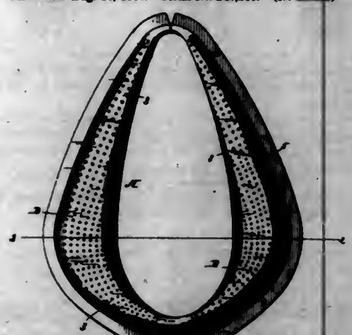


Claim.—1. In a faucet, the combination of the cylinder having two interior compartments divided by an open transverse partition having a valve-seat thereon, an inlet-port leading to one of said compartments and an outlet-port leading from the other compartment, the valve-stem mounted in the cylinder, the disk-valve secured to the valve-stem and arranged to close the opening in the partition and to open toward the inlet-port, the piston secured to the valve-stem above the outlet-port, said piston being provided with perforations *r* and *t*, and the valve arranged to slide on the valve-stem and to close the perforations *r*, all arranged to co-operate substantially as and for the purpose specified.

2. In a faucet, the combination of the cylinder having two interior compartments divided by an open partition having a valve-seat thereon, an inlet-port leading to one of said compartments and an outlet-port leading from the other compartment, the valve-stem mounted in the cylinder, the disk-valve secured to the valve-stem and arranged to close the opening in the partition and to open toward the inlet-port, and the open disk mounted on the valve-stem, adapted to cover the outlet-port with its edge, and arranged relatively to the valve so that the disk is slid over the outlet by the closing of the valve, all substantially as set forth.

3. In a faucet, the cylinder having two interior compartments divided by an open transverse partition having a valve-seat thereon, an inlet-port leading to one compartment and an outlet-port leading from the other compartment, the valve-stem mounted in the cylinder, the valve secured to the valve-stem and arranged to close the opening in the partition and to open toward the inlet-port, the piston secured to the valve-stem above the outlet-port, said piston having perforations through which water may pass from one side to the other, and the open disk mounted loosely on the valve-stem, between the piston and the valve, so as to permit the stem to slide through the disk, all combined and arranged to co-operate substantially as specified, whereby the first movement of the valve in closing is checked by the piston, and the continued movement of the valve is further checked by the closing of the outlet-port by the disk, as set forth.

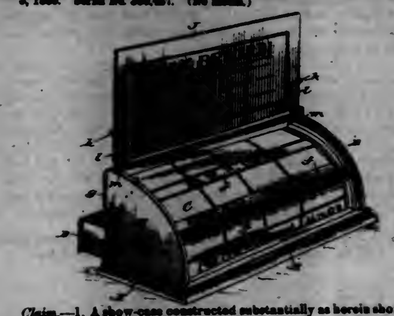
412,543. HORSE-COLLAR. JESSE W. RIDENOUR, Mechanicsburg, Pa. Filed Aug. 16, 1887. Serial No. 247,263. (No model.)



Claim.—1. The herein-described horse-collar, the covering for the bearing-surface of the afterwale, which is perforated, and a lining of absorbent material secured directly in contact with the interior of said covering, whereby the sweat is absorbed and the grit and dust prevented from entering the interior of the collar, substantially as described.

2. The herein-described horse-collar, the covering for the bearing-surface of the afterwale, which is provided with conical perforations, and a lining of an absorbent material secured directly in contact with the interior of said covering, substantially as described.

412,544. SHOW-CASE. WILLIAM C. ROSS, Gurney, Ill. Filed May 3, 1889. Serial No. 309,627. (No model.)



Claim.—1. A show-case constructed substantially as herein shown and described, the same consisting of a main frame having a sloping glass front, in combination with an inner triangular frame pivoted at the angle near the base of the main frame and provided with supports for goods and adapted to swing back out of the main frame, substantially as and for the purposes set forth.

2. The main frame having triangular end pieces and sloping glass front, in combination with an inner triangular frame having a curved support provided with ledges to retain the goods, the inner frame being pivoted at the angle near the base of the main frame and adapted to be swung out from the main frame, substantially as and for the purpose set forth.

3. The main casing provided with a spring-arm A, rising from the base A of the main frame, in combination with the inner triangular frame pivoted at the angles near the base of the main frame, so as to be adapted to swing out from said main frame against the spring-arm A, substantially as and for the purposes set forth.

4. The main casing provided with a gong or bell, and the inner pivoted frame provided with a hammer arranged to cause the gong to be struck on the pivoted frame is opened, substantially as described.

412,545. PROCESS OF MAKING ARTIFICIAL MUSK. RUD. SCHMAWIN and HERMANN HEPNER, Frankfort-on-the-Main, Germany. Filed Feb. 11, 1889. Serial No. 299,207. (No specimens.)

Claim.—The herein-described process of making an oil adapted to be used as a substitute for musk, which consists in digesting a mixture of metaxylol and isobutylalcohol with chloride of zinc, in nitrating the resulting hydrocarbon, and in separating the oil therefrom by dissolving out extraneous matter, substantially as herein set forth.

412,546. TRIMMING FOR THE EDGES OF FABRICS. ROBERT W. SCOTT, Philadelphia, Pa. Filed June 14, 1888. Serial No. 277,089. (No specimens.)

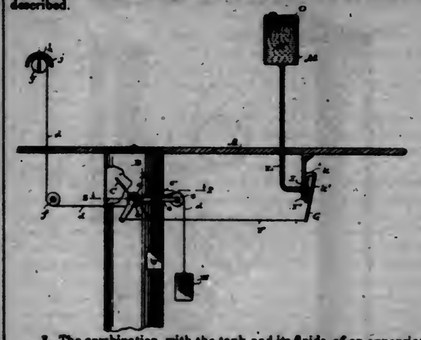


Claim.—The within-described border or trimming for the edges of fabrics, the same consisting of a strip comprising a straight inner bar lying close to but beyond the edge of the fabric, an outer scalloped or ornamental edging, and spaced cross bars or pillars connecting said inner bar to the outer portion of the strip, with overedge or crochet stitches, whereby the inner bar of the strip is confined to the edge of the fabric, substantially as specified.

412,547. TEMPERATURE-REGULATOR. LEWIS SHERMAN, Milwaukee, Wis. Filed May 24, 1888. Serial No. 274,005. (No model.)

Claim.—1. In a temperature-regulator, the combination, with a damper, of a tank containing a non-volatile fluid and a superimposed volatile fluid, a diaphragm and a fluid-piston leading from the tank, and means connecting the diaphragm with the damper, whereby the damper is operated by the vaporization and condensation of the volatile fluid.

2. The combination, with a suitable receptacle containing a volatile fluid and a practically non-volatile fluid supporting the first-named fluid, of an expansion-chamber and a tube connecting said receptacle and chamber, a lever operated by said expansion-chamber, and a valve operating mechanism operated by said lever, substantially as described.



3. The combination, with the tank and its fluids, of an expansion-chamber and its lever operated thereby, a valve and its lever, two weights, one of which is adapted to slide on the valve-lever, and a cord operated in one direction by the other weight and in the other direction by hand to adjust the first-named weight, substantially as set forth.

4. The combination, with a valve and poised lever, of an expansion-chamber connected with said lever, said expansion-chamber containing a non-volatile fluid and a volatile fluid superimposed on the non-volatile fluid, substantially as described, the whole being so arranged that the poised lever will tend to open the valve, while the vapor tension of the volatile fluid will tend to close it, as set forth.

412,548. SURFACING AND POLISHING MACHINE. JOHN H. SNOWDEN, Chicago, Ill., assignor of one-half to Charles B. Kelley, same place. Filed May 20, 1889. Serial No. 311,442. (No model.)



Claim.—1. In the polishing-machine shown and described, the combination of the polisher F', having a central aperture, hollow shaft B, and head F secured thereto, and having the side channel C, the miter-gear P, miter-gear P', having the hub H and set-screws Z Z, and the means shown and described for maintaining a yielding pressure and for feeding forward said polisher, substantially as and for the purpose set forth.

2. The combination of the open-bottom case E, water-chamber D, terminating in its upper part in a stem-handle formed of the tubular parts A A', screwed together and having a water-inlet G, coil-spring S, hollow shaft B, having the side channel C, shell-couplings *a a*, thumb-screw O, miter-gear P', having the hub H sleeved on shaft B, miter-gear P, secured on shaft L, polishing-wheel F, and polisher F', having the central vertical aperture *i*, all arranged substantially as and for the purpose set forth.

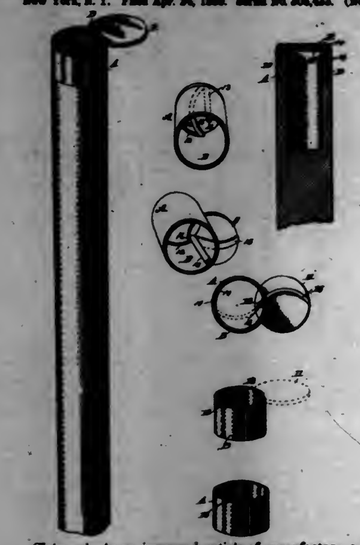
3. In the surfacing and polishing machine shown and described, the combination of the rotating polisher, having a central orifice for admitting water through it to its work, the open-bottom case for inclosing said polisher and adapted to rest upon the work being polished, the hollow shaft B, having the head F secured to the polisher, and having the side channel C, and adapted to rotate and feed forward the said polisher, and the water-chamber D and its upwardly-extending stem-handle A A', substantially as and for the purpose set forth.

412,549. POUNCET FOR FRENCH STAMPING. CHARLES H. RUSH, Baltimore, Md. Filed Sept. 27, 1888. Serial No. 286,580. (No model.)



Claim.—A box for applying dry coloring-powder to paper, having a top cover *b*, a bottom *c*, provided with a hole *c*, covered on the inside with fine gauze and a felt face *d* on the exterior of the bottom, all substantially as and for the purpose set forth.

412,550. SWING-COVER FOR RECEPTACLES. EDGAR B. SMITH, New York, N. Y. Filed Apr. 24, 1889. Serial No. 308,433. (No model.)

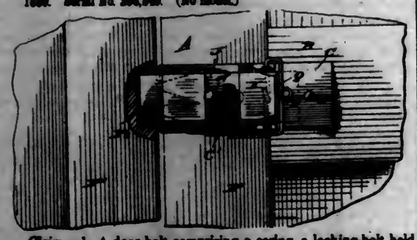


Claim.—1. As an improved article of manufacture, a cover for receptacles, consisting of an inner ring provided with a recess in its upper edge, extending partially around the same, an outer ring loosely mounted upon the inner ring and provided with a short recess in its upper edge, a lid or disk pivoted to the inner ring to slide loosely over both rings, and a segmental rib secured to the under face of the lid or disk, traveling in the recess of the inner ring and secured within the recess of the outer ring, substantially as shown and described.

2. As an improved article of manufacture, a cover for receptacles, consisting of an inner band or ring provided with a recessed upper edge, a lid or disk pivoted to the said ring, an outer ring or band loosely mounted upon the inner ring, a segmental rib integral with the under face of the lid or disk, extending from its pivotal point to the periphery at the opposite side, said rib being adapted to slide in the recess of the inner ring and in the recess in the outer ring, substantially as and for the purpose specified.

3. In a sliding cover for vessels, the combination, with a body consisting of an inner ring having a recess in its upper edge extending partially around the same, and an outer ring held to slide upon the inner ring and provided with a short recess in its upper edge, of a lid or disk pivoted to the inner face of the inner ring near one end wall of the recess therein, a segmental rib secured to the under face of the lid or disk, extending from the pivotal point of said disk or lid to the periphery at the opposite side, said rib being made to pass through the recess in each of the two rings, substantially as and for the purpose specified.

412,551. BOLT. JOHN H. SLATER, Stanton, Nebr. Filed Jan. 19, 1889. Serial No. 296,949. (No model.)

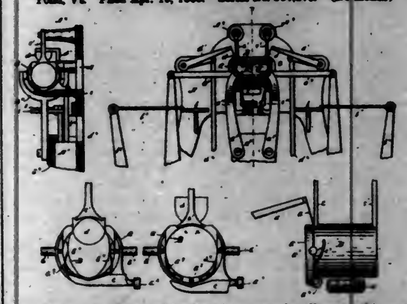


Claim.—1. A door-bolt comprising a casing, a locking-bolt held to slide in the said casing, and a bail pivoted on the said casing and adapted to engage the rear end of the bolt when the latter is moved outward, substantially as shown and described.

2. In a door-bolt, a casing provided with a back plate having a longitudinal slot, and bridges secured on the said back plate, in combination with a locking-bolt held to slide in the said bridges on the back plate, a bail pivoted on the rear bridge and adapted to be passed over the rear end of the said locking-bolt when the latter is in an outermost position, and a knob held on the said back plate and engaging with its inner end the longitudinal slot in the said back plate, substantially as shown and described.

3. In a door-bolt, a casing provided with a back plate having a longitudinal slot and a right-angular extension provided with teeth or prongs in line with the back plate, and bridges secured on the said back plate, in combination with a locking-bolt held to slide in the said bridges on the back plate, a bail pivoted on the rear bridge and adapted to be passed over the rear end of the said locking-bolt when the latter is in an outermost position, a knob held on the said back plate and engaging with its inner projecting end the said slot in the back plate, and a lined keeper into which is adapted to pass the front end of the said locking-bolt, substantially as shown and described.

412,552. CAN-HEADING MACHINE. CHARLES W. SLEEPER, Island Pond, Vt. Filed Apr. 19, 1888. Serial No. 307,573. (No model.)



Claim.—1. The combination, in a can-heading machine, of a chuck to hold a can-head, having a removable semicircular piece fitted in a recess in the chuck and to the outside diameter of the can-head, two trunnions to support the chuck, and with a guide-roller a^9, with a guide a^{12}, to engage the said guide-roller, and means for supporting the chuck by its trunnions, and means for moving the chuck in the guide a^{12}, substantially as described, and for the purpose set forth.

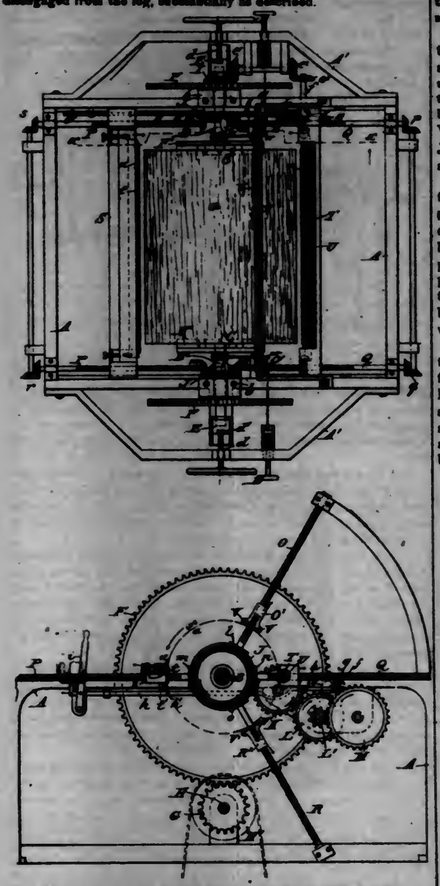
2. In a can-heading machine, a chuck, substantially as described, to hold a can-head, combined with a carrier a^3, to support the chuck by its trunnions, and with means for moving the carrier and chuck both vertically and horizontally, and with a guide a^{12}, to engage and act upon the roller a^9, (carried by the chuck-eccentric to its trunnions,) to cause the chuck to turn upon its trunnions from a horizontal to a vertical position as the carrier rises, substantially as described, and for the purpose set forth.

3. In a can-heading machine, a chuck, substantially as described, a carrier a^3, to support the said chuck by its trunnions, the guide a^{12}, arranged to engage the roller a^9, carried by the chuck, and cause the said chuck to turn upon its trunnions as the carrier rises, and means for moving the carrier and the chuck both vertically and horizontally, combined with a rest c and fingers d' d', substantially as described, to support a can-body, and with two spring-fingers a^{14} a^{14}, carried by the chuck and arranged to press upon and slightly flatten the can-body as the carrier rises, and with a shield d, to enter between the can-head and the can-body to prevent their edges from striking each other, and with means, substantially as described, for raising and lowering the said shield, substantially as described, and for the purpose set forth.

4. In a can-heading machine, the chuck a, carried by the carrier a^3, and means, substantially as described, for moving the chuck and the carrier both vertically and horizontally, the guide a^{12}, to engage the roller a^9, carried by the chuck, and cause the said chuck to turn upon its trunnions from a horizontal to a vertical position as the carrier rises, combined with a table b, (upon which the can-heads are placed,) so arranged as to be in the plane of the chuck a when the said chuck is in its lowest position, and with a finger b', to push the can-heads from the table into the chuck, and means, substantially as described, for moving the fingers b', substantially as described, and for the purpose set forth.

412,553. ROTARY VENEER OR LUMBER CUTTING MACHINE. HERMAN S. SMITH, Geneva, N. Y. Filed Nov. 2, 1888. Serial No. 289,891. (No model.)

Claim.—1. In a veneer and lumber cutting machine, in combination with the spindle B, the chuck or dog on the end thereof, and a supplemental chuck consisting of a sleeved disk feathered upon the spindle and having arms carrying knives that engage the log, a bifurcated lever fulcrumed on the main frame of the machine engaging the supplemental dog and acted upon by a movable part of the machinery, so that at the proper instant the supplemental dog may be disengaged from the log, substantially as described.



2. In a veneer and lumber cutting machine, the combination, with the spindle B, carrying on its inner end a dog or chuck, of means for imparting thereto an endwise movement for the purpose of driving the chuck into the log or disengaging it therefrom, consisting of a box E, loosely engaged by the outer end of the spindle, which is provided with collars located inside of the box, and the screw-shaft d, having the collar d' located loosely within the box E, said screw-shaft being provided with an operating hand-wheel B, substantially as described.

3. In a veneer and lumber cutting machine, the combination of the series of four feed-screws O, P, Q, and R at one end of the machine and a similar series of feed-screws at the other end of the machine, said feed-screws being arranged substantially as described, the gears J, engaging pinions on said feed-screws, the spindles B and B', the driving-gears thereupon, and the connecting-gearing between the driving-gears and the gear J at one end of the machine and between the feed-screws at one end and those at the other end of the machine, substantially as described.

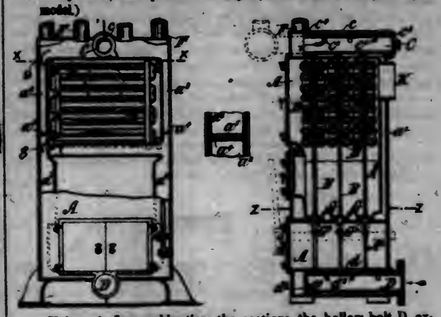
4. In a veneer and lumber cutting machine, the combination of the four feed-screws O P Q R at one end of the machine and the four feed-screws O P Q R at the other end of the machine, said feed-screws P and Q being horizontal and said feed-screws O and R being inclined upward and downward, the head-block having the knife and pressure-roller and carried by the feed-screws P P, the upper pressure-rollers carried by feed-screws O O, the lower pressure-rollers carried by feed-screws R R, the dividing-roller carried by the feed-screws Q Q, the gears J J, engaging pinions on the several feed-screws, and the actuating mechanism whereby said gears J J are rotated in one direction to feed the cutter, dividing-roller, and pressure-rollers against the log or in another direction to cause them to recede from the log, substantially as described.

5. In a veneer and lumber cutting machine, the combination of the four feed-screws O P Q R at one end of the machine and a like number at the other end, the head-block S, having knife t and roller u and actuated by feed-screws P P, the dividing-roller T, actuated by the feed-screws U U, the upper pressure-rollers V V, journaled in boxes O' O', actuated by the feed-screws O O, the lower feed-screws V' V', journaled in boxes R' R', actuated by the feed-screws R R, the gears J J, connecting pinions on the several feed-screws, and actuating mechanism for said gears, substantially as described.

6. The combination of the spindle B, the driving-gears thereon, the double gear J, loosely mounted thereon, a feeding mechanism consisting of feed-screws having pinions engaged by the bevel-face of said double gear, the gear I, feathered upon spindle B, a shaft c, carrying beveled pinions c' and c^2, said pinion c' engaging the gear I, and said pinion c^2 engaging the pinion c^3 on the movable shaft f, carrying the pinion g, and the train of gears K, L, L', and M, said gear K engaging the flat face of the double gear J, all arranged so that the pinion g may be caused to engage the gear M or the gear L, so that the feeding devices may move in one direction or the other, substantially as described.

7. In a veneer and lumber cutting machine, the combination of the feed-screws having pinions thereon, the gears J, engaging said feed-screws, the spindles B and B', carrying the dogs that engage the log, the driving-gears on said spindles, the connecting-gearing between said spindles and the gears J, and the rod A, connected to the movable shaft f, carrying transfer-pinion g, said rod A having the leg k', adapted to come into contact with a lug on the bottom of the head-block, substantially as and for the purpose described.

412,554. SECTIONAL WATER-HEATER. JOHN G. SMITH, Montreal, Quebec, Canada, assignor to Henry Whittaker Garth and John Henry Garth, same place. Filed May 31, 1888. Serial No. 311,851. (No model.)



Claim.—1. In combination, the sections, the hollow bolt D, extending transversely of and partially across the sections, said sections being independent and separated from each other, said bolt having openings in its sides communicating with the separate sections, the said bolt having also an inlet-opening at its outer end and an opening at its inner end communicating with the front section, whereby the water entering the outer end of the hollow bolt will pass through the side openings to the sections, and also through the end opening to the front section, substantially as described.

2. In a hot-water boiler, the combination, with a series of vertical sections cast separate from each other, of hollow bolts or tubes passing transversely through said sections at top and bottom and serving to secure same firmly together, such hollow bolts or tubes having also perforations or openings in communication with each of said vertical sections, diaphragms or checks serving to divide each of said sections into upper and lower compartments or chambers, a coil of pipes for each section in communication with both chambers thereof, and suitable flow-pipes, substantially as and for the purpose specified.

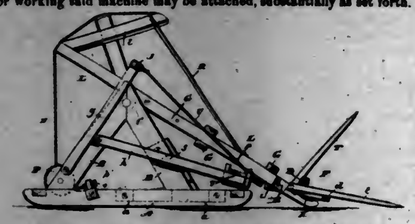
3. The combination, with the vertical sections having the ribs or projections d, of the hollow bolts securing said sections together and having perforations at each side of said ribs or projections, for the purpose set forth.

4. The combination, with the vertical cast sections and with the hollow bolts for securing the same together, of the loose nuts c^4 d^3, contained within the front section, into which the ends of said hollow bolts are screwed, substantially as specified.

5. A cast-section for a hot-water boiler, having the diaphragm or check c^4, with perforation c^3, for the purpose described.

412,555. HAY-STACKING MACHINE. ROBERT J. SMITH, Onawa, Iowa. Filed July 1, 1887. Serial No. 243,193. (Model.)

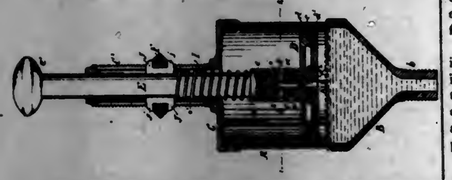
Claim.—1. In a hay-stacking machine, the combination, with two A-braces and a lever-frame provided with extension-arms, knees adjustably attached to said extension-arms, a fork attached to said knees, and a brace erected upon the front end of said lever-frame, of a roller with a pulley at one end, a rope extending from said roller to the point of the brace erected upon the front end of said lever-frame, and a rope attached to the pulley on the end of said roller passing between two smaller pulleys, to the free end of which rope the horse or other power for working said machine may be attached, substantially as set forth.



2. The hay-stacking machine having the base-frame provided with the A-braces B, the lever-frame pivoted intermediate its ends between the said braces and having the upwardly-projecting brace *l* at its inner end, the fork at the outer end of the said lever-frame, the rods R, attached to the lever-frame and to the brace *l*, the drum mounted on the base-frame, the pulley also on said base-frame, the rope H, connecting the drum to the inner end of the lever-frame and the brace *l* thereof, and the operating-rope *c*, attached to the drum and passing around the pulley, substantially as described.

3. In a hay-stacking machine, the combination, with two A-braces and a lever-frame having extension-arms, adjustable knees attached to said extension-arms, a fork attached to said knees, said fork having two rows of teeth securely set at an acute angle to each other, a brace erected upon the front end of the lever-frame, a rope attached to the point of said brace, the other end of which rope is attached to said roller, a pulley on one end of said roller of sufficient size to equalize the power lost on the lever-frame, and a rope attached to said pulley and passing back between two small pulleys, of a hinge-latch or hook attached to the braces in the bottom of the machine, said latch being adapted to be worked by means of a cord, substantially as set forth.

412,556. GREASE-CUP. JOHN H. SORDEN, Philadelphia, Pa. Filed June 7, 1889. Serial No. 313,421. (No model.)



Claim.—1. The combination, in a grease-cup, of the casing, the plunger, with an air-valve and stem, with screw mechanism, substantially as described, whereby the pressure may be regulated independently of the valve-stem, substantially as specified.

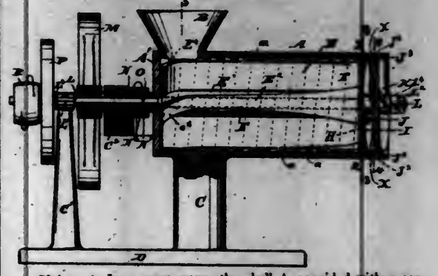
2. The combination, in a grease-cup, of the body A and the plunger D, having a spindle in which are valve-openings, with a stem also having valve-openings in line with the valve-openings of the plunger, so that on turning the valve-stem air communication will be established between the space above and the space below the piston, substantially as described.

3. The combination, in a grease-cup, of the body A, the plunger D, having a valve-opening, and a stem also having a valve-opening in line with that of the plunger, with a cap on the casing having a screw-threaded extension, a nut adapted to said screw-threaded extension, and a spring between the nut and plunger, so that a varied pressure can be obtained, substantially as described.

4. The combination, in an oil-cup, of the plunger having a spindle and valve-opening therein, with a stem having a sleeve provided with a valve-opening, said sleeve being slotted, and a pin on the plunger adapted to said slot, so that the turning movement of the stem will be limited to cut off and establish communication between the space above and air-space below the plunger, substantially as described.

5. The combination, in a grease-cup for lubricating purposes, of the casing A, having a cap C, slotted extension C' thereon, screw-threads on said extension, a nut adapted to said screw-threads, and blocks J J, with a plunger D, the stem E, and a spring between the blocks and a shoulder on the plunger, substantially as and for the purpose described.

412,557. MEAT-CUTTER. GRANVILLE H. STILLMAN, Cincinnati, Ohio, assignor to the Murray Iron Works Company, of Iowa. Filed May 4, 1889. Serial No. 309,630. (No model.)



Claim.—1. In a meat-cutter, the shell A, provided with a conveyer having radial wings lying for part of their length parallel to the shaft L and for part of their length—namely, that portion which is under the hopper—obliquely to the axis of the shell A, the shell A being provided with threads *a*, and the hopper provided with preliminary cutting-knife B', substantially as and for the purposes specified.

2. In a cutter, the shell A, provided with comb J, having apertures J', and the propeller-knife I, having inclined blades provided with cutting-edges on the one hand and projections or flanges i^4 on the other, these projections or flanges bearing against the said comb J, substantially as and for the purposes specified.

3. In a meat-cutter, the shell A and the longitudinal adjustable comb, and the rotating cutting-knife K, provided with curved edges located on the outer side of said comb and rotated by shaft L, and the rotating knife I, also rotated by shaft L, provided with projections i^4, and at the other end provided with the curved cutting-edges bearing against the cutting-plate H, substantially as and for the purposes specified.

4. In a meat-cutter, the shell A and the longitudinal adjustable comb, and the rotating cutting-knife K, provided with curved edges located on the outer side of said comb and rotated by shaft L, and the rotating knife I, also rotated by shaft L, provided with the curved cutting-edges bearing against the cutting-plate, substantially as and for the purposes specified.

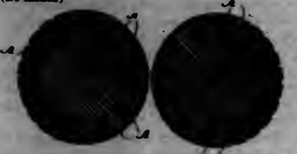
5. In a shell A, the longitudinal adjustable comb having openings, and the exterior rotating knife K, and the interior knife I, having inclined blades, and the comb having apertures narrowing toward their exit for enabling the mass of meat compressed through the apertures by means of knife I to be compacted as it issues from said apertures to the exterior cutting-knife K, substantially as and for the purposes specified.

6. In a meat-cutting device, the shell A, provided interiorly with a series of inclined threads having smooth surfaces, and the conveyer E, rotating within the shell and provided with wings E^3 in conjunction with said threads, the grooves or corrugations between the projections or wings E^3 narrowing as they approach the discharging end of the conveyer, and plate H, fixed to the conveyer and rotated therewith, the knife I, having inclined blades whose cutting-surfaces bear against the comb J, said comb J having apertures J', and the knife K outside of the comb and having its cutting-surface in contact with the exterior surface of the comb, the knives K and I being rotated by shaft L independent of and in the opposite direction to the rotation of the conveyer, substantially as and for the purposes specified.

7. In a meat-cutting device, the shell A, provided interiorly with a series of inclined threads having smooth surfaces, and the conveyer E, rotating within the shell and provided with wings E^3 in conjunction with said threads, the grooves or corrugations between the projections or wings E^3 narrowing as they approach the discharging end of the conveyer, and plate H, fixed to the conveyer and rotated therewith, the knife I, having inclined blades whose cutting-surfaces bear against the plate H, the comb J, having apertures J', and the knife K outside of the comb and having its cutting-surface in contact with the exterior surface of the comb, the knives K and I being rotated by shaft L independent of and in the opposite direction to the rotation of the conveyer, and a preliminary cutting-knife B', located at the junction of the hopper and the shell, substantially as and for the purposes specified.

8. In a cutter, the shell A, having a rotating knife-plate H, a propeller-knife I, having inclined blades whose cutting-edges bear against the cutting-plate H, and a comb J, adjustable longitudinally in said shell, having apertures J', and the rear end of the blades of knife I moving in close proximity to the said comb, substantially as and for the purposes specified.

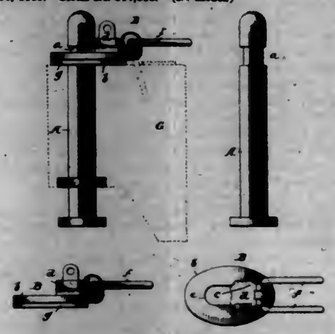
412,558. SURFACE FOR GRINDING AND CRUSHING. AMOS P. STRYKER, New Brunswick, N. J. Filed Feb. 18, 1889. Serial No. 300,261. (No model.)



Claim.—1. The grinding-rolls for crushing or grinding ore and hard substances, composed of pieces of steel or similar hard metal in juxtaposition with each other, and united with a body of cast metal to prevent the formation of peripheral grooves, substantially as set forth.

2. The grinding-surface for crushing or grinding apparatus, composed of pieces of steel set closely together and held firmly in place by the inner surfaces being fused with and by the cast-iron in contact with them, substantially as specified.

412,559. GRIP-LOCK. JOHN STEPHENSON, New York, N. Y. Filed July 18, 1889. Serial No. 317,893. (No model.)



Claim.—1. A grip-lock with its plate having a hole of diameter and form adapted to a grip-carrier post, with a groove to receive the lock-plate and prevent the grip-machine from rising on the post, substantially as and for the purpose described.

2. A grip-lock with its plate having on its upper side a hinged flap adapted to be raised up to permit the lock being placed over the head and in the groove of the grip-post and there retained by said hinged flap, substantially as and for the purpose described.

3. A grip-post lock with a hinged flap on its upper surface and its hinge-pin extended both ways, with its ends drooping and forming a yoke adapted to fall astride the neck of the grip-machine, substantially as and for the purpose described.

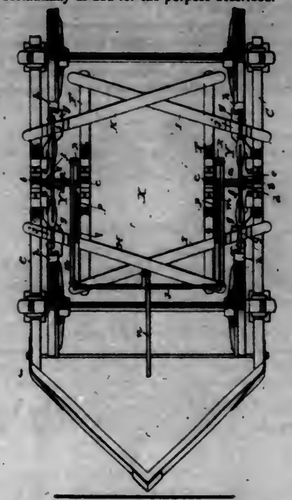
4. A grip-lock with its plate adapted to a grip-post holding the socket of a cable-grip machine, the under side of the lock-plate faced with leather or similar noiseless substance, substantially as and for the purpose described.

412,560. WHEEL-BRAKE. JOHN STEPHENSON, New York, N. Y. Filed Aug. 10, 1889. Serial No. 320,269. (No model.)

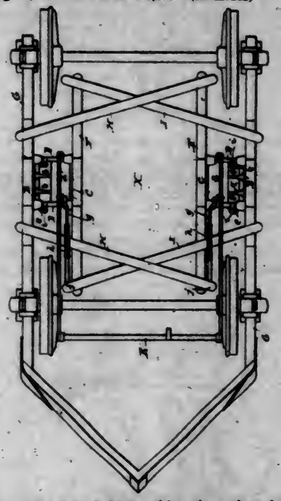
Claim.—1. A car-wheel brake adapted to a car-truck, having crossed rails passing the wheel-treads diagonally, and the shoe-bars sliding through diagonal keepers secured to the diagonal crossed rails, substantially as and for the purpose described.

2. A car-wheel brake adapted to a car-truck, the brake mechanism attached to the truck-sills, cheek-sills, and diagonal crossed rails, and the operating-lever of the brake located at the car-front, as and for the purpose described.

3. A car-wheel brake on a truck with its diagonal cross-rails supporting shoe-bars, each shoe-bar carrying at one end a brake-shoe, with mechanism adapted to force the shoe against the car-wheel and again release the shoe by a rock-shaft-arm recoil-rod shouldered against a spiral spring, the rod continuing through the loose end of the cross-rail against which the recoil-spring abuts, whereby after being crushed the spring recoils and restores the brake to its inactive position, substantially as and for the purpose described.



412,561. TRACK-BRAKE. JOHN STEPHENSON, New York, N. Y. Filed Aug. 12, 1889. Serial No. 320,453. (No model.)



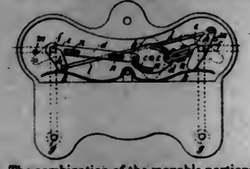
Claim.—1. A car-track brake with a shoe adapted to be lifted and depressed by connections with rock-shafts whose outer ends are journaled in housings connected to truck-sills that are sustained by pendants integral to the axle-box shells, the truck-sills carrying the ends of crossed bars, which crossed bars carry the inner cheek-sills, and the cheek-sills supporting the housings for the inner end of the rock-shafts, substantially as and for the purpose described.

2. A track-brake in two sections, each of which sections occupies a wall or four-sided inclosure at one of the sides of a car-truck having a central six-sided grip-well, with four of its sides formed by the two crossed rails, with their four ends connected with the side sills of the truck, and also forming the four end walls of two track-brake wells whose sides are inclosed by the two truck-sills and the two cheek-sills, the ends of the latter carried by the ends of the crossed rails, substantially as described.

3. A track-brake located in a car-truck, with a six-sided grip-well having two of the well-sides formed by the two cheek-sills par-

allel with the two truck-sills and each of the four sills supporting parts of the mechanism of a track-brake, the other four sides of the well being formed by the two composite cross-rails, substantially as and for the purpose described.

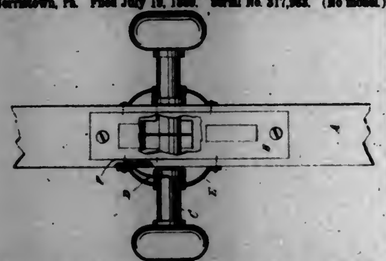
412,562. LETTER-FILE. WILHELM SEIBT, Leipsic, Germany. Filed Jan. 29, 1889. Serial No. 297,928. (No model.) Patented in Germany Aug. 10, 1886, No. 47,147; in England Nov. 14, 1886, No. 14,565; in Switzerland Nov. 31, 1886, No. 176, and in Austria-Hungary Feb. 15, 1888.



Claim.—1. The combination of the movable portions of the filing-wires of a letter-file with mechanism adapted to be operated by a key to lock the said wires in their closed positions, all substantially as described.

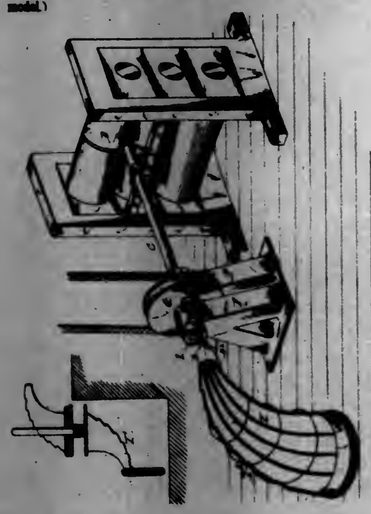
2. The combination of the movable portions of the curved filing-wires of a letter-file and crank-levers carrying said movable parts with mechanism adapted to be operated by a key to lock the said wires in their closed positions, all substantially as described.

412,563. ELECTRICAL DOOR-ALARM. DANIEL H. STRESSER, Norristown, Pa. Filed July 19, 1889. Serial No. 317,963. (No model.)



Claim.—The combination, with a door, its lock having operating-knob and an escutcheon E, of the electric alarm and battery, the contact-plate F, secured to the door under the escutcheon and in the circuit of the battery, and the switch-arm D, secured to the knob-shank and also concealed by the escutcheon, substantially as set forth.

412,564. MACHINE FOR COILING WIRE RODS. FRANK G. TALLMAN, Beaver Falls, Pa. Filed Mar. 5, 1889. Serial No. 301,908. (No model.)



Claim.—1. The combination, with a set of rolls, of a curved and revolving guide-pipe placed at the delivery end of the said pipe or guide and on a line therewith, whereby the rod as it emerges from the revolving guide is formed into loops, as set forth.

2. In a device for coiling metal rods as they emerge from the rolls, a revolving horizontal pipe or tube communicating with the guide which conducts the rods from the rolls, said pipe being curved or bent at its outer end so as to describe a circle and form the rods into loops or spirals while in their aerial flight, and a standard or supporting device for arresting and retaining the coils.

3. In a device for coiling metal rods as they emerge from the rolls, a horizontal revolving guide-tube having its outer end curved or bent, as described, to form the rods into spirals while in their aerial flight, in combination with a curved or horn-shaped standard to catch and retain said coils.

4. The revolving curved guide, in combination with a movable support having the standards mounted thereon, substantially as described, whereby the same may be successively filled and discharged, as set forth.

5. The revolving curved guide-pipe provided with the removable end, substantially as and for the purpose set forth.

6. The horn-shaped holder or arrester arranged in relation to the forming-rolls, substantially as described, whereby the same is adapted to receive a rod in process of coiling, and constructed with its point or apex to receive the rod as it is coiled and being enlarged as it recedes toward its base, as set forth.

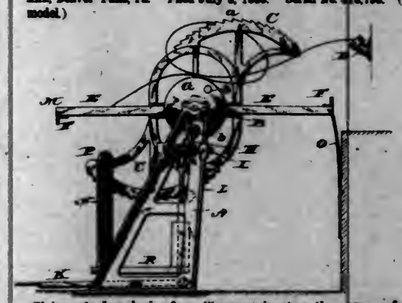
7. The cone or horn shaped holder or arrester arranged to receive a rod in process of being coiled, provided with a hooked, saw-tooth, or notched back, and with its point or apex to receive the rod as it is coiled, and said holder being enlarged as it recedes from the apex to its base, and with said base arranged at right angles (more or less) with the line of direction of its apex, as set forth.

8. The combination, with a traveling carrier, of the holders or standards arranged thereon, substantially as described.

9. The combination, with a traveling carrier, of the holders or standards arranged thereon, and a feeder-wall for removing the coils from the holders, as set forth.

10. The combination of a revolving bent pipe to form the rod into coils, the rolls for feeding the same to the pipe, a holder or standard to receive the coils, and a device for engaging the coils and removing them from the standard, as set forth.

412,565. DEVICE FOR COILING METAL RODS. FRANK G. TALLMAN, Beaver Falls, Pa. Filed July 6, 1889. Serial No. 316,793. (No model.)



Claim.—1. In a device for coiling metal rods as they emerge from the rolls, the horn-shaped revolible catchers or holders, provided with a serrated back, in combination with a revolible frame for drawing the rear end of the rod from the guide-tube, as set forth.

2. In a device for coiling metal rods as they emerge from the rolls, the catchers or standards C, and frame E, mounted on a suitable shaft, in combination with the disk, bolt, bar, and treadle, as set forth.

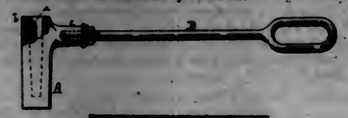
3. In a device for coiling metal rods as the emerge from the rolls, the frame, and catchers or standards revolubly mounted in the supports A, and a spring-brake adapted to impinge against the end of the frame to arrest its motion, as set forth.

4. In a device for coiling metal rods as they emerge from the rolls, the horn-shaped standards or catchers C C, mounted on a central axis and adapted to be rotated around the same, in combination with the resting or stop plate.

412,566. MOLD FOR INGOTS. HENRY C. TALLMAN, Cranston, assignor to Charles F. Irons, Providence, R. I. Filed May 31, 1888. Serial No. 273,796. (No model.)

Claim.—1. The combination of the mold A, having the matrix *a*, the hub *c*, the handle B, screwed into said hub, and the check-nut *d*, substantially as specified.

2. The improved ingot-mold A herein described, having the matrix *a*, the crucible-notch *b*, the hub *c*, the handle B, screwed into said hub, and the check-nut *d*, substantially as shown.



412,567. GOVERNOR FOR ELECTRIC GENERATORS. PATRICK J. TRACY, Racine, Wis. Filed Nov. 9, 1888. Serial No. 289,981. (No model.)



Claim.—1. The combination, with an electric generator, of an electro-magnet and other electrically-actuated devices arranged in parallel circuit, a balanced beam connected at one end to the generator, and an armature suspended from the other end of the beam to come in the attractive field of the electro-magnet, and be attracted in proportion as surplus energy manifests itself in said magnet, whereby the generation of the electric current is automatically regulated in case any one or all of said electrically-actuated devices beyond the magnet-loop are cut out of circuit, substantially as set forth.

2. In an electric governor, a pivoted beam mechanism actuated by an electric current to automatically regulate said current or its production, in combination with a spring-latch for retaining the beam in position to discontinue said current, and an electro-magnet arranged to disengage said latch and beam, substantially as set forth.

3. In an electric governor, a pivoted beam connected to an electric generator, a magnet electrically connected to said generator, an armature suspended from the beam to come in the attractive field of the magnet, a weight arranged on the beam, and a tension-spring connected to said beam to have its power inverse to that of the weight, substantially as set forth.

4. In an electric governor, a pivoted beam mechanism connected to an electric generator, a magnet electrically connected to said generator, an armature suspended from the beam to come in the attractive field of the magnet, and an auxiliary electro-magnet arranged to attract the beam, substantially as set forth.

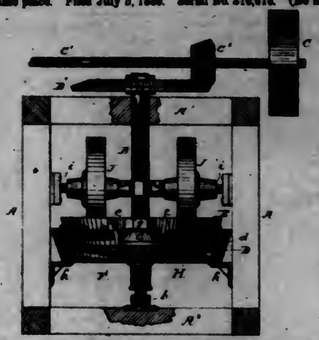
5. In an electric governor, a pivoted beam connected to an electric generator, a magnet electrically connected to said generator, and an armature suspended from the beam to come in the attractive field of the magnet, in combination with an adjustable regulator for said beam, a spring-latch for retaining the beam in position to discontinue the current, an electro-magnet arranged to attract said latch, an air-chamber, and a piston arranged within the air-chamber and having a rod-connection with the beam, substantially as set forth.

6. In an electric governor, a pivoted beam provided with a stud, a segment-arm adjustably secured to the stud, an armature connected to the segment, and an electro-magnet arranged to attract the armature, substantially as set forth.

7. In an electric governor, the combination of an electrically-controlled and pivoted beam, a main battery, an auxiliary battery, opposing spring contact-points connected to the batteries, and a flexible connection uniting the beam with one of said contact-points, the latter being arranged in the path of the adjacent end of said beam, substantially as set forth.

8. The combination, with an electric generator and parallel circuit, of an electro-magnet in the circuit, a vertical standard, a beam pivotally secured thereto and connected to the generator, an armature suspended from the beam to come in the attractive field of the electro-magnet, a weight arranged on the beam, and a tension-spring connected to said beam to have its power inverse to that of the weight, substantially as set forth.

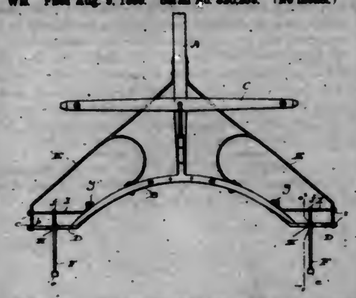
412,568. ORE-CRUSHER. JAMES A. VAUGHN and CALVIN W. VAUGHN, Cuyahoga Falls, Ohio, assignors to Turner, Vaughn & Taylor, same place. Filed July 5, 1889. Serial No. 316,616. (No model.)



Claim.—1. In a mill of the class designated, the combination of the disk, with its annular ridge, the removable bed arranged to rest against said ridge, the conical sleeve arranged to meet the inner edge of said bed, and means, as a nut, to force said sleeve against said bed, all constructed and arranged substantially as shown, and for the purpose specified.

2. In a mill of the kind designated, the combination, with the revolible grinding-bed and rim having side openings, of a pan disposed beneath said bed and rim, having upwardly-sloping center and sides forming an annular channel to receive the material which escapes through said openings, all constructed and arranged substantially as shown and described.

412,569. VEHICLE-TONGUE. GERARD H. VOLLRARDT, Milwaukee, Wis. Filed Aug. 9, 1889. Serial No. 320,268. (No model.)



Claim.—1. A vehicle-pole, circle-bar, and braces, in combination with lateral arms uniting the opposing ends of the circle-bar and braces, longitudinal links adjustable on the arms, and rods extended from said circle-bar through the forward portion of the links and connected to the braces, substantially as set forth.

2. A vehicle-pole, circle-bar, and braces, in combination with lateral arms wedge-shaped in cross-section, arranged to unite the opposing ends of the circle-bar and braces, longitudinal links provided with wedge-shaped openings for engagement with the arms, but of greater depth than the latter, and set-screws for clamping the links in any position to which they may be adjusted on said arms, substantially as set forth.

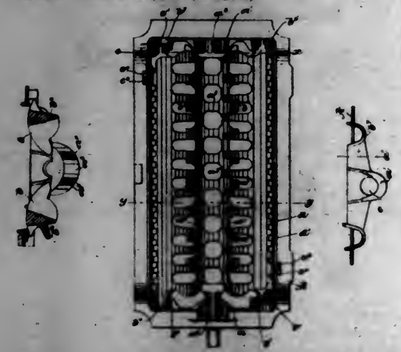
3. A vehicle-pole, circle-bar, and braces, in combination with lateral arms wedge-shaped in cross-section, arranged to unite the opposing ends of the circle-bar and braces, longitudinal links provided with wedge-shaped openings for engagement with the arms, set-screws for clamping the links in any position to which they may be adjusted on

said arms, and rods extended from said circle-bar through the forward portion of said links and connected to the braces, substantially as set forth.

4. A vehicle-pole, circle-bar, and braces, in combination with lateral arms uniting the opposing ends of the circle-bar and braces, longitudinal links adjustable on the arms, and rods extended from said circle-bar through the forward portion of the links to connect with the braces, and provided with eyes for stay chains or straps, substantially as set forth.

5. A vehicle-pole, circle-bar, and braces, in combination with the lateral arms D, uniting the opposing ends of the circle-bar and braces, the links F, adjustable on the arms, the set-screws H, engaged by the links, and the bushings G, inserted between said arms and screws, substantially as set forth.

412,570. **GRATE.** GEORGE W. WALKER, Malden, Mass. Filed Jan. 10, 1889. Serial No. 296,013. (No model.)

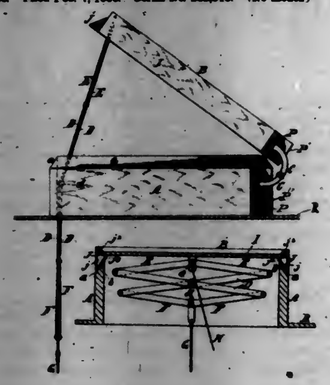


Claim.—1. The combination, with the bed-plate provided with a bearing having a slot, as c^2, of a rocking grate consisting of the central section and side bars, and a locking projection on one or both of said side bars below the journals of the said side bars, the said locking projection being passed through the said slot and located below the bearing of the grate-bar journals out of line with the said slot when the side bar is in operative position and capable of being rocked, substantially as described.

2. The combination, with the bed-plate, of the grate consisting of the central section provided with projections, and independent rocking side bars having fingers co-operating with the projections of the central section, and provided with a limiting projection on its rear side to co-operate with the bed-plate, substantially as described.

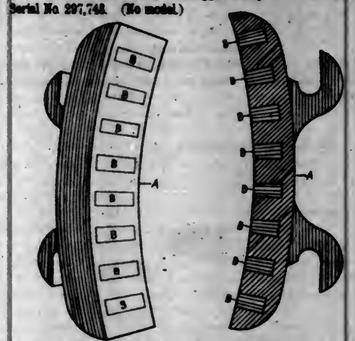
3. The herein-described side bar, consisting of the deep longitudinal web b^2, provided with journals at its ends and with a locking-finger c', and fingers connected to side of the said web and made at their junction with the web of a depth substantially equal to the width of the web, and having their upper surface made substantially in the arc of a circle, substantially as and for the purpose specified.

412,571. **SCUTTLE-LIGHT.** JOHN WEBB, Cincinnati, Ohio, assignor of two-thirds to Joseph H. Bostain and Valentine Bostain, both of same place. Filed Feb. 7, 1888. Serial No. 263,315. (No model.)



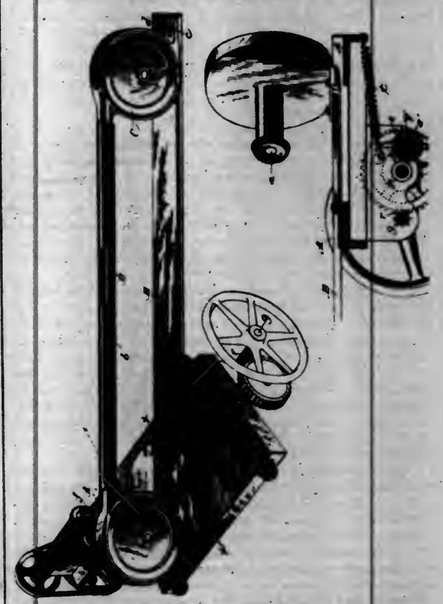
Claim.—The combination of a scuttle-box, top hinged thereto, bent levers D D, fulcrumed to the box, and toggle-arms E E and F F, substantially as and for the purposes specified.

412,572. **RAILWAY-BRAKE SHOE.** RICHARD F. WEALES, CHARLES W. CASE, and ARTHUR O. GARDNER, Hannibal, Mo., assignors of two-fifths to Erwin C. Case and William W. Driggs, same place. Filed Jan. 7, 1889. Serial No. 297,748. (No model.)



Claim.—As an improved article of manufacture, a railway-brake shoe composed of an iron or steel body filled with lead and antimony, substantially as described.

412,573. **EMBROIDERY-CUTTING MACHINE.** CHARLES WHITE, Baltimore, Md., assignor to Friedenwald Brothers, same place. Filed Oct. 20, 1888. Serial No. 288,642. (No model.)



Claim.—1. In combination, a suitable base, an endless cutting-band, the drums therefor, and the support B, said support being arranged below the drums and having a groove directly in line with the peripheries of the drums, substantially as described.

2. In combination, a suitable base, an endless cutting-band, the drums therefor, the support B, below the drums, having a groove directly in line with their lower peripheries, and a tube extending between the upper peripheries of the drums and receiving the endless band, substantially as described.

3. In combination, a base A, an endless band suitably supported having a cutting-edge, a support B, having a grooved edge for covering said band, a guide for directing the material, and an adjustable plate for the band in line with the guiding device, whereby the cutting-edge of the band may be exposed to a greater or less extent, substantially as described.

4. In combination, a base A, an endless cutting-band, a support B, grooved to conceal the same, and a plate having a groove of less depth than that of the plate B, whereby the cutting-edge is exposed, and a guiding device for directing the material to said cutting-edge, substantially as described.

5. In combination, the base A, an endless cutting-band, a support B, grooved to cover said band, supporting-drums at each end of said support, one of said drums being adjustable, and a tube between the drums in line with the upper peripheries, substantially as described.

6. In combination, the cutting-tool, means for supporting and means for driving the same, a guide-bar *n*, and a pressure-plate *m*, supported by said bar, said plate having its forward end raised and its other end near the cutter depressed to bear upon the goods, substantially as described.

7. In combination, a base, an endless cutting-band, a support B, having a groove on its edge in which the band travels, means for supporting said band, and adjustable plate A, having a groove corresponding to the groove in the support B, but of less depth, whereby the edge of the cutter is exposed in its travel a distance equal to the width of the adjustable plate, and means for adjusting said plate.

8. In combination, a base A, a support B, arranged at an angle thereto, a groove in its edge, an adjustable plate fitting a recess in said support B, said adjustable plate also having a groove in its edge in line with the groove in the plate B, but of less depth, whereby the cutting-edge is exposed at this point, supporting-drums for the band, one of said drums being adjustable, a tubular covering between the drums for the band in its return movement, means for driving said band, means for directing the material to the cutting-edge, consisting of the pressure-plate, a vertical shoulder and a guide for the plain portion and feed-rollers for drawing upon the plain cut portion of the fabric, and means for driving said rolls, substantially as described.

9. In combination with an endless cutting-band, means for directing the material to the cutting-edge, feed-rollers for receiving and drawing upon the plain cut portion, consisting of the revolving roll *p*, and the roll *q*, mounted eccentrically upon the rocking shaft, and means for moving the shaft, substantially as described.

10. In combination, the base, the endless cutting-band, the drums, and the support B, for the drums, having a groove, the said band being arranged with its front cutting-edge within the groove and back of the front edge of the support, said support being recessed at one point to expose the cutting-edge, substantially as described.

412,574. **TRAVELER-CLEARER FOR SPINNING-MACHINES.** ARTHUR F. WHITIN, Whitinsville, Mass., assignor to the Whitinsville Spinning Ring Company, same place. Filed Mar. 26, 1888. Serial No. 268,117. (No model.)



Claim.—1. A ring-holder and means, substantially as described, for holding it to the rail, combined with a traveler-clearer adjustably attached to or connected with it by means independent of the means employed for securing said holder in place, substantially as described.

2. A spinning-ring holder and means, substantially as described, for holding it to the rail, combined with a traveler-clearer pivotally connected to the holder by means independent of the means employed for securing said holder in place, substantially as described.

3. A ring, a ring-holder, and means, substantially as described, for holding it to the rail, and a traveler-clearer connected to the said holder, the said clearer consisting of a piece of material bent or shaped to form a base or foot and an upright portion, and means independent of the means employed for securing said holder in place to connect the base or foot to the holder, leaving the vertical part of the clearer extended upwardly near the ring, substantially as described.

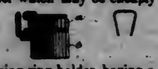
412,575. **TRAVELER-CLEARER FOR RING-SPINNING FRAMES.** ARTHUR F. WHITIN, Whitinsville, Mass., assignor to the Whitinsville Spinning Ring Company, same place. Filed Mar. 26, 1888. Serial No. 268,118. (No model.)



Claim.—A spinning-ring holder having a notch or recess, and a traveler-clearer composed of a strip of metal bent to form a spring-foot and held in position in said notch or recess, substantially as described.

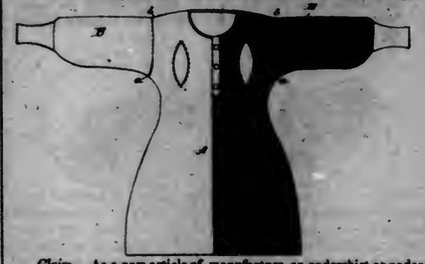
412,576. **TRAVELER-CLEARER FOR RING-SPINNING FRAMES.** ARTHUR F. WHITIN, Whitinsville, Mass., assignor to the Whitinsville Spinning Ring Company, same place. Filed Mar. 26, 1888. Serial No. 268,119. (No model.)

Brief.—The object of the invention is to provide a spinning-ring holder with a traveler which may be cheaply made and efficient.



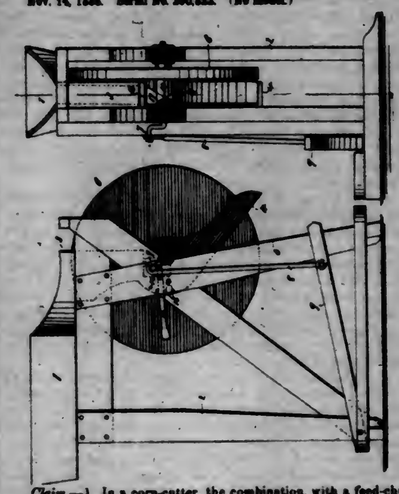
Claim.—A spinning-ring holder having a socket or recess, combined with a traveler-clearer having a foot or base to enter the said socket or recess and made adjustable on the said holder, substantially as described.

412,577. **KNITTED UNDERSHIRT.** FRANK WILCOXS, San Francisco, Cal., assignor, by mesne assignments, to the Wilcomb Knitting Machine Company, Jersey City, N. J. Filed Jan. 22, 1887. Serial No. 225,188. (No specimens.) Patented in Canada Jan. 14, 1889, No. 30,574.



Claim.—As a new article of manufacture, an undershirt or undervest the body of which is formed of shaped tubular knitted fabric terminating at its upper part in front and rear flaps stitched on their upper edges and having a neck-opening, and sleeves formed of shaped tubular knitted fabric secured to the edges of the armholes, as set forth.

412,578. **CORN-CUTTER.** HARRY WELLIN, New Boston, Ill. Filed Nov. 14, 1888. Serial No. 290,832. (No model.)



Claim.—1. In a corn-cutter, the combination, with a feed-chute, of a vertical wheel and segmental cutters having oppositely-inclined cutting-edges and secured to the side of the wheel below the lower end of the chute and on opposite sides of the axis of the said wheel, substantially as described.

2. In a corn-cutter, the combination, with a receptacle provided with a vertical feed-chute, of a vertical wheel, a series of segmental cutters having oppositely-inclined or spiral cutting-edges and secured to the side of the wheel below the lower end of the chute and on opposite sides of the axis of the said wheel, and an adjustable gage extending across the lower end of the chute, substantially as herein shown and described.

3. In a corn-cutter, the feed-chute 3, the vertical wheel 6, with cutters 10, having an inclined cutting-edge 11 projecting beneath the chute 3, and the gage consisting of a lever-arm 12, pivoted to frame 2, and having an arm 13 at right angles thereto and extending across the lower end of chute 3, and adjusting-pin 15, adapted to enter one of a series of holes 14 in the frame, substantially as shown and described.

4. A cutter consisting of receptacle 1, with feed-chute 3 and discharge-chute 4, a vertical wheel 6, having crank-shaft 7, treadle 9, connecting-rod 8, and the cutters 10, with an inclined cutting-edge 11 projecting beneath the chute 3, and a gage consisting of lever-arm 12, pivoted to a frame 2, and having an arm 13 at right angles thereto and extending across the lower end of chute 3, with the adjusting-pin 15, adapted to enter one of the series of holes 14 in frame 2, substantially as shown and described.

412,579. MICROPHONIC TRANSMITTER. BRUNO ABDANK-ABAKANOWIN, Paris, France, assignor to the American Bell Telephone Company, Boston, Mass. Filed Feb. 20, 1888. Serial No. 300,543. (No model.) Patented in France Feb. 26, 1888, No. 189,018, and in Austria-Hungary Apr. 16, 1888, No. 6,633.



Claim.—1. In a telephone-transmitter, the combination of a contact-piece carried in a horizontal plane by a vibratory diaphragm and across the central portion thereof, a number of movable disk-formed carbon contact-pieces abutting by the force of gravity peripherally against the diaphragm contact-plate, the said disks being on edge and separated from each other by a non-conducting partitioned frame, as described, and being mounted upon a suitable conducting-support, through which the current traversing the circuit reaches the carbon disks, whereby a multiplicity of variable-resistance contacts may be provided, and whereby the movable contact pieces may remain untrammeled by connecting-wires, substantially as described.

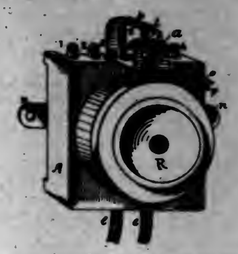
2. In a microphonic telephone-transmitter, the combination, substantially as hereinbefore described, of a vibratory diaphragm carrying at its center a conducting-plate, a conducting inclined surface mounted in the rear of the said diaphragm, a series of disk-formed freely-movable carbon contact-pieces placed on edge between the diaphragm-plate and the inclined support and adjusted to make permanent but variable contact with the said diaphragm-plate by means of the inclined rear support on which they rest, and a comb-like frame for the said movable carbon disks, separating the said disks from each other and acting to dampen or retard their movement, whereby a series of variable-resistance contacts may be arranged both in series and multiple arc and vibrated by the same diaphragm at a point near the center thereof.

3. In a microphonic transmitter, a series of carbon disk-formed freely-movable contact-pieces, a conducting-support therefor comprising two parts divided electrically from each other and each supporting on edge a part of the entire number of said carbon disks, and a diaphragm-electrode in contact with all of the said disks, whereby they are held in place, the whole being adapted to be included in an electrical circuit, whereby a continuous circuit including a number of resistance-contacts variable by the movements of said diaphragm and arranged in multiple series is constituted between the two insulated parts of the conducting-support, substantially as and for the purposes specified.

4. A telephone-transmitter comprising a series of freely-movable disk-formed contact-pieces of carbon, an inclined-plane conducting-surface consisting of two parts electrically insulated from each other, forming a rear support for the said disks, the said insulated parts each supporting a fractional number of said disks, and a vibratory diaphragm and electrode, with which the peripheries of the said carbon disks are in permanent contact by the influence of gravity, the said electrode forming a conducting bridge-piece, whereby an electrical circuit including a series of variable contacts is constituted between the two members of the inclined rear support, substantially as described.

5. The combination, in a telephone-transmitter, of a conducting contact-surface carried by a vibratory diaphragm, a rear conducting-surface inclined at an angle to the plane of the said diaphragm, a series of carbon disks constituting freely-movable contact-pieces supported peripherally upon the said inclined rear conducting-surface and caused thereby to abut against the diaphragm conducting-surface, the point of contact therewith being at or below the horizontal plane of their centers, the said disks being connected with an electrical circuit only by means of or through one or both of their supports, whereby their freedom of movement is unimpaired, and whereby they are enabled to rotate and to continually bring new points of contact into action, substantially as described.

412,580. TELEPHONE-STATION APPARATUS. BRUNO ABDANK-ABAKANOWIN, Paris, France, assignor to the American Bell Telephone Company, Boston, Mass. Filed Feb. 20, 1888. Serial No. 300,549. (No model.) Patented in France Feb. 26, 1888, No. 189,018, and in Austria-Hungary Apr. 16, 1888, No. 6,633.



Claim.—1. The combination, in a telephone-station apparatus, of a microphonic transmitter in which the variable-resistance contacts are formed by the interposition of a number of carbon disks placed on edge between an inclined rear surface of carbon and a plate of carbon carried upon the diaphragm, a non-conducting case for the working parts of the said transmitter, comprising non-conducting partitions integral with or centrally mounted within the said case and interposed between the several adjacent carbon disks, a perforated bifurcated plate serving as a telephone-holder mounted centrally on the upper edge of the non-conducting case, a portable telephone-receiver having a watch-stem suspending-rod adapted to engage with the said perforated plate, whereby the said telephone may be hung upon its holder in front of the transmitter, a circuit-changing switch also mounted upon the upper edge of the said non-conducting case, actuated automatically in one direction by a spring when the receiver is removed and actuated in the other direction by the operation of the suspending-stem of the said receiver when replaced, the said stem acting as a lever in opposition to the said spring, as and for the purpose specified.

2. The combination, in a telephone-station outfit, of a microphone-transmitter consisting of a vibratory diaphragm carrying or forming a conducting-plate, an inclined plane of conducting material in the rear thereof, and a series of carbon disk-formed movable contact-pieces making variable-resistance contact with the diaphragm and rear plates, a mold, frame, or base of non-conducting material recessed in front to serve as the diaphragm-seat and vocalizing-chamber, provided centrally with partitions for interposition between the several carbon disks and channeled on the rear side for the reception of a calling-key and electrical connections, a calling-key with normal and battery contacts mounted in one of the said lateral channels on the rear side of said frame and projecting therefrom, a circuit-changing switch comprising a line-spring, a telephone-contact, and an alarm-branch contact, serving also as a telephone-holder, secured to the upper edge of the non-conducting frame, and a portable telephone-receiver in circuit with the said microphone-transmitter provided with a watch-stem suspending-rod adapted to be engaged by the telephone-holder when placed thereon and thereupon to disengage the line-spring from the telephone-contact and to transfer the circuit thereof through its own substance to the signal-branch contact, the telephone-receiver being hung in front of the transmitter-diaphragm, substantially as described.

3. As a new article of manufacture, the homogeneous case, frame, or base for a compound telephonic apparatus described herein, consisting of a block of hard rubber, vulcanized fiber, or like non-conducting material partitioned centrally for the reception and mutual insulation of the several movable microphonic contact-pieces, and provided with a shouldered recess at its front side, serving as the diaphragm-seat and vocalizing-chamber, and with suitable channels and recesses cut or pressed into its substance at its rear side for the reception and protection of the calling-key and electrical connections and terminals, substantially as described.

4. In a compound telephone-station outfit, the combination of a main electric circuit, a call-signal branch circuit therefor normally completing the same and including a slotted plate forming a holder for the receiving-telephone when not in use, a spring calling-key, the back or resting contact thereof, and a call-bell magnet, a normally open or discontinuous telephone branch including a multiple-contact microphone, a receiving-telephone, and a transmitter-battery, the said battery being also connected with the front contact of the calling-key, a circuit-changing switch for transferring the main line from either branch to the other as required and for closing the circuit of the battery through the transmitter, operated automatically in one direction and actuated by the suspending-stem of the telephone-receiver used as a lever in the other, and comprising a contact-spring constituting the automatically-actuating main-line terminal, an insulated contact-post forming the terminal of the telephone branch normally out of contact with the said main-line spring, but connecting therewith when the receiver is removed for use, thereby closing the said branch to line, and the slotted receiver-holding plate forming the terminal of the call-signal branch circuit and normally connected with the said main-line spring through the substance of the suspending-stem of the receiver, the said stem being interposed between the said plate and the line-spring, uniting them electrically and raising the latter from the telephone-branch terminal post when the receiver is hung upon its holder, substantially as described.

5. The combination, in a telephone-station apparatus and in a concrete organization of the several instrumentalities thereof, of a non-conducting matrix forming a frame or base for the entire instrument, a multiple-contact microphonic transmitter mounted in the front and center of said matrix, a calling-key with front and back contacts, together with electrical connections recessed in channels cut in the back of said matrix, a circuit-changing switch constituting a rest or holder for the receiving-telephone mounted on the upper edge of the said matrix and projecting over the front side thereof, and a watch-formed telephone-receiver having a metal suspending-stem and adapted to be hung thereby, when not in use, in the said telephone-holder and in front of the transmitter, the said stem being adapted to actuate the said switch in one direction and forming when in place a portion of one of the circuits controlled thereby.

6. The combination, in a telephone-station apparatus, with a receiving-telephone having a metal suspending-stem formed, as shown and described therein, with an enlargement at its central part, of a circuit-changing switch controlling the circuits of said apparatus, and consisting of the angle-plate *a*, perforated and slotted to receive and lock the telephone suspending-stem and to serve as a rest or holder therefor and forming the terminal of a given branch circuit, the insulated post or fixed contact *c*, forming the terminal of a second branch circuit, and the spring *b*, fixed at one end, having its free end in line with and overhanging the said fixed post and the slot of the angle-plate, the said spring being the terminal of a main circuit and being adapted to press, when the telephone is not suspended in place, upon the said insulated post and to be elevated and disconnected therefrom by the telephone suspending-stem acting as a lever and to connect through the substance thereof with the slotted plate when the telephone is suspended from the said plate, substantially as and for the purposes described.

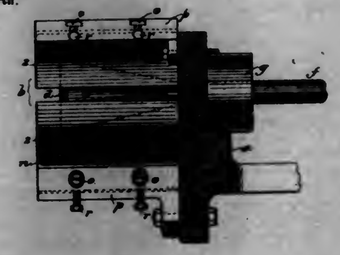
412,581. MANDREL FOR CAN-MACHINES. EDWIN R. ASHELL, Boston, assignor of one-half to E. P. Welch, Cambridge, Mass. Filed Jan. 29, 1889. Serial No. 298,007. (No model.)

Claim.—1. The combination, with the supporting-carrier *a*, of the mandrel-sections 2, recessed or formed hollow between their inner and outer walls to provide housing-cavities, the springs *c*, attached to said carrier and to the said sections in the housing recesses or cavities of the latter, separated clamping-jaws outside of said mandrel-sections, and means for expanding the mandrel to clamp a can-body between said mandrel and jaws, substantially as set forth.

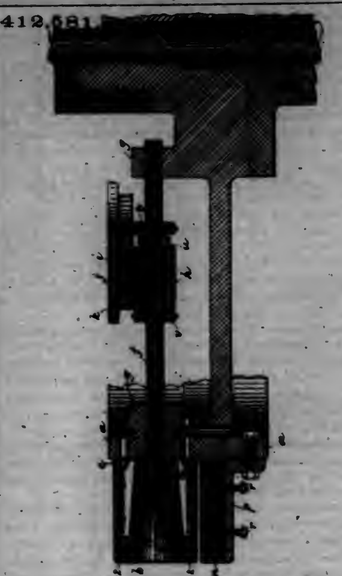
2. The combination, with the expansible mandrel, of the external jaws and means for adjusting said jaws with relation to the periphery of the mandrel, and for positively holding them at any position to which they may be adjusted.

3. The combination, with the expansible mandrel, of the tangentially-adjustable jaws *m m*, as set forth.

4. The combination, with the expansible mandrel, of the adjustable jaws *m m*, arranged to co-operate with one side of the mandrel, and the jaw *n*, arranged to co-operate with the opposite side thereof, as set forth.

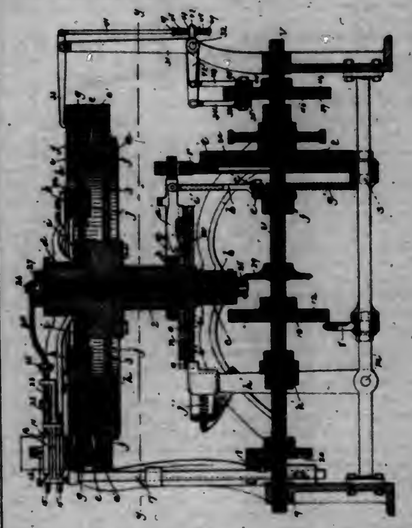


412,581.



5. The combination of the sectional mandrel, the external jaws, the wedge interposed between the sections of the mandrel as a means for expanding the same against the jaws, a rod attached to said wedge, a sleeve *h* on said rod, a cam adapted to positively reciprocate said sleeve, and a yielding connection between said sleeve and rod, as set forth.

412,582. CAN-SOLDERING MACHINE. EDWIN R. ASHELL, Boston, assignor of one-half to E. P. Welch, Cambridge, Mass. Filed Jan. 29, 1889. Serial No. 298,008. (No model.)



Claim.—1. The combination, with the step-by-step-rotated turret and its mandrels and jaws, of the continuously-rotated shaft within the hub of the turret, the yoke or frame located over the turret, the soldering-iron holders fitted to slide in guides in said frame and provided with irons or slugs, and the pitmen connected at one end with

an eccentric wrist-pin on said shaft, and intermediate devices, substantially as described, connecting said pitman with the iron-holders, whereby the latter are reciprocated, as set forth.

2. The combination of the rotary mandrel-carrying turret having a hub journaled in suitable bearings, a wheel *n*, affixed to said hub and having a series of notches or slots *o*, an arm *q*, mounted to oscillate horizontally on said hub, means for oscillating said arm, the dog *s'*, pivoted to said arm and formed to engage the slots of the wheel *n*, and means for vertically reciprocating said dog, whereby the latter is caused to engage the wheel *n* and rotate the turret during the forward horizontal movement of the arm *q* and disengaged from the wheel during the backward movement of said arm, as set forth.

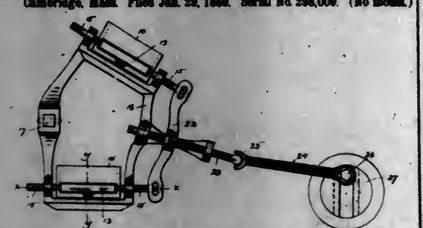
3. The combination, with the rotary mandrel-carrying turret having a hub journaled in suitable bearings, of the wheel *n*, rigid with said hub and provided with the slots or notches *o* and *i'*, the oscillating arm *q*, provided with the pivoted dog *s'*, adapted to engage the slots or notches *o*, the spring-pressed locking-lever *K'*, arranged to engage the said slots or notches *i'*, and a cam for disengaging said lever from said slots or notches, as set forth.

4. The combination of the rotary turret and its mandrels and jaws, means for rotating said turret step by step, the ejecting or can-body-removing dog to which the mandrels are successively presented, the lever 31, supporting said dog, means for oscillating said lever to give the dog a longitudinal motion, a pivoted lever 42, connected by a rod 41 to one end of the dog 33, and means for oscillating the lever 42, whereby said dog is raised and lowered, as set forth.

5. The combination, with the intermittingly-rotating turret and its mandrels, of the can-removing dog 33, the levers 31 and 42, means for operating said levers, and the rod 41, having the collars 47 and 49 and springs 48, as set forth.

6. The combination, with the intermittingly-rotated turret and its mandrels, of the continuously-rotated shaft within the hub of the turret, an eccentric wrist-pin carried by said shaft, the yoke or frame located over the turret, the soldering-iron holders fitted to slide in guides in said frame, a jointed rod connecting said holders with said wrist-pin, and means for lifting said holders when the turret is to be rotated, as set forth.

412,583. SOLDERING APPARATUS FOR CAN-SOLDERING MACHINES. Edwin R. Abbell, Boston, assignor of one-half to E. R. Welch, Cambridge, Mass. Filed Jan. 29, 1889. Serial No. 298,009. (No model.)



Claim.—1. The combination of a holder having an iron-receiving slot or aperture, a slug or iron placed loosely in said slot, a frame having guides in which said holder is adapted to reciprocate, means for reciprocating said holder in the frame, and a can-blank-supporting mandrel to which the iron is presented by its holder, as set forth.

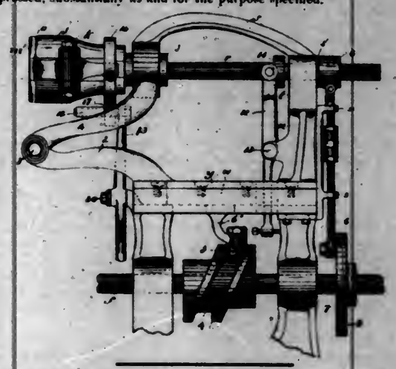
2. The combination of the frame or support 16, a plurality of holders 14, adapted to slide in guides in said frame, the slugs or irons 13, loosely inserted in said holders, the cross-head 22, connected to said holders and provided with the rod 23, and means for reciprocating said rod and thereby simultaneously reciprocating the holders 14, and a plurality of can-blank-holding mandrels to which the irons are presented by said holders, as set forth.

412,584. CAN-HEADING MACHINE. Edwin R. Abbell, Boston, assignor of one-half to E. R. Welch, Cambridge, Mass. Filed Feb. 18, 1889. Serial No. 300,247. (No model.)

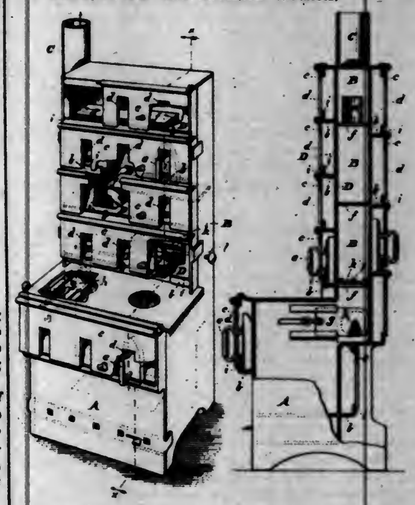
Claim.—1. In a can-heading machine, the combination of a can-head holder or carrier provided with means for clamping and releasing a can-head, a reciprocating slide, to which said carrier is pivotally connected, and means for rocking the head or carrier on its pivotal connection with the slide, whereby the can-head is tipped while being applied to the can-body, as set forth.

2. In a can-heading machine, the combination of a can-head holder or carrier provided with means for clamping and releasing a can-head, a reciprocating slide, to which said carrier is pivotally connected, a rod *r*, connected to said carrier, and means whereby said rod is alternately raised and depressed to tip the carrier and the can-head held thereby, as set forth.

3. The combination of a can-head holder or carrier having a head-receiving cavity, intermittently opening and closing jaws in said holder formed to bear on the edge of a can-head flange therein, a spring-projected plunger in said holder having a rod *r*, a pivoted yoke or frame supporting said holder, jaws, and rod; a slide *w*, to which said frame is pivotally connected, means for reciprocating said slide with the holder and rod thereon, a lever 12, pivoted to a support on said slide and arranged to be moved by contact with a fixed stop during the backward movement of the holder, and thereby retract the rod *r* and its plunger, a rotating cam 7, and a connecting-rod 6, engaged at one end with said cam and at the other end with a sliding collar on the rod *r*, whereby said rod is alternately raised and depressed, substantially as and for the purpose specified.



412,585. SAD-IRON HEATER. David E. Bangs, Medford, Mass. Filed May 31, 1889. Serial No. 312,792. (No model.)

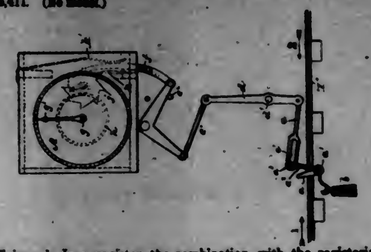


Claim.—1. The sad-iron heater consisting of the fire box having the central flue and front and rear receiving-chambers, said central flue having compartment-chambers opening alternately at opposite ends, and the slotted doors hinged at the open sides of the receiving-chambers, substantially as set forth.

2. The sad-iron heater consisting of the compartment or subdivided central flue, the front and rear walls of which are provided with shelves having at their forward or outer edges guard-flanges, and the drop slotted doors hinged at their upper edges to the top edges of said shelves, substantially as set forth.

3. The sad-iron heater consisting of the fire-box having the central flue, the front and rear receiving-chambers, said central flue having compartment-chambers opening alternately at opposite ends, the slotted doors hinged at their upper edges and at the open sides of said receiving-chambers, and the transverse horizontal partitions or guides, one having a damper closing the opening of the bottom one of said compartment-chambers, substantially as set forth.

412,586. REGISTERING AND INDICATING DEVICE FOR MINES. William F. Bath, Wardner, Idaho. Filed July 2, 1888. Serial No. 316,411. (No model.)

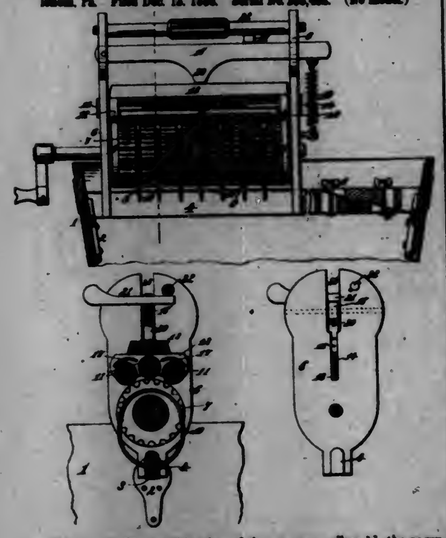


Claim.—1. In a register, the combination, with the registering mechanism proper, of a hoisting-drum and a cord and weight connected and adapted to move therewith, said weight having its path in proximity to and adapted to engage and operate a part connected with the registering mechanism, substantially as set forth.

2. In a combined register and indicator, the combination, with the register proper, of a hoisting-drum, a cord and weight connected and adapted to move therewith, said weight engaging a part connected with the registering mechanism, and a scale situated by the path of the weight, substantially as set forth.

3. In a registering mechanism, the combination, with the register proper, of a reciprocating and oscillating bar or dog *f*, a lever *e*, carrying the same, a rock-shaft *d'*, adapted to be rocked by the movement of the object to be registered, an arm d^3 on said shaft and provided with a pin e^3, a connecting rod or link *c*, having a slot engaged by said pin, and connections between said lever *e* and link, substantially as set forth.

412,587. WASHING-MACHINE. James G. Brasher, South Bethlehem, Pa. Filed Dec. 13, 1888. Serial No. 293,492. (No model.)

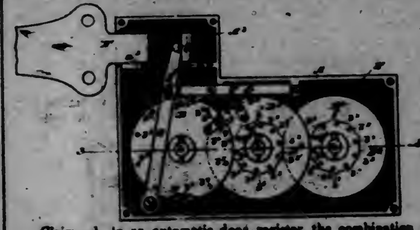


Claim.—1. The combination of the pressure-rollers 11, the corrugated roller 7, located beneath the pressure-rollers, the standards having vertical slots 15, terminating at their lower ends above the journals of the corrugated roller, the elastic cushions 16, arranged at and supported by the lower ends of the said slots, the horizontal bar 18, having pendent end blocks 12, supporting the pressure-rollers and provided with horizontally-projecting tongues 14, extending into the slots and resting and adapted to slide on the elastic cushions, substantially as and for the purposes described.

2. The combination of the standards 6, having vertical slots 15, the corrugated roller 7, the pressure-rollers 11, located above and resting upon the uppermost side of the corrugated roller and having supports projecting into the said vertical slots, and the series of concave-convex strips 17, extending, respectively, over the entire length of the outer pressure-rollers, substantially as described.

3. The combination of the standards 6, having the vertical slots 15, the corrugated roller 7, the pressure-rollers 11, located above and resting upon the uppermost side of the corrugated roller, the horizontal bar 18 above the pressure-rollers, having pendent end blocks 12 supporting the latter and provided with horizontal tongues 14, extending into said vertical slots, and the series of concavo-convex strips 17, supported at their ends by the pendent blocks and extending over the entire length of the outer pressure-rollers, substantially as described.

412,588. AUTOMATIC DOOR-REGISTER. Charles W. Bent, Chicago, Ill. Filed July 13, 1888. Serial No. 279,894. (No model.)



Claim.—1. In an automatic door-register, the combination of suitable registering-disks with latch-bar F, flexible arm G, and reciprocable bar C, spring E, and dog *c*, for actuating the registering-disks, as and for the purpose specified.

2. The combination, with registering-disks, of the reciprocable bar C, pivoted dog *c*, spring E, with arm G, and the inclined bearing-surface *d'*, for actuating arm G, as and for the purpose specified.

3. The combination, with registering-disks, of the rigidly-fixed latch-bar F, with arm G, and inclined bearing-surface *d'*, for actuating the registering-disks, as and for the purpose set forth.

4. In an automatic door-register, a fixed latch-bar F, provided with a recess and inclined end surface, in combination with a transmitting member flexible laterally, having a lug *g*, and with an inclined bearing-surface *d'*, upon which the arm G works, all parts adapted to co-operate to actuate the registering-disks, substantially as set forth.

5. In an automatic door-register, the combination, with one or more registering-disks, of a latch-bar, as F, the flexible arm G, and a tripping device—such as bearing-surface *d'*—for engaging and disengaging said latch-bar and arm, so as to impart motion to the registering-disks, substantially as and for the purpose set forth.

6. In an automatic door-register, the combination, with a latch-bar, of one or more registering-disks, mechanism operated by said latch to actuate the disks comprising a reciprocable spring-rod, the movement of which actuates the disks, and a tripping device to release said mechanism and latch when the door is opened, substantially as described.

7. In an automatic door-register, the combination, with actuating mechanism, of two or more axially-movable overlapping indicator members having concentric laterally-projecting hubs or portions smaller than the same, said hub being provided with a peripheral series of projections fitting against the periphery of an adjoining member to normally look the same, a concentric series of lateral projections on each hub, and fixed toes projecting radially from the periphery of the members and adapted to consecutively engage the lateral projections of an adjoining member, said members being provided with peripheral recesses in proximity to the toes, for the purpose set forth.

8. The combination, with actuating mechanism, of a pair of rotatable indicator members, each cast integral and consisting of a disk having the indicating characters on one side and a concentric hub or portion on the other side smaller than the disk, and having a peripheral series of concaved projections fitting against the periphery of the adjoining disk to normally look the same, a series of lateral projections on the side of the hub, and a toe projecting radially from the periphery of the disk to engage the lateral projections of the next adjoining member, said disk being provided with a peripheral recess beneath the toe, for the purpose set forth.

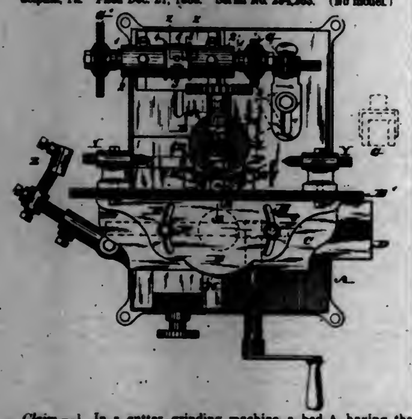
9. In an automatic door-register, the combination, with a reciprocable bar carrying a pawl, of a rotatory indicator-disk having a concentric series of lateral projections adapted to be engaged by said pawl and thereby rotate the disk, a toe projecting radially from the periphery of the disk and provided with a peripheral recess beneath the same, and another rotatory indicator-disk having a lateral concentric hub on one side of less diameter than the disk, said hub being provided with a peripheral series of radial projections engaging the periphery of and normally locking said first-mentioned disk, and a series of lateral projections on the side of said hub engaged by said toe, for the purpose set forth.

10. The combination of a car-door provided with a fixed and rigid latch-bar F, suitable indicator members, and intermediate mechanism—such as flexible arm G and spring-bar C—by which the direct thrust or pull of the latch-bar is transmitted thereto to operate the same, as specified.

11. In an automatic door-register, the combination, with the latch, of one or more registering-disks, intermediate mechanism, substantially as described, operated by said latch when the door is opened or closed to actuate the disks, and a tripping device—such as an inclined bearing-surface—to disengage said mechanism and latch when the door is opened, substantially as described.

12. In an automatic door-register, the combination, with a latch, of one or more registering-disks, a reciprocable spring-rod carrying a pawl to rotate said disks, said rod being operated by said latch when the door is opened or closed, and means for releasing said latch from the rod when the door is opened, substantially as described.

412,589. CUTTER-GRINDING MACHINE. ADAM BENDER, Philadelphia, Pa. Filed Dec. 21, 1888. Serial No. 294,263. (No model.)



Claim.—1. In a cutter-grinding machine, a bed A, having the movable support D thereon, the table C, movable on said support, and the carriage B, pivotally mounted on said table, the graduated plate H, secured to the center of the side of the carriage B, and the index-finger J, the latter being curvilinear drawn from the axis of the said carriage, said parts being combined substantially as described.

2. A tool carrier or holder, in combination with a plate to which said carrier or holder is pivoted, a rock-shaft in the heel end of said carrier or holder, and a screw fitted to said plate and engaging with said rock-shaft, substantially as described.

3. In a cutter-grinding machine, a carriage with upright portion, an upright frame with ears, a plate with ears, pivotal screws connecting said ears of plate and upright, and a carrier with holder connected with said plate, said parts being combined substantially as described.

4. In a cutter-grinding mechanism, a carriage, an upright plate secured to said carriage, a plate pivotally connected with said upright plate, a rocking shaft journaled in said pivoted plate and having a screw-threaded opening, a screw-bolt swiveled in said upright plate and working in said opening in the shaft, and a carrier with holder secured to said pivoted plate, said parts being combined substantially as described.

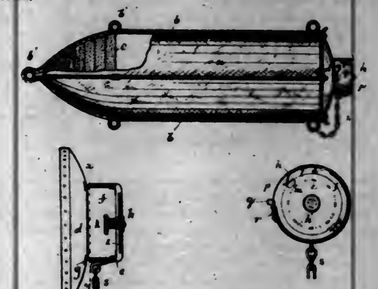
5. In a cutter-machine, a rotary shaft with grinding-wheel thereon, a pulley mounted on said shaft between the bearings thereof and having shoulders 5, a beveled collar encircling the shaft adjacent to said shoulders and bearings, and a screw working in the pulley with its point bearing against the beveled face of the collar, substantially as and for the purpose set forth.

412,590. OIL-DISTRIBUTER FOR VESSELS. NICOLAI C. RUUD, Christiania, Norway. Filed Apr. 19, 1889. Serial No. 307,842. (No model.)

Claim.—1. In an oil-distributer for vessels, a bag of water-tight material, being closed at one end and having this end filled with floatage material, while its other end is provided with a metallic head having an adjustable valve with suitable means for regulating the discharge of oil when the bag is floating on the water.

2. The combination, with an oil-distributer for vessels, with a bag of canvas or similar water-tight material for containing oil, the head *d*, and the cover *h*, provided with a set of holes *K*, of an adjustable valve *i*, with holes *i'*, corresponding with the holes in the cover *h*.

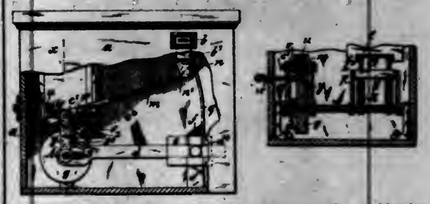
3. In an oil-distributing device for vessels, an adjustable valve for discharging the oil through the lower end of the oil-bag, consisting of the cap A, fitting over the spout *c* and secured to the same by the boss *r* or equivalent means, a revolvable disk *i*, mounted on the inside of the cover and provided with holes *i'* corresponding with holes *k* in the cover, a handle *k* for turning said disk, and means for holding the said disk in its different positions, all substantially as specified and shown.



4. In an oil-distributer for vessels, the combination, with the head *d*, having an opening surrounded by a spout *c*, of a cap *h*, for closing said spout and provided with a pocket h^3, in which are holes *K*, and valve *i*, for closing and regulating said holes *K*, substantially as and for the purposes hereinbefore set forth.

5. A floating oil-distributer for vessels, substantially consisting of the following parts: a water-tight bag made of canvas or similar material, having a substantially-cylindrical shape, being pointed at the upper end, and strengthened by means of binding-ropes provided on several places with loops to which the holding-ropes may be tied, the bag being in the upper pointed end filled with floatage material—such as cork—and of an adjustable valve fixed in a metallic head closing the lower end of the bag, the valve being separated from the interior of the bag by means of a perforated plate, between which and the valve hemp or similar material may be placed to lessen the outflow of the oil, substantially as shown and for purposes as specified.

412,591. AUTOMATIC VENDER FOR TICKETS, CARDS, &c. CHARLES H. BINGHAM, Utrecht, Holland, assignor to the Simplex Automatic Machine Company, London, England. Filed Oct. 3, 1888. Serial No. 287,055. (No model.)



Claim.—1. In an automatic vending apparatus, the combination of the doubly-forked part *y*, arranged on the spindle A, and carrying at its upper end the bolt *c'*, lever *m*, with its coin-receptacle and pin or stud *v'*, and the pawl *v*, the latter being held out of engagement with the disk *g* by the pin *v'* until the lever *m* is depressed by the insertion of a coin, substantially as shown and described.

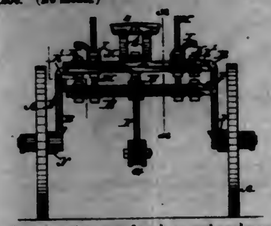
2. In an automatic vending apparatus, the lever *m*, provided at one end with the bottomless receptacle or coin-box *n*, adapted to move close to and parallel with a strip of sheet metal or other material formed so as to correspond with the curve described by the said lever and coin-box, in combination with said strip, the doubly-forked part *y*, the spindle A carrying part *y*, the slide *d*, and guide *f*, as and for the purposes set forth.

3. In an automatic vending apparatus, the combination of the coin-box *n*, the doubly-forked part *y*, the double-armed lever *m*, carrying the coin-box *n* and the strip of sheet metal *q*, which, when the parts are in normal position, will retain the coin in the coin-box, the slide *d*, guide *f*, and the knob *w*, whereby the lever *m* may be caused to recede with its coin-box *n* from the metallic strip *q*, so that the coin can fall into the guide *f*, substantially as shown and described.

4. In an automatic vending apparatus, the delivery device consisting of the receptacle B, having opening N, and elastic piece E, the rectangular piece C, arranged beneath the receptacle B, and having a slot C, and the delivery-arms mounted on the spindle A, said arms provided with tips L, adapted to move in the slot C and come in contact with the lowest flat object in the receptacle B to deliver the same, substantially as shown and described.

5. In an automatic vending apparatus, the device for ejecting the articles for sale, consisting of a cross-bar G, supported by the spindle A and two one-armed levers F, and carrying two tubes H, in which pistons I, having tips L and helical springs K, are arranged, so as to continuously press the tips L upward against the lower card or other object in the box B, which said object is pushed outward according to the movement communicated to the spindle A, substantially as and for the purpose set forth, and shown on the drawings.

412,592. RUNNING-GEAR FOR PLOWS. GEORGE C. BRAINERD, South Vineland, N. J. Filed July 2, 1887. Renewed Sept. 7, 1889. Serial No. 323,256. (No model.)



Claim.—1. An adjustable gear for plows and analogous devices, consisting of the body or frame B, composed of two sections, each having a single standard with axles, the standards extending upward and having U-shaped branches, the latter being slotted and adapted to slide upon each other, and fastening devices for said sections, substantially as described.

2. The combination of the frame B, composed of sectional parts having recessed standards and slotted branches, with the plow-supports E, having shoulders P, the screw-bolts H H, and handled nuts I I, substantially as and for the purpose set forth.

3. The frame B, consisting of sectional parts, each having standards and slotted branches, in combination with braces N, having slotted parts, and means, substantially as described, for securing said parts, all combined substantially as and for the purpose set forth.

412,593. PICTURE-NAIL. WARREN M. BENEDICT, Auburn, N. Y. Filed May 20, 1889. Serial No. 312,009. (No model.)



Claim.—1. A picture-nail provided with an elastic head enlarged from each end, substantially as described.

2. A picture-nail provided with a head consisting of a spiral coil separate from the main body of the nail, said main body being reduced at one end, forming a penetrating-point, substantially as described.

3. A picture-nail whose main body is provided with an elastic head movable thereon, substantially as described.

4. A picture-nail consisting of a main body provided with a head formed of coiled elastic material surrounding said main body, said head being secured to said main body at the extremity next adjacent to its point, substantially as described.

5. A picture-nail consisting of a main body provided with a head formed of spiral elastic material extending longitudinally of said main body and retained thereon at one point by frictional contact, substantially as described.

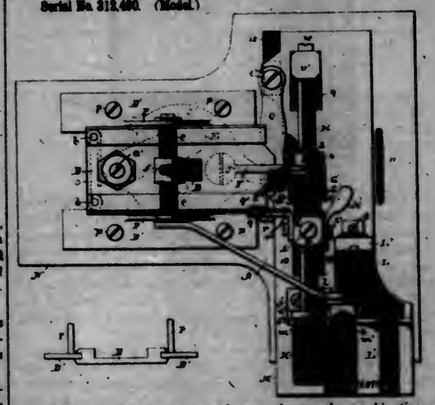
6. A picture-nail provided with an elastic head consisting of a spiral coil surrounding the main body of the nail, the outer extremity of said coil having a greater diameter than the inner end, substantially as described.

412,594. SIDING OR CLAPBOARD MARKER. JOHN T. BROOME, Sioux City, Iowa. Filed Apr. 20, 1889. Serial No. 308,016. (No model.)



Claim.—The siding or board marker consisting of the box frame or closure having at its ends arms standing at right angles to the length of said box-frame or closure, the marking-knife arranged in said closure and provided with a handle, said marking-blade having ends projecting through slots in said closure adapted to allow the marking-blade to have longitudinal and inward movement, the springs connecting at their outer ends to said studs and having their inner ends connected about centrally to said closure, and the semi-elliptic spring centrally secured to said closure and bearing near its ends upon said studs, securing the marking-blade in a withdrawn position, substantially as set forth.

412,595. SEWING-MACHINE ATTACHMENT FOR OVERCASTING THE EDGES OF FABRICS. BOGERS DUNN, Kansas City, Mo., assignor of one-half to John S. Gardner, same place. Filed May 20, 1889. Serial No. 312,490. (Model.)



Claim.—1. In a sewing-machine attachment, the combination of the rotary shaft carrying a feed-roll, the cam loosely mounted on said shaft and carrying a pawl to engage a ratchet on the shaft, and the sliding frame connected to the needle-bar and provided with an arm to engage and operate the said cam, substantially as specified.

2. The combination, with the shaft carrying a feed-roll, of a cam loosely mounted on the shaft and having a pawl-and-ratchet connection therewith, the adjustable arm pivoted to a slotted sector and provided with a set-screw, said cam being provided with a check-pin to, engage the adjustable arm, and the sliding frame provided with an arm to engage and operate the cam, substantially as specified.

3. The combination, with the shaft carrying a feed-roll and provided at the opposite end with a ball socket ed in a suitable post, and the tension-spring bearing on an intermediate point of said shaft, of the spring-actuated pressing-fingers arranged adjacent to the feed-roll and provided with a lateral strip or arm which extends under and is engaged by the said shaft, substantially as specified.

4. The combination, with a rotary feed-roll, mounted loosely on its shaft and the sliding frame connected to the needle-bar and adapted to be reciprocated thereby, of the cam-plate provided with a cam-slot having diverging arms and registering with a guide-slot in a stationary plate, said cam-plate being connected to the feed-roll, and the operating-arm carried by the sliding frame and provided with a pin to engage the registering slots, substantially as specified.

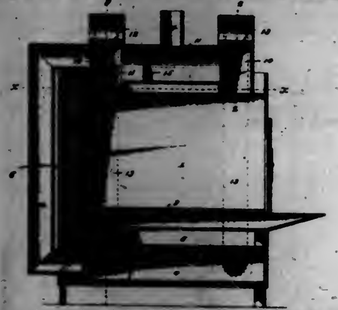
5. The combination, with a rotary feed-roll sliding on its shaft and the sliding frame connected to the needle-bar and adapted to be reciprocated thereby, of the cam-plate connected to the feed-roll and provided with a cam-slot which registers with a guide-slot in a stationary plate, the operating-arm carrying a pin to engage the registering slots, and the spring carried by the sliding plate and having engagement with the operating-arm to cause its pin to normally lie in the center of the guide-slot, substantially as specified.

6. The combination, with a feed-roll having a lateral movement on its shaft and the sliding plate provided with lugs to engage a peripheral groove in the said roll, of the cam-plate connected to the said sliding plate by a link having a set-screw to engage a curved slot in the cam-plate, whereby the throw of the sliding plate may be adjusted, and the sliding frame carrying an operating-arm which engages a cam-slot in the cam-plate, whereby the latter is oscillated, substantially as and for the purpose specified.

7. The combination, with a rotary shaft carrying a feed-roll having a spline-and-groove connection therewith and the sliding plate carrying adjustable pressing-fingers and connected to the said feed-roll, of the sliding frame connected to the needle-bar and carrying an operating-arm, and the cam-plate connected to the said sliding plate and

adapted to be engaged by the said operating-arm, the sliding frame being further provided with an arm to engage a loose cam having a pawl-and-ratchet connection with the rotary shaft, substantially as specified.

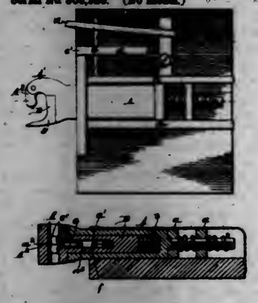
412,596. HOT-AIR HEATING-STOVE. SIMON D. BURLINGAME, Reading, Mich. Filed June 26, 1889. Serial No. 315,919. (No model.)



Claim.—1. In a hot-air heating-stove, substantially as described, the combination of a combustion-chamber, an exterior vertical shell concentric with and equidistant from the combustion-chamber throughout its length, the upper and lower ends of said shell being open, a low chamber arranged beneath the combustion-chamber within the vertical shell, the high chambers, and the vertical up and down flues arranged exteriorly of the vertical exterior shell and having the elbows at their ends, which enter the high and low chambers, for the purpose set forth, substantially as specified.

2. In a hot-air heating-stove, the combination of a combustion-chamber, a high chamber communicating therewith, another high chamber isolated from communication with the combustion-chamber, a longitudinal chamber intermediate of both high chambers and having a damper located therein between the smoke-receiving high chamber and the smoke-outlet opening, a low chamber located beneath the combustion-chamber, an exterior case surrounding the combustion and low chambers, and the down and up flues located exteriorly of the inclosing-case and communicating with the high and low chambers, substantially as and for the purpose described.

412,597. CAR-COUPLING. PETER CAMPBELL, Carrolltown, Pa. Filed Apr. 12, 1889. Serial No. 306,989. (No model.)

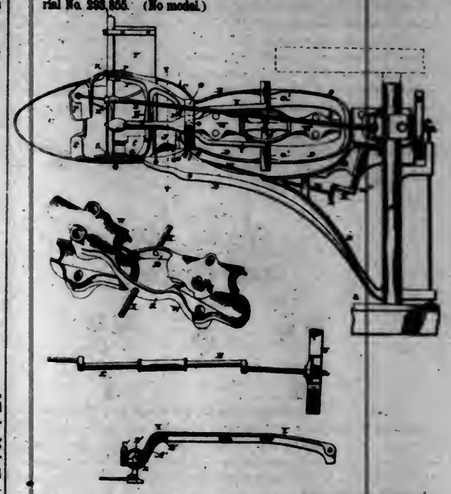


Claim.—1. The car-coupling having at one end of the buffer or draw-bar a hinged or pivoted leaf or hook having an arm standing proximately at right angles to said leaf or hook, in combination with the spring-pressed follower actuating said leaf or hook through said arm, substantially as set forth.

2. The combination of the draw-bar or buffer having the hinged or pivoted leaf or hook having an arm extending about at right angles to said hook or leaf, the spring-pressed follower having at one end, at one side, a forward projection or extension, and the holding-pin and its lever, said pin engaging the follower, substantially as set forth.

3. The car-coupling having the draw-bar or buffer provided with a hinged leaf or hook having an arm standing at right angles to said hook, in combination with the follower having at its forward end a projection or extension and at one side a rib or guide sliding in a groove in the draw-head, together with means to hold said follower in position, said follower actuating said leaf through its said arm, substantially as set forth.

412,598. MOWING-MACHINE. OSCAR CRANE, Rutland, Ohio, assignor of one-half to H. D. Holt, same place. Filed Dec. 17, 1888. Serial No. 293,955. (No model.)



Claim.—1. In a mower, the combination of the axle, the stationary frame B, secured thereto, the pivoted frame D, and the shoe with the operating-shaft, which extends through the frame D and is provided with two cranks near its center, which extend in a line with each other, the driving-pinion on the rear end of the shaft, the vibrating box applied to the cranked portion of the shaft and provided with pivots, the operating-lever connected at its rear end to the box, and the cutter connected at its inner end to the lever, substantially as shown.

2. In a mower, the combination of the axle, the stationary frame B, secured thereto, the pivoted frame D, and the shoe with the operating-shaft, which extends through the frames and is provided with two cranks which extend in a line with each other, the driving-pinion applied to the rear end of the shaft, the box formed of two parts which have their opposite ends to catch above and below the two cranks, and each part provided with a pivot, the operating-lever having its rear end pronged, so as to make connection with the two parts of the box, and the cutter connected to the front end of the lever, substantially as described.

3. The combination of the shoe, the two separate castings P Q, provided with journals R S, and the frame D, provided at its front end with the two arms F G and journaled upon the two castings, substantially as set forth.

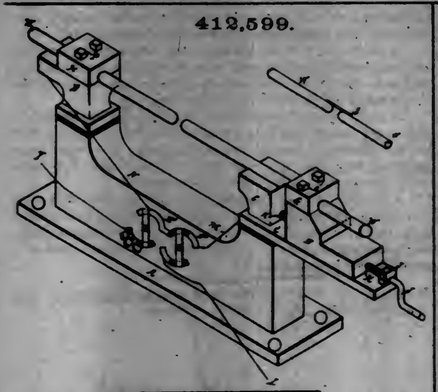
4. The combination of the shoe, the casting Q, provided with the bearing S, having a slot through one side, with the frame D, provided with the extension-arm G, having an opening formed therein to fit upon the journal S, the extension or arm being cut away upon one side, so that the cutter can be removed and replaced sidewise, substantially as specified.

5. The combination of the axle, the frame B, secured thereto, the pivoted frame D, and the shoe loosely connected to the front end of the frame D with the driving-shaft provided with two cranks, which extend through the frame D, and upon which the frame turns, the box W, provided with pivots and placed upon the cranked portion of the shaft, the curved connection J, secured at its outer end to the frame B and having the driving-shaft to extend through its inner end, and the forked operating-lever connected to the box at its rear end and the cutter, the frame D being provided at its front end with the braces H I and the arms F G, and the shoe with the castings P Q, having the journals R S, substantially as shown.

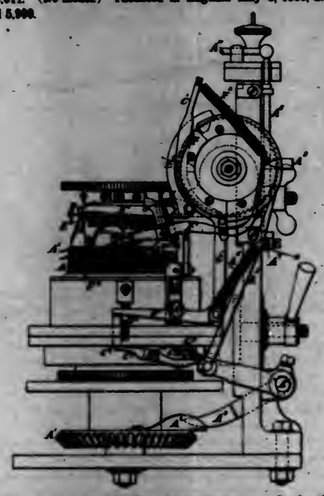
412,599. PROCESS OF ELECTRIC WELDING. CHARLES L. COFFIN, Detroit, Mich. Filed Apr. 24, 1888. Serial No. 308,415. (No model.)

Claim.—The herein-described process of welding together two metal rods or bars, the same consisting in placing the articles to be welded in an electric circuit, closing said circuit, then breaking the circuit between the articles to be welded, whereby the voltaic arc is formed at the point of the weld, pressing the articles together and holding them permanently in contact after the ends or edges have reached a welding heat, and passing heating-currents through the articles while so pressed and held until they are welded one to the other, substantially as described.

412,599.



412,600. CIRCULAR RIB KNITTING MACHINE. JOHN H. COOPER and GEORGE ELLIOT, Leicester, England. Filed Feb. 12, 1889. Serial No. 299,611. (No model.) Patented in England May 3, 1888, Nos. 6,908 and 6,909.



Claim.—1. The combination, substantially as set forth, of the circular revolving heads of frame and machine needles, the clearing and knocking-over cams, the notched wheel for lifting when in action some only of the frame-needles, the push-back blade, which can be made to descend between the frame and machine needle heads, the levers for putting these cams and the push-back blade in and out of action, the cams for acting on these levers, the cam-shaft and ratchet-wheel upon it, the pawl giving a step-by-step revolving motion to the ratchet-wheel, the lever carrying the pawl, and the cam on the revolving frame-head to rock this lever.

2. The combination, substantially as set forth, of the circular revolving heads of frame and machine needles, the clearing and knocking-over cams, the notched wheel for lifting when in action some only of the frame-needles, the push-back blade, which can be made to descend between the frame and the machine needles, the cam-shaft, means for giving it a step-by-step revolving motion when a welt is to be formed, and the cams carried by this shaft, one cam to draw back the point of the clearance or knocking-over cam of the frame-needles for one course, one cam to somewhat draw back the cam for knocking over work on the machine or rib needles for one course and then to draw it back entirely out of action until a welt is completed, one cam to draw back and put out of action the cam by which the machine-needles are thrust forward, and one cam to raise and lower the push-back blade.

3. In combination with the circular heads of frame and machine needles of a rib circular-knitting machine, a push-back blade which can be made to descend between the frame and machine needle heads and bear upon the work at times when the machine-needles are left out of work with loops of work hanging upon them, and means for actuating the push-back blade.

4. The combination, substantially as set forth, of the circular revolving heads of frame and machine needles, means for actuating them, the cam-axis, cams on the cam-axis, a push-back blade actuated by one of the cams, the clearing and knock-over cams, connections between these cams and cams on the cam-axis, the toothed wheel on the cam-axis, the driving-pawl engaging therewith, means for actuating the pawl, the arm engaging with the pawl to hold it out of engagement with the wheel, the vertical axis to which the arm is secured, and the second arm on the vertical axis, which engages with one of the cams, for the purpose specified.

5. The combination, substantially as set forth, of the circular revolving heads of frame and machine needles, means for actuating them, the pattern-wheel, its shaft, the toothed wheel thereon, which is provided with a guard *e* around part of its circumference, the pawls *a* and *b*, engaging with the toothed wheel, and one of which rides on the guard during a part of the revolution of the wheel, and means for actuating the pawls.

6. In a circular-knitting machine, the combination, substantially as set forth, of the spring-actuated clearing-cam C^3, the lever C^5, connected therewith, the lever C', the plunger C^6, interposed between the levers C' and C^5, the cam C, having a recess into which a projection on the lever C' enters, and means for actuating the cam C.

412,601. INKSTAND. JOHN R. COOPER, Rochester, N. Y. Filed May 31, 1889. Serial No. 311,939. (No model.)



Claim.—1. The combination, with an ink-reservoir provided with a filling opening closed by a removable stopper and mounted upon a rigid supporting-stand, of the flexible ink-holder at the base of the reservoir, and having the pen-dip mouth-piece by its minute outflow-opening directly attached to the flexible ink-holder below the body of ink, whereby the pressure of the pen alone in the mouth-piece will, by the contracting of the flexible ink-holder, cause sufficient ink to gravitate into the pen-dip for filling the pen, the residue of ink upon the removal of the pressure and the resumption of a normal position of the parts returning to the ink-holder, substantially as described, and for the purpose herein set forth.

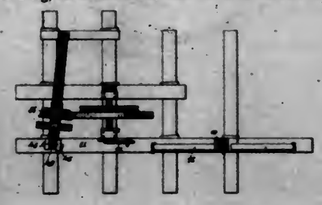
2. The combination, with the flexible ink-holder mounted upon a rigid stand, of the mouth-piece provided with the minute opening connected directly to the flexible ink-holder below the body of ink and having the inwardly-extending flange upon the open edge of the pen-filling mouth-piece for the prevention of an overflow of ink, substantially as described and herein set forth.

412,602. WELL-DRILLING RIG. GEORGE CORBETT, Bradford, Pa. Filed Oct. 4, 1888. Serial No. 287,131. (No model.)

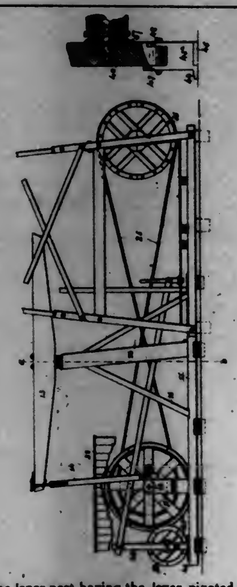
Claim.—1. In a rig, the combination, with the main sill, the driving-shaft, and a walking-beam connected with said shaft, of a samson-post planted in said main sill, leaning beyond the perpendicular toward the drawing-shaft and supporting said walking-beam, substantially as and for the purposes set forth.

2. In a rig, the combination, with the main sill, the driving-shaft mounted thereon, and the walking-beam adapted to receive motion from said shaft at one end and to carry the drilling-rope at the other, of a samson-post supporting said beam and leaning beyond the perpendicular toward the drawing-shaft, and a brace between said post and sill, substantially as set forth.

3. In a rig, the combination, with the main sill and the sand-



412,602.



reel lever 49, of the lever-post having the lever pivoted thereto and the projections therefrom, and the pieces 46, as set forth.

412,603. THILL-COUPLING. FRANCIS R. COX, Sandwich, Ill. Filed Aug. 13, 1888. Serial No. 282,602. (No model.)



Claim.—1. The combination, with a shackle having a draw-iron formed integral therewith and recessed upon its upper side, of a hook pivoted to said draw-iron, both ends thereof being bifurcated to embrace the draw-iron and co-operating with said recessed draw-iron to form a thill-pin bearing, and a thill or pole iron having a transverse pin or bolt which is adapted to be retained between the draw-iron and hook by a suitable retaining-nut bearing against the free end of said hook, the parts being constructed substantially as shown.

2. The combination, with a shackle having a forwardly-projecting draw-iron C and bolt D, said draw-iron having a recess *c* above the bolt, of a hook E, having bifurcated ends, the rear ends being pivoted to the draw-iron, and a nut *d*, adapted to bear upon the forward bifurcated ends of the hook to prevent movement of the same, substantially as shown, and for the purpose set forth.

412,604. SPONGE-CUP. HENRY CROSSON, Washington, D. C. Filed July 24, 1888. Serial No. 318,542. (No model.)



Claim.—1. As an article of manufacture, a cup having a sponge-receiving holder, a rim extending around outside of said holder, so as to be out of contact with a sponge therein and made higher than the portion of the cup between it and the holder, and one or more openings connecting the interior of the holder with the space between the latter and the rim, substantially as and for the purpose set forth.

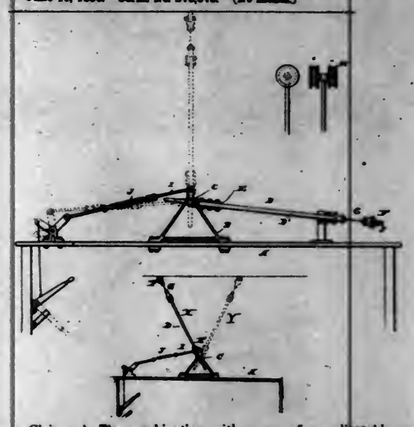
2. As an article of manufacture, a cup having within it a series of fingers adapted to receive and hold a sponge out of contact with the cup edge, at their upper ends made separate and standing away from such edge, substantially as and for the purpose set forth.

3. As an article of manufacture, a cup having within it a series of sponge-holding fingers or projections extending upward and inward with their upper ends within and some distance from the edge of the cup, substantially as and for the purpose described.

4. As an article of manufacture, a sponge-holder consisting of a dish or cup having extending upwardly and inwardly within it a series of fingers adapted to engage and hold a sponge, such fingers being separated from each other and made tapering toward their upper ends, substantially as and for the purpose specified.

5. As an article of manufacture, a cup having extending upwardly from points within and below the level of its rim a series of fingers adapted to grasp and hold a sponge between them and having spaces between their sides for the passage of water, substantially as and for the purpose described.

412,605. ELECTRIC RAILWAY. LEO DAFT, Plainfield, N. J. Filed June 11, 1888. Serial No. 276,670. (No model.)



Claim.—1. The combination with a car, of an adjustable arm mounted on the top thereof and adapted to bear upward against and to make moving contact with an overhead conductor, and operating-connections within reach of the engineer, substantially as described.

2. The combination, with a car, of a support mounted on the top thereof, an arm one end of which is pivotally supported thereby, a contact device carried on and extending from the end of the arm, and manual connections to operate and hold the arm upward in contact with an overhead conductor, substantially as described.

3. The combination, with a car, of an arm upon the roof thereof, an elastic connection between the arm and contact device and elastic connections with the arm, so that it may accommodate itself to the inequalities of the road or conductor, substantially as described.

4. The combination, with a trolley or brush bearing upward against a conducting-wire, and its supporting and carrying connections on top of the car, of a shifting or reversing mechanism therefor fitted within the car-roof, substantially as described.

5. The combination, with an overhead conductor and electrically-propelled vehicle, of a contact device adapted to travel along said conductor, a flexible resilient support carrying the contact device at one end and supported at the other, and a shifting or reversing mechanism for said support, substantially as described.

412,606. TYPE-SETTING MACHINE. LORENZO DOW, Boston, Mass., assignor to the American Type Setter Company, Portland, Me. Filed Nov. 13, 1885. Serial No. 182,771. (No model.)

Claim.—1. In type-setting machines of a curved or circular shape, the tubes or channels converging and twisted, substantially as described, and for the purposes specified.

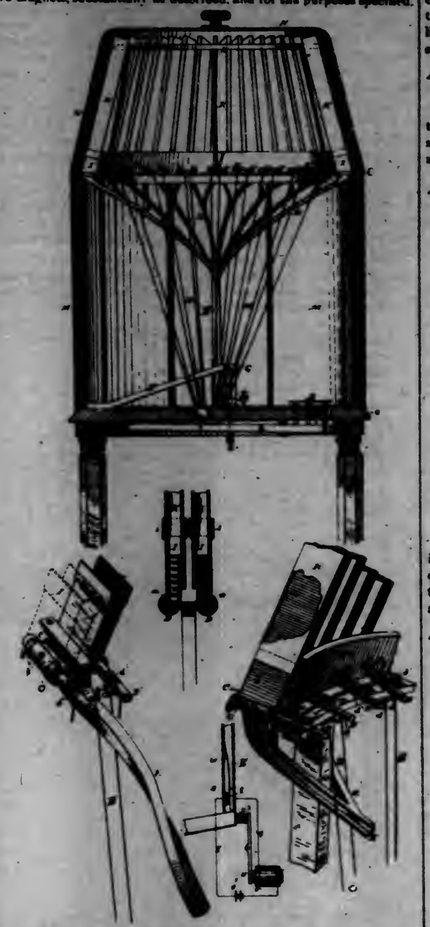
2. In type-setting machines, the short fixed type-channels I, fitted at the upper end to receive and hold in position the removable channels K, substantially as described.

3. In type-setting machines, the base or ring, in combination with the twisted converging channels or tubes, substantially as described, and for the purposes set forth.

4. In type-setting machines, the channels, part of which are fixed and part removable, in combination with the rollers, substantially as described.

5. In type-setting machines, the ejecting-rollers, in combination with the actuating-rods and a key-board, substantially as described.

6. In type-setting machines, the rollers, in combination with electro-magnets, substantially as described, and for the purposes specified.



7. In type-setting machines, the combination of the rollers, the converging and twisted tubes or channels, and the pusher by which the type are made to advance in the stick, substantially as described, and for the purposes specified.

8. In type-setting machines, the rollers, in combination with the pin or stop and the coiled spring, substantially as described, and for the purposes described.

9. In type-setting machines, the base or ring, in combination with converging tubes or channels and pushers actuated by levers through the keys, substantially as described, and for the purposes specified.

10. In type-setting machines actuated as set forth, the pusher A A, the tube, with its spring, and the stick, in combination with the base or ring, the type-channels, and the rollers, substantially as described, and for the purposes described.

11. In type-setting machines, the universal bar or lever, in combination with the pusher, the converging channels, and the base or ring, and the type-channels, substantially as described, and for the purposes set forth.

12. In type-setting machines, the circularly arranged type-channels, in combination with ejecting-rollers, substantially as described, and for the purposes set forth.

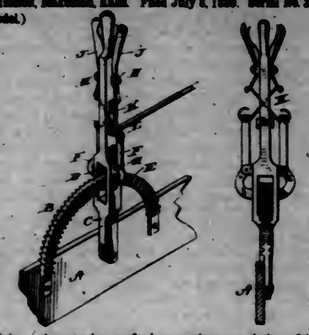
13. In type-setting machines, the combination of the ejecting-rollers in pairs with the type-channels above in pairs, and the conveyer-tube below, one of the said tubes coming between each pair of rollers and channels, substantially as and for the purposes set forth.

14. In a type-setting machine of the curved or circular form, the combination of the inclined type-channels with the ejecting-rollers and the converging and twisted tubes below, whereby the type when delivered from the channels above fall directly into the tubes below, substantially as described.

412,607. TREATING LAMP-WICKS. THOMAS DOLAN, Greenville, N. H. Filed Mar. 7, 1889. Serial No. 302,330. (No specimens.)

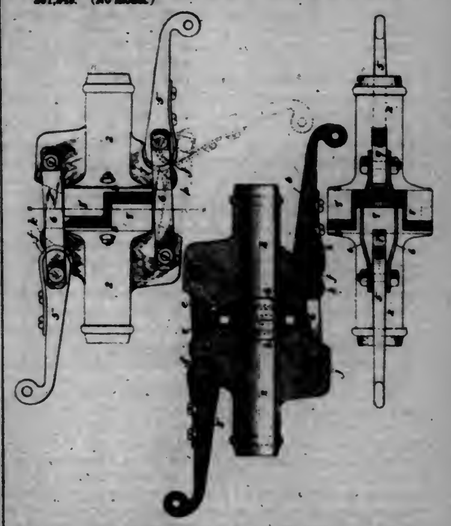
Claim.—The method of treating lamp-wicks composed of vegetable fiber, the same consisting in first saturating said wicks with a solution of vinegar and after drying further saturating and impregnating with chloride of zinc, substantially as set forth.

412,608. REVERSING-LEVER FOR LOCOMOTIVES. GEORGE W. RAYMOND, Nahant, Mass. Filed July 6, 1889. Serial No. 316,969. (No model.)



Claim.—As an attachment for locomotives, consisting of the rack having teeth on each side, the lever traveling on said rack, the detents pivoted to the lever for engaging the teeth of the rack, the levers pivoted to said rack, and the springs connecting the said levers and detents, all arranged and operating substantially as described.

412,609. STEAM-COUPLING. CHARLES A. HARRISON, Lynn, and ROBERT D. SUTHERLAND, Boston, Mass. Filed Nov. 19, 1888. Serial No. 291,349. (No model.)



Claim.—1. A coupling composed of two members, each having a concave seat, a metallic gasket permanently secured to it and provided with a flat outer surface to bear against the gasket of the other member, and a convex back formed to fit and move upon said seat, whereby said gaskets are enabled to tip independently and adjust themselves to the relative positions of the members, as set forth.

2. A coupling composed of members having concave seats, permanently-secured metallic gaskets having flat outer surfaces and convex backs fitted to move on said seats without disturbing the con-

tinuity of their bearing thereon, and levers for drawing said members together, substantially as described.

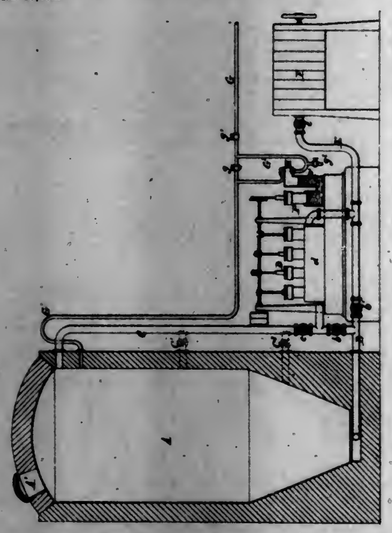
3. A coupling composed of members having concave seats, permanently-secured metallic gaskets having plane or flat outer surfaces, and convex backs fitted to move on said seats, external lugs 7, and yielding toggle-joints co-operating with said lugs, as set forth.

4. A coupling composed of members having concave seats, metallic gaskets fitted to tip or move on said seats, external lugs 7, links 6, pivoted to the body portions of the members, levers 5, pivoted to the free ends of said links and having the shorter and longer arms, and the springs or yielding terminals on said shorter arms, as set forth.

5. A coupling member having a concave seat *c*, a gasket formed with a convex back *b*, fitted to said seat and provided with a marginal flange *d*, and a retaining-ring secured to the body of the member outside of said flange, said ring being arranged to permit a tipping movement of the gasket-flange, as set forth.

6. A coupling composed of two members, each having a compressive toggle-joint and a seat for a like toggle-joint on the other member, each toggle-joint being composed of a link pivoted at one end to an ear on one of the coupling members, and a lever pivoted to the free end of the said link and having a longer outer arm and a shorter convex-ended inner arm, the bearing portion *k* of which is at the longitudinal center of said shorter arm, whereby, when the maximum pressure of the toggle-joint is attained, the parts thereof are substantially in line with each other, and are therefore in position to maintain said pressure and to be kept in operative position thereby, as set forth.

412,610. APPARATUS FOR APPLYING CHLORINE TO THE EXTRACTION OF GOLD FROM ORES. JAMES B. HANNAY, Cove Castle, Loch Long, County of Dumbarton, Scotland. Filed Apr. 17, 1889. Serial No. 307,582. (No model.) Patented in England Jan. 16, 1889, No. 841; in France Apr. 6, 1889, No. 197,279, and in Belgium Apr. 6, 1889, No. 86,732.



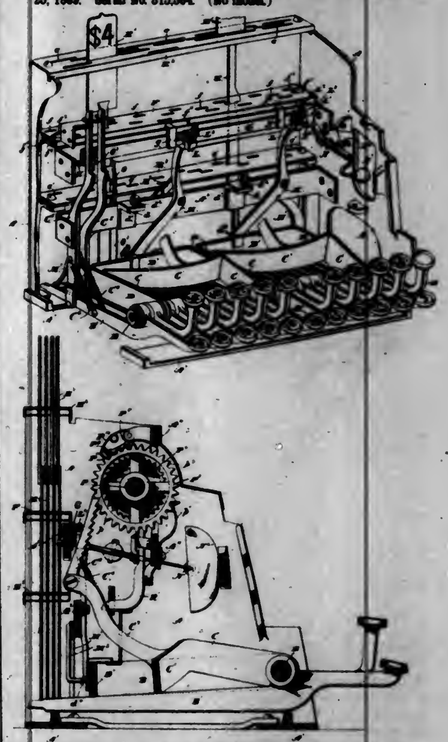
Claim.—1. In apparatus for applying chlorine to the extraction of gold from ores, the combination of a closed vessel to be charged with the ore-sludge to be treated, pumps for circulating the sludge through the said vessel, a pipe connecting the upper part of the said vessel with the suction-opening of the said pumps, a pipe connecting the lower part of the said vessel with the delivery-opening of the pumps, a pump for supplying chlorine gas under pressure into the said vessel, a pipe connecting the suction-opening of the said pump with a supply of chlorine gas, and a pipe connecting the discharge-opening of the said pump with the upper part of the said vessel, substantially as herein described.

2. In apparatus for applying chlorine to the extraction of gold from ores, the combination of a closed vessel to be charged with the ore-sludge to be treated, pumps for circulating the sludge through the said vessel, a pipe connecting the upper part of the said vessel with the suction-opening of the said pumps, a pipe connecting the lower part of the said vessel with the delivery of the pumps, a filter-press connected by a pipe to the discharge-opening of the circulating-pump for receiving the sludge after treatment in the said vessel, a pump for supplying chlorine gas under pressure into the said vessel, a pipe connecting the suction-opening of the said pump with a supply of chlorine gas, and a pipe connecting the discharge-opening of the said pump with the upper part of the said vessel, substantially as herein described.

3. The combination, with the chlorinating-vessel A, of circulating-pumps D, pipes B, provided with cocks *b b'*, connecting with the suction and delivery openings of the pumps, the pipe C, having cock *c*, and connecting with the suction-opening of the pumps and with the pipe B, a suitable filter-press F, and the pipe E, having cock *e*, and connected with the filter-press and with the pipe B, substantially as described.

4. The combination, with the chlorinating-vessel A, of a pump P, connected to a chlorine-supply by pipes G G³, shut-off cocks *g g'*, air-inlet cock *g³*, and pipe G', communicating with pipe G and with the chlorinating-vessel, substantially as and for the purposes described.

412,611. CASH REGISTER AND INDICATOR. ALFRED M. HARRISON, Dayton, assignor to John F. Pfeifer, Cincinnati, Ohio. Filed June 25, 1889. Serial No. 315,564. (No model.)



Claim.—1. In an indicating mechanism, in combination with a series of indicator-rods provided with locking-shoulders, the locking-plate for engaging such shoulders and a movable bar or piece adapted to move the locking-plate into and out of its rod-locking position, substantially as and for the purpose specified.

2. In an indicating apparatus, in combination with the shouldered rods and the locking-plate therefor, a movable bar and connections between such bar and the locking-plate, whereby the bar at opposite ends of its movement moves the plate in opposite directions, substantially as and for the purpose shown.

3. In an indicating apparatus, in combination with the shouldered rods and the locking-plate therefor, a movable bar, a spring drawing such bar in one direction, and suitable connections between the plate and the bar whereby the latter, as moved to put the spring under stress, moves the locking-plate out of operative position and on its return movement by the spring moves the plate into locking position, substantially as and for the purpose set forth.

4. In combination with the rod-locking plate, a movable bar, a spring forcing such bar in one direction, an arm on the bar, and shoulders on the plate adapted to be engaged by the arm on the bar as such bar approaches the opposite ends of its travel, substantially as and for the purpose described.

5. In combination with the movable bar provided with one or more arms, the rod-locking plate provided with a notch for each of the rod-arms and a spring forcing the bar in a direction to carry and hold the plate in rod-locking position, substantially as and for the purpose specified.

6. In combination with the bar provided with one or more arms, the indicator-rod-locking plate provided with one or more notches made wider than the arm or arms on the bar, a spring drawing the bar in one direction, and means for forcing it in the other direction, substantially as and for the purpose shown.

7. In combination with the indicator-rod-locking plate and the spring-retracted bar, connections between the plate and bar whereby the latter moves the former as it approaches the ends of its movement in opposite directions, a pawl on the bar, and a lever adapted to engage such pawl, so as to force the bar over against the stress of the spring and then let it fly back again, substantially as and for the purpose set forth.

8. In combination with the spring-retracted bar having one or more arms, the indicator-rod-locking plate having one or more notches for the arm or arms on the bar, a pawl on the bar, and a lever to engage such pawl, substantially as and for the purpose described.

9. In combination with the indicator-rod-locking plate and the bar for moving the same, connections between the bar and plate whereby the former as it is moved in opposite directions reciprocates the plate, a spring for moving the bar in one direction, an adjustable pawl on the bar, and a lever to engage such pawl, substantially as and for the purpose specified.

10. In combination with the drawer or till lock, the spring-retracted bar, means for moving the bar against the stress of the spring, a lever connected with the lock, and means on the bar for moving the lever, substantially as and for the purpose shown.

11. In combination with the drawer or till lock and the lever connected therewith, the spring-retracted bar and an adjustable piece on such bar for engaging the lever to cause the lock to be tripped, substantially as and for the purpose set forth.

12. In an indicating apparatus, in combination with the bar for moving the indicator-rod-locking plate into and out of locking position, an alarm-sounding mechanism and means carried by the bar for causing such mechanism to sound an alarm, substantially as and for the purpose described.

13. In an indicating apparatus, in combination with the shoulder-rods and the locking-plate therefor, the movable bar, connections between the same and the plate whereby the latter is moved into and out of locking position by the movements of the bar, an alarm-sounding mechanism, and means on the bar for actuating such mechanism as the bar moves the plate out of its locking position, substantially as and for the purpose specified.

14. In combination with the drawer or till lock and an alarm-sounding mechanism, a movable bar, connections between the same and both the lock and alarm-sounding mechanism whereby the lock is tripped and an alarm is caused to be sounded by movement of the bar, substantially as and for the purposes shown.

15. In combination with the series of indicator-rods and the locking device therefor, the till-lock and means for moving the same, and an alarm-sounding mechanism, the movable bar provided with means for tripping the rod-locking device, raising the till-lock, and actuating the alarm-sounding mechanism, substantially as and for the purpose set forth.

16. In combination with the indicator-rod-locking plate, the alarm-sounding mechanism, the till lock or bolt, and the lever connected therewith, the movable bar having means for moving the plate into rod-unlocking position, and also means for moving the bolt-lever and actuating the alarm-sounding mechanism, substantially as and for the purpose described.

17. In combination with the indicator-rod-locking plate having suitable shoulders for engagement by its actuating device, the drawer latch or bolt and means for raising the same, and the alarm-sounding mechanism, the movable bar having the arm to engage the shoulders on the rod-locking plate, a piece to engage the bolt-raising means, and a lug to actuate the alarm-sounding mechanism, substantially as and for the purpose specified.

18. In combination with the lever of the alarm-sounding mechanism, the movable bar having the lug to engage such lever as the bar moves in one direction and means for shifting the bar to take its lug out of line with the alarm-lever as the bar travels back again, substantially as and for the purpose shown.

19. In combination with the movable bar and a lever for moving the same in one direction, a pawl on the bar to be engaged by the lever, one or more pins on the bar, and switches to engage and guide the bar-pins along an elevated path as the bar travels back again and allow them to drop at the end of the backward travel of the bar, substantially as and for the purpose shown.

20. In an indicating apparatus, in combination with a series of keys and the levers moved through suitable connections with such keys, the reciprocating bar provided with pawls to be engaged by the levers as the latter swing in one direction, and with pins, a spring to retract the bar, and switches to engage and raise the pins and the bar as the bar is retracted, substantially as and for the purpose set forth.

21. In an indicating apparatus, in combination with the two series of keys and the frames engaging the keys of the respective series, the reciprocating bar provided with pawls and with the guide pins or studs, the two levers adapted to engage the pawls to move the bar in one direction, and the spring-switches guiding the pins and bar into and along an elevated path as the bar travels back, so as to carry the pawls clear of the tracks of the lever ends, substantially as and for the purpose described.

22. In an indicating apparatus, in combination with the series of shouldered indicator-rods and the reciprocating locking-plate therefor provided with one or more notches, the movable bar provided with one or more arms to engage the notch or notches in the locking-plate, and with guide-pins, a spring to retract the bar, pawls on the bar, swinging levers to engage the pawls, two series of keys, two frames adapted to be moved by any key in the respective series and to move one of the levers, and suitable switch devices to engage the bar-pins and cause them and the bar to travel in different paths as they move in opposite directions, substantially as and for the purpose specified.

23. In an indicating apparatus, in combination with the indicator-rods and keys for actuating them, levers for causing actuation of the indicator-rod-locking device and the alarm mechanism and levers adapted to be engaged by the keys and themselves engaging arms of the other levers, substantially as and for the purpose shown.

24. In an indicating apparatus, in combination with the separate sub-series of keys and the separate independent keys, a lever, and a swinging frame for each sub-series, each frame being adapted to be engaged by any key in the respective sub-series and itself engaging and actuating one of the levers, separate independent keys, levers adapted to be engaged thereby, and themselves engaging arms of the other levers, substantially as and for the purpose set forth.

25. In combination with the reciprocating bar, the stationary supporting bar or plate therefor having openings or slots, arms on the movable bar embracing the upper edge of the supporting-plate, and pins on the bar entering the plate-slots, spring-switches situated in such slots having the elevated portion, and the downwardly-inclined portion extending down into the track of the bar-pins, substantially as and for the purpose described.

26. In a cash register and indicator, in combination with the key-levers and the indicator-rods actuated thereby, registering mechanism operated by the different key-levers, means for locking the indicator-rods when elevated, an alarm mechanism, a movable piece for tripping such lock and actuating the alarm mechanism, levers for moving such piece, and swinging frames for actuating such levers engaged by the key-levers, substantially as and for the purpose specified.

27. In a registering mechanism, in combination with a toothed wheel, a movable brake having a nose to engage the wheel-teeth to lock the wheel, and a friction device for retaining the brake in its operative position, substantially as and for the purpose shown.

28. In a registering mechanism, in combination with a toothed wheel and the brake to engage the teeth of the wheel so as to lock the latter from turning, a friction-spring engaging such brake, adapted to retain it in engagement with the wheel-teeth until it is positively moved, substantially as and for the purpose set forth.

29. In a registering mechanism, in combination with a toothed wheel and a brake-lever having a nose to engage the teeth of the wheel, a friction-spring engaging the side of the lever, so as to retain it as moved into engagement with the wheel-teeth, while leaving it free to be positively moved out of engagement with such teeth, substantially as and for the purpose described.

30. In a registering mechanism, in combination with a toothed wheel, a swinging brake-pawl adapted to engage the teeth of the wheel so as to lock the latter, a slide connected with the pawl so as to move the same into and out of engagement with the wheel-teeth, and a friction device to retain the pawl as moved into or out of operative position, substantially as and for the purpose specified.

31. In a registering mechanism, in combination with a toothed register-wheel, the pivoted brake-pawl, the slide for actuating the same connected therewith, and the friction-spring engaging the side of the pawl, substantially as and for the purpose shown.

32. In a registering mechanism, in combination with a toothed register-wheel, the brake-pawl, the friction-spring engaging the same, and the pawl-actuating slide connected with the pawl and carrying two shoulders or bearings to be struck by a movable piece for actuating the slide, substantially as and for the purpose set forth.

33. In a registering mechanism, in combination with a toothed register-wheel, a key, and connecting devices between the key and wheel whereby the latter is turned as the key is moved, a movable piece actuated by the key, the brake-pawl adapted to engage the teeth on the wheel, a friction-spring engaging the pawl, and a slide connected with the pawl so as to actuate it, and provided with two bearings or shoulders to be struck by the movable key-actuated piece as the latter moves in opposite directions, substantially as and for the purpose described.

34. In a registering mechanism, in combination with a series of keys and a toothed register-wheel, connections between the wheel and the keys whereby the wheel is moved as any key is raised, a brake-pawl adapted to engage the teeth on the wheel, the friction-spring engaging the pawl, a swinging frame extending across above the keys, and a slide connected with the pawl, having bearings or shoulders arranged above and below the frame, substantially as and for the purpose specified.

35. In combination with a toothed register-wheel, a series of keys, and means for actuating the wheel as any key is moved, the brake-pawl, the friction-spring engaging the same, a swinging frame extending across the series of keys, and the slide connected with the pawl, having the adjustable bearing to be struck by the frame just as a key finishes its upward movement and a shoulder or bearing below the frame to be struck by the latter on its downward movement, substantially as and for the purpose shown.

36. In a registering mechanism, in combination with a toothed register-wheel, a series of keys, a frame adapted to be moved different distances by the different keys, and connections between such frame and the wheel whereby the latter is caused to turn by the rising of the frame, a second frame moving with any raised key, a brake-pawl to engage the wheel-teeth to lock the wheel from turning, a friction device to retain such pawl as moved into or out of engagement with the wheel-teeth, and a slide connected with the pawl, having the bearings to be engaged by the second frame arranged above and below such frame, substantially as and for the purpose set forth.

37. As a means for moving a toothed wheel or other device, in combination with a rocking piece and a pawl carried thereby, a spring engaging the pawl and rocking piece so as to be compressed or put under greater strain as the rocking piece is moved to actuate the pawl, substantially as and for the purpose specified.

38. As a means for turning a toothed register-wheel, a rocking piece, a pawl for engaging the teeth on the wheel, pivotally connected with the rocking piece so as to be moved to turn the wheel as the piece is rocked, and a spring bearing upon the pawl, attached to the rocking piece so as to be forced toward the pawl as the piece rocks to move the pawl forward, substantially as and for the purpose described.

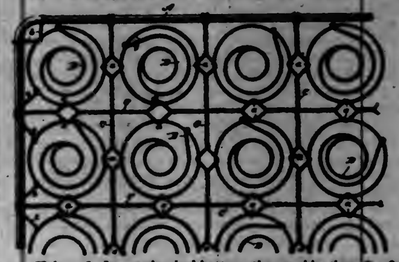
39. In combination with a wheel having a tooth or projection and a second wheel having a series of teeth, a rocking-piece having an arm in the path of the tooth on the first wheel, a pawl pivotally connected with the rocking piece so as to be moved thereby and adapted as moved in one direction to engage the teeth on the second wheel and ride over the same as moved in the opposite direction, and a spring bearing upon the outer end of the pawl, attached to the rocking piece so as to be forced toward the pawl as the piece rocks, substantially as and for the purpose specified.

40. In combination with a wheel provided with a tooth or projection and a second wheel provided with a series of teeth, the rocking piece provided with the two arms, of which one is in the path of the tooth on the first wheel, a pawl pivoted to the other arm and engaging the teeth on the second wheel, and a spring bearing upon the pawl and attached to the rocking piece so as to be forced toward said pawl as the piece is rocked to cause the pawl to turn the second wheel, substantially as and for the purpose set forth.

41. In combination with a wheel provided with a tooth or projection and a second wheel provided with a series of teeth, a rocking piece having the two arms, one in the path of the tooth on the first wheel, a pawl pivoted to the other arm and having its nose for engaging the teeth on the second wheel, adapted as the pawl is drawn in toward the rocking piece to engage the wheel-teeth to turn the wheel and having its outer side inclined, a spring attached at one end to the rocking piece and projecting out over the pawl so as to be carried down toward the latter as the rocking piece is moved to draw the pawl inward and having its outer end, engaging the outer end of the pawl, hooked, substantially as and for the purpose described.

42. In a registering mechanism, the means for turning one register-wheel at each revolution of another, which consists of a tooth on one wheel, a series of teeth on the other wheel, a rocking piece having the two arms, the pawl on one of the arms having its upper side grooved, the spring engaging the groove in the pawl attached to the rocking piece so that it is forced down upon the pawl as the piece is rocked to draw the pawl inward and having its outer end hooked over the pawl end, substantially as and for the purpose specified.

412,612. SPRING BED-BOTTOM. HENRY H. HENRY, St. Louis, Mo. Filed May 21, 1889. Serial No. 311,530. (No model.)



Claim.—1. In a spring bed-bottom, the combination of a frame A, bed-springs B, arranged in transverse and longitudinal rows within the said frame, and the longitudinal and transverse tie-wires C, extending entirely across the frame and securely fastened to the same at their ends, these tie-wires being arranged between the rows of springs, so as to intersect each other, and being constructed each of two strands of wire tightly twisted together, loops *a a* being formed by separating the strands of the tie, these loops receiving the end coils of the springs, as shown, whereby the entire bed of springs will be firmly connected together and to the frame, thereby preventing lateral movement of the springs in all directions, substantially as described.

2. The combination of a frame, springs arranged in rows within the frame, and the parallel intersecting tie-wires C, secured to said frame and composed of twisted wire strands, the ends *c c* of these tie-wires being wrapped around the frame and turned inwardly and secured to the top coils of the border springs, and loops *a a* being formed in the said tie-wires and connected to the top coils of the springs, whereby each spring is securely braced at four different points, substantially as described.

412,613. COLORING-MATTER. ALBERT HERRMANN, Höchst-on-the-Main, Germany, assignor to the Farbwerke, vormals Meister, Lucius & Brüning, same place. Filed Jan. 15, 1889. Serial No. 296,203. (Specimens.) Patented in Germany Aug. 16, 1885; in Belgium Sept. 3, 1888, No. 83,115; in France Sept. 5, 1888, No. 192,807, and in Italy Sept. 30, 1888, XLVII, 176.

Claim.—The process of making blue-green dye which consists in dissolving meta-amidotetralkyldiamidotriphenyl methane in a mineral acid, diazotizing by a nitrous acid or a nitrate, in the usual way, decomposing the diazo compound by boiling with water, precipitating by the addition of sodium sulphate and boiling the resulting oxy-leuco base with water until it becomes neutral, and sulphonating the same by heating with concentrated or fuming sulphuric acid, as set forth.

412,614. PREPARING COLORING-MATTER. ALBERT HERRMANN, Höchst-on-the-Main, Germany, assignor to the Farbwerke, vormals Meister, Lucius & Brüning, same place. Filed Jan. 15, 1889. Serial No. 296,202. (Specimens.) Patented in Belgium Sept. 3, 1888, No. 83,115; in France Sept. 5, 1888, No. 192,807, and in Italy Sept. 30, 1888, XLVII, 176.

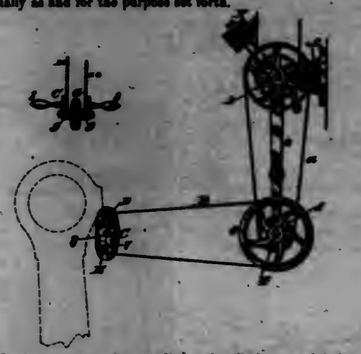
Claim.—The process of making fast blue-green color by dissolving meta-amidotetraethyldiamidotriphenyl methane in fuming sulphuric acid, heating the solution until a sample gives a clear mixture with cold ammonia, adding a soluble alkaline salt, as calcium or sodium oxide, oxidizing the leuco sulphonic compound thus obtained with a peroxide of lead or manganese, and precipitating the metallic base by dilute sulphonic acid, and filtering and evaporating to dryness the color solution, as set forth.

412,615. COLORING-MATTER. ALBERT HERRMANN, Höchst-on-the-Main, Germany, assignor to the Farbwerke, vormals Meister, Lucius & Brüning, same place. Filed Jan. 15, 1889. Serial No. 296,201. (Specimens.) Patented in Germany Aug. 16, 1888; in Belgium Sept. 3, 1888, No. 83,115; in France Sept. 5, 1888, No. 192,807, and in Italy Sept. 30, 1888, XLVII, 176.

Claim.—The new fast green-blue coloring-matter obtained, as described, from the etherized compounds of metaoxytetralkyldiamidotriphenyl methane or metamethoxy or metaethoxy tetralkyldiamidotriphenyl carbinol in the form of a copper-red powder of metallic luster, easily soluble in water, and giving, when so dissolved, a blue color which remains when soda-lye is added or when boiled with a solution of ammonia or soda, changes to violet only when boiled with soda-lye, and turns green on the addition of mineral acids, as set forth.

412,616. APPARATUS FOR GRINDING AND POLISHING METALS, &c. JOHN A. HEIS, Philadelphia, Pa. Filed Oct. 27, 1888. Serial No. 289,269. (No model.)

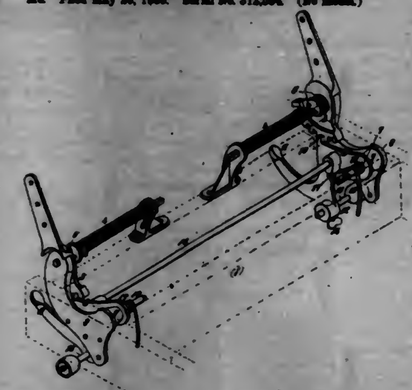
Claim.—1. An apparatus for grinding and polishing metal, consisting of a bracket with rotary shaft having pulleys thereon, balanced arms pivotally mounted on said shaft, a shaft journaled in the lower end of said arms and having pulleys thereon, a hand implement with rollers thereon, a belt connecting one of the bracket-shaft pulleys with one of the pulleys on the shaft in the lower end of the arms, and a grinding and polishing belt connecting one of the arm-shaft pulleys with the rollers of the hand implement, said parts being combined substantially as and for the purpose set forth.



2. In an apparatus for grinding and polishing metal, balanced arms mounted on a rotary shaft and having at their lower ends a rotary shaft with pulley carrying a grinding and polishing belt, substantially as and for the purpose set forth.

3. In an apparatus for grinding and polishing metal, a rotary shaft with pulley, a hand implement with yielding rollers, and a grinding and polishing belt connected with said pulley and rollers, said parts being combined substantially as and for the purpose set forth.

412,617. ATTACHMENT FOR CHAIRS. JOHN HOGAN, St. Louis, Mo. Filed May 20, 1889. Serial No. 312,094. (No model.)



Claim.—1. In an attachment for chairs, lounges, &c., the combination of the body portion, a back or rest, racks secured to the back or rest, levers pivoted to the body, extensions 11 and 12 on the levers, said extensions 11 being adapted to be pressed down to disengage the levers from the racks, and said extensions 12 being adapted to be pressed in to detach the parts, and rods 13, with heads 15, on the extensions 12, substantially as and for the purpose set forth.

2. In an attachment for chairs, lounges, &c., the combination of the body, back or rest, racks secured to the back or rest, levers pivoted to the body and connected by a rod 16, set-screws 17 for holding the levers on the rod, pins 18, upon which the levers are mounted, and springs 19, one end of each of which bears against a fixed point and the other end against one of the levers, said levers having extensions adapted to be engaged by the hand or foot for releasing the racks, substantially as and for the purpose set forth.

3. In an attachment for chairs, lounges, &c., the combination of a body, back or rest, racks secured to the back or rest, plates 8, secured to the body and provided with cone-shaped projections 9, having pins 18, levers fitting over the pins 18, springs surrounding the pins 18, one end of each of said springs bearing against a fixed point and the other end against one of the levers and bearing against the levers, and extensions on said levers adapted to be engaged by the hand or foot for releasing the racks, substantially as and for the purpose set forth.

4. In an attachment for chairs, lounges, &c., the combination of a body, a back or rest, racks secured to the back or rest, levers pivoted to the body and engaging the racks, projections 12 on the levers, and adjustable rods 13 on the extensions, substantially as and for the purpose set forth.

5. In an attachment for chairs, lounges, &c., the combination of the body, back or rest, racks secured to the back or rest, levers pivoted to the body, a rod fitting in sockets in the levers, set-screws by which the levers are secured to the rod, and extensions on said levers for pressing them out of engagement with said racks, substantially as and for the purpose set forth.

412,618. PROCESS OF AND APPARATUS FOR PUNCHING AND FEEDING BLANKS. FREDERICK HOTZ, Cincinnati, Ohio. Filed July 22, 1889. Serial No. 318,276. (No model.)



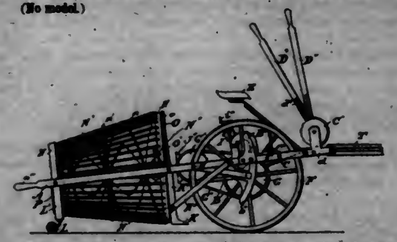
Claim.—1. The process of punching blanks from a fed-in strip, consisting in first punching out the blank, then reinserting said blank into the strip, and then feeding the strip carrying the punched-out blank to a discharger, substantially as described.

2. In a blank-punching machine, the combination, with a reciprocating plunger carrying a punch and a discharger, of a die-plate for the fed-in strip provided with perforations beneath said punch and discharger, and a yielding follower beneath said punch for replacing the punched-out blanks into the strip, substantially as described.

3. In a blank-punching machine, the combination, with a reciprocating plunger carrying a punch and a discharger, of a die-plate for the fed-in strip provided with perforations beneath said punch and discharger, a yielding follower beneath said punch for replacing the punched-out blanks into the strip, and mechanism for feeding in the strip, substantially as described.

4. The combination and arrangement of the punch G, discharger H, die-plate I, provided with perforations *b c*, and tube J, provided with spring *d* and follower *e*, substantially as and for the purpose described.

412,619. POTATO DIGGER AND PICKER. HERBERT HOOPER, Port Perry, Ontario, Canada. Filed Feb. 9, 1889. Serial No. 299,282. (No model.)



Claim.—1. A potato-digger consisting of a bar-iron frame carrying a platform, the gearing, shoe, and a sifting-cage, and supported at the rear by a caster-wheel and near the front by wheels at an adjustable height, an axle journaled in levers having their rear end pivoted near the rear of the front portion of the frame and within the same, and having their segmental fronts attached to chains secured to chain-wheels upon a shaft carrying ratchet-wheels held by detents and operated by hand-levers, wheels journaled upon the axle and operated by ratchet-connections and adapted for lateral adjustment, a sprocket-wheel journaled upon the axle, a clutch feathered upon the axle and pressed into gear by a spring, and controlled by a shifting-fork controlled by an operating device, a shaft parallel to the axle and in the rear thereof, carrying a smaller sprocket-wheel and geared to the other sprocket-wheel by a pitch-chain, said shaft carrying a miter-wheel, the conical sifting-cage composed of rods connected by longitudinal wires or bars and having a shaft journaled longitudinally

upon the rear portion of the main frame and carrying a miter-wheel gearing in the miter-wheel upon the rear cross-shaft, said cage having internal Archimedean screw-blades and provided with shields at the front, rear, and on one side, and a shoe K, carried on a bracket K', secured to the frame in front of the cage, substantially as set forth.

2. In a potato-digger, the combination of the bar frame A A' A'', the longitudinal bars A'' being arched over the axle to allow the axle to rise above the level of the frame, and carrying a platform A''', the axle B, journaled in the levers B', the levers B, having segmental front ends b'', and having their rear ends pivoted at the rear of the front portion of the frame and to the inside thereof, and the upper end of each of the segments having the end of a chain secured thereto, the platform A''', secured upon the bars A'', a shaft D, journaled upon the front of the frame A, chain-wheels C', secured to said shaft, chains C, each having one end secured to one of the chain-wheels C' and the other to the segments b'' and passing over a friction-pulley C', ratchet-wheel D', secured upon the shaft D by set-screw and having a detent d' gearing into it, lever D'', pivoted upon the shaft by an oblong eye, and having a dog d'', adapted to engage the teeth of the ratchet-wheel, substantially as set forth.

3. In a potato-digger, the combination of the frame A A' A'' and foot-board A''', the shaft D, journaled thereon, chain-wheels C', keyed to said shaft, ratchet-wheel D', secured upon one end of said shaft by set-screw, a lever D², pivoted to said shaft by an oblong eye, and having a dog d², adapted to engage the teeth of said ratchet-wheel d², a detent pivoted to said frame A and engaging the teeth of said ratchet-wheel and having a handle d³, substantially as set forth.

4. In a potato digger, the combination of the frame A A' A'', the levers B' and axle B, the wheels F, journaled upon said shaft, and connected therewith by a ratchet movement, the sprocket-wheel G, journaled upon said axle and provided with lateral teeth adapted to be engaged by a clutch, the clutch H, feathered to said axle and adapted to engage said sprocket-wheel and controlled by a shifting-fork, the spring H', held by a collar on said axle and adapted to push the clutch H' into gear, the shifting-fork I, engaging said clutch H and held at one end upon a rod, the rod or bolt I', holding one end of said fork and secured to the bars A'' parallel to the axle B, the bracket I'', secured to one of the bars A'' and having a hub or bearing i'', the flat bar I''', journaled in said bracket I'' and provided with handle i''', and adapted to bear with one edge on the shifting-fork I and press the same so as to push the clutch H out of gear, substantially as set forth.

5. In a potato-digger, the combination of the frame A A', the bracket K', braced by a brace K'' and carrying the shoe K, and the shoe K, secured to said bracket, substantially as set forth.

6. In a potato-digger, the combination of the frame A A' A'', the conical sifting-cage N, having open ends, mounted upon a shaft M, journaled upon said frame, and connected by gearing, said ends connected by longitudinal bars or wires n and held by a hoop n', and said cage provided with internal Archimedean screw-blades N' N'', and with an adjustable front shield O and side shield Q, substantially as set forth.

7. In a sifting-cage of a potato-digger, the combination of the central shaft M, the open ends N, connected by longitudinal bars or wires n, held by a hoop n', said ends varying in diameter, being larger in front and smaller at the rear, so as to give a conical shape, the Archimedean screw-blades N', extending through the cage, and the short screw-blades N'', the front shield O, held adjustably to the cross-bar of the frame by a slotted bar O', pivoted to said plate, and the side shield Q, secured to the frame, substantially as set forth.

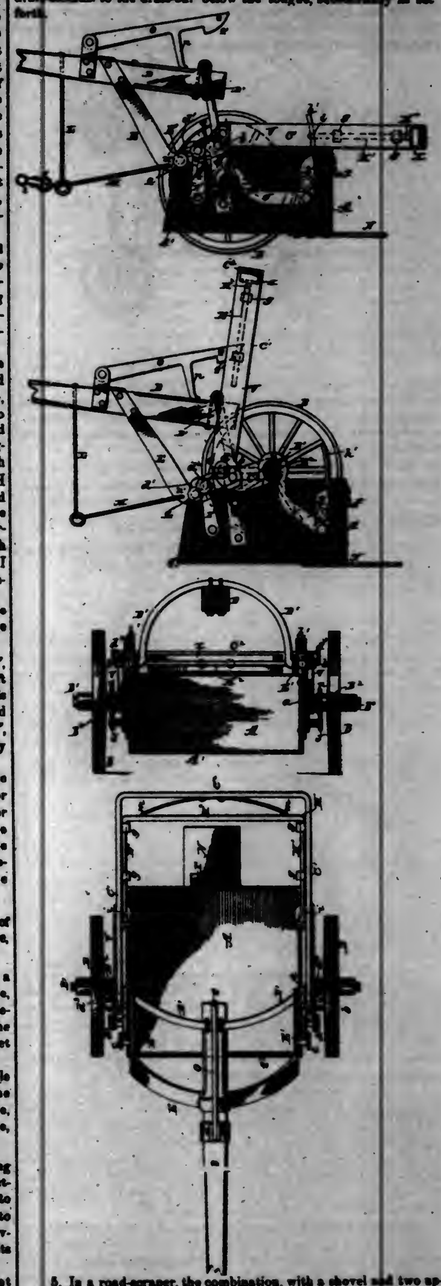
412,620. ROAD-SCRAPER. EDWARD HOUSE, Hunt, assignor of two-thirds to James C. Stubbs and John A. Johnson, both of Pierre, Dak. Filed June 13, 1888. Serial No. 276,975. (No model.)

Claim.—1. In a road-scraper, the combination, with a shovel, a lever carrying axle-spindles, wheels mounted on said spindles, a tongue, and a yoke connecting the tongue and shovel, of a bracket-arm secured to the tongue and having a lateral projection for limiting the upward movement of the front end of the shovel, substantially as set forth.

2. The combination, with a shovel, of a pair of wheels adjustable for height with respect to the shovel, a yoke pivotally secured to the shovel, a tongue having its rear end secured to the center of yoke, and bracket-arms secured to the tongue and to the ends of the yoke, substantially as set forth.

3. In a road-scraper, the combination, with a bent lever carrying axle-spindles, wheels mounted thereon, a tongue, and a yoke connecting the tongue with the shovel and bent lever, of a plate attached to the shovel, a sliding bolt secured to the bent lever and adapted to engage the plate, a bracket having a projection thereon, and a movable hook adapted to engage said projection when the shovel is in its depressed position, substantially as set forth.

4. In a road-scraper, the combination, with a shovel having a flat bottom and vertical sides, which are adapted to excavate soil, a lever having bent arms, stub-axles secured to these arms, and wheels mounted on the axles, of a tongue, a yoke secured to the rear end of the tongue, bracket-arms that support the tongue laterally, a depending draft-bar, stay-rods for the draft-bar, and means for attachment of draft-animals to the draft-bar below the tongue, substantially as set forth.



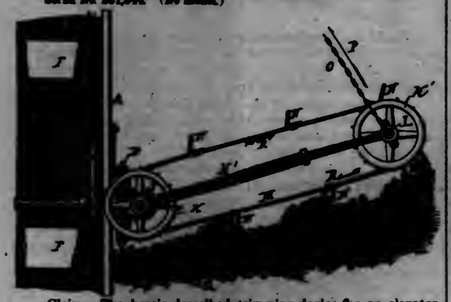
5. In a road-scraper, the combination, with a shovel and two up-

wardly-projecting curved and perforated locking-plates affixed to the opposite sides of the shovel, of a bent lever, each member or arm of which is bent downwardly at its forward end, wheels journaled on axles secured to the bent ends of said members or arms, and a bent sliding bar that is adapted to slide on the bent lever and engage with the perforations in the curved locking-plates, substantially as set forth.

6. In a road-scraper, the combination, with a shovel and a bent lever having two parallel links with bent ends and carrying two stub-axles and two wheels, of two hook-plates pivoted on the shovel-sides and adapted to hook over the axles or wheel-hubs, substantially as set forth.

7. In a road-scraper, the combination, with a shovel having a flat bottom and upright side walls, all adapted to cut earth with their front edges, a tongue, bracket-plates, and an arched yoke provided with journal-ends, which serve as pivots on which the tongue vibrates vertically, of a bent rocking lever, a bent slide-bar, two curved locking-plates, with which the slide-bar can engage, two links, and two vertically-vibrating hooks connected by the links to the bent rocking lever and adapted to look fast to the bracket-arms of the tongue when the bent rocking lever is vibrated vertically, substantially as set forth.

412,621. TRIMMER OR GATHERER FOR COAL-ELEVATORS. LYMAN D. HOWARD, Brooklyn, N. Y., assignor to the Clark-Howard Excavator and Conveyor Company, of New Jersey. Filed July 30, 1888. Serial No. 281,344. (No model.)



Claim.—The herein-described trimming device for an elevator, consisting of the shaft G, journaled in the bearings I K, the bevel-wheel J, adapted to mesh with a bevel-wheel on the lower shaft of the elevator, a frame consisting of side bars, with the non-rotary shaft L connecting the same near their outer ends, the bars H H' being journaled on one end of said shaft G, sprocket-wheels on said shafts L and G, and a chain with flights N thereon, said parts being combined substantially as described.

412,622. RUBBER-DAM CLAMP AND CARRIER. JAMES W. IVORY, Philadelphia, Pa. Filed Oct. 23, 1888. Serial No. 288,927. (No model.)



Claim.—1. The herein-described rubber-dam carrier and clamp, having connected jaws formed with lateral and horizontal lips, and tongues arranged at an angle to said lips, substantially as and for the purpose described.

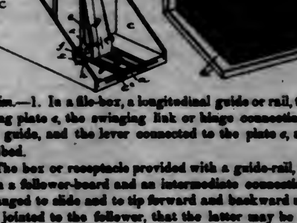
2. The herein-described rubber-dam carrier and clamp, having the connected jaws provided with lips, and tongues punched out of said lips and arranged at an angle thereto, substantially as and for the purpose described.

412,623. WINDOW-SCREEN. CHARLES JESSAL, Savannah, Ga. Filed June 22, 1889. Serial No. 315,312. (No model.)



Claim.—A window-screen consisting of a frame and a panel of wire-gauze provided with openings near its top formed by cutting the vertical strands of wire and bending them outwardly, so as to form barbs, in combination with a short interior curtain of framinous material attached to the frame and extending downwardly from the top of the screen a little below the transverse openings, and being separated a short distance from the plane of the gauze-panel, substantially as described.

412,624. PAPER-FILE. MARK R. JEWELL, Rochester, N. Y., assignor to the Office Specialty Manufacturing Company, same place. Filed Feb. 6, 1888. Serial No. 263,393. (No model.)



Claim.—1. In combination with the tray having the bent or angular rod d^3, the pressure-arm D, with perforated ear d and ears d'.

2. In combination with the tray having the groove front, the plate d^3, angular bar d^3, and pressure-arm D, provided with ears d and d'.

3. In combination with a tray or receptacle provided with bar or guide d^3, the pressure-arm D, and the follower C, independently mounted on said guide, substantially as shown.

4. In combination with the grooved tray, the angular bar d^3, the slotted plate d^3, and the pressure-arm D, mounted on the bar and arranged to turn backward over the front of the tray in the manner shown.

5. In combination with a tray or receptacle and a pressure-arm therein, a pressure-sheet or follower provided with strips c, for transmitting the pressure to the marginal portions of the confined sheets.

6. A pressure-sheet for a filing tray or box, provided with elastic metal strips secured thereto and extending from the middle to the margin.

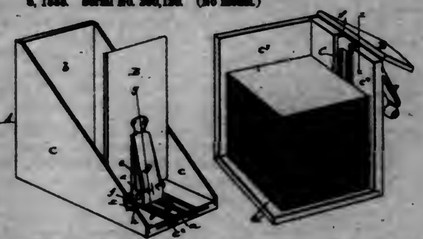
7. The pressure-sheet or follower having the metal stiffening-strips attached to its under and upper faces, and extending from the middle outward.

8. The pressure-sheet having the metal strips applied thereto on the two faces, the strips on one face provided with lips passing through the sheet and engaging the strip on the opposite face.

9. In a paper-file, the tray or receptacle, in combination with the index-sheets connected to each other and to the tray by the devices removable at will from the tray and the pressure-arm independently connected to the tray and arranged to turn outward therefrom, whereby the sheets may be removed without detaching the pressure device.

10. In combination with the tray and the removable clip-plates c', to hold the index-sheets, the pressure-sheet C, independently connected to the tray and provided with slots c^4.

412,625. FILE-BOX. MARK R. JEWELL, Rochester, N. Y., assignor to the Office Specialty Manufacturing Company, same place. Filed Nov. 6, 1888. Serial No. 290,128. (No model.)



Claim.—1. In a file-box, a longitudinal guide or rail, the follower-supporting plate c, the swinging link or hinge connecting said plate with the guide, and the lever connected to the plate c, substantially as described.

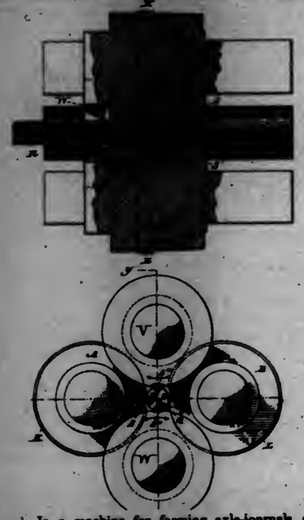
2. The box or receptacle provided with a guide-rail, in combination with a follower-board and an intermediate connecting-link, said link arranged to slide and to tip forward and backward upon the rail and also jointed to the follower, that the latter may be tipped inde-

pendently of the motion of the link, whereby the follower is permitted to tip backward to a greater distance than would otherwise be allowable.

3. The guide-rail for a file-box, consisting of the sheet-metal bar longitudinally depressed at its middle, elevated at its edges, and bent downward at one end, as shown.

4. The file-box having the rectangular base and the two vertical walls at right angles to each other, its remaining sides being open, in combination with a longitudinal guide, a horizontal follower-board, and clamping devices, substantially as shown, connecting said follower-board to the guide.

412,626. MACHINE FOR FORMING AXLE-JOURNALS. JOHN R. JONES, Philadelphia, Pa. Filed Aug. 20, 1888. Serial No. 283,268. (No model.)



Claim.—1. In a machine for forming axle-journals, a pair of shaping-rolls provided with embossments for crowding the metal laterally, in combination with a pair of retaining-rolls adapted to hold the axle to the action of the shaping-rolls, in the manner and for the purpose substantially as described.

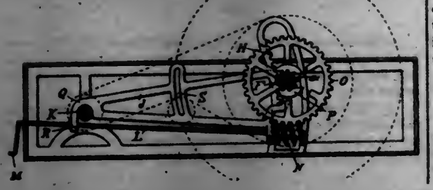
2. In a machine for forming axle-journals, one or more shaping-rolls, in combination with retaining-rolls arranged to hold the axle to the action of the shaping-rolls, in the manner and for the purpose substantially as described.

3. In a machine for forming axle-journals, a pair of twin shaping-rolls provided with tapering or spiral embossments, in combination with retaining-rolls for holding the axle to the action of the shaping-rolls, in the manner and for the purpose described.

4. In a machine for forming axle-journals, a pair of twin rolls provided with tapering embossments for crowding the metal laterally to form a groove, in combination with a smaller auxiliary tapering embossment located upon one side of the main embossment, and being so arranged as to commence acting upon the axle when the main embossment ceases, in the manner and for the purpose set forth.

5. In a machine for forming axle-journals, a pair of shaping-rolls provided with transverse recesses in their peripheries to facilitate the entrance of the axle, in combination with retaining-rolls for holding the axle to the action of the shaping-rolls, substantially as described.

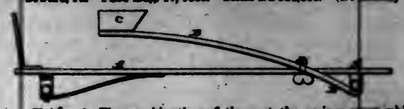
412,627. DEVICE FOR RAISING AND LOWERING HARVESTERS OR GRAIN-BINDERS. JEREMIAH KELLER, Sandusky, Ohio, assignor to Otto Kramer, same place. Filed Oct. 9, 1888. Serial No. 287,691. (No model.)



Claim.—1. In a device for the purpose described, the combination, with the main wheel and the axle F, upon which it is journaled, of the pinions G G, secured to said axle, the counter-shaft K, the segmental circular slotted racks H, secured to the frame, the bracket J, pivotally secured at one end by an opening bearing on said counter-shaft K and at the other end formed with an open bearing sleeved upon the axle F, the shaft L, mounted on said bracket, the worm N, secured upon said shaft, and the worm-gear O, mounted upon the axle, the parts being arranged to operate substantially as described.

2. The combination, with the axle F and shaft K, of a bracket J, having at its front end a bearing for the front end of the shaft L, and the open bearing P, by means of which the bracket is sleeved upon the axle F, the open bearing Q, by means of which said bracket is hinged to the shaft K, the worm-wheel, the segmental racks, the pinions, and the downwardly-projecting leg R, and the shaft L, journaled in said leg and provided at one end with a handle M and at the other with the worm N, substantially as described.

412,628. SPRING-SEAT FOR VEHICLES. CLARENCE M. KIMBALL, Seward, Pa. Filed Aug. 17, 1888. Serial No. 281,116. (No model.)



Claim.—1. The combination of the seat, the springs upon which the seat is secured, and the body having suitable openings through it, the rear ends of the springs being made to extend under or through the body and to catch against the axle, substantially as shown.

2. The combination of the elastic body provided with suitable openings or perforations, with the springs, and the seat which is secured to the front ends of the springs, the body forming a fulcrum for each spring, substantially as described.

412,629. FISHING-REEL. JOHN M. KEPLER, Corry, Pa. Filed May 20, 1889. Serial No. 312,155. (No model.)



Claim.—1. In combination with a fishing-rod or section thereof, a reel journaled within an opening formed therein, said reel being mounted upon and secured to a shaft having a crank-arm pivoted thereto, said shaft containing a spring-actuated bolt which engages with notches formed in the crank-handle adjacent to its pivot, substantially as and for the purpose set forth.

2. In combination with a fishing-pole or section thereof having a recess in which is journaled a reel, a cover for said recess, said cover being pivoted and provided adjacent to its pivot with a notch or recess with which a spring-actuated bolt engages for holding the cover closed, substantially as shown, and for the purpose set forth.

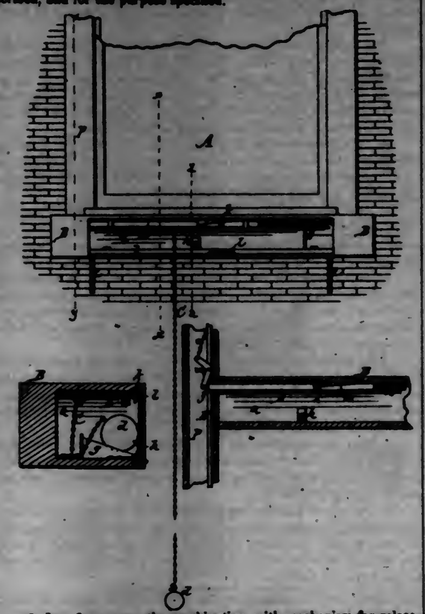
3. In combination with a fishing-rod or section thereof, a reel located within a mortise formed in said section, a casing adapted to inclose the reel, said casing having on one side a slot through which the line passes, and opposite thereto a cover, and a pivoted crank-handle for rotating the reel, said handle being adapted to be turned upon its pivot and enter a recess in the casing to lock the reel against rotation, substantially as and for the purpose set forth.

4. In combination with a section of a fishing-rod having a mortise, within which is located a reel, a casing adapted to be secured around said mortise, inner side plates *b b*, against which the flanges of the reel abut, said casing having a cover, the slot through which the line passes, openings through which the shaft upon which the reel is mounted passes, and an opening in which the crank-handle can be turned, substantially as and for the purpose set forth.

412,630. FIRE-ESCAPE. GEORGE KLUPP, Rochester, N. Y. Filed July 13, 1889. Serial No. 317,402. (No model.)

Claim.—1. In a fire-escape, the combination, with the hinged door *h*, provided with the loop *l*, of the catch *k*, engaging with said loop, the slide D, provided with a cam *m* for operating the catch, the retracting spring *n*, connected with one end of the slide, the bell-crank

n, connected with the other end of the slide, the tube E, provided with a rack *s* for operating the bell-crank, the gear *o*, engaging with the rack, and the handle *w* for operating the gear, as shown and described, and for the purpose specified.



2. In a fire-escape, the combination, with mechanism for releasing a door which incloses a chain and ball, of a tube extending the whole height of a building and connected with said mechanism, gears engaging with racks on said tube opposite each floor, and handles for operating the gears, whereby the drop mechanism may be operated from any floor, as herein shown and described.

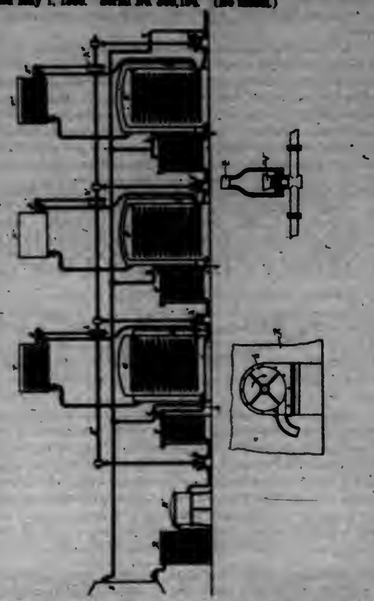
412,631. WATCH-CRYSTAL GAGE. OMAR C. KRAEHENBUHL, Galena, Ill. Filed Sept. 17, 1888. Serial No. 285,682. (No model.)



Claim.—1. The combination of the plate A, the fixed point *a*, the movable point *b*, the sliding plate F, and the spring-controlled gage thereon, substantially as specified.

2. The combination of the plate having the diagonal and longitudinal marks thereon, the fixed point *a*, the sliding plate having the point *b*, the sliding plate F, the bar G, moving in guides on said plate, the indicator-point, and the spring, substantially as specified.

412,632. APPARATUS FOR THE PASTEURIZATION OF BEER AND OTHER LIQUIDS. WILLIAM KIRR, Germont-Ferrand, France. Filed May 1, 1888. Serial No. 269,194. (No model.)



Claim.—1. The series of connected apparatus for continuous pasteurization under pressure, composed of a number of receptacles provided each with an inlet and an outlet for the beer or other liquid to be pasteurized, and with a close coil therein nearly equal in length and diameter to the inclosing-receptacle, in combination with connecting-pipes from the outlet of each preceding to the inlet of each succeeding receptacle, force-pumps, one in the inlet-pipe of the first receptacle of the series and others in the said connecting-pipes, safety-valves, one for each receptacle, having each its supply-passage in communication with the interior of its appropriate receptacle, and means for supplying the coil of the first receptacle with a heating and of each of the others with a cooling medium, substantially as described.

2. The series of apparatus for pasteurization, having pipes connecting the outlet of each preceding with the inlet of the succeeding apparatus, in combination with the ton, the refrigerator, the filter, the force-pump, and the pipes connecting the ton with the refrigerator, the latter with the filter, the filter with the force-pump, and the latter with the first of said apparatus, substantially as described.

3. The series of three connected apparatus for continuous pasteurization under pressure of beer and other liquids, each apparatus being composed of a receptacle and an inclosed coil, and the outlet of each preceding receptacle being in communication by a connecting-pipe with the inlet of the succeeding receptacle, in combination with a supply-pipe for the first and a discharge-pipe for the last apparatus of the series, force-pumps in said connecting and supply pipes, safety-valves having their respective supply-passages in communication with the interiors of the respective receptacles, three reservoirs for hot water, for cold water, and for incompressible liquid, respectively, pipes connecting the reservoir of hot water with the coil of the first apparatus, the reservoir of cold water with the coil of the second apparatus, and the reservoir of incompressible liquid with the coil of the third apparatus, and circulating-pumps connected with said last-mentioned pipes, substantially as described.

4. The combination, with the three apparatus, each composed of a close coil and an inclosing-receptacle provided with an inlet and an outlet, of a coil and force-pump for each apparatus, pipes connecting

the coil last mentioned and its force-pump with each other, pipes connecting the discharge of each force-pump with the inlet of the appropriate receptacle, pipes connecting the inlet of the preceding receptacle with the supply of the force-pump for the succeeding apparatus, a reservoir for each apparatus, pipes connecting each reservoir with the first-mentioned coil of the appropriate apparatus, and pumps connected with the last-mentioned pipes, substantially as described.

5. The series of connected apparatus, each comprising a receptacle, a safety-valve, a jacket for said receptacle, and a coil in said receptacle, in combination with the pumps and connecting-pipes for forcing the beer through the receptacles and the pumps and reservoirs in communication with said coils and jackets, substantially as described.

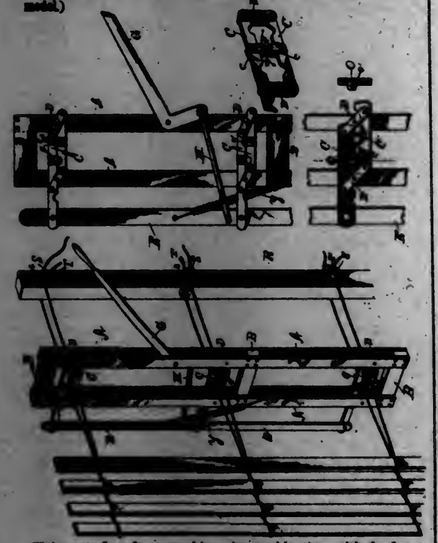
6. A series of apparatus having jacketed receptacles, the jackets or casings being placed around the lower part of the first receptacle of the series and around the upper part of the balance of said receptacles, in combination with the supply-pipe for the first apparatus, the discharge-pipe for the last apparatus, the connecting-pipes between the different apparatus, and the means or connections for supplying the jacket of the first apparatus with a heating and that of each succeeding apparatus with a cooling medium, substantially as described.

412,683. COMBINED HAME AND COLLAR FOR HORSES. CHRISTIAN H. LEHMANN and JAMES H. SOUTHCOTT, Adelaide, South Australia. Filed Sept. 15, 1888. Serial No. 285,202. (No model.) Patented in South Australia July 23, 1888, No. 1,057; in New South Wales July 30, 1888, No. 815; in Queensland Aug. 1, 1888, No. 851; in New Zealand Aug. 9, 1888, No. 3,166, and in England Sept. 15, 1888, No. 13,262.



Claim.—In a combined horse-collar and hames hinged together at the top, the tubular hame-pieces A A', the latter forming a socket F and the former having the solid projecting piece E, rigidly secured in the tubular end of said piece A, adapted to enter the opposite tubular hame portion and having the seat H, a spring-actuated projection passing through the tubular piece A' and adapted to enter said seat, and a ring for drawing aside said piece A' and separating it from the part A, said ring being connected with the spring-actuated projection, whereby when pulled it first withdraws said projection.

412,684. FENCE-MACHINE. EDGAR A. LEHARD and GEORGE W. SHERK, Karie, Ohio. Filed Aug. 21, 1888. Serial No. 282,461. (No model.)



Claim.—1. In a fence-machine, the combination, with the frame, of the pairs of carriers pivotally mounted at both ends on opposite ends of connecting-links pivoted at the center to the frame, substantially as described.

2. In a fence-machine, the combination, with the frame and links pivotally connected thereto at substantially the center, of the pairs of carriers mounted at both ends on opposite ends of the links, and an operating-bar uniting one of the carriers of each pair, whereby they may be moved simultaneously in either direction, substantially as described.

3. In a fence-machine, the combination, with the frame and links pivotally connected thereto at substantially the center, of the pairs of carriers mounted at both ends on opposite ends of the links, an operating-bar uniting one of the carriers of each pair, and a bell-crank operating handle pivoted to the frame and connected to said bar for imparting motion thereto, substantially as described.

4. In a fence-machine, the combination, with the frame having the double side bars, of the links at the front and back, each pivoted at the center between said bars, and the carriers mounted on opposite ends of each pair of links, substantially as described.

5. In a fence-machine, the combination, with the frame and the links pivoted thereto at the center, to move in a vertical plane, of the carriers mounted on the ends of the links and having the vertical projections for the wire-holders, substantially as described.

6. In a fence-machine, the combination, with the frame and the links pivoted thereto at the center to move in a vertical plane, of the carriers mounted on the ends of the links and having the vertical projections thereon, with the apertures in the same, through which the wire passes, substantially as described.

7. In a fence-machine, the combination, with the frame and the links pivoted thereto at the center, of the carriers mounted on the ends of the links and having the projections thereon, with the movable plugs therein having the notch in the edge, through which the wire passes, substantially as described.

8. In a fence-machine, the combination, with the frame, the pairs of wire-carriers, and connecting-links pivoted to the frame intermediate the carriers, of a spring for holding said carriers at each extreme of their movement.

9. In a fence-machine, the combination, with the frame, pairs of wire carriers, connecting-links pivoted to the frame intermediate the carriers, and the bar uniting one of each pair of said wire-carriers, of the spring connected at one end to the bar and at the opposite end to the frame, as set forth.

412,685. APPARATUS FOR REPRODUCING COPIES OF WRITINGS, DRAWINGS, &c. MARC A. LEVY, St. Louis, Mo. Filed Feb. 21, 1889. Serial No. 300,777. (No model.)



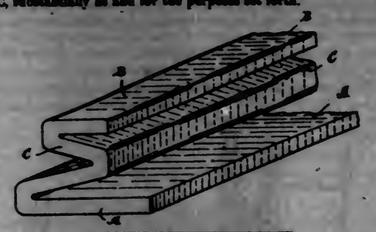
Claim.—1. In a duplicating apparatus, the combination of an absorbent pad, an absorbent composition thickly applied to one surface of said pad, and a gelatine substance thinly applied to the outer surface of said composition, all substantially as described, and for the purposes set forth.

2. In a duplicating apparatus, the combination of an absorbent pad having its back, edges, and a border around its face rendered water proof, an absorbent composition thickly applied to the face of said pad within said border, and a gelatine substance thinly applied to the outer surface of said composition, substantially as described, and for the purposes set forth.

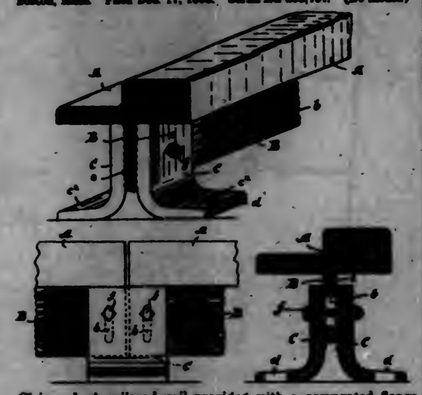
412,686. RAILROAD-RAIL. HERMAN W. LEVERY, Boston, Mass. Filed Nov. 16, 1888. Serial No. 291,051. (No model.)

Claim.—1. A railroad-rail consisting of an upper and a lower flange connected together by a >-shaped web, substantially as and for the purposes set forth.

2. A rail for railroads, consisting of a lower flange A for securing the same to the sleepers and an upper flange B for the wheels to run upon, said flange and tread being connected together by a >-shaped web C, substantially as and for the purposes set forth.



412,687. RAILROAD RAIL AND CHAIR. HERMAN W. LEVERY, Boston, Mass. Filed Dec. 17, 1888. Serial No. 293,737. (No model.)



Claim.—1. A railroad-rail provided with a corrugated flange having vertical slots at suitable intervals, substantially as and for the purposes set forth.

2. The rail A, provided with corrugated flange B, having vertical slots b, in combination with a chair formed in two parts C C, their upper inner faces c being corrugated to correspond with the flange of the rail, and their lower ends c^2 provided with oblong holes or slots d, substantially as shown and described.

412,688. AGRICULTURAL MACHINE. GEORGE H. LEVER, Los Angeles, Cal. Filed Jan. 6, 1888. Serial No. 259,762. (No model.)

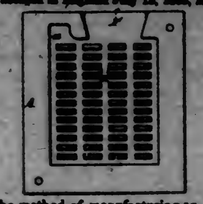


Claim.—1. In an agricultural machine, the combination of the frame A A', the roller-frame C', and the auxiliary frame or hinge-plates C', with the truck-frame consisting of the tongue E, hinged to the main frame, the yoke I J, and the roller H, substantially as shown and described.

2. The combination of the main frame A A', rollers B B', and frame C, the auxiliary frame C', the adjusting hinge-plate E, the tongue F, yoke I J, roller H, and adjusting-collar L, substantially as shown and described.

3. The main frame, the series of armed rock-shafts R R' R'', the bar D, and lever T, in combination with the arms or hinge bars M, suspended from the frame by the links O', the shanks P, for the cultivator-teeth, pivoted to the hinge-bars, and the rods W, connecting the shanks to the arms of the rock-shafts, substantially as shown and described.

412,689. SECONDARY BATTERY. FARNHAM H. LYTE, London, County of Middlesex, England. Filed Jan. 7, 1889. Serial No. 295,977. (No model.) Patented in England July 13, 1888, No. 9,498.



Claim.—1. The method of manufacturing an electrode of a secondary battery, consisting in making or casting the supporting material around studs, prisms, or bars of spongy or finely-divided lead having collars or projections, or of such form as to be retained in place by the supporting material, substantially as described.

2. The method of manufacturing an electrode of a secondary battery, consisting in making or casting the supporting material around studs, prisms, bars, rods, or other suitable forms of active material.

3. The method of making a secondary-battery element or electrode, consisting in first forming studs, prisms, bars, rods, or other suitable forms of active material, then casting or molding the supporting material around said active studs, prisms, bars, rods, or other forms in such manner as to hold them and expose a portion of their surface.

4. The method of making a secondary-battery element or electrode, consisting in first forming studs, prisms, bars, rods, or other suitable forms of active material, then arranging a number of said studs, prisms, bars, rods, or other forms of active material in a predetermined order and more or less separated from each other, and finally casting or molding the supporting material around said active studs, prisms, bars, rods, or other forms in such manner as to hold them and expose a portion of their surface.

5. The method of making a secondary-battery element or electrode, consisting in first forming studs, prisms, bars, rods, or other suitable forms of active material, and then casting the supporting material around them in the form of a plate end of less thickness than the said studs, prisms, bars, rods, or other forms.

412,640. CAR-BRAKE. BENJAMIN F. HAINES, Troy, N. Y. Filed July 31, 1888. Serial No. 281,943. (No model.)



Claim.—1. The combination, with a four-wheeled truck, of a pair of brake-bars, the brake-shoes thereon, the pairs of brake-levers respectively pivotally connected at their outer ends to the brake-bars and to each other at their inner ends, and the pair of rods pivotally connecting one lever of each pair with one lever of the opposite pair, substantially as and for the purpose described.

2. The combination of a four-wheeled truck-frame, the laterally-movable brake-bars mounted transversely in the frame adjoining each pair of wheels and carrying brake-shoes, substantially as described, with the pairs of brake-levers pivotally connected to the ends of each brake-bar, the link-connection between the levers of each pair, and the brake-chain for operating said levers, and the pair of connecting-rods attached to one lever of each pair, and the retracting-springs, all substantially as specified.

3. The combination of the truck-frame, the grooved hangers thereon, and the brake-bars resting in the grooves of said hangers opposite each pair of wheels, and the retracting-springs engaging said bars, and the brake-shoes on said bars having rearwardly-projecting perforated ears, with the pairs of brake-levers pivotally connected to the ears of the brake-shoes and to each other, and the brake-chain for operating said levers, and the connecting-rods pivotally connected to the opposite levers of each pair near the pivoted outer ends thereof, all substantially as and for the purpose set forth.

412,641. SEAL-LOCK. WILLIAM W. HAMER, Hempville, Tenn. Filed Dec. 3, 1888. Serial No. 292,022. (No model.)

Claim.—1. A seal-lock having the casing and shackle, the pawl

and forwardly-rotatable ratchet-wheel within the casing carrying the detent for engaging the shackle, and the seal for preventing the forward rotation of the ratchet-wheel, as set forth.



2. In a seal-lock, the combination, with the wheel and clutch for preventing its backward rotation, of the shackle, the detent moved by the wheel and engaging the shackle to prevent its withdrawal, and the seal for preventing the forward rotation of the ratchet-wheel, substantially as described.

3. In a seal-lock, the combination, with the wheel and clutch for preventing its backward rotation, of the shackle, the detent moved by the ratchet-wheel and engaging the shackle to prevent its withdrawal, the headed projection moved by the ratchet-wheel, the stationary headed projection, and the seal engaging said projections to prevent the forward rotation of the ratchet-wheel, substantially as described.

4. In a seal-lock, the combination, with the wheel, the clutch for preventing its backward rotation, and the shackle, of the detent mounted on the ratchet-wheel and engaging the shackle, the arm moved by the wheel having the headed projection thereon, the stationary headed projection, and the seal engaging said projections to prevent the forward rotation of the ratchet-wheel, substantially as described.

5. The combination, with a seal-lock having the two projections for engaging the seal at the top, of the seal formed with the extended body, and the slot at the top through which the projections pass, whereby the body extends over the lock, substantially as described.

412,642. SEED-PLANTER. JAMES I. MAYFIELD, Kosciusko, Miss. Filed July 23, 1888. Serial No. 318,203. (No model.)



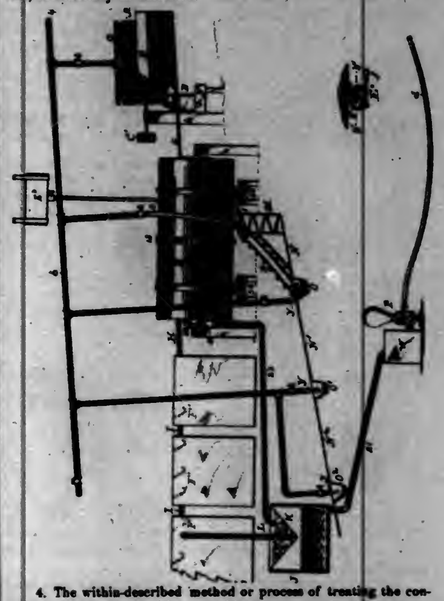
Claim.—The combination of the frame A, furrow-opener B, and coverer C with the bars F, hinged or pivoted at their front ends, the seed-boxes G H, the operating-wheel journaled in the rear ends of the bars, the crank-shaft J, the connecting-rods L N, the lever Q, seed-slides S, and stirrer P, substantially as described.

412,643. METHOD OF AND APPARATUS FOR EXTRACTING GOLD. WILLIAM A. MERRAMA, Kansas City, Mo. Filed Nov. 5, 1887. Serial No. 254,447. (No model.)

Claim.—1. The within-described method or process of treating the concentrated placer mine or deposit gold intermediate its passage from the concentrating mechanism to the amalgamator proper, consisting in collecting the flowing gold along with any remaining fine sand and the water carrying the same, draining off the water and settling the pulp, mixing with the pulp a chemical solution consisting of chloride of sodium, cyanide of potassium, chloride of mercury, and water, and agitating by rotation the mixture until the gold is deoxidized or cleaned and becomes coated with a film of mercury, substantially as and for the purpose described.

2. The within-described method or process of treating the concentrated placer mine or deposit gold in its passage from the concentrators to the trap or traps of the amalgamator proper, consisting in collecting the flowing gold along with any remaining fine sand and the water carrying the same, draining off the water and settling the pulp, mixing with the pulp a chemical solution consisting of chloride of sodium, cyanide of potassium, chloride of mercury, and water, placing pieces of iron amidst the mixture, and agitating by rotating the whole until the gold is deoxidized or cleaned and becomes coated with a film of mercury, substantially as described.

3. The within-described method or process of treating the concentrated placer mine or deposit gold in its passage from the concentrators to the trap or traps of the amalgamator, consisting in collecting the flowing gold, fine sand, and the water carrying the same, draining off the water and settling the pulp, mixing with the pulp a chemical solution consisting of chloride of sodium, cyanide of potassium, chloride of mercury, and water, agitating by rotation the mixture until the gold is deoxidized or cleaned and becomes coated with a film of mercury, and then bringing the mixture in contact with mercury or mercury-covered surfaces for effecting complete amalgamation, substantially as described.



4. The within-described method or process of treating the concentrated placer mine or deposit gold on its passage from the concentrators to the amalgamator trap or traps, consisting in collecting the flowing gold, fine sand, overflowing gold slimes, and water carrying the same, draining off the water and settling the pulp, mixing with the pulp a chemical solution consisting of chloride of sodium, cyanide of potassium, chloride of mercury, and water, placing pieces of iron in the mixture, agitating the mixture until the gold is deoxidized or cleaned and becomes coated with a film of mercury, bringing the mixture containing the thus-prepared gold in contact with mercury or mercury-covered surfaces, bringing water in contact with the flowing mixture, and, finally, subjecting the water used to a filtering operation and returning it clean for reuse, substantially as described.

5. The combination of successively lower and finer revolving screens, stationary lateral sluiceways, inclined aprons, water-distributing pipes, connecting gutter at end of last apron, a revolving settling deoxidizing cylinder having a man-hole, one or more water-drain cocks or faucets, and a pulp-discharge cock or faucet, substantially as described.

6. The combination of successively lower and finer rotary screens, lateral sluiceways, stationary inclined aprons, water-supply distributing-pipes, connecting-gutter at end of last apron, a revolving settling deoxidizing cylinder having a man-hole, an overflow passage or man-hole, one or more water-drain cocks, a pulp-discharge faucet or cock, and an overflow stationary settling-box having a skimmer, substantially as described.

7. The combination of successively lower and finer revolving screens, lateral sluiceways, stationary inclined aprons, water-distributing pipes, connecting-gutter at end of last apron, a revolving settling deoxidizing cylinder having a man-hole, water-drain cocks, and a pulp-discharge faucet or cock, a chemical-solution chamber, and an amalgamator consisting of a perforated trough, a vertical chamber having zigzag amalgamation-plates, inclined amalgamation-plates, one of which is formed with a side well for surplus mercury, and an endless-chain mercury-elevator, substantially as described.

8. The combination of successively lower and finer revolving screens, lateral sluiceways, stationary inclined aprons, water-supply distributing-pipes, connecting-gutter at end of last apron, a revolving cylinder having a man-hole, water-drain cocks on different horizontal planes, a pulp-discharge faucet or cock, an overflow passage or man-hole, drain-pipes from the settling deoxidizing cylinder, stationary settling-boxes, overflow-pipes, a filter, filtered-water return-pipes, and a pump, substantially as described.

9. The combination, with the revolving settling deoxidizing cylinder having a man-hole, drain-cocks, and a pulp-discharge cock, of water-distributing pipes and a chemical-solution chamber having a connecting-pipe, substantially as described.

10. The combination of the revolving settling deoxidizing cylinder having a supply man-hole and overflow passage or man-hole, drain-cocks, drain-gutter, stationary settling-boxes, overflow drain-gutters and pipes, water-filter, and return water-pipes, substantially as described.

11. The combination of successively lower and finer screens, lateral sluiceways, stationary inclined aprons, connecting-gutters at end of last apron, a gate for changing the course of the water and substances passed off from the aprons, two revolving settling deoxidizing cylinders, each having an inlet and an outlet man-hole, water-drain cocks, and a pulp-discharge cock or faucet, substantially as described.

412,644. INDICATOR-VALVE. RICHARD H. B. MEYER, Brooklyn, assignor of one-half to Frederick W. Floyd, New York, N. Y. Filed Feb. 19, 1889. Serial No. 300,628. (No model.)



Claim.—1. In an indicator-valve, the combination, with the valve-operating stem, of two disks located one above the other flatwise, the upper disk being of a diameter or area to cover or conceal the under disk, and adapted to move transversely one over the other, and disk-actuating mechanism, as described, located intermediate the said disks and the valve-stem and operated by said stem, whereby said disks are caused to move flatwise transversely one upon the other concurrently with the movement of the valve-stem in opening and closing the valve, substantially as and for the purpose specified.

2. In an indicator-valve, the combination, with the valve-operating stem, of two disks located one above the other flatwise, the upper disk being of a diameter or area to cover or conceal the under disk, and one of which is fixed, while the other of which is carried by a nut and adapted to move transversely of and over and upon said fixed disk flatwise, a screw on which said nut works, and gearing, as described, connecting said screw and said valve-stem, whereby the movement of the valve-stem, in opening and closing the valve carried thereby, causes a concurrent movement of the movable disk flatwise transversely of and upon the fixed disk, substantially as and for the purpose specified.

3. In an indicator-valve, the combination, with the valve-operating stem B, provided with a hand-wheel B', of the frame c at right angles to the valve-stem and under the said hand-wheel, the disk E, fixed on said frame, the platform c', the disk E' thereon, movable transversely and flatwise upon said fixed disk, the nut c^3, carrying said movable disk, the screw c^4, on which said nut works, and the gears c^5 and c^6 on said screw and said valve-stem, respectively, substantially as and for the purpose specified.

4. A valve-movement indicator consisting of two disks adapted to move transversely of each other, one over the other flatwise, a frame upon which said disks are mounted, a nut attached to one of said disks, a screw on which said nut works and journaled in said frame, together with gearing on said screw whereby said worm may be connected to and actuated by the stem carrying and operating a valve, substantially as and for the purpose specified.

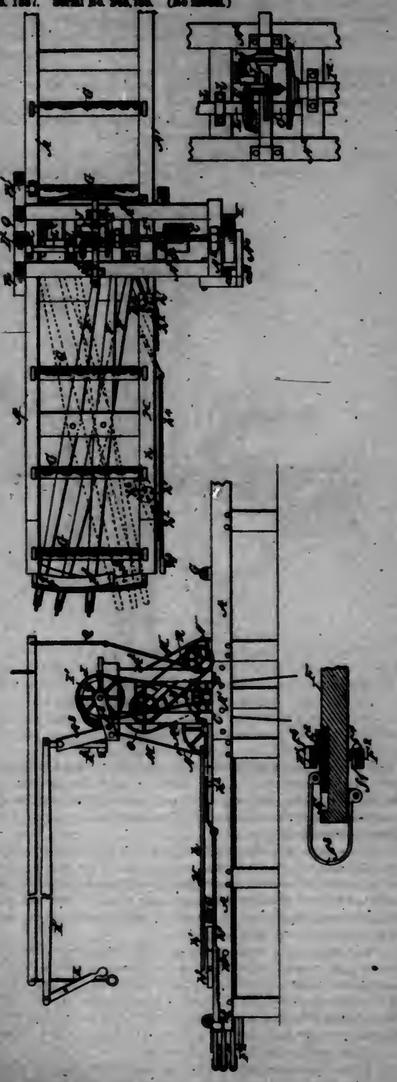
412,645. VEHICLE-SPRING. GEORGE R. MINARD, Mount Gilead, Ohio, assignor of one-half to Oswald W. Primrose, same place. Filed Aug. 13, 1888. Serial No. 282,620. (No model.)



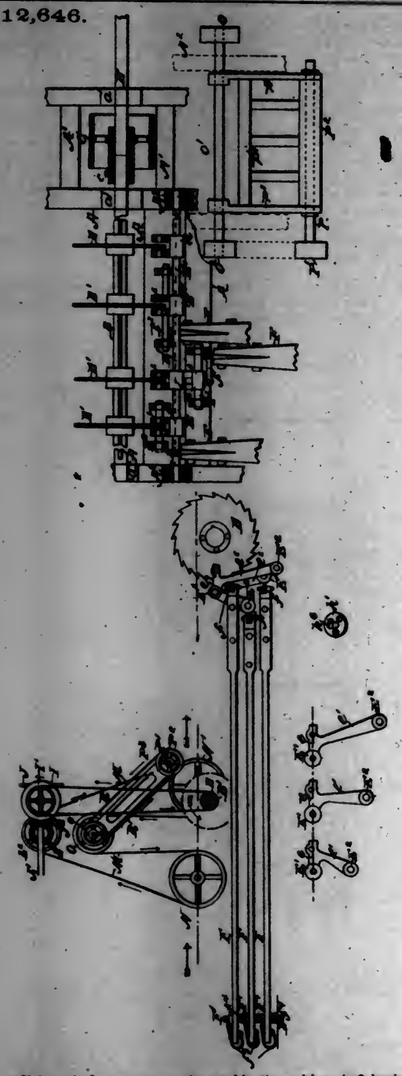
Claim.—1. A vehicle-spring made up of a bar of metal having a single coil, the extending ends of said bar extending in substantially the same direction, the lower member of the spring being of greater length than the upper member and tapered from a point beneath the end of the upper member to its end, said tapered portion being bent downwardly and then upwardly and formed into an eye, the upper and lower members being one above the other, except at the coil, substantially as shown, and for the purpose set forth.

2. The combination, with the body A, of plates a a', having recesses within which the upper member of the spring lies, a spring having a horizontal upper member connected to the lower member by a single coil, said coiled portion being slightly inclined, so as to locate the lower member beneath the upper member, the terminal portion of the lower member which extends beyond the end of the upper member being tapered to its end, said tapered portion being curved first downwardly and then upwardly, an eye formed at the end of said tapered portion, and a clip attached to the running-gear for attaching the end of the spring thereto, substantially as shown, and for the purpose set forth.

412,646. GANG-EDGER FOR CUTTING DIMENSION LUMBER. JOSEPH H. MORROW and ALFRED H. HEINZ, Evansville, Ind. Filed Sept. 3, 1887. Serial No. 248,782. (No model.)



412,646.



Claim.—1. In a gang-saw, the combination, with a shaft having saws movable thereon, of a bar extending below the saw-bed, guides for the saws sliding thereon, and bars upon different horizontal and vertical planes for steadying each of the said guides, as and for the purposes described.

2. In a saw-mill, the combination, with a shaft having saws movable thereon, of guides consisting of two arms, a bar passing through all the guides, bars arranged in different vertical and horizontal planes, each one thereof passing through one arm of one of the said guides, the other arm thereof being slotted to receive and guide a saw, as and for the purposes described.

3. In a saw-mill, the combination, with a frame-work and a shaft having saws mounted thereon, of guides, levers adapted to move the said guides passing between graduated scale-bars, the upper portion of the said bars being corrugated, wedges on the tops of the said levers, U-shaped pieces adapted to draw the said wedge forward, and lips on the under surfaces of the levers, whereby they are locked in position, as and for the purposes described.

4. In a gang-saw mill, a series of saw-guides, each of the said guides consisting of two arms and having the angle formed by the said arms of every guide differing from the corresponding angle of the other guides, as and for the purposes described.

5. In a gang-saw mill, the combination, with a shaft having saws adjustably mounted thereon, of guides, each one thereof consisting of two arms, one arm of each of the said guides receiving one of the said saws, the other arm of each of the said guides terminating at a different level and attached to a lever extending to the front of the mill, a bar passing through all of the said guides at the junction of the two arms, and independent bars, each one situated on a different vertical and horizontal plane and passing through the lower arm of one of the said guides, as and for the purposes described.

6. In a gang-saw mill, the combination, with a frame-work and shaft having saws adjustably mounted thereon, of a bar extending below the saw-bed, guides for the saws sliding thereon, bars upon different vertical and horizontal planes, also below the saw-bed, for steadying each of the said guides, and a gage having legs upon its ends moving in equally-inclined bearings in the frame-work, whereby a forward or backward motion of the gage is converted into a lateral one, as and for the purposes described.

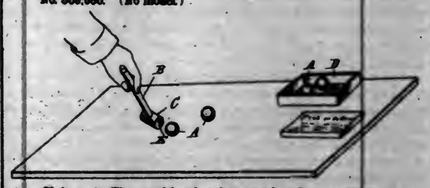
7. In a gang-saw mill, the combination, with a main frame-work A and a shaft provided with adjustable saws mounted thereon, of a bar extending below the saw-bed, guides for the saws sliding thereon, bars, each upon a different vertical and horizontal plane below the saw-bed, for steadying each of the said guides, a frame-work A^1, rising from the frame-work A, a shaft O, mounted on the said frame-work A^1 and having a shaft P, carrying a feed-roller depending therefrom in a frame, and suitable gearing imparting motion from the saw-shaft to the shaft O and from the shaft O to the feed-roller shaft P, as and for the purposes described.

8. In a gang-saw mill, the combination, with a main frame-work A and a shaft provided with adjustable saws mounted thereon, of a bar extending below the saw-bed, guides for the saws moving thereon, bars upon different vertical and horizontal planes, also below the saw-bed, for steadying each of the saw-guides, a frame-work A^1, rising from the main frame-work A, a shaft I^1, mounted thereon and receiving motion by any suitable means, a disk I' on one end thereof, and a shaft J' at right angles to shaft I^1, and having a disk J movably bearing upon the disk I', as and for the purpose described.

9. In a gang-saw mill, the combination, with a shaft having saws adjustably mounted thereon, of a bar extending below the saw-bed, guides for the saws moving thereon, bars upon different vertical and horizontal planes, also below the saw-bed, for steadying each of the said guides, a feed-roller capable of a vertical motion, and disks movable in relation to each other and forming a part of a gearing between the said saw-shaft and feed-roller, as and for the purposes described.

10. In a gang-saw mill, the combination, with suitable saw-guides, of corrugated bars, lever, each one thereof passing between two of the said bars and attached to one of the saw-guides, and having a wedge moving in a slot in the upper surface of its forward end and a lip formed on the lower surface thereof, and of a U-shaped handle pivoted to the said lever and wedge, whereby the lip may be caused to engage the corrugations of the bar below it, as and for the purposes described.

412,647. PUZZLE. ORVILLE M. MORSE, Jackson, Mich., assignor of one-half to John G. Mundy, same place. Filed May 6, 1886. Serial No. 309,680. (No model.)



Claim.—1. The combination, in a puzzle, of one or more spherical bodies, and a scoop consisting of a handle with an annular bearing of smaller diameter than the diameter of the said body or bodies, to be used in the manner and for the purpose described.

2. The combination, in a puzzle, of a number of spherical bodies of different sizes or weight, and a scoop consisting of a handle secured to a tubular body, forming an annular bearing of smaller diameter than the diameter of the spherical bodies, said scoop to be applied substantially in the manner described.

412,648. THILL-COUPLING. GEORGE H. HOFFMANN, Dell Rapids, Dak. Filed July 15, 1889. Serial No. 317,602. (No model.)

Claim.—1. In a thill-coupling, the fastening device E, provided with the cylindrical end portion e, for insertion in the eyes of the clip and thill iron, the hook e', to engage on one of the thill-rings to support the device, and the spring e^2, having a hooked end to engage the upper end of a wedge F and draw it upward between the thill-clip and thill-iron, substantially as specified.

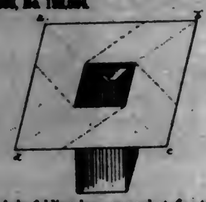


2. In a thill-coupling, the combination, with the fastening device E, having the end e for insertion in the eyes of the clip and thill iron, the hook e', to engage one of the thill-rings, and the spring e^2, having a hooked end, of the wedge F, inserted between the thill-rings and between the clip and thill iron, and provided with the hooked upper end f, which engages the hook e^2 and prevents the end e of the fastening device from being withdrawn, substantially as specified.

3. The combination, with the thill-clip A, having the perforated lugs a, and the thill having the eye c in its iron, of the wedge F, inserted between said lugs and between the clip and thill iron and provided with the upper hooked end f, and the fastening device E, having the end e for insertion in the eyes of the lugs a and thill-iron, the hook e', to engage upon one of the clip-lugs, and the spring e^2, having a hooked end to engage the hooked end f of the wedge and raise the latter, substantially as specified.

4. In a thill-coupling, the combination, with a clip having perforated lugs and the thill having an eye in its iron between said lugs, of a wedge having its base downward, standing between the thill-lugs and between the clip and thill iron and provided with a curved upper end, and a fastening device mounted on the clip and provided with a cylindrical portion inserted in the eyes of the clip-lugs and thill-iron, and a spring having a hook on its end to engage the hooked upper end of the wedge and draw it upward between the clip and thill iron to prevent the thill from rattling, substantially as specified.

412,649. CARD-BOARD BOX. FRITZ J. MÜLLER, Cologne, Germany. Filed Feb. 5, 1889. Serial No. 299,194. (Model.) Patented in France Aug. 21, 1888, No. 192,894.



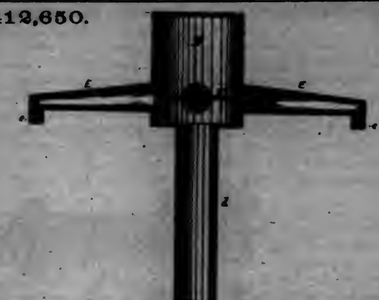
Claim.—1. A tightly-folding box or packet for tea, sugar, bonbons, chocolate, snuff, and similar substances, consisting of a case or packet of paper, pulp, stiff linen, or other material, open at one end, which end is provided with a continuous and undivided laterally-projecting rim, which is adapted to be folded over to completely close the box, substantially in the manner and for the purpose as described.

2. A packing-box of paper, stiff linen, or any other suitable material, provided at its open end with an uncut flat rim, which is folded over in two series of folds, the first serving to close the end, and the second series to hold the first firmly down, substantially as described and shown.

412,650. WASH-BOILER. JOHN T. MCCAFFERY, Red Bud, Ill. Filed June 26, 1889. Serial No. 315,603. (No model.)



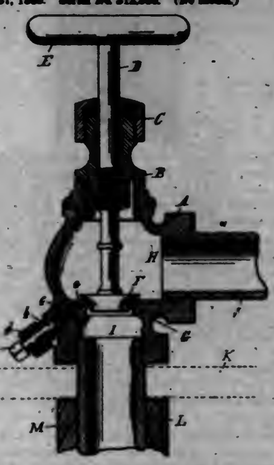
412,650.



Claim.—1. In a wash-boiler, the combination of the perforated plate C, tubes b and d, steam-chamber D, provided with a supplemental bottom, and the tapering arms E, having tube c, substantially as shown and described.

2. In a wash-boiler, the combination of a perforated plate, a steam-chamber having tapering arms, and a supplemental bottom dividing the passage to said arms, and tubes connecting said perforated plate and steam-chamber, substantially as shown and described.

412,651. DRAIN-VALVE. JAMES P. MCELROY, Lansing, Mich. Filed May 27, 1889. Serial No. 312,309. (No model.)



Claim.—1. In a valve of the kind described, a supplementary adjustable aperture or slot formed in the face of the valve-seat independent of the valve-disk, whereby a permanent opening is left for the escape of the contained fluid, substantially as described.

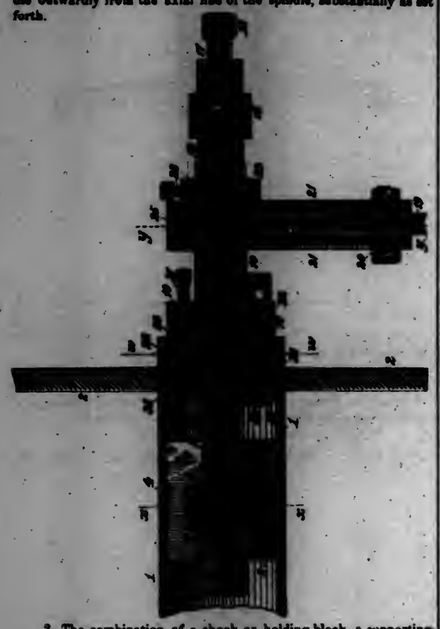
2. In a valve of the kind described, in combination with the inclined valve-seat, the slot-opening formed in the face of the valve-seat, the screw-threaded spindle to adjust the size of said opening, arranged substantially at right angles to the inclined sides of the disk, substantially as described.

3. In a valve of the kind described, the combination, with the inclined valve-seat, the slot-opening formed in the face of the valve-seat, and the screw-threaded spindle adapted to adjust the size of said opening, of the stuffing-box around said spindle and of the wrench-hold, said spindle being substantially at right angles to the inclined face of the disk, substantially as described.

412,652. TUBE CUTTER, EXPANDER, AND BEADER. JAMES MOFFAT, Pittsburg, Pa., assignor of one-half to Thomas Moffat, same place. Filed June 20, 1888. Serial No. 276,893. (No model.)

Claim.—1. The combination of a chuck or holding-block, a supporting-spindle fitting centrally therein, a rotatable head or tool-carrier mounted upon the spindle, an adjustable die or box fitted to move within the head radially to the axis of the spindle and adapted to receive and support interchangeably a cutting-roller, an expanding-roller, or a beading-roller, and an adjusting-block movable within the head and provided with an inclined or wedging face for forcing the

die outwardly from the axial line of the spindle, substantially as set forth.



2. The combination of a chuck or holding-block, a supporting-spindle fitting centrally therein, a rotatable head or tool-carrier mounted upon the spindle, an adjustable die or box fitted to move within the head radially to the axis of the spindle, a beading-roller journaled radially to the axis of the spindle upon a block pivoted to the die, an adjusting-block movable within the head and provided with an inclined or wedging face for forcing the die outwardly from the axial line of the spindle, and an adjusting-screw engaging the head and bearing upon the shaft of the beading-roller in position to vary the angular position of said shaft relatively to the axial line of the spindle, substantially as set forth.

3. The combination of a radially-divided series of chuck-segments, which are serrated peripherally, a separate nut fitting centrally in the series of segments, and a supporting-spindle having a conical or tapered end portion fitting a corresponding central bore in the segments and provided with a thread engaging the thread of the nut, substantially as set forth.

4. The combination of an expansible chuck or holding-block composed of a radially-divided series of peripherally-serrated segments and a separate nut fitting centrally in the series of segments, a supporting-spindle having a conical or tapered end portion fitting a corresponding central bore in the segments and provided with a thread engaging the thread of the nut, a rotatable head or carrier mounted upon the spindle, and a roller-tool mounted in an adjustable die or box in the head, substantially as set forth.

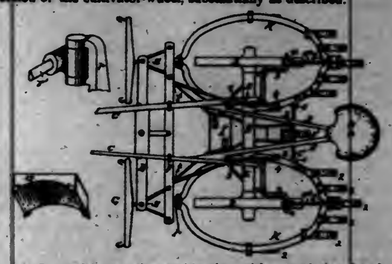
412,653. MECHANICAL TELEPHONE. WILLIAM NAYLOR, Alton, Ill.; Edward Craig administrator of said William Naylor, deceased. Filed Mar. 26, 1888. Serial No. 304,094. (No model.)



Claim.—In a mechanical telephone, the combination of the wooden band A, the metallic band C, the diaphragm consisting of the combined layers of linen canvas, card-board, and linen paper glued together, and the backing consisting of the combined layers of card-board and the linen paper glued together, said diaphragm being clamped on said wooden band by said metallic band, substantially as set forth.

412,654. CULTIVATOR. CONRAD HOYER, Marshall, Mich. Filed Nov. 30, 1888. Serial No. 292,315. (No model.)

Claim.—1. In a cultivator, the combination, with an axle and a supporting-frame, of an adjustable tooth-bearing frame suspended from the supporting-frame above the axle and surrounding the upper portion of the cultivator-wheel, substantially as described.



2. In a cultivator, the combination, with a tooth-bearing frame adjustably suspended above the axle and surrounding the upper portion of the cultivator-wheel, of a lever, a lever-crank, and a connecting-rod for raising and lowering the rear end of said tooth-frame, substantially as described.

3. In a cultivator, the combination, with a supporting-frame, of two elliptical tooth-bearing frames surrounding the cultivator-wheels and suspended from the supporting-frame, a connecting-rod *d'*, pivoted to said frames in rear of the axle, and levers, toothed segments, and connecting-rods for raising and lowering the rear ends of either of said tooth-bearing frames and retain them at any desired elevation separately, substantially as described.

4. In a cultivator, the combination of a supporting-frame located above the axle, the swing tooth-bearing frames K K, surrounding the upper portions of the cultivator-wheels, a pivoted cross-rod *d'*, connecting said swing-frames at the rear of the axle, a central tooth-bearing frame pivotally supported above the axle between the swing tooth-bearing frames and having its rear end resting on the cross-rod that connects said frames, and levers for vertically adjusting the rear ends of said frames, substantially as described.

412,655. CIRCULAR-KNITTING MACHINE. GEORGE H. NYE, Philadelphia, Pa., assignor of one-half to Edward Trefelt, same place. Original application filed Jan. 2, 1889, Serial No. 295,940. Divided and this application filed May 16, 1889. Serial No. 311,010. (No model.)



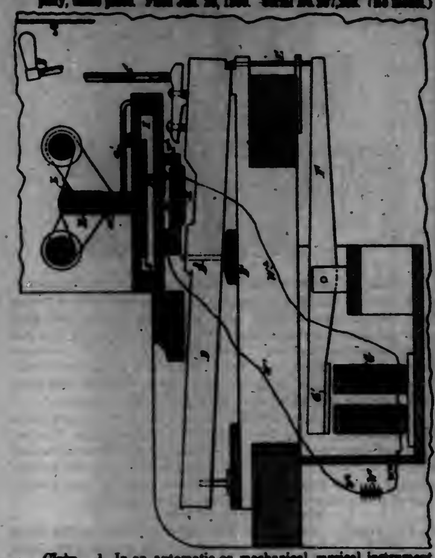
Claim.—In a knitting-machine, the base-plate or frame provided with flat bearing-faces, the needle-cylinder therein, the dial-plate, the cross-bar having the dial-plate suspended therefrom, and having at its ends bearing-faces seated on the faces of the frame and vertical holes through the ends, in combination with the vertical bolts of less diameter than the holes passed therethrough into the frame, whereby the dial-plate may be adjusted horizontally in relation to the cylinder without liability of being raised or lowered or tipped out of position.

412,656. PAPER-MACHINE. LAWRENCE O'NEILL, Port Yan, N. Y., assignor to A. Clinton Brooks, John Shutts, and John T. Andrews, 2d, same place. Filed Feb. 5, 1889. Serial No. 299,002. (No model.)



Claim.—In a paper-machine, the combination, with the press-rolls R R' and felt F, passing between said rolls, of the endless rubber jacket J, surrounding the upper roll R, bearings *b b*, arranged adjustably vertically above said roll, and the roller *r*, journaled in said bearings and carrying the aforesaid jacket, substantially as described and shown, for the purposes set forth.

412,657. AUTOMATIC MUSICAL INSTRUMENT. ROBERT W. PAIN, New York, N. Y., assignor to the Aliston Organ and Music Company, same place. Filed Jan. 28, 1889. Serial No. 297,956. (No model.)



Claim.—1. In an automatic or mechanical musical instrument, the combination of electric circuits, electro-magnets serving to produce notes, opposite contacts for said electric circuits, pneumatic motors connecting with certain of the contacts, a tracker communicating with said motors, and a music sheet, card, or tablet, substantially as specified.

2. In an automatic or mechanical musical instrument, the combination of electric circuits, electro-magnets serving to produce the notes, opposite contacts comprised in each electric circuits, pneumatic motors, pins extending between the pneumatic motors and certain of the contacts, the last-named contacts serving to support the motors, a tracker communicating with said motors, and a music sheet, card, or tablet, substantially as specified.

3. In an automatic or mechanical musical instrument, the combination of electric circuits, electro-magnets serving to produce the notes, pairs of contact-pieces comprised in each electric circuits, pneumatic motors, a wind-chest in which such pneumatic motors are arranged, pins extending between and supported by the contact-pieces of the pairs, pneumatic motors contacting with said pins, a tracker communicating with said motors, and a music sheet, card, or tablet, substantially as specified.

4. In an automatic or mechanical musical instrument, the combination of electric circuits, electro-magnets serving to produce the notes, pairs of contact-pieces comprised in each electric circuits, pneumatic motors, pins extending between the pneumatic motors and certain contact-pieces of the pairs, such contact-pieces serving to support the pins and collapse the motors when these are not otherwise actuated, a tracker communicating with said motors, and a music sheet, card, or tablet, substantially as specified.

5. In an automatic or mechanical musical instrument, the combination of a tracker-board, a music sheet, card, or tablet, pneumatic motors communicating with the tracker-board, a wind-chest in which such motors are arranged, exhaust-bellows communicating with such wind-chest, electric circuits, pairs of contact-pieces for the several electric circuits, pins extending from the motors to certain contact-pieces of the several pairs, and electro-magnets in the circuits and serving to produce the notes, the said pins being moved in one direction by the extension of the motors through the admission of atmospheric air to them and moved in the other direction by the contact-pieces upon which they rest, substantially as specified.

6. In an automatic or mechanical musical instrument, the combination of sound-producing devices, manual keys for operating the same, electro-magnets, levers carrying the armatures of said magnets and arranged beneath the keys, pins extending between the levers and the keys, electric circuits connected to the magnets, pairs of contact-pieces for the several circuits, pneumatic motors arranged above the keys, a tracker-board, and a music sheet, card, or tablet, also arranged above the keys, the said motors operating the said contact-pieces, substantially as specified.

7. In an automatic or mechanical musical instrument, the combination of sound-producing devices, electro-magnets for operating the same, electric circuits connected with the magnets, contact-pieces connected with the circuits, pneumatic motors for operating the contact-pieces, bellows for effecting the operation of the pneumatic motors, an electro-magnetic motor for operating the bellows, a tracker communicating with the pneumatic motors, a music sheet, card, or tablet for controlling the pneumatic motors, and a wind-motor operated by the bellows and effecting the travel of the music-sheet, substantially as specified.

8. In an automatic or mechanical musical instrument, the combination of sound-producing devices, electro-magnets for operating the same, electric circuits connected with the magnets, contact-pieces connected with the circuits, pneumatic motors for operating the contact-pieces, bellows for effecting the operation of the pneumatic motors, an electro-magnetic motor for operating the bellows, a regulator for the electro-magnetic motor, a tracker communicating with the pneumatic motors, a music sheet, card, or tablet for controlling the pneumatic motors, and a wind-motor operated by the bellows and effecting the travel of the music-sheet, substantially as specified.

9. In an automatic or mechanical musical instrument, the combination of sound-producing devices, electro-magnets for operating the same, electric circuits connected with the magnets, contact-pieces connected with the circuits, pneumatic motors for operating the contact-pieces, bellows for effecting the operation of the pneumatic motors, an electric motor for operating the bellows, a tracker communicating with the pneumatic motors, a music sheet, card, or tablet for controlling the pneumatic motors, a wind-motor operated by the bellows and effecting the travel of the music-sheet, and a regulating-valve for controlling the wind-motor, substantially as specified.

412,658. SASH-CORD GUIDE. STEPHEN PALMER, Lansingburg, N. Y. Filed June 2, 1888. Serial No. 276,057. (No model.)



Claim.—1. A sash-pulley case having formed on its sides angular swellings, on its rear or inner edges chisels or cutters, and on its front or face edges arcs of circles, each arc having formed on its outer periphery a marking-spur, substantially as and for the purposes set forth.

2. A sash-pulley case having formed on its sides angular swellings, its front or face edges curved to form a series of arcs of circles, each arc being provided with a marking-spur located centrally thereof, the spurs of the angular swellings projecting outwardly beyond the curved lines of the face-plate, substantially as and for the purposes set forth.

3. A sash-pulley case having its rearwardly-extending pulley-supporting flanges beveled on their rear edges from their inner to their outer surfaces, forming acute angles at their rear outer edges to serve as chisels, substantially as set forth.

412,659. SMOKE-CONSUMING FURNACE. WILLIAM PERRY, New York, assignor, by direct and mesne assignments, of two-thirds to Ida de Kramer and John U. Shorter, Brooklyn, N. Y. Filed Dec. 15, 1888. Serial No. 293,672. (No model.)



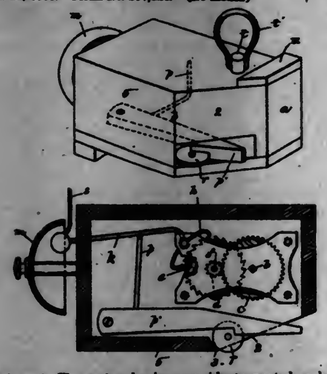
Claim.—The combination, with the rear wall of a furnace having an opening or openings, of an additional transverse wall at some distance back of the same, an arch or floor connecting said walls, and a series of pipes passed through said floor or arch, which pipes are open at the top and bottom, the upper ends of the pipes projecting a short distance above the top of said arch or floor, and the lower parts of the pipes being perforated and in direct communication with the space formed below said arch or floor, substantially as set forth.

412,660. TOBACCO-PIPE. DANIEL PETERS, Cincinnati, Ohio. Filed July 18, 1889. Serial No. 317,989. (No model.)



Claim.—A cob tobacco-pipe provided with an orifice B for the stem and having at the lower end of the bowl the pith-c, and the plate D, secured to the lower outer end, substantially as described.

412,661. BURGLAR-ALARM. CHARLES PERLEY, Salem, Mass. Filed Jan. 22, 1889. Serial No. 297,126. (No model.)



Claim.—1. The casing having one side truncated or beveled to form a shorter beveled face 2 at an angle with the main portion 5 of said side, combined with an alarm mechanism within the casing and a detent pivoted to the casing and having an arm in contact with a moving part of the alarm and another arm projecting through said beveled face and arranged to vibrate freely within the space between said beveled face and a continuation of the longer portion 5, substantially as and for the purpose specified.

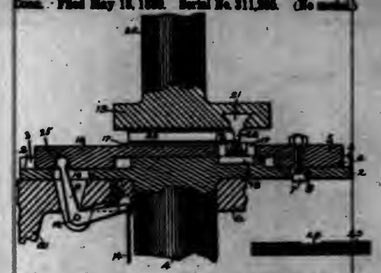
2. The casing having the beveled face formed on one of its sides at an angle to the main portion of said side, and an anti-friction roller journaled in the casing near said angle, combined with an alarm mechanism within the casing and a detent pivoted to the casing and having an arm in contact with a moving part of the alarm and another arm projecting through said beveled face and arranged to vibrate freely within the space between said beveled face and a continuation of the longer portion 5, substantially as and for the purpose specified.

412,662. DOMESTIC BOILER. JOHN B. PHILLIPY and SIMON P. DRALY, Hartsville, Ind. Filed Feb. 6, 1889. Serial No. 299,103. (No model.)



Claim.—A domestic boiler consisting of the outer imperforate vessel A, the inner vessel B, having the re-enforced perforated bottom, the perforated body provided with the internally-projecting apertured bead B^1 and upper flange B^2, the apertured cover B^3, and the apertured externally-flanged cover B^4, substantially as specified.

412,666. PROCESS OF AND APPARATUS FOR MANUFACTURING CARRIAGE CORNER-IRONS. EDWARD C. PORTER, New Haven, Conn. Filed May 18, 1889. Serial No. 311,269. (No model.)



Claim.—1. The herein-described method of straightening corner-irons, the same consisting in clamping them edgewise in dies of proper form while they are arranged upon a bed, and then striking them upon one plane or side with dies having a face of less width than that of the corner-iron, and with a force sufficient to produce a sufficient longitudinal depression in the iron so struck as to permanently retain them when released in the straightened position which the iron occupied in the die after being so struck, substantially as specified.

2. The combination of bed 2, having a supporting-surface 18 for the corner-irons, fixtures 5 and 10, having clamping-faces 17 to receive and clamp the corner-irons, a treadle mechanism to force said fixture 10 toward fixture 5, fixture 19, provided with the striking edges or bars 22, a drop to which 19 is secured, and a press in which said drop may be actuated, all substantially as specified.

412,664. APPARATUS FOR IMPREGNATING LIQUIDS WITH GASES. WILLIAM RADAM, Austin, TEX. Filed July 15, 1889. Serial No. 317,518. (No model.)



Claim.—In an apparatus for impregnating liquids with gases, the combination, with the closed reservoir A for containing the liquid, having windows E upon opposite walls thereof, of the transverse beam F, having its ends supported in said windows, the sulphur-containing vessel F', resting upon said transverse beam, the man-hole B, the air-hole Y, and cocks I and I', substantially as described.

412,665. VEHICLE-SPRING. GEORGE E. RAYMOND, Grand Rapids, Mich. Filed June 15, 1889. Serial No. 314,200. (No model.)



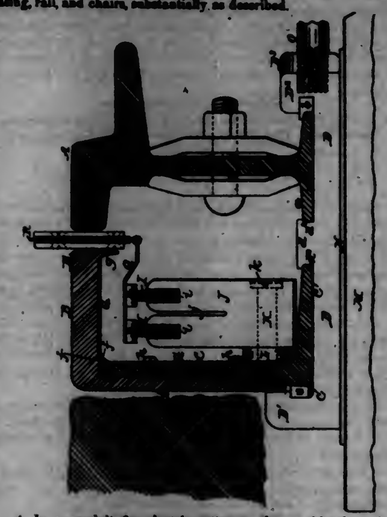
Claim.—In a vehicle, the combination of the vehicle-body, arms supported at their outer ends by side bars, a spring attached at each end to the body, near the outer side thereof, by a rigid attachment to the body and spanning the space between such points of attachment, said arms pivoted near the center of each arm to the body, and at their inner ends connected to the spring near the center of such spring, said spring having a curved form on either side of its center, and adapted to allow for the vertical movement of the center of the spring and the inner ends of the arms without moving the ends of said spring at the point of attachment to the vehicle-body, substantially as described.

412,666. ELECTRICAL-RAILWAY CONDUIT AND CURRENT-FLOW. JAMES W. REID, Denver, Colo. Filed Apr. 29, 1889. Serial No. 308,012. (No model.)

Claim.—1. In a conduit for electric railways, the combination, with the girder-rail, of a hollow metal casing composed of a top and a bottom section joined back to back, the bottom section being secured to the base of said rail, and the top section forming with the rail the plow-slot, substantially as described, for the purpose specified.

2. In a conduit for electric railways, the combination, with a girder-rail, of a casing formed with a top plate, a closed side and a bottom plate arranged at one side of said rail to form a conduit together with the same, forming a slot between said top plate and the head of said rail, and keyed or locked to said rail, substantially as described.

3. In a conduit for electric railways, the combination, with a girder-rail, of a rectangular casing open at one side and secured at the side of said rail to form a conduit together with said rail, locking-chairs clamping the foot of said rail and casing, and keys locking said casing, rail, and chairs, substantially as described.



4. In a conduit for electric railways, the combination of the girder-rail, rectangular casings open at one side and secured at the side of said rail to form a slotted conduit together with said rail, and a drain arranged directly below said rail and conduit forming casing and communicating directly with the latter and the plow-slot, substantially as described, for the purpose stated.

5. In a conduit for electric railways, the combination of a girder-rail, a rectangular plate having a foot-flange C' and a side and arranged at the side of said rail, a rectangular slot-forming plate having a side and a top, and locking-chairs and keys for locking said rail and angle-plates together to form a rectangular slotted conduit, substantially as described.

6. In a conduit for electric railways, the combination of a girder-rail, the angle-plate having the foot-flange C' formed with the rib *e*, and the side C, the angle-plate B, having the side B' and the top formed with the rib *f*, the locking-chair having the upwardly and inwardly turned lock ends, and the keys *b c*, substantially as described.

7. In a conduit for electric railways, the plow-slot formed by the overhanging head of a girder-rail and the overhanging top plate of the conduit, in combination with a bottom plate forming a support for said overhanging top plate, and means, substantially as described, for securing said supporting-plate to the base of the rail, whereby the said slot-forming plate may be removed and replaced, when desired, for access to the current-transmitting devices, substantially as described.

8. In a conduit for electric railways, the combination of the girder-rail and the slot-forming angle-plates arranged to have their joints register, the angle-plates C, arranged to break joints with said rails, and the hood or shield plates G, secured to one of said angle-plates to cover from the inside the joints of said slot-forming angle-plates, substantially as described.

9. In a conduit for electric railways, the combination, with the conduit, of insulators having horns in their lower ends, screw-bolts inserted through said horns and into the side of said conduit, and flexible or rubber washers interposed between said insulators and the side of the conduit, substantially as described.

10. In a conduit for electric railways, the combination of a girder-rail, a rectangular casing open at one side and arranged at the side of said rail to form a conduit and plow-slot, and insulators and conductors secured to the closed side of said casing under the top plate of the same, substantially as described.

11. In a conduit for electric railways, the combination of a rectangular conduit, insulator-blocks formed with slots or seats in their upper ends, conductors supported in said seats, and bolts inserted through said insulator-blocks and into the side of said conduit, substantially as described.

12. In a conduit for electric railways an insulator-block for the electric conductors having slots or seats for said conductors and having a deep slit or recess between said seats, substantially as described.

13. In a conduit for electric railways, the combination of the conduit, insulator-blocks having slots in the upper ends and slits or recesses between said slots, bolts inserted through said blocks into said conduit, and flexible or rubber washers upon said bolts between said blocks and conduit, substantially as described.

14. In a conduit for electric railways, the combination, with a girder-rail, of a hollow rectangular casing open at one side and secured with its bottom to the foot of said rail and with its open side opposite the side of the latter and having its top extending toward the tread of said rail to form the plow-slot, substantially as described.

15. In a conduit for electric railways, the plow-slot formed by the overhanging head of a girder-rail and the overhanging top plate of the conduit, and a bottom longitudinal drain-slot for said conduit formed by the bottom plate thereof and the base-flange of said rail, in combination with means, substantially such as described, for fastening the said conduit-forming plates to the said rail.

16. In an electrical-railway conduit, the combination, with a girder-rail, of a hollow metal casing secured to the base of said rail and forming, together with said rail, the plow-slot and the conduit, substantially as described.

17. In an electric-railway conduit, the combination of a rail having an overhanging side head adapted to form one side of the plow-slot and a conduit-forming casing having a removable plate-section forming the other side of said plow-slot and provided with an under shoulder or ridge *f*, and a fixed base-plate section interlocking with said shoulder or ridge, whereby to hold said slot-forming part in fixed relation to the rail to maintain a uniform width of slot.

18. In an electric railway, the combination, with a railway-rail, of a casing formed of a fixed base part and a removable top part and containing the insulated electrical conductors, and both together forming the plow slot, and the locking-chairs, substantially as described.

19. In an electric railway, a conduit having a removable top L-shaped section, in combination with a base L-shaped section, a rail, and a base-locking device for the parts, the vertical sides of the said casing parts being secured together at the upper end of one and at the lower end of the other, whereby to permit the removal of the said slot-forming part without disturbing the paving or the conduit.

20. A street-conduit for electric railways formed of a casing open at one side and forming one side of the plow-slot and a rail closing such open casing side and forming the other side of said plow-slot, and means for binding said casing to said rail, consisting of a chair having lock-connections with the rail-base and with the casing-base, substantially as described.

21. A conduit-forming casing for electric railways, consisting of an L-shaped plow-slot-forming part, combined with a railway-rail forming one side of said conduit-casing and one side of said plow-slot, and means, substantially as described, for binding the conduit-casing to the base of the rail and for supporting the slot-forming parts, substantially as described.

22. In an electric railway, the insulator having vertical slots, a supporting-bolt therefor, and flexible or rubber washer for insulating it from its bolt-supporting wall, in combination with the conductors loosely supported by said insulators and the yielding contact plow-shoes, substantially as described.

23. In an electric railway, the insulator having the conductor-receiving slots and an intervening slot, all open at the top and mounted upon the wall of the conduit in isolated relation thereto, substantially as described.

24. In an electric railway, the conductors for supplying the current for the moving car and for the return-current arranged upon the same side of the conduit, in combination with the contact-shoes, their connected yielding arms, and the plow or current-taker, the said shoes having a pivotal connection with the latter, substantially as described.

25. The combination, in an electric-railway conduit, of a rail and a hollow casing, the two forming the conduit, of cross base-chairs having exterior and interior locks, with the base-flange of the rail and with the base-plate of the casing, whereby the rail and the casing are bound together at intervals along the track.

26. In an electric railway, a plow device for connecting the car-motor with the conductors, consisting of the side wear-plates, the insulated copper plates E, the clamping screws or rivets 6 6, the plates, the arms hinged upon said plates, and the shoes carried by said hinged arms, substantially as described.

27. In an electric-railway conduit, the rail, the side casing part C C', and a base-chair having the central locking-ridge *d* and the locking ends $D' D^2$, in combination with the top casing part B B' and the wedge *b c*, substantially as described.

28. In an electric-railway conduit, the combination, with a conductor, of the insulator therefor mounted upon the wall of a conduit by means of a bolt and maintained in proper relation to said conductor by means of an angular or square abutting upon the bottom part of said conduit, substantially as described.

29. In an electrical-railway conduit, the combination, with the

rail and a hollow casing, both together forming the conduit, the plow-slot, and a bottom drain-slot, of the cross locking-chairs, the foundation drain-pieces, and the open-top drain-sections supported upon said foundation-pieces, substantially as described.

30. In an electric-railway conduit, the combination, with the rail and the conduit-forming-casing parts, of the foundation-pieces M and the drain-pieces P, whereby to form a support and a continuous drain for the conduit, substantially as described.

31. The combination, in an electrical-railway conduit, with the rail, the casing-plates forming the conduit, the locking-chair, and the base-plate N, of the foundation-pieces M, substantially as described, for the purpose specified.

32. The combination, in an electrical-railway conduit, with the rail and the casing-plates forming the conduit, of the foundation-pieces M, having the projecting end shoulders M^3, and the drain-pieces supported upon said shoulders, substantially as described.

33. In an electrical-railway conduit, the combination of the rail and the casing-plates forming the conduit, with the foundation-pieces M, formed with a longitudinal central opening and supporting the conduit, as described, and the drain-pieces supported by said foundation-pieces and opening at the top into the said conduit, substantially as described, for the purpose specified.

34. The combination, in an electric-railway conduit, of the rail and the conduit-casing parts, with the foundation-pieces M, having a longitudinal hole and a base or foot flange broadening out at one side, whereby the center of the foot-flange of the rail will be in vertical line with the middle of the width of said foundation, substantially as described.

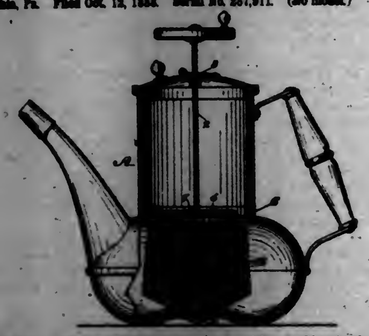
35. The combination, in an electric-railway conduit, of the rail and the conduit-casing parts, with the foundation-pieces M and the drain-pieces P, constructed of two side parts curved and joined at the bottoms, open at top, and bearing at their upper edges against the outer flanges of the rail and the outer side of the base-casing part, whereby, when the earth is packed about the drain parts, they will be tightly pressed together where they join at the bottom and held rigidly against the said rail-flange and conduit-wall.

36. In an electric-railway conduit, the plow or take-up having a hinged contact-shoe at each end, combined with independent conductors arranged side by side in the same horizontal plane and an insulator having open-top slots and convex bearings for said conductors, substantially as described, for the purpose specified.

37. The combination, in an electric-railway conduit, of two independent conductors arranged side by side, and insulators having open-top confining-seats for the conductors with contact-shoes for the conductors, the plow or take-up, and arms hinged to said plow and carrying said shoes independently of each other for the separate conductors.

38. The combination, in an electric-railway conduit, of two independent electric conductors arranged side by side and a seat-forming insulator for both conductors with independent contact-shoes, the plow or take-up, and arms connecting one of said shoes to each end of the take-up.

412,667. COFFEE OR TEA POT. LOUIS J. RICHARDS, Philadelphia, Pa. Filed Oct. 12, 1888. Serial No. 287,911. (No model.)

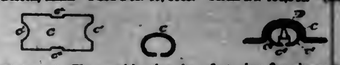


Claim.—1. The combination of a sack with a holder having a diaphragm provided with a flange rising therefrom, a rod supporting said diaphragm, and a ring which is movably fitted on said rod and adapted to engage with said flange, whereby the sack may be distended and its mouth clamped between the flange and ring, the parts named being combined substantially as described.

2. A coffee or tea pot having a dishing bottom with a concavity therein a vertical rod stepped in said concavity, perforated diaphragms secured to said rod, a sack sustained by said diaphragms, a flange rising from one of said diaphragms, and a ring with cross-piece having opening therein, said parts being combined substantially as and for the purpose set forth.

3. A coffee or tea pot having a rotatable rod journaled therein, perforated diaphragms secured to said rod, a sack or percolator sustained by said diaphragms, a rim attached to one of said diaphragms, and a ring fitting in said rim and having a cross-piece, the latter serving as a bearing for said rotatable rod, and a catch to engage said rod, said parts being combined substantially as and for the purpose set forth.

412,668. FASTENING FOR GLOVES. WILLIAM S. HOUGHTON, Boston, Mass. Filed Feb. 19, 1886. Serial No. 192,241. (No model.)



Claim.—1. The combination, in a fastening for gloves and other articles, of a stud or member of a fastening formed from a cup-eyelet A' having a flange a', which rests upon the under surface of the material to which the eyelet is attached, which eyelet extends through a hole in the material and is provided with a washer b upon the upper or outer surface of the material, and which stud is expanded or enlarged above or without the washer, with the other or female member of the fastening, comprising a section C, having the recess c' bent to form the yielding section c^3, and a cap D, adapted to receive the material to which the member is secured, and the upper section C, to which it is fastened by one or more fastenings extending through the material, as and for the purposes specified.

2. The member of a fastening device comprising the section C, having the recesses c' in the yielding sections c^3, and the cap D, attached thereto, as described, all substantially as and for the purposes set forth.

3. The section C of a socket-fastening, made from a flat blank c, having recessed ends bent to bring the recesses opposite each other, all substantially as and for the purposes described.

412,669. THERMO-ELECTRIC GENERATOR. WILLIAM S. DE L. ROGERS and JAMES S. MOLLISET, Sydney, New South Wales. Filed Feb. 9, 1889. Serial No. 299,399. (No model.)



Claim.—1. In thermo-electric generators, the hot-air chamber, in combination with the projecting thermo-electric couples, the separate inner furnace-chamber, and a heat-regulating valve, substantially as described, and as illustrated in the drawings.

2. In thermo-electric generators, the combination of the hot-air chamber and thermo-electric couples with a pyro safety-valve and pyro-gage, substantially as described, and for the purpose herein set forth.

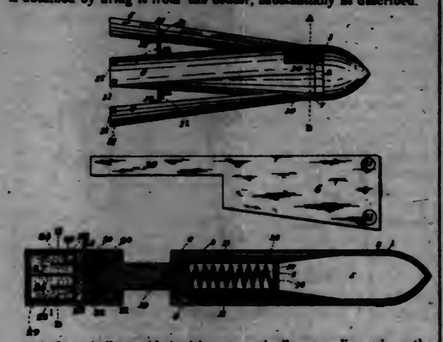
3. In a thermo-electric generator, a couple composed of two metals or alloys which melt at different temperatures, cast one upon or about the other, so that the metal or alloy of which the element is composed shall, while in process of casting, cause the partial fusing of the metal or alloy of which the connecting-pieces are composed, and another alloy be thus formed at the point of union of the metals or alloys, substantially as described, and for the purpose herein set forth.

412,670. PROJECTILE. GEORGE B. ROSS, Buffalo, N. Y., assignor of one-half to Clayton M. Daniels. Filed Dec. 4, 1886. Renewed Apr. 3, 1889. Serial No. 305,912. (No model.)

Claim.—1. A projectile provided with a series of automatically radially-expanding wings having their spring ends rigidly secured to the shell at one side of the longitudinal center of said wings, so that while one side or edge of the free ends of the wings move radially, or nearly so, from the center, the other sides move tangentially from the body of the shell, substantially as and for the purposes described.

2. A projectile provided with automatically-acting wings for imparting a rotary movement to the shell during its flight, a chamber for holding the explosive, and a cylindrical chamber provided with buffer-springs, in combination with a follower adapted to fit said cylindrical chamber and set in conjunction with the springs and having an enlarged portion 20 at its rear, substantially as and for the purposes described.

3. In a shell for firing dynamite or other high explosives, the combination therewith of a cartridge containing a charge of slow-burning powder for giving the shell a comparatively slow start, and a charge of quick-burning powder at the back of the slow-burning powder for increasing its velocity through the gun, with a priming-tube 27, extending from the rear of the cartridge through the quick-burning powder to near the front of the slow-burning powder A, and a series of priming-tubes extending back from the rear of the slow-burning-powder chamber to or near the center of the quick-burning-powder chamber, whereby the slow-burning powder is discharged from front to rear, and a more rapid discharge of the quick-burning powder is obtained by firing it from the center, substantially as described.



4. In a shell provided with automatically-expanding wings, the combination, with said wings, of the soft elastic packing-pieces 31, located on the outside of the rear ends of the wings, as and for the purposes described.

5. In a projectile, a series of automatically-expanding wings having their spring ends rigidly secured to the forward portion of the shell, in combination with the jointed arms 11, secured to or near the rear ends of the wings by joints 12 and 14 and to the body of the shell, as and for the purposes described.

412,671. GRIPPING DEVICE FOR CABLES. THOMAS H. ROSS, St. Louis, Mo. Filed May 9, 1888. Serial No. 310,132. (No model.)



Claim.—1. A gripping device for cables, consisting of a handle, a groove therein in which the cable takes, and an independently-movable gripping-jaw for automatically grasping said cable when weight of the article to be transported is applied to the same.

2. A gripping device for cables, consisting of a handle 7, a downward extension 9, and a gripping-jaw 10, pivoted to said downward extension, to which the articles of freight are adapted to be secured.

3. A gripping device for cables, consisting of a handle 7, having a groove extending from one side thereof, in which groove the cable takes, and a plate 13, pivoted to said handle, adapted to close the open side of said gripping device, for the purpose described.

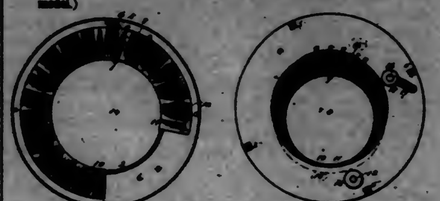
4. The combination, as hereinbefore set forth, to form a gripping device for cables, consisting of a handle 7, a downward extension 9, a gripping-jaw 10, pivoted to said downward extension, to the lower end of which the articles of freight are adapted to be secured, and a plate 13, pivoted to said handle 7, and having cord 15 for manipulating said plate.

412,672. CELERY-BLEACHER. GEORGE W. ROSS, Newark, Ohio. Filed Apr. 2, 1889. Serial No. 305,704. (No model.)



Claim.—A celery-bleacher composed of two continuous rolls or strips of paper which are placed upon opposite sides of each row of the plants, and which paper is held in contact with the plants at its upper edge, substantially as shown.

412,673. ROTARY ADJUSTABLE STOVE-PIPE THIMBLE. JOHN R. SHAFFER, Oak Hill, Mo. Filed Mar. 6, 1889. Serial No. 302,467. (No model.)



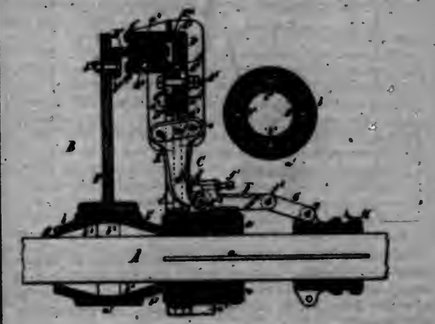
Claim.—1. The expanding sleeve 7, formed of two strips carrying radial rings 8 9, overlapping so as to form a close flange working in the recess of a flange surrounding the sleeve 7, for the purpose set forth.

2. The combination of the flue 1, the flange 2 4, turning on the flue and having an annular recess 6, and the expanding sleeve 7, with one end secured to the flue 1 and the other end secured to the turning flange 2 4, and carrying a flexible flange 8 9, working in the recess 6, substantially as and for the purpose set forth.

3. The combination of the flue 1, recessed flange 2 4, turning on the flue, expanding sleeve 7, with one end attached to the flue and having flexible flange 8 9, working in the recess of the turning flange 2 4, and screw-bolt passing through the flanges 2 4 and 8 9, and having a nut adapted to bear upon the outer face of the outer disk 4 of the turning flange, for the purpose set forth.

4. The combination of the flue 1, recessed flange 2 4, turning on the flue, expanding sleeve 7, with one end attached to the flue, and having a flexible flange composed of wings 8 9, working in the recess of the turning flange 2 4, screw-bolt passing through the flanges 2 4 and 8 9, with nut bearing against the outer disk 4 of the turning flange, and a screw-bolt fixed in a wing of the flange 8 9 and extending through an oblique slot of the disk 4, substantially as and for the purpose set forth.

412,674. FRICTION-CLUTCH. NOAH SHAW, San Castro, Wis. Filed June 6, 1888. Serial No. 276,262. (No model.)



Claim.—1. In combination with a friction-clutch pulley, the pivoted operating-lever E, clutching-clamps D D', clutch-frame C, having arm c', and spring d^3 between clutching-clamps D D', bearing against and acting upon both of said clamps with a thrusting force simultaneously, substantially as and for the purpose described.

2. In combination with a friction-clutch pulley, the clamps D D', one of which has a lower support for a spring and the other a bearing for said spring, the pivoted operating-lever E, having arm e^4, toggle-link F, and set-screw f' on link F, and accessible for adjusting purposes outside the lever E and pulley B, substantially as and for the purpose described.

3. The combination of the pulley B, having a friction-clutch rim B', clamps D D', pivoted lever E, having arm e^4 and connected to both of said clamps, the set-screw f', and toggle-link F, the said link having the set-screw attached to it, and the said screw exerting its force against the outer side of the lever E for the purpose of adjusting the movement of the said lever and clamps, substantially as described.

4. In combination with a pulley or wheel B, having a friction-rim B', clutch-arm c', a hub c, fixed on the shaft, a sliding sleeve H, two laterally and radially movable clutch members D D', of the type specified, clamp-lever E, pivoted to said clutch members, and toggle-links F G, the inner one of the links thereof provided with means by

which its inner end can be adjusted inwardly or outwardly from a position outside the pulley and clutch-arm, substantially as described.

5. The combination, with the loose pulley B, having the friction-rim B', the hub *c*, having arms *c'*, the movable jaws *d d'*, having wearing-blocks d^3, the spring d^5, lever F, lever E, the loose sleeve H, and the link G, connecting the latter to the lever F, substantially as described.

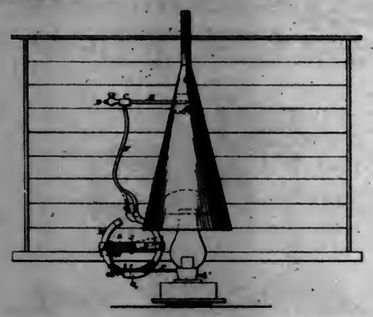
6. The combination of the pulley having the friction-rim B', the movable jaws D D', spring d^5, lever E, hub *c*, having arm *c'*, lever F, loose sliding sleeve H, and the toggle-link G, connecting said sleeve to the lever F, substantially as described.

7. The combination of the pulley B, having the friction-rim B', the hub *c*, having the radial arms *c'*, the movable friction-jaws, movable jaws D D', guided on said arms and adapted to engage the inner and outer sides of the rim, the springs d^5, to normally move said jaws in opposite direction from the rim, and the clamp-levers E, pivotally connected to the said jaws, and thereby adapted to move the jaws toward each other and apply them with equal force to the inner and outer sides of the rim, substantially as described.

8. The combination, with a pulley B, having a friction-rim B', two inversely and radially movable clutching-clamps D D', and a radial arm *c'*, of a clutch-frame C, upon which the shanks *d d*^{3} of the clamp-heads *d' d*^{3} of said clutching-clamps are mounted, the outer one of said clutching-clamps being provided with a shoulder d^{10} and the inner one thereof with a shoulder d^3, which is in substantially the same plane with the shoulder of the outer clamp, but nearer to the shaft, and the spring d^5, arranged to thrust against said shoulder, substantially as described.

9. In combination with a friction-clutch pulley, the operating-lever, clutching-clamps, the clutch-frame having an arm, and a spring between the clutch-clamps bearing against and acting upon both of said clamps with a thrusting force simultaneously, substantially as described.

412,675. HEAT-REGULATOR FOR INCUBATORS. WILLIAM P. SHEPARD, Fall River, Mass. Filed May 13, 1889. Serial No. 310,556. (No model.)



Claim.—1. In an incubator, the combination of an air-chamber placed in the incubator, a connecting-tube, a partially-rotating curved tube containing a body of mercury, and a mechanism operated by the movement of the tube for controlling the flame of the lamp, substantially as shown.

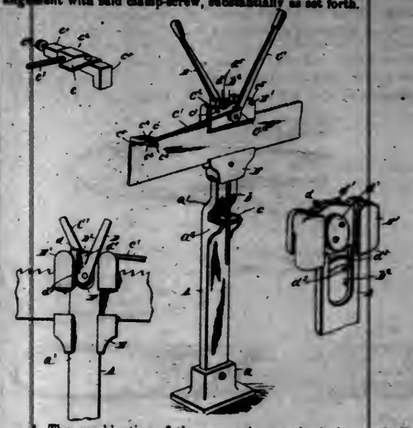
2. The combination of an air-chamber placed in the incubator, a suitable connecting-tube, a bent pipe which is open at one end and provided with suitable journals or bearings, a body of mercury placed in the bent pipe, a counter-balance placed upon the pipe, and an operating mechanism connected to the pipe for controlling the flame of the lamp, substantially as described.

412,676. SAW-SWAGE. WILLIAM W. SHUEY, Vandalia, Ill. Filed Apr. 13, 1888. Serial No. 307,076. (No model.)

Claim.—1. The combination, with the supporting-standard and the saw-blade clamps, of the die-actuating lever or handle carrying the feed device, substantially as specified.

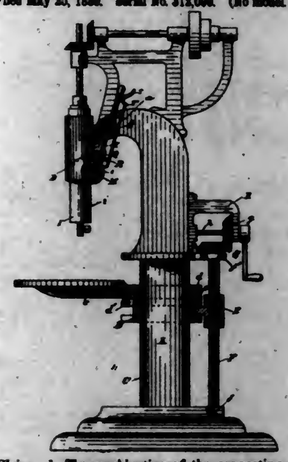
2. The combination, with the supporting-standard and the saw-blade clamps, of the lever or handle actuating the saw-tooth swaging-die and the opposite diagonally-disposed clamp-bar and holding-screws, said bar resting upon the back of the tooth, and the screw bearing upon the clamp-bar, substantially as set forth.

3. The combination, with the supporting-standard and the saw-blade clamps, of the lever or handle actuating the saw-tooth swaging-die, the set or clamp screw bearing against the one side of the saw-tooth, and the cam lever or handle whose cam is provided with a spiral groove or channel which receives a projection upon said supporting-standard, the journal of said cam bearing against the tooth in alignment with said clamp-screw, substantially as set forth.



4. The combination of the supporting-standard, the vertically-adjustable saw-clamps, the lever carrying the tooth-swaging die, and the saw-feeding device, the opposite diagonally-disposed clamp-bar and holding-screw, the former bearing upon the back of the saw-tooth at the point and the latter bearing upon said clamp-bar, the clamp-screw bearing against one side of the saw-tooth, and the cam-journals bearing against the opposite side of the tooth, the cam having a spiral groove engaging a projection on the supporting-standard and bearing against a hub-like projection of the upper saw-clamp, substantially as specified.

412,677. DRILL-PRESS. ALBERT P. SIBLEY, South Bend, Ind. Filed May 25, 1889. Serial No. 312,009. (No model.)



Claim.—1. The combination of the supporting-post, the collar thereon, and the drill-table supported by said collar, with a screw-shaft exterior to the post, and a nut on said shaft loosely engaging the said collar, substantially as described.

2. The combination of a drill-spindle, its sleeve, and the shaft and gearing for adjusting said spindle, with the worm-gear loosely mounted on the end of said shaft, the adjustable key engaging said gear, the lever carrying a worm-screw engaging said gear, and the mechanism for disengaging said key and worm-gear, all substantially as specified.

3. The combination, in a drill-press, of the supporting-post, the collar thereon grooved exteriorly, and the drill-table supported by said collar, with a screw-shaft and a nut on said shaft having a lateral rib engaging the groove in said collar, substantially as described.

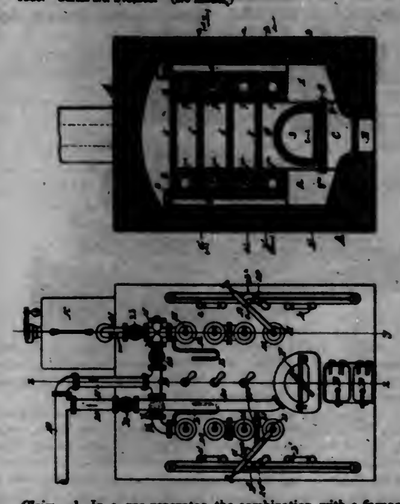
4. The combination of the drill-spindle, the shaft for operating the same, and the worm-gear on said shaft having radial notches in its face, with the lever mounted on the shaft, a worm-screw carried on a short shaft journaled in said lever and engaging said worm-gear, the spring-controlled key engaging said worm-gear and the bell-crank lever, and pin and latch for shifting said key, all substantially as set forth.

5. The combination of the supporting-post and collar thereon, and a table rigidly connected to said collar, with a vertical screw-threaded shaft exterior to the post, gearing for operating the same, and a nut thereon engaging the collar, substantially as specified.

6. The combination, with the sleeve, the spindle, its rack, and the shaft journaled in said sleeve carrying a pinion engaging the rack and a hand-wheel, and having its other end reduced, bored, and slotted, substantially as described, of the worm-gear mounted on the reduced end of said shaft, having radial notches in its inner face, the spring-controlled key in the slot of the shaft engaging said worm-gear, and the lever embracing said worm-gear and carrying a worm-screw shaft and hand-wheel for operating the same, and a bell-crank pivoted on said lever and operating a pin in the end of the shaft engaging said crank and the key, all substantially as described.

7. The combination of the supporting-post and collar thereon having an L-shaped peripheral groove, and a table rigidly connected to said collar, with a vertical screw-threaded shaft, gearing for operating the same, and a nut on said shaft having a lateral flanged rib engaging the groove of the collar, substantially as specified.

412,678. GAS-GENERATOR. ARMENIS C. SMITH, Sheboygan, Wis., assignor of one-half to Fleetwood Ward, Toledo, Ohio. Filed May 4, 1889. Serial No. 309,569. (No model.)



Claim.—1. In a gas-generator, the combination, with a furnace structure, of a coal-gas retort, a gang of oil-vaporizing pipes at one side of the furnace structure, a gang of steam-superheating pipes, a series of retorts alternately connected at their ends, a steam and vaporized-oil injector connected with the two gangs of pipes and with one of the said alternately-connected retorts, a gas-delivery pipe for the latter, and pipe-connections between the gas-delivery pipe and the coal-gas retort and alternately-connected retorts, substantially as described.

2. In a gas-generator, the combination, with a furnace structure, of a gang of oil-vaporizing pipes, and a gang of steam-superheating pipes, both located at one side of the furnace structure, a series of metallic pipe-lined retorts of refractory material, resting one directly upon another, and having the pipe-linings alternately connected at their ends, and a steam and vaporized-oil injector connected with the gangs of pipes and with one of the retorts, substantially as described.

3. In a gas-generator, the combination, with a furnace structure, of the gangs of oil-vaporizing pipes and steam-superheating pipes arranged at opposite sides of the furnace, the oil-feed pipes connected with the vaporizing-pipes, the steam-supply pipes connected with the superheating-pipes, a series of metallic pipe-lined retorts of refractory material, resting directly one upon another at each side of the furnace, each series having the pipe-linings alternately connected at their ends, connections between the oil-vaporizing pipes, superheating-pipes and the lower retorts, and a gas-delivery pipe having branch connections with the upper retorts, substantially as described.

4. In a gas-generator, the combination, with a furnace structure, of a series of superposed pipe-lined retorts alternately connected at their ends, a gas-delivery pipe connected with the upper retort, the steam-superheating pipes, connections between the latter and the lower retort, the baffle-plates located at one side of the pipe-lined retorts and having alternating end openings, the ascending flue between the opposite side of the retorts and the side wall of the furnace, and a fire-chamber, substantially as described.

5. In a gas-generator, the combination, with a furnace structure, of the steam-superheating pipes, pipe-lined refractory retorts alternately connected at their ends and in communication with the said pipes, the baffle-plates located at one side of the retorts and having alternating end openings, the ascending flue between the opposite side of the retorts and the side wall of the furnace, and a fire-chamber, substantially as described.

6. In a gas-generator, the combination, with a furnace structure having a fire-chamber, of a series of metallic pipe-lined refractory retorts, resting one directly upon another, and having the pipe-linings alternately connected at their ends, a series of baffle-plates located at one side of said pipe-lined retorts and having alternating end openings, and a gang of steam-superheating pipes connected with one of the retorts, substantially as described.

7. In a gas-generator, the combination, with a furnace structure having a central fire-chamber and opposite blocks or supports arranged at intervals to form opposite side flues, of a main retort arranged between the side flues, a series of superposed pipe-lined retorts on the blocks or supports at each side of the furnace, ascending flue spaces arranged, respectively, between the superposed retorts and the side walls of the furnace, and the baffle-plates located above the main retort and between the pipe-lined retorts at one side and those at the opposite side of the furnace structure and having alternating end openings, substantially as described.

8. In a gas-generator, the combination, with a furnace structure, of a main retort having a gas-discharge pipe, a series of retorts arranged in the furnace and rising above the main retort, a gang of oil-vaporizing pipes and a gang of steam-superheating pipes, both located at one side of the furnace, a gas-delivery pipe connected with the upper one of the series of retorts and with the gas-discharge pipe of the retort, a steam-injector connected with the lower one of the series of retorts and with the two gangs of pipes, and a valved branch pipe connecting the injector with the said gas-discharge pipe, substantially as described.

9. In a gas-generator, the combination, with a furnace structure, of a main retort, a series of superposed retorts rising above the latter, a gang of oil-vaporizing pipes and a gang of steam-superheating pipes located at one side of the furnace, a steam-injector connected with one of the superposed retorts and with the two gangs of pipes, a boiler, a gas-delivery pipe, a pipe-coupling connected with the gas-delivery pipe, the boiler, and the one of the superposed retorts, and provided with two valves to control communication between the retorts and the boiler and gas-delivery pipe, and a pipe connection between the main retort and the gas-delivery pipe, substantially as described.

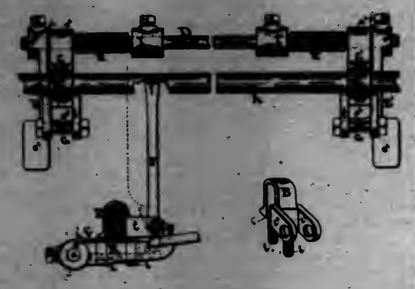
10. In a gas-generator, the combination, with a furnace structure, of a series of retorts at each side thereof, those of each series having their ends alternately connected, a gang of oil-vaporizing pipes and a gang of steam-superheating pipes embedded in each side wall of the furnace structure, a valved steam-supply pipe for each gang of steam-superheating pipes, an oil-feed pipe for each gang of oil-vaporizing pipes, a steam-injector connecting the gangs of pipes at each side of the furnace with the retorts adjacent thereto, a gas-delivery pipe having a branch-pipe connection with both series of retorts, a boiler, and connections between the boiler and the retorts, substantially as described.

11. In a gas-generator, the combination, with a furnace structure having a fire-chamber, side flues, and ascending flue spaces at its opposite sides, of a main retort having a gas-discharge pipe, a series of superposed pipe-lined retorts arranged at each side of the furnace, those of each series having their ends alternately connected, a gang of oil-vaporizing pipes and a gang of steam-superheating pipes embedded in each side wall of the furnace, a steam-injector connecting the gangs of pipes at each side with the adjacent pipe-lined retorts, a gas-delivery pipe, a steam-boiler, pipe-connections between the gas-delivery pipe and the upper retort of each series, a pipe-coupling connection between the boiler and the retorts at one side of the furnace, steam-supply pipes leading from the boiler to the respective gangs of steam-superheating pipes, and an oil-feed pipe for each gang of oil-vaporizing pipes, substantially as described.

412,679. CHILL-SUPPORT. GEORGE A. BOOTH, Norristown, Pa., assignor of one-half to William H. Lamb, same place. Filed Aug. 5, 1889. Serial No. 319,720. (No model.)

Claim.—1. The combination, with the axle of a vehicle, of a spring-controlled arm or arms supported in bearings on said axle, and a projection or projections on the shafts for engagement with said arm or arms, substantially as shown and described.

2. The combination, with the axle of a vehicle and the clips thereon for the shaft-couplings, of a plate or plates through which project the clip-bolts provided with a boss or bosses in which are journaled a spring-controlled arm or arms, and a projection or projections on the shafts for engagement with said arm or arms, substantially as shown and described.



3. The combination, with the axle of a vehicle, of a spring-controlled rod parallel with and journaled in bearings on said axle, a catch or catches secured on said rod, and a suitable projection or projections on the shafts for engagement with the catch or catches, substantially as shown and described.

4. The combination, with the axle of a vehicle, of a rod parallel with and journaled in bearings on said axle, a pair of helical springs encircling the rod and secured at one end to said bearings, a pair of collars secured on said rod and receiving the other ends of the springs, and a catch on each end of the rod for engagement with projections on the shafts, substantially as shown and described.

5. The combination, with the axle of a vehicle, of a spring-controlled rod parallel with, at the rear of, and journaled in bearings on said axle, and an arm or arms secured on said rod, the outer ends of said arm or arms extending forwardly of the axle and provided with a lateral projection adapted to engage with projections on the shafts, substantially as shown and described.

6. The combination, with the axle of a vehicle, of the arms E E' provided with the projections e^3 e^3 and the thumb-pieces e^4 on their outer ends, each said arms being supported in bearings on said axle and controlled by a spring and adapted to engage with a projection on the shafts, substantially as shown and described.

7. The combination, with the axle of a vehicle, of the plates C C, through which pass the bolts of the shaft-coupling clips, the bosses c^2 c^2 on said plates, with the openings c^3 therein, the arms E E', journally supported in said openings, and springs for the control of and projections on the shafts for engagement with said arms, substantially as shown and described.

8. The combination, with the axle of a vehicle, of a rod D, journaled in suitable bearings on said axle, the springs H H', encircling said rod, a socket in said bearings for the reception of one end of said springs, the collars I I, secured on said rod by bolts i, a socket in said collars for the reception of the other ends of the springs, and a catch secured on each end of the rod and adapted to engage with projections on the shafts, substantially as shown and described.

9. The combination, with the axle of a vehicle, of a spring-controlled rod parallel with and journaled in bearings on said axle, the arms E E', provided with the bosses c^2 c^2, with the openings c^3 therein and secured on said rod, the bolts e e', the projections e^3 e^3, and the thumb-pieces e^4 on the outer ends of said arms, said projections being adapted to engage with suitable projections on the shafts, substantially as shown and described.

10. The combination, with the axle A, of the clips B, the plates C C', the bosses c^2 c^2, with the openings c^3 therein, the rod D, the springs H H', the collars I I', the bolts i, the arms E E', the bolts e e', the bosses c^2 c^2, the openings c^3 in said bosses, the projections e^3 e^3, provided with the shoulders e^5 and the edges e^6, the thumb-pieces e^4, the shaft-irons F, secured to the shafts, the bosses f', provided with the openings f^2 for the passage of the bolts G, the wings b^2, the cam projections f^3, and the shoulders f^4, substantially as shown and described.

11. The combination, with the axle of a vehicle, of a spring-controlled rod parallel with and journaled in bearings on said axle, the arms E E', the bolts e e', securing the arms on the rod, the bosses c^2 c^2, with the openings c^3 therein, the projections e^3 e^3, the thumb-pieces e^4, the bosses f', the cam projections f^3, the bolts G, and the wings b^2 of the clip on the said axle, substantially as shown and described.

412,680. PROCESS OF TREATING THE MOTHER-LIQUORS OF PHENOL NITRATES. CLAUDE SAVIGNY, Lyons, France, assignor of one-half to Barthélemy Martinez, same place. Filed May 2, 1888. Serial No. 310,681. (No specimens.) Patented in France May 26, 1887, No. 183,768.

Claim.—1. The process herein described of separating the various substances contained in mother-liquors resulting from the manufactory of nitro-phenols and other nitrated substances, which consists in heating the mother-liquors and distilling nitric acid therefrom, and then cooling the mother-liquors and precipitating picric or nitro-cresylic acid, substantially as described.

2. The process herein described of separating the various substances contained in mother-liquors resulting from the manufacture of nitro-phenols and other nitrated substances, which consists in heating the mother-liquors and distilling the nitric acid therefrom, cooling the mother-liquors and precipitating picric or nitro-cresylic acid, and heating the mother-liquors and concentrating the sulphuric acid, substantially as set forth.

3. The process herein described of separating the various substances contained in mother-liquors resulting from the manufacture of nitro-phenols and other nitrated substances, which consists in heating the mother-liquors and distilling nitric acid therefrom, cooling the mother-liquors and precipitating picric or nitro-cresylic acid, heating the mother-liquors and concentrating the sulphuric acid, and adding nitrates to effect the nitrification of phenols, cresols, and the like, substantially as set forth.

412,681. RAIL-CHAIR. MCLEOD W. THOMSON, Altoona, Pa. Filed Mar. 25, 1889. Serial No. 304,626. (No model.)

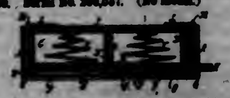


Claim.—1. The combination, with the cross-ties and the twin chair-sections B B', of the wedge-shaped headless stop-spike p, driven into the tie, wedging against the grain of the wood, and impinging upon the end of the chair, substantially as described.

2. The combination, with the cross-ties and the twin chair-sections B B', of the wedge-shaped stop-spike p, driven into the tie, wedging against the grain of the wood, and impinging upon the end of the chair, said chair-sections having the horizontal bases a a, with projecting flanges h, and the upwardly and inwardly extended webs C, connected together and engaging the rails A A by means of the transverse screw-bolts c, passing through the vertical web-extensions D, substantially as described.

3. The combination, with the cross-ties, rails, and twin chair-sections having flanged bases a a, which embrace the foot of the rail, of wedge-shaped stop-spikes inserted in the ties at the ends of the chair-sections at an oblique angle to the face of the tie, substantially as described.

412,682. PHOTOGRAPHIC-PLATE HOLDER. JOSEPH THOMAS, Jersey City, N. J., assignor of one-half to Carl P. Stirn, Brooklyn, N. Y. Filed Jan. 17, 1889. Serial No. 296,857. (No model.)



Claim.—1. The combination, with a plate-holder having a photographic chamber and a receiving-chamber for the reception of the plates, of a slide having a recess of a size sufficient to receive a plate in the photograph-chamber, said slide, by its outward-sliding movement, drawing the plate in its said recess into the receiving-chamber, said lifters adapted to extend through the slide into the receiving-chamber and lift the plate from the recess of said slide, substantially as described.

2. The combination, in a plate-holder having a photograph-chamber and a receiving-chamber, both chambers being adapted for the reception of photographic plates, of a slide or carrier adapted to carry a plate from one chamber to the other, and spring-lifters for holding the plates in the receiving-chamber out of the way of the carrier, said lifters being operated at suitable intervals by the movement of the carrier, substantially as described.

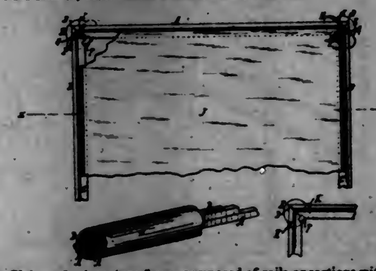
3. The combination, with a plate-holder having a photographic chamber and a receiving-chamber, of a slide having a recess which receives a plate in the photographic chamber, said slide, by its outward-sliding movement, drawing the plate from the photographic chamber into the receiving-chamber, and having adjacent to its plate-receiving recess a projecting shoulder, which lifts the plates in the receiving-chamber as the slide is moved outward, substantially as described.

4. The combination, with a plate-holder having a photographic chamber and a receiving-chamber, of a slide having a recess which receives a plate in the photographic chamber, said slide, by its outward movement, drawing the plate from the photographic chamber into the receiving-chamber, and having a projecting shoulder which lifts the plates in the receiving-chamber as the slide is moved outward, and lifters adapted to pass through the slide and lift the plate from the recess thereof, substantially as described.

5. The combination, with a plate-holder having a photographic chamber and a receiving-chamber, each adapted to contain a series of independent plates, and a spring arranged in the photographic chamber for pressing the plates therein toward the opening for exposure, of a slide having a recess of a size to receive within it a plate, and into which recess the latter is pressed by the spring, said slide, by its outward movement, drawing the plate from the photographic chamber into the receiving-chamber, substantially as described.

6. The combination, with the plate-holder frame having a photographic chamber and a receiving-chamber, and provided with the springs T, of the slide F in front of the photographic chamber, for exposing a plate, and the slide H, adapted to receive a plate in the photographic chamber and by its outward-sliding movement draw said plate into the receiving-chamber, said slides each having a stop-pin S to engage the springs on the plate-holder frame, substantially as described.

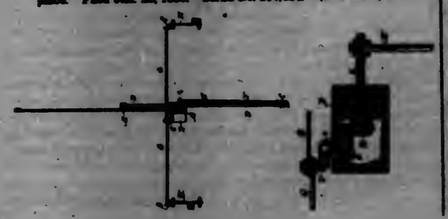
412,683. PICTURE-FRAME. GEORGE B. THROOP, New York, N. Y. Filed Feb. 14, 1889. Serial No. 299,896. (No model.)



Claim.—1. A picture-frame composed of rails or sections mitered at the ends, and combined with ornamental corner-pieces placed upon the angles of the frame and provided with flexible clamping-tongues bent into the inner angles of the frame, and wires bent over the edges of the sections on each side of the outer angles, substantially as described.

2. In a picture-frame, the combination, with the sections A and B, formed with rabbets and miter-joints D, of the ornamental corner-pieces E, provided upon their backs with the clamping-tongues F, bent into the inner angles of the frame and over upon the rabbeted edges, and the flanges K, bent over the outer edges of the sections A and B on each side of the miter-joints, substantially as described.

412,684. SLIDING OR ROLLING GATE. JOSEPH H. VARNUM, Terre Haute, Ind., assignor of one-half to Leonel Ford Purdue, same place. Filed Jan. 28, 1889. Serial No. 297,194. (No model.)



Claim.—1. In a sliding or rolling gate, the combination, with the spindles c and c and their beveled gearing, of the pitmen or connecting rods loosely connected to the crank of spindle c, and the stirrups to which the outer ends of said pitmen are loosely connected, substantially as described.

2. In a sliding or rolling gate, the combination, with the spindles c and c and their beveled gear-wheels, of the pitmen or connecting rods G G, the stirrups H H, the gate B, and the arm E, keyed at one end to the spindle c and at its other end pivotally or loosely connected to arm F, the other end of which latter arm is hinged or connected to the gate, substantially as described.

412,685. FISHING-REEL. JULIUS VAN HOUT, Brooklyn, assignor to Charles F. Ambrie, New York, N. Y. Filed Mar. 26, 1889. Serial No. 304,889. (No model.)



Claim.—1. The combination, with the side plate of a fishing-reel, of a spool having a shaft journaled in said plate, and an adjustable cap G secured to said plate and having a pin bearing against the end of said shaft.

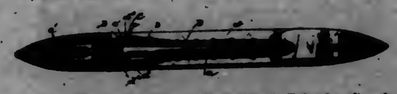
2. The combination of the side plate of a fishing-reel, having a journal-box with screw-threaded end projecting outside of the plate, a spool having a shaft journaled in said box, and an adjustable cap screwed upon the screw-threaded end of the box and having a pin bearing against the end of said shaft.

3. The combination of the side plate of a fishing-reel, having a journal-box with screw-threaded projection, a spool having a shaft journaled in said box, a screw-cap secured to said projection and having a pin bearing against the end of said shaft, and a washer interposed between the cap and plate, substantially as described.

4. The combination of the side plate of a fishing-reel, having a screw-threaded projection and journal-box, a spool having a shaft journaled in said box, a screw-cap secured to said projection and having a pin bearing against the end of the shaft, a metal washer next to the screw-cap, and a washer interposed between the metal washer and the plate.

5. The combination of the side plate of a fishing-reel, a pawl in said plate, a spool journaled in said plate, an adjustable cap secured to the plate and having a pin bearing against the end of the spool-journal, and a ratchet for the pawl on the plate.

412,686. BOBBIN. J. HENRY WELLS, Fall River, Mass. Filed Apr. 6, 1889. Serial No. 306,072. (No model.)



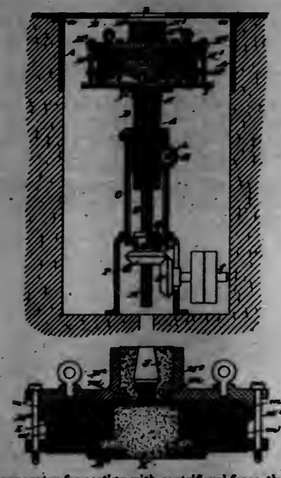
Claim.—The combination, with the bobbin B, having the enlarged base b and the circumferential groove in said base, said bobbin having its end from the lower shoulder of the groove reduced and beveled outwardly, of the metal cap D, having an inner flange d inserted in the bore of the bobbin, a base d' against the end of the bobbin, an outer flange d^2 on the outer surface of the base, and a spun-in flange d^3, entering the groove C, binding on the shoulder c', and preventing the latch from receding said shoulder or stripping the base, substantially as specified.

412,687. APPARATUS FOR CASTING METALS. HENRY W. WILKINSON, Sheffield, county of York, England, assignor of two-thirds to John B. Farwell, East Orange, and Frank Wilkinson, Orange, N. J. Filed Jan. 30, 1889. Serial No. 298,063. (No model.)

Claim.—1. In apparatus for casting with centrifugal force, the slide D and means for raising and lowering it, in combination with the shaft H, feather G^2, sleeve G, and wheel G', and with the mold M revolved thereby, and the floor-plate B, with its pouring-hole b, arranged for joint operation as herein specified.

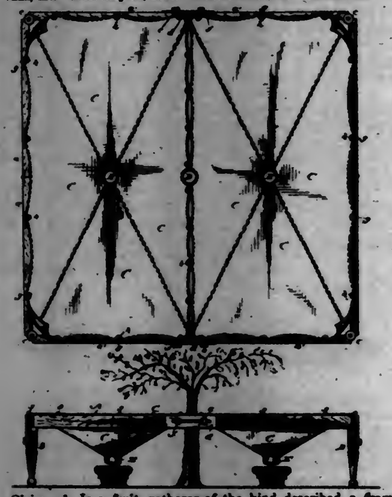
2. In apparatus for casting with centrifugal force, the metal mold $M' M^2 M^3$, being upper and lower portions separated by a considerable interval, in combination with the holding-bolts M^2 and with the po-

cipheral earthy molded part L, arranged for joint operation as herein specified.



3. In apparatus for casting with centrifugal force, the mouth part J, central part K, and peripheral part L, in combination with each other and with the metal portion M' M² M³ of the mold, and with the wheel I, shaft H, and suitable means for rapidly revolving the whole, as herein specified.

412,688. FRUIT OR NUT GATHERER. IRA H. WILLIAMS, Nevada, Mo. Filed May 10, 1889. Serial No. 310,264. (No model.)



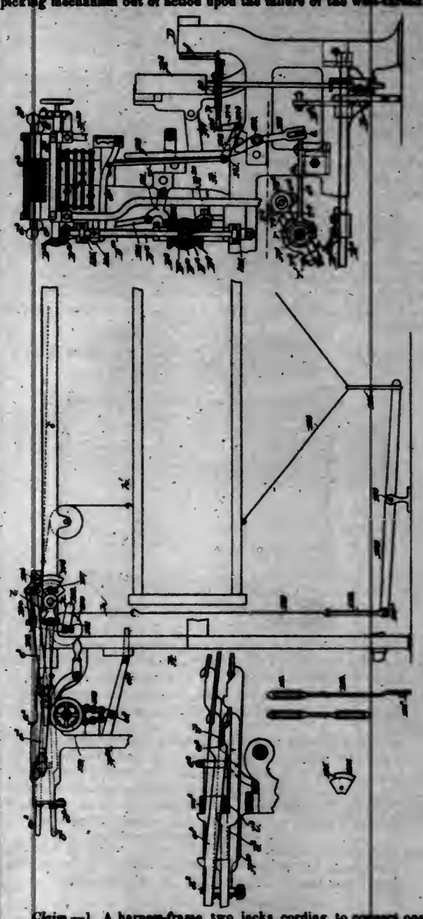
Claim.—1. In a fruit-gatherer of the kind described, a frame formed of sections, each composed of side and end pieces, the former hinged together so as to fold outwardly upon each other, and the latter hinged to the outer ends of the side pieces so as to fold inwardly thereon, and means for fastening the sections together, substantially as described.

2. The combination, to form a fruit-gatherer, of the frame formed of sections adapted to be fastened together and each composed of side and end pieces the former hinged together so as to fold outwardly upon each other, and the latter hinged to the outer ends of the side pieces so as to fold inwardly thereupon, and the canvass having the discharge-openings in their depressed centers, eyeleted holes along their outer edges adapted to catch over hooks on the frame-bars, and suitable fastenings along their meeting edges, substantially as described.

3. The combination, to form a fruit-gatherer, of the frame adapted to be set up around a tree, formed of sections, each composed of side and end pieces, the side pieces hinged together so as to fold outwardly upon each other, and the end pieces hinged to the outer ends of the side pieces so as to fold inwardly thereupon, slotted plates connected to the ends of the end pieces of one section, and thumb-screws upon the meeting ends of the end pieces of the other section, adjustable legs at the intersection of the side and end pieces of each section, and canvass adapted to be stretched upon the frame to receive the fruit from the tree and having discharge-openings in their depressed centers for the fruit to escape into receptacles therebeneath, eyeleted holes along their outer edges to catch over hooks on the frame-bars, and suitable fastenings along their meeting edges, substantially as described.

412,689. LOOM. HERBERT WYMAN, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed Mar. 9, 1889. Serial No. 302,695. (No model.)

Brief.—The objects of the invention are to relieve the tension on the harness-frame cording, and to provide means for throwing the picking mechanism out of action upon the failure of the weft-thread.



Claim.—1. A harness-frame, two jacks, cording to connect one end of one of the said jacks to the upper side of the harness-frame, a sheave to support the said cording, cording intermediate one end of the other of the said jacks and the under side of the harness-frame, and a sheave, as 100, over which the said cording is extended, combined with a movable sheave-carrying frame and with a compensating device to hold the frame against and strain the cording during the time that the shed is being formed and to move the said frame to reduce the strain on the cording when both of the said jacks are engaged by the evener, substantially as described.

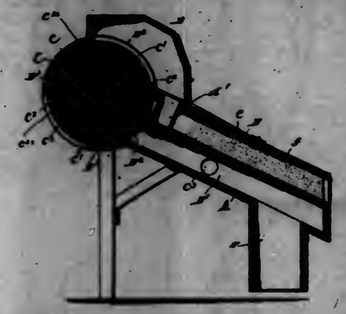
2. A harness-frame, two jacks, cording to connect one end of one of the said jacks to the upper side of the harness-frame, a sheave to support the said cording, cording intermediate one end of the other of the said jacks and the under side of the harness-frame, and a sheave, as 100, over which the said cording is extended, combined with a movable sheave-carrying frame and with a compensating device having a cam-surface to rest upon a roller or other stud 105 of the said sheave-carrying frame to hold the frame against and strain the cording during the time that the shed is being formed and to move the said frame to reduce the strain on the cording when both of the said jacks are engaged by the evener, substantially as described.

3. The crom-shaft A', provided with the hubs having lugs and the roller-carrying arms pivoted thereon, and the sleeve-hubs engaging the said roller-carrying arms loosely, combined with arms to engage the said sleeves, connections between the said arms, and a lever 138, to move the said arms to throw the rolls out of position and stop the picking, substantially as described.

4. A lever 138, to control the stopping and starting of the picking mechanism, and a latch, a projection to be engaged by and arrest the latch, a spring to normally draw the latch past the projection, and means to release the latch from the said projection, combined with means, substantially as described, between the said latch and lever, whereby when the latch is released from the projection the spring is made to move the lever 138 and stop the picking, substantially as described.

5. The lever c^6, the clutching-hub, connections between the said lever and hub to move the latter, a latch, a projection to be engaged by and arrest the latch, a spring to normally draw the latch past the projection, and means to release the latch from the said projection, combined with means, substantially as described, between the said latch and lever, whereby when the latch is released from the projection the spring is made to move the lever c^6 and place the said hub in position to stop the forward rotation of the pattern mechanism, substantially as described.

412,690. TRUNK AND CONDENSER FOR COTTON-GINS. CORNELIUS YOUNG, Selma, Ala. Filed May 2, 1889. Serial No. 309,377. (No model.)



Claim.—1. The cotton-gin condenser having a cylinder provided with heads and divided into compartment-chambers by radial blades, said cylinder having its heads provided with wire-cloth-covered openings, a cap provided with a wire-cloth bottom, the inclined trunk subdivided into two flues and having vertical passages, and inclined side flues outside of said trunk, one flue of the trunk connecting through said vertical passages with the semicircular chamber of the cap fitting partly over said cylinder, the said flue also connecting with the compartment-chambers of the cylinder through said side flues and openings, substantially as set forth.

2. The cotton-gin condenser having the trunk provided with flues, the cap having a wire-cloth bottom applied to its chamber, passages connecting one of said flues with said chamber, side flues connecting with the same trunk-flue through openings, and the compartment-cylinder having wire-cloth-covered openings in its heads communicating with said flues, substantially as set forth.

3. The cotton-gin condenser having the cap provided with a semicircular chamber and the trunk provided with two flues and vertical and lateral passages, the lower flue connecting by said vertical passage with said semicircular chamber, the cylinder having radial compartments and blades, the heads of said cylinder having wire-cloth-covered openings, the side flues connecting with the compartments of said cylinder through said wire-cloth-covered openings and with the lower flue of the said trunk through said lateral passages or openings, the plates, one applied to said cap and the other to the upper edge of the trunk, and the chute or flue connecting with the lower flue of the trunk, substantially as specified.

412,691. METHOD OF SECURING WIRE OR THE LIKE IN WOODEN BODIES. MCCLINTOCK YOUNG, Frederick, Md. Filed Apr. 20, 1888. Serial No. 308,094. (No model.)

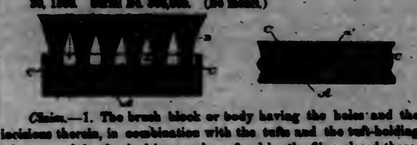


Claim.—1. The herein-described method of seating and securing a wire or the like in wood, consisting in first providing the wood with a fine slit or incision, then forcibly inserting the wire laterally into the slit, thereby displacing or separating the walls of the slit, and finally permitting the wood to react to close above the wire.

2. The method of inserting or securing a wire or similar strip in wood, consisting in providing the wood with a fine slit or incision terminating short of its edges, and thereafter forcing the wire, of greater width than the slit, laterally into the same and below the surface of the wood, and finally permitting the fiber to react and close together above the wire, whereby the wire is concealed within the wood and secured both against lateral and longitudinal motion.

3. The method of inserting and securing wires or like metal strips in wood, consisting in providing the wood with a thin slit or incision and forcing the wire laterally into said slit below the surface of the wood, and finally wetting the wood to cause the reaction of the fiber above the wire.

412,692. BRUSH. MCCLINTOCK YOUNG, Frederick, Md. Filed Apr. 20, 1888. Serial No. 308,093. (No model.)



Claim.—1. The brush block or body having the holes and the incisions therein, in combination with the tufts and the tuft-holding wires seated in the incisions and confined by the fiber closed thereover, as described.

2. A brush-block having a series of holes and intersecting incisions terminating at their ends within the edges of the block, in combination with the tufts, and the wires or fastenings seated in the incisions and with the fiber closed thereover.

3. The brush block or body consisting of the wooden block provided with the series of tuft-receiving holes, and with the incisions formed therein without removal of the wood, whereby they are adapted to close over wires inserted therein.

412,693. BALANCED SLIDE-VALVE. JAMES B. ALLISON, Indianapolis, Ind. Filed Apr. 3, 1889. Serial No. 305,944. (No model.)



Claim.—1. In balanced slide-valves, the combination, with the valve-stem, of the two valves adapted to move to and from each other and provided on their ends with lugs or ledges having beveled sides, and two clamps correspondingly formed and adjustable on the stem, substantially as described.

2. In balanced slide-valves, the combination, with the valve-stem provided at one end with a right-handed screw and at the other end with a left-handed screw, of two valves held apart by springs and provided on their ends with lugs having beveled sides and two clamps screw-threaded to fit the ends of the valve-stem and formed with ledges fitting said lugs, substantially as described.

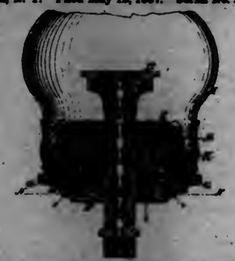
3. The combination, with the valve-stem, the two valves adapted to move transversely with respect thereto, and means for increasing or decreasing the extent of such movement, of lock-nuts and washers placed on the valve-stem inside between the valves, the same being faced off and bearing against faced-off portions of the valves, which are squared and faced to receive them, substantially as described.

4. The combination, with the valve-stem, of two valves adapted to move transversely with respect thereto and formed on their ends

with the lugs or ledges having beveled sides, the two clamps correspondingly formed for adjusting the valves, and lock-nuts and washers placed on the valve-stem inside between the valves, the same being faced off and bearing against faced-off portions of the valves, which are squared and faced to receive them, substantially as described.

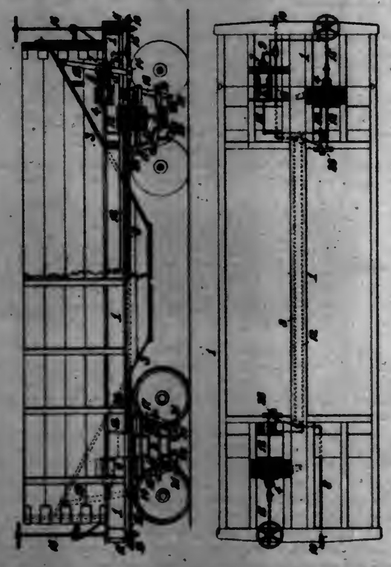
5. In balanced slide-valves, the combination, with the valve-stem and eccentric-rod, of the yoke R, having projection *t*, through which the stem passes, and the nuts T T and U, fitting on said stem on either side of said projection, substantially as described.

412,694. GAS-BURNER. DANIEL K. BAKER, Chicago, Ill., and CHARLES H. GREEN, New York, assignors to the New York Brass Company, New York, N. Y. Filed May 12, 1887. Serial No. 287,901. (No model.)



Claim.—In a gas-burner, the tube C, having the hollow laterally-projecting arms D, the funnel-shaped cap B, secured to the top of the tube C, and the annular reservoir or chamber E, having top perforations, said chamber surrounding a portion of the tube C and communicating therewith through the medium of the hollow arms D, combined with the supply-tube A, extending upward within the tube C and opening into the cap B, wire screens located within the chamber E between its top and the points of connection with the arms D, the perforated cone F, surrounding the chamber E, and the perforated screens H and M, surrounding, respectively, the top and bottom of the chamber E, for the purpose specified.

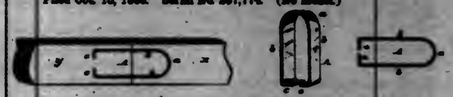
412,695. AIR-BRAKE APPARATUS FOR CARS. RICHARD W. BAYLEY, Pittsburg, Pa., assignor to the Westinghouse Air Brake Company, same place. Filed July 22, 1889. Serial No. 318,394. (No model.)



Claim.—1. The combination of two brake-cylinders each fixed to a car-body above and adjacent to one of its trucks, a main air or brake pipe, an auxiliary reservoir and triple valve connected with the brake-pipe and with each of the brake-cylinders, two brake-cylinder levers, each coupled to the car-body above one of the brake-cylinders and to the piston-rod of said cylinder, and draft-connections coupling the free ends of the brake-cylinder levers to the brake-levers of the adjoining truck, substantially as set forth.

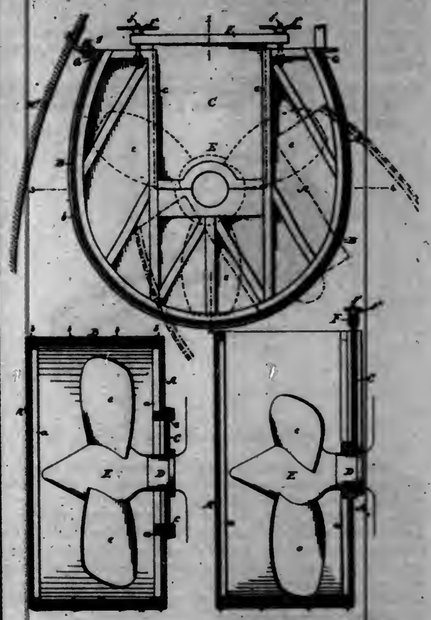
2. The combination of two brake-cylinders each fixed to a car-body above and adjacent to one of its trucks, a main air or brake pipe, an auxiliary reservoir and triple valve connected with the brake-pipe and with each of the brake-cylinders, two brake-cylinder levers, each coupled to the car-body above one of the brake-cylinders and to the piston-rod of said cylinder, and chains, each connecting the lower end of one of the brake-cylinder levers to one of the brake-levers of the adjacent truck and passing around a guide on the opposite brake-lever of said truck, substantially as set forth.

412,696. METALLIC FASTENER FOR WOOD JOINTS. JOHN I. BERRY, Williamsport, Pa., assignor to George W. Klump, same place. Filed Oct. 10, 1888. Serial No. 287,774. (No model.)



Claim.—A metallic fastener made of thin flat sheet metal of a general horseshoe shape, with straight parallel sides and with retaining ends or lugs *c c*, and adapted to be driven edgewise, substantially as set forth.

412,697. PROPELLER-DAM. GEORGE CLARKE, Jersey City, N. J. Filed May 14, 1889. Serial No. 310,727. (No model.)



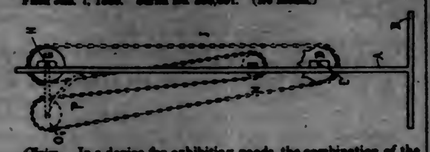
Claim.—1. The combination, with a propeller or coffer dam for vessels of the heads A A', with the body B, the head A having an opening for the reception of the shank or bracket of the propeller and a gate for closing said opening, substantially as specified.

2. In combination, a propeller or coffer dam for vessels, having two heads, one of which is adapted to receive the shank or bracket of the propeller, said dam having a body of the form substantially as shown and described, so that the said propeller-dam will fit over either the right or left hand propeller, substantially as described.

3. The combination of the heads A A' and the body B, with securing-flange on the body, said flange being adapted to be secured to a flange on the vessel, substantially as described.

4. The combination of the heads A A', the body B, an opening in the head A for the reception of the shank or bracket of the propeller, with a gate C, adapted to said opening, a bar F, secured to the head, with bolts passing through said bars, and nuts for fixing the gate to its seat.

412,698. EXERCISING DEVICE. FREEMAN H. GOULD, Chicago, Ill., assignor to Denton B. Turner and Annie B. Cobbs, both of same place. Filed Jan. 7, 1889. Serial No. 295,697. (No model.)



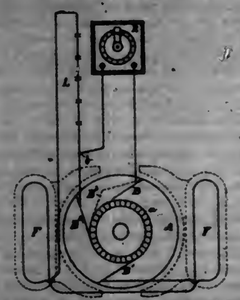
Claim.—In a device for exhibiting goods, the combination of the supporting-frame with a cross-shaft below carrying two sprocket-wheels D D, short shafts above carrying the pulleys G G, and pulleys N between the sprocket-wheels D and pulleys G, and the pulleys O, supported at one side of the pulleys G, and endless belts J, passing over all of said sprocket-wheels and pulleys and carrying cross-bars, substantially as and for the purpose set forth.

412,699. TIRE FOR WHEELS-WEDGES. EDWARD H. DU BOIS, Philadelphia, Pa. Filed Nov. 1, 1888. Serial No. 289,763. (No model.)



Claim.—A wheel having wrought-iron tire with side flanges, bolts securing the tire to the rim of said wheel, an elastic tread having the inclined sides 4 and the inclined shoulders *c*, and provided with recess 5 on its inner sides, forming a circumferential groove coinciding with the heads of the bolts, the side flanges of the tire being inwardly inclined and embracing the inclined sides 4, so as to be flush with the outer face of the tread, their lower ends being in contact with the inclined shoulders *c*, said parts being combined substantially as described.

412,700. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. WILLIAM H. BAKER, Cambridge, Mass., assignor of two-thirds, by direct and mesne assignments, to Arthur B. Griggs, Boston, Mass., and Polly Gray, De Funiak Springs, Fla. Filed Jan. 13, 1888. Serial No. 260,703. (No model.)

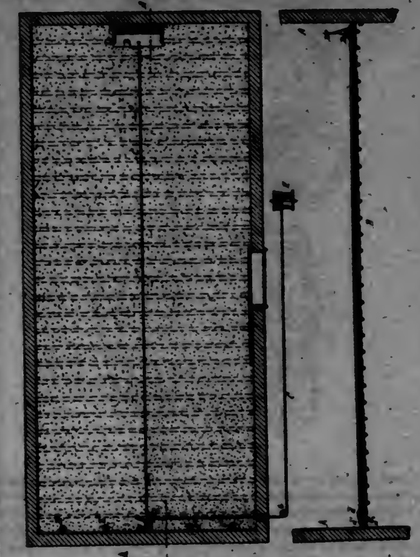


Claim.—In combination with the armature A and its commutator *a*, the main brushes B F', the additional brush B², and the adjustable resistance R, the brushes B and B² being connected to the work-circuit at *b*, with the resistance R between the brush B and the junction *b*, all arranged and operating as described to keep the current constant by variations in the current supplied by the brushes B² and B, substantially as described.

412,701. MALT-TURNING APPARATUS. JOSEPH EISENHARDT, New York, N. Y. Filed Mar. 17, 1888. Serial No. 267,471. (No model.)

Claim.—1. The combination of a malt kiln provided at one end with a series of eyes disposed at certain distances apart, a sliding block for turning the malt, of a width corresponding to the distance between the eyes, a detachable pulley for engaging said eyes in succession, a fixed pulley, a rotary drum, and a rope secured at one end to said sliding block and passing over said pulleys and drums, substantially as described.

2. The combination of a malt-kiln provided at each end with a series of eyes disposed at certain distances apart, a sliding block for turning the malt, of a width corresponding to the distance between the eyes, detachable pulleys supported by a pair of said eyes, fixed pulleys, a drum, and a cord passing over said drum and pulleys and attached at one end to said block.



412,702. SAFETY APPARATUS FOR CARBONIC-ACID-GAS FLASKS. JOHANNES FLEISCHER, Frankfort-on-the-Main, assignor of one-half to Wilhelm Theiss, Offenbach-on-the-Main, Germany. Filed June 15, 1889. Serial No. 314,516. (No model.) Patented in Germany June 17, 1888, No. 46,822.



Claim.—1. The combination, with a receptacle for the character described, of a reticulate cage completely enveloping the receptacle or the weaker wall thereof, and provided with an elastic internal bearing, against which the wall of the receptacle rests, substantially as described.

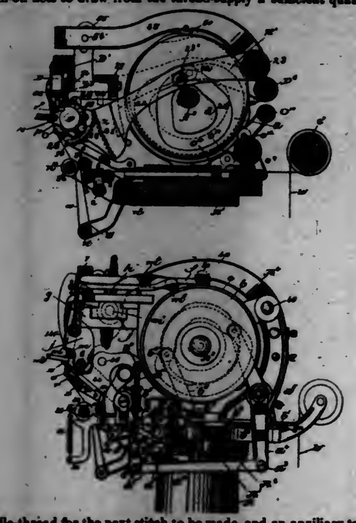
2. The herein-described safety apparatus for high-pressure receptacles, consisting of a reticulate cage adapted to completely envelop the receptacle or the weaker wall thereof, and provided with an elastic internal bearing for the wall of the receptacle, as set forth.

412,703. SEWING-MACHINE. ZACHARY T. PERRIN and WILLIAM C. MEYER, Boston, Mass., assignors to the Goodyear Shoe Machinery Company, Hartford, Conn. Filed Nov. 23, 1887. Serial No. 255,975. (No model.)

Claim.—1. In a wax-thread sewing-machine, the following instrumentalities, viz: a work-support an oscillating curved hooked needle, a looper to supply it with thread, a curved awl, a shuttle-race, a substantially circular shuttle therein, a take-up, a clamp to act directly upon the needle-thread on its way to the take-up, a pull-off to act upon the needle-thread between the said clamp and the thread-supply, and means actuating the said clamp and pull-off, whereby the clamp acts to hold the needle-thread between the pull-off and the take-up, while the pull-off acts to draw from the thread-supply a sufficient quantity of needle-thread for the next stitch to be made, substantially as described.

2. In a wax-thread sewing-machine, the following instrumentalities, viz: a work-support, an oscillating curved hooked needle, a looper to supply it with thread, a curved awl, a shuttle-race, a substantially circular shuttle therein, a take-up, a clamp to act directly upon the needle-thread on its way to the take-up, a pull-off to act upon the needle-thread between the said clamp and the thread-supply, and means actuating the said clamp and pull-off, whereby the clamp acts

to hold the needle-thread between the pull-off and the take-up, while the pull-off acts to draw from the thread-supply a sufficient quantity



of needle-thread for the next stitch to be made, and an auxiliary take-up, to operate substantially as described.

3. In a wax-thread sewing-machine, the following instrumentalities, viz: a circular shuttle-race, a substantially circular shuttle therein, a curved hooked needle, a thread-guide, a looper to supply it with thread, a take-up to act upon the needle-thread, means to actuate the take-up, a curved awl, means to actuate the said needle and awl, a channel-guide to retain the stock at a predetermined level as the needle enters it for each stitch, a thread-clamp to act directly upon the needle-thread between the thread-supply and the said take-up, a yielding work-support, a pull-off to act directly upon the needle-thread between the thread-clamp and the thread-supply, and variable-motion devices intermediate and connecting the said yielding work-support on which the work rests with the said pull-off, whereby as the work-support rises and falls, owing to variations in the thickness of the stock upon it, the said pull-off will have given to it automatically a variable throw, to thereby adapt the length of the loop of needle-thread to the thickness of the stock, substantially as described.

4. In a wax-thread sewing-machine, the curved hooked needle, the yielding work-support, a pull-off consisting, essentially, of a lever having a roll and a sliding shoe mounted upon one arm of the said lever, combined with an adjustable connecting rod or link joined at one end to the said shoe and at its other end to the said work-support, to operate substantially as described.

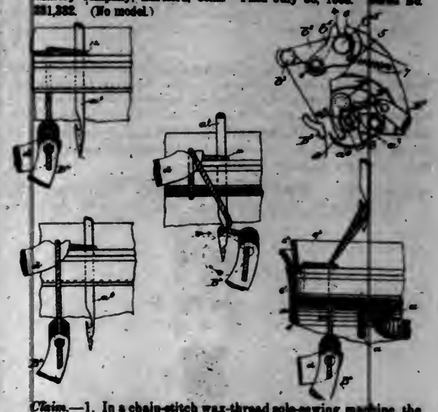
5. In a wax-thread sewing-machine, the yielding work-support, the curved hooked needle, and a clamp consisting of a bar, as 5, and rolls 3 4, located at opposite sides the said bar to clamp the needle-thread, a pull-off to act upon the needle-thread between the said clamp and the thread-supply, and connecting devices between the pull-off and the said yielding work-support, combined with means to automatically operate the said clamp, substantially as described.

6. In a wax-thread sewing-machine, the yielding work-support, the curved hooked needle, and a clamp consisting of a bar, as 5, and rolls 3 4, located at opposite sides the said bar to clamp the needle-thread, a pull-off to act upon the needle-thread between the said clamp and the thread-supply, and connecting devices between the pull-off and the said yielding work-support, combined with means to automatically operate the said clamp, and with the auxiliary take-up, to operate substantially as described.

7. In a wax-thread sewing-machine, the curved oscillating hooked needle and the looper having a hollow shank and upwardly-extended arm o', and bearings for the said shank, combined with gear o^{16}, the segmental lever o^{17}, the lever o^{9}, link o^{8}, and with means to actuate said levers to not only reciprocate the said looper, but to also impart a slight rocking motion thereto, substantially as described.

8. In a wax-thread sewing-machine, the yielding work-support, the curved hooked needle, a take-up for the needle-thread, a shuttle, and a shuttle-race therefor, combined with a loop-guide, as r^{6}, located between the shuttle-race and the said work-support and having its delivery end terminating near the upper side of the stock being sewed, the said loop-guide receiving upon it and guiding the loop of needle-thread as it is discharged from the shuttle and during the time the loop is being drawn down to the work by the take-up, substantially as described.

412,704. SHOE-SEWING MACHINE. ZACHARY T. PIERCE and WILLIAM C. MEYER, Boston, Mass., assignors to the Goodyear Shoe Machinery Company, Hartford, Conn. Filed July 30, 1888. Serial No. 281,282. (No model.)



Claim.—1. In a chain-stitch wax-thread sole-sewing machine, the following instrumentalities, viz: a channel-guide, a hooked needle, the needle-segment, feeding mechanism, actuating means for the said needle-segment, as the link B^{2}, lever B^{4}, and cam 200, to force the needle with a loop upon its shank into the stock and out through the inner channel of the sole and there hold the said needle temporarily substantially at rest while the stitch is being set, a thread-guide, means to actuate it to supply the hooked needle with thread, and a take-up, as b^{3}, a cam, as C, and connecting devices intermediate the said cam and the said take-up, the said cam through the said connecting devices actuating the said take-up to pull upon the loop of needle-thread about the shank of the needle while the needle is in the stock and holds the said loop upon its shank, the said take-up drawing the said loop about the shank of the needle, as described, to set the last stitch, of which the said loop forms a part, without straining the between substance, the said stitch being set before the loop to form the next stitch is drawn through it, substantially as described.

2. In a chain-stitch wax-thread sole-sewing machine, a hooked needle, a thread-guide to supply it with thread, feed mechanism to feed the stock while the hooked needle holds on its hook a loop of thread, and means to actuate the said needle to force it into the upper and sole and out through the channel therein and temporarily hold the said needle substantially at rest in the stock, combined with a take-up, as b^{3}, and means to actuate it to act upon the thread and draw the same back through the sole and upper while the last loop formed by the needle is yet on the shank of the needle, the needle yet remaining in the stock, the said take-up completing the setting of the stitch before the said needle is withdrawn from the stock and out from the old loop upon its shank, substantially as described.

3. In a chain-stitch wax-thread sole-sewing machine, a hooked needle, means to actuate it to enter the upper and sole and emerge therefrom in the inner channel thereof, and a thread-guide and means to actuate it to supply the hook of the needle with thread, combined with a feeding mechanism, a take-up, a cam, and intermediate devices to actuate the said main take-up to draw the thread about the shank of the needle and set the stitch while the needle is in the stock and the loop of thread last drawn through the stock by it is yet on the shank of the needle, the said cam and intermediate devices at the same time moving the take-up far enough to draw thread from the thread-supply sufficient for a new stitch, and with an auxiliary spring-actuated take-up to take up the slack in the needle-thread drawn off by the main take-up, the said auxiliary take-up thereafter giving up the said slack thread to the needle as the latter again acts to draw a loop of thread through the stock, substantially as described.

4. In a chain-stitch wax-thread sole-sewing machine, the take-up b^{3} and the auxiliary take-up b^{5}, the thread-guide, and the hooked needle and actuating means therefor, combined with the thread-holder d and means to actuate it, whereby the said thread-holder is made to act upon the needle-thread between the said thread-guide and the stock and while the needle is in the stock and the last loop of thread drawn therethrough is yet upon the shank of the needle, the said thread-holder taking from the auxiliary take-up and through the said thread-guide before the latter acts to lay its thread in the hook of the needle a sufficient quantity of thread to prevent the rending of the same across the hook of the needle as the loop is being drawn by the needle through the stock, substantially as described.

5. In a chain-stitch wax-thread sole-sewing machine, a hooked needle, a thread-guide to supply the needle with thread, means to actuate the needle to draw the thread in the form of a loop from the inner channel of the sole through the between substance and upper, feeding mechanism to move the sole, and means to move the needle forward to pass through the upper and between substance and sole substantially at rest, combined with a take-up, as b^{3}, and means to actuate it while the needle is in the stock to pull upon the loop of thread yet on the shank of the needle next the outer side of the shoe and pull the said thread back through the upper and about the said needle to set the stitch, the pull on the thread in setting the stitch being in the direction to draw the upper closely to the sole, substantially as described.

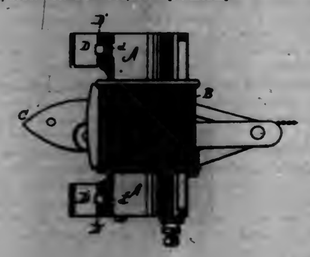
412,705. FIRE-LADDER. HENRY T. HAYES, Oakland, Cal. Filed Jan. 12, 1889. Serial No. 296,189. (No model.)



Claim.—1. The herein-described trussed fire-ladder, which consists in a double frame having the interposed truss-blocks, with square ends and binding-rods, passing through said blocks, and ladder-frames held in position by nuts upon the outer face of the rear ladder-frame, as set forth and specified.

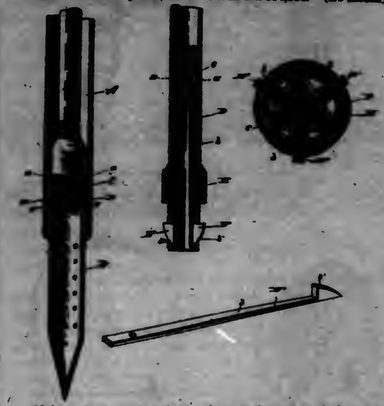
2. The ladder composed of the double frames on the sides, each frame having truss-blocks I and bolts $I^{\times}$ for uniting and holding its two parts, and one of the said parts of each frame being provided with series of brackets or plates H, bolted to its inner face and provided with sockets or eye-holes for the ends of the rounds, as described.

412,706. CAR-COUPLING. IVORY HAMILTON, Boston, Mass. Filed Aug. 9, 1888. Serial No. 282,269. (No model.)



Claim.—The combination, with the frame A of the coupler, of the buffer described, consisting of the metallic case or shell D, open at its rear side and suspended in front of said frame, and the rubber block or cushion D, inclosed in said shell and projecting slightly rearward therefrom, substantially as and for the purpose set forth.

412,707. EXTRACTOR FOR TUBE-WELLS. JOSEPH H. HILL, Chicago, Ill. Filed Apr. 19, 1888. Serial No. 307,316. (No model.)

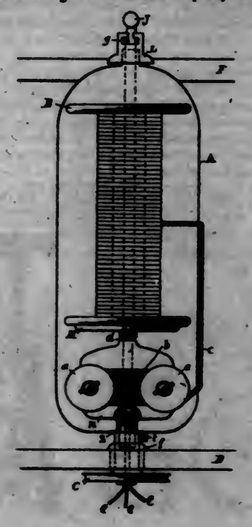


Claim.—1. An extracting-tool consisting of a tubular rod screw-threaded externally at its lower end, a vertically-adjustable collar tapped on this rod, and three or more spring-catches inserted in the said tubular rod and provided with beveled projecting noses, substantially as described.

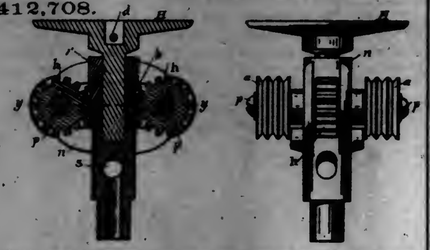
2. The combination of a tubular rod D, provided with vertical slots at its lower end, a vertically-adjustable collar tapped upon the lower end of this rod, a removable block G, secured in the tube D, and the spring-catches F, secured to the block G and provided with beveled noses which project out through the notches in the lower end of the said tube D, substantially as described.

412,708. CAPSTAN-HEAD FEED-MOTION FOR ROPE OR TWINE MACHINES. WILLIAM HOLLINGSWORTH, Baltimore, Md., assignor to William J. Harper, same place. Filed June 26, 1888. Serial No. 316,671. (No model.)

Claim.—A feed-head for twine and rope machines, consisting of a frame carrying a central vertical shaft having a worm-wheel fast-ened thereon, and one or more horizontal shafts having bearings in said frame and having one or more feed-pulleys and a worm-gear

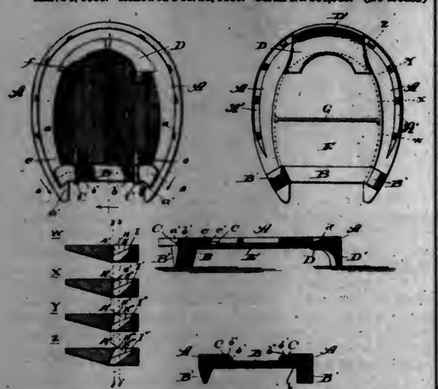


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wheel secured thereon, the worm-gear engaging with the central worm-wheel and being moved thereby, substantially as and for the purpose set forth.

412,709. HORSESHOE. ALBERT B. HOLSON, Chicago, Ill. Filed Mar. 31, 1888. Renewed Feb. 28, 1889. Serial No. 301,563. (No model.)

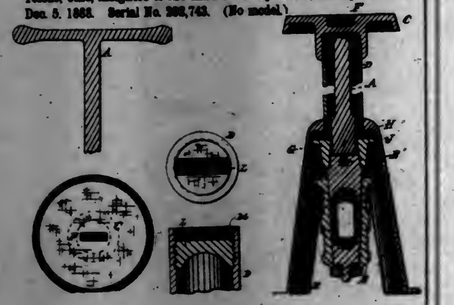


Claim.—1. In a horseshoe, the combination of a main shoe, a grooved bar forming heel and toe bars attachable to said main shoe, said bars having calks integral therewith, with a plate overlapping at the sides thereof onto said main shoe and pressing between said heel and toe bars at the ends of said plate, and means for securing said plate in position, all substantially as described.

2. The combination of shoe A, having beveled edge *a* and notches *a'* thereon, with grooved bars B D, having calks thereon integral therewith, plate E, having lugs *e e* F F thereon, pins C C, fitting into holes in lugs *e e* on said plate and into holes *b''* on bar B, and pins *f f*, integral with lugs F F on plate E and fitting into holes in bar D, all substantially as described.

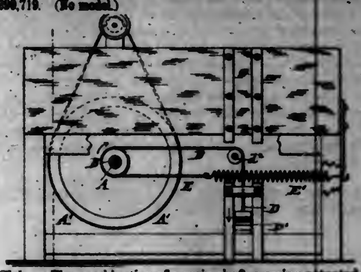
3. In a horseshoe provided with a groove on the under side thereof with a constantly-varying side and bottom, and having nail-holes placed in said groove, the combination of beveled faces forming said groove and beveled faces forming with one of the beveled faces of the groove the sides of said nail-holes, the ends of said nail-holes being parallel, and the said nail-holes having openings on the upper sides of said shoe of equal size.

412,710. CURB-BOX. ANDREW KELLER, Jr., and FRANK KELLER, Toledo, Ohio, assignors of one-third to Henry Keller, same place. Filed Dec. 5, 1888. Serial No. 292,743. (No model.)



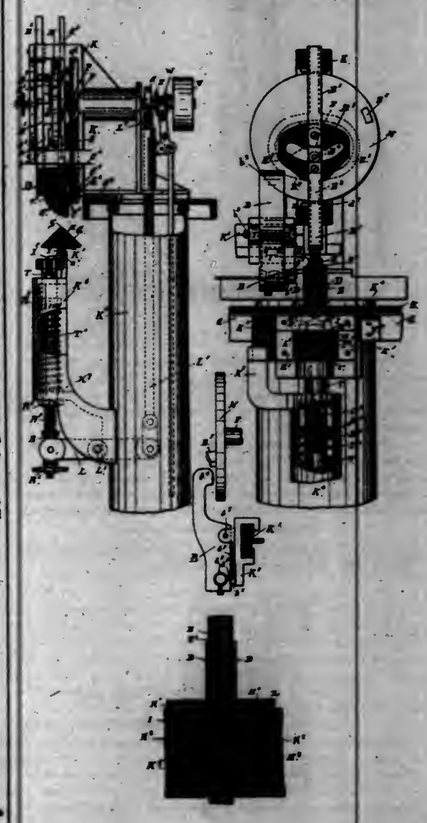
Claim.—In a curb-box, the faucet-plug B', having an angular head, the coupling G, fitting said head and provided with an angular recess in its upper face, said coupling having a circular flange J in combination with the conical case E, embracing said faucet and coupling and loosely fitting said flange, all as and for the purpose described.

412,711. FOOT-POWER. JAMES KELLY, Newport, R. I., assignor to Adolph von Schade, same place. Filed Feb. 13, 1888. Serial No. 299,719. (No model.)

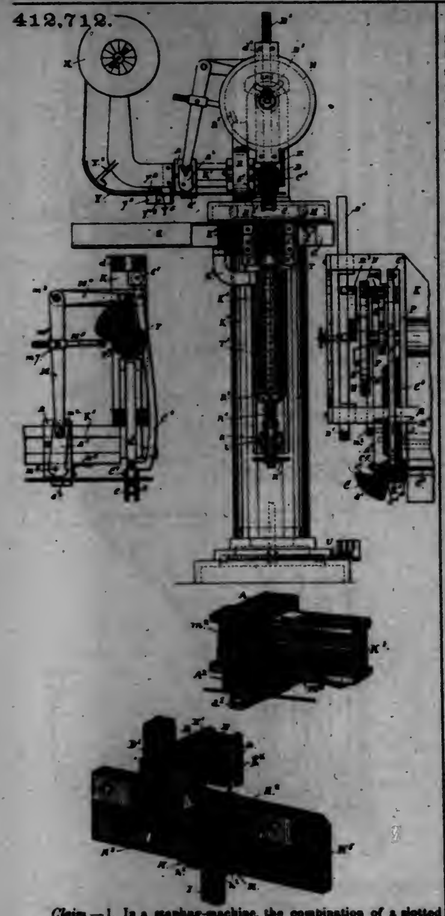


Claim.—The combination of a main shaft, a spring-actuated pawl located in a recess of the same, a sleeve on said driving-shaft provided with interior ratchet-teeth, belts attached to said sleeve and wound in opposite direction around the same, a hinged actuating-treadle attached to the opposite end of one of the belts, and a spiral spring attached to the opposite end of the other belt, substantially as set forth.

412,712. BOOK-STAPLING MACHINE. JOSEPH LYMAN, San José, Cal. Filed Dec. 24, 1888. Serial No. 294,862. (No model.)



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Claim.—1. In a stapling-machine, the combination of a slotted table to support the sheets, a staple-forming device consisting of a swinging anvil to support the staple-blank in horizontal position above the table, having a width of supporting-surface corresponding to the size of the staple to be formed; a pair of reciprocating jaws cutting outside of said anvil to reciprocate against the sides thereof, and having edges to strike and turn down the end portions of the blank against the sides of the anvil, and grooves in the inner faces to take in the turned-down portions, a vertically-acting hammer reciprocating between said jaws and adapted to drive the formed staple and force back the anvil from beneath it, a prong-clinching device beneath the table and in the same plane with the driver, and a wire feed and cutting device arranged at one side of the forming device above the table to feed and place a blank or cut-off portion of wire at right angle to said staple-forming device, substantially as described.

2. In a stapling-machine, the combination of the swinging anvil held rigidly in position during the forming operation while the ends of the blank are being bent squarely and released and allowed to swing from beneath the staple during the driving operation, and the vertically-reciprocating jaws arranged outside of said anvil to work in close relation to the sides thereof, and having grooves in the inner faces to take in and confine the bent prongs of the staple, substantially as described.

3. In a stapling-machine, the combination of the swinging anvil C, spring C^3, stop-lever C^5, operating, as described, to hold and release the anvil, the reciprocating jaws D D, adapted to bend the staple-blank over the anvil, and the driving-hammer E, arranged to work between said jaws and to force back the anvil from under the staple during the driving operation, substantially as described.

4. A staple-forming device consisting of a swinging anvil having a blank-supporting face of equal width to the length of the staple to be formed, a pair of bending-jaws embracing and reciprocating outside of said anvil at right angle to the supporting-face and in close relation to the sides of the anvil, and having grooves in the inner faces to take in the bent portions of the staple, and the driver moving in the same plane with the said jaws and in the grooves thereof above the staple and adapted to force out the formed staple and throw back the anvil from beneath it, substantially as described.

5. In a staple forming and driving mechanism, the combination, with staple-bending jaws and a driving-hammer, of the swinging anvil and mechanism, substantially as described, whereby the anvil is held in position to receive the staple-blank during the feeding operation, and is set and locked to hold the blank while the jaws are bending the prongs, and is finally released and allowed to turn and be pressed back from under the formed staple by the stroke of the hammer, as specified.

6. The swinging anvil C, having a straight top face to support the staple-blank, vertical sides over which the prongs of the staple are bent, and a curved bottom edge set for operation with relation to the work-supporting table, as described, in combination with the reciprocating jaws having grooves for confining and guiding the prongs of the staple, and the driving-hammer arranged for joint operation as specified.

7. In a staple-forming mechanism, a pair of reciprocating jaws formed of two parallel plates with a space between them corresponding to the length of staple to be formed, and having vertical grooves in their inner faces, in combination with a staple-blank support of corresponding width of blank-supporting surface, which is adapted to present the blank to said jaws while they descend and bend the prongs, and then swing or move outwardly from beneath the staple as the latter is pressed down, substantially as specified.

8. In a staple forming and driving machine, the combination of staple-forming jaws and a driving-hammer adapted to place and drive the formed staple and then remain in position to hold it down while the clinching is being done, and the clinching dies and hammer arranged for operation, as described, to turn and clinch the prongs of the staple.

9. The wire-feed consisting of the stationary carriage-guide, reciprocating carriage having a rest or support for the wire, the pivoted dog with wire-gripping face set with relation to the said rest, as described, mechanism connected directly to said dog above its pivot to move the carriage, and a resistance-spring applied to produce the required friction of the carriage on its guide in the feeding movement, as specified.

10. In combination with the wire-feed and the blank-supporting anvil, the stationary cutter *b'*, the vibrating jaw B, having a cutter b^3, and means whereby said jaw is actuated with respect to the movements of the wire-feed, as specified.

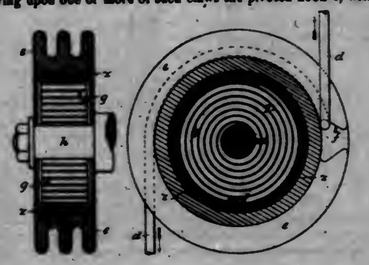
11. In a stapling-machine, the combination of staple forming and driving mechanism, a yielding table or support for the sheets to be bound, and a reciprocating clinching-hammer operating in an upward direction through a slot in the table and capable of adjustment to regulate the intensity of the blow, substantially as specified.

412,713. FITTING AND HOISTING GEAR FOR ELECTRIC LAMPS. WILLIAM R. SAYERS, Lisbon, Portugal, and WILLIAM H. BYNGE, Birmingham, England. Filed June 16, 1888. Serial No. 277,202. (No model.) Patented in England July 19, 1887, No. 10,071.

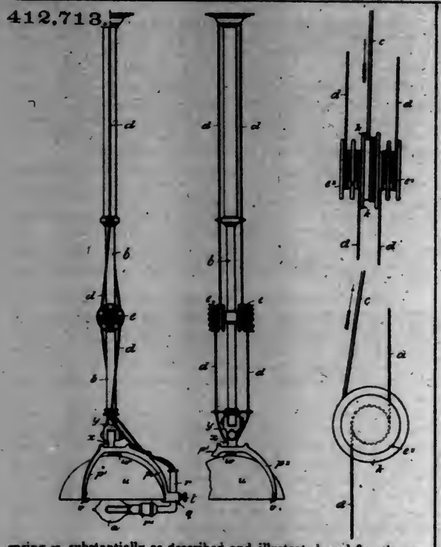
Claim.—1. In an electric-light fitting, the combination of the spring-drums *c c'* and the electric conducting-cords *d' d*, attached at their centers to the peripheries of the drums, and having their leads reversely coiled thereon, as shown and described.

2. In an electric-light fitting, the combination of the drums *c' c'*, having their leads reversely coiled thereon, with the hoisting-drum *k*, substantially as described.

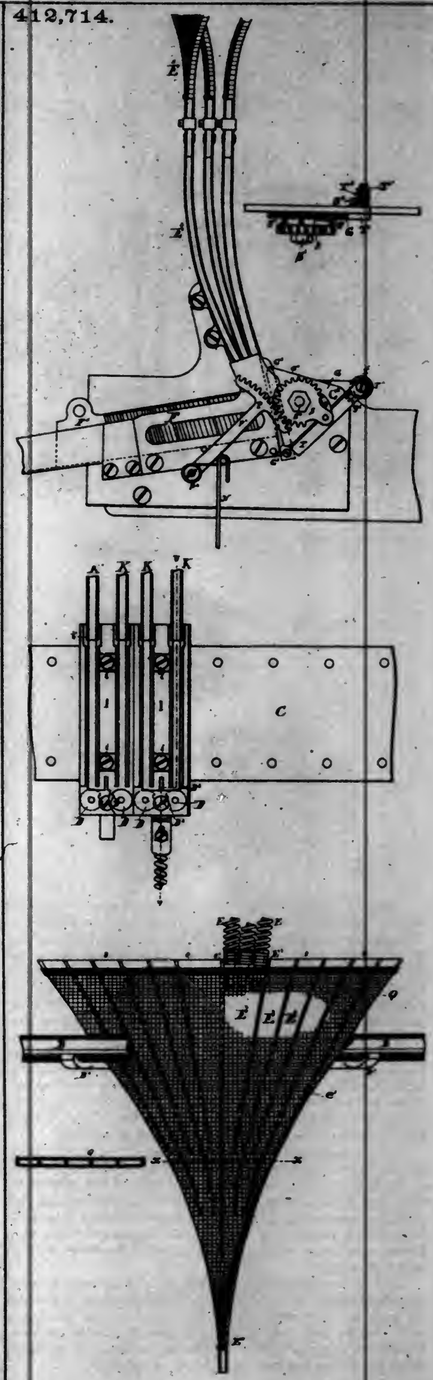
3. In an electric-lamp fitting, the combination of the claws *p p' p'*, having upon one or more of such claws the pivoted hook *v*, with the



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spring *w*, substantially as described and illustrated, and for the purposes specified.

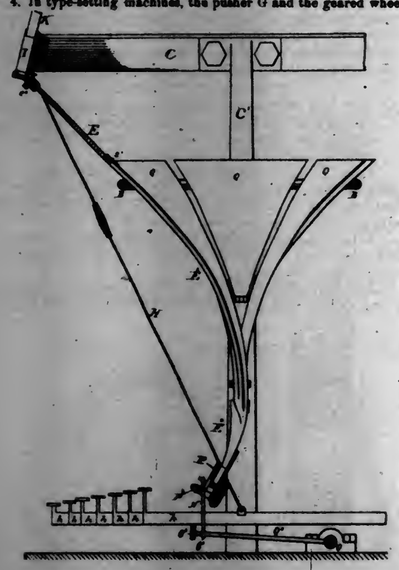
412,714. TYPE-SETTING MACHINE. LORENZO DOW, Boston, Mass., assignor to the American Type Setter Company, Portland, Me. Filed Dec. 6, 1888. Serial No. 290,594. (No model.)

Claim.—1. In a type-setting machine, the inclined channels I and the converging wire channels, in combination with the rollers D and their springs d^2, substantially as and for the purpose set forth.

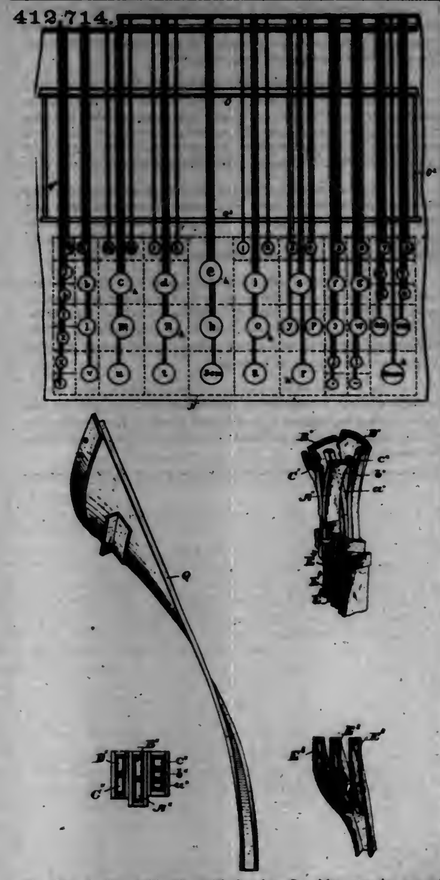
2. In type-setting machines, the coiled-wire tube flattened to receive and convey, without rotating, type of varying size, as and for the purposes described.

3. In type-setting machines, the plates Q, with their converging partitions between the plate and the cover adapted to receive type of varying thicknesses, and bent and twisted, whereby they will deliver the said type in the position desired into the channels E^2, as and for the purposes described.

4. In type-setting machines, the pusher G and the geared wheel



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f^3 and pawl f^4, in combination with the piece S and its actuating geared sector P, as and for the purposes described.

5. In type-setting machines, the type-channels and type-discharging mechanism, as set forth, in combination with the stick F, the piece F^1, the pusher G, the rod G^2, the sector P, the pinion S, and connections, as set forth, between the sector and pinion and the levers of the key-board, substantially as and for the purposes set forth.

6. In type-setting machines, a key-board with the letters of the lower case arranged substantially as in the printer's case, with the letters of the upper case arranged to the right and left of the same, as and for the purposes described.

7. In a type-setting machine, in combination with the type-channels, in which the type are placed before being set, the longitudinally-grooved rollers D, normally in position to present their rounded sides to the lower ends of the type-channels, the springs connected with each, the key-levers, and the rods connecting them with the rollers, substantially as described, whereby the pressing of a key of the key-board partially rotates said roller, and thereby presents a groove into which said column descends, and which roller, on release of the key under the finger, returns to its former position, carrying out the bottom type, as and for the purposes described.

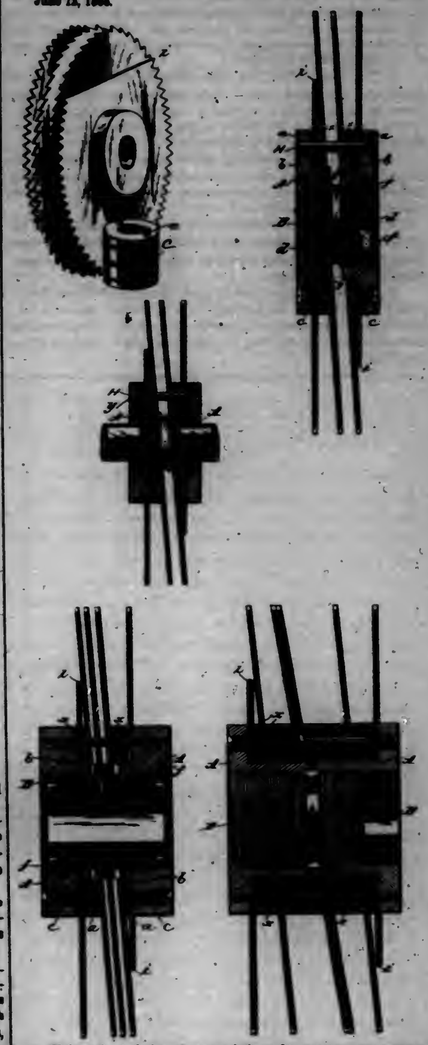
8. In type-setting machines, the piece T, in combination with the spring T^2 and the piece G, as and for the purposes mentioned.

9. The type-channel, in combination with the recessed roller normally in position to present its rounded side to the lower end of the type-channel, and with means, substantially as described, for actuating the rollers.

10. In a type-distributing machine, substantially as described, flexible tubes for type-channels, substantially as and for the purpose described.

REISSUES.

11,033. DADO-CUTTER. WILLIAM B. FOX, Grand Rapids, Mich. Filed July 20, 1889. Serial No. 318,119. Original No. 364,343, dated June 13, 1887.



Claim.—1. A dado-cutter consisting of two outer saws arranged parallel to each other and intermediate saws arranged at an angle thereto adjustable with the outer saws to lessen or widen the cut, substantially as described.

2. A dado-cutter consisting of outer parallel saws and inner inclined saws occupying the intermediate space, the outer and inner saws being connected in pairs or series and adjustable toward and from each other to lessen or widen the cut, substantially as described.

3. A dado-cutter consisting of outer parallel saws and inner inclined saws connected in pairs or series and mounted upon a right and left hand screw-threaded sleeve, whereby the saws are adjusted to different widths, substantially as described.

4. In a dado-cutter, parallel outer saws, inner inclined saws, flanged rings for connecting the saws together in pairs or series, and outer

rings internally screw-threaded—one upon each side—connected one to each set of saws, and a right and left hand screw-threaded sleeve upon which the rings are mounted and by which the series of saws are adjusted, substantially as described.

5. The combination, in a dado-cutter, of the outer rings A A, having inner flanges, straight and inclined saws arranged in series and supported on said inner flanges, thimbles and screws for securing the rings and saws of each set together, and a right and left hand screw-threaded sleeve adapted to corresponding threads on the rings A A, substantially as described.

6. The combination, in a dado-cutter, of the straight and inclined saws arranged in pairs, a right and left hand screw-threaded sleeve for adjusting the saws, having depressions on its face, and a wrench for operating the sleeve, having projecting pins adapted to the depressions, substantially as described.

7. A dado-cutter consisting of two outer adjustable saws arranged parallel to each other, intermediate inclined saws adjustable with the outer saws, and a fixed inclined saw between the adjustable inclined saws, substantially as described.

8. A dado-cutter consisting of two outer adjustable saws arranged parallel to each other and a double set of intermediate saws, the saws of each set being adjustable with the respective outer saws, substantially as described.

9. In a dado-cutter, a screw-threaded sleeve, saws carried thereby so as to be adjusted to cut varying widths of grooves, said saws having straight cutting portions for marking the width of the groove, and inclined portions for removing the intervening stock, substantially as described.

10. In combination with a dado-cutter having saws adapted to be adjusted, a loose connection between the saws for maintaining them in relative position peripherally without interfering with the adjustment thereof toward and from each other.

11. An adjustable dado-cutter comprising a right and left hand screw-threaded sleeve and saws mounted thereon so as to be adjustable toward and from each other, said saws being provided with cutting portions in vertical plane for marking the width of the groove and cutting portions arranged at an angle to the vertical portions for removing the stock intervening, substantially as described.

12. In a dado-cutter, a right and left hand screw-threaded sleeve, saws mounted thereon so as to be adjustable toward and from each other, each of said saws having cutting portions in vertical plane for marking the width of the groove and inclined cutting portions for removing the intervening stock, substantially as described.

13. In combination with an adjustable dado-cutter having a right and left hand screw-threaded sleeve, and saws supported thereon so as to be adjusted toward and from each other, a loose connection between the saws for maintaining them in relative position peripherally without interfering with the adjustment thereof toward and from each other, substantially as described.

14. In a dado-cutter, a screw-threaded sleeve, saws carried thereby so as to be adjusted to cut varying widths of grooves, said sleeve having depressions in its face, and a wrench for operating the sleeve, having projecting pins adapted to the depressions, substantially as described.

PHOTO LITH. NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of New York.

CONSOLIDATED BUNGING APPARATUS COMPANY *et al.* *v.* H. CLAUSEN & SON BREWING COMPANY.

Decided June 21, 1889.

1. MELLER AND HOFMANN—MAKING BEER—CLAIMS 1 AND 2—PROCESS OLD.

The first and second claims of Letters Patent No. 215,679, granted upon the application of Leonard Meller and E. Hofmann to George Bartholomae, assignee, May 20, 1879, are as follows: "1. The process of preparing beer for the market, which consists in holding it under controllable pressure of carbonic-acid gas when in the 'kraeusen' stage, substantially," &c. "2. The process of treating beer when in the kraeusen stage, which consists in holding it in a vessel under automatically-controllable pressure of carbonic-acid gas, substantially," &c. *Held* that these processes are invalid for lack of novelty. The vent-bungs known as the "Shaefer bung," the "Guth bung," the "Bachman bung," and others are the vent-bung of this patent in the sense that they have the same functions and are automatic valves designed to control the pressure of the gas, and were used commercially in many breweries between 1861 and 1876, being applied to shavings-casks after the beer had reached the kraeusen stage, and, before the end of that stage, for controlling the pressure of the gas.

2. SAME—SAME—CLAIM 3 CONSTRUED—INFRINGEMENT.

The third claim of the patent—viz., "the process of preparing and preserving beer for the market, which consists in holding it under controllable pressure of carbonic-acid gas from the beginning of the kraeusen stage until such time as it is transferred to kegs and bunged," &c.—must be limited to the application of the apparatus at the beginning of the kraeusen stage, and is not infringed by defendant's apparatus, which, though the same vent-bung as that of the patent, is not applied until several days after the kraeusen has been introduced, the beer in the interval being allowed to work out of the bung-hole of the shavings-cask.

ON FINAL HEARING for infringement of Letters Patent No. 215,679.

For a full description of this patent see the opinion of the Supreme Court in *New Process Fermentation Co.* v. *Maus et al.*, (39 O. G., 1419; 7 Sup. Ct. Rep., 1304; 20 Fed. Rep., 725.)

Messrs. Banning & Banning & Payson for the complainants.

Mr. Josiah Sullivan, *Mr. C. P. Jacobs*, and *Mr. B. F. Thurston* for the defendant.

WALLACE, *J.*:

This suit is founded upon Letters Patent granted May 20, 1879, to George Bartholomae as assignee of Leonard Meller and Edmund Hofmann, inventors, for an improvement in processes for making beer. The application for the patent was filed February 12, 1879.

The patent has 8 claims, 4 of which are in controversy in this suit. These claims are as follows:

1. The process of preparing beer for the market, which consists in holding it under controllable pressure of carbonic-acid gas when in the "kraeusen" stage, substantially as set forth.

2. The process of treating beer when in the kraeusen stage, which consists in holding it in a vessel under automatically-controllable pressure of carbonic-acid gas, substantially as described.

3. The process of preparing and preserving beer for the market, which consists in holding it under controllable pressure of carbonic-acid gas from the beginning of the kraeusen stage until such time as it is transferred to kegs and bunged, substantially as described.

4. The method herein described of preserving beer in a marketable condition after it has passed the kraeusen stage, which consists in holding it under pressure of carbonic-acid gas, said pressure being automatically regulated by a counteracting hydrostatic pressure, substantially as described.

These claims relate to the treatment of the beer in the shavings cask after it has been drawn from the ruh casks, and after the kraeusen in the beer has been added to produce the secondary fermentation during which the beer is to be ripened and clarified and prepared for market use. The term "kraeusen" stage, as that term is used in the claims, is the period of active fermentation in the shavings-cask induced by the introduction of the kraeusen into the old beer, and this period ends when the beer becomes clarified and brilliant. It begins as soon as the active secondary fermentation commences. The "holding" the beer "under controllable pressure," mentioned in the claims, describes the means by which the pressure is controlled, consisting of a vent-bung applied to the shavings-cask, which vent-bung is of the kind particularly described in the specification, or any other self-acting valve adapted to control the gas and permit or prevent its escape at any predetermined degree of pressure.

Aside from the language of some of the claims themselves, the general statement of the nature of the invention, and the description of the bunging apparatus, the patent does not point out specifically how the processes of the claims in controversy are to be practiced. The specification seems to assume that it is only necessary to describe the apparatus used in order to enable any person skilled in the art of beer-making to use it so as to carry out the processes claimed. Inferentially the specification suggests that the processes claimed involve holding the beer under the gas-pressure during the whole period of the shavings-cask stage, beginning as soon as the secondary fermentation becomes sufficiently active to cause the beer to flow through the bung-hole of the cask and the gas to escape, and ending when the beer is ready to be drawn off for market. This is to be implied because the specification states that the "cask being closed none of the beer wastes by running over, and the foul smell and washing of the casks and cellars are avoided,"

and "the escaping carbonic-acid gas does not settle in the brewing-cellars to endanger life." Referring to this part of the specification when the patent was considered by the Supreme Court in *New Process Fermentation Co.* v. *Maus et al.*, (39 O. G., 1419; 122 U. S., 413; 7 Sup. Ct. Rep., 1304,) the Court said:

> This is fairly to be read as a statement that the beer is to be thus treated during the whole of its subjection to the shavings-cask stage of the process, whether in one closed cask or in two or more closed casks connected together. The statement is that the cask or casks are to be closed—that is, closed throughout the shavings-cask stage of the process, and kept during that process under automatically-controllable carbonic-acid-gas pressure, generated either by the mild fermentation of the beer or artificially. It is also stated that none of the beer wastes by running over, and that the foul smells and washing of the casks and cellars are avoided, and that the escaping carbonic-acid gas is conducted to the open air. These consequences cannot follow, nor can the advantages of the invention set forth be fully availed of unless the casks are closed from the beginning of the shavings-cask kraeusen stage.

There is nothing in the specification to restrict the scope of the first or second claims to a process for holding the beer under pressure at any particular period of the kraeusen stage, or for any length of time during that stage, or for treating the beer according to any special conditions. They are broad claims for processes, respectively, in which the controllable pressure is applied at any time during the kraeusen stage, the only difference between them being that the first includes pressure, whether applied automatically or not, while the second is restricted to automatic pressure. The limitations expressed in the third and fourth claims emphasize the interpretation of the first and second as claims for processes without any limitation or condition in respect to the pressure period. These claims must therefore be deemed as claims for the process of treating the beer whenever it is in the kraeusen stage by holding it under the pressure of carbonic-acid gas by means of the vent-bung applied to the shaving-scask. The third claim is for a process of like treatment, in which the pressure is applied at the beginning of the kraeusen stage—that is, as soon as the fermentation is active—and is maintained until the beer is ready to be drawn off for market. The fourth claim is capable of two interpretations. It may be construed as one for the process of the third claim continued after the beer has become ready for market, to preserve it in good condition, or as a claim for a process of treatment which does not begin until the end of the kraeusen stage. The latter seems the better construction.

It is doubtful whether the first two claims are not invalid upon the face of the patent, as being merely for the functions of the bunging apparatus. Unless the method of using such apparatus was so well known as not to require to be pointed out to those skilled in the art, the specification is insufficient; and, if it was so well known that description was not necessary, there is no novelty in the claims. However this may be, these claims are invalid upon other grounds. Their novelty is negatived by evidence which establishes beyond any reasonable doubt the prior public use in this country of the respective processes claimed more than two years before the application for the patent was filed. The evidence is overwhelming that the vent-bungs known in the record as the "Shaefer bung," the "Guth bung," the "Bachman bung," and others, which are the vent-bung of the patent in the sense that they have the same functions, and are automatic valves designed to control the pressure of the gas, were used in many breweries during the period between the years of 1869 and 1876. Some of them were used in large numbers, and they were applied to shavings-casks after the beer had reached the kraeusen stage for controlling the pressure of the gas. The proofs establish that in some instances these vent-bungs were used before the end of the kraeusen stage, but generally they were used after the active fermentation had subsided, when it was desired to hold the beer in the shavings-cask for some period of time before drawing it off for market. The testimony of Mr. Sturm, a highly-intelligent witness, shows the use of an equivalent vent-bung as early as 1861 in two breweries in Indianapolis. The bungs were designed and made by him at the request of the brewers by whom they were used; they were used, not experimentally, but commercially; were applied to the shavings-casks before the active fermentation had subsided in the beer, and were intended and used to prevent the gas from escaping into the cellar and the foam and yeast particles from running over the cask.

This evidence not only defeats the novelty of the first and second claims, but also the novelty of the fourth claim, unless that claim is merely a restatement of the third claim in different phraseology.

The complainants have failed to establish infringement by the defendant of the third claim of the patent. The Eureka vent-bung, which the defendant employs, differs in details of construction from the vent-bung particularly described in the patent, but is the vent-bung of the claim, because it performs the function of holding the beer under automatic gas-pressure. But the testimony for the complainants does not show that the defendant has applied this apparatus in its brewery at the beginning of the kraeusen stage in the treatment of the beer, and the testimony for the defendant is explicit that the apparatus as it has always been used there is not applied until several days after the kraeusen has been introduced, during which time the beer is allowed to work out of the bung-hole. The direct testimony for the defendant is consistent with probability because it appears that as commonly used by brewers the bunging apparatus particularly described in the patent and equivalent apparatus are not applied until the beer has been allowed to clean itself for a few days of the kraeusen stage.

Mr. Schwartz, one of the expert witnesses for the complainants, states that as a practical brewer he would not use the apparatus of the patent until the kraeusen stage is somewhat advanced, and that it is desirable to allow the beer to work out of the cask for a few days, and thereby eliminate the bulk of the impurities before applying the apparatus. He states that, although some brewers apply it at the beginning of the kraeusen stage, brewers generally do not, but find the best results are obtained by allowing the active fermentation to proceed a few days before doing so. There is considerable other testimony in the record to the same effect as respects the use of this apparatus and of the several other equivalent devices.

The proof seems clear that the defendant has used the Eureka device in just the same way in which the Guth vent-bung was used in its brewery in 1875, and just as the Meller and Hofmann vent-bung was used in its brewery during the time it was authorized to use that device.

The bill is dismissed, with costs.

U. S. Circuit Court—Northern District of Illinois.

IDE *v.* BALL ENGINE COMPANY.

Decided July 23, 1889.

1. NOVELTY—PATENT DECLARED VOID FOR WANT OF.
   Letters Patent No. 301,720, granted July 8, 1884, to Albert L. Ide, for an improvement in steam-engine governors, declared void for want of patentable novelty.

2. INVENTION—MECHANICAL SKILL.
   Where the joint operation of mechanical parts, old in themselves, when combined is the same as and only that of their separate operation in the older machines, there is no patentable combination, although there may be some convenience in bringing these parts together and making a more compact machine. Such change is merely mechanical, and does not rise into the realm of invention.

Messrs. Offield & Towle for the complainant.

Mr. John K. Hallock and *Mr. J. H. Raymond* for the defendant.

BLODGETT, *J.:*

This is a bill in equity for an injunction and accounting, by reason of the alleged infringement by defendant of Letters Patent No. 301,720, granted July 8, 1884, to the complainant for a steam-engine governor.

The nature and scope of the invention covered by this patent are described by the patentee in his specification as follows:

> This invention relates to that class of steam-engine governors known as "fly-wheel governors," and has for its primary object to provide means for holding the eccentric steadily in its proper poised position, in opposition to the tendency of certain extraneous forces which are calculated to disturb the movements of the valve, as sought to be determined by the balanced forces of weights and springs when the engine is in motion.
>
> To this end the invention consists in the combination of a dash-pot with the governor and pulley, said dash-pot connected with a fixed and a movable part, or with two relatively or unequally movable parts—as, for example, with the extremity of a weight-lever and the pulley-hub.
>
> In this class of governors the position of the eccentric is variably determined by the opposing and self-balancing forces exerted by the centripetally-acting spring or springs and the centrifugally-acting weight or weights connected with said springs, the intention being to hold the eccentric permanently in a certain poised position for a given speed of the wheel to which the governor is applied, and to vary the position of the eccentric exactly as the speed of said wheel is varied. There are, however, certain temporarily-acting causes of disturbance calculated to change the position of the eccentric independently of the speed of the wheel. The principal of these disturbing causes is the inertia of the reciprocating parts, including the eccentric and the parts actuated thereby; and a secondary cause is the gravity of the eccentric when not counterbalanced by some special device for the purpose. At a regular and very high speed of the governor wheel or pulley these disturbing forces operate but slightly, owing to the momentum of the weights, which serve to prevent their deflection from a regular course; but at lower speeds than that at which the apparatus is adjusted to run, and particularly in accelerating or retarding the engine, as in starting up or slowing down, these incidental disturbing forces interfere materially with the valve action and give an objectionable irregularity to the movements of the weights. In the case of an engine used for running a dynamo for electric-lighting purposes, and subject to sudden and wide changes in requisitions of power and speed, the effects of the disturbances referred to manifest themselves also in the quality or intensity of the lights. A dash-pot constructed and attached to the apparatus in such manner as to prevent sudden movements of the weight-levers or of the eccentric is found in practice to wholly overcome the defects indicated and to give a desirable steadiness and regularity to the movements of the movable parts of the governor, as well as accuracy and reliability to the cut-off action of the valve.
>
> * * * * * * *
>
> * * * The cylinder of the dash-pot is filled with glycerine or some other non-compressible liquid, preferably one that is also not congealable at a temperature to which the engine is likely to be exposed. By means of the dash-pot applied to the relatively movable and stationary parts or to the unequally-moving parts, as described, wide and sudden radial movements of the weights E' are prevented, and as a consequence the governor will have a steady and efficient action at all speeds of the pulley or wheel to which said governor is applied. * * *
>
> * * * * * * *
>
> By the term "dash-pot" in the appended claim I mean the device technically known by that name—usually comprising a closed cylinder, a piston having a passage through or around it, and a fluid confined in the cylinder, as shown—or its equivalent.

The patentee has but one claim, which is—

> In a fly-wheel governor, the combination, with relatively-movable parts, of a dash-pot, substantially as described.

The proof shows without dispute that as early as 1880 the Buckeye Manufacturing Company, of Salem, Ohio, placed upon the driving-shafts of their engines governors with weighted arms arranged to swing centrifugally as the shaft revolved so as to act upon the eccentric, and kept from swinging too readily by centripetal springs, the arrangement and function of the movable and fixed parts of the governor being substantially like the movable and fixed parts of the Ide governor, except that it had no dash-pot, the operative parts being held in place upon the shaft of the engine within a comparatively light shell or case with radial arms extending from the shaft. One of these Buckeye engines was placed in what was known as the "Pacific Elevator" or "Dow's Stores," in Brooklyn, in the State of New York, and its governor not securing such steadiness of motion in the engine as was desired, a dash-pot was, in December, 1880, put into the governor in substantially the manner shown by the defendant's "Exhibit B," in evidence in this case, the dash-pot in "Exhibit B" being attached to one of the swinging arms of the governor and to a fixed part, so that its operation was essentially the same as that of the dash-pot in the complainant's patent.

In July, 1881, governors similar in arrangement of parts and with dash-pots were put into the engines of the Hartford Carpet Company, at Thompsonville, Conn., and the engine of the Hartford Manilla Company, at Burnside, Conn., and these governors with dash-pots attached had continued in use on these engines up to the time the proofs were taken in this case, and all had proved effective in securing steadiness of action in the engines to which they were attached, or, as the witnesses expressed it, preventing sudden and violent fluctuations of the governor.

The dash-pots attached to these Buckeye governors were connected with a movable and fixed part of the governor in such a manner as to be accurately described by the specifications of complainant's patent. In other words, the structure of these Buckeye governors with the dash-pot added was such as to make them a manifest and palpable infringement of the complainant's patent if they had been made and used after instead of before that patent.

The only feature in which these Buckeye governors with the dash-pot added can be differentiated from the complainant's patent is, that they were not placed in the fly-wheel of the engines to which they were attached. Mr. Ide has taken this Brooklyn and Thompsonville governor out of the shell or disk in which it was placed by the agents of the Buckeye Company on the shaft and attached it to the hub and radial arms of the fly-wheel of his engine, and the claim of his patent is for putting this governor with dash-pot into the fly-wheel of the engine. The most that he has done has been to fasten this old Brooklyn and Thompsonville governor to the arms of the fly or balance wheel of his engine instead of leaving it on the driving-shaft, where he found it, and the only question is, has he invented anything in doing this? I do not learn from the proof that any new function is obtained from the combination covered by this claim. The governor still performs the same function and no other that it did when fastened to the shaft by the shell and

arms as in the Brooklyn and Thompsonville governors, and the fly-wheel still performs the functions it did before the governor was brought into it. Their joint operation, when combined, is the same, and only that of their separate operation in the older machines.

The patent, therefore, seems to me to come clearly within the rule in *Reckendorfer* v. *Faber* (92 U. S., 354) and *Pickering* v. *McCullough*, (104 U. S., 310.) It is true there may be some convenience in bringing these parts together and making a more compact machine, but that is a mere mechanical change which does not rise into the realm of invention.

As was said by Mr. Justice Mathews in the case last cited:

> In the patentable combinations of old elements all the constituents must so enter into it as that each qualifies every other. * * * It must form either a new machine of a distinct character and function or produce a result due to the joint co-operating action of all the elements. It is not a mere adding together of separate contributions.

For these reasons I am of opinion that the patent is not valid, and that the bill should be dismissed for want of equity.

U. S. Circuit Court—District of Massachusetts.

THE UNITED STATES OF AMERICA *v.* THE AMERICAN BELL TELEPHONE COMPANY *et al.*

Decided September 9, 1889.

1. PRACTICE IN THE COURTS—AMENDMENT OF EQUITY PLEADINGS.

Although under the acts of Congress the power of the courts of the United States with respect to the amendment of equity pleadings is plenary, the allowance of such amendment is a question of judicial discretion depending largely on the special circumstances of the cases.

2. SAME—SAME.

One of the defendants, C, filed a general answer to the bill and another defendant, B, filed a plea and answer in support thereof. Before any evidence had been taken in the cause the defendant C asked leave to withdraw its answer and to file the same plea and answer in support thereof which had been filed by the defendant B. *Held* that the motion was not open to the objection of introducing a new defense on a new state of facts, or of changing the substance of the case made by the bill, or of setting up a merely technical defense, and that, as the convenience of the case would be best promoted by having the issues proceed *pari passu* as to each defendant, the motion should be granted.

Mr. George A. Jenks and *Mr. Charles S. Whitman* for the complainant.

Mr. Chauncey Smith and *Mr. Elias Merwin* for the defendants.

COLT, *J.*:

In this case the defendant company has filed a general answer to the bill, and the defendant Bell has filed a plea and answer in support thereof. The defendant company now asks leave to withdraw its answer and to file the same plea and answer in support thereof which has been filed by Bell.

By section 954 of the Revised Statutes the courts of the United States may at any time permit either of the parties to amend any defect in the process or pleadings upon such conditions as they may in their discretion or by rule prescribe.

The plenary power of the courts of the United States with respect to amendment of pleadings under the acts of Congress is recognized in *Eberly* v. *Moore*, (24 How., 147.)

In *Hardin* v. *Boyd* (113 U. S., 756) the Supreme Court states the rule as follows:

> In reference to amendments of equity pleadings the courts have found it impracticable to lay down a rule that would cover all cases. Their allowance must at every stage of the cause rest in the discretion of the court, and that discretion must depend largely on the special circumstances of each case. It may be said generally that in passing upon applications to amend the ends of justice should never be sacrificed to mere form or by too rigid an adherence to technical rules of practice. Undoubtedly great caution should be exercised when the application comes after the litigation has continued for some time, or when the granting of it would cause serious inconvenience or expense to the opposite side. And an amendment should rarely, if ever, be permitted where it would materially change the very substance of the case made by the bill, and to which the parties have directed their proofs.

It thus appears that the allowance of amendments of equity pleadings is a question of judicial discretion, depending largely on the special circumstances of each case. The present motion is not open to the objection of introducing a new defense on a new state of facts, or of changing the substance of the case made by the bill. It is not made for the purpose of setting up a merely technical defense, nor after the litigation has continued and evidence has been taken, nor does it seem to me that granting it would cause inconvenience or expense to the other side. Upon this last point it is urged by the defendants that it will be more convenient and less expensive to first try the question of fraud which is raised by the plea, and which may dispose of the case. The counsel for the defendants further say that the general answer was filed on behalf of the Bell Company under the misapprehension that the equity rules of this court were the same as prevail in the Massachusetts State Court, and that but for this misapprehension the same plea and answer in support thereof would have been filed on behalf of the defendant company as was filed by the defendant Bell.

Although the question of priority of invention is raised by the bill, the defendants insist that when this case was before the Supreme Court on demurrer (128 U. S., 315) that Court directed its examination to the question of whether the bill contained sufficient allegations of fraud, and that the Court refused to go a step beyond the position that the Government had the power to bring suit to annul a patent in the event that it was obtained by fraud. In view of this opinion of the Supreme Court it is urged that the issue of fraud should be first tried as to both of the defendants.

With the decision of the Supreme Court before me, I think there are strong equitable grounds for granting this motion. Limiting the case to the question of fraud may confine the testimony within comparatively narrow bounds, whereas the question of priority alone involves a laborious and extensive examination. If there is an issue in the case which may dispose of it without going into that elaborate investigation, it seems to me that the discretion of the court should be exercised in favor of such a limitation. Again, so far as the defendant Bell is concerned, this issue must be first tried, because the plaintiff has filed a replication to Bell's plea.

While it must be admitted that a motion to withdraw an answer and substitute a plea is rare in equity causes, still, taking into consideration all the circumstances as presented in this case, I am of opinion that the justice and convenience of the case will be best promoted by having the issues proceed *pari passu* as to each defendant, and that therefore the motion should be granted.

Motion granted.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 49—No. 3. TUESDAY, OCTOBER 15, 1889. PRICE—$5 per year.

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Changes in Classification.

(ORDER No. 578.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 2, 1889.

The following changes are directed in Division IV:

New Class 189, Iron Structures, and sub-classes thereunder are established, as follows:

1. Jails.
2. Buildings.
3. Grilles.
4. Metallic ceilings.

The following sub-classes are established:

In Class 14, Bridges:
11. Flooring.
12. Truss, Bow-string.

In Class 108, Roofing:
8. Flashing.

In Class 159, Fire Escapes and Ladders:
20. Fluid-check.
21. Fly-check.
22. Escapement-check.
23. Governor-check.

ROBERT J. FISHER,
Acting Commissioner.

Additional Sub-Classes.

(ORDER No. 579.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 3, 1889.

The following additional sub-classes are hereby established in Division XXVI:

In Class 171, Electricity, Generation:
121. Inductoriums—
122. Induction-coils.
123. Transformers, Rotary.
124. Transformers, Stationary.
125. Pyro-magneto-electric devices.

In Class 172, Electricity, Motive-Power:
126. Motors, Reciprocating.

ROBERT J. FISHER,
Acting Commissioner.

Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., September 13, 1889.

SIR: The Secretary of the Interior has ordered that J. M. D. Miller, of Iuka, Miss., be not recognized after this date as attorney or agent in the prosecution of any claim or other matter before this Department or any bureau thereof.

Very respectfully,
E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

Issue of October 15, 1889.

Patents	443—No.	412,715 to No. 413,157, inclusive.
Designs	11—No.	19,352 to No. 19,362, inclusive.
Trade-Marks	24—No.	17,096 to No. 17,119, inclusive.
Labels	6—No.	6,035 to No. 6,040, inclusive.
Reissues	2—No.	11,084 to No. 11,085, inclusive.
Total issue	486	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	3	....	Nebraska	9	....
Arizona Territory	1	1	Nevada	....	....
Arkansas	1	....	New Hampshire	5	....
California	11	....	New Jersey	19	....
Colorado	3	....	New Mexico Terri'y	....	....
Connecticut	15	....	New York	84	9
Dakota Territory	2	....	North Carolina	1	....
Delaware	1	....	Ohio	26	1
District of Columbia	3	..	Oregon	2	....
Florida	....	....	Pennsylvania	47	5
Georgia	3	....	Rhode Island	4	....
Idaho Territory	....	....	South Carolina	2	....
Illinois	27	1	Tennessee	2	....
Indian Territory	....	....	Texas	9	1
Indiana	14	....	Utah Territory	....	....
Iowa	10	....	Vermont	1	....
Kansas	4	....	Virginia	1	....
Kentucky	7	....	Washington Terri'y	2	....
Louisiana	4	....	West Virginia	2	....
Maine	3	....	Wisconsin	8	....
Maryland	7	....	Wyoming Territory	....	....
Massachusetts	30	7	United States Army	....	....
Michigan	16	1	United States Navy	....	....
Minnesota	4	....			
Mississippi	1	....	Total to citizens of the United States	404	26
Missouri	10	....			
Montana Territory	....	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	France	3	2
Australia	....	....	Germany	10	....
Austria-Hungary	7	....	Luxemburg	1	....
Belgium	2	....	Mexico	....	....
Bermuda	....	....	New South Wales	....	....
Brazil	....	....	New Zealand	....	....
Canada	5	....	Russia	1	....
Chili	....	....	Scotland	1	....
Costa Rica	....	....	Spain	....	....
Cuba	....	1	Switzerland	3	....
Curaçoa	....	....	Victoria	2	....
Denmark	....	....			
England	15	1	Total to citizens of foreign countries	50	4
Finland	....	....			

DESIGNS.

19,352.—BROUGHAM BODY.—*William Richard Connor*, New York, N. Y. Application filed September 11, 1889. Serial No. 323,670. Term of patent 3½ years.

19,353.—HEATING-STOVE.—*James Dwyer*, Detroit, Mich Application filed August 19, 1889. Serial No. 321,308. Term of patent 7 years.

19,354.—CAP.—*Jacob M. Frank*, Philadelphia, Pa. Application filed February 16, 1889. Serial No. 300,173. Term of patent 3½ years.

19,355.—FONT OF PRINTING-TYPE.—*William W. Jackson*, Philadelphia, Pa., assignor to *The MacKellar, Smiths & Jordan Company*, same place. Application filed September 16, 1889. Serial No. 324,107. Term of patent 14 years.

19,356.—TOY SAVINGS-BANK.—*Charles G. Shepard* and *Peter Adams*, Buffalo, N. Y.; said *Adams* assignor to *Walter J. Shepard*. Application filed August 12, 1889. Serial No. 320,506. Term of patent 7 years.

19,357.—BOTTLE.—*William G. Walter*, Pittsburg, Pa. Application filed August 17, 1889. Serial No. 321,151. Term of patent 3½ years.

19,358 and 19,359.—BELT BUCKLE.—*Louis Sanders*, Brooklyn, N. Y. Applications filed September 11, 1889. Serial Nos. 323,653 and 323,654. Term of patents 3½ years.

19,360.—BELT.—*Louis Sanders*, Brooklyn, N. Y. Application filed September 11, 1889. Serial No. 323,655. Term of patent 3½ years.

19,361.—TEA OR COFFEE POT HANDLE.—*Charles G. Shepard* and *Peter Adams*, Buffalo, N. Y.; said *Adams* assignor to *Walter J. Shepard*, same place. Application filed July 8, 1889. Serial No. 316,845. Term of patent 7 years.

19,362.—GUM FOR ARTIFICIAL TEETH.—*Eli T. Starr*, Philadelphia, Pa., assignor to *The S. S. White Dental Manufacturing Company*, same place. Application filed April 16, 1884. Serial No. 123,160. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

17,096.—TABLE-SALT.—*William C. Baird*, New York, N. Y. Application filed August 30, 1889. Used since August 15, 1889.
"The word 'ROYAL.'"

17,097.—SHOES.—*Eva Palsimer*, Philadelphia, Pa. Application filed September 11, 1889. Used since January, 1888.
"The word 'OUR,' the representation of an American dollar, upon the face of which appears the numeral '3,' in combination with a hand holding a shoe with one side turned over bearing the inscription 'SEWED.'"

17,098.—CHOCOLATE CONFECTIONS.—*Fobes, Hayward & Company*, Boston, Mass. Application filed August 31, 1889. Used since September, 1886.
"The word 'CLIMAX.'"

17,099.—LOZENGES.—*Fobes, Hayward & Company*, Boston, Mass. Application filed August 31, 1889 Used since December, 1878.
"The word 'PEERLESS.'"

17,100.—SHOE-ELASTIC.—*Herbert & Rapp Company*, Brockton and Boston, Mass. Application filed September 14, 1889. Used since August 15, 1889.
"A reversely-pieced triangular figure, at every apex of which is a re-entering angle containing a small ball-shaped device, within which figure are the words 'VIS GORE.'"

17,101.—METALLIC RINGS FOR THE CURE OF RHEUMATISM AND THE LIKE.—*Leonard G. Abbott*, Boston, Mass. Application filed August 31, 1889. Used since December 15, 1888.
"The compound word 'FRANCO-GERMAN.'"

17,102.—CIGARS.—*Pedro Mireda*, Havana, Cuba. Application filed September 18, 1889. Used since July, 1880.
"The words 'LA DILIGENCIA.'"

17,103.—BASIN-LIFTS FOR WASH-BASINS AND BATH TUBS.—*William H. Ward*, Boston, Mass. Application filed August 26, 1889. Used since February, 1887.
"The word 'ACME.'"

17,104.—VALVES FOR WATER-CLOSET TANKS AND CISTERNS.—*William H. Ward*, Boston, Mass. Application filed August 26, 1889. Used since February, 1887.
"The word 'IMPERIAL.'"

17,105.—WATCH-MOVEMENTS.—*American Waltham Watch Company*, Waltham, Mass. Application filed September 4, 1889. Used since January 1, 1861.
"The words 'APPLETON, TRACY & Co.' stamped or engraved in a semicircular or curved manner in script letters."

17,106.—STRAW CIGARETTE-PAPER.—*Charles E. Wackerhagen*, Canaan, N. Y. Application filed June 10, 1889. Used since January 1, 1881.
"A parallelogram in light tint representing a cigarette-wrapper having two or more longitudinal water-lines from end to end."

17,107.—LINEN HYDRAULIC HOSE.—*Eureka Fire Hose Company*, New York, N. Y. Application filed August 21, 1889. Used since July, 1889.
"Red, white, and blue lines running longitudinally upon the hose and the words 'EUREKA UNDERWRITERS.'"

17,108.—COGNAC BRANDY.—*Gautier Frères*, Aigre, France. Application filed August 8, 1888. Used since 1862.
"A multicolor label with irregular borders, showing a mural crown and turreted upper corners."

17,109.—COGNAC BRANDY.—*Gautier Frères*, Aigre, France. Application filed August 8, 1888. Used since 1865.
"A white label in the form of an inverted truncated cone with rounded upper corners and a golden border."

17,110.—PREPARATIONS ENTITLED LIQ. SANTAL FLAV. C BUCHU ET CUBEBA AND MIST. PEPSINÆ CO. C BISMUTHO.—*C. J. Hewlett & Son*, London, England. Application filed May 12, 1880. Used since December 1, 1875.
"The representation of an owl."

17,111.—CACHEMIRES FOR DRESSES.—*Hilton, Hughes & Denning*, New York, N. Y., and Paris, France. Application filed August 20, 1889. Used since 1872.
"The letters 'R D.'"

17,112.—WATCH-CASES.—*Roy Watch Case Company*, New York, N. Y. Application filed September 16, 1889. Used since July 1, 1885.
"The word 'ROY.'"

17,113.—GAMES.—*Ralph G. Barnes*, Syracuse, N. Y. Application filed September 3, 1889. Used since July 1, 1888.
"The word 'SAFE.'"

17,114.—EMMENAGOGUE.—*Chichester Chemical Company*, Philadelphia, Pa. Application filed January 24, 1889. Used since October 20, 1887.
"The words 'CHICHESTER'S ENGLISH RED CROSS DIAMOND BRAND PENNYROYAL PILLS.'"

17,115.—PUZZLES.—*James C. Collin*, Syracuse, N. Y. Application filed September 5, 1889. Used since July 1, 1886.
"The word 'CANUDOIT.'"

17,116.—GLOVES.—*August C. Hartmann*, New York, N. Y. Application filed September 6, 1889. Used since September 4, 1889.
"The words 'LE GRAND PRIX.'"

17,117.—PLAYING-CARDS.—*The Russell & Morgan Printing Company*, Cincinnati, Ohio. Application filed September 7, 1889. Used since June 26, 1888.
"The word 'SEAT.'"

17,118.—SIDE-SPRING WAGONS.—*Harvey A. Moyer*, Syracuse, N. Y. Application filed September 5, 1889. Used since January 1, 1889.
"The word 'BANNER.'"

17,119.—TONICS, FEBRIFUGES, AND THE LIKE.—*Charles Wright & Company*, Detroit, Mich. Application filed September 27, 1888. Used since April 1, 1888.
"The representation of the head of a gargoyle inclosed by a circle having a shield partly within it."

LABELS.

6,035.—Title: "CHICHESTER'S ENGLISH, DIAMOND BRAND, RED CROSS, PENNYROYAL PILLS."—*Chichester Chemical Co.*, Philadelphia, Pa. Application filed December 24, 1888.

6,036.—Title: "CHICHESTER'S ENGLISH, DIAMOND BRAND, RED CROSS, PENNYROYAL PILLS."—*Chichester Chemical Co.*, Philadelphia, Pa. Application filed December 24, 1888. (Trade-Mark Registered.)

6,037.—Title: "DR. PETTITT'S PERFECT BLOOD AND LIVER TONIC." *Grayson Medicine Company*, Sherman, Tex. Application filed July 16, 1889.

6,038.—Title: "STYPTIC LOTION FOR BURNS, SCALDS, FROSTBITES, CUTS, AND SORES."—*Edwin Augustus Levering*, Germantown, Pa. Application filed August 30, 1889.

6,039.—Title: "DR. TOLAND'S LIVER TONIC OR BLOOD PURIFIER." *Oscar Lincoln*, Prescott, Arizona Ter. Application filed September 18, 1889.

6,040.—Title: "DR. HILDEBRAND'S IMPROVED SYPHON VAGINAL DOUCHE AND IRRIGATOR."—*E. H. Sargent & Company*, Chicago, Ill. Application filed September 9, 1889.

DISCLAIMERS.

197,441.—*Basil M. Wilkerson*, Baltimore, Md. Patent dated November 20, 1877. IMPROVEMENT IN DENTISTS' CHAIRS. Disclaimer filed October 3, 1889, by the present assignees, *The S. S. White Dental Manufacturing Co.*

Enters its disclaimer to that part of the claim in the specification which is in the following words, to wit:
"23. In a dental chair, a head-rest pivoted twice about parallel axes and once about a ball-and-socket joint, as set forth."

315,559.—*August Schwarzschild* and *Nelson Greenfield*, New York, N. Y. Patent dated April 14, 1885. IMPROVEMENT IN CONFECTIONERY. Disclaimer filed October 9, 1889, by the patentees.

Enter their disclaimer "to that part of the claim in said specification which includes more, or can now be construed to include more, than a candy egg or a candy consisting of the combination described in said specification and claim and resembling in its whole combination an egg in exterior and interior construction and general appearance, the intent and meaning of this disclaimer being to limit and confine the invention described in the specification and claimed in the claim to a candy consisting of the combination of a hard smooth exterior or shell composed of sugar or sugar compound with a soft interior composed of marsh-mallow or moonshiner stock, the whole combination made to resemble an egg in exterior and interior construction and general appearance."

PATENTS

GRANTED OCTOBER 15, 1889.

412,715. BAND-CUTTING FEEDER FOR THRASHING-MACHINES. CHARLES H. ASHPAUGH and JOHN J. WILHELM, Cedar Grove, Ind. Filed Dec. 26, 1888. Serial No. 294,842. (No model.)

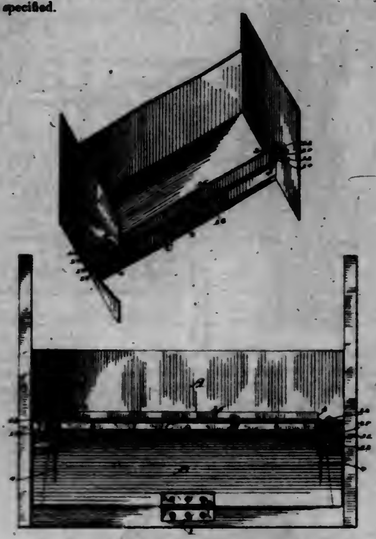


Claim.—An endless traveling carrier having projecting pins or fingers and a rotating shaft having a central band-cutter and oppositely-twisted spreading spirals on each side of said cutter, in combination with a vertically-movable feed-controlling frame located behind said rotary shaft, downwardly-projecting fingers *q* on said frame, a lever for raising and lowering said frame, a vertically-sliding bar W, sliding in said frame in front of said fingers *q*, and a rotating crank-shaft journaled in said frame and operating said bar W, substantially as set forth.

412,716. DEVICE FOR PREVENTING HORSES FROM CRIBBING. ANDREW J. AVERY, Norway, Me. Filed Apr. 17, 1889. Serial No. 307,547. (No model.)

Claim.—1. The combination, with a feed-box, of a hinged side, a shaft journaled therein, a swinging frame arranged on said shaft to swing upward over the upper edge of the hinged side, and chains secured on said shaft and to the sides of the feed-box, substantially as described, and for the purpose specified.

2. The combination, with a feed-box, of a hinged side formed with a tubular bearing longitudinally extended through it, and cut-away end portions, a shaft projected through said tubular bearing and provided with annular collars to prevent end-play, clamping-sleeves on the projecting ends of said shaft, chains having one end secured to said sleeves and the other end fastened to the feed-box, and the swinging frame formed with slotted end arms arranged on the shaft and clamped between the sleeves and the collars thereon, substantially as specified.



3. In a device for preventing animals from cribbing, the combination of a hinged plate constituting one side of the feed-box and provided with a tubular bearing extended longitudinally through it, a shaft mounted in said bearing, a swinging frame mounted on said shaft to turn upward over the upper edge of the hinged plate, and means, substantially as described, for holding the plate in normal position and for throwing the swinging frame upward, all substantially as specified.

412,717. PNEUMATIC CANNON AND SUPPLY SYSTEM. WALLACE A. BARTLETT, Washington, D. C., assignor, by mesne assignments, to the Pneumatic Dynamite Gun Company, New York, N. Y. Filed Mar. 9, 1886. Serial No. 193,532. (No model.)

Claim.—1. A pneumatic cannon, an air-flask therewith, a source of air-supply, (as a compressor or tank,) and separate systems of protected supply-pipes leading to the gun-flask from the source of supply.

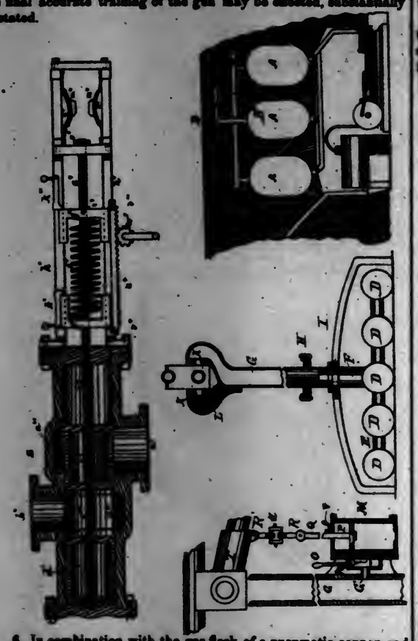
2. In combination with a gun, a supply-pipe leading thereto, a stop-valve, connections with the pipe and valve on the gun side for opening said valve, and automatic mechanism (as a spring or its equivalent) for closing the valve on the reduction of back-pressure.

3. In combination with the gas-flask of a pneumatic cannon, a plurality of supply-pipes leading thereto, each pipe being provided with a check-valve and a back-pressure valve.

4. The combination, with the gas-supply pipe of a pneumatic cannon, of a closing-valve, a spring or its equivalent to close the same, and a bolt or catch operated by the back-pressure in the pipe to retain the valve open, but to permit its closure on the reduction of back-pressure, substantially as set forth.

5. The combination, with a pneumatic training device, of a sup-

plementary screw attachment between the same and the gun, whereby the final accurate training of the gun may be effected, substantially as stated.



6. In combination with the gas-flask of a pneumatic cannon and a supply-pipe or standard leading therefrom, on which the gun is supported, a support for said standard independent of the flask, substantially as described.

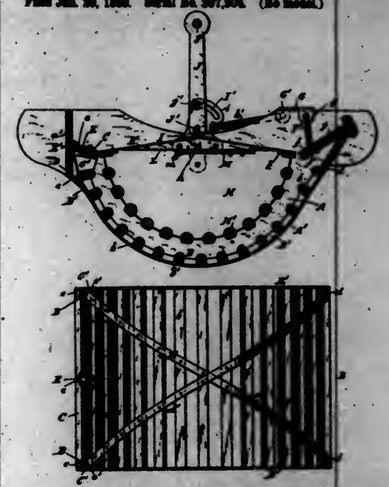
412,718. STEAM-BOILER. JOHN RAMBHART, Altoona, Pa. Filed June 8, 1889. Serial No. 313,542. (No model.)



Claim.—1. In combination, the fire-pot, the upper and lower flue-sheets, the main flues *c'*, extending from the fire-box above the water-line and connected with the upper sheet *g*, the shell *K* for the upper flue-sheet, said shell extending below the water-line, the flange K, and the series of supplemental tubes *c* outside the shell *K* and below the water-line, substantially as described.

2. In combination, the fire-pot, the flue-sheets, the inner series of tubes *c'*, extending above the water-line, the shell *K* and flange K, the supplemental tubes *c* below the water-line, and the ring 4 upon the flange K, substantially as described.

412,719. WASHING-MACHINE. GEORGE H. ROSS, Lebanon, Ind. Filed Jan. 29, 1889. Serial No. 297,904. (No model.)



Claim.—1. The combination, with the curved side plates of the wash-board having the enlargements C and the lugs D at one end, of the parallel slats secured between the side plates, with their ends abutting against the sides of said plates, the slanting end pieces secured between the said enlargements, and the diagonally-crossed stays secured to the under side of each of the slats and to lugs D, substantially as and for the purpose set forth.

2. In a washing-machine, the combination, with the drip-board provided with a groove, of the rod pivoted in the said groove, a plate *f'* in the middle of the drip-board, and two similar plates at the ends of the said board upon the opposite side of the crank-rod from the central plate, each of the said plates having one end secured to the drip-board and the other end bent into the groove over the said rod for retaining it in position, substantially as set forth.

3. The combination, with a washing-machine tub, of the plates G, secured upon the top of the sides of the tub and provided with the downwardly-projecting lugs *g* and G' at the opposite ends of the said plates and inside and outside the tub respectively, each lug being provided with a pivot-hole, substantially as and for the purpose set forth.

4. The combination, with the wash-tub and the pivot-rod A, supported by the tub, of the reciprocating rubber, the plates secured to the sides of the rubber and journaled upon the said pivot-rod and provided with the ledges *i'*, resting on the top of the rubber, and the extensions *i* above the rubber, having the curved slots *I* in them, the handles pivoted to said plates between the curved slots and the pivot-rod holes, and the screws passing through said curved slots and adjustably connecting the handles to the said plates, substantially as set forth.

5. The combination, with a reciprocating rubber, of a pivot-rod, a lid closing the top of the rubber, and a connecting device—such as a clip—for attaching the lid to the pivot-rod and retaining said lid in a horizontal position when the rubber is moved back and forth, substantially as set forth.

6. The combination, with a reciprocating open-topped rubber, of a pivot-rod for the rubber, a removable non-reciprocating lid closing the top of the rubber when in its central position, and spring-clips rigidly secured to the lid at one end, with their free ends engaging with the pivot-rod, for connecting the lid to the said pivot-rod, substantially as set forth.

7. The combination, with a reciprocating open-topped rubber, of a pivot-rod for the rubber provided with flat places on its lower side, a lid fitting inside the top of the rubber, and the springs secured to the lid and provided with downwardly-bent ends and with horizontal portions bearing against the said flat places on the pivot-rod, substantially as and for the purpose set forth.

8. The combination, with a reciprocating open-topped rubber, of

a pivot-rod for the rubber, a removable sheet-metal lid sloping downwardly at each end and provided with flat-bottomed sides having central notches fitting over the pivot-rod, and springs secured to the said side pieces of the lid and retaining the pivot-rod in the said notches, substantially as and for the purpose set forth.

412,720. APPARATUS FOR HEATING GLUE. HILLARD P. BRAMAN, Chicago, Ill. Filed Mar. 9, 1889. Serial No. 302,993. (No model.)



Claim.—1. The apparatus for melting glue, consisting of the covered steam-chamber A, having an interior perforated partition for diffusing the steam, and a steam-inlet, in combination with open-work trays for the glue, adapted to be suspended in said chamber, substantially as set forth.

2. The apparatus for melting glue, consisting of the covered cylinder A, an inner perforated cylinder B, the two forming a steam-space *c*, and a steam-inlet, in combination with open-work trays for holding the glue, adapted to be suspended within the inner cylinder, substantially as set forth.

3. The apparatus for melting glue, consisting of the covered chamber A, having a steam-inlet, and means for diffusing and breaking up the current of the steam, in combination with one or more trays for holding the glue and adapted to be suspended in said chamber, substantially as set forth.

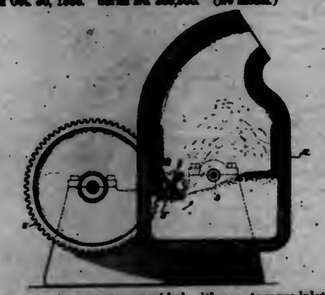
4. The apparatus for melting glue, consisting of a covered chamber having a steam-inlet and provision for catching the melted glue as it drops from the trays, in combination with open-work trays, in which the glue may be suspended in said chamber, substantially as set forth.

5. The apparatus for melting glue, consisting of a chamber covered at the top and permanently open at the bottom, and having a steam-inlet, in combination with one or more trays, in which the glue may be suspended in said chamber, substantially as set forth.

6. The combination, with the chamber A and its steam-inlet, of an interior partition for diffusing and breaking up the current of steam, such partition being perforated except in that portion opposite the inlet, and trays for holding the glue, substantially as set forth.

7. The combination, with the chamber A and its steam-inlet, of the inner perforated cylinder B, the two forming the space *c*, wherein the steam is diffused around the chamber and its currents broken up, the drainage-pipe A, for draining off the water of condensation from such space *c*, and trays for holding the glue, substantially as set forth.

412,721. CONVERTER. JOHN W. BOOTHALEL, Springfield, Ohio, assignor to the Bookwalter Steel and Iron Company, Jersey City, N. J. Filed Oct. 30, 1888. Serial No. 289,980. (No model.)



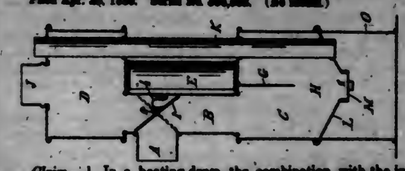
Claim.—1. A converter provided with one or more inlet-pipes or tuyeres, and with a paddle arranged above and in position to act upon limited portions of the bath of metal in the converter at the surface of the metal to separate such portions from the main body and expose them to the converting agent, substantially as and for the purpose set forth.

2. The combination, with a converter having a tuyere, of a revolving paddle arranged to act locally upon a part of the bath of metal in the converter at the surface thereof to throw the same upward from the main body, substantially as described.

3. The combination, with a tilting converter having a tuyere, of a revolving paddle arranged with its axis above the level of the surface of the bath of metal and at one side of the center of the converter, substantially as set forth.

4. The combination of a converter having a tuyere, a revolving paddle arranged with its transverse axis above the level of the surface of the metal in the converter in position for the blades to act only on a limited portion of metal at the surface of the bath, and a driving-shaft for imparting rapid rotation to the paddle-shaft, substantially as set forth.

412,722. HEATING-DRUM. ANDREW W. BRADY, Shepherd, Mich. Filed Apr. 26, 1889. Serial No. 308,382. (No model.)

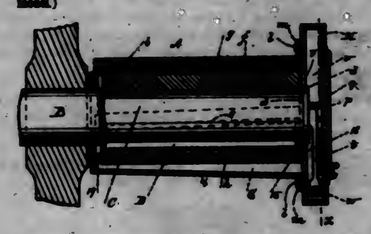


Claim.—1. In a heating-drum, the combination, with the inlet-pipe A and the flue B, formed with chambers C and D, of the reversible damper I, the flues E and F, connecting the two chambers, and the circulating-flue K, arranged substantially as shown and described.

2. In a heating-drum, the combination of the inlet-pipe A, the flue B, provided with the reversible spring-controlled damper, the chamber C, provided with the inclined bottom and the removable cap and with the partition G, the flues E and F, and chamber D, and the circulating-flue K, the parts being arranged to operate substantially as described.

3. In a heating-drum, the combination, with the inlet-pipe, of the vertical flue B, provided with the damper having the abutment *a* and the spring *b*, arranged to hold it in either one of its adjusted positions, substantially as and for the purpose described.

412,723. JOURNAL-BOX FOR RAILWAY-CARS. PATRICK BROWSLEY, St. John, New Brunswick, Canada, assignor of one-half to James Straton, same place. Filed Mar. 5, 1888. Serial No. 301,493. (No model.)



Claim.—1. In a journal-box of the character described, the combination of a body provided with a bushing in its upper portion, a horizontal partition below the axle-opening, forming a packing-chamber and lubricant-reservoir, inwardly-inclined distributing-shelves above said packing-chamber, a box on the outer end of said body, into which the reservoir opens, ducts leading from said box onto said shelves, and an arm secured to the journal and fitted to rotate in said box, substantially as and for the purpose set forth.

2. In a device of the character described, the combination of a body, a bushing bearing upon the axle-journal, a box in the outer end of said body provided with a door, a packing-chamber in said body opening into said box, a door for said chamber, a reservoir in the body opening into said box, ducts leading from said box onto inwardly-inclined distributing-shelves in the body, and a laterally-projecting arm on said journal fitted to rotate in said box and raise the lubricant to said ducts, substantially as described.

3. In a journal-box, a body provided with a bushing for supporting it on an axle-journal, a box on said body provided with a door, an oil-reservoir leading into said box, ducts leading from the box onto inclined shelves in the body for distributing the lubricant onto the journal, and an arm fixed to the outer end of the journal and rotating in said box, said arm having a forked head, whereby the lubricant

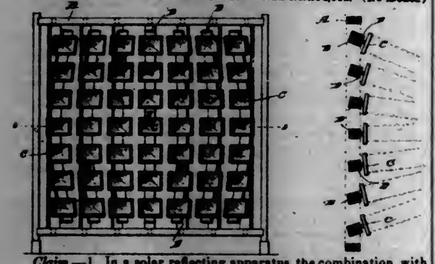
from the reservoir may be conveyed to said ducts, substantially as described.

4. In a journal-box, a body provided with a bushing bearing on the axle-journal, a circular box on the outer end of said body provided with a door, a packing-chamber below said journal opening into said box, an oil-reservoir opening into said box and provided with an outwardly-inclined bottom, ducts leading from said box onto inwardly-inclined distributing-shelves in said body, and an arm projecting laterally from the outer end of said journal and fitted to rotate in said box, said arm having a forked head provided with curved prongs, whereby oil from the reservoir may be conveyed to said ducts, substantially as described.

5. In a journal-box, the axle-journal C, provided with the flange *d*, in combination with the body A, having the bushing *g*, the box H on said body, the reservoir G, opening into said box, the inclined shelves 17, the ducts 18, leading from said box to said shelves, and the arm *t*, secured to said journal, all being arranged to operate substantially as described.

6. In a journal-box, the combination of the axle B, the body A, having the bushing *g* bearing on the journal C, the box H, provided with the inclined bottom *i* and door *p*, the partitions *h*, forming packing-chamber D and reservoir G, opening into said box, the door 16 for said chamber, the ducts 18, leading from said box to inclined distributing-shelves in said body, and the arm *t*, provided with the forked head *w*, substantially as and for the purpose set forth and described.

412,724. SOLAR REFLECTING APPARATUS. WILLIAM CALVER, Washington, D. C. Filed Dec. 31, 1888. Serial No. 294,992. (No model.)



Claim.—1. In a solar reflecting apparatus, the combination, with a mirror-supporting frame, of a series of mirror-sustaining bars pivoted to said frame and each provided with a mirror-carrying strip, and a series of mirrors carried by each of said strips, substantially as set forth.

2. In a solar reflecting apparatus, the combination, with a mirror-supporting bar, of a curved or flexible mirror-carrying strip attached to said bar, and a series of mirrors carried by said strip, substantially as set forth.

3. In a solar reflecting apparatus, the combination, with a mirror-supporting bar, of a flexible strip attached thereto, a series of mirrors carried by said strip, and adjusting appliances for bending the mirror-carrying strip to any desired curvature, substantially as set forth.

412,725. SOLAR STOVE. WILLIAM CALVER, Washington, D. C. Filed Dec. 31, 1888. Serial No. 294,993. (No model.)



Claim.—1. A solar stove consisting of inner and outer boxes with spaces between them, one side of each of said boxes being of transparent material, substantially as set forth.

2. A solar stove consisting of inner and outer boxes with spaces between them, one side of each of said boxes being transparent and the outer box having a top extension, substantially as set forth.

3. A solar stove consisting of inner and outer boxes with spaces between them, one side of each of said boxes being transparent and the outer box having a top extension with a mirror-facing on its under side, substantially as set forth.

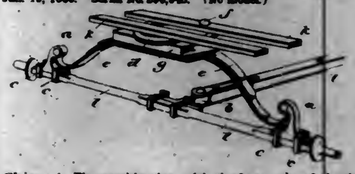
4. A solar stove consisting of inner and outer boxes with spaces between them, one side of each of said boxes being transparent and the outer box having top and side extensions on its transparent side, substantially as set forth.

5. A solar stove consisting of inner and outer boxes with spaces between them, said boxes both having transparent doors, substantially as set forth.

6. A solar stove consisting of inner and outer boxes with spaces between them, and provided with transparent doors, combined with a thin flat removable boiler having an enlarged top and an extended base, substantially as set forth.

7. A boiler for a solar stove, formed thin and flat and having an enlarged top and an extended base, substantially as set forth.

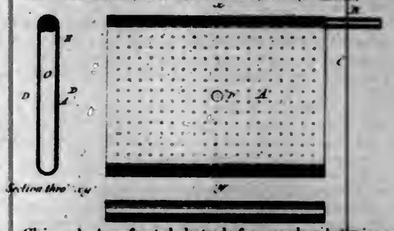
412,726. VEHICLE-GEAR. DANIEL W. CARP, Lincoln, Nebr. Filed Jan. 19, 1889. Serial No. 296,945. (No model.)



Claim.—1. The combination, with the front axle, of the shackles secured thereon and against the shoulders thereof, the springs secured at one end to the shackles and at the opposite end to the head-block, the lower section of fifth-wheel arranged upon the upper side of the head-block, the spring-bars, the upper section of fifth-wheel secured to said bars, both sections of said wheel having concentrically-arranged apertures and connected by a bolt passing through said apertures, substantially as specified.

2. The combination, with the front axle, of the shackles secured thereon and against the shoulders thereof, the springs secured at one end to the shackles and at the opposite end to the head-block, the lower section of fifth-wheel arranged upon the upper side of the head-block, the spring-bars, the upper section of fifth-wheel secured to said bars, both sections of said wheel having concentrically-arranged apertures and connected by a bolt passing through said apertures, and the reach having its forward end secured to the front axle beneath the fifth-wheel and free from the latter, substantially as specified.

412,727. SECONDARY BATTERY. HIRAM H. CARPENTER, Denver, Colo. Filed Dec. 26, 1888. Serial No. 294,689. (No model.)



Claim.—1. A perforated electrode for secondary batteries, composed of cerusite made into compressed tablets and inclosed in a perforated case composed of lead or any alloy thereof.

2. A perforated electrode for secondary or storage batteries, made or composed of cerusite, substantially as described.

3. An electrode for secondary or storage batteries, perforated through and through with a multiplicity of small holes, composed entirely of active matter, with a conducting support or case A, also perforated, as and for the purpose intended, substantially as described.

4. An electrode for secondary batteries, composed of cerusite, and perforated as herein described, in combination with a perforated envelope or case having a post made integral therewith, substantially as described.

412,728. COMBINED HORSESHOE NAIL AND CALK. ASMUS CARSTENS, Flensburg, Prussia, Germany. Filed July 11, 1888. Serial No. 279,604. (No model.) Patented in Germany Nov. 29, 1887, No. 44,297; in Norway June 5, 1888, No. 894; in England June 6, 1888, No. 8,394; in Sweden June 7, 1888, No. 1,565; in Canada Sept. 11, 1888, No. 29,938, and in Denmark Nov. 28, 1888, No. 967.



Claim.—A horseshoe-nail having, as usual, a tapered head to fit a corresponding socket in the shoe, said head having on its front surface ribs or ball-shaped projections integral with the face of the nail-head, arranged in a curved line, so that the head may be wedged into its socket, and having also integral therewith a tapered calk, substantially as shown and described.

412,729. LEAF AND FLOWER ALBUM. HIRAM T. COOK, Alba, Mich., assignor of one-half to Frank D. Hopkins, same place. Filed Oct. 23, 1888. Serial No. 288,893. (No model.)



Claim.—1. The herein-described book or album having pieces arranged between the leaves at their edges to hold their opposing sides apart, and having ornamental pieces applied to the sides of the leaves and secured thereto at intervals, whereby the stems of leaves and other articles may be inserted between the said pieces and the leaves, substantially as and for the purpose specified.

2. The herein-described leaf for albums and books, having its edges or corners thickened by separate pieces applied thereto between the edges and secured at intervals, whereby spaces are left between the points of attachment for the insertion of the stems of leaves and other articles, substantially as described.

412,730. COOKING UTENSIL. CHRISTOPHER G. DAVIS, Kansas City, Mo. Filed June 3, 1889. Serial No. 312,967. (No model.)



Claim.—1. The combination, with a pan provided with an air-tight cover, of a reticulated grate hinged to the interior wall of said pan above its bottom, a leg to support the opposite end of said grate above the bottom of the pan, and a bail secured to the free end of said grate, substantially as set forth.

2. The combination, with a pan provided with an air-tight cover, of a reticulated grate hinged to the interior wall of said pan above its bottom, and a support for the opposite edge of said grate.

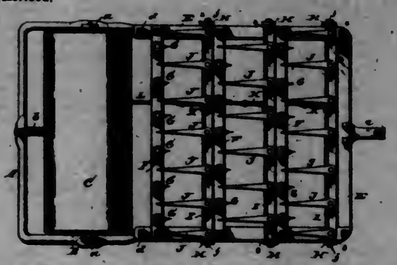
3. The combination, with a pan provided with an air-tight cover and a socket adapted to be engaged by a stove-lid hook, of a grate inclosed within said pan and supported above its bottom.

412,731. COMBINED HARROW AND ROLLER. JAMES A. DAWSON, Tiptonville, Tenn. Filed June 15, 1888. Serial No. 314,326. (No model.)

Claim.—1. The combination, with the roller-frame and the roller, of the harrow-frame pivotally connected to the roller-frame and provided with harrow-teeth and teeth for ejecting trash, substantially as shown and described.

2. The combination, with the roller and its frame, of the harrow-frame, the harrow-teeth attached thereto, and the trash-ejector teeth on said harrow-frame, and means for raising and lowering the ejector-teeth independent of the harrow-frame, substantially as and for the purpose specified.

3. The combination, with the roller-frame, the roller, and the harrow-frame and the harrow-teeth, of the trash-ejector teeth on the harrow-frame and free to vibrate laterally, substantially as shown and described.

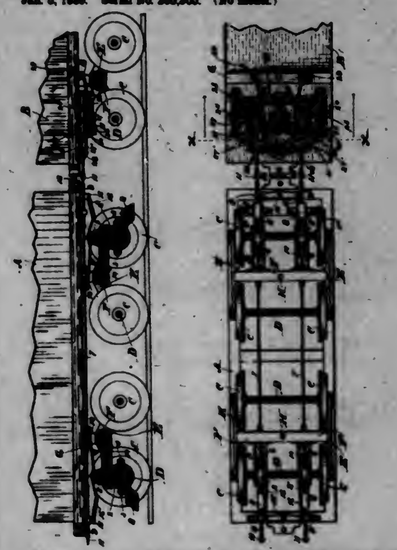


4. The combination, with the roller and its frame and the harrow-frame and its teeth, of the lugs attached to the side bars of the harrow-frame, the bars I, having bearings in said lugs and formed with shoulders and free to move endwise in their bearings, and the teeth J, attached to said bars, substantially as and for the purpose specified.

5. The combination, with the roller and its frame, of the harrow-frame pivotally connected to the roller-frame, the harrow-teeth on the harrow-frame, the bars I, journaled in bearings on the harrow-frame, the arms K, attached at their lower ends to said bars, and the longitudinal bar L, connecting the upper ends of said arms, substantially as shown and described, and for the purpose specified.

6. The combination, with the roller and the harrow-teeth and their frames, of the trash-ejector teeth arranged at an angle of about forty-five degrees with the harrow-teeth and in the spaces between the said harrow-teeth, as set forth.

412,732. CAR-MOVER. BERA DUDERSTADT, Milwaukee, Wis. Filed Jan. 3, 1889. Serial No. 295,905. (No model.)



Claim.—1. A car-mover consisting of two ratchet-wheels rigid on a car-axle, two cases, one about each ratchet-wheel, oscillating on the axle, each provided with a gravity-weight or counterpoise and carrying a pivoted pawl, in combination with two reciprocating rods connected with the oscillating cases, and means, substantially as described, for reciprocating the rods, all for the purpose set forth.

2. A car-mover consisting of two ratchet-wheels rigid on a car-axle, two cases, one about each ratchet-wheel, oscillating on the axle and carrying a pivoted pawl, in combination with two reciprocating rods connected, respectively, with the oscillating cases, which rods, being connected with mechanism for operating them, are adapted for tilting the cases alternately, and a central pivoted oscillating lever

connected at its ends to the oscillating cases, whereby when one case is tilted forward the other case is drawn up rearwardly; substantially as described.

3. The combination, in a car, of two or more sets of ratchets, cases, pawls, and two reciprocating rods connected with the cases, each set of ratchets being on one axle, and the ratchet-wheels and cases of the two sets being, in sets, reversed in direction, with two reciprocating rods, each rod being connected with one case of each set, whereby the two rods and the two cases of one or more sets may be alternately tilted in the same direction, and by the same rods, operated in the reversed direction, the two cases of one or more of the other sets may be tilted in the other direction, substantially as described.

4. In a car-mover, a tilting case and therein a pulley having a double groove, or groove in the bottom of a groove, in its periphery, in combination with a chain running therein, such chain being made of links alternately at right angles to each other, substantially as described.

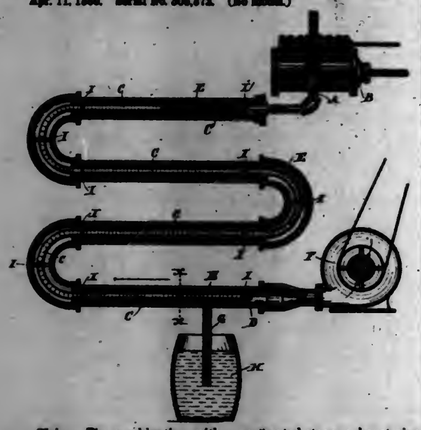
5. In the tilting case of a car-mover, a pivoted pawl and a thereto-pivoted arm supported on the case, and a stationary bracket, against which the arm is adapted to impinge, substantially as and for the purpose set forth.

6. In the tilting case of a car-mover, a grease-cup having a false top with an aperture therein so located as to permit a fluid lubricant to come or be brought up to the supporting-axle by the tilting of the case, substantially as described.

7. The combination of ratchets, pawls, and cases in sets on the axles of a car and two reciprocating rods, one connected to each of a set of cases and both connected to the respective ends of a centrally-pivoted lever, with a movable carriage supported in ways on the bottom of a car and carrying the centrally-pivoted lever, to which the reciprocating rods are connected, the carriage by its movement being adapted to take up slack in the reciprocating rods, substantially as described.

8. A car-mover consisting of two ratchet-wheels rigid on a car-axle, two cases, one about each ratchet-wheel, oscillating on the axle, each provided with a gravity-weight and carrying a pivoted pawl, in combination with two reciprocating rods connected, respectively, with the oscillating cases, which rods, being connected with mechanism for operating them, are adapted for tilting the cases alternately, and a central pivoted lever, connected at its ends to the oscillating cases, whereby when one case is tilted forward the other case is drawn rearwardly, substantially as described.

412,783. CONDENSER. BERA DEDERICK, Milwaukee, Wis. Filed Apr. 11, 1889. Serial No. 306,972. (No model.)



Claim.—The combination, with a perforated steam-exhaust pipe leading from the cylinder of an engine, of a steam-tight case inclosing the exhaust-pipe throughout all that part of the pipe that is provided with perforations, an air-blower located in a case having an opening for receiving air, and a duct leading into the inclosing-case for forcing air into the inclosing-case about the perforated exhaust-pipe, and a supply of water in which the drip-pipe terminates, which drip-pipe leads from the inclosing-case at or near its lowest point, substantially as described.

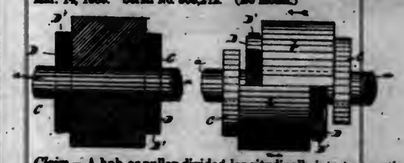
412,784. BED-PAN. OTTILIE DRAEGE, Milwaukee, Wis. Filed May 20, 1889. Serial No. 311,491. (No model.)

Claim.—1. The pan or receptacle herein described, having a vertical rear wall and bottom A, horizontal in cross-section and curved longitudinally and upwardly from the lower end of the vertical rear wall at the point *x* to the point *y*, vertical side walls having horizontal upper edges between the points *a a*, a concave tight cover or plate C at its front end, formed integral therewith, inclining rearwardly and downwardly from the front end toward the center of the receptacle, the rear end of said receptacle being open at its top, all substantially as and for the purpose specified.



2. As a new article of manufacture, the receptacle herein described, consisting of the chamber D, the bottom A of which is horizontal in cross-section and curved longitudinally forwardly and upwardly from its vertical rear wall to its front end and having open rear end, its front end being provided with an inclosing concave plate C, converging downwardly and inwardly toward the center of the receptacle, and its rear end provided with a handle B, affixed thereto, all substantially as and for the purpose specified.

412,785. DIVIDED HUB OR PULLEY. CHRAVELL L. DUNTON, Brockton, Mass., assignor of one-half to Thomas F. Sullivan, same place. Filed Mar. 14, 1888. Serial No. 302,212. (No model.)



Claim.—A hub or pulley divided longitudinally into two sections, each having at one end a laterally-projecting female locking-plate and at its opposite end a laterally-projecting male locking-plate, which male plates respectively interlock with the female locking plates when one hub-section is moved into proper position on the other hub-section, substantially as described.

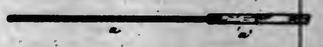
412,786. LAMP-WICK. JULIUS HELM, Liège, Belgium, assignor of one-fourth to A. Schoverling, New York, N. Y. Filed June 9, 1888. Serial No. 276,642. (No specimens.) Patented in England May 15, 1888, No. 4,962.

Claim.—1. The described lamp-wick, formed of clay, silica, borax, and cellulose moistened and mixed into a paste and vitrified by the action of heat, substantially as described.

2. A lamp-wick consisting of the following elements: clay, silica, borax, cellulose, gypsum, and white lead vitrified by heat, substantially as described.

3. The described lamp-wick, formed of clay, silica, borax, and cellulose moistened and mixed into a paste and molded into the tubular form of the lamp-wick while in a plastic state and vitrified by the action of heat, substantially as described.

412,787. PROCESS OF PREPARING CANE REEDS FOR WEAVING. ANDREAS A. REESEN, Leipsic, Germany. Filed Sept. 21, 1888. Serial No. 314,128. (No specimens.)



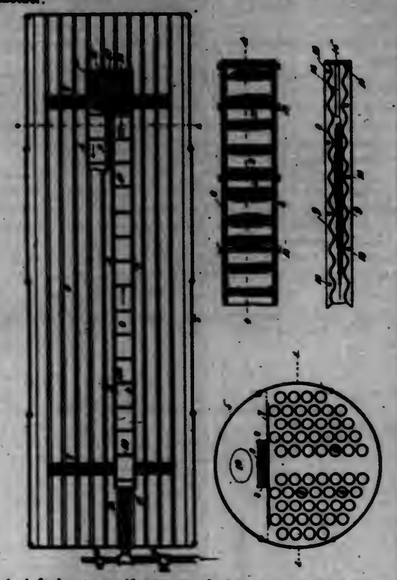
Claim.—The process of preparing cane reeds for weaving, which consists in removing the skin, splitting the cane, impregnating it with a softening mixture, and washing it, substantially as specified.

412,788. FEED-WATER PURIFIER. GEORGE B. FIELD, New York, N. Y. Filed Nov. 26, 1888. Serial No. 292,061. (No model.)

Claim.—1. A feed-water purifier horizontally arranged within a boiler and made up of corrugated sheet-metal top and bottom, whereby an increased heating-surface is presented and the corrugations in the bottom serve as catch-basins for the sediment.

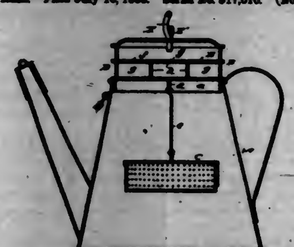
2. The combination, to form a feed-water purifier adapted to be inserted in a boiler, of the corrugated metal 9 9, the wooden pieces 8 8, bolts 10, securing the latter together and forming a close joint with the corrugated metal parts 9 9 and a feed-water pipe 12.

3. A feed-water purifier adapted to be inserted in a boiler, having two or more lengths composed of side pieces 8 8, of wood, a corrugated sheet-metal top and bottom 9 9, bolts 10, for securing the sides together and holding them in contact with the sheet-metal top and bottom, the end board 15, and slots, as 16, in the adjacent parts of the adjoining lengths, whereby the feed-water can circulate from one length to another.



4. A feed-water purifier composed of two or more lengths, each length made up of side pieces 8 8, of wood, a top and bottom of corrugated sheet metal, bolts 10, securing said side pieces together and holding them in intimate contact with the sheet-metal top and bottom, the end board 15, slots 16 in the two adjacent lengths of the purifier, a feed-water connection, and a blow-off, substantially as described.

412,789. COFFEE-POT. GEORGE M. FLEMING and CHARLES W. HOYER, Beloit, Kans. Filed July 10, 1888. Serial No. 317,010. (No model.)



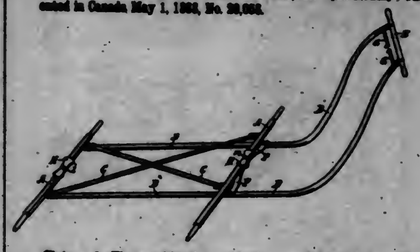
Claim.—1. The combination, with a coffee-pot, of a cover having a plurality of apertures in its top, a condensing-chamber arranged above the cover and divided into an upper and lower compartment, and a pipe leading through the cover from the interior of the coffee-pot and through the condensing-chamber above the same, and having its opposite end opening into the upper compartment of the condensing-chamber, substantially as specified.

2. The combination, with a coffee-pot, of a cover having perforations in its top, a condensing-chamber arranged above the cover, and a steam-pipe passing from the interior of the cover in a loop form above the condensing-chamber, and having its opposite end entering the upper compartment of said chamber, whereby said pipe may serve the additional function of a handle, substantially as specified.

3. The condensing-chamber divided into an upper and lower compartment by a horizontal partition, and the lower compartment divided by vertical partitions, so as to form a central and two lateral chambers, the lateral chambers having their top walls perforated to communicate with the upper chamber, and a steam-pipe passing through the central lower compartment above the condenser in a loop form, and having its opposite end passing into the upper chamber of a condenser, the whole adapted to serve upon a coffee-pot, substantially as specified.

4. The combination, with a coffee-pot, of a cover having perforations in its top, a percolator suspended from the cover, and a condensing-chamber arranged above the cover and divided into compartments, and a steam-pipe having one end communicating with the interior of a coffee-pot and its opposite end entering the upper chamber of the compartment, substantially as specified.

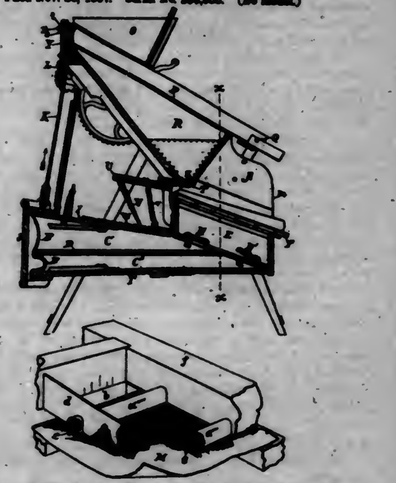
412,740. VEHICLE-GEARING. SIMON S. FAY, Woodstock, Ontario, Canada. Filed July 7, 1888. Serial No. 279,340. (No model.) Patented in Canada May 1, 1888, No. 30,002.



Claim.—1. The combination, with the parallel handle-bars D D, of the front axle and cross-bar F, to which said handle-bars are pivoted, the rear axle pivoted to the said cross-bar, and the cross-reaches C, pivotally connected to the front and rear axles, whereby the handle-bars are held parallel to each other in such manner that the backward or forward movement of the same will change the relative position of the axles, so as to alter the direction of the wheels, substantially as specified.

2. The combination, with the handle-bars D D and the rear cross-bar E, to which they are pivoted, of the front axles, to which the forward ends of the handle-bars are pivoted, the rear axle, and cross-reaches C C, pivotally connected thereto and to the front axle, the cross-bar F, to which the rear axle is pivoted and which is pivotally connected with the handle-bars D D and the levers G G, whereby the said bars D D are shifted directly back and forth to alter the position of the axles, substantially as specified.

412,741. ORE-SEPARATOR. JAMES R. FREEMAN, Los Angeles, Cal. Filed Nov. 30, 1887. Serial No. 256,205. (No model.)

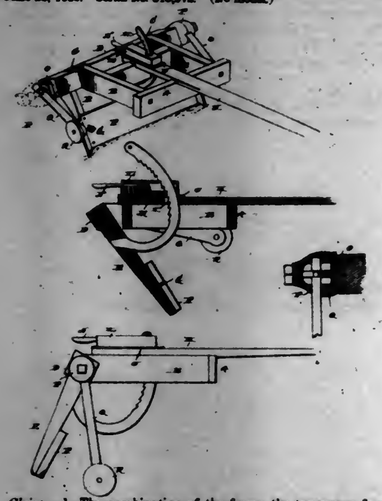


Claim.—1. The feed-box R and valve T, in combination with levers U and V, rack-bar W, and movable leaf I of bellows B, as described.

2. The improved apron for gold-separators, comprising the frame, the riffles *a a' a'' a'''*, bent into the form of an inverted trough, the wire-cloth N, fastened to the frame and pressed into the said riffles, the strips of tin *e*, entering the said riffles and fastening the wire-cloth therein, the ribs *d d'*, notched on the under side, said notches fitting over the said riffles and holding them in place, and the muslin or canvas strip *m*, fastened to the bottom of the frame, substantially as described.

3. The combination of the feed-box R, valve T, provided with the levers U and V, bellows B B', valves H H, air-chest K, and apron P.

412,742. ROAD-SCRAPER. GEORGE FRY, Phœnix, Ariz. Filed June 28, 1889. Serial No. 315,872. (No model.)



Claim.—1. The combination of the frame, the transverse frame-bar journaled in suitable bearings at the rear end of said frame, the standards extending downwardly from said frame-bar, the scraper attached to said standards, and the arms extending forwardly from said frame-bar at an angle to the standards and having wheels or rollers at their outer ends, substantially as set forth.

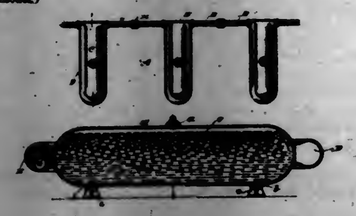
2. The combination of the frame, the transverse frame-bar journaled at the rear end of the same, the tongue attached to and extending forwardly from the frame, the standards extending downwardly from the transverse frame-bar and carrying the scraping-blade, the segmental ratchet-bar attached to one of said standards and extending upwardly through a slot in the tongue, and a spring-latch engaging said ratchet-bar, substantially as set forth.

3. The combination of the frame, the transverse frame-bar journaled at the rear end of the same and having squared ends or extensions, the hubs or collars mounted upon said extensions, the forwardly-extending arms fixed in said collars, and the wheels or rollers at the outer ends of said arms, substantially as set forth.

4. The combination of the frame having the forwardly-extending tongue, the transverse frame-bar journaled at the rear end of said frame and having downwardly-extending standards, the scraper secured to the lower ends of said standards, the eyebolts passing through said standards and scraper for the attachment of the draft, the collars mounted upon square projections at the ends of the transverse frame-bar, and arms fixed in said collars, extending downwardly and forwardly at an angle to the standards, and having wheels or rollers at their outer ends, substantially as set forth.

5. In a scraping and leveling machine, the combination of a frame, a tongue extending forwardly from the same, a transverse bar journaled at the rear end of said frame and having downwardly-extending standards carrying the scraping-blade, a ratchet-bar extending from one of the standards through a slot in the rear end of the tongue, a spring-latch engaging said ratchet-bar, and arms extending forwardly from the transverse frame-bar at an angle to the standards and provided with wheels or rollers at their outer ends, substantially as set forth.

412,743. STEAM-HEATER FOR RAILROAD-CARS. SAMUEL F. GOLD, Englewood, N. J. Filed Apr. 17, 1889. Serial No. 307,542. (No model.)

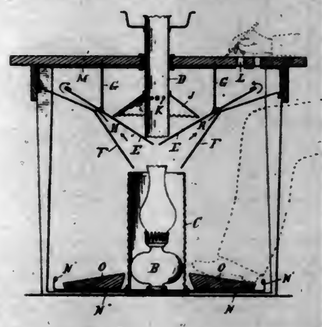


Claim.—1. In a heater for railroad-cars, containing a storage-chamber and a branch steam-conduit for heating the same, a contracted steam passage or port located in the main steam-pipe between the connections of the branch conduit therewith, for the purpose set forth.

2. A storage-heater for railroad-cars, composed of a storage-chamber and a loop-shaped heating-conduit having a part of its heating-surface in contact with the chamber and a part exposed to the air of the car, in combination with a main steam-pipe provided with a contracted passage or port located between the connections of the loop-shaped conduit therewith, for the purpose set forth.

3. The combination of several storage-heaters, each composed of a storage-chamber and a branch conduit for heating the same, with a main steam pipe or conduit provided with contracted passages or ports, one of which is located between the connections of each of the branch conduits therewith to form a series of storage-heaters located beneath the transverse seats of a railroad-car and extending throughout the length of the car, substantially as and for the purpose described.

412,744. BODY-WARMER. THOMAS C. GREEN, South Haven, Mich. Filed Feb. 7, 1889. Serial No. 299,046. (No model.)



Claim.—1. In a body-warmer, the combination, with a table or desk, of a source of heat mounted below said table, and a radiating-surface below the top of said table or desk, adapted to be heated thereby and arranged to radiate the heat toward one or more sides of said table or desk, and the adjustable deflectors, substantially as described.

2. In a body-warmer, a table or desk, in combination with a radiating-surface and a source of heat mounted below said table and arranged to radiate the heat to one or more sides of said desk or table, and a radiating-surface in the top of said table, and adjustable deflectors arranged between said radiating-surfaces, substantially as described.

3. In a body-warmer, substantially as described, the combination, with a desk or table, of a stove or heater mounted below the same and having an escape-pipe through the top of said table or desk, a deflector or deflectors adapted to form an adjustable cut-off for the hot air and gases between the escape-pipe and heater, substantially as described.

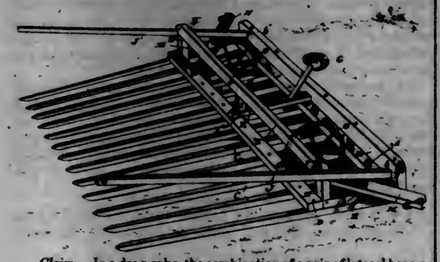
4. In a body-warmer, the combination of the following elements: the table or desk, the stove or heater, the escape-pipe through the top of the desk or table, the deflectors, and the radiating-surfaces adapted to radiate the heat to the side of table or desk, all combined and operating substantially as described.

5. In a body-warmer, the combination, with the desk or table, of the stove or heater adjustably mounted below said desk or table, the gravitating deflectors, the radiating-surfaces adapted to be heated thereby and radiating to the sides of the desk or table, and the vertically-adjustable escape-pipe, all arranged to operate substantially as described.

6. In a body-warmer, the combination, with a table or desk, of the stove or heater mounted below the same, the vertically-adjustable escape-pipe through the top of said desk or table, the outwardly-inclined deflectors between the top of the heater and the escape-pipe and adapted to form adjustable cut-offs between the same, and the radiating-surfaces below the deflectors, substantially as described.

7. In a body-warmer, the combination, with the desk or table, of the heater B, the surrounding guard C, the vertically-adjustable escape-pipe D, perforated with the conical or pyramidal collar J, having its lower edge serrated, the gravitating deflectors E, the radiating-surfaces F, and the radiating-surface L in the top of the table, all arranged to operate substantially and for the purpose as described.

412,745. DRAG-RAKE. JAMES HARRYMAN, Harris, and GEORGE COONEY, Galt, Mo. Filed June 10, 1889. Serial No. 314,702. (No model.)



Claim.—In a drag-rake, the combination of a pair of lateral beams, rake-teeth secured to said beams, a vertical back piece erected on the rear lateral beam at right angles thereto, cross-pieces connecting said beams at their middle and outer ends, upright posts erected on said cross-pieces, tongues mortised into said vertical back piece and resting on the outside posts, respectively, a third lateral beam resting at its middle on the middle vertical post and at its outer ends on the tongues, a seat secured on the middle cross-piece, wheels mounted to turn on axles secured between the rake-teeth, and draft-bars secured to the front lateral beam and extending rearward beneath said tongues and resting on the outside cross-pieces, respectively, all arranged in the manner and for the purpose described.

412,746. WAGON-BOX. RUSSELL A. HART, Battle Creek, Mich. Filed Aug. 26, 1889. Serial No. 322,004. (No model.)



Claim.—A wagon-box having sectional sides, said sides consisting of the base fixed sections comprising sections of stakes having side-boards attached thereto and additional like sections, all of which sections are detachably and adjustably attached to each other by means of the fulcrum-pivots, the projections, the fulcrum-holes, and the holes to receive the projections, substantially as set forth.

412,747. CAR-BRAKE. ROBERT HAWES, Chicago, Ill., assignor of one-half to John Miller, same place. Filed Aug. 19, 1889. Serial No. 321,294. (No model.)

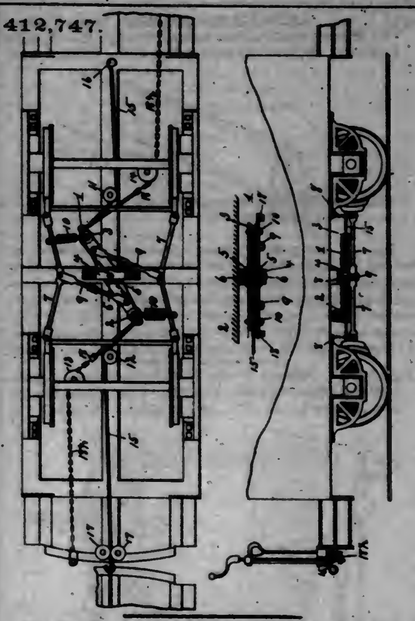
Claim.—1. A car-brake consisting of the combination of a duplicate lever pivoted beneath the center of a car, two sheaves pivoted between the parts of said lever, two toggle-joints pivoted each to two brake-shoes or to the opposite brake-bars and suspended between adjacent car-wheels, connecting-links pivoted to the junctions of the toggle-joints and to said lever, and a rope or chain passing through said lever to brake-handle rod, substantially as and for the purposes specified.

2. A car-brake composed, in combination, of a duplicate lever pivoted beneath the middle portion of a street-car, two sheaves pivoted between the parts of said lever, two toggle-joints pivoted each to two brake shoes or bars and suspended between adjacent car-wheels, rigid connecting-links pivoted to junctions of toggle-joints and to said levers on opposite sides of its center, a rope or chain secured at one end to bottom of car or to corresponding rope under next rear car and passed through said lever to brake-handle rod, the retracting-spring 10, and the sheaves 11 and 12, substantially as and for the purposes specified.

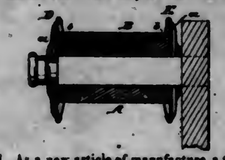
3. In a car-brake mechanism, the duplicate lever 1, the toggle-joints 7 7, pivoted to brake shoes or bars, the connecting-links 9 9, sheave-rod 18, secured to end of lever 1, and chain 18½, secured to brake-handle staff, as and for the purpose stated.

4. In a street-car-brake mechanism, the combination of the duplicate lever 1, the bracket 4, having sockets in its center and formed to allow said lever to pass through it, the bosses 5 5, secured to the center of the parts of said lever, and the pivots 6 6, secured in said bosses so as to pass into said sockets, as and for the purpose stated.

412,747.



412,748. TOP-PROP REST FOR VEHICLES. WILLIAM LE B. HAWES, Cincinnati, Ohio. Filed July 26, 1889. Serial No. 318,654. (No model.)

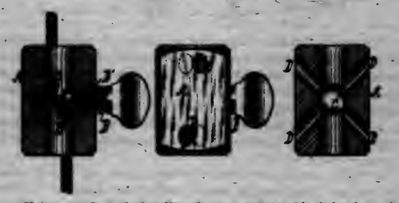


Claim.—1. As a new article of manufacture, a top-prop rest composed of a rubber cylindrical body with its ends expanded within hollow metallic washers, substantially as shown and described.

2. In a top-prop rest, the combination of hollow metallic washers with a rubber top-prop block whose ends are expanded within the back shells of said washers to hold them in place, substantially as and for the purpose described.

3. In a top-prop rest, the combination, with a top-prop block, of hollow metallic washers, the front shells of which are covered with leather and the back shells folded over the outer edges of the leather to hold the same in place, substantially as shown and described.

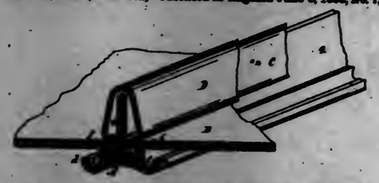
412,749. CLOTHES-LINE CLAMP. MICHAEL F. HAYES, New York, N. Y. Filed Jan. 8, 1889. Serial No. 295,811. (No model.)



Claim.—1. In a clothes-line clamp, a tubular block having a lateral screw-hole with a clamping-screw fitted therein, and lateral guide-holes inclined toward the interior of the block for the passage of the line ends, substantially as shown and described.

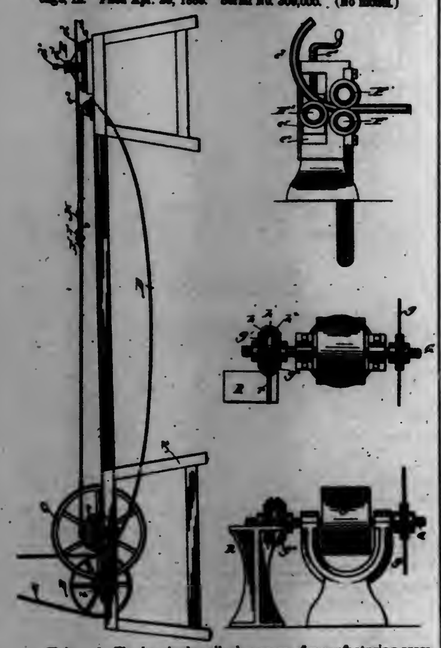
2. In a clothes-line clamp, a tubular block having a lateral screw-hole with a clamping-screw fitted therein, a recess opposite said hole on the interior of the block to receive the line ends under the impulse of said screw, and lateral guide-holes inclined toward the interior of the block for the passage of the line ends, substantially as shown and described.

412,750. GLAZING-BAR FOR SKYLIGHTS. THOMAS W. HELLAWELL, Brighouse, County of York, England. Filed Mar. 23, 1887. Serial No. 232,209. (No model.) Patented in England June 8, 1886, No. 7,988.



Claim.—A glazing-bar or astragal made of solid rolled metal, and combining in a single piece a central rib or web *a*, laterally-extending flanges having inner ledges *c c*, grooved on their upper surfaces, so as to hold a yielding packing for supporting the glass, channels *m m* between the ledges *c c* and the central rib or web *a*, outer ledges *d d*, the upper edges of which are below the plane of the glass, and channels *l l* between said outer and inner ledges, substantially as set forth.

412,751. PROCESS OF MANUFACTURING METALLIC CROSS-BARS AND RAILS FOR WINDOW-SASHES. WILLIAM HENDERSON, Chicago, Ill. Filed Apr. 30, 1889. Serial No. 309,055. (No model.)



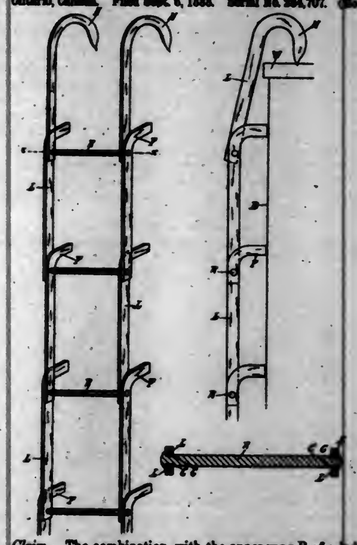
Claim.—1. The herein-described process of manufactoring cross-bars, rails, and fastenings for window-sashes, &c., consisting, first, in passing the strips of metal through a die or dies giving the bars the desired conformation or shape, then cutting or sawing the formed strips into proper lengths, then notching the ends of the strips, and then passing the notched strips through a device for bending the same into suitable shape or curve ready for use, substantially as and for the purpose set forth.

2. The herein-described process of manufactoring metallic cross-bars, rails, and fastenings for window-sashes, consisting, first, in drawing the strips of metal through a die or dies making the proper conformation or shape, then placing the strips horizontally against a revolving circular saw and cutting them to proper lengths, then notching the ends of the formed strips by placing them longitudinally against a series of revolving disks, then passing the notched strips through a series of rollers, then bending them to a proper curve ready for use, substantially as shown and described, and for the purpose set forth.

3. The herein-described process of manufactoring metallic cross-bars, rails, and fastenings for window-sashes, consisting, first, in passing strips of metal through a die or dies forming a bar and cap of desired conformation, then placing the cap on the rib of the bar and cutting them into proper lengths, then notching the ends of the strip, and then passing the notched strips through a device for bending the same to a desired curve, then removing the adjustable cap and clipping the ends of the rib of the bar at a desired angle, substantially as shown and described, and for the purpose set forth.

4. The herein-described method of manufactoring hollow metallic cross-bars, rails, and fastenings for window-sashes, consisting, first, of forming a metallic bar and cap in separate pieces, then adjusting the cap on the rib or web of the bar, then bending, cutting, and notching the same as a whole, then removing the adjustable cap and cutting the ends of the web or rib of the bar, substantially as and for the purpose specified.

412,752. FIRE-ESCAPE LADDER. WILLIAM HEWITT, London, Ontario, Canada. Filed Sept. 6, 1888. Serial No. 284,707. (No model.)



Claim.—The combination, with the upper rung R of a ladder and the bent ends of the links L, connected thereby, of the side pieces loosely secured to the said rung and formed at their free ends with pointed hooks H integral therewith, which are adapted to be rigidly secured to the edge of the window-sill and be bound thereto by the full weight of the ladder and its occupant, substantially as specified.

412,753. CORNET. BERT H. HYDE, Morgantown, W. Va. Filed July 9, 1888. Serial No. 316,960. (No model.)



Claim.—1. A valve for cornets and similar instruments, made substantially sector-shaped and provided with apertures, as described.

2. A valve for cornets and similar instruments, having a longitudinal curved aperture and two transverse curved apertures in a horizontal plane different from the other, as described.

3. A cornet or similar instrument provided with valves substantially sector-shaped, each having a longitudinal curved aperture, and two transverse curved apertures in a horizontal plane different from the other apertures to provide a continuous curved passage for the wind in producing all tones, substantially as described.

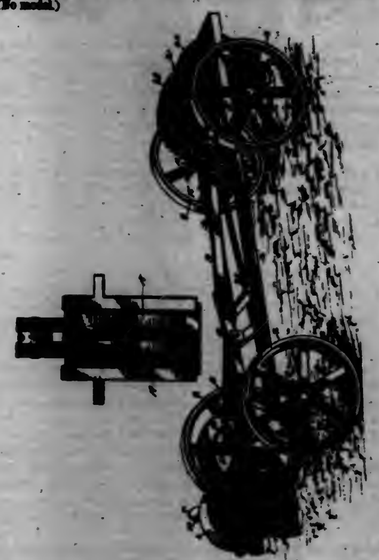
4. A cornet or similar instrument having all its valve-shell openings in the same plane and communicating with the crooks, as described.

5. A cornet or similar instrument having a valve-shell with apertures in the same horizontal plane, valve-slides communicating with the apertures in the manner described, and valves within the valve-shell provided with the longitudinal and transverse curved passages described, affording communication, as set forth.

6. A cornet or similar instrument comprising the usual wind-passage for open-tones, and having a valve-shell divided into communicating compartments by perforated partitions, valves moving within said compartments, each provided with three curved passages in two horizontal planes, and valve-slides in the same horizontal plane communicating with the curved passages in the valves through the perforations in the shell, all as set forth.

7. In a cornet or similar instrument, substantially sector-shaped valves and valve-stems joined to the valves near their spaces, as described.

412,754. GEARING FOR HIGH-SPEED MOTORS. PLEASANT HOSTETT, Colorado Springs, Colo. Filed Feb. 13, 1889. Serial No. 299,873. (No model.)



Claim.—1. In combination with a car, a driving-shaft which revolves at high speed, suitable supporting and driving wheels, a slowly-revolving driven shaft rigidly connected with the driving-wheels, ratchet-gearing, wheels connected thereto, and suitable reducing-levers extending under the car and transmitting motion from the driving-shaft to the ratchet-gearing, substantially as described.

2. In combination with a car, an electric motor on the car, a slowly-revolving driven shaft, ratchet-gearing connected thereto, and suitable reducing-levers extending under the bottom of the car and transmitting motion from the armature-shaft of the motor to the ratchet-gearing, substantially as described.

3. In combination with a car, an electric motor on the car, a crank-shaft geared to the armature-shaft of the motor by suitable cog-wheels, a driven shaft with driving-wheels keyed thereon, ratchet-gearing connected to the driven shaft by suitable cog-wheels, and reducing-levers extending under the car and transmitting motion from the crank-shaft to the ratchet-gearing, substantially as described.

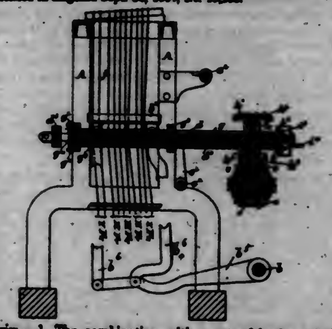
4. In combination, a frame, a shaft turning in bearings in said frame, and a pinion keyed upon said shaft, a second shaft, a gear-wheel keyed upon this shaft and meshing with the pinion, two ratchet-wheels keyed upon said second shaft, the teeth of one ratchet-wheel facing in opposite direction to the teeth of the other, a reciprocating piece carrying spring-pawls which engage with said ratchet-wheels, suitable cams, and plungers controlled by said cams for lifting either or both of the pawls out of engagement with its ratchet-wheel, substantially as described.

5. In combination, a main frame, a ratchet-wheel, a continuously-reciprocating piece, a spring-pawl mounted on the continuously-reciprocating piece and tending to engage with the ratchet-wheel, a plunger mounted in the reciprocating piece and connected to the spring-pawl, a second plunger mounted in the main frame and having a broad face against which one end of the first plunger bears, whereby the spring-pawl may be thrown into or out of gear with the ratchet-wheel and the motion of the latter be discontinued at will, while the motion of the reciprocating piece is continuous, substantially as described.

6. The compound ratchet-gearing, which consists of the ratchet-wheel, the two or more pawls spring-pressed upon the ratchet-wheel and so spaced that only one of them can engage a tooth at one time, and the plunger for lifting them all out of engagement with the ratchet-wheel, substantially as described.

7. In combination, a main frame, two ratchet-wheels journaled in bearings in said main frame and rigidly connected together, the teeth of one of said ratchet-wheels facing in opposite direction to the teeth of the other, a continuously-reciprocating piece carrying spring-pawls which engage with said ratchet-wheels, suitable plungers, which are also mounted in said continuously-reciprocating piece, and which bear upon the spring-pawls, together with cams mounted in the main frame for controlling the said plungers, substantially as described.

412,755. JACQUARD APPARATUS. SAMUEL HOLDSWORTH, Durham, England. Filed Sept. 6, 1888. Serial No. 284,682. (No model.) Patented in England Sept. 26, 1887, No. 12,105.



Claim.—1. The combination, with a set of horizontal needles, vertical needles for controlling the position of said horizontal needles, and means for presenting a pattern-surface to said vertical needles, of a reciprocating carrier and removable and replaceable plates *i* carried thereby, substantially as described.

2. The combination, with a set of horizontal needles, vertical needles for controlling the position of said horizontal needles, means for presenting a pattern-surface to said vertical needles, a trap-board having holes therein, with a portion of the said holes formed with their narrow parts on the side of said holes opposite to that on which said narrow parts are formed in the rest of the holes, and harness-cords, said needles having the eyes and loops, as described, of a carrier and removable and replaceable plates *i* carried thereby, as described.

3. The combination, with a set of horizontal needles, vertical needles for controlling the position of said horizontal needles, means for presenting a pattern-surface to said vertical needles, a trap-board having the holes therein arranged with a portion thereof formed with their narrow parts on the side of said holes opposite to that on which the said narrow parts are formed in the rest of the holes, and harness-cords, said needles having the eyes and loops, as described, of a carrier and plates *i* carried thereby and notched or cut away, as described.

4. The combination, with a set of horizontal needles, vertical needles for controlling the position of said horizontal needles, means for presenting a pattern-surface to said vertical needles, a trap-board having the holes arranged therein with a portion thereof formed with their narrow parts on the side of said holes opposite to that on which the said narrow parts are formed in the rest of the holes, and harness-cords, said needles having the eyes and loops, as described, of a carrier and removable and replaceable plates *i* carried thereby and notched or cut away, as described.

5. The combination, with a set of needles *g*, the supplemental or part needles g^1, vertical needles for controlling the position of said needles g^1, and means for presenting a pattern-surface to said vertical needles, of a reciprocating carrier and removable and replaceable plates *i* carried thereby, substantially as described.

412,756. CORN-HARVESTER AND SHOCK-BUNDLER. EDWARD HOUSE, Mount Oak, assignor of one-half to Jonah F. Williams, same place. Filed Oct. 20, 1888. Serial No. 288,693. (No model.)

Claim.—1. The combination, with the bed or platform having the corn cutter and elevator on one side, of the bundling-box pivoted on the platform and adapted to swing outward transverse to the platform, said bundling-box having the hinged bottom extension f^{10} and hinged outer side extension h^2, and connections between the exten-

sions f^3 and A^2, whereby the extension A^2 is automatically operated by the extension f^3, substantially as described.



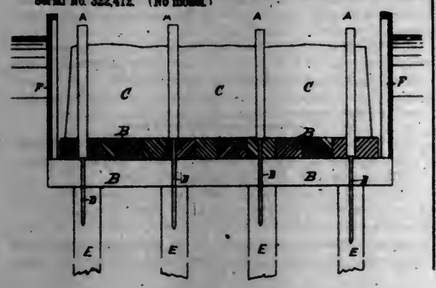
2. The combination, in a corn-harvesting machine, of the bed or platform having the corn cutting and elevating apparatus on one side, the pivoted bundling-box arranged on the platform and having a hinged bottom extension f^3 and hinged outer side extension A^2, and connections between said extensions, whereby the extension A^2 is automatically operated by the said hinged bottom extension f^3, the rearwardly-extending lever I^2, secured to the latter, the detent N^2, pivoted to the rear end of the bundling-box and adapted to engage said lever, and the stud O^2 on the rear end of the bed or platform A to disengage the detent from the lever I^2 when the bundling-box is swung outward, substantially as described.

3. The combination, in a corn-harvesting machine, of the bed or platform having the corn cutter and elevator on one side, the standard L^2, rising from the rear end of said bed or platform and supporting the driver's seat, the bundling-box pivoted on the standard L^2, and thereby adapted to swing outward transverse to the platform, said bundling-box having the hinged bottom extension f^3 and hinged outer side extension A^2, connections between said extension, whereby the extension A^2 is automatically operated by the extension f^3, and the lever M^2, attached to the bundling-box, substantially as described.

4. The combination, in a corn-harvester, of the transverse inclined elevator-frame having the arm X at its lower end, the guide-arm at its front side, the cutter-bar supported on said guide-arm, the roller Y^2 at the lower end of the frame, having the sprocket-wheel P' at its front end, the rod connecting said sprocket-wheel to the cutter-bar, the roller Z^2 at the upper end of the elevator-frame, the endless carrier having the cleats or catches and connecting the rollers Z^2 Y^2, the shaft W', socketed at one end on the front side of the elevator-frame, the sweep-reel X' on said shaft, the sprocket-wheel S^2 on the front side of the elevator-frame, the chain connecting said sprocket-wheel to the wheel P', the shaft Z', jointed to the wheel S^2, and gearing connecting said shaft to the sweep-reel to rotate the latter, substantially as described.

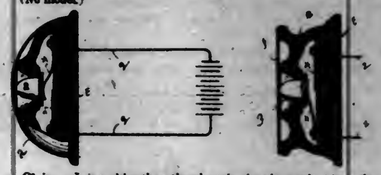
5. The combination, in a corn-harvesting machine, of the transverse inclined elevator-frame having the cutting apparatus at its lower front corner, the rollers Y^2 Z^2 at the lower and upper ends of said frame, respectively, said lower roller having the driving gear-wheel O' at its rear end and the sprocket-wheel P' at its front end, the pitman connecting said sprocket-wheel and the cutter-bar, the sprocket-wheel S^2, journaled on the front side of the elevator-frame, the endless sprocket-chain connecting the wheels P' S^2, the shaft W', socketed at one end on the front side of the elevator-frame, the sweep-reel on said shaft, the shaft Z', jointed to the wheel S^2, gear-wheels connecting said shaft to the shaft W', and the endless carrier-belts connecting the rollers Y^2 Z^2, substantially as described.

412,757. FASTENING GRILLAGES, PLATFORMS, OR FOUNDATIONS OF STRUCTURES TO PILES OR OTHER MATERIALS. RANDELL HUNT, San Francisco, Cal. Filed Oct. 31, 1888. Renewed Aug. 30, 1889. Serial No. 322,412. (No model.)



Claim.—As a means of enabling spikes or the like to be driven into the foundations of masonry, the combination of metal tubes with masonry built upon a supporting-platform, all substantially as shown and described.

412,758. ELECTRIC CIRCUIT-CLOSING DEVICE. WILLIAM C. JOHNSTON, Jr., Lynn, Mass. Filed Mar. 31, 1888. Serial No. 269,123. (No model.)



Claim.—In combination, the electric circuit, a suitable casing, contact-points 4 within the same, one of said points being movable, and a covering rigidly secured to said casing by its edges, whereby dust is excluded therefrom, the said covering being composed of flexible material and arranged independent of the movable contact-point but in proximity thereto, in order to move the same when pressed upon, substantially as described.

412,759. METHOD OF MAKING PATTERNS. WILLIAM J. KERR, Detroit, Mich. Filed Oct. 23, 1888. Serial No. 288,970. (No model.)



Claim.—1. The process herein described of making patterns, which consists in making a matrix and electroplating the face of the same, then placing a patrix over said matrix and pouring a non-metallic composition having a low melting-point into the space between the electroplate and the patrix, substantially as described.

2. The process herein described of making patterns, which consists in first preparing a pattern-block, then making a matrix from said block, then lining the interior of the matrix with material substantially of the thickness the desired article is to be cast, then making a patrix on the face of the lined matrix, next removing the lining, then electroplating the matrix, next replacing the patrix, and then pouring into the space between the patrix and metal plate a composition having a low melting-point, substantially as described.

3. The process herein described of making patterns, which consists in first making a matrix and electroplating the same, then painting the reverse side of the film with a material of low melting-point, then placing over the film a patrix, and then pouring into the space between the film and the patrix a non-metallic material having a low melting-point, substantially as described.

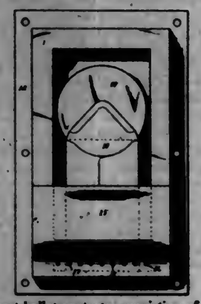
412,760. PROCESS OF PRODUCING FROM A COPY A PLATE OR TYPE FOR PRINTING. FRANK X. KEITTER, Milwaukee, Wis. Filed May 3, 1889. Serial No. 310,093. (No model.)



Claim.—1. The process of producing a plate for printing from types or from a printed copy by transferring the same directly upon a prepared asphaltum-covered zinc plate and producing the printing-plates therefrom, substantially as described.

2. The process of transferring ink from a printed copy upon an asphaltum-covered zinc plate, removing the asphaltum beneath the ink, and producing the type in depressed letters in the zinc plate by the use of acid, substantially as described.

412,761. APPARATUS FOR USE IN SECRET VOTING. LOUIS KUTSCHER, Bridgeport, Conn. Filed July 17, 1889. Serial No. 317,703. (No model.)



Claim.—1. A secret-ballot protector consisting of a frame-work placed in the door of a voting-compartment, a socket in said frame-work to receive the lower end of an envelope, and a door in said frame-work closing over the envelope, so that it cannot be removed from the inner side.

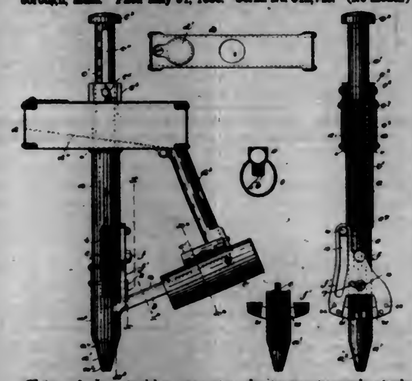
2. In a device of the class described, a frame-work having a guard upon its inner side, and openings through said guard, and a door upon said frame-work having prongs upon its inner side adapted to engage the openings in the guard, so that an envelope placed between the guard and the door cannot be removed until the door is opened.

3. In a device of the class described, a frame-work, a door acting in connection therewith and having a fastening upon the outer side and prongs upon its inner side near the lower edge, and a guard upon the inner side of the frame-work adapted to receive the envelope, and having holes near the bottom corresponding with the prongs upon the door, so that an envelope placed in the guard is locked in place, when the door is closed, by the prongs passing through it and engaging said openings.

4. In a device of the class described, a frame-work having a socket 14 and a guard upon its inner side, in combination with a door adapted to cover an envelope in the guard, so that it cannot be removed until the door is opened.

5. In a device of the class described, a frame-work having a socket, and a guard upon its inner side having openings, and a door having prongs upon its inner side adapted to engage said openings and upon its outer side a dial and a latch, substantially as described.

412,762. TACKING-TOOL. RICHARD C. LAMBERT, North Middleborough, Mass. Filed May 31, 1889. Serial No. 312,748. (No model.)



Claim.—1. In a tacking apparatus, the hopper to receive tacks or nails, a raceway, a conductor between the hopper and raceway, and the case or shell and driver-bar, and driver, combined with the separator having separating and detaining blades 20 21, located in substantially the same plane, and operating substantially as described.

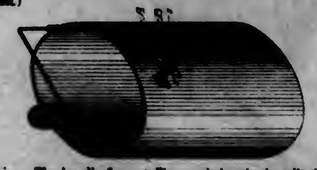
2. The raceway, the case or sleeve having the driver passage or throat, and the driver and driver-bar, combined with the separator having separating and detaining blades 20 21, located in substantially the same plane, and having a space between their ends for the passage of a tack or nail from the end of the raceway into position against the side of the driver, the separating-blade keeping the tack against the side of the driver while the latter is completing the driving of a tack or nail and is being partially elevated, substantially as described.

3. The raceway, the case or shell in communication therewith, the driver, and the driver-bar having a projection and stud, combined with a separator having a slot, as 13, and two blades 20 and 21, to operate substantially as described.

4. The case or shell, the driver-bar, and driver therein, combined with the hopper, through which the said case or shell is extended, a raceway, and a conductor connecting said hopper and raceway, to operate substantially as described.

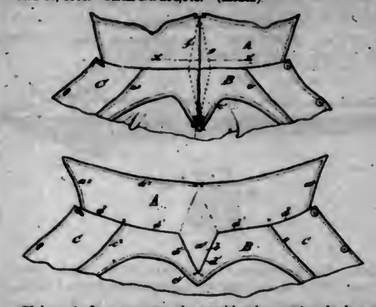
5. In a tacking apparatus, the raceway, the case or shell, the driver-bar, and driver therein, combined with the hopper and conductor, the raceway being provided with the cover having a concave or curved interior surface, and located immediately above the slot in the raceway, to operate substantially as described.

412,763. HANDLE FOR METALLIC VESSELS. WILLIAM C. LEAVITT, Norway, Me. Filed July 20, 1889. Serial No. 318,202. (No model.)



Claim.—The handle for metallic vessels herein described, consisting of a metal handle A, having a bead formed on its lower edge and a wooden hand-piece B, formed with a central longitudinal hole and a slit leading from the said hole to the surface of the hand-piece to hold the bead and embrace the body of the metal, substantially as specified.

412,764. SHIRT, &c. ALBERT R. LEHMAN, Saugerties, N. Y. Filed Jan. 17, 1889. Serial No. 296,673. (Model.)



Claim.—1. In a garment, the combination, with a body portion, of a band-like portion united thereto and comprising two portions made separate from each other, each of said portions of the band-like portion being provided with separate folds extending inwardly, the outer edge of each fold being united by a draw-thread to the portion of the band-like portion in which the fold is formed, substantially as specified.

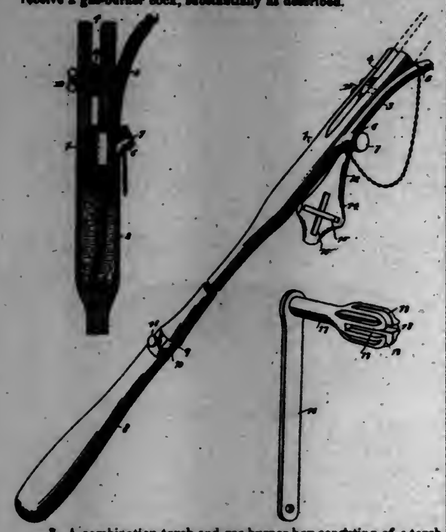
2. In a garment, the combination, with a body portion, of yoke portions made separate from each other, a collar having two portions made separate from each other, said collar being provided with gore-shaped pieces extending into and united at their edges to V-shaped openings in the yoke-pieces, said gore-pieces being folded in the direction of the width of the collar and tucked between the yoke-pieces and collar-pieces in opposite directions, the side edges of the folds thus formed being united by draw-threads, substantially as specified.

412,765. COMBINED TORCH AND GAS-BURNER KEY. GEORGE W. LEMBAY, Gainesville, Tex. Filed Nov. 21, 1888. Serial No. 291,450. (No model.)

Claim.—1. A combined torch and gas-burner key consisting of a handle having near its upper end a reservoir, from which projects a wick-tube in close proximity to the extreme upper end of the handle, and an arm adjustably pivoted to the upper end of the handle above the reservoir and provided with slots for engaging a gas-burner cock, substantially as described.

2. In a combined torch and gas-burner key, the combination, with a body portion having a forked upper end and provided with a

reservoir below the same and a wick-tube projecting therefrom at one side of and in close proximity to the said forked end, of an arm pivoted in the forked upper end of the body and provided with slots to receive a gas-burner cock, substantially as described.



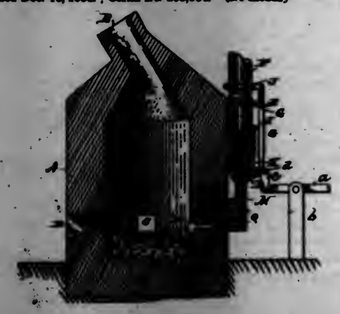
3. A combination torch and gas-burner key consisting of a torch having reservoir 2, wick-tube 3, forked end 4, and arm 12, pivoted thereto on screw 13, and having enlarged end 14, with cross-slots 15, substantially as shown and described.

412,766. FENCE-POST. JOHN LOUDERBERRY, Owego, N. Y. Filed Apr. 23, 1888. Serial No. 308,268. (No model.)



Claim.—The metal post A, constructed of two angular sides *b c*, which form a V in cross-section throughout its length, and increasing in width in a direction toward its lower end, and having a tapering point, which is also angular in cross-section, in combination with the anchor B, formed of two angular sides *d e*, and having the angular loop *f* to conform to the angular sides of the post, and the inclined edges *h* of an angle to conform to the edges *i* of the point of the post, said anchor at its upper portion being of greater width than that of the post, substantially as and for the purpose set forth.

412,767. CONVERTER. ROBERT F. LUDLOW, Springfield, Ohio. Filed Dec. 18, 1888. Serial No. 293,961. (No model.)



Claim.—1. In an apparatus for decarbonizing iron and liberating the impurities contained therein, the combination, with a converter-vessel, of groups of tuyeres in vertical series, the individual tuyeres thereof running at an angle to one another, and a common mouth for all the tuyeres of the group terminating in close proximity to their confluence and including in its circumference the said ends of the whole group, whereby each tuyere directs its air-current to different places across the surface of the bath in the converter.

2. In an apparatus for decarbonizing iron and liberating the impurities contained therein, the combination, with a converter-vessel, of groups of tuyeres in vertical series, the tuyeres of each group running at an angle to one another, and the groups adjustable upon a vertical axis to change their lateral direction.

3. In an apparatus for decarbonizing iron and liberating the impurities contained therein, the combination, with a converter-vessel having a series of openings in one wall thereof, of a series of groups of tuyeres, the tuyeres of each group running at an angle to each other and connecting with a common head-pipe, a tuyere-section to which said heads are connected, and the air-blast pipe to which the tuyere-section is rotatably connected, and suitable cut-offs for the tuyeres.

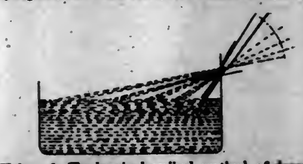
4. In an apparatus for decarbonizing iron and liberating the impurities contained therein, the combination, with a stationary converter-vessel having a series of openings in one wall thereof, of a corresponding series of groups of tuyeres, the tuyeres of each group running at an angle to each other and connecting with a common head-pipe, a cut-off for each tuyere, the cut-offs of all the tuyeres on the same horizontal plane being connected together, a tuyere-section to which the heads are secured, and a blast-pipe with which said section is rotatably connected.

5. In an apparatus for decarbonizing iron and liberating the impurities contained therein, a group of tuyeres in vertical series, the individual tuyeres thereof running at an angle to one another, and a common mouth for all the tuyeres of the group terminating in close proximity to their confluence and including in its circumference the said ends of the whole group, whereby each tuyere directs its air-current to a different place across the surface of the bath in the converter, and a common head-pipe to which the tuyeres connect at their free ends, and a suitable cut-off in each tuyere.

6. In an apparatus for decarbonizing iron and liberating the impurities contained therein, the combination, with a converter-vessel, of tuyeres in vertical series, each tuyere running at an angle to the other and one or more of them at an angle to the vessel, and means to adjust the whole series vertically with respect to the vessel, the said angle to the vessel and the said adjustability changing the place of contact of the air with the surface of the molten metal contained in the vessel from side to side of the vessel.

7. In an apparatus for decarbonizing iron and liberating the impurities contained therein, the combination, with a converter-vessel, of vertically-adjustable air-tuyeres running at an angle to the vessel and pointing toward the surface of the contained bath at an angle thereto and with their points above the same, and means to adjust the tuyeres vertically with respect to the vessel, the said angle of the tuyeres to the vessel and the said adjustability operating to change the place of contact of the air with the surface of the bath contained in the vessel from side to side thereof.

412,768. PROCESS OF MAKING STEEL. ROBERT F. LUDLOW, Springfield, Ohio. Filed Jan. 23, 1889. Serial No. 297,296. (No specimens.)



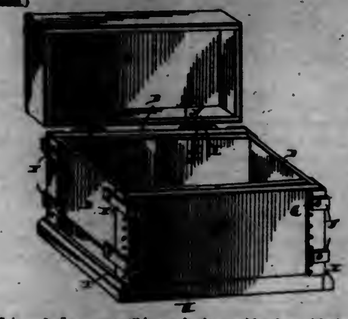
Claim.—1. The herein-described method of decarbonizing iron and liberating the impurities contained therein, the same consisting in disturbing and putting in practically uniform motion the essential mass of a bath of molten iron by constantly varying the place of contact therewith, of air-currents projected against and upon the surface thereof at an angle thereto, and in maintaining this operation until the contained carbon and impurities are liberated and the latter collected on the surface of the bath.

2. The herein-described method of decarbonizing iron and liberating the impurities contained therein, the same consisting in disturbing and putting in practically uniform motion the entire mass of a bath of molten iron by directing air-currents upon and against the surface thereof at an angle thereto, and in constantly varying the places of contact back and forth across said surface, in maintaining this operation until the contained carbon and impurities are liberated from the iron, in removing the collected impurities, and in uniting with the bath in this condition some recarbonizing agent in quantities to suit the product sought.

412,769. ALTERATIVE TONIC. WILLIAM H. LYON, New Haven, Conn. Filed Feb. 26, 1889. Serial No. 301,286. (No specimens.)

Claim.—The herein-described composition of matter to be used as a tonic and alterative, consisting of an infusion in water and alcohol of queen of the meadow, burdock-root, black-cohosh root, grove tops of the shrub bonfire, and white granulated sugar, in proportions as specified.

412,770. CONVERTIBLE TRUNK AND WARDROBE. FRANK J. LYLE, Humboldt, Nebr. Filed May 2, 1889. Serial No. 309,378. (No model.)



Claim.—1. In a convertible trunk, the combination, with the permanent bottom, of the hinged sides and end pieces, the end pieces hinged to the sides and folding inwardly upon the latter, and a false bottom having a flange extending around its sides and adapted to receive the permanent bottom, substantially as set forth.

2. In a convertible trunk, the combination of the bottom, the hinged side pieces, the end pieces hinged to the latter, the end pieces hinged to the bottom, the angle-plates secured to the sides, and screws for connecting the said angle-plates detachably to the end pieces of the trunk-body, substantially as set forth.

3. In a convertible trunk, the combination, with the trunk-body having the hinged sides and ends, and the end pieces hinged to the sides and folding inwardly upon the latter, of the detachable top or cover having hinge-plates provided with hooks adapted to engage the pintle of the hinge-plates attached to the upper edge of the rear side of the trunk, substantially as set forth.

4. In a convertible trunk, the combination, with the trunk-body comprising the permanent bottom, the sides and ends hinged to the latter, and the end pieces hinged to the sides and adapted to fold inwardly upon the latter, of the flanged bottom secured detachably to the under side of the permanent bottom, and the detachable top or cover, substantially as and for the purpose set forth.

5. In a convertible trunk and wardrobe, the combination of the permanent trunk-bottom, the sides and ends hinged to the latter, the ends hinged to the side pieces and adapted to fold inwardly upon the same, the angle-plates or braces secured to the sides and connected detachably with the ends of the trunk, the false bottom secured detachably to the under side of the permanent bottom, the top and bottom strips provided on their rear sides with cleats, and the side strips having dowel-pins adapted to engage the recesses in the bottom strip and provided with hinged doors, substantially as herein described and for the purpose set forth.

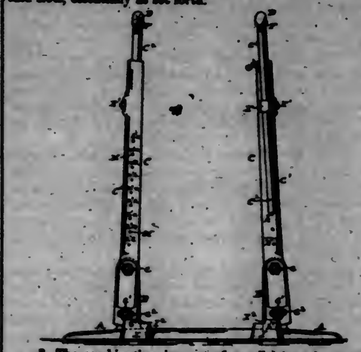
412,771. ART OF CLEANING FILES. JEREMIAH R. MATTHEWMAN, Sheffield, England, assignor to Benjamin G. Tilghman and Richard A. Tilghman, Philadelphia, Pa. Filed Aug. 3, 1889. Serial No. 319,561. (No specimens.)

Claim.—The method of cleaning files from the glaze formed by the protecting covering during the hardening process, which consists in subjecting them to the action of a rapidly-driven jet of fluid abrasive mud.

412,772. PARALLEL BARS FOR GYMNASIUMS. FREDERICK MEDART, St. Louis, Mo. Filed July 19, 1888. Serial No. 280,622. (No model.)

Claim.—1. A set of parallel bars for gymnasiums, comprising, in combination, the base A and standards B, the bars D, and the supporting-posts C, secured to the standards B by a pivot-bolt *c*, so as to be capable of a pivotal adjustment in a lateral direction, essentially as set forth.

2. A set of parallel bars for gymnasiums, comprising, in combination, the base A and the standards B, the posts C, provided with elongated slots, pivot-bolt *c*, and clamping-bolts *d*, passing through said slots, essentially as set forth.



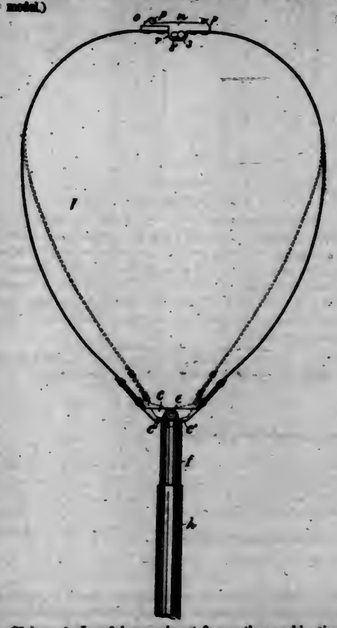
3. The combination, in a set of parallel bars for gymnasiums, of the posts or legs C, formed in sections, and made vertically adjustable one upon the other, the laterally-moving clamping-sleeve E, stem *d*, and nut E', substantially as described.

4. The combination, in a set of parallel bars for gymnasiums, of the parallel bars D D and posts C with the T-shaped bracket F, having a vertical socket member F' and a horizontal member F², and having its top concaved, substantially as and for the purpose set forth.

5. The combination, in a set of parallel bars for gymnasiums, of the parallel bars D D and posts C with the T-shaped bracket F, having a vertical socket member F', a hollow swelled portion F³, and a horizontal member F², having its top concaved, and vertical attaching-bolt G, the head of which is arranged within the swelled portion F³ of the bracket, substantially as described.

6. The combination of the hollow projections I, casters J, vertically-moving blocks I', latch-piece I², and hook-leg *i*, substantially as set forth.

412,773. FISH-NET. ADOLPH F. MEISSELBACH and WILLIAM MEISSELBACH, Newark, N. J. Filed July 1, 1889. Serial No. 316,127. (No model.)



Claim.—1. In a fisherman's-net frame, the combination, with the inner ends of the bows, of arms secured thereon, having ears with

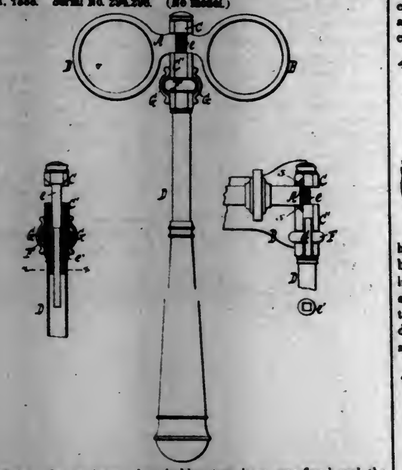
inclined outer edges, as described, a pivot-block having a solid screw-shank projecting therefrom, a pin for pivoting the arms detachably to such block by means of the said ears, and a handle provided with a ferrule adapted to be secured upon the said screw-shank in contact with the ears upon the arms, as and for the purpose set forth.

2. In a fisherman's-net frame, the combination, with the inner ends of the bows, of arms secured thereon, each having two ears with inclined edges, as described, a pivot-block having a projecting screw-shank, a pin for pivoting the arms to such block, with the said ears interlocking thereon, and a handle provided with a ferrule adapted to be secured upon the said screw-shank in contact with the ears upon the arms, as and for the purpose set forth.

3. In a fisherman's-net frame, the combination, with the outer ends of the bows *a a'*, of catch-pieces *n*, secured thereto, one being provided with a hook *o* at one end and the other with a pin *p* at the opposite end to engage the same, ears *r* upon the catch-pieces, one being provided with a slot *t'* and the other with a pin *s*, projecting through such slot, the whole arranged and operated substantially as shown and described.

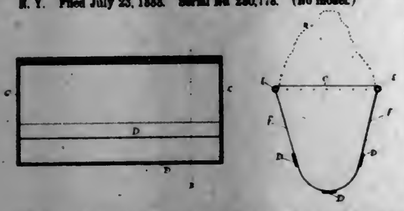
4. In a fisherman's-net frame, the combination, with the outer ends of the bows *a a'*, of catch-pieces *n*, secured thereto, and provided with hooks *o* at their outer ends and pins *p* at their inner ends to engage the same, ears *r* upon the catch-pieces, one being provided with a slot *t'* and the other with a pin *s*, projecting through such slot, the whole arranged and operated substantially as shown and described.

412,774. OPERA-GLASS HOLDER. Emil B. Metzowitz, Ridgefield, N. J., assignor to Levy, Dreyfus & Co., New York, N. Y. Filed Dec. 21, 1888. Serial No. 294,208. (No model.)



Claim.—In an opera-glass holder, two jaws, one fixed and the other movable, adapted to grasp a cross-bar of the opera-glass, the inner faces of said jaws having grooves parallel and opposite to each other with their bases inclined in reverse directions, to receive said bar, a non-rotating screw-rod carrying the movable jaw, a handle, a screw-nut on said rod intermediate of the fixed jaw and the handle, and side arms connecting the fixed jaw and handle, substantially as and for the purpose described.

412,775. ELEVATOR-BUCKET. Alexander Miller, New York, N. Y. Filed July 23, 1888. Serial No. 280,773. (No model.)



Claim.—An elevator-bucket consisting of a frame having a bag or sack made of fibrous or flexible material fitted into said frame and secured to said frame, for the purpose and substantially as herein described.

412,776. MACHINE FOR PRESSING FABRICS. George W. Miller, Woonsocket, R. I. Filed Nov. 12, 1888. Serial No. 290,555. (No model.)

Brief.—Cutting or abrasion of the jacket, resulting either from the bending of the cylinder or the springing upward of the jacket, is prevented by the devices set forth in the claims.

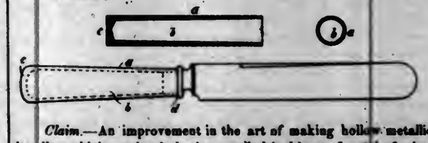


Claim.—1. The combination, with a cylinder and a bed, of disks equal in diameter to the cylinder and arranged in proximity to the ends thereof, substantially as set forth.

2. The combination, with the cylinder and bed of a pressing-machine, of a jacket or lining covering the face of the bed and extending beyond the ends of the cylinder, and disks arranged at the ends of the cylinder opposite the edges of the jacket, substantially as set forth.

3. The combination, with the cylinder, bearings, and bed of a cloth-pressing machine, of two disks, one at each end of the cylinder and carried by the bearings thereof, and as great in diameter as the cylinder, substantially as and for the purpose set forth.

412,777. ART OF MAKING HOLLOW METALLIC HANDLES. Isaac E. Moody, Toledo, Ohio. Filed July 25, 1889. Serial No. 318,645. (No model.)



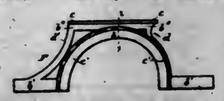
Claim.—An improvement in the art of making hollow metallic handles, which consists in boring a cylindrical bore of metal of suitable length from one end nearly to the other, thus forming a tube having a solid closed end, said bore tapering from its outer to its inner end, then pressing or hammering said tube, so that the same shall taper toward its open end, whereby the shell of the completed handle is formed of equal thickness throughout its length, substantially as described, for the purposes specified.

412,778. WAGON-BODY. William H. Morrell and Charles A. Eddy, Waterloo, N. Y. Filed Feb. 1, 1889. Serial No. 298,342. (No model.)



Claim.—In the class of vehicles or road-wagons hereinbefore specified, a body in which are combined the rockers or sills B B, arched as described, and the rail F, attached or connected to the said sills and made in one piece extending continuously along the sides and rear end of a platform E, of which it forms a part, substantially as and for the purposes specified.

412,779. VEHICLE-BODY. William H. Morrell and Charles A. Eddy, Waterloo, N. Y. Filed July 11, 1889. Serial No. 317,141. (No model.)



Claim.—1. In an arched vehicle-body, a pair of arched metallic side pieces having sill-lapping extensions and seat-supports, in combination with body side bars or sills terminating at or near the lower ends or corners of the said side pieces, substantially as and for the purposes specified.

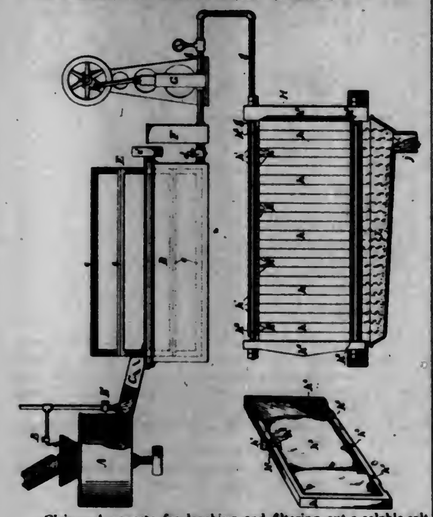
2. The combination, in an arched vehicle-body, of the arched metallic side pieces F F, having front and rear sill-lapping extensions *b' b'* and seat-supports, the said metallic parts having their sides or faces

arranged vertically, and wooden body side bars or sills terminating at or near the lower ends or corners of the said metallic arches, substantially as and for the purposes specified.

3. The combination, in an arched vehicle-body, of the arched metallic side pieces F F, having a T-shaped seat-supporting rail or bar at or near its top or apex, and also having sill-lapping extensions *b' b'* projecting forwardly and rearwardly from the lower ends or corners of the said metallic arches, respectively, and the body side bars or sills terminating at or near the said corners, substantially as and for the purposes specified.

4. The combination, in an arched vehicle body, of the arched metallic side pieces F F, having thereon a seat-supporting rail *b''*, with depending arms *d* and *d'*, uniting the said side pieces, and the latter also having the sill-lapping extensions *b' b'*, and the body side bars or sills terminating at or near the lower corners of the said arches, substantially as and for the purposes specified.

412,780. PROCESS OF FILTERING. James McNab, Camden, N. J., assignor to the United States Chemical Company, same place. Filed June 26, 1887. Serial No. 242,447. (No model.)



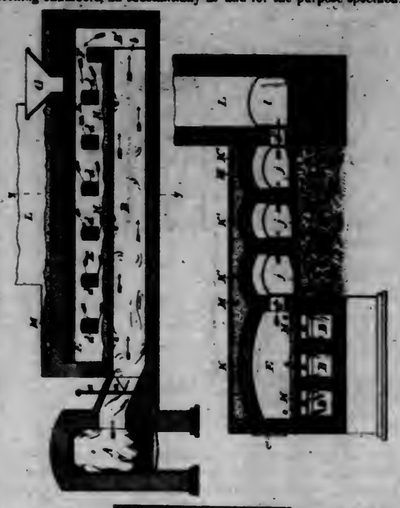
Claim.—A process for leaching and filtering out a soluble salt from a mixed mass of soluble and insoluble material, which consists in grinding the mass together with water in sufficient quantity to make a thick homogeneous paste, in subjecting the ground mass mixed with additional water in sufficient quantity to dissolve the soluble portions and form a thoroughly-fluid homogeneous mixture with the insoluble material to treatment in an agitating-tank, and then forcing the homogeneous mixture into the fibrous bags of a filtering-press by means of a force-pump, so as to express all of the solution and separate it from the insoluble material.

412,781. FURNACE FOR CALCINING BONE-BLACK. James McNab, Camden, N. J., assignor to the United States Chemical Company, same place. Filed June 22, 1887. Renewed Mar. 19, 1889. Serial No. 303,943. (No model.)

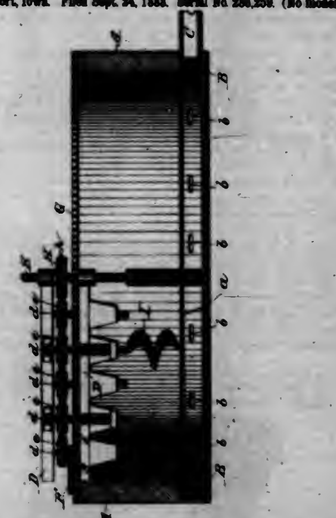
Claim.—1. In a furnace for calcining and purifying bone-black, the combination of the fire-chamber A, flues B, passing from the fire-chamber beneath the calcination-chamber and opening into it at their back end, the calcination-chamber E, having a feed-opening G at the end where flues B enter it, doors *c* in its front wall, and multiple flues *d*, arranged from front to rear along its back wall, and a stack L, connected with said flues *d*, so as to draw the gases from the back of calcination-chamber E all along its length.

2. In a furnace for calcining and purifying bone-black, the combination of the fire-chamber A, flues B, passing beneath the calcination-chamber, the calcination-chamber E, having doors *c* in its front wall and flues *d* in its back wall, and a feed-opening G at the end where the flues B open into it, one or more settling-chambers, and a stack L, connecting with the flues *d d'* through the settling-chambers, all substantially as and for the purpose specified.

3. In a furnace for calcining and purifying bone-black, the combination of the fire-chamber A, flues B, passing beneath the calcination-chamber, the calcination-chamber E, having doors *c* in its front wall and flues *d* in its back wall, and a feed-opening G at the end where the flues B open into it, one or more settling-chambers lying alongside of the chamber E, and having their roofs K' substantially on a level with the roof K of said chamber to form a drying-platform, and a stack L, connecting with the flues *d d'* through the settling-chambers, all substantially as and for the purpose specified.



412,782. MALTING-MACHINE. John Noye and Henry Noye, Davenport, Iowa. Filed Sept. 24, 1888. Serial No. 286,259. (No model.)

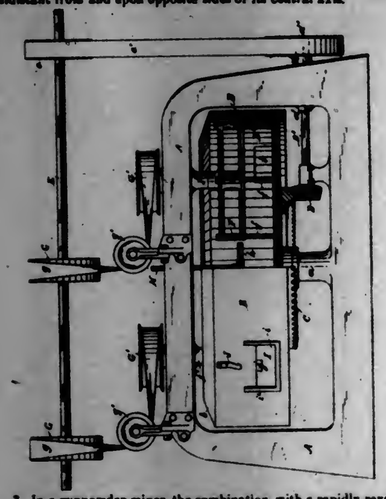


Claim.—In combination with a malting-tub, the spiral blade-stirrer having an interior vertical opening, such stirrer attached at its upper end to a vertical rotating shaft, and such shaft attached to a horizontal wing axially attached to a central vertical revolving shaft within such tub, substantially as described.

412,783. MIXER. Paul A. Oliver, Oliver's Mills, Pa. Filed June 18, 1888. Serial No. 277,668. (No model.)

Claim.—1. In a gunpowder-mixer, the combination, with a rapidly-revolving tub balanced upon a central pivot, of two agitators revolving rapidly in a contrary direction to the tub and arranged upon opposite sides of its central axis.

2. In a gunpowder-mixer, the combination, with a rapidly-revolving tub balanced upon a central pivot, of two agitators revolving rapidly with equal velocity in a contrary direction to the tub and arranged equidistant from and upon opposite sides of its central axis.



3. In a gunpowder-mixer, the combination, with a rapidly-revolving tub balanced upon a central pivot, of a soft non-metallic lining for the tub and two agitators revolving rapidly in a contrary direction to the tub upon opposite sides of its central axis.

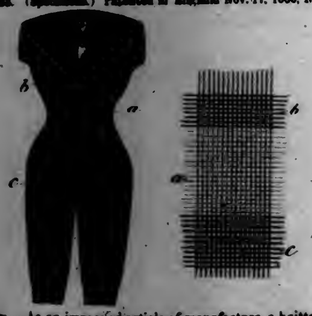
4. In a gunpowder-mixer, the combination, with a rapidly-revolving tub balanced upon a central pivot, of two agitators revolving rapidly in a contrary direction to the tub, and a spray-pipe for moistening the materials in the tub.

5. In a gunpowder-mixer, the combination, with a rapidly-revolving tub balanced upon a central pivot and provided with a discharge-opening in its side and a door for closing said opening, of two agitators revolving rapidly in a contrary direction to the tub upon opposite sides of its axis, whereby the materials are discharged when said door is opened, substantially as set forth.

6. In a gunpowder-mixer, the combination, with a rapidly-revolving open-top tub having an inwardly-sloping portion around its top edge, of two agitators consisting of frames provided with depending bars and revolving rapidly in a contrary direction to the tub upon opposite sides of its axis.

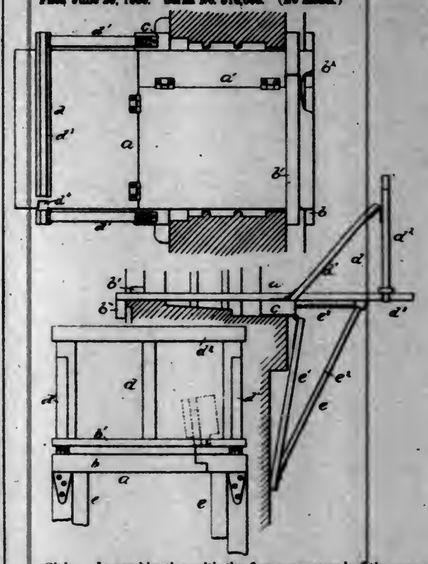
7. In a gunpowder-mixer, the combination of the framing provided with a central pivot, the mixing-tub mounted on said pivot and provided with mechanism for revolving it, the agitators inside the tub, provided with vertical spindles journaled in the frame, the driving-pulleys secured upon said spindles, the guide-pulleys supported by the frame, and the main driving-shaft provided with belt-pulleys for communicating rotary motion to the tub-driving mechanism and to the agitators, substantially as and for the purpose set forth.

412,784. **KNITTED UNDER-GARMENT.** MARGARET ORR, London, County of Middlesex, England. Filed Nov. 29, 1887. Serial No. 256,493. (Specimens.) Patented in England Nov. 17, 1886, No. 14,951.



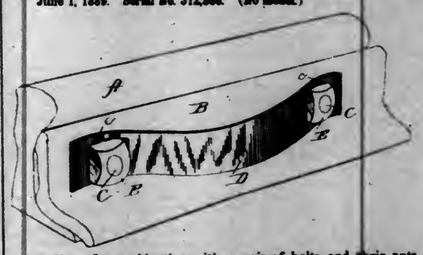
Claim.—As an improved article of manufacture, a knitted under-vest or combination-garment having a broad zone at the waist continuous with the adjoining upper and lower portions thereof, but composed of finer yarn than the remainder, substantially as and for the purpose set forth.

412,785. **WINDOW-JACK.** CHARLES PARKER, Hartford, Conn. Filed June 20, 1889. Serial No. 314,998. (No model.)



Claim.—In combination with the frame composed of the several parts united by hinges, the cross-bars *b b'*, secured across the inner end of the frame, the rest or base-piece *c*, secured to the outer part of the frame, the folding-back support *d*, the upright part d^2, being provided with the tenons d^3, adapted to fit sockets in the frame, and the folding bracket attached to the under side of the frame, all substantially as described.

412,786. **NUT-LOCK.** FERDINAND POST, Baton Rouge, La. Filed June 1, 1889. Serial No. 312,866. (No model.)

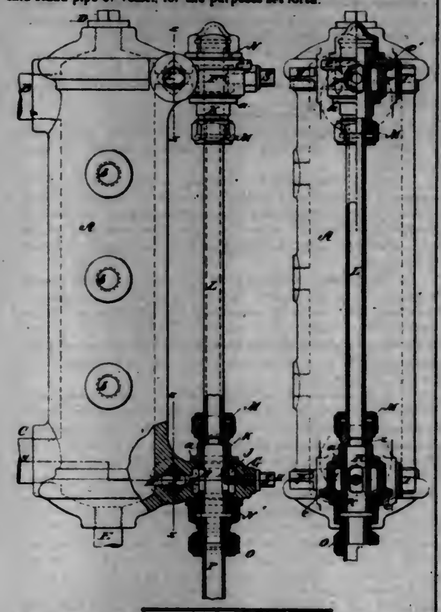


Claim.—In combination with a pair of bolts and their nuts, a locking-plate for said nuts of spring metal, having its central portion curved outwardly and its ends slightly flattened, holes at its ends adapted to register with the nut when the plate is flattened out, but drawing the outer edges of each opening in the plate beneath the adjacent edges of the nut when the spring-plate is relieved from its pressure, whereby the sides of the opening in the spring-plate are brought above the bottom line of the nut, and thus the turning of the nut prevented, substantially as described.

412,787. **WATER-GAGE.** NATHANIEL W. PRATT, Brooklyn, N. Y. Filed June 4, 1888. Serial No. 275,922. (No model.)

Claim.—1. The combination, with the stand-pipe or other vessel having hollow projections made integral therewith extending in a fixed position from its side, of the separable tubes or nipples secured to said projections in a common axial line to receive the ends of a glass tube, and the cocks seated in the said projections to intercept the port communication of the same with the said stand-pipe or other vessel.

2. The combination, with the stand-pipe or other vessel having hollow projections extending in a fixed position from its side, of tubes or nipples intersecting said projections in a common axial line, clamping-nuts for securing said tubes or nipples longitudinally in place, and the herein-described screwed studs entering the longitudinal slots of said tubes or nipples at a point in line with their port connection with said stand-pipe or vessel, for the purposes set forth.



412,788. **DROPPING-STOPPER FOR MEDICINE-BOTTLES.** WILLIAM W. PRESTON and EDWARD F. PRESTON, Bismarck, Mich., assignors to the Preston Ice Creeper Company, Chicago, Ill. Filed Dec. 3, 1888. Serial No. 292,578. (No model.)

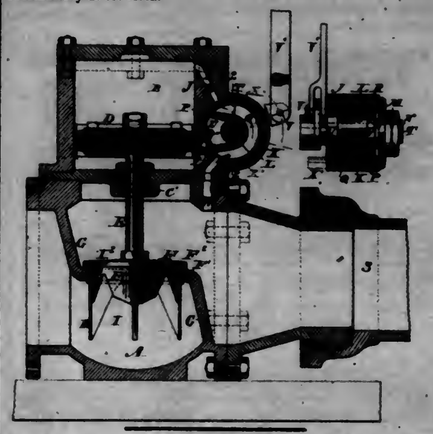


Claim.—The combination, with a medicine-bottle and its stopper, of a dropping-tube passing through the cork and constructed with a single bore, said tube having a dropping-aperture at its outer point and air-inlet port back of its point but outside the cork, a fluid-inlet within the bottle, and an air-outlet near its extreme inner end, such inner end being closed, substantially as set forth.

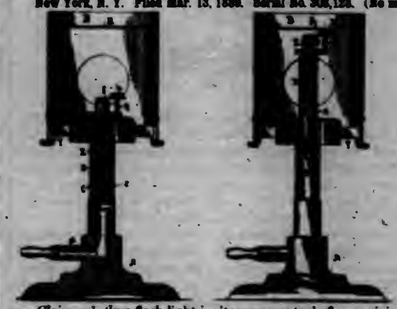
412,789. **HYDRAULIC-VALVE MECHANISM.** HUBERT F. PROBST, Three Rivers, Mich., assignor of one-half to the Sheffield Velocipede Car Company, same place. Filed Nov. 12, 1888. Serial No. 290,561. (No model.)

Claim.—1. The combination, with the water-main, of a hydraulic-valve mechanism consisting of a main valve for opening and closing the water-main, having an annular seat and tapering projections separated by water-spaces, a piston connected with the main valve, a single pressure-cylinder in which the piston works, an auxiliary-valve mechanism, a port connecting the auxiliary valve with the water-main, and two ports connecting the auxiliary valve with the pressure-cylinder, the one admitting water to the cylinder for opening the main valve and the other for closing it, substantially as set forth.

2. The combination, with the main valve and pressure-cylinder and piston, of the auxiliary valve L, the ports R, S, and W, a U-shaped compartment O, a water-passage Q, the bridge U, for controlling the flow through the port S, and opening T, constructed and arranged substantially as set forth.



412,790. **FLASH-LIGHT IGNITOR.** HERMANN G. RAMPENDAHL, New York, N. Y. Filed Mar. 13, 1889. Serial No. 303,128. (No model.)



Claim.—1. In a flash-light igniter, a receptacle for receiving the charge, in combination with a glowing igniter adapted to move toward the charge, substantially as described.

2. In a flash-light igniter, a receptacle for receiving the charge, in combination with a carrier adapted to move toward the charge and provided with an igniter, substantially as described.

3. In a flash-light igniter, a horizontal receptacle B for the charge, having an orifice, and a carrier adapted to move toward the orifice in a vertical line and provided with an igniter, substantially as described.

4. The combination, with a receptacle for the charge, of a cylinder arranged in line with the same, a carrier fitted in the cylinder and containing an igniter, and means for propelling the carrier toward the charge, substantially as described.

5. The combination, with a receptacle for the charge, of a cylinder, a hollow carrier fitted to the cylinder and adapted to move toward the receptacle, a spring-supported igniter within said carrier, a stop engaging the upper end of the igniter, and a pneumatic bulb coupled to the cylinder, substantially as described.

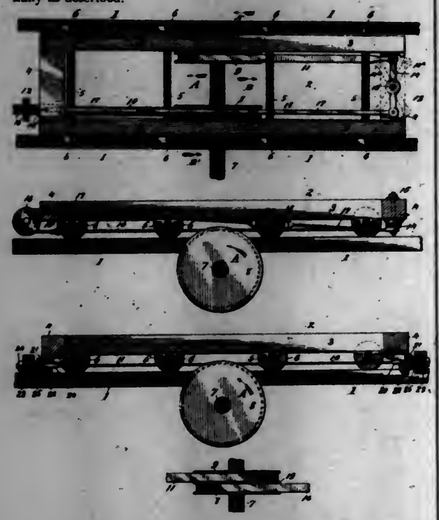
6. The combination, with the receptacle for the charge, of a carrier adapted to move toward the receptacle and provided with a spring-supported igniter, a post on the carrier engaging with the receptacle for limiting the movement of the carrier, and having a transversely-projecting stop engaging with the igniter, substantially as described.

412,791. **MECHANISM FOR RECIPROCATING SAW-MILL CARRIAGES.** GEORGE R. RAY, Manistee, Mich. Filed May 24, 1889. Serial No. 311,961. (No model.)

Claim.—1. In mechanism for reciprocating saw-mill carriages, the combination, with a revolving and reversible shaft provided with two drums, of a saw-mill carriage and two flat bands which are connected to the opposite ends of said carriage and wound upon said drums in opposite directions and in coils one upon the other, substantially as described.

2. In mechanism for reciprocating saw-mill carriages, the combination, with a revolving and reversible shaft provided with two

drums, of a saw-mill carriage and two flat steel bands which are connected to the opposite ends of said carriage and wound upon said drums in opposite directions and in coils one upon the other, substantially as described.



3. In mechanism for operating saw-mill carriages, the combination, with a carriage, of a revolving and reversible drum-shaft provided with two drums, two flat steel bands connected to the opposite ends of said carriage and wound upon said drums in opposite directions and in coils one upon the other, and compensating mechanism for adjusting the tension and slack of said bands as they are wound upon and unwound from said drums, substantially as described.

4. In mechanism for operating saw-mill carriages, the combination, with a carriage, of a revolving reversible drum-shaft provided with two drums, two flat steel bands connected to the ends of said carriage and wound upon said drums in opposite directions and in coils one upon the other, and a compensating lever fulcrumed upon said carriage and connected with the ends of said belts or bands, substantially as described.

5. In mechanism for operating saw-mill carriages, the combination, with the carriage 2, of the revolving reversible drum-shaft 7, provided with the two drums 8 and 9, the lever 14, fulcrumed at one end of said carriage, the guide-pulley 16, journaled at the other end of said carriage, the rod or bar 17, pivotally connected to one end of said lever, the band 10, secured to said rod or bar, passed around said pulley 16, and wound upon said drum 8 in coils one upon the other, and the band 11, pivotally connected to the other end of said lever and wound upon the other drum 9 in an opposite direction to the other band 10 and in coils one upon the other, substantially as described.

6. In mechanism for operating saw-mill carriages, the combination, with the carriage 2, of the revolving reversible drum-shaft 7, provided with the two drums 8 and 9, the lever 14, fulcrumed at one end of said carriage, the pulley 16, journaled at the other end of said carriage, the rod or bar 17, formed with the slot 18 and pivotally connected to one end of said lever, the band 10, secured to said rod or bar, passed around said pulley 16, and wound upon said drum 8 in coils one upon the other, and the band 11, pivotally connected to the other end of said lever and wound upon the other drum 9 in an opposite direction to the other band 10 and in coils one upon the other, substantially as described.

7. In mechanism for operating saw-mill carriages, the combination, with the carriage 2, of the revolving reversible drum-shaft 7, provided with the two drums 8 and 9, the lever 14, fulcrumed at one end of said carriage, the pulley 16, journaled at the other end of said carriage, the rod or bar 17, formed with the slot 18 and pivotally connected to one end of said lever, the cable chain 10', connected to the other end of said rod or bar and passed around said guide-pulley, the band 10, connected to the other end of said cable chain and wound upon said drum 8 in coils one upon the other, and the band 11, pivotally connected to the other end of said lever and wound upon the other drum 9 in an opposite direction to the other band 10 and in coils one upon the other, substantially as described.

412,792. CRYSTALLINE CALCIC TETRAPHOSPHATE AND THE PROCESS OF MAKING THE SAME. JACOB REESE, Pittsburg, Pa. Filed Sept. 23, 1887. Serial No. 250,479. (No specimens.)

Claim.—1. The process for the manufacture of crystallized tetrabasic phosphate of lime, which consists in oxidizing phosphorus at a high temperature while in the presence of lime, until the lime is charged with phosphoric acid, then withdrawing the charged lime and subjecting it to slow cooling, substantially as described.

2. In a new article of manufactnre, crystallized tetrabasic phosphate of lime.

3. As a new article of manufacture, pulverized crystals of tetrabasic phosphate of lime.

412,793. PROCESS OF MAKING PHOSPHATES. JACOB REESE, Pittsburg, Pa. Filed Sept. 23, 1887. Serial No. 250,480. (No specimens.)

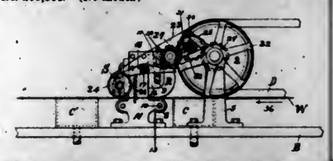
Claim.—1. The process of producing calcium phosphates, which consists in blowing molten phosphoritic iron with an air-blast while held in a basic-lined vessel, and in the presence of lime additions until the phosphorus has been reduced to not less than one-half of one per cent., then withdrawing the phosphate so formed from the presence of the metal.

2. The process of producing calcium phosphates, which consists in blowing molten phosphoritic iron with an air-blast while held in a basic-lined vessel, and in the presence of lime additions until the desired amount of phosphorus is oxidized to phosphoric acid and held in the lime as a phosphate, then stopping the blast and removing the phosphate while the metal still contains not less than one-half of one per cent. of phosphorus.

3. In the manufacture of calcium phosphate from phosphoritic iron by oxidizing the phosphorus with an air-blast while the metal is in a molten state and held in a basic-lined vessel in the presence of lime additions, the method of withdrawing the lime from the vessel after it has been charged to the desired degree with phosphoric acid, and then recharging fresh lime, whereby phosphates having any desired percentage of phosphoric acid may be produced.

4. In the manufacture of calcium phosphates from phosphoritic iron by oxidation with an air-blast, the method of preventing the deposit of a large amount of oxide of iron in the phosphate, which consists in stopping the blast and withdrawing the phosphate from the vessel before the phosphorus has been reduced in the metal below one-half of one per cent., (.5 per cent.,) whereby the large amount of oxide of iron produced while the last .5 per cent. of phosphorus is eliminated is prevented from entering the phosphate.

412,794. WATER-MARKER FOR PAPER-MAKING MACHINES. FRANCIS H. RICHARDS, Springfield, Mass. Filed May 31, 1887. Serial No. 239,868. (No model.)



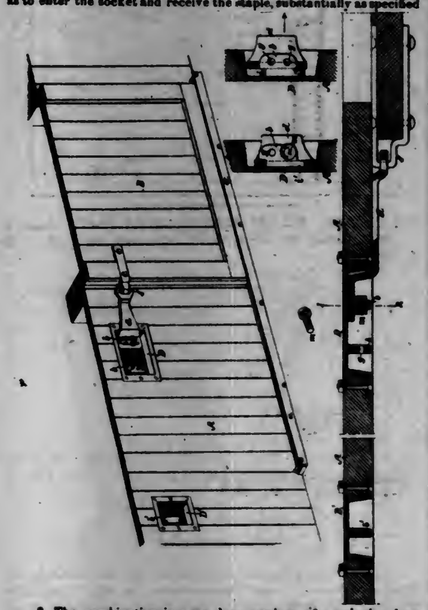
Claim.—1. In a water-marking device for paper-making machines, the combination of the shaft carrying the water-markers, a driving-pulley, substantially as described, thereon, a projecting arm or dog fixed on said shaft, a reciprocating stop-arm interposable into the path of said dog for interrupting the rotation of said shaft, and means for intermittingly oscillating the stop-arm, all substantially as described.

2. The combination, in a paper-making machine, of the wire W, shaft 8, carrying the water-markers, having a pulley whereby it is driven, and a dog 16, a stop-arm operating to interrupt the movement of said dog and shaft 8, and a cam having a continuous movement slower than the movement of shaft 8 and operating said stop-arm, all substantially as described.

3. The combination, in a paper-making machine, of the wire carrying the web, a shaft above and crosswise of said wire and carrying the water-markers, and having thereon a dog for stopping the revolution thereof, means, substantially as described, operating to impart to said shaft a normally-continuous and uniform rotary movement, a stop-arm arranged to intercept said dog and thereby stop said shaft, a cam operating said stop-arm to release said dog, and change-gearing driving said cam, whereby the interruption of the movement of said shaft may be continued for a longer or shorter time, all substantially as described, and for the purpose specified.

412,795. CAR-DOOR RETAINER AND SEAL. ANTHONY ROELOFS, Philadelphia, Pa. Filed Aug. 17, 1887. Serial No. 247,162. (No model.)

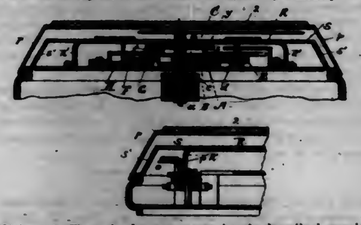
Claim.—1. The combination, in a hasp and staple retainer for car-doors, of the door of the car, a socket-plate secured to the side of the car flush with the face of the same, a staple contained wholly within the socket of said plate, and a hasp hung to the car-door and bent so as to enter the socket and receive the staple, substantially as specified



2. The combination, in a car-door retainer, of a swinging hasp, with a staple having inner and outer portions, each of substantially the same size as the opening in the hasp, the outer portion being in a higher plane than the inner portion, substantially as specified.

3. The combination of the socket-plate secured to the side of the car flush with the face of the same, a hasp hung to the door and bent so as to enter the socket, a staple engaging with the hasp, and a sealing-rivet applied to the staple outside of the hasp, both staple and rivet being wholly within the limits of the socket, substantially as specified.

412,796. CALENDAR-WATCH. BERNHARDT ROSENBURG, Waltham, Mass. Filed July 16, 1888. Serial No. 280,092. (No model.)



Claim.—1. The calendar-movement herein described, consisting of the combination of the pinions c and e, wheels A, B, C, d, F, D, and H, pins *y*, *z*, and *f*, clicks E, K, and I, and suitable indicating-hands, all arranged substantially as and for the purposes set forth.

2. In a calendar-watch, the independent ring-dial S, for the day of the month, provided with the bezel S', and the independent dial R, having two faces, one for the days of the week and one for the months of the year, and provided with a bezel R', and both combined with a watch movement and case, and arranged in relation to the time-dial as herein described, all substantially as and for the purposes set forth.

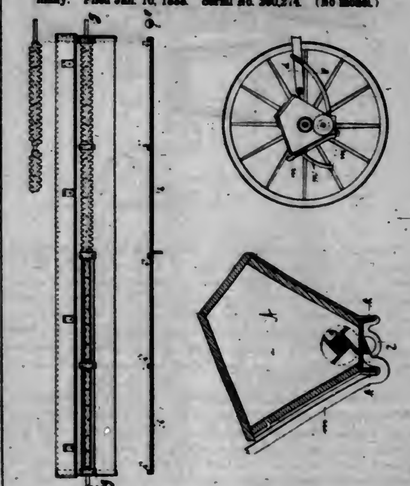
3. In a calendar-watch, the calendar-train, consisting of the pinion e, provided with the teeth, the wheel A, provided with forty teeth, the pinion c, provided with six teeth, the wheel B, provided with thirty-six teeth, the wheel D, provided with seven teeth, the wheel d, provided with seven teeth, the wheel G, provided with thirty-one teeth, the wheels F, G, and H, each provided with twelve teeth, and the clicks I K E and pins *y*, *z*, and *f*, all combined with the center arbor of the watch-movement and adapted to operate substantially as and for the purposes set forth.

412,797. RAILWAY-RAIL FASTENING. WILLIAM SALISBURY, Cleveland, Ohio. Filed July 10, 1888. Serial No. 317,067. (No model.)



Claim.—In a railway-rail fastening, the fish-plate held in contact with the rail by a threaded bolt *d*, which engages with nuts placed in a groove outside of said plates, and which is provided with a spike-point to secure the same firmly to the tie, substantially as described.

412,798. MACHINE FOR DISTRIBUTING FERTILIZERS. WILHELM SCHMIDT and PAUL P. SPIESS, Halle-on-the-Saale, Prussia, Germany. Filed Jan. 10, 1888. Serial No. 260,274. (No model.)

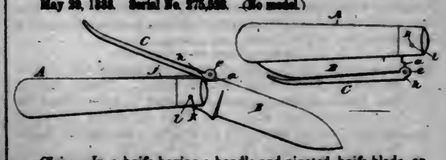


Claim.—1. In a machine for distributing fertilizers, the combination, with the hopper having the discharge-opening and an agitator located therein, of the semicircular valve co-operating with the opening in the hopper-bottom to regulate the exit of material, substantially as described.

2. In a machine for distributing fertilizers, and in combination with an adjustable opening in the bottom of the hopper, as hereinbefore described, a revolving stirrer provided with blades set at an angle, whereby the contents of the hopper is forced through the discharge-opening, the said blades being provided with toothed edges, substantially as described.

3. In a machine for distributing fertilizers, and in combination with an adjustable opening in the bottom of the hopper, as hereinbefore described, a revolving stirrer provided with blades set at an angle, whereby the contents of the hopper is forced through the discharge-opening, the said blades being provided with toothed edges, so that the teeth on one side correspond with spaces between the teeth on the other side, substantially as described.

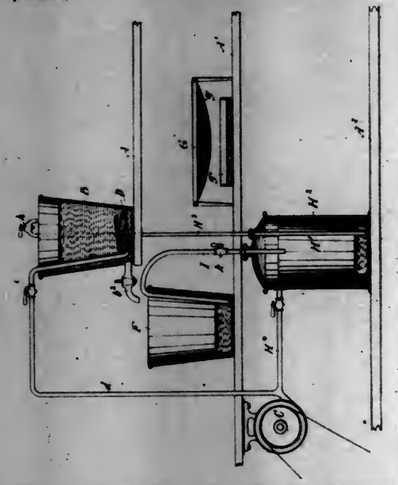
412,799. POCKET-KNIFE. JOHN C. F. SHERMAN, Maine, Ill. Filed May 20, 1889. Serial No. 311,233. (No model.)



Claim.—In a knife having a handle and pivoted knife-blade, an arm attached near the pivoted end of the knife-blade for applying

force against the blade for the purpose of swinging the same open or out of the handle, substantially as described.

412,800. PROCESS OF MAKING LEAD CHLORIDE. WALDRON SHAPLEIGH, Camden, assignor to the Electric Storage Battery Company, Gloucester City, N. J. Filed Apr. 9, 1889. Serial No. 306,543. (No specimens.)



Claim.—1. In the manufacture of chloride of lead, introducing a blast of air into an aqueous solution of nitric acid during the admission of finely-divided lead thereto and while the solution is undergoing chemical action, substantially as and for the purposes set forth.

2. In the method of making chloride of lead, adding to a solution of lead nitrate hydrochloric acid and then introducing a blast of air into the same while the chemical reaction is taking place between said lead nitrate and hydrochloric acid, substantially as and for the purposes set forth.

3. In the method of making chloride of lead, precipitating the lead from a solution of lead nitrate in the form of lead chloride by the addition of hydrochloric acid, then introducing a blast of air into said solution during the reaction to oxidize the lower oxides of nitrogen given off during the reaction, and then adding lead nitrate thereto to remove the excess of hydrochloric acid, substantially as and for the purposes described.

412,801. MACHINE FOR GROOVING TIRES FOR CARRIAGE-WHEELS. JOSEPH SHAW, Manchester, County of Lancaster, England. Filed July 2, 1889. Serial No. 316,276. (No model.) Patented in England July 3, 1888, No. 9,623.

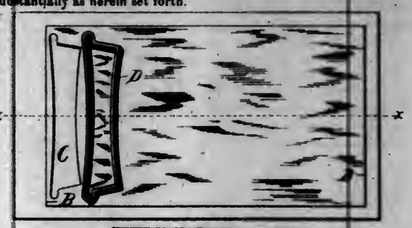


Claim.—1. In an apparatus for producing dovetailed and undercut recesses in metal bars, the combination and arrangement of the roll C with the bearing-rolls F and G and a die H, substantially as hereinbefore described, and as illustrated by the accompanying drawings.

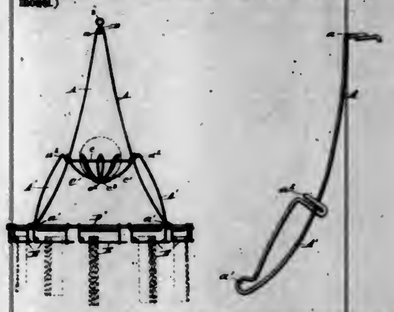
2. In an apparatus for producing dovetailed and undercut recesses in metal bars, the combination and arrangement of the bearing-roll G with the die H, substantially as hereinbefore described, and as illustrated by the accompanying drawings.

412,802. BLOCKS USED AS BEDS IN PUNCHING AND CUTTING MACHINES AND IN CUTTING OUT GENERALLY. PIERRE J. SEROULIN, Paris, France, assignor, by mesne assignments, to Charles Edward Shafer, same place. Filed Feb. 2, 1888. Serial No. 262,804. (No model.) Patented in France May 3, 1887, No. 183,309; in England July 14, 1887, No. 9,910, and in Belgium Nov. 14, 1887, No. 79,868.

Claim.—The combination, with a knife or cutter, of a block or sheet the base of which is composed of soluble nitro-cellulose, the knife being operated by pressing it through the material laid upon the block or bed and partly into the surface of the block or sheet, substantially as herein set forth.



412,803. BAG AND TWINE OR SAMPLE HOLDER. FRANK H. SMITH, Chicago, Ill. Filed June 24, 1889. Serial No. 315,304. (No model.)



Claim.—1. In a bag and twine holder, the combination of the hanger-arms formed of single lengths of wire and coiled in their middles about a suspending hook or ring to form a swivel-support, and the hoop supported by said arms, substantially as set forth.

2. In a bag and twine holder, the combination of the hanger-arms formed of single lengths of wire and coiled in their middles about a suspension-hook to form a swivel-support, the hoop supported by said hanger-arms, and the twine-holder supported by hooks formed at the upturned ends of the arms, substantially as set forth.

3. In a twine and bag holder, the hanger-arms formed of single lengths of wire supporting the hoop, and the spring-pin having upper curved approximately U-shaped portions to clamp over the hoop or ring, and the lower spring-pin portion, substantially as set forth.

4. In a twine and bag holder, the combination of the hanger-arms formed of single lengths of wire and coiled in their middles about a hook or ring to form a swivel-support, the twine-holder bushed at its outlet or opening and supported by hooks formed on the upturned ends of said hanger-arms, the hoop supported thereby, and the spring-pins having upper curved approximately U-shaped portions to clamp over the hoop or ring, substantially as set forth.

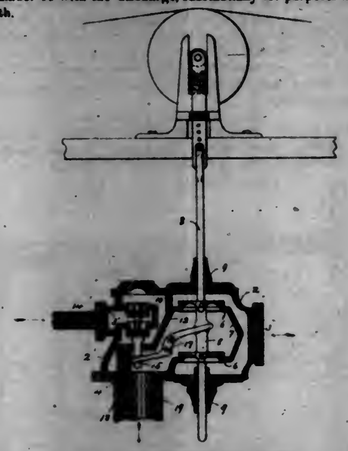
5. In a twine and bag holder, the combination of the supporting-arms formed of a single length of wire, said arms being coiled at their middles about a stemmed suspending-ring to form a swivel-support, the hoop supporting the hooks or pins, and the twine-support, substantially as set forth.

412,804. STEAM-CONTROLLING DEVICE. RICHARD SMITH, Sherbrooke, Quebec, Canada. Filed Sept. 14, 1888. Serial No. 285,209. (No model.)

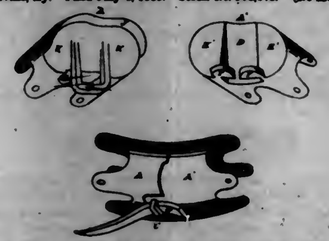
Claim.—1. A steam-controlling device, substantially as described, composed of a valve case or shell provided with a main supply opening, a delivery or discharge opening, and a main valve which controls said supply-opening, combined with an auxiliary inlet supply-opening and its controlling-valve connected with and actuated by the main valve by means of a connecting-lever pivoted near its center, substantially as and for the purposes stated.

2. In valve-cases provided with two inlet supply-openings and a common delivery-opening, an adjustable valve 5 and the adjustable glands 9, combined with the secondary valve which governs the secondary inlet-opening and the interconnecting lever by which the main valve causes the auxiliary valve to open, substantially for purposes stated.

3. In combination, the valve-case 2, having the inlet supply-openings 3'3', the valves 5 13, which respectively control said openings, and the lever-rod 16, pivoted to the valve-cast and operated by the main valve 3 to open the valve 13, and the pipe 18, which connects the chamber 10 with the discharge, substantially for purposes herein set forth.

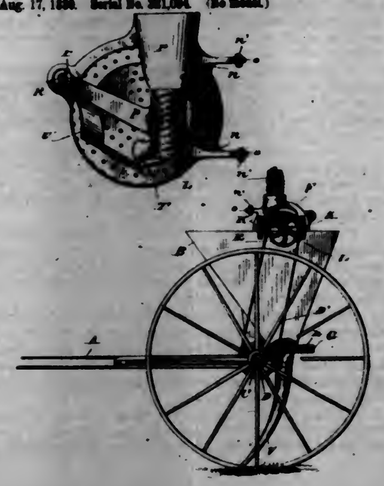


412,805. HORSE-COLLAR FASTENER. WILLIAM T. SUMNER, Louisville, Ky. Filed July 1, 1889. Serial No. 316,175. (No model.)



Claim.—In a horse-collar fastening, the combination, with a metal tip A, having a hollow sloping tongue C, a lip J, and the countersinks H H, of the metal tip A', having a sloping slot D, and hooks F F, and a hame-string G, substantially as set forth, and for the purposes specified.

412,806. SEED-PLANTER. THOMAS H. TABOR, Hilgay, Ga. Filed Aug. 17, 1889. Serial No. 321,094. (No model.)

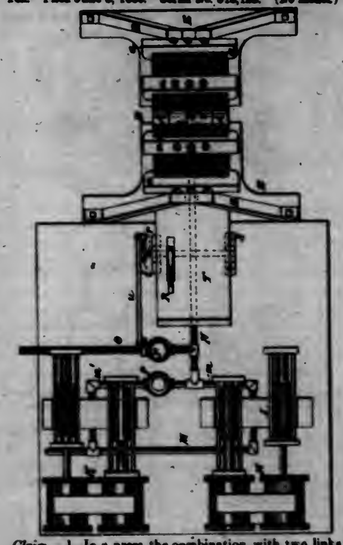


Claim.—1. The combination, with a corn-planter, of a shelling device, whereby the corn will be removed from the cob and intermittently fed to the ground, as set forth.

2. The combination, with a planter having a pulley D and belt D', of the disk L, having pulley E, and the hinged hopper P, arm *p*, bolt R, thumb-nut *r*, and spring S, as set forth.

3. In a sheller and planter, the combination of the disk L and devices for operating the same, with the hinged sectional hopper P, provided with the finger T, the arm *p*, having integral guide U, and the bolt R, nut *r*, and spring S, substantially as shown and described.

412,807. COTTON-PRESS. JAMES W. THOMPSON, Fort Worth, Tex. Filed June 5, 1889. Serial No. 312,122. (No model.)



Claim.—1. In a press, the combination, with two links formed of uprights A, provided with curved connections at the top and at the base, of a fixed upper platen conforming to said links, binders *a*, which are made fast to said upper platen and embrace said links, a semicircular block fitting within said links at the base, a cylinder mounted on said block, said cylinder being provided with a plunger, and a platen in position above the plunger to be operated thereby, substantially as and for the purposes described.

2. The combination, with the fixed upper platen of a press, said platen being perforated, of a screw-rod provided with a hook at its lower end and placed in the perforation, a nut *h* on said rod and resting on the platen, whereby the hook on the latter may be raised, and a plunger provided with a loop in position to connect with said hook on the rod, substantially as set forth and described.

412,808. GRAIN-DRILL. WILLARD A. VAN BRUNT, Horicon, Wis. Filed Aug. 3, 1889. Serial No. 319,622. (No model.)



Claim.—1. The combination, with feed-spouts and shares or hoes, of covering-wheels connected therewith and springs for retaining the shares in the ground at a uniform depth and transferring the pressure to the wheels the moment the shares tend to sink into the ground beyond this uniform depth, substantially as set forth.

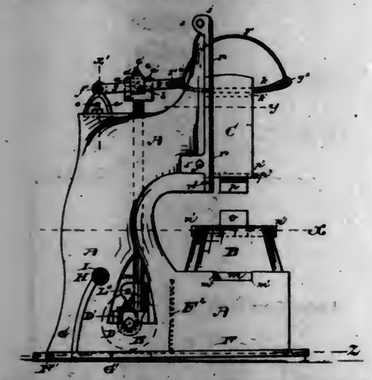
2. The combination, with drag-bars, hoes or shares connected thereto, and feed-spouts located on the shares or hoes, of straps or bales pivotally secured to the drag-bars, covering-wheels journaled in the straps or bales, and springs adapted to transfer pressure upon the covering-wheels when the shares or hoes sink beyond a certain depth, substantially as set forth.

3. The combination, with drag-bars, shares or hoes secured thereto, and feed-spouts located on the shares, of straps or bales, cov-

oring-wheels journaled therein, a rod extending upward from the share, and a spring mounted thereon and adapted to exert a constant pressure upon the share and transfer its pressure to the wheels when the share has reached a certain depth, substantially as set forth.

4. The combination, with drag-bars, shares, feed-spouts, and straps or bales pivotally secured to the drag-bars and having covering-wheels journaled in their rear ends, of a rocking shaft, arms thereon, rods pivotally secured to the shares and having loose connection with the arms, said rods having washers thereon, and springs mounted on the rods between the arms and washers, adapted to exert a constant pressure on the shares and transfer this pressure to the wheels when the share has reached a certain depth, substantially as set forth.

412,809. **POWER-HAMMER.** CHARLES A. VAUGHN, Newark, N. J. Filed Nov. 14, 1888. Serial No. 290,796. (No model.)



Claim.—1. In a power-hammer, the combination, with the driving mechanism, of a helve pivoted at one end to the frame and provided at the other end with a semicircular spring made integral therewith, and a flexible strap adjustably secured between the ends of said spring by bolts, substantially as described.

2. In a power-hammer, the combination, with the driving mechanism, of a vibrating helve pivoted at one end to the frame, the other end being provided with a semicircular spring made integral therewith, a flexible strap adjustably secured between the ends of said spring, and adjustable bearings for receiving the end of a rod from the driving-shaft, substantially as shown and described.

3. In a power-hammer, the combination, with the driving mechanism, of a vibrating forked helve pivoted at one end to the frame and adjustably connected to the driving-shaft by a suitable connecting-rod, as shown, and provided at its other end with a semicircular spring, and a flexible strap adjustably secured between the ends of said spring, substantially as shown and described, for the purposes set forth.

4. In a power-hammer, the combination, with the driving mechanism, of a vibrating forked helve pivotally connected at one end to the frame and adjustably connected with the driving-shaft by a suitable connecting-rod, as shown, the other end of said helve being provided with a semicircular spring and a slot in said helve at the base of said spring, and a bolt for holding one end of a flexible strap between the ends of said spring, substantially as described, and for the purposes set forth.

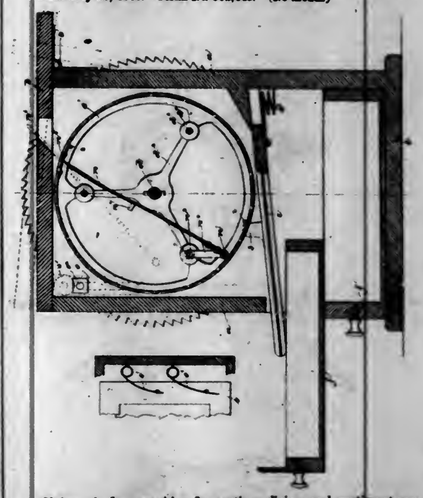
5. In a power-hammer, the combination, with the driving mechanism, of a pivoted connection and bearings for a helve, consisting of a spindle with a tapering bushing firmly fixed thereon and adapted to enter a tapering hole in the bearing, as described, and for the purposes set forth.

6. In a power-hammer, the combination, with the frame and driving mechanism of the machine, of a hammer-stock, a helve pivoted at one end to the frame, a semicircular spring on the other end of said helve and integral therewith, a flexible strap extending between the ends of said spring, whereby said helve is connected with said hammer-stock, and a slot in said helve adapted to receive a bolt for adjustably securing one end of the flexible strap, as shown, and for the purposes set forth.

7. In a power-hammer, the combination, with the hammer-stock of ways between which the hammer-stock slides, and a helve pivoted at one end to the frame and also adjustably and pivotally connected to the driving-shaft, as shown, and for the purposes set forth.

8. In a power-hammer, the combination, with the hammer-stock provided with a slot k', of ways between which the hammer-stock slides, bolts s s, rubber washers or cushions s^2 s^2, a helve pivoted at one end to the frame, a semicircular spring upon the other end of said helve, a flexible strap extending between the ends of said spring and passing through slot k' in said hammer-stock, bolt f, adapted to slide in slot g^4 in said helve for adjustably securing one end of said flexible strap, adjustable bearings c on said helve, and rod M, pivotally connected at one end to said adjustable bearings c and at the other end to the driving-shaft, substantially as shown and described, and for the purposes set forth.

412,810. **MACHINE FOR CUTTING, SHAVING, AND GRINDING CHEESE.** JOSEPH VERCELLI and BATTISTA GRAHANA, Boston, Mass. Filed May 28, 1888. Serial No. 312,449. (No model.)



Claim.—1. In a machine for cutting, slicing, and grating cheese, &c., the revolving grating-cylinder and circular saw, having their bearings in the frame-work of the box-like structure, the cylinder being within said structure, combined with a slicing-knife inclosed in the said cylinder, substantially as described.

2. The grating-cylinder d', arranged on the shaft d in the box-like structure, having a pivoted top plate b, combined with the separable retaining device for the shaft, consisting of the recessed flange i^2, slide P thereon, and pivoted segment i^4, normally resting on the top of said slide, substantially as described.

3. The grating-cylinder and pins 2, carried by it, the inclined plate e, partially perforated, arranged below the grating-cylinder, and retractive springs attached thereto and having the ear 3 in the path of movement of said pins, to be acted on thereby, and the two compartments f f', substantially as described.

4. The grating-cylinder arranged in a box-like structure having a pivoted top plate, the movable plate e, partially perforated, and receptacles f f', arranged to slide under said plate, combined with the adjusting device for the top plate, consisting of the slotted plate o and set-screw o^3, substantially as described.

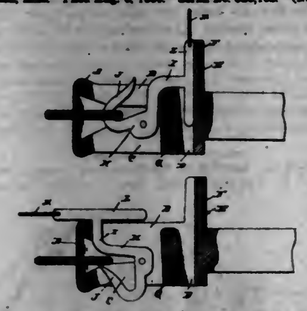
5. The top plate, the opening therein, the grating-cylinder having an opening through it to register with the opening in the top plate, combined with a knife n, inclosed in said cylinder, a crank by which the knife is borne carried by the cylinder, and a rotatable shaft or stud for the crank, substantially as described.

6. The top plate, the opening therein, the grating-cylinder having an opening to register with the opening in the top plate, combined with a knife n, having a pin n^1, the crank n^3, shaft n^2, and rod d^3, wherewith said pin co-operates, all located in said cylinder, substantially as and for the purposes specified.

7. In an organized machine for cutting, slicing, and grating cheese, &c., the top plate having an opening therein, and an extended portion, the circular saw and guide carried by said extended portion, the grating-cylinder, a shaft upon which said saw and cylinder are mounted, and the movable slicing-knife carried by the cylinder, all substantially as and for the purposes set forth.

8. In an organized machine for cutting or slicing and grating cheese, &c., the top plate having the opening m^3 therein, the grating-cylinder and shaft carrying it, and a cutting device consisting of a circular disk secured by a set-screw m' on said shaft projecting through said opening in the top plate, and protruding knife-edges on the face of said disk for slicing or shaving material held against said face, substantially as and for the purposes set forth.

412,811. **CAR-COUPLING.** CHRISTOPHER C. WARREN, Chamley's Station, Miss. Filed Aug. 6, 1889. Serial No. 320,162. (No model.)



Claim.—1. The combination of the draw-head and the hook pivoted therein and provided with a U-shaped portion adapted to be struck by the link, as set forth.

2. The combination of the draw-head and the coupling-hook pivoted therein and having a central U-shaped portion, the lever L, rising from the back edge of said U-shaped portion, and the engaging-hook K, projecting forward from the said U-shaped portion, as set forth.

3. The combination of the draw-head having longitudinal slots in its top and bottom, the internal partition G, and the recessed lug E, and the coupling-hook pivoted in the slot in the bottom of the draw-head and having a central U-shaped portion fitting over the internal partition therein, and a lever engaging the recessed lug, as set forth.

412,812. **DENTAL MATRIX.** GEORGE M. WHITON, Philadelphia, Pa., assignor to Henry D. Justi, same place. Filed May 27, 1889. Serial No. 312,282. (No model.)



Claim.—A dental matrix consisting of a band of flexible metal and a single loop, the band having an eye which is permanently affixed to one side of the loop, and having its other end passing freely between said eye and the opposite side of the loop, substantially as described.

412,813. **CLASP.** ISAC L. WERNHOFF, Furth, Bavaria, Germany. Filed Jan. 4, 1889. Serial No. 295,620. (No model.)

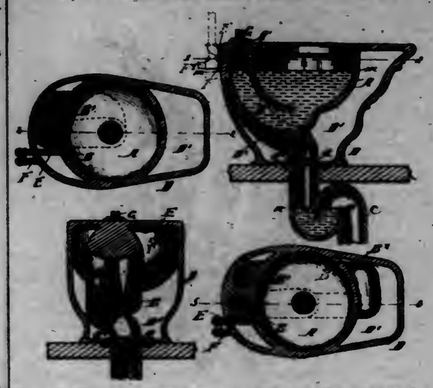


Claim.—In a clasp for attaching the trousers to a shirt, the combination of the flat hook c, hinged to the guard-plate f, which is depressed from the hook c by the spring m and provided with the curved part k, having holes therein, with the pin A, the pin g, having a notch, and the spring lever or catch l falling into this notch, all substantially as described, and for the purpose set forth.

412,814. **WATER-CLOSET.** FRANK A. WELLS, Nutley, N. J. Filed Jan. 24, 1888. Serial No. 297,410. (No model.)

Claim.—1. In a water-closet, in combination, substantially as set forth, the bowl having a siphonic soil-passage leading therefrom and a pedestal inclosing both the bowl and the soil-passage, leaving a cavity or chamber within the pedestal around the bowl and soil-passage, the pedestal being apertured at the lower part and the soil-passage of the bowl discharging through such aperture, a flushing-pipe communicating with the bowl, and a water-pipe discharging into the chamber within the pedestal surrounding the bowl.

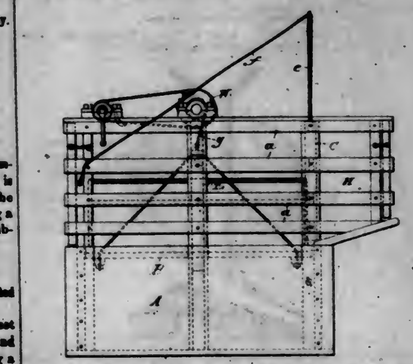
2. In a water-closet, in combination with the closet-bowl having a siphonic soil-passage leading therefrom, said soil-passage comprising two traps, and a pedestal inclosing the bowl and its soil-passage, including both traps thereof, and forming a chamber about them and having in its base an aperture through which the soil-passage discharges, a flushing-pipe communicating with the bowl, and the water-pipe communicating directly with the chamber in the pedestal surrounding the bowl and traps, substantially as set forth.



3. A water-closet bowl having a siphonic soil-passage leading therefrom, said soil-passage and bowl being formed integrally, and a pedestal also formed integrally with the bowl and soil-passage and inclosing them both, leaving a cavity or chamber within said pedestal and around the bowl and soil-passage, the bottom wall of said pedestal being apertured and the soil-passage terminating concentrically with said aperture, so that it may discharge through it, an annular space being left between the end of the soil-passage and the margin of the aperture through the pedestal-base, a flushing-pipe communicating with the bowl, and a water-pipe discharging into the chamber in the pedestal, in combination, substantially as set forth.

4. A water-closet bowl having a siphonic soil-passage leading therefrom, said bowl and soil-passage being formed integrally, the soil-passage comprising two traps, and a pedestal also integral with the bowl and its soil-passage and inclosing them both, forming a chamber about them, and having an aperture in its base concentric with the terminus of the soil-passage, an annular aperture being left between the end of the soil-passage and the margin of the aperture in the pedestal-base, a flushing-pipe communicating with the bowl, and a water-pipe communicating directly with the chamber in the pedestal about the bowl and traps, in combination, substantially as set forth.

412,815. **MACHINE FOR DIPPING ANIMALS.** JACOB E. WEAVER, Burton City, Ohio. Filed Apr. 3, 1889. Serial No. 305,894. (Model.)

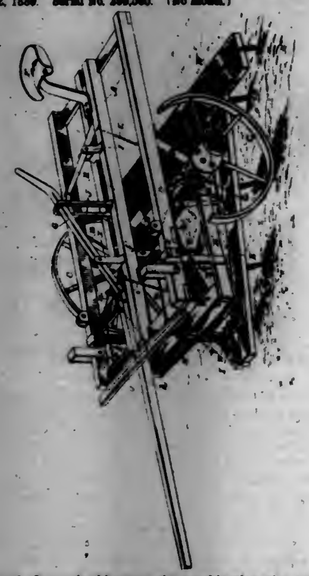


Claim.—1. In a machine for dipping animals, the combination, with a tank, of a platform and suitable raising and lowering mechanism, and a supplemental platform provided with grooves, as and for the purpose set forth.

2. In a machine for dipping animals, the combination, with a vertically-adjustable platform B, of the frame d, mounted thereon, such frame consisting of suitable uprights rounded on their upper ends and connected by longitudinal bars, as and for the purpose set forth.

3. The combination, with the platform B, of the metal frame d and the vertically-movable gate C, provided with downwardly-projecting spring-arms e, substantially as and for the purpose specified.

412,816. HARROW. WASHINGTON WILKIN, Syracuse, Ala. Filed Feb. 12, 1889. Serial No. 299,565. (No model.)



Claim.—1. In a wheel-harrow, the combination of a top frame carrying coacting levers, a tooth-frame having its rear end suspended by flexible connections from the rear lever, an intermediate frame hinged to the side of the axle and being suspended from the forward lever by flexible connections, a pair of hangers in which the side bars of said frame operate, an adjustable supporting-hook extending down from the hinged frame, and links connecting the latter to the forward end of the tooth-frame, all arranged and adapted to operate in the manner and for the purpose substantially as described.

2. In a wheel-harrow, the combination of a top frame, an intermediate frame hinged to the harrow-axle and having a depending hook in its front portion, a tooth-frame having an elongated link in its forward end, and a link connecting said depending hook and elongated link, substantially as described.

412,817. SHOT-CASE. ISAAC H. WILLIS, Marceline, Mo. Filed July 29, 1889. Serial No. 319,057. (No model.)

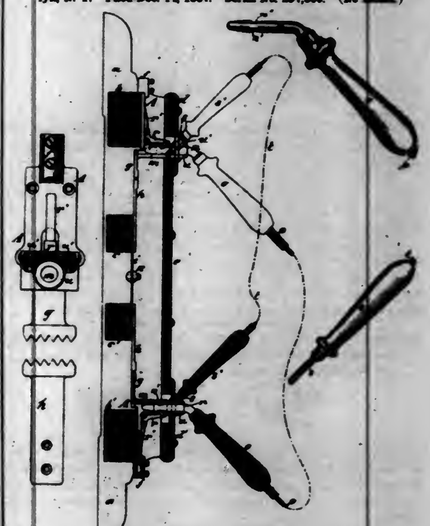


Claim.—1. The combination of the shot-case having the radial compartments, and the central tube provided at its upper and lower ends with openings communicating with said compartments, and the vertically-movable revoluble tube D, arranged in the central tube and having the openings at its upper and lower ends adapted to communicate with those of the compartments, and having the inclined chute *b*, registering with the opening at its upper end, substantially as described.

2. The shot-case having the radial compartments, and the central tube C, having openings *c c'* at its upper and lower ends into each of said compartments communicating with the upper and lower sides of the compartments, in combination with the vertically-movable tube D in said tube C, and having the hopper at its upper end, the opening *d*, forming the discharge of the hopper and adapted to register with either of the openings *c* when the tube D is lowered, and the opening *d'* at the lower end adapted to register with either of the openings *c'* when the tube D is raised, for the purpose set forth, and the discharge-chute F, attached to the shot-case and with which the lower end of tube D communicates, substantially as described.

3. The shot-case having the radial compartments, and the central tube having openings communicating with the upper and lower ends of the compartments, in combination with the vertically-movable revoluble tube D in the central compartment, and having the openings *d d'*, adapted to register with the upper and lower openings in the central tube, respectively, when the tube D is lowered and raised, the stops to limit its vertical play, and the hopper at its upper end communicating with the upper opening *d*, substantially as described.

412,818. ELECTRICAL SWITCH-BOARD. JAMES J. WOOD, Brooklyn, N. Y. Filed Dec. 14, 1887. Serial No. 257,869. (No model.)



Claim.—1. The combination, in a switch-board, of two terminals adapted to be introduced in the circuit and formed with horizontal socket-holes, with two switch-pins adapted to fit said holes, a handle fastened to each pin and projecting angularly therefrom in such direction that when the pin is in its normal position in the socket the handle inclines downwardly, and a flexible conducting loop or cable secured at each end to the pins and passing through and issuing from said handles, whereby the flexure of the cable at its junction with the handles is reduced, and by its weight it tends to hold the pins in their normal position in the sockets, substantially as and for the purpose set forth.

2. In a switch-board, the combination, with terminals or socket-heads having a socket *m* and an engaging-latch *r*, of the bent switch-pin *n*, having recess *n'*, and crank-handle *o* relatively arranged so that when the recess is in position to be engaged by said latch the crank-handle is turned downward and tends by its weight to keep the pin locked by said latch, substantially as and for the purpose set forth.

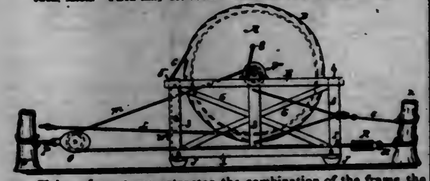
3. In a switch-board, the combination, with two sets of socket-terminals having spring-latches entering their sockets and said latches relatively inverted in the respective sets, of two switch-pins and an intervening loop or cable, with its opposite ends connected to said pins, each of said pins bent downwardly and a handle fixed on the bent portion thereof, with the cable issuing from the end of the handle, and the pins formed each with notches or recesses on both top and bottom sides for engagement by said latches, whereby the pins may be entered in the sockets of either set of terminals interchangeably, and when engaged therewith the handles project downwardly and the weight of the handles and cable tends to retain the pins in the engaging position, substantially as set forth.

4. In a switch-board, the combination of terminals or socket-heads formed with main sockets *m*, extending horizontally and with minor sockets *n'*, extending downwardly at an inclination adjacent to the main sockets, with main switch-pins to fit the main sockets, formed with handles bent downwardly, and minor switch-pins to fit the minor sockets, formed with straight handles, all combined and arranged substantially as shown and described, whereby, when the pins are inserted, the handles of the main pins project downwardly and those of the minor pins project upwardly at widely-diverging angles, so that they are readily distinguishable and accessible without interfering with one another.

5. In a switch-board, the combination, with the end brackets *a a'*, of the longitudinal bars *b b'*, marginal boards *d d'*, pin sockets or terminals fixed to bars *b b'* and projecting through said boards *d d'*, and central sliding leaf *e*, substantially as shown and described.

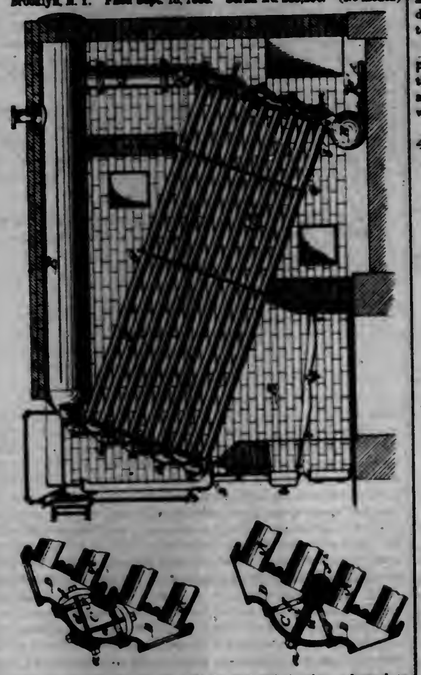
6. In a switch-board, a terminal or socket-head formed with the binder *f*, socket-tube *m*, and prong *g*, substantially as and for the purpose set forth.

412,819. STUMP-EXTRACTOR. JASPER A. WOODWORTH, Saugatuck, Mich. Filed May 16, 1889. Serial No. 310,913. (Model.)



Claim.—In a stump-extractor, the combination of the frame, the single and double blocks, the fastenings carried by said blocks, the grooved and ratcheted wheel mounted on a shaft journaled on top of the frame, the pawl, the rope having one end secured in the groove of the wheel and adapted to have power applied at its other end, and the continuous rope passing through said wheel and through the single and double blocks and adapted for winding on the shaft at each side of the wheel, substantially as shown and described.

412,820. SECTIONAL STEAM-BOILER. AMASA WORTHINGTON, Brooklyn, N. Y. Filed Sept. 13, 1888. Serial No. 285,280. (No model.)



Claim.—1. The herein-described sectional header, adapted to connect staggered tubes of a water-tube boiler in a single vertical series, as described, said header consisting of a series of inclined sections or units that receive the tubes, and a series of oppositely-inclined connecting-bends that connect the adjacent ends of said sections or units at points opposite the entrance thereto of the said tubes, said inclined sections and oppositely-inclined connecting-bends being united by seating surfaces or joints that lie in planes at the described opposite angles to the axes of the boiler-tubes connected to said sections, whereby a substantially straight-way vertical water-course is obtained.

2. In a sectional header adapted to connect staggered boiler-tubes, the combination, with the series of inclined sections thereof and oppositely-inclined connecting-bends that are united to said sections by seating surfaces or joints at angles to each other, as described, of clamping-bolts extending through the crowns of said connecting-bends to and between adjacent portions of said sections provided with lugs, said bolts having anchor-shaped heads that act upon said lugs with acting-surfaces that are convergent in the direction of draft of said bolts, whereby the contraction of the said seating-surfaces is effected in directions parallel with the axes of the openings thereof.

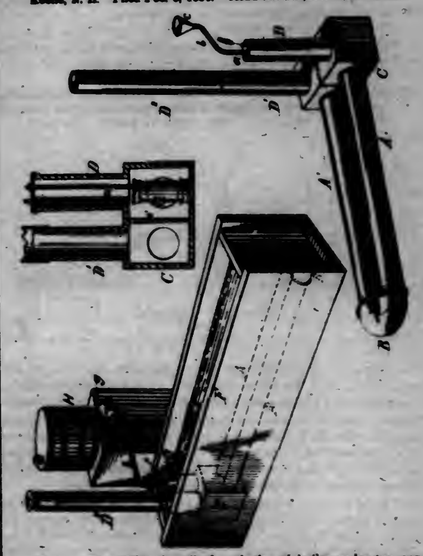
3. The combination, with the inclined water-tubes of a water-tube boiler and the vertical headers connecting the ends thereof, of a mud-drum interposed and directly connected between the lower ends of the bottom series of said inclined water-tubes and the lower ends of their adjacent headers.

4. The herein-described mud-drum, having a chambered upper portion or series of chambered portions adapted to receive and intercept the ends of the bottom series of inclined water-tubes of a water-tube boiler and the terminal openings of an adjacent series of headers, through which water-circulation is delivered to bottom series of said tubes, said chambered upper portion or portions of the drum opening vertically to the lower or main portion of the drum to permit the gravitation therein of the heavier water impurities.

5. In a water-tube steam-boiler, the combination, with the inclined water-tubes, the sectional headers having sections adapted to connect the ends of said tubes in pairs, and the connecting-bends adapted to connect said sections in vertical series, of a mud-drum having a chamber or series of chambers in its upper portion adapted to connect with a terminal series of connecting-bends of sectional headers at the rear of the boiler, a terminal series of semi-sections of said sectional headers at the front of the boiler, located opposite said drum-chambers, and a bottom series of inclined water-tubes connecting between the drum-chambers and the corresponding series of semi-sections adapted to effect a portion of the circulation through the drum.

6. In a water-tube boiler, the sectional bridge-block, as G', composed of half-sections that embrace the water-tubes by pairs, one section whereof, as *g'*, is downwardly elongated to form a hanger that is adapted, as by a cap *n'*, to embrace a third tube and to retain the same with reference to the adjacent tubes above, as set forth.

412,821. AGRICULTURAL BOILER OR HEATER. JOHN A. WRIGHT, Keene, N. H. Filed Feb. 8, 1889. Serial No. 299,217. (No model.)



Claim.—The within-described agricultural boiler or heater, consisting of the following instrumentalities in combination: a water-tank,

a fire-chamber therein provided with a pipe-coil having an outlet and also an inlet, a gauze-wire covering for this inlet, a feed-pipe leading to a fuel-cartridge, and a reservoir provided with a regulating-cock, all as specified.

412,822. BAG-HOLDER. COLUMBIA L. YATES, Upper Lisle, N. Y. Filed June 15, 1889. Serial No. 314,381. (No model.)



Claim.—1. In a bag-holder, the combination of the frame and the keepers secured on the upper side of the same and projecting inward and downward therefrom to engage over the upper edge of the bag, as set forth.

2. The combination, with the frame, of the hooks mounted vertically therein and adapted to engage the bag, and the springs arranged around the shanks of the hooks between the frame and the heads of the hooks, as set forth.

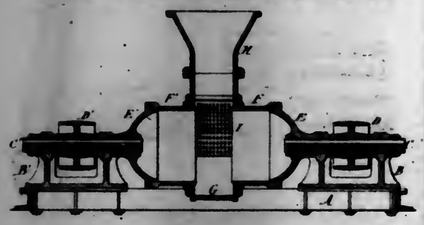
3. The combination, with the frame, of the keepers secured thereto, the guide-loops on the inner side thereof, the hooks mounted vertically in the frames and having their points playing through the said guide-loops, and the springs arranged around the shanks of the hooks between the frame and the heads of the hooks, as set forth.

4. The improved bag-holder herein described and shown, consisting of the U-shaped frame, the brackets secured to the outer side thereof, the supporting-legs pivoted to said brackets, the spring-actuated hooks mounted in the frame and adapted to engage the bag, and the keepers secured to the frame and adapted to engage over the edge of the bag, as set forth.

5. In a bag-holder, the frame, combined with the right-angled hooks mounted therein, and the springs coiled around the body of the hooks and bearing against the frame, as set forth.

6. In a bag-holder, the frame having the guide-loops on the inner side, and the spring-actuated U-shaped hooks mounted in the frame and having their points engaging the loops, as set forth.

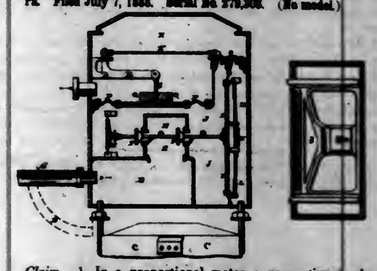
412,823. ROTARY PULVERIZER. ROBERT YATES, Omaha, Nebr., assignor to himself, and Charles Kaestner and Frank A. Hecht, both of Chicago, Ill. Filed June 7, 1888. Serial No. 276,315. (No model.)



Claim.—1. In a rotary pulverizer, the combination, with the pulverizing-chamber, the rotary cylinders F F', and the exhaust-pipe J, communicating with the pulverizing-chamber, of the concavo-convex screen I, located between the pulverizing-chamber and the exhaust-pipe to screen the material passing from the chamber to the exhaust-pipe, said screen being terminated short of the wall of the exit-passage from said chamber to form an open channel for the return of coarse material to the chamber, substantially as described.

2. In a rotary pulverizer, the combination of the non-rotating central section G, the rotary sections or cylinders F F', having concaved heads, the hopper leading into non-rotating section, the upwardly-extending exhaust-pipe J, communicating with the non-rotating section and formed with an enlarged section or separating-chamber K, and the concave-convex screen I, located at the rear of the non-rotating section between it and the exhaust-pipe, substantially as described.

412,824. PROPORTIONAL METER. FRED R. YOUNG, Pittsburg, Pa. Filed July 7, 1888. Serial No. 279,308. (No model.)



Claim.—1. In a proportional meter, a proportional valve controlling two triangular openings, which bear a determined ratio to each other, the center line of which approximately coincides with the center line of the openings, substantially as specified.

2. In a proportional meter, the combination of a receiving-chamber for the unmeasured volume of gas, an outlet-chamber from which the gas is taken, a diaphragm placed between the two chambers, and a proportional valve which is operated by the diaphragm, the larger opening of the valve being placed between the inlet and outlet chambers, and its smaller opening being placed between the delivery side of the meter and the outlet-chamber, substantially as described.

3. In a proportional meter, the combination of a meter with a regulator provided with an inlet-pipe, an outlet-chamber, and a chamber into which the gas from the meter is discharged, the inlet and the meter delivery-chambers being separated from the outlet-chamber by a proportional valve and a diaphragm which operates the valve, substantially as specified.

4. The combination, in a regulator for a proportional meter, of an inlet-chamber, a balance-valve, a diaphragm for operating this valve, a chamber into which the gas passes from the inlet-chamber, a chamber into which the gas is discharged from the meter, a proportional valve, a diaphragm which operates the proportional valve, and an outlet-chamber, substantially as shown and described.

5. In a regulator for a proportional meter, the combination of two diaphragms, a balance-valve which is attached to one of the diaphragms, and a proportional valve which is attached to the other diaphragm, the diaphragms being controlled independently of each other by the pressures of the measured and unmeasured gas, substantially as specified.

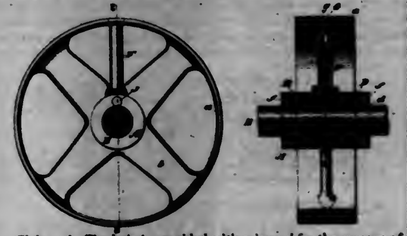
412,825. STIRRUP-STRAP LOOP. WILLIAM P. YOUNG, Bear Wallow, Ky. Filed June 12, 1889. Serial No. 314,031. (No model.)



Claim.—1. As an improved article of manufacture, the herein-described loop for stirrup-straps, the same comprising, in combination, a main or body portion substantially rectangular in form, with the lower horizontal portion slightly shorter than the upper and having its free end vertically bifurcated, and a substantially L-shaped lever provided upon its under side near the angle with a leg or extension adapted to be pivotally secured within the said bifurcated free end of the loop, the long arm of the lever resting normally upon the lower horizontal arm of the body portion and adapted to receive the loop of the stirrup-strap, substantially as described, and for the purpose specified.

2. As an improved article of manufacture, a loop for stirrup-straps, consisting of a main body substantially rectangular in contour, with one side open, and a substantially L-shaped lever pivotally secured near its angle to the outer end of the lower horizontal arm of the body of the loop, with its longer arm normally resting upon said lower horizontal arm and adapted to be normally held against said horizontal arm by the stirrup-strap, and its shorter arm normally extending vertically and partially closing the open side of the rectangle, substantially as shown and described.

412,826. LUBRICATING DEVICE FOR LOOSE PULLEYS. THOMAS R. ALMOND, New York, and LOUIS J. GROSSMAN, Brooklyn, N. Y. Filed June 26, 1889. Serial No. 315,694. (No model.)

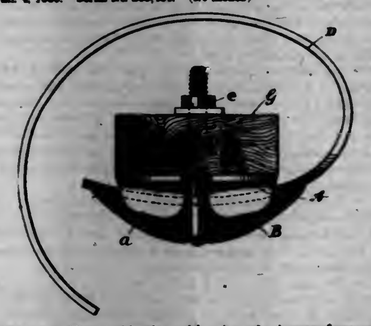


Claim.—1. The hub A, provided with a bore *d* for the passage of the shaft B, and having a longitudinal channel D open throughout its length to said bore and extending along parallel therewith, said channel being provided with absorbent material and having inclosing-walls to retain the absorbent material against displacement by centrifugal action, and a radial centrifugal collecting-chamber F, closed at its outer end, projecting from the rear wall of the channel, and opening into the channel behind the absorbent material, substantially as described.

2. The hub A, provided with a bore *d* for the passage of the shaft B, and having a longitudinal channel D extending along parallel with said bore and communicating therewith by a longitudinal slot of less width than the channel, absorbent material confined within the channel, an end plug *f* for the ready insertion and removal of said material, and a radial centrifugal collecting-chamber F, projecting from the rear wall of the channel behind the absorbent material, substantially as described.

3. The chamber F, having the threaded feed-opening provided with the funnel-shaped flaring mouth, combined with the threaded plug G, the head of said plug having a circular inner edge abutting against the inclined wall of said funnel-shaped mouth, so as to make a tight joint therewith, substantially as described.

412,827. HARROW. BYRON M. RANNEY, Ashtabula, Ohio. Filed Jan. 4, 1889. Serial No. 295,481. (No model.)



Claim.—1. The combination, with a bar of a harrow-frame and a harrow-tooth, of a base having a curved tooth-bearing surface and sides provided with vertical grooves, a cap-piece provided with a groove extending crosswise thereof communicating with the grooves of the base, and a clip-bolt and engaging-nuts, substantially as shown and described.

2. The combination, with a spring harrow-tooth and the bar of a harrow-frame, of a base having a curved tooth-bearing surface provided with vertical ribs or flanges extending lengthwise of the base, and sides provided with vertical grooves, a cap-piece provided with a groove extending crosswise thereof communicating with the grooves of the base, and a clip-bolt and engaging-nuts, substantially as shown and described.

3. The combination, with a spring harrow-tooth and a bar of a harrow-frame, of a base having a curved tooth-bearing surface and sides provided with vertical grooves, a cap-piece provided with a groove crosswise thereof, the ends of the cap-piece extending beyond the ends of the base adapted to bear against the tooth at points outside of the base, and a clip-bolt and engaging-nuts, substantially as shown and described.

4. The combination, with a spring harrow-tooth and a bar of a harrow-frame, of a base having a curved tooth-bearing surface provided with vertical ribs or flanges extending lengthwise of the same, the sides of said base being provided with vertical grooves, a cap-piece provided with a groove extending crosswise thereof, the ends of said cap-piece projecting beyond the base and adapted to bear against the tooth at points outside of the base, a clip-bolt adapted to engage with the grooves of the cap piece and base, and engaging-nuts, substantially as shown and described.

5. The combination, with a spring harrow tooth and a bar of a harrow-frame, of a base having a curved tooth-bearing surface provided with vertical ribs or flanges extending lengthwise thereof, the sides of the base being provided with vertical grooves, a cap-piece having a tooth-clamping surface curved slightly more than the tooth, and having a groove extending crosswise of the reverse side of said cap-piece, and a clip-bolt and engaging-nuts, substantially as shown and described.

6. The combination, with a spring harrow-tooth and a bar of a harrow-frame, of a base having a curved tooth-bearing surface and sides provided with vertical grooves, a cap-piece provided with a groove extending crosswise thereof, a clamping-plate, clip-bolt, and engaging-nuts, substantially as shown and described.

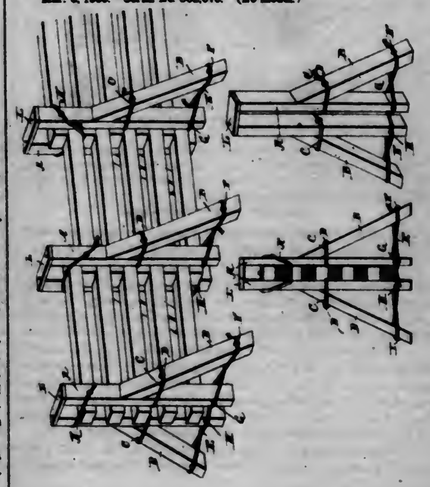
412,828. LAMP-SHADE. WALTER S. BURR, Philadelphia, Pa. Filed June 22, 1889. Serial No. 315,211. (No modelled.)



Claim.—1. An extensible-canopy lamp-shade consisting of fabric-covered ribs, the upper sections of which are inclined in a straight line from their points of connection to a top notch-ring A, to compose a dome of given dimension and contour, said ribs being from thence curved toward their terminal points to compose the section of a sphere of larger dimensions, in combination with runner-ring E and stretchers S, pivotally connected at opposite ends to said ring and ribs, substantially as described.

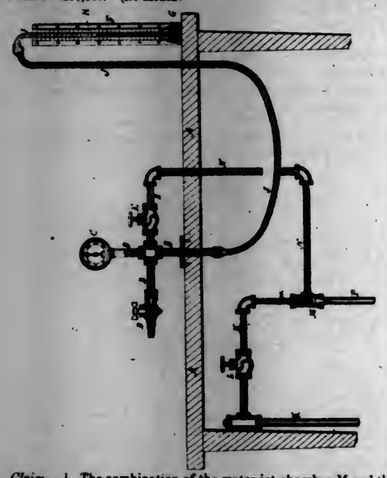
2. An extensible-canopy lamp-shade consisting of fabric-covered ribs B, bent to compose sections 1 and 2, in combination with runner-ring E, stretchers S, and vertical supporting-rods C, permanently attached at their upper ends to top notch-ring A and at their lower ends to base-ring D, said rods passing intermediately through orifices of runner-ring E; whereby as said runner-ring is moved vertically the canopy will assume varied configuration, substantially as described.

412,829. FENCE. DWIGHT H. BLAKESLEE, Stockbridge, Mich. Filed Mar. 6, 1889. Serial No. 302,070. (No model.)



Claim.—As an improvement in fences, the combination, with the herein-described posts, comprising the vertical stakes, the inclined braces, the wires twisted around and connecting the said stakes and braces near their lower ends, the wire loops encircling the upper ends of the stakes and secured to one of said stakes only, the securing-staples, and the caps secured to and connecting the upper ends of the vertical stakes, of the panel-rails arranged as herein described and resting upon the bottom wires connecting the posts and braces, substantially as herein set forth.

412,830. INSTRUMENT FOR TESTING AND GRADUATING VACUUM-GAGES. CHARLES B. BOSWORTH, Everett, assignor to the Crosby Steam Gage and Valve Company, Boston, Mass. Filed Dec. 10, 1888. Serial No. 293,077. (No model.)



Claim.—1. The combination of the water-jet chamber M and the water-jet pipe *m*, the barometric column F, the piping connecting the chamber and column, the gage attachment secured to the piping, and the valves for controlling the water-jet and the exhaust, as set forth.

2. The combination of the water-jet chamber M, the supply-pipe therefor with its valve and the jet *m*, the barometric column F, the pipes N and J, leading to the chamber and column, the cross-pipe B, and the valve E, all constructed and arranged as described.

412,831. SPIKE. LEWIS A. BOWEN, Wilmington, Del., assignor to the Diamond State Iron Company, same place. Filed Aug. 26, 1889. Serial No. 322,013. (No model.)



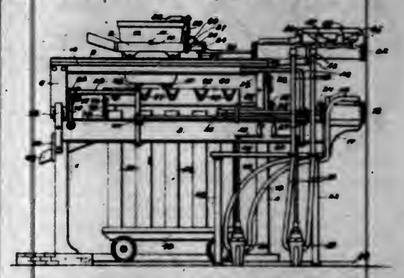
Claim.—A spike provided with a plurality of points, and a bevel-channel cut upon one side of the spike and extending at its widest part between the points and forming two oppositely-inclined chisel cutting-edges, substantially as set forth.

412,832. DEVICE FOR CASTING INGOTS. THOMAS BRADY, South Chicago, Ill. Filed May 6, 1889. Serial No. 309,810. (No model.)

Claim.—1. In an ingot-plant, the combination of the converters, the receiving-cranes, the center or distributing crane, the frames arranged concentrically with said center crane and supporting the longitudinally and transversely adjustable ladle-carriers, and means for adjusting the latter, substantially as and for the purpose herein set forth.

2. In an ingot-plant, the combination of the converters, the receiving-cranes, the center or distributing crane, the frames arranged concentrically with the latter and supporting the longitudinally and transversely adjustable ladle-carriers, the tracks arranged between the sides of the respective frames, and the cars or carriages supporting the molds, substantially as and for the purpose herein set forth.

3. The combination of the supporting-frame, the transversely-movable carriage, the hydraulic cylinder arranged longitudinally with relation to the frame, the bell-crank levers mounted in bearings attached to the frame, the rod or bar connecting the laterally-extending arms of said bell-crank levers, the pitman connecting said rod or bar with the piston-rod of the hydraulic cylinder, and the pitmen connecting the longitudinal arms of the bell-crank levers with the transversely-movable carriage at points near the front and rear ends of the latter, substantially as and for the purpose set forth.



4. The combination, with the supporting-frame, of the transversely-movable carriage, the ladle-carrier arranged to move longitudinally upon said carriage, the hydraulic cylinder mounted upon said transversely-movable carriage, the piston-rod having its front end connected detachably with the ladle-carrier, and the flexible or swivel-jointed pipes connecting the front and rear ends of the said cylinder with a stationary valve-case, substantially as herein described, and for the purpose set forth.

5. The combination, with the supporting-frame, of a transversely-movable carriage, a hydraulic cylinder mounted upon said carriage and connected by swivel-jointed pipes with the stationary valve-case, the ladle-carrier arranged to move longitudinally upon the transversely-movable carriage, the piston-rod provided with a yoke at its front end and having downwardly-extending brackets adapted to ride upon the track of the ladle-carrier, and means, substantially as described, for connecting the said yoke detachably with the ladle-carrier, as and for the purpose set forth.

6. The ladle-carrier provided with bearings for the trunnions of the ladle and having a pivoted frame in which is journaled a worm-shaft equipped with a ratchet-lever, in combination with the ladle, one of the trunnions of which is provided with a worm-gear, substantially as and for the purpose set forth.

7. The combination of the ladle-carrier, a frame mounted pivotally upon one of the side beams of the same and provided with a lever or handle and a pair of laterally-extending brackets, a worm-shaft journaled in the said brackets and provided with a ratchet-lever, a pair of stops extending from the side beam of the ladle-carrier to retain the lever or handle of the pivoted frame in position, and the ladle having a worm-gear attached to one of its trunnions, substantially as and for the purpose herein shown and specified.

8. The combination, with the ladle mounted in a carrier longitudinally adjustable upon a transversely-movable carriage, of a trough or runner mounted adjustably on a horizontal plane below said ladle and having a series of spouts adapted to register with the molds or flasks, substantially as and for the purpose herein set forth.

9. The combination, with the tilting ladle mounted upon a longitudinally and transversely adjustable carrier, as herein described, of the trough or runner mounted adjustably below the said ladle and provided at its front end with a dam and an inclined slag-spout, substantially as herein described, and for the purpose set forth.

10. The herein-described runner, consisting of a longitudinal trough the sides of which are provided with spouts having dams or skimmers, said trough being provided at its front end with a dam for the overflow of slag and with a downwardly-extending bracket to which is connected an inclined slag-spout, substantially as and for the purpose set forth.

11. The combination of the supporting-frame, the U-shaped brackets attached to the front and rear cap-beams of the same, the runner supported upon the said brackets, and a lever connected pivotally with the said runner and fulcrumed in a staple upon one of the side beams of the frame, substantially as and for the purpose set forth.

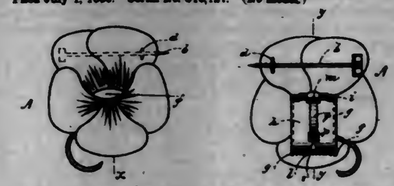
12. The combination of the supporting-frame, the U-shaped brackets attached to the front and rear cap-beams of the same, and the runner supported in said brackets and having downward-extending studs to limit its longitudinal movement, substantially as set forth.

13. The combination of the supporting-frame, the U-shaped brackets attached to the front and rear cap-beams of the same, the runner mounted in the said brackets, a rock-shaft journaled in bearings upon one of the side beams of the frame and having laterally-extending arms, links connecting the ends of said arms with one side of the runner, and a lever pivoted to the side of the latter and fulcrumed in a staple upon one of the side beams of the frame, substantially as and for the purpose set forth.

14. The combination, with a ladle and adjusting mechanism for the same, substantially as herein described, of the longitudinally and transversely adjustable runner, the lever for manipulating the same, and the cars provided with molds or flasks arranged in position to correspond with the spouts extending laterally from the sides of the runner, substantially as and for the purpose set forth.

15. The combination of the supporting-frame, the transversely-movable carriage having the longitudinally-movable ladle-carrier and provided with staples or eyes upon its under side, and the guides attached to the supporting-frame and extending through the said eyes or staples, substantially as and for the purpose herein shown and specified.

412,833. BOUQUET-PIN. WILLIAM A. BRENEA, Boston, Mass. Filed July 1, 1889. Serial No. 316,127. (No model.)

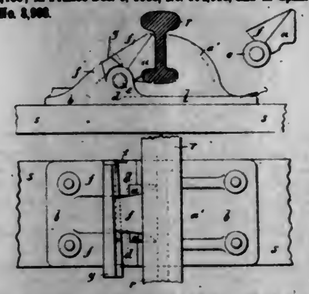


Claim.—1. In a bouquet-pin, a body having a flower-opening and attaching-pin, a clamp secured to the rear of said body, comprising a hinged toothed plate, and a flat spring having one end detachably disposed in a slot in said hinge and its opposite end at the free end of said lid, substantially as described.

2. In a bouquet-pin, a clamp comprising guide-plates secured to the pin-body at each side of its flower-opening, a toothed lid hinged to said plate, an attaching-pin, and a detachable flat spring having an end projecting into a slot in the plate-hinge, its opposite end resting on a stud at the free end of said lid, substantially as described.

3. In a bouquet-pin, the body A, having the opening *f* and pin *b*, in combination with the guide-plates *g*, lid *h*, hinged at *i* and having the stiffening-piece *t*, slot *p*, and lip *r*, the spring *q*, and hinge-slot *m*, all being arranged to operate substantially as described.

412,834. COUPLING FOR PERMANENT WAYS. ROBERT CARDWELL, Liverpool, and SAMUEL WARNE, Manchester, County of Lancaster, England. Filed Apr. 23, 1889. Serial No. 308,182. (No model.) Patented in England June 6, 1888, No. 8,176; in Belgium Dec. 5, 1888, No. 84,186; in France Dec. 6, 1888, No. 194,610, and in Spain Dec. 17, 1888, No. 8,966.



Claim.—In single and joint railway-chairs secured to or formed with a sleeper, the hinged jaw *a*, in combination with a metal wedge *g*, driven between the same and the projections *f*, formed on the base *b* of the chair, substantially as and for the purpose specified.

412,835. LIQUID DIGESTIVE COMPOUND. JOHN CARBRICK, New York, N. Y. Filed June 22, 1889. Serial No. 315,205. (No specimens.)

Claim.—1. A liquid compound adapted to cause the digestion and absorption of fats, containing a fluid extract of pancreas and bile mixed in suitable proportions.

2. A liquid compound adapted to cause the digestion and absorption of fats, containing suitable proportions of a fluid extract of pancreas, bile, and alcoholic preservative.

3. A liquid compound adapted to cause the digestion and absorption of fatty matter, containing a fluid extract of pancreas, purified bile, an alcoholic preservative, sugar, and suitable flavoring substances.

412,836. PREPARING DIGESTIVE COMPOUNDS. JOHN CARBRICK, New York, N. Y. Filed June 22, 1889. Serial No. 315,204. (No specimens.)

Claim.—1. The process of preparing a compound for causing the digestion and absorption of fats, albuminous and starchy matters, which consists in treating pancreas or sweet-breads with alcohol and pressure to remove the fatty matter, then agitating the resulting pancreatine in water to form a watery pancreatic solution, purifying bile by treating it with alcohol, filtering through charcoal, and drying, then mixing the bile with a watery solution of pancreas and a suitable preservative.

2. In the manufacture of a digestive compound, the herein-described method of preparing the watery solution of pancreas used therein, which consists in removing the fatty matter from the pancreas or sweet-breads first by mechanical means, then by maceration of the comminuted pancreas in alcohol and subjecting it to pressure, then agitating the resulting fibrous pancreatine in water to impregnate the water with pancreatic extract.

3. In the manufacture of a digestive compound, the herein-described method of preparing the pancreatine used therein, which consists in removing the fatty matter from pancreas or sweet-breads by macerating the comminuted pancreas in alcohol, then subjecting it to pressure to squeeze out the moisture and fat, and then drying to preserve it.

412,837. DIGESTIVE COMPOUND. JOHN CARBRICK, New York, N. Y. Filed June 22, 1889. Serial No. 315,205. (No specimens.)

Claim.—1. A dry digestive compound composed of powdered pancreatine and powdered bile.

2. A powdered digestive compound adapted to cause the digestion of fats, albuminous substances, and starchy matter, composed of powdered pancreatine and bile and inclosed in capsules or formed into pills, and having a coating adapted to resist the acid action of fluids in the stomach.

3. A digestive ferment compound adapted to cause the digestion and absorption of fatty matter and albuminous substances, and to convert starchy matter into an assimilable condition, coated with a substance that will resist the acid action of the stomach-fluids, but which will be readily dissolved in the alkalies secretions which flow into the intestinal canal.

412,838. MEDICAL COMPOUND. JOHN CARBRICK, New York, N. Y. Filed June 22, 1889. Serial No. 315,206. (No specimens.)

Claim.—1. A medical compound containing caffeine, phosphoric acid, and an antipyretic, as antipyrene or antifebrine.

2. A granular effervescing compound containing, as active ingredients, caffeine, phosphoric acid, and an antipyretic, such as antipyrene or antifebrine.

3. A medical compound in the nature of a sedative, nerve, and brain food, containing caffeine, phosphoric acid, an antipyretic, as antipyrene or antifebrine, and one or more sedatives, as extract of celery and sodium or potassium bromide.

4. A granular effervescing medical compound in the nature of a sedative, nerve, and brain food, containing caffeine, phosphoric acid, an antipyretic, as antipyrene or antifebrine, extract of celery, and sodium or potassium bromide.

412,839. PREPARED FOOD FOR INFANTS AND INVALIDS. JOHN CARBRICK, New York, N. Y. Filed Aug. 22, 1889. Serial No. 321,640. (No specimens.)

Claim.—1. The process of preparing a milk-food, which consists in removing from sweet milk a portion of the butter-fat and adding to the milk a suitable proportion of cocoa-butter, then partially digesting the milk and preparing the added cocoa-butter for assimilation by means of a digestive ferment, then arresting the digestive process by increasing the temperature and evaporating the mixture to dryness.

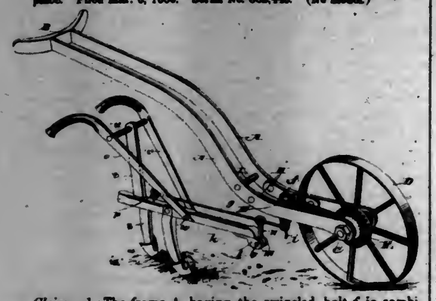
2. The process of preparing powdered milk-food, which consists in removing from the milk a portion of its natural fat and substituting therefor a suitable proportion of cocoa-butter, also adding a suitable quantity of milk-sugar, then partially digesting the milk and preparing the cocoa-butter for assimilation by means of a digestive ferment at the proper temperature, then raising the temperature for arresting the digestive process and rendering the product sterile and evaporating the mixture to dryness, and finally reducing to a powder.

3. As a new article of manufacture, partially-digested milk and cocoa-butter.

4. As a new article of manufacture, granular or powdered partially-digested milk and cocoa-butter.

5. An article of manufacture composed of partially-digested milk from which part of the natural fat has been removed, cocoa-butter, and added milk-sugar.

412,840. GARDEN PLOW, CULTIVATOR, &c. CORNELIUS COLLINS, Albia, Iowa, assignor of one-half to George W. McBurney, same place. Filed Mar. 8, 1889. Serial No. 302,442. (No model.)



Claim.—1. The frame A, having the swiveled bolt *f*, in combination with the rod *g*, passed through an eye at the lower end of the bolt and having the hook or stop at its front end, the beam carrying the implement to act on the soil and having its rear end loosely connected to the rear end of said rod, and the link-arm having its upper end loosely connected to and adapted to slide longitudinally on the rod and its lower end pivotally connected to the lower end of the frame, substantially as described.

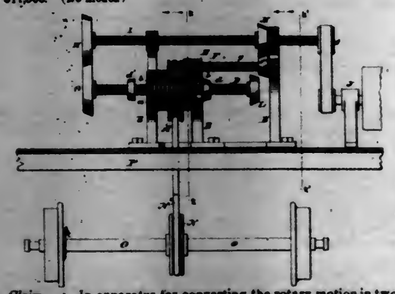
2. The frame comprising the parallel compound curved bars A, the yoke B, connecting the rear ends of the said bars, the shaft connecting the front ends of the bars, and the driving and supporting wheel mounted on said shaft, substantially as described.

3. The frame having the swiveled bolt *f*, the rod *g*, connected at its front end to said bolt and arranged at right angles thereto, and the beam carrying the implement to act on the soil, said beam being pivotally and loosely connected to the rod *g*, so as to slide thereon, as set forth.

4. The frame having the wheel D and bars A, combined with the beam carrying the implement to act on the soil, the swiveled bolt *f* on the frame-bars A, the beam of the implement being connected to the bolt *f*, as set forth.

5. The frame comprising the parallel bars A, shaped and curved substantially as shown, and having the curved yoke B connecting their rear ends, the wheel D, journaled between their front ends, and the casting F, connecting the bars A in rear of the wheel and providing a bearing for a pivot-bolt, to which the implements are connected, as set forth.

412,841. MECHANICAL MOVEMENT. JOSEPH I. COGHLIN, Brooklyn, assignor of five-eighths to Ed. Hueretel, New York, N. Y., and Wm. Hy. Rushforth, Rutherford Park, N. J. Filed July 15, 1889. Serial No. 317,568. (No model.)



Claim.—1. In apparatus for converting the rotary motion in two directions of the shaft O into rotary motion in but one direction of the shaft I, the combination of said shafts O I with the threaded longitudinally-movable shaft D and the internally-threaded pulley A, through which the shaft D passes, means, substantially as described, for preventing lateral movement of said pulley, and with two sets of gearing between the shafts D and I, arranged so that when the shaft D is in one position it will actuate one set of gearing and when in another position it will actuate the other set of gearing, as and for the purpose described.

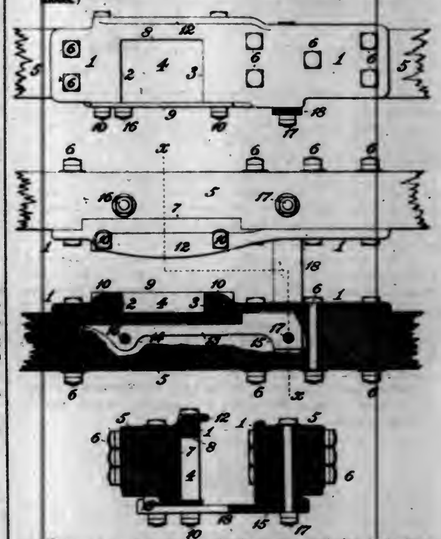
2. In apparatus for converting the rotary motion in two directions of the shaft O into rotary motion in but one direction of the shaft I, the combination of said shafts O I with the threaded longitudinally-movable shaft D, internally-threaded pulley A, through which the shaft D passes, means, substantially as described, for preventing lateral movement of said pulley, and with the intermediate shaft *g*, all arranged for operation substantially as described.

412,842. CARPET-STRETCHER. CHARLES F. COOPER, Cedar Rapids, Iowa, assignor of one-half to John W. Cooper, Mount Vernon, Dak. Filed May 16, 1888. Serial No. 274,065. (No model.)



Claim.—In a carpet-stretcher, the combination of the head A, having stirrup A', forming a bearing for the smooth upper face of the hook-bar, and lug *d* and teeth *e e*, the hook-bar B, having notches on the under side, the handle C, pivotally connected with the head, and the pawl D, pivoted to the handle above said bar, having the catch *b*, substantially as and for the purpose set forth.

412,843. DRAW-BAR STOP FOR RAILROAD-CARS. GEORGE W. COMBS, Omaha, Nebr. Filed July 27, 1889. Serial No. 318,393. (No model.)



Claim.—1. A draw-bar stop having an integral plate or body, a draw-bar pocket provided with front and back stops or abutments at its opposite ends, holes for draft-timber bolts in front and in rear of said stops, and a tenon or projection formed on the side of the plate which abuts against the draft-timber and constituting the inner wall of the draw-bar pocket, substantially as set forth.

2. A draw-bar stop having an integral plate or body, and a draw-bar pocket provided with front and back stops or abutments at its opposite ends, and a draw-bar-guide face at its top, substantially as set forth.

3. A draw-bar stop having an integral plate or body, a draw-bar pocket provided with front and back stops or abutments at its opposite ends, holes for draft-timber bolts in front and in rear of said stops, and upper and lower horizontal ribs, substantially as set forth.

412,844. WATCH-BOW FASTENER. HENRY RABY and FRED L. TURNER, Birmingham, County of Warwick, England. Filed Sept. 3, 1888. Serial No. 284,484. (No model.)



Claim.—In combination, a watch-bow having headed ends integral therewith, a pendant provided with side slots extending from the edge thereof and adapted to engage the necks of the bow, and a removable filling-up piece fitting in the pendant and provided with projecting parts which fit in the side slots and secure the end of the bow therein, all substantially as set forth.

412,845. PUSH-BUTTON. GEORGE R. BLY, Rochester, N. Y., assignor to Louis T. Riggs, same place. Filed Mar. 6, 1889. Serial No. 302,053. (No model.)



Claim.—1. As an article of manufacture, a button adapted for use in electrical push-buttons, constructed of two sheet-metal sections, one having a rib or projection at the sides for co-operating with the casing, and the other sliding within the former and secured to it at the side below the operating portion by readily-fusible material, and a spring under compression contained within and between said sections, substantially as described.

2. As a new article of manufacture, a button adapted for use in electrical push-buttons, constructed of two telescoping sections, the outer one having a projection or rib for co-operating with the casing, and having a slot in the side, a spring under tension between the sections, and fusible solder connecting the sections placed in the slot in the outer one, substantially as described.

3. The combination, with the stationary and spring contacts forming the terminals of an electrical circuit and the casing for the same having an opening therein, of the button constructed in two parts, the outer one having a projection on its sides arranged to co-operate with the sides of the casing-aperture, and the inner one operated upon by the contact-spring and connected to the side of the other by fusible solder, and a spring under compression between the two sections, substantially as described.

4. As an article of manufacture, a button for use in electrical push-buttons, consisting of the two sections, one having a projection at the sides for co-operating with the casing, and the other adapted to slide within it having the rib or projection with which the first-mentioned section co-operates, said sections being connected at the side by fusible solder, and a spring under compression arranged within and between said sections, substantially as described.

412,846. ATTACHMENT FOR JOB-PRESSES. DAVID W. GLENDENNING and FRANK W. GLENDENNING, Leavenworth, Kans., assignors to said David W. Glendenning and Princess H. Fay, same place. Filed Mar. 29, 1889. Serial No. 305,204. (No model.)

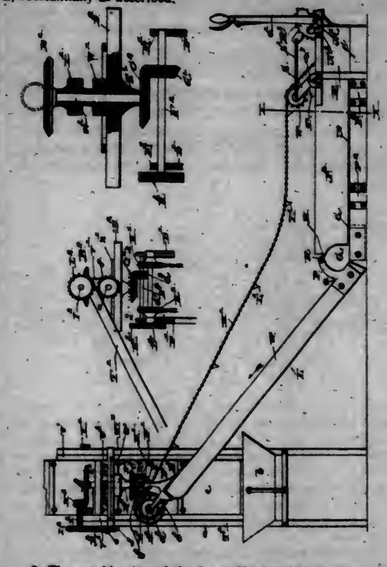


Claim.—1. The herein-described throw-off and impression regulator for printing-presses, consisting of the throw-off lever, the two-part adjustable connecting-rod, the handle for adjusting said parts, the rock-shaft connected to one of said parts, and the bell-crank lever and eccentric arranged and operating substantially as and for the purpose described.

2. The combination, with the throw-off mechanism of a printing-press of the character described, of an impression-regulator consisting of the two-part connecting-rod Q U, screw-threaded together, as described, and provided with the swiveled block *b*, the throw-off lever connected to said block, and the regulating-handle for adjusting the rod Q U, substantially as and for the purpose described.

412,847. CORN-CONVEYER. JOHN HEALEA and GEORGE G. HEALEA, La Rey, Ill., assignors of one-half to William Hammond, same place. Filed Oct. 3, 1888. Serial No. 287,048. (No model.)

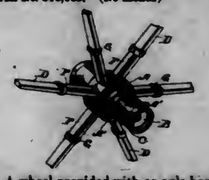
Claim.—1. The combination of the trough A, the wheels Y at the outer ends thereof, the wheels Z, journaled at the inner end of said trough, the trough L, hinged to the inner end of trough A, the wheels H' at the outer end of trough L, the pivoted standards S near the outer end of trough A, the wheels W, having their bearings in the said standards, the endless carrier connecting the wheels Y, Z, H', and W, and the lever connected to the standard S, whereby the latter may be inclined to any desired position to tighten or loosen the endless carrier, and thereby adjust the latter to suit the inclination of the trough L, substantially as described.



2. The combination of the frame U, adapted to be secured to a corn-shelling machine, the beam or plate D^2, pivoted to said frame and having the bearings E^2, the shaft F^2, having the wheel H^2, the vertical shaft A^2, journaled in frame U and geared to the shaft F^2, the shaft I^2, journaled in frame U and geared to the shaft A^2, the troughs A L, hinged together, the latter having the standards or arms D', adapted to be hinged to shaft F^2, the shaft G' in bearings in the outer end of trough L and having the sprocket-wheels H' and the gear I', the latter meshing with wheel H^2, the wheels Z at the inner end of trough A, the wheels Y at the outer end thereof, the pivoted arms S, the wheels W, having their bearings in said arms, the endless chains connecting the wheels H', Y, Z, and W, the flights connecting said chains, and means, substantially as set forth, to adjust the arms or standards S to any desired position, substantially as described.

3. The combination, with the shaft I^2, journaled in the corn-sheller frame and connected to the driving-shaft of the sheller, the shaft A^2, geared to the shaft I^2, the beam D^2, swiveled on said shaft, and the bearings E^2, of the shaft F^2, journaled in said bearings and geared to the shaft A^2, and the corn-conveyer having one end hinged to the bearing E^2 and having the endless carrier, the latter being geared to and operated by the shaft F^2, substantially as described.

412,848. WHEEL. WILLIAM J. HOLLAND, Bra, Tex. Filed July 6, 1889. Serial No. 316,663. (No model.)



Claim.—1. A wheel provided with an axle-box having the lateral flanges *b* at its sides and the annular flanges *b'* at its ends, substantially as described.

2. The combination, in a wheel, of the hub, the spokes, the metal braces arranged on each side of the spokes and having enlarged or wedge-shaped lower ends, and bands securing the upper ends of the braces, substantially as described.

3. A wheel comprising the sectional hub, the bands securing the sections together, the axle-box having the annular flanges *b'* and the lateral flanges *b*, wedge-shaped in cross-section, and the spokes wedged from the inside of the hub, and the metal braces having their lower ends enlarged, substantially as described.

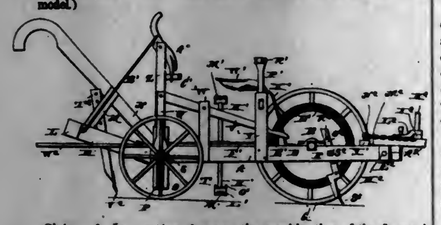
412,849. LUBRICANT BEARING. PHILIP H. HOLMES, Gardiner, Me. Filed Mar. 6, 1889. Serial No. 302,125. (No specimens.)

Claim.—1. The herein-described composition of matter, consisting of plumbago, combined with wood fiber, in substantially the proportion specified, to form one homogeneous mass, substantially as set forth.

2. The herein-described composition of matter, consisting of plumbago, wood fiber, and sulphuric acid, substantially as set forth.

3. The herein-described composition of matter, consisting of plumbago, combined with wood fiber, sulphuric acid, and sizing, substantially as set forth.

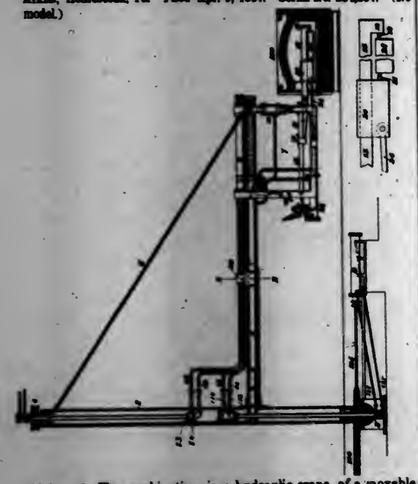
412,850. COTTON CHOPPER AND CULTIVATOR. GEORGE W. HUTTO, Granbury, Tex. Filed Mar. 5, 1889. Serial No. 301,900. (No model.)



Claim.—1. In a cotton-chopper, the combination of the frame A B C, the forwardly-extending side bars D, the axle journaled on the latter and having a bevel-wheel, the longitudinal shaft journaled in a pivotal bearing upon the rear frame-beam and having its front end journaled in a box sliding upon the front frame-beam, mechanism for adjusting said sliding box, a pinion upon the front end of the longitudinal shaft, the chopping-hoes mounted upon the latter, and the frame jointed to the rear frame-beam and carrying the plows, substantially as set forth.

2. The combination, with the frame, of the beams D, projecting forward therefrom, the cross-bar Y', connecting said beams and having the hook Z' on its front side, the tongue having the recess and cross-pin engaging said hook, the cross-bar D^3, and the draft-irons E^2, attached to said cross-bar and having the ears F^2 and the bolts pivoting said ears to tenons on the front ends of the beams D, substantially as set forth.

412,851. HYDRAULIC CRANE. JULIAN KENNEDY and HENRY AIKEN, Homestead, Pa. Filed Apr. 9, 1887. Serial No. 234,297. (No model.)



Claim.—1. The combination, in a hydraulic crane, of a movable racking-cylinder mounted on the jib, a carriage provided with lifting devices suspended on the racking-cylinder, and valves for controlling the movements of the racking-cylinder mounted on the carriage, substantially as and for the purposes described.

2. The combination, in a crane, of a hydraulic motor comprising a racking-cylinder and plunger mounted on a jib, a carriage moved along said jib with the moving element of the motor, lifting devices carried by the carriage, and valve-operating mechanism also carried thereby and controlling the racking-cylinder, substantially as and for the purposes described.

3. The combination, in a crane, of a hydraulic motor comprising a racking-cylinder and plunger mounted on a jib, a carriage moved with the moving element of the motor, hydraulic lifting devices carried by the carriage, and valves also carried by the carriage and controlling the lifting devices and the racking-cylinder, substantially as and for the purposes described.

4. The combination, in a hydraulic crane, of a cylinder and mechanism operated thereby for rotating the crane, a jib, a carriage mounted upon said jib, circulating-pipes extending from the cylinder to the carriage and return, and a valve for said circulating-pipes located upon the carriage, substantially as and for the purposes described.

5. The combination, in a hydraulic crane, of a mast and jib, a carriage supported on the jib, lifting devices mounted on the carriage, a hydraulic cylinder for raising and lowering said lifting devices, a hydraulic cylinder for advancing and withdrawing them, valves mounted on the carriage for controlling said cylinders, and circulating-pipes extending along the jib to said valves and connecting the same with the source of supply and with the exhaust, substantially as and for the purposes described.

6. The combination of the jib, the stationary piston, the movable racking-cylinder, a carriage supported on the racking-cylinder, a valve to control the racking-cylinder placed on the carriage, and circulating-pipes extending from said valve to the opposite ends of the cylinder, substantially as and for the purposes described.

7. The combination of the jib, the stationary piston and stationary main circulating-pipes supported on the jib, a movable racking-cylinder having also chambers through which the circulating-pipes extend and with which they communicate, a carriage moved with the racking-cylinder and supporting the valve thereof, pipes connecting said valve with said chambers, and pipes connecting the valve with the opposite ends of the racking-cylinder, substantially as and for the purposes described.

8. The combination of the rotating mast, the jib, the movable racking-cylinder on the jib, having also four chambers or water-channels through which the circulating-pipes extend, a stationary piston and four stationary circulating-pipes, a cylinder at the foot of the mast for turning the same, circulating-pipes extending from the opposite ends of the turning-cylinder to two of the stationary circulating-pipes on the jib, main circulating-pipes extending to the other two stationary pipes, a carriage moved with the racking-cylinder and supporting the valves which control the mast-turning cylinder and the racking-cylinder, pipes connecting said valves with the chambers in the racking-cylinder, and pipes connecting one of the valves with the opposite ends of the racking-cylinder, substantially as and for the purposes described.

9. The combination of the mast and jib with main supply and waste pipes leading down the mast and out along the jib, a racking-cylinder supported on the jib with which the said pipes connect, a carriage supported on the jib and actuated by the racking-cylinder, a valve for controlling the operation of said cylinder placed on said carriage, and lifting devices supported by the said carriage, substantially as and for the purposes described.

10. The combination, in a hydraulic crane, of the jib, a movable carriage mounted on the jib, a pivoted horizontal lifting-bar mounted on the carriage, a hydraulic cylinder for raising the lifting-bar, and a valve and suitable water-connections with the cylinder and the source of water-supply, substantially as and for the purposes described.

11. The combination of the carriage, the pivoted lifting-bar having an end projection, with a sliding gripper, and a cylinder with suitable water-connections and valve to operate such sliding gripper, substantially as and for the purposes described.

12. The combination, with a crane and the jib, of a horizontal lifting-bar upheld by the jib and having a gripper at the end thereof, power devices for lifting said bar, and power devices for moving the bar horizontally along the jib, substantially as and for the purposes described.

13. The combination, in a crane, of the pivoted lifting-bar having a lateral projection or extension at the outer end with a reciprocating slide, which projection and slide constitute the gripping mechanism of the crane and act in conjunction to seize and hold the burden between them, substantially as and for the purposes described.

14. The movable carriage having mounted thereon and in combination therewith the pivoted lifting-bar and a hydraulic cylinder for giving it a short vertical oscillation, a sliding gripper capable of acting in conjunction with the lifting-bar to grip the load, a hydraulic cylinder for actuating the sliding gripper, and valves having suitable water-connections with the source of water-supply and the said cylinders for the purposes of governing the operation of the cylinders, substantially as and for the purposes described.

15. The combination of a series of two or more double-acting hydraulic piston-valves, a single shell having individual chambers within which the valves are mounted, common waste-passages formed in the shell at each end of the valves, a common supply-passage formed in the shell, and independently-operating actuating-levers whereby any one of a number of hydraulic motors may be operated from a common supply without operating the remainder, substantially as and for the purposes described.

16. The combination, with two or more double-acting hydraulic piston-valves within a single chamber or shell and having independently-operated actuating-levers, of common supply and waste passages whereby any one of a number of hydraulic cylinders may be operated from a common supply without operating the remainder, substantially as described.

17. The combination of two or more double-acting hydraulic valves 31 within a single chamber or shell, having independently-operated actuating-levers, a common distributing inlet-passage 38, to which the common supply-pipe is connected, a common waste or exit passage 43, to which the common waste-pipe is connected, and separate annular passages 39 for each valve at opposite sides of the common passage 38, which are connected with the service-pipes of the cylinder controlled by the valve, substantially as and for the purposes described.

18. The combination of the fixed piston and movable racking-cylinder with the fixed circulating-pipes extending through longitudinal water-ways in the sides of the racking-cylinder and communicating therewith by means of perforations formed in said pipes near the limit of the inner movement of the cylinder, and suitable connections connecting the water-ways with the valve or valves by which the water is controlled, substantially as and for the purposes described.

19. In combination with the jib, the movable racking-cylinder having water-ways extending longitudinally through its sides, fixed circulating-pipes extending through said water-ways and supported beyond the ends of the cylinder, said pipes communicating with the water-ways by perforations in their sides, and suitable connections connecting the water-ways with the valve or valves by which the water is controlled, substantially as and for the purposes described.

20. In a crane, the combination, with the upright mast having a top journal, of an annular bearing having a spherical outer surface and a top steadiment having a concave seat in which the spherical bearing may move, substantially as and for the purposes described.

21. In a crane, the combination of the upright mast having a top journal, removable annular bearing having a spherical outer surface, and a top steadiment having a concave seat for the bearing, said mast having an enlargement below the top steadiment, substantially as and for the purposes described.

22. The combination, in a hydraulic crane, of a rotating mast having circulating-pipes extending through the same with stationary non-rotary supply and waste pipes connected therewith by intermediate chambers, substantially as and for the purposes described.

23. The combination of the rotating mast provided with circulating-pipes, one within the other, a cylinder or casing 98, having chambers 91 and 94, with which the said pipes respectively communicate, and a cupped follower 102 in the chamber 94, said follower bearing on the packing of one of the circulating-pipes and being perforate to afford passage of fluid therethrough, substantially as described.

24. In a crane, an upright rotary mast having a top journal of small diameter and an adjoining thicker portion, in combination with a top steadiment having a thick metal skirt extending down around the said thicker portion, substantially as and for the purposes described.

25. The combination of the mast having a hemispherical foot in which it is stepped with a base-plate having a concave socket for receiving said foot, said socket being provided with a strong rim extending up above the foot, and a gear-wheel upon the mast, the hub of said gear-wheel extending within said rim, substantially as and for the purposes described.

26. The combination of the hollow rotating mast, the base-plate, two circulating-pipes, one within the other, rigidly attached to the base-plate, the inner and smaller one extending beyond the ends of the outer one, a cylinder attached to and rotating with the mast, chambers provided with stuffing-boxes within the cylinder, in which the ends of the pipes terminate; chambers in the base-plate in which the lower ends of the pipes terminate, pipes leading from the upper chambers to the controlling-valve, pipes leading from the lower chambers to a hydraulic cylinder, and gearing intermediate between the hydraulic cylinder and mast for rotating the latter, substantially as and for the purposes described.

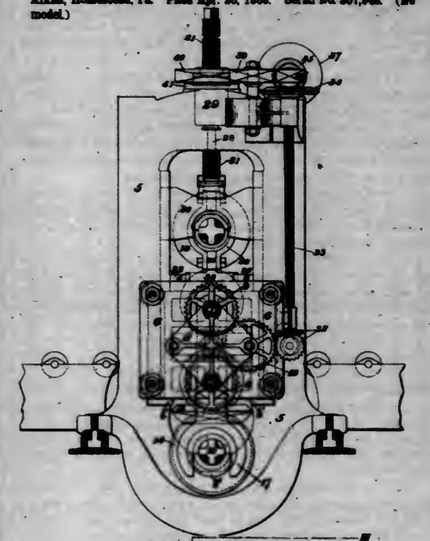
27. The combination, in a hydraulic crane, of a motor comprising a racking-cylinder and plunger mounted on a jib and a carriage provided with lifting devices suspended directly from the moving element of the motor and movable therewith, substantially as and for the purposes described.

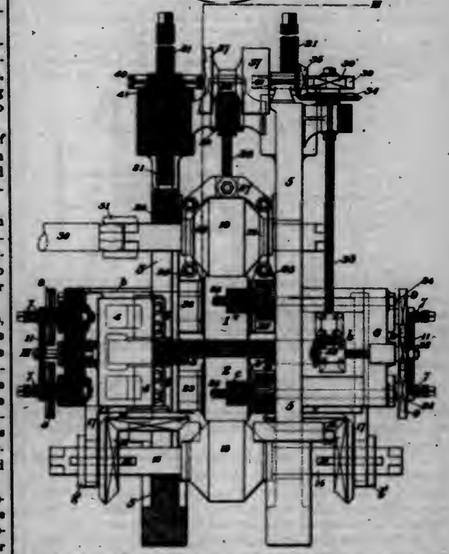
28. In a crane, the combination, with an upright mast having a top journal, of an annular bearing within which the top journal is revoluble, said annular bearing having a spherical outer surface, and a top steadiment having a concave seat within which the spherical annular bearing is rotatory, substantially as and for the purposes described.

29. In a crane, an upright mast having at the base a spherical foot set in a correspondingly-shaped socket and at the upper end a spherical bearing having a concave seat, substantially as and for the purposes described.

30. The rotatory mast having at its foot a spherical bearing in which it is revolably stepped and a concave socket in which the said bearing is journaled, substantially as and for the purposes described.

412,852. ROLLING-MILL. JULIAN KENNEDY, Latrobe, and HENRY AIKEN, Homestead, Pa. Filed Apr. 30, 1888. Serial No. 307,948. (No model.)





Claim.—1. The combination of a forming-roll, an upper driving-roll upheld thereby, and a counter-balance supporting the bearings of the forming-roll, substantially as and for the purposes described.

2. The combination of a forming-roll, an upper driving-roll upheld thereby, a counter-balance, and hangers encircling the necks of the driving-roll and connected with the bearings of the forming-roll, substantially as and for the purposes described.

3. The combination of a forming-roll, an upper driving-roll upheld thereby, a counter-balance supporting the bearings of the forming-roll, and adjusting-screws for the driving-roll, substantially as and for the purposes described.

4. In a universal mill, the combination of vertical rolls, short-necked horizontal rolls, outer driving-rolls, and a counter-balance connected with the bearings of the upper short-necked roll, and supporting it, together with the driving-roll, substantially as and for the purposes described.

5. The combination of a forming-roll, an upper driving-roll upheld thereby, a counter-balance, a cross-head 27, and hangers encircling the necks of the driving-roll and connected with the bearings of the forming-roll, substantially as and for the purposes described.

6. The combination, with the housings and the rolls, of separators interposed between the housings and having between them the bearings of the rolls, substantially as and for the purposes described.

7. The combination, with the housings and the rolls, of separators interposed between the housings and having between them the bearings of the rolls, and bolts passing through the separators and housings, substantially as and for the purposes described.

8. In a universal mill, the combination of the horizontal roll-housings, side rolls and their carriers, and wings projecting from the sides of the housings, in which the said carriers are movably supported, substantially as and for the purposes described.

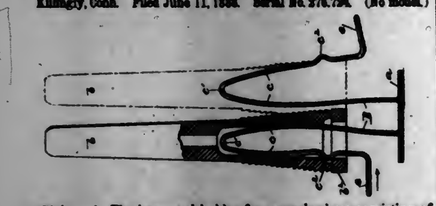
9. In a universal mill, the combination, with the horizontal rolls and side rolls and their adjusting-screws, of common driving mechanism which actuates the adjusting-screws of both horizontal and side rolls, and means whereby the relative speed of said adjusting-screws may be varied, substantially as and for the purposes described.

10. The combination, with the adjusting-screws 21, of a pinion 40, connected therewith by a traveling connection—such as a feather and spline—and a divided collar, by which the pinion is held to the housing, substantially as and for the purposes described.

11. The combination, with the upright housings, of forming-rolls—such as the rolls 1 and 2—having their necks entirely within the space between the housings, and vertical bars or wings *d*, between which the necks of the rolls are set, substantially as and for the purposes described.

12. The combination, with the peripherally beveled or shaped forming and reducing rolls—such as the rolls 1 and 2—one at least of which is frictionally driven, of an outer roll, against which the face of such forming and reducing roll has a bearing, and by which it is frictionally driven, substantially as and for the purposes described.

412,853. ENAMELER'S APPARATUS. SAMUEL D. KEISER, Providence, R. I., assignor to the Arnold & Barber Spool and Bobbin Company, Killingly, Conn. Filed June 11, 1888. Serial No. 276,794. (No model.)



Claim.—1. The improved holder for enamelers' use consisting of a piece of bent metal arranged to frictionally engage the interior surface of a bobbin or other article to be enameled, and having the free end of the wire terminating in a pusher, as *c*, formed by bending the free end of the wire in an outward direction, substantially as shown and set forth.

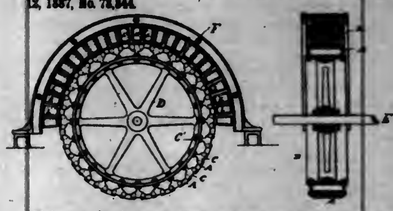
2. The enameler's apparatus hereinbefore described, consisting of a base portion, as *a*, having a series of bent wire holders secured thereto, said holders being each provided with a pusher, as *c*, and a stop for limiting the position of the bobbin, substantially as shown and set forth.

3. The combination, with a base or support, of the wire holders B, secured thereto, each having two spring-arms which are bent, as at c^2 c^3, to engage the interior surface of a bobbin, and being further bent contiguous to said base to form a stop and pusher, as *d* and *c*, respectively, substantially as shown, and for the purpose set forth.

4. The holder hereinbefore described, made of a piece of spring-wire bent to form two substantially parallel legs or sides, each having bends therein, a short bend formed in one of said legs to serve as a stop, and having an end of the wire bent outwardly at right angles to act as a pusher, substantially as shown and set forth.

5. The holder for enamelers' use, consisting of a piece of spring-wire bent to form two curved arms, one of the arms being arranged to be secured to a base and the other or free arm having a short bend or projection, as c^2, adapted to engage an interior groove or notch formed in the lower portion of the bobbin, and, further, having the free end of the arm bent to form a pusher, substantially as shown and set forth.

412,854. DYNAMO-ELECTRIC MACHINE. JOHN A. KINGDON, London, England. Filed May 20, 1889. Serial No. 276,230. (No model.) Patented in England Dec. 3, 1886, No. 15,857; in Germany Dec. 24, 1886, No. 41,795; in France Sept. 3, 1887, No. 185,719, and in Belgium Sept. 12, 1887, No. 78,944.



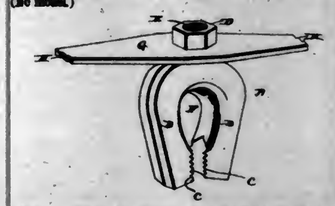
Claim.—1. A chain of soft-iron laminated inductors separated from one another by non-magnetic spaces, and connected by side links or equivalent disks, so as to be applicable to the periphery of a fly-wheel or drum, or to form the periphery of a drum, in combination with a series of fixed alternate primary and secondary electro-magnets K L, whose cores are composed of laminated rake-shaped plates and wholly or partially surrounding the inductor-drum.

2. In a dynamo-electric machine, the inducting-surface in the form of an endless chain of inductors A, formed of insulated plates and supported and connected by non-magnetizable links C C, so that they may be conveniently constructed and combined with the periphery of any known fly-wheel or drum, substantially as described.

3. The cores of the primary and secondary electro-magnets in a dynamo-electric machine, composed of bundles of soft-iron plates insulated from one another and of a rake shape, breaking joint, so as to overlap one another and to give rigidity and as much magnetic continuity between adjacent cores as possible, substantially as described.

4. The inductor-plates A, having perforated lugs which project opposite their peripheral edges, in combination with bolts B, passing through said lugs to hold the plates together, and thus located so that they are not cut by the lines of magnetic force, substantially as described.

412,855. SCREW-DIE. CHARLES LEACH, Bonkleman, Notr., assignor to William R. Turner, same place. Filed Mar. 8, 1889. Serial No. 302,452. (No model.)



Claim.—1. The die having the central bore and provided with the integral arms B, and having the threaded portion C formed between the opposing outer ends of said arms, substantially as described.

2. The die having the central bore, the integral arms B, inclined toward each other and having the opening F between them, and the extension D, formed at the top and adapted to be engaged by the bar G, substantially as described.

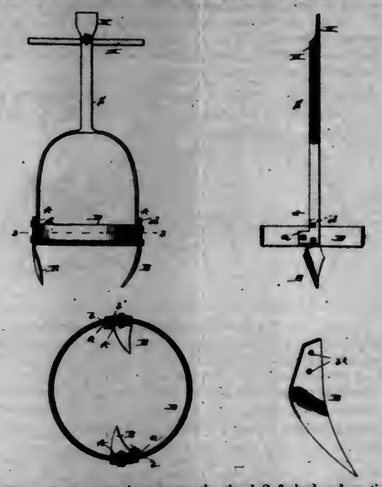
3. The die-body having the arms B, provided with the threaded portion C on their opposing sides at their outer ends said die-body having the opening F between the arms B, and the bore or opening E in line with the threaded portion C, substantially as described.

412,856. SHELL. JAMES J. HOOGE, Merryville, La. Filed Apr. 6, 1889. Serial No. 306,211. (No model.)

Claim.—In a projectile, the combination of a shell having a longitudinal bore or chamber at its rear end, a breech pin or plug at the rear end of the same, a longitudinally-movable cartridge arranged in said bore or chamber, curved springs secured in the sides of the latter and impinging against the sides of the cartridge, thereby retaining the latter in position by frictional contact with said springs, and a percussion-cartridge mounted upon a nipple at the front end of said cartridge, substantially as set forth.



412,857. POST-HOLE AUGER. DONALD B. MCCALL, Terrelton, Tex. Filed June 20, 1889. Serial No. 314,995. (No model.)



Claim.—1. In a post-hole auger, the shank S, forked and continued in the arms A, the latter having elbows *d* at their lower ends, in combination with the ring-shaped band E, having a sharp lower edge and bolts passing through said band and arms and through said elbows and arms, substantially as described.

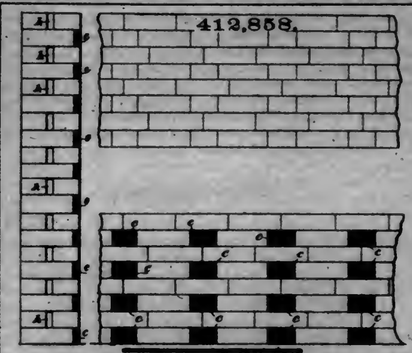
2. In a post-hole auger, the shank S, forked and continued in the arms A, the rim-shaped band D, embracing the lower ends of said arms, and the bits B, outside of said band opposite said lower ends of the arms, said parts being secured together by bolts passing through registering holes in all of them, substantially as described.

3. In a post-hole auger, the shank S, forked and continued in the arms A, the latter having lateral elbows *a* at their lower ends, the ring-shaped band D, embracing the lower ends of said arms and provided with upwardly-projecting ears *d*, and the bits B, said arms, band, and ears and bits having two registering bolt-holes one above the other, bolts for securing all said parts together, said elbows and said band remote from said bits having registering bolt-holes and bolts for securing said parts together independently of said bits, substantially as described.

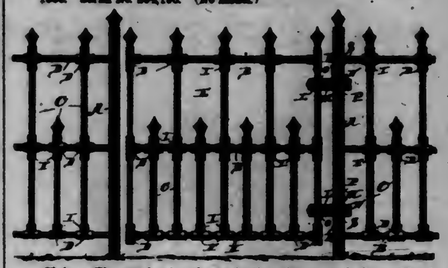
412,858. BRICK WALL. JOHN MCMURRAY, Lexington, Ky. Filed Mar. 22, 1889. Serial No. 304,377. (No model.)

Claim.—A one-brick wall constructed with courses or series of adjacent courses of inside and outside stretchers, separated by a space *h* of one inch, (more or less,) and a course consisting of stretchers and headers interposed between the aforesaid courses or series of courses, the stretchers in this course being separated, as in the first-mentioned courses, the spaces left by the headers on the inside face of the wall being filled with good cement, as and for the purposes set forth.



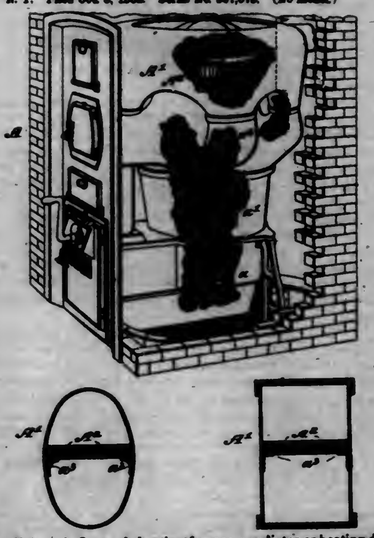


412,859. GATE. HENRY FRIDAY, Houston, Tex. Filed Dec. 30, 1888. Serial No. 294,190. (No model.)



Claim.—The post having the projecting pins or studs S, combined with the gate having the hinges L, composed of a pair of plates bolted together, the said plates being swelled outward to provide collars N which are provided with cams R, as set forth.

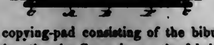
412,860. HOT-AIR FURNACE. DWIGHT S. RICHARDSON, Brooklyn, N. Y. Filed Oct. 3, 1888. Serial No. 287,073. (No model.)



Claim.—1. In an air-heating furnace, a radiator or heating-drum which is divided by a detachable diaphragm or flue-plate into an incoming and an outgoing flue, the body of the radiator being composed of thin quickly-radiating metal, and the diaphragm or flue-plate being composed of fire-brick or other analogous refractory material, substantially as and for the purposes set forth.

2. In an air-heating furnace, a radiator or heating-drum which is divided by a detachable diaphragm into an incoming and an outgoing flue, the body of the radiator being composed of thin quickly-radiating metal, the diaphragm being composed of fire-brick or like refractory material and serving to reverse the direction of the flow of the volatile products of combustion, substantially as described.

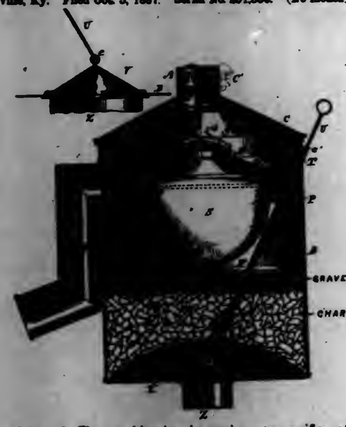
412,861. COPYING-PAD. THOMAS ROBSON, Philadelphia, Pa. Filed Jan. 31, 1887. Serial No. 225,905. (No model.)



Claim.—1. A copying-pad consisting of the bibulous sheets A, the stiffener B, having the rim C, as shown, the fabric facing D, secured to the stiffener B, the rubber backing F, having its edges which form the rim G secured to the facing D, the channel H, formed by rim C and facing D, and the stitching E, all substantially as described.

2. A copying-pad consisting of bibulous sheets, a stiffener having a rim projecting beyond the ends of the sheets, and a piece of fabric covering the face of the sheets and having its edges secured to the back of the stiffener, thereby forming a channel around the edges of the said sheets, substantially as and for the purpose set forth.

412,862. RAIN-WATER PURIFIER. WINFIELD R. SCOTT, Danville, Ky. Filed Oct. 5, 1887. Serial No. 251,536. (No model.)



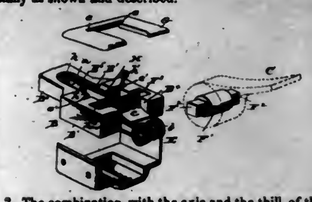
Claim.—1. The combination, in a rain-water purifier, of a main cover provided with a vertical inlet-neck, a body having within its upper end a fixed annular curb located below said neck and concentric therewith and provided with an inwardly-projecting stop-bead, a removable textile strainer having a distending wire which coacts with said stop-bead, and a filter, as of gravel and charcoal, beneath said strainer, whereby said filter is protected against contamination by soot and like impurities, substantially as hereinbefore specified.

2. The combination, in a rain-water purifier, of a main cover provided with a vertical inlet-neck, a conical inner cover having an inner inlet-neck in line with the one first named provided with a convex primary screen of wire-cloth, a wasteway surrounding said inner cover, and a waste-outlet leading from said wasteway, substantially as herein specified.

3. The combination, in a rain-water purifier, of a main cover provided with a vertical inlet-neck, an inner cover having an inner inlet-neck in line with the one first named, a waste-outlet communicating with the space above said inner cover, and a gravitating cut-off comprising a laterally-swinging cap loosely fitted to said inner neck, and a vertically-sliding crank-handle rigidly attached thereto at one edge and supported by said main cover, substantially as herein specified.

412,863. THILL-COUPLING. ALONZO DE JOHN, Louville, N. Y. Filed Aug. 10, 1888. Serial No. 280,985. (No model.)

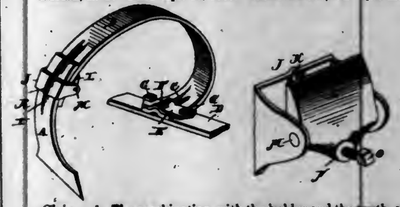
Claim.—1. The combination, with a vehicle-axle and thill, of a chambered casting secured to the axle by means of a clip, a wire of spring metal retained within the chamber by the engagement of one of the arms of the clip-iron with a central loop in the wire, the coils *b*, formed in the wire at the front end of the chambered casting, the wearing-plate secured to the free ends of the wire adjacent to the loops, the cap-plate G, fitted over the enlarged portion of the casting and provided with central apertures and recesses, as described, and the wire H, having a central loop to engage one of the vertical arms of the clip-iron within the chamber within the casting, and having its free ends bent upwardly and engaging the recesses in the cap-plate, substantially as shown and described.



2. The combination, with the axle and the thill, of the chambered casting, and a wire spring formed at its end with a seat for the thill and formed with a coil *b* at the front end of the casting, substantially as and for the purpose specified.

3. The combination, with the axle and the thill, of the chambered casting, the wire spring having a loop, a coil *b*, and a seat for the thill, and the clip-iron having one leg passed through the loop of the spring, substantially as shown and described.

412,864. SPRING HARROW-TOOTH. FREDERICK VAN PATTEN, Auburn, N. Y. Filed Apr. 19, 1889. Serial No. 307,774. (No model.)



Claim.—1. The combination, with the holder and the tooth, of the clip passed around the same and a clamping-plate pivotally mounted in the clip and adapted to bind against the tooth, as set forth.

2. The combination, with the tooth and the holder, of the clip passed around the tooth and the holder, the clamping-plate pivotally mounted in the clamp, and a set-screw mounted in a suitable bearing on the clamping-plate and adapted to bind against the tooth, as set forth.

3. The combination, with the tooth and the holder provided with engaging longitudinal corrugations, of the clip passed around the same and having a groove engaging the corrugations in the holder, and a clamping-plate pivotally mounted in the clamp and adapted to bind against the tooth, as set forth.

4. A removable clamping device for harrow-teeth, consisting, essentially, of a clip carrying a pivoted clamping-plate provided with a set-screw, as set forth.

412,865. SPRING HARROW-TOOTH. FREDERICK VAN PATTEN, Auburn, N. Y. Filed Apr. 19, 1889. Serial No. 307,776. (No model.)



Claim.—1. The combination of the beam, the curved tooth-holder secured thereto and having ribs or flanges E at its side edges, provided with the widened portions F, the tooth fitting in the holder, the clamping-plate adapted to bear on the tooth and having an integral journal engaging one of the widened portions F, and the removable journal inserted through the other one of the widened portions F into the clamping-plate, as set forth.

2. The tooth-holder having as a fixed part thereof a pivoted clamping-plate provided with a set-screw, as set forth.

3. The tooth-holder having as a fixed part thereof a pivoted clamping-plate having one of its journals removable, as set forth.

412,866. COMBINED CARRIAGE AND SLED. REUBEN B. WHITNEY, Gloversville, N. Y. Filed Aug. 24, 1888. Serial No. 283,572. (No model.)



Claim.—1. A combined wagon and sled consisting of a sled-body and a running-gear connected thereto, the said sled-body being inverted to form the body of the wagon, substantially as described.

2. In combination, a sled-body, a running-gear connected thereto, and removable front and end pieces, substantially as described.

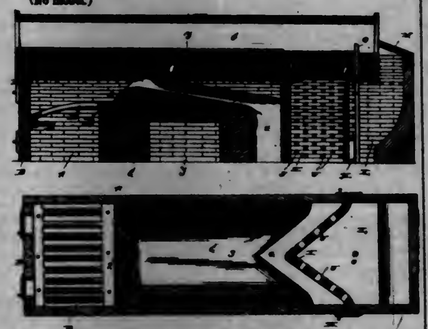
3. In combination, a sled-body, a running-gear removably connected thereto, removable front and end pieces, and a pivoted seat connected to one of the pieces, substantially as described.

412,867. KEY-HOLE GUARD. CHARLES D. WILLIAMS, Philadelphia, Pa. Filed Oct. 23, 1888. Serial No. 288,941. (No model.)



Claim.—A lock having a throat in the periphery of its casing, and an inwardly-extending guard at the wall of said throat, and an oscillating guard with a shoulder adapted to abut against said inwardly-extending guard, and a tooth adapted to enter an opening in a key, and a spring adapted to close said shoulder against said inwardly-extending guard, said parts being combined substantially as described.

412,868. STEAM-BOILER FURNACE. CHARLES H. WILSON and KEVIN W. BERRY, Paducah, Ky. Filed June 20, 1889. Serial No. 314,993. (No model.)



Claim.—1. In a furnace, the herein-described fire-wall, having its front end curved upwardly and rearwardly to within a short distance of the boiler, the upper surface of said fire-wall being extended from thence in a downward and rearward direction and provided with a V-shaped recess forming an ash-pit, the upper surface of said fire-wall being curved transversely concentrically with the boiler, substantially as set forth.

2. In a furnace, the combination, with the fire-wall having a V-shaped recess at its rear end, of the V-shaped draft regulating and equalizing wall, substantially as herein described.

3. In a furnace, the herein-described V-shaped draft regulating and equalizing wall provided with a series of longitudinal openings or passages, substantially as and for the purpose set forth.

4. The combination, in a furnace, of the fire-wall having a V-shaped recess at its rear end, the downwardly and forwardly inclined grate, and the V-shaped draft regulating and equalizing wall having longitudinal perforations or passages, as set forth.

5. The combination of the furnace walls or casing, the longitudinally-arranged fire-wall having transversely-curved upper surface and provided with a V-shaped recess at its upper end, the downwardly and forwardly inclined grate supported upon said fire-wall and upon a shoulder on the rear side of the front wall of the furnace-casing, the V-shaped draft-regulating wall having longitudinal perforations or passages, the doors in the side walls of the furnace registering with the ash-pit between the fire-wall and the V-shaped draft-regulating wall, and the vertical boiler-support located in the combustion-chamber in rear of said draft-regulating wall, substantially as and for the purpose set forth.

412,869. BURGLAR-ALARM. SAMUEL W. WILT, Clifton Mills, W. Va. Filed Mar. 6, 1889. Serial No. 302,196. (No model.)

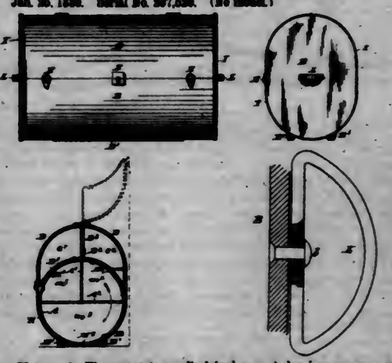


Claim.—1. The combination, with a door-lock provided with a knob-shaft, of a gun-lock mounted above the door-lock and provided with a depending lever adapted to actuate the releasing pawl or sear of the gun-lock and to be operated by the knob-shaft, substantially as specified.

2. The combination, with a door-lock provided with a knob-shaft, of a gun-lock mounted above the door-lock and provided with a depending lever connected with the releasing-pawl of the gun-lock, and a clip embracing the knob-shaft and bearing on the lever and adapted to rock the same through the medium of the shaft, substantially as specified.

3. The combination, with a door-lock, of a gun-lock arranged above the same and having a depending lever connected with its releasing-pawl, and a U-shaped clip mounted on the knob-shaft of the door-lock for operating the lever and provided with a binding-screw, substantially as specified.

412,870. TRUNK. JOHN M. WOLLENBERG, Tarrytown, N. Y. Filed Jan. 26, 1889. Serial No. 297,839. (No model.)



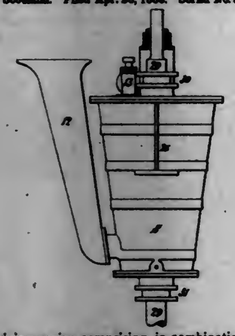
Claim.—1. The revolving cylindrical case A, having one or more partitions A' A^2, and doors M' M^2, adapted to revolve within a trunk-casing, in combination with a top containing compartments c' c^2, performing the double function of storing articles and protecting the revolving part, as herein specified.

2. The ovoidal casing B, having fixed end pieces extending upon as to protect the movable top, in combination with the latter, having

compartments, one of which is movable by turning upward and backward from the center of the top, and with the cylindrical case A, capable of revolving in the lower portion and having two or more doors M' M² and compartments m' m², as herein specified.

3. The trunk described, having the spring *b*, acting under the pivots to raise the cylinder for free motion and to allow it to be depressed and held, in combination with the revolving casing A, divided into compartments and equipped with doors, and with the ovoid casing B, having a portion movable, all arranged to serve substantially as herein specified.

412,871. PULPING-ENGINE. JAMES H. ARMSDALE, Fulton, County of Mid-Lothian, Scotland. Filed Apr. 26, 1889. Serial No. 308,751. (No model.)



Claim.—A pulping-engine comprising, in combination, a vertical cone-shaped casing, with its larger end uppermost and with closed ends, a feed-hopper at the side of and extending higher than the casing, with its lower end communicating with the lower part of the casing, a regulatable discharge-valve communicating through the otherwise closed top of the casing, knives fixed to the inner sides of the conical casing and distributed regularly round it, a rotating vertical cone-shaped roll provided with knives distributed regularly round it, the said roll having its knives fitted to move nearly in contact with the fixed knives of the casing, and a shaft on which the roll is fixed and which extends through stuffing-boxes in the closed top and bottom of the casing, the several parts being arranged and operating substantially as and for the purposes hereinbefore described.

412,872. REACH-COUPLING FOR VEHICLES. CHRISTOPHER C. BRADLEY, Syracuse, N. Y. Filed Jan. 13, 1887. Serial No. 224,214. (No model.)



Claim.—1. The combination, with an axle provided with a tapering opening, of a reach provided with arms embracing the upper and lower sides of the axle, a tapering stud formed on one of said arms and entering the tapering opening of the axle, a coupling-bolt passing through said stud, and a spring whereby the bolt and the stud are tightened in their seats, substantially as set forth.

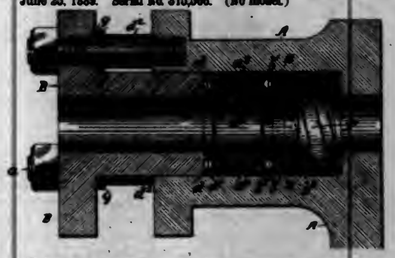
2. The combination, with an axle provided with a tapering opening, of a reach provided with arms embracing the upper and lower sides of the axle, a tapering stud formed on one of said arms and entering the tapering opening of the axle, a cap secured to the opposite arm, a coupling-bolt passing through said stud, and a spring seated in said cap and bearing against the axle, substantially as set forth.

412,873. SHOE-UPPER. SAMUEL P. CARRICK, Boston, Mass., assignor of one-half to George H. Clark, same place. Filed Mar. 26, 1889. Serial No. 304,950. (No model.)

Claim.—The boot or shoe quarter or upper herein described, consisting of the piece *b*, having the slit 2 at the top, and the slit 3, cut parallel with the back line of the quarter, leading from and forming a continuation of the slit 2, to thereby obviate a rear heel-seam, and the gore or auxiliary piece *c*, shaped to fill the opening formed by the slits 2 3 when the piece *b* is crimped or made to assume proper shape, substantially as and for the purposes set forth.



412,874. ROD-PACKING. DAVID H. CHADDACK, Chicago, Ill. Filed June 25, 1889. Serial No. 315,566. (No model.)



Claim.—1. A metallic packing-ring provided in its ends with annular grooves, and having channels in its outer and inner circumferential surface and leaving the narrow bearing-surfaces *b*, substantially as set forth.

2. The combination, with a metal packing-ring having inner and outer circumferential channels and the groove a^2, the cap-ring beveled on the face and engaging with said groove and bearing against the outer edges of the packing-ring, and spiral spring seated in the bottom of the stuffing-box and bearing against said cap-ring, substantially as and for the purpose set forth.

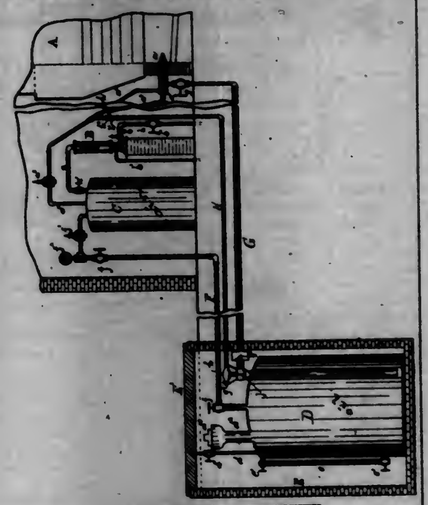
3. The combination, with the packing-ring provided in its outer end with the groove *a'*, of the packing-gland having the inner joining end beveled, so as to wedge into said groove and spread the bearing-surface of the packing-ring, substantially as and for the purpose set forth.

4. The combination, with a metal packing-ring provided exteriorly and interiorly with channels and having V-shaped grooves in the respective ends, as described, of the cap-ring beveled to wedge into said grooves, the spiral spring seated in the bottom of the stuffing-box, and the packing-gland beveled on its inner end and wedging into the companion groove in the packing-ring, substantially as and for the purpose set forth.

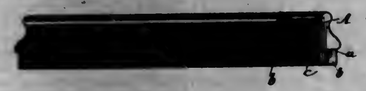
412,875. APPARATUS FOR BURNING PETROLEUM. GEORGE COLLINS and EDWARD H. WEATHERHEAD, Cleveland, Ohio. Filed Jan. 7, 1889. Serial No. 295,662. (No model.)

Claim.—1. In apparatus for burning petroleum, the combination, with an oil-burner, an oil-reservoir, and pipe-connection between the two, an air-compressor, and a pipe between the latter and said oil-reservoir, together with a pipe between the air-compressor and the oil-burner, of a spring-pressed valve which controls communication between said oil-reservoir and said oil-pipe, and air-pipe between the air-compressor and said spring-pressed valve, said latter pipe provided with an escape-valve, together with a mechanical connection between said latter valve and the valve of the oil-burner, substantially as set forth.

2. In apparatus for burning petroleum, the combination, with an oil-burner, an oil-reservoir, and pipe-connection between the two, an air-compressor, and a pipe between the latter and said oil-reservoir, together with a pipe between the air-compressor and the oil-burner, of a spring-pressed valve *j*, which controls communication between said oil-reservoir and said oil-pipe, and a continuous air-pipe H between the air-compressor and said spring-pressed valve, said latter pipe provided with a two-way escape-valve h^3, said valve provided with lever *h*, together with chain connection between said lever *h* and the valve of the oil-burner, substantially as set forth.



412,876. BLACKBOARD-ERASER. THOMAS H. COFFELD, Lake, assignor to A. H. Andrews & Company, Chicago, Ill. Filed June 20, 1889. Serial No. 315,015. (No model.)



Claim.—1. As an improved article of manufacture, a blackboard-eraser comprising a block-handle having one end extending at an acute angle to its side, and felt or other erasive material secured to the face of the block-handle, and having one end extending at an acute angle to the side and coinciding with the acute-angled end of the block-handle, substantially as described.

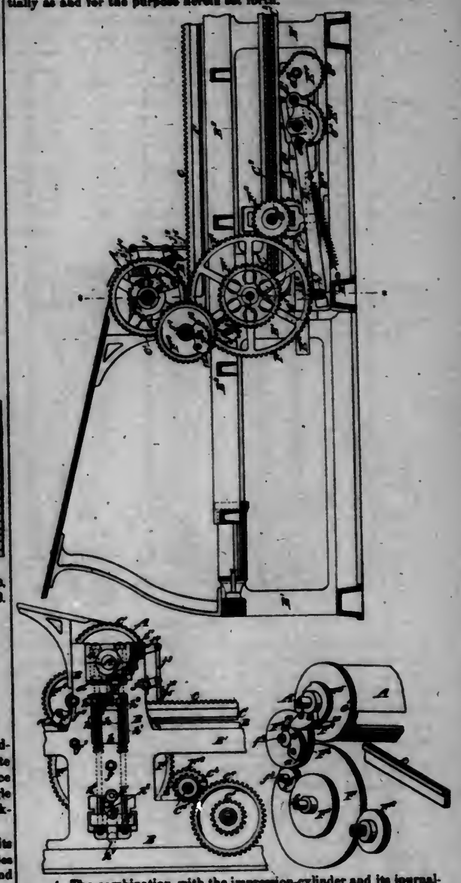
2. A blackboard-eraser comprising a block-handle having its opposite ends extending diagonally to its sides to form acute angles *a*, the parallel side erasing-strips *b*, secured to the block-handle and having diagonal ends to form acute angles coinciding with the acute angles at the ends of the block-handle, and diagonal erasing-strips *c*, secured to the block-handle between the parallel side strips, substantially as described.

412,877. CYLINDER PRINTING-MACHINE. CALVERT B. COTTRELL, Stonington, Conn. Filed Dec. 26, 1888. Serial No. 294,586. (No model.)

Claim.—1. The combination, with the main shaft and impression-cylinder, the bed having a rack for gearing with and driving the cylinder during printing, and a cam-actuated starting-lever for starting and stopping the cylinder, of eccentric gearing between and geared with the main shaft and cylinder for driving the latter at a gradually-increasing speed after it has been started by the starting-lever, substantially as herein described.

2. The combination, with the main shaft and impression-cylinder, the bed having a rack for gearing with and driving the cylinder during printing, and lift mechanism for raising the cylinder after printing, of eccentric gearing between and geared with the main shaft and cylinder for driving the latter at a gradually-increasing speed while out of gear with the bed, and a cam-actuated starting-lever for starting and stopping the cylinder, substantially as herein set forth.

3. The combination, with the main shaft and the impression-cylinder, of the concentric sector F^3, fast to the cylinder, a gear-wheel for gearing with said sector and geared with the main shaft to drive the cylinder at printing speed, and two eccentric sectors, one fast to the cylinder and the other carried by said gear-wheel for the purpose of driving the cylinder at a gradually-accelerated velocity, substantially as and for the purpose herein set forth.



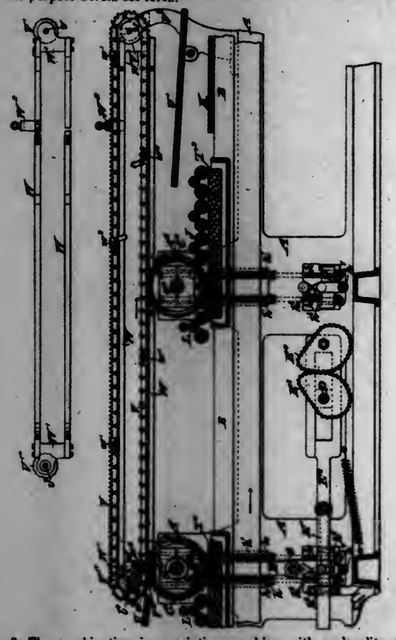
4. The combination, with the impression-cylinder and its journal-boxes, and mechanism, substantially as herein described, for raising and depressing said boxes, of locking devices consisting of toggle-levers applied directly to said boxes independently of the said raising and depressing mechanism for holding the cylinder down during printing, substantially as herein set forth.

412,878. CHROMATIC-PRINTING MACHINE. CALVERT B. COTTRELL, Westerly, R. I. Filed Mar. 25, 1889. Serial No. 304,661. (No model.)

Claim.—1. The combination of a plurality of impression-cylinders provided with receiving-grippers and geared together to rotate synchronously, a reciprocating form-bed common to all of said cylinders and adapted to carry a number of forms corresponding with the number of said cylinders, a rack on the bed for each cylinder, gears upon said cylinders gearing with said rack, and endless chains and grippers thereon arranged to run between said cylinders for the purpose of taking sheets from one of said cylinders and transferring them to another, substantially as and for the purpose herein set forth.

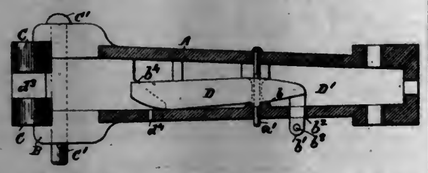
2. The combination, with a plurality of impression-cylinders provided with receiving-grippers, a reciprocating form-bed common to all of said cylinders and adapted to carry a number of forms corresponding with the number of cylinders, a rack on said bed for each cylinder, and gears on said cylinders for engaging with said rack for driving said cylinders during printing, of endless racks and gears upon said cylinders gearing with said endless racks for the purpose of transmitting motion from one cylinder to another while out of gear with the bed-rack and grippers on said endless racks for taking sheets from

one cylinder and transferring them to another, substantially as and for the purpose herein set forth.



3. The combination, in a printing-machine, with a plurality of impression-cylinders having gears upon them, endless chains engaging with said gears above the said cylinders, and carrying grippers for taking sheets from said cylinders, of tracks upon which said endless chains run, pivotal supports for said tracks at one end, and upwardly-movable supports for the other end of said tracks, substantially as and for the purpose herein set forth.

412,879. CAR-COUPLING. ABRAHAM DETO and WILLIAM S. SCHROEDER, Chicago, Ill. Filed May 14, 1889. Serial No. 310,723. (No model.)



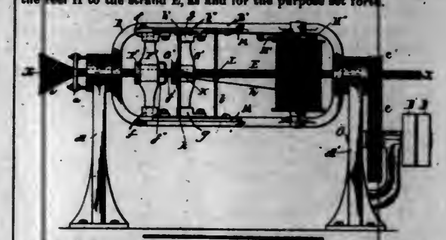
Claim.—1. The combination, with the draw-bar, of the locking-lever chambered therein and provided near the back end with an elongated aperture, the pivot-pin passing through said aperture and the link secured to said lever and projecting through the under side of the draw-bar, substantially as and for the purpose set forth.

2. The combination, with the draw-bar provided on the inside with the raised rounded seat and inwardly-projecting lugs, of the locking-lever chambered in said draw-bar, whereby said lever is adapted to have a rocking movement in a vertical plane, but prevented from moving laterally, substantially as and for the purpose set forth.

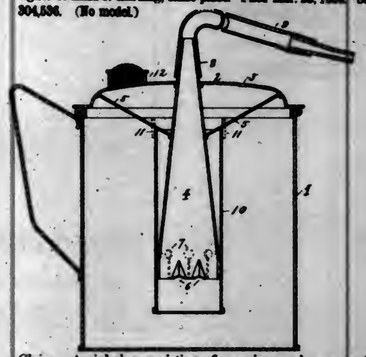
412,880. TIE-YARN MACHINE. CHARLES H. EVERSON, Plymouth, Mass., assignor to the Plymouth Cordage Company, of Massachusetts. Filed Aug. 10, 1889. Serial No. 320,333. (No model.)

Claim.—1. The tie-yarn machine as described, consisting of the frame A A' and the rotary flier B, journaled therein, combined with a perforated guide *a*, tubes F G, binder-yarn reel H, tension-rollers K L, and guide-roller *f'*, substantially as and for the purpose set forth.

2. In a tie-yarn machine, the rotary flier B and the arms or cross-bars F' G', journaled thereon, and having detachable tubes F G, as described, combined with the reel H, the longitudinally-adjustable rollers K L, and guide-roller *f'*, for conducting the binder-yarn A from the reel H to the strand E, as and for the purpose set forth.

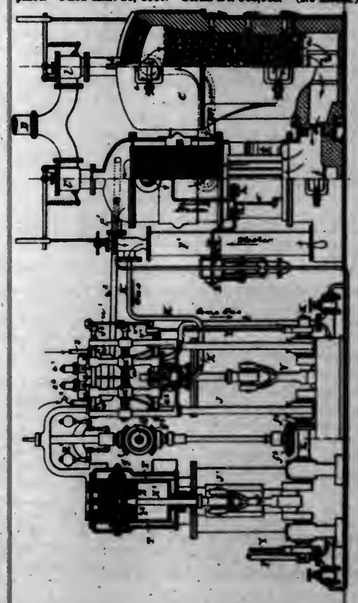


412,881. INHALER. WILLIAM J. FAIRFIELD, Denver, Colo., assignor to Elias J. Harding, same place. Filed Mar. 23, 1889. Serial No. 304,536. (No model.)



Claim.—An inhaler consisting of a main vessel, a cover therefor having apertures for the passage of air therethrough, and having a depending inhalation-tube secured thereto, and a medicine-receptacle adapted to slide over and be held by such inhalation-tube, substantially as set forth.

412,882. THERMIC MOTOR. CIPRIAN F. L. GARDIE, Hendon, France, assignor to the Société Anonyme des Moteurs Thermiques Gardie, same place. Filed Mar. 30, 1889. Serial No. 305,962. (No model.)



Claim.—1. In a thermic motor operating by the combustion and expansion of a mixture of gas and air, the combination of two motor-cylinders and their pistons with admission and exhaust valves at one end of each cylinder to constitute it a power-cylinder and compressor-valves at the other end of the cylinder to constitute the portion thereof on that side of the piston a compressor, and with a gas-inlet pipe leading to one compressor and an air-inlet to the other compressor, whereby the air and gas are compressed separately in the two cylinders.

2. In a thermic motor operating by the combustion and expansion of a mixture of gas and air, two cylinders and their pistons with admission and exhaust valves at one end of each cylinder to constitute it a power-cylinder and compressor-valves at the other end of each cylinder to constitute the portion thereof on that side of the piston a compressor, a gas-inlet leading to one compressor, and an air-inlet to the other compressor, whereby the air and gas are compressed separately in the two cylinders, respectively, in combination with two regenerators, pipes leading from the compressor ends of said two cylinders to said two regenerators, respectively, whereby the compressed air and gas are separately heated, pipes leading from both regenerators to the power end of each cylinder to convey both heated gas and heated air to the power end of each cylinder, and exhaust-pipes leading from the power ends of said cylinders to said regenerators, respectively, whereby the burned gases from one cylinder are utilized for heating one regenerator and the burned gases from the other motor-cylinder are utilized for heating the other, substantially as set forth.

3. In a thermic motor, the combination, with the motor-cylinder with separate air and gas inlet valves, of passages between the chambers of said valves and the interior of the cylinder, constructed to communicate with the latter through numerous contracted openings over a certain area, and the gas and air inlet openings both distributed over said area, whereby the gas and air are thoroughly subdivided and commingled.

4. In a thermic motor, the combination, with the motor-cylinder with separate air and gas inlets, of parallel plates with their intervening spaces in communication alternately with the air and gas inlets, whereby the air and gas are introduced to the cylinder in alternated thin layers.

5. In a thermic motor, the motor-cylinder thereof having its portion in which the burning of the gases takes place lined with segments of thick metal, the adjoining edges of each two adjacent segments being separated by an expansion-space to provide for the expansion of said segments, substantially as set forth.

6. In a thermic motor, the motor-cylinder having its portion in which the burning of the gases takes place lined with segments of thick metal, the adjoining edges of each two adjacent segments being separated by an expansion-space to provide for their expansion, and with a layer of non-conducting material between said segments and the wall of the cylinder, substantially as set forth.

7. In a thermic motor, a compressor in which the gas is compressed, a regenerator, a pipe or passage leading from said compressor to said regenerator whereby said compressed gas is heated, a motor-cylinder, a pipe leading from said regenerator to said motor-cylinder whereby heated and compressed gas is supplied to said motor-cylinder, and an exhaust-pipe leading from said motor-cylinder to said regenerator whereby said regenerator is heated by the burned gases from said motor-cylinder, in combination with a valve arranged to effect direct admission of gas and air to said motor-cylinder independently of said compressor and said regenerator, and a valve for affording direct escape of the products of combustion from said motor-cylinder independently of the valve-gear, whereby by opening said valves a stream of burning gases may be caused to flow through the cylinder in order to heat the latter before starting the engine, substantially as set forth.

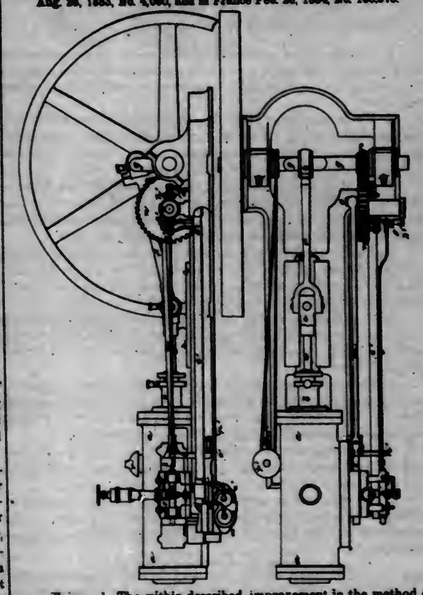
8. In a thermic motor, a motor-cylinder and a compressor-cylinder arranged in line and having a common piston, in combination with an inlet-valve for the compressor, an inlet-valve for the motor-cylinder, a passage for the compressed gas leading from the outlet from the compressor to the inlet-valve of the motor-cylinder, and a valve-gear for opening said respective valves, constructed to establish an invariable mechanical connection between them, whereby at all speeds a constant ratio is maintained between the gas supplied to the motor-cylinder and that supplied to the compressor, substantially as set forth.

9. In a thermic motor operating by the combustion and expansion of a mixture of gas and air, the combination, with the power-cylinder, of separate gas-inlet and air-inlet valves and a valve-gear for operating them, constructed to delay the closing of the air-inlet valve until after the closing of the gas-inlet valve, in order to introduce air after the introduction of the gaseous mixture, and thereby to dilute the latter and reduce the temperature due to its combustion.

10. In a thermic motor operating by the combustion and expansion of a mixture of gas and air, the combination, with the power-cylinder, of separate gas-inlet and air-inlet valves, cams for operating said valves, formed with cam projections varying in height longitudinally and movable longitudinally to bring portions thereof of different heights into engagement with the valves, arms engaging said cams and movable to determine the longitudinal displacement thereof, and a screw engaging said arms, whereby by the turning of said screw the cams are displaced to determine the action of the valves.

11. In a thermic motor operating by the combustion and expansion of a mixture of gas and air, the combination, with the power-cylinder, of separate gas-inlet and air-inlet valves, cams for operating said valves, formed with cam projections varying in height longitudinally and movable longitudinally to bring portions thereof of different heights into engagement with the valves, a screw, and mechanical connections between the latter and said cams, whereby the turning of the screw in one direction or the other displaces the cams longitudinally, a governor, and a clutch operated by said governor for connecting said screw to a revolving part in either of two opposite directions, whereby the engine is governed automatically.

412,888. METHOD OF OPERATING GAS-ENGINES. SAMUEL GRIFFITH, Kingston Iron Works, Bath, County of Somerset, England. Filed June 10, 1886. Serial No. 204,818. (No model.) Patented in England Aug. 28, 1883, No. 4,080, and in France Feb. 26, 1884, No. 160,573.

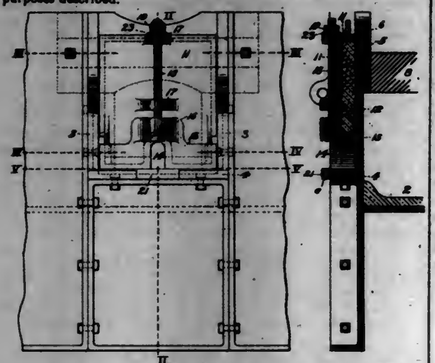


Claim.—1. The within-described improvement in the method of working gas-motor engines, whereby each complete operation of the piston in the cylinder is made to consist of a cycle of six strokes, as follows: first, a stroke in one direction in which during the first part the explosive compound of gas and air is drawn into the cylinder and during the latter part pure air is drawn thereinto; second, a return-stroke in the opposite direction, by which not only the air drawn in during the latter part of the previous stroke, but the products of combustion or air previously contained in the cylinder, are displaced by the air drawn in during the latter part of that stroke; third, a stroke in the first-mentioned direction for drawing in a full charge of the explosive compound; fourth, a return-stroke for the compression of the explosive compound in the cylinder; fifth, a third stroke in the first-mentioned direction produced by the ignition of the explosive compound in the cylinder; sixth, a return-stroke for the discharge of the products of bustion, all as herein described.

2. The within-described improvement in the method of working gas-motor engines, consisting in admitting the explosive compound to the cylinder during the first portion of one stroke of the piston in one direction, and during the whole of the succeeding stroke in the same direction, substantially as and for the purpose herein set forth.

412,884. FURNACE-DOOR. JOHN HEATLEY, Pittsburg, Pa., assignor of one-half to Thomas B. Vennare, same place. Filed Feb. 11, 1889. Serial No. 299,418. (No model.)

Claim.—1. The furnace-door comprising the frame 11, an extensible foot, and an interposed backing 12, substantially as and for the purposes described.



2. The furnace-door comprising the frame 11, an extensible foot, an interposed backing 12, and a bolt connecting the frame and foot for drawing the same together, substantially as and for the purposes described.

3. The furnace-door comprising the frame 11, an extensible foot, an interposed backing 12, a bolt connecting the frame and foot for drawing the same together, and lugs 16 and 17, through which the bolt passes, substantially as and for the purposes described.

4. The doorway-frame having vertical sides and cross-pieces at the top and bottom, the cross-piece at the top being secured to the furnace-wall and the cross-piece at the bottom being secured to the cinder-plate, substantially as and for the purposes described.

5. The combination, with the doorway-frame having at the base a cross-piece flanged, as at *h*, of a fore plate which fits on the cross-piece and is provided with a projecting retaining flange or shoulder *c*, substantially as and for the purposes described.

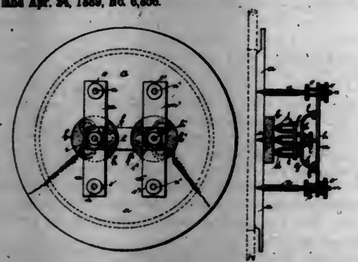
6. The combination, with the doorway-frame having a cross-piece at the upper end thereof, of a reversible back plate having a recessed portion *b*, which fits over the cross-piece, substantially as and for the purposes described.

7. The combination, with the doorway-frame having a cross-piece at the upper end thereof, of a reversible back plate having a recessed portion *b*, which fits over the cross-piece and is provided with projecting arms *c*, substantially as and for the purposes described.

8. The furnace-door comprising the frame 11, an extensible foot, and an interposed backing 12, said foot being provided with guide ribs or lugs 20, substantially as and for the purposes described.

9. The furnace-door comprising the frame 11, an extensible foot, and an interposed backing 12, said foot being provided with a work-hole 14 and a lining-block 15, substantially as and for the purposes described.

412,885. MICROPHONE. Eduard F. Hetzler, Dresden, Germany. Filed May 8, 1889. Serial No. 310,042. (No model.) Patented in England Apr. 24, 1889, No. 6,856.



Claim.—1. In a microphone, the combination, with a diaphragm having two connected contact-plates thereon, of two contacts connected by an elastic connection with the diaphragm, each of said contacts being connected with one terminal of the circuit, substantially as described.

2. In a microphone, the combination, with the diaphragm and the two connected carbon plates thereon, of two carbon contacts and a spring-support therefor, each of said contacts adapted to co-operate with one of the plates on the diaphragm, said contact-supports being connected to the diaphragm, substantially as described.

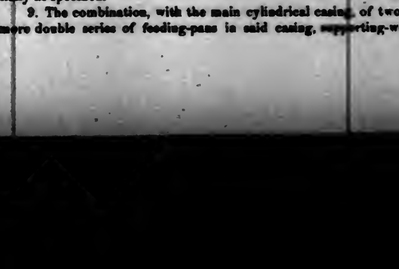
3. In a microphone, the combination, with a diaphragm and two connected contact-plates thereon, on two contacts mounted on the diaphragm and arranged to co-operate with said plates, each contact consisting of a plurality of contact-points, substantially as described.

4. In a microphone, the combination, with a diaphragm and two connected contact-plates thereon, of the standards on the diaphragm and the contacts connected thereto by an elastic connection, each arranged to co-operate with one of the contact-plates, substantially as described.

5. In a microphone, the combination, with the diaphragm and a contact-plate thereon, of the standards secured to the diaphragm, a plate adjustable on the standards, and a spring carrying a contact connected to the said plate, substantially as described.

6. In a microphone, the combination, with the diaphragm and the contact-plate thereon, of the standards on the diaphragm, the plate, the bowed spring connected thereto, and the contact connected to the center of the spring and co-operating with the contact on the diaphragm.

412,886. FEED-WATER HEATER AND PURIFIER. John J. Hoppe, Springfield, Ohio, assignor to the Hoppes Manufacturing Company, same place. Filed July 10, 1888. Serial No. 317,086. (No model.)



Claim.—1. In a purifier, a double series of heating-pans, in combination with an upper pan having longitudinal ribs or projections adapted to deflect the water from the bottom of said pan into the respective series, substantially as specified.

2. The combination, with the double series of pans and an upper feeding-pan having the deflecting-strips, of the branched supporting-standards to support the inner ends of said standards and permit the upper pan to be removed, substantially as specified.

3. The combination, with a heating-pan and a feed-pipe adapted to extend below the water-line therein, of ways on which said pan is supported, said ways being provided with depressions opposite said feeding-pipe, substantially as and for the purpose set forth.

4. The combination, in a purifier, of an upper pan having a curved or inclined bottom and longitudinal edges over which the water is adapted to flow so as to pass along said bottom, and deflecting-strips on said bottom, substantially as specified.

5. The combination, with a feed-pan having a curved or inclined bottom and horizontal edges over which the water is adapted to flow so as to pass along said bottom, and a feed-pipe extending below the overflow-edges in said pan, of ways on which said pan is supported, said ways being provided with depressions opposite said feed-pipe to permit the end of said pan to pass under the feed-pipe when said pan is withdrawn, substantially as specified.

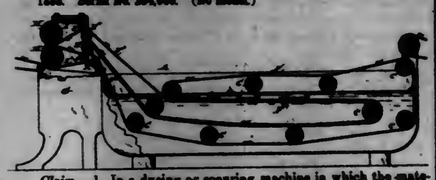
6. The combination, with the double series of heating-pans, of an upper pan having overflow-edges and a curved or inclined bottom with deflecting ribs or projections on the bottom of said pan, and a feed-pipe projecting into said pan below the overflow-edges, and the guides or ways having the depressions opposite said feed-pipe, substantially as specified.

7. The combination, with a double series of heating-pans, each provided with longitudinal overflow-edges and a curved or inclined bottom, of ways on which said pans are adapted to slide, an upper feeding-pan having deflecting projections in the bottom thereof to deflect the water into the respective series of said pans, and central supporting-standards to support the inner ways of each series of pans, said standards being branched to pass around the upper feeding-pan, substantially as specified.

8. In a purifier, a pan provided with overflow-edges and a feed-pipe projecting into said pan below said overflow-edges, and supporting-ways on which said pan is supported, said ways being provided with depressions opposite said feed-pipe to permit the end of the pan to drop down so as to pass under said pipe when withdrawn, substantially as specified.

9. The combination, with the main cylindrical casing, of two or more double series of feeding-pans in said casing, supporting-ways for said pans, central supporting-standards for said ways, an upper feed-pan for each series having overflow-edges and deflecting-strips, a feed-pipe having branched portions extending into the respective feed-pans below the overflow-edges thereof, and guides or ways on which said feed-pans are supported provided with depressions opposite the respective branches of said feed-pipe, substantially as specified.

412,887. DYEING-MACHINE. Walter A. Lorimer, Philadelphia, Pa., assignor of one-half to John H. Lorimer, same place. Filed Dec. 26, 1888. Serial No. 294,609. (No model.)

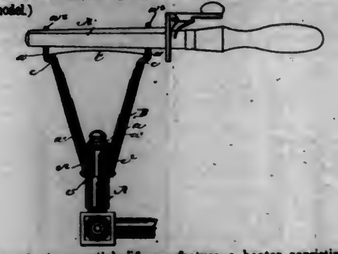


Claim.—1. In a dyeing or scouring machine in which the material treated is carried through the liquor by suitable carriers incapable of passing between the squeeze-rollers, the combination, with said carriers, of squeeze-rollers, an idler-roller arranged close to the delivery end of said carriers, and an endless band or apron passing about said idler-roller and the lower of said squeeze-rollers, adapted to act as a stripper for the carriers of the dyeing or scouring machine.

2. In a dyeing or scouring machine in which the material to be treated is carried through the liquor by aprons or carriers incapable of passing between the squeeze-rollers, the combination, with said aprons or carriers, of squeeze-rollers, idler-rollers located close to the delivery end of said aprons or carriers and respectively above and below them, and short endless aprons passing over said squeeze and idler rollers and adapted to act as strippers for the carriers or aprons of the dyeing-machine.

3. In a dyeing or scouring machine in which the material to be treated is carried through the liquor by aprons or carriers incapable of passing between the squeeze-rollers, the combination, with said aprons or carriers, of squeeze-rollers, idler-rollers located close to the delivery end of said aprons or carriers and respectively above and below them, short endless aprons passing over said squeeze and idler rollers and adapted to act as strippers for the carriers or aprons of the dyeing-machine, and a guide roller located near the delivery end of the lower of said carriers or aprons of the dyeing-machine to guide said apron or carrier away from the lower of said idler-rollers.

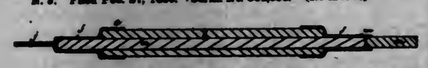
412,888. CURLING-IRON HEATER. Herbert J. Mayer and Gustave Burkhardt, Chicago, Ill. Filed July 1, 1889. Serial No. 316,164. (No model.)



Claim.—1. As an article of manufacture, a heater consisting of a funnel-form casing flattened at the top and provided with rings a^2 a^3, for holding a curling-iron directly over the long narrow opening thus formed at the top of said casing, an opening at the bottom affording bearing-points, as at *a a'*, for attaching the same to a gas-burner, and openings a^5, for affording a draft of air, as specified.

2. The heater composed of the frame *a a'* a^3, and the casing B, being a funnel-form tube flattened at the top and having the opening at the bottom for attaching it to a gas-burner, and air-holes, substantially as shown and described.

412,889. ELECTRIC TERMINAL. Charles McIntire, Newark, N. J. Filed Feb. 27, 1889. Serial No. 301,331. (No model.)



Claim.—1. In combination with the insulated conducting-wire, a cap *c*, for protecting the insulation, and teeth *e*, to bite into said insulation, substantially as and for the purpose set forth.

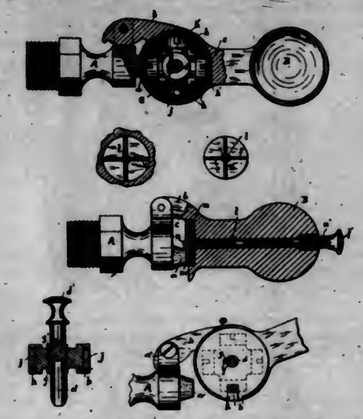
2. In combination with the insulated conducting-wire, a cap *c*, having perforation *d*, through which latter the wire extends, and the cap covering the insulation, the edges of said cap biting into said insulation, as at *e*, substantially as and for the purpose set forth.

3. The improved terminal herein described, combined with a cap *c*, adapted to cover the insulation of a conducting-wire, a seamless tubular extension *f*, secured to said cap and reduced in size to engage the uncovered end of said conducting-wire, and adapted to be indented or impressed into holding engagement with said wire, substantially as set forth.

4. In combination with the insulated conducting-wire, a cap *c*, having the reduced tubular extension *f* and eye-plate *j*, the said parts being arranged and adapted to operate substantially as and for the purpose set forth.

5. The improved electric terminal herein described, combining a cap, a reduced tubular extension, and an eye-plate, substantially as and for the purpose set forth.

412,890. GAGE-COCK. David G. Hoagg, Cleveland, Ohio. Filed Apr. 25, 1888. Serial No. 308,615. (No model.)



Claim.—1. In a gage-cock, a rotary packing-holder provided with two or more independent removable seats, substantially as set forth.

2. In a gage-cock, the combination, with a rotary packing-holder, of a spindle engaging therewith, said spindle extending beyond the side of said gage-cock, whereby it may be turned, substantially as set forth.

3. In a gage-cock, the combination, with a rotary packing-holder, of a spring-pressed spindle engaging with said packing-holder, said spindle having a projecting portion, whereby it may be turned, and being spring-pressed, whereby it may be held in position, substantially as set forth.

4. In a gage-cock, the combination of a rotary packing-holder having one or more seats, a spindle having engagement therewith and provided with a thumb-nut, and a spring engaging with said spindle, substantially as set forth.

5. A gage-cock provided with a rotary nipple-engaging device having a series of faces located angularly to each other, substantially as set forth.

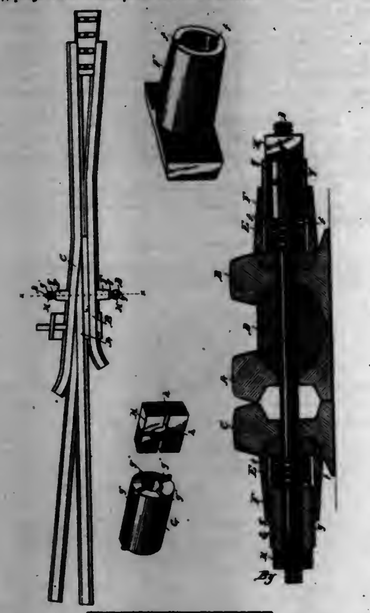
6. In a gage-cock, the combination, with a discharge-pipe, of a weight having pivotal engagement with said discharge-pipe and provided with a seat adapted to engage with said pipe, said discharge-pipe provided with a downwardly-inclining discharge-orifice, whereby as the weight is raised the issuing water will clear said seat, substantially as set forth.

7. In a gage-cock, the combination of a weight provided with a recess, a spindle pivoted in the walls of said recess, a rotary packing-holder provided with sockets secured to said spindle, seats fitting in said sockets, said spindle provided with a thumb-nut, whereby it may be turned, spring-locking mechanism that holds said packing-holder in stationary position, and a discharge-nipple to which said weight is journaled, substantially as set forth.

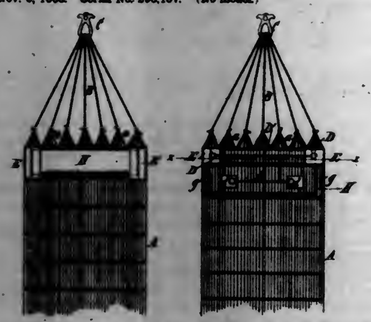
412,891. SPRING-FROG. Alonzo W. Paine, Chicago, Ill. Filed July 13, 1889. Serial No. 317,366. (No model.)

Claim.—The combination, in a spring-frog, of a spring operating the movable rail, a nut for adjusting the tension of said spring, and a non-rotatable follower interposed between said spring and nut, the

adjacent surfaces of the follower and nut being provided with corresponding projections and depressions, as described.



412,892. **HAMMOCK.** ISAAC R. PALMER, Middletown, Conn. Filed Nov. 6, 1888. Serial No. 290,137. (No model.)



Claim.—1. In a hammock, the combination, with a body portion, of two pockets made independent of the hammock and secured upon the face of the body portion of the hammock near one end of the latter and also near opposite side edges thereof, said pockets having their mouths or open ends toward each other and being adapted to receive a stretcher, substantially as specified.

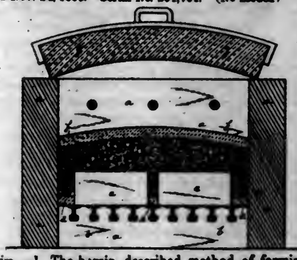
2. In a hammock, the combination, with a body portion, of two pockets made independent of the hammock and secured upon the face of the body portion of the hammock near one end of the latter and also near opposite side edges thereof, said pockets having their mouths or open ends toward each other, and re-enforcing pieces for the pockets at their closed ends, said pockets being adapted to receive a stretcher, substantially as specified.

3. In a hammock, the combination, with a body portion, of two pockets made independent of the hammock and secured upon the face of the body portion of the hammock near one end of the latter and also near opposite side edges thereof, said pockets having their mouths or open ends toward each other, and re-enforcing pieces for the pockets at their closed ends, said re-enforcing pieces overlapping the side edges of the hammock and the adjacent ends of the pockets, and said pockets being adapted to receive a stretcher, substantially as specified.

4. In a hammock, the combination, with a body portion, of four pockets made independent of the hammock and secured upon the face of the body portion of the hammock near one end of the latter, two of said pockets being secured to the hammock near opposite side edges thereof and two being secured to the hammock farther inward from the side edges of the hammock than the others and farther from the adjacent ends, the pockets of each pair having their mouths or open ends toward each other, said pockets being adapted to receive stretchers, substantially as specified.

5. In a hammock, the combination, with a body portion, of two pockets secured thereto near one end thereof and having their mouths or open ends toward each other, and a stretcher made in two sections secured together and adapted to be arranged in said pockets, substantially as specified.

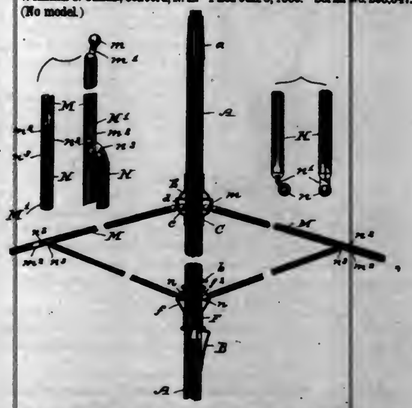
412,893. **PROCESS OF MANUFACTURING STEEL BODIES HAVING LAYERS OF DIFFERENT CARBONS.** JOHN PRODER, Pittsburg, Pa. Filed Nov. 24, 1888. Serial No. 291,761. (No model.)



Claim.—1. The herein-described method of forming bodies of steel having strata containing different proportions of carbon, consisting in maintaining the lower surface of a steel ingot, bloom, or slab at a temperature below that at which carburization or decarburization can take place, covering the upper surface of the bloom with carburizing or decarburizing materials, forming a covering of loam or like substance over the bloom and treating materials, and generating a high heat above such covering, substantially as and for the purposes set forth.

2. The herein-described method of forming bodies of steel having strata containing different proportions of carbon, consisting in exposing to the atmosphere the lower surface of a steel ingot, bloom, or slab, covering the upper surface of the bloom with carburizing or decarburizing materials, forming a covering of loam or like substance over the bloom and treating materials, and generating a high heat above such covering, substantially as and for the purpose set forth.

412,894. **UMBRELLA OR PARASOL.** RICHARD E. PETERS and WILLIAM T. GREEN, Concord, N. H. Filed Jan. 3, 1889. Serial No. 295,347. (No model.)



Claim.—1. In an umbrella-frame comprising ball-and-socket connections for the ribs and their braces, the ribs and their fixed support, and braces and runner, the tubular ribs having at one end a ball-journal connected by a slim rectangular neck to said ribs, and a slot at the proper point for admitting the ball-journal of either of said braces to the interior of said tubular ribs.

2. An umbrella-frame comprising tubular ribs, each containing a slot m^3 and provided at one end with a ball-journal, suitable braces having at each end a slim rectangular neck carrying a ball-journal, a fixed cap having at one end an annular slotted enlargement for carrying one end of said ribs, and a cap or cover shutting part way over said slots, and a suitable runner formed in one piece having an annular enlargement and slots therein for carrying one end of said braces, all substantially for the purpose set forth.

412,895. **SIGNAL-LANTERN.** ADOLPH F. PRAHL, Indianapolis, Ind. Filed Mar. 5, 1889. Serial No. 301,949. (No model.)



Claim.—1. In a signal-lantern, the combination of a casing having a side opening, a lamp arranged within said casing, a door having a lens mounted therein and arranged to close said opening, an open frame hinged to one side of the opening and arranged between the door and the lamp, and a transparent colored screen detachably secured in said open frame, all substantially as specified.

2. In a signal-lantern, the combination, with the reduced top R of the main casing having ventilating-tubes S S, of the exterior perforated casing T, arranged to rotate on said top and having openings *s*, adapted to register with the tubes, substantially as and for the purpose specified.

412,896. **SPRING-HEEL BOOT OR SHOE.** FREDERICK F. RAYBOLD, 2d, Newton, Mass. Filed Jan. 19, 1888. Serial No. 261,236. (No model.)



Claim.—The combination, in a boot or shoe, of the insole, the outsole, a spring-heel having the line of metal nails or slugs *c* placed closely to the edge thereof and adapted to form a wearing-surface and an ornamental finish thereto, but not to attach it, and the line *d* of attaching-nails for securing the spring-heel to the insole, placed inside the line of wearing nails *c*, with considerable space between each nail, as set forth, substantially as described.

412,897. **DEVICE FOR DETACHING HORSES.** CHARLES L. RICE, East Grande Falls, Minn. Filed May 26, 1889. Serial No. 312,393. (No model.)



Claim.—1. In combination with a reversible whiffletree, automatic trace hooks or loops secured to the ends thereof, and provided each with a pin or stud to enter the eye of the trace, all substantially as shown, whereby when the whiffletree is reversed the traces will be positively detached from the pins or studs.

2. In combination with a hinged or pivoted whiffletree, (or doubletree,) an automatic locking device therefor and automatic trace-hooks applied to the ends thereof.

3. In combination with a reversible doubletree, an automatic releasing device therefor, whiffletrees secured to the doubletree, and automatic trace hooks or loops secured to the ends thereof.

4. In combination with plate C, plate D, provided with a bolt or stem, and iron G, hinged to the plate C.

5. In combination with perforated plate C, plate D, provided with a stem or bolt, iron G, hinged to the plate C, and a bolt F, passing through the plates C D.

6. In combination with plate B, plate C, fitting thereon and provided with a curved slot, plate D, provided with a bolt or stem, iron G, hinged to the plate C, and a bolt F, passing through the plates.

7. In combination with plate C, having a slotted pin, iron G, provided with a stud and pivoted or hinged to plate C, and a weight having a slotted hub.

8. In combination with plate C, having lugs *h* and *g*, the former slotted, as shown, and provided with a slotted pin *i* and a recess *k*, iron G, provided with a flattened stud *m* and hinged to the lug *g*, and a weight provided with a slotted hub *l*.

9. In combination with the socket-piece K, provided with sockets *n o*, and a rigid draw-pin *g*, the loop or hook L, having the inclined slots *r*, and a pin or stud *s*, working in the slots.

10. In combination with a socket-piece, as K, provided with a draw-pin *g*, and pin or stud *s*, the trace loop or hook provided with spiral slots and mounted and free to slide upon the draw-pin.

412,898. **STAIRWAY.** PETER RIEBECK, Allegheny, Pa. Filed June 13, 1887. Serial No. 241,222. (No model.)

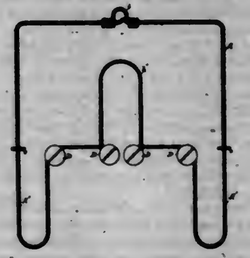


Claim.—1. In a stairway, the combination, with the supporting-columns, of two sets of stairs composed of flights arranged at right angles to each other around the columns and provided with platforms at the angles, substantially as specified.

2. The combination, in a stairway, of the supporting-columns, the flights extending around the columns and arranged at right angles to each other, and the platforms located at the angles of the flights, the upper platforms of each flight being arranged to connect with different stories of a building, substantially as specified.

3. The combination, in a stairway, of the supporting-columns, the independent stairways located on opposite sides of the columns and consisting of a series of flights at right angles to each other, and a series of platforms at the angles of the flights, the flights and platforms being provided with hand-rails and balusters, the inner hand-rail being bent around and secured to the columns, substantially as specified.

412,899. **RAILWAY-CAR CARD-CLIP.** FRANK ROBINSON, Climax, Mich. Filed June 27, 1889. Serial No. 315,768. (No model.)



Claim.—1. A railway-car card clip or holder constructed of a single piece of wire bent to form spring-arms projecting downward from its lower corners, loops or coils at the upper ends of said arms for the reception of fastening means, and a finger-lift at the upper end of the holder.

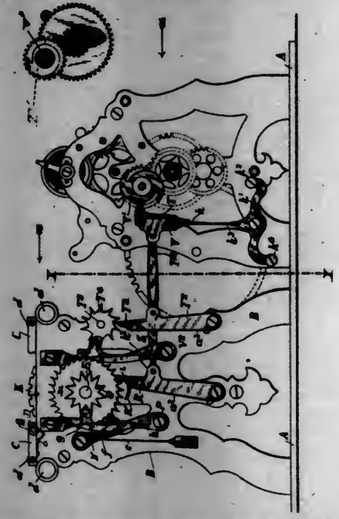
2. A railway-car card-clip or label-holder constructed of a single piece of wire bent to form spring-arms projecting downward from its lower corners, a label-rest projecting upward from the lower side of the holder, and a finger-lift at the upper side of the holder.

3. A railway-car card-clip or label-holder constructed of a single piece of wire bent to form spring-arms projecting downward from its lower corners, coils for the reception of fastening means at the inner ends of said arms, a label-rest projecting upward from the lower side

of the holder, and a finger-lift and a spur or spurs at the upper side of the holder.

4. A railway-car card-clip or label-holder constructed of a single piece of wire, the extreme ends of which are sharpened and bent to form spurs, and the adjacent portions wound around each other and bent upward and outward to form a finger-lift or handle, the said wire being also bent to form spring-arms projecting downward from its lower corners, coils or loops at the upper ends of said arms, a label-rest projecting upward from the lower side of the holder, and coils or loops at the lower corners of said label-rest.

412,900. TIME-STAMP. REDFIELD H. ROGERS, Jr., New York, N. Y., assignor to the Rogers Automatic Time Stamp Company. Filed July 16, 1887. Serial No. 244,446. (No model.)



Claim.—1. In combination, a frame, a cam mounted to turn therein, an arm pivoted or fulcramed to said frame and carrying at one end a spring-pawl bearing upon the cam, and an adjustable conical screw in said frame bearing upon the free end of the arm to regulate the force with which the spring-pawl shall bear upon the cam.

2. In a time-stamp, the combination of the time mechanism, the indicator mechanism, including the ratchet-wheel M, a deer-foot pawl R, mounted in the frame of the indicator mechanism in position to engage the wheel M, and connected with the time mechanism, to be oscillated thereby, the said pawl having a toe *i* and curved extension R', substantially as shown, and for the purpose stated.

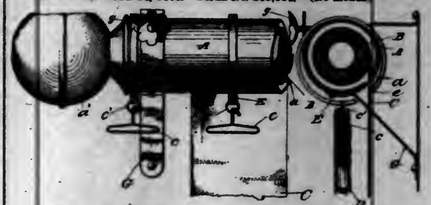
3. A time-stamp having the shaft E, the indicator-wheel F and ratchet fixed thereon, the wheels I and G, provided with sleeves also provided with ratchets, the said wheels being arranged on the shaft on opposite sides of the wheel F, the sectors H and K, turning on the sleeves of the wheels I and G, and the sector L, means, substantially as described, for operating the sector K from the wheel I, combined with time mechanism, with cams and pawls mounted upon the frames of the indicator and time mechanisms, and suitable connections between them, whereby the indicator wheels and sectors are operated from the time mechanism, as described.

4. The combination, with time mechanism, of time-indicator mechanism comprising a main shaft, time-indicators supported upon said shaft, ratchets and pawls for operating said indicators mounted upon the time-indicator frame, ratchets and pawls mounted upon the frame for the time mechanism, connections between said pawls, arms upon which said pawls are borne, and adjusting devices acting on said arms for varying the resistance of the pawls, substantially as specified.

5. The combination, with time mechanism, of time-indicator mechanism, ratchets and pawls for the indicator mechanism, and suitable connections between the time mechanism and the time-indicator mechanism, whereby the latter may be operated by the former, and a setting device consisting of a shaft having a turning head and a pinion to engage a gear on the hour-shaft, by which both the time mechanism and time-indicator mechanism may be set in unison, substantially as specified.

6. The combination, in a hand-stamp, of the shaft E, sleeved day or type wheel I, ratchet-wheel M, and a self-adjusting deer-foot pawl provided with an extension adapted to catch the said ratchet-wheel M when another pawl is being released therefrom.

412,901. CURTAIN-POLE. HERMAN J. SCHRADER, Poughkeepsie, N. Y. Filed Oct. 24, 1888. Serial No. 289,081. (No model.)



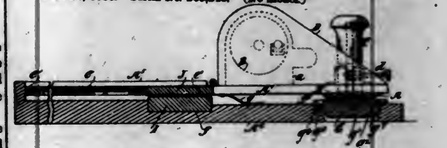
Claim.—1. A hollow slotted curtain-pole, in combination with an interior roller, a shade attached to the roller and passing through the slot of the pole, and a series of slotted rings hung upon the pole for the purpose of conveniently attaching a curtain and allowing the shade to pass through the slots of the rings, as described.

2. A shade and curtain fixture consisting of a hollow slotted curtain-pole, a spring-roller within the pole, a shade supported on the roller and passing through the slot of the pole, and a series of slotted rings having their opening directly below the slot of the pole, so as to support a curtain without hindering the passage of the shade C from the interior of the pole A, substantially as set forth.

3. A hollow slotted curtain-pole, in combination with a roller B, the removable end blocks F, supported within the curtain-pole, the shade C, attached to the roller B, and the slotted rings E, having their openings below the slot of the pole for the passage of the shade C, substantially as described.

4. A combined curtain-pole and shade-roller, consisting of a hollow slotted pole, a spring-roller B, contained within the pole and working in bearings of the end blocks F, the shade C, supported on the roller B, the curtain D, the end blocks F, the slotted curtain-rings E, for supporting the curtain D and allowing the shade C to pass downward from the slot through the rings, and the brackets G for holding the pole in position, all arranged as and for the purpose specified.

412,902. TIME-STAMP. CHARLES H. SHAW, Brooklyn, N. Y. Filed Feb. 24, 1888. Serial No. 265,213. (No model.)



Claim.—1. In a time-stamp, the combination, with time mechanism, of an endless traveling band moved substantially continuous by said time mechanism and bearing letters, figures, or characters to indicate the time of day, substantially as specified.

2. In a time-stamp, the combination, with time mechanism, of a wheel rotated thereby and making a complete rotation every twelve hours and an endless band bearing letters, figures, or characters to indicate the time of day, moved by said wheel, of such length that it will make one substantially continuous and complete traverse every twenty-four hours, substantially as specified.

3. In a time-stamp, the combination, with a stamp for indicating divisions of time greater than parts of a day, of time mechanism, an endless traveling band moved substantially continuous by said time mechanism and bearing letters, figures, or characters to indicate the time of day, and a fixed indicator or pointer adjacent to said traveling band, substantially as specified.

4. In a time-stamp, the combination, with a base-piece upon which the stamp is supported, of a sliding piece hinged to said base-piece, a support for the sliding piece, and an inking-pad below said sliding piece, substantially as and for the purpose specified.

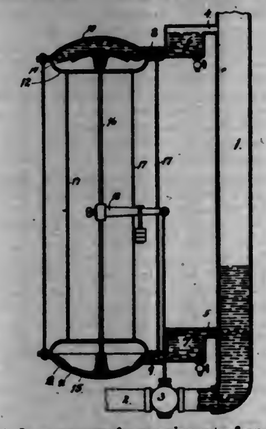
5. The combination, with a time mechanism, of an endless band having a twenty-four-hour movement requiring one traverse of said band, said band being provided with printing-characters indicating the divisions M., A. M., and P. M and divisions indicating hours and fractions thereof, substantially as specified.

6. In a time-stamp, the combination of an endless band having printing-characters thereon moved by time mechanism and a hand-stamp having printing-characters thereon, the said endless band and hand-stamp having a common yielding support, substantially as specified.

7. In a time-stamp, the combination of an endless band moved by time mechanism and having printing-characters thereon, and a hand-stamp having printing-characters, the said endless band and hand-stamp being mounted on a common support, substantially as specified.

8. In a time-stamp, an endless movable band having an extended printing portion indicating hours of the day and fractions thereof, substantially as specified.

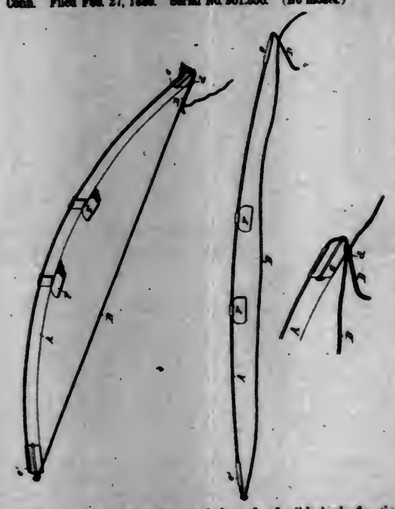
412,908. STEAM-TRAP. WILLIAM P. THOMPSON and ROBERT P. THOMPSON, Philadelphia, Pa. Filed Apr. 3, 1888. Serial No. 268,532. (No model.)



Claim.—1. In an apparatus for removing water from steam pipes, the combination of the connected diaphragms 12 and 13, placed and connected in fluid communication at different levels with the pipe 1 to be drained, with a valve controlling the discharge of water from the pipe 1, substantially as described.

2. In an apparatus for draining condensed water from steam-pipes, the combination of connected diaphragms presenting surfaces to pressure from fluid at different points in height of the vessels to be drained, with a valve controlling the water-discharging or steam pumping apparatus, substantially as set forth.

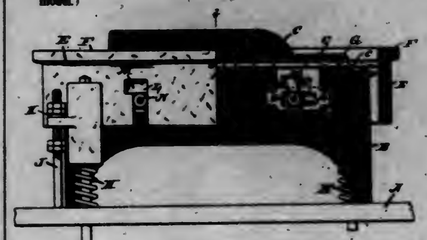
412,904. FLEXIBLE RULER. BENJAMIN H. TOQUET, Westport, Conn. Filed Feb. 27, 1889. Serial No. 301,350. (No model.)



Claim.—1. A flexible ruler consisting of a flexible body forming the ruler proper and a flexible cord secured to one end of the said flexible body, which has at the other end gripping-jaws consisting of a double wire with an eye for the passage of the cord, all substantially as set forth.

2. A flexible ruler consisting of a flexible body forming the ruler proper and a flexible cord connected to one end of said flexible body, which has at the other end jaws for the cord and a foot-piece or foot-pieces upon the body, all substantially as and for the purpose set forth.

412,905. METAL-FOUNDING APPARATUS. GEORGE W. VAN TINE, Elizabeth, N. J. Filed Jan. 4, 1889. Serial No. 295,412. (No model.)



Claim.—1. In metal-founding apparatus, the combination, substantially as set forth, of a table for the support of the pattern, a sand-box surrounding the same and adapted for vertical motion with reference thereto, springs supporting the sand-box, a stripping-plate fitting the sand-box and pattern and supported normally by said table, and a latchment adapted for uniting the stripping-plate to the sand-box.

2. In metal-founding apparatus, the combination, substantially as set forth, of a table for the support of the pattern and provided with upwardly-projecting pins, a sand box surrounding the table and fitted for vertical motion with reference thereto, springs supporting the sand-box, a stripping-plate fitting the sand-box and pattern and supported normally by the pins on the table, and a latchment adapted for uniting the stripping-plate to the sand-box.

3. In metal-founding apparatus, the combination, substantially as set forth, of a table for the support of the pattern, a sand-box surrounding the same and adapted for vertical motion with reference thereto and provided with upwardly-presenting shoulders adapted to be engaged by rollers, springs for supporting the sand-box, a stripping-plate fitting the sand-box and pattern, rollers attached to the stripping-plate and arranged for horizontal movement with reference thereto and adapted to engage the before-mentioned shoulders of the sand-box, springs urging said rollers in the direction to engage said shoulders, and lugs upon the table arranged to move said rollers out of engagement with the shoulders.

4. In metal-founding apparatus, the combination, substantially as set forth, of a table for the support of the pattern, a sand-box surrounding the same and adapted for vertical motion with reference thereto and provided with horizontal shoulders adapted to be engaged by rollers, springs for supporting the sand-box, a stripping-plate fitting the sand-box and pattern and supported normally by said table, hangers projecting from the stripping-plate and provided with rollers, springs urging said rollers in the direction to engage the before-mentioned horizontal shoulders of the sand-box, bolts projecting from the roller-blocks, and lugs upon the pattern-table adapted to engage said bolts and urge the rollers out of engagement with said shoulders.

5. In metal-founding apparatus, the combination, substantially as set forth, of a table for the support of the pattern, a sand-box surrounding the same and adapted for vertical motion with reference thereto, springs for supporting the sand-box, stops for limiting the vertical motion of the sand-box, a stripping-plate fitting the sand-box and pattern and supported normally by said table, and a latchment adapted for uniting the stripping-plate to the sand-box.

412,906. POCKET-FASTENER. BEDFORD WOODFORD, Chelsea, London, England. Filed Apr. 20, 1889. Serial No. 308,123. (No model.)

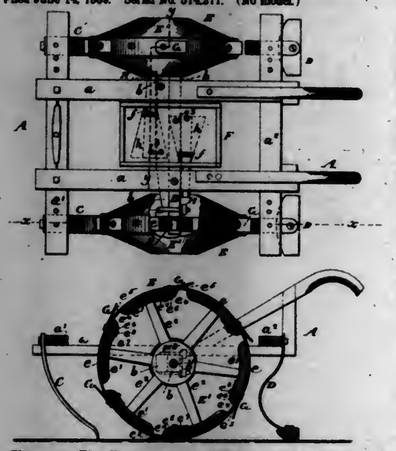


Claim.—1. In a pocket-fastener, the combination, with the back plate A and the front plate A', of the bowed plate c, secured to the front plate, the frame A^2, secured behind the back plate, and the locking-hook pivoted to said frame and adapted to engage with the front plate, substantially as set forth.

2. In a pocket-fastener, the combination, with the back plate A and the front plate A', of the frame A^2, secured behind the back plate, and the locking-hook pivoted to said frame at its lower end and pro-

vided with a rearward projection *b'* at its upper end adapted to press against the body of the wearer and give warning when the pocket is being opened, substantially as set forth.

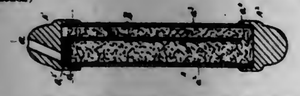
412,907. SEED-PLANTER. JAMES E. ATKINS, Mayesville, S. C. Filed June 14, 1889. Serial No. 314,271. (No model.)



Claim.—1. The distributing-wheel E, formed of the tire *e*, fellies *e'*, spokes *e²*, and hub *e³*, the fellies being cut out to form cups *e⁴*, the tires being provided with a hole *e⁵* under each cup, and an angle-plate *e⁶* being arranged over each tire-hole, substantially as shown and described.

2. The dropping-wheel of a planter, provided with a hole *e⁵* in the tire, a seed-cup *e⁴* in the fellies, and an adjustable angle-plate *e⁶*, all constructed and arranged substantially as shown and described.

412,908. INHALER. GEORGE W. BURGE, Detroit, Mich., assignor to George H. Nelson, same place. Filed Jan. 11, 1889. Serial No. 296,050. (No model.)



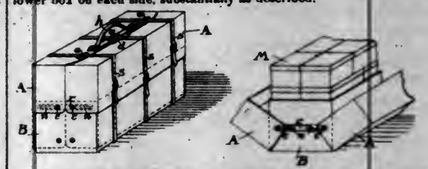
Claim.—1. In combination, a casing provided with an air-inlet and an air-outlet opening, a deflecting-partition within the casing projecting between said air inlet and outlet openings, and a combined nozzle and cap fitted to the air-outlet end of the casing, the base of the nozzle-cap within the casing having an engagement with the deflecting-partition to close the opening through the nozzle, and the base of the nozzle-cap exterior to the casing having an engagement with the casing to close the air-inlet opening, substantially as set forth.

2. In combination, a casing having an air-inlet and an air-outlet opening, a partition between said openings, a plug to close an opening in the partition at the air-outlet opening of the casing, and a combined cap and nozzle fitted to the end of the casing and having an engagement at its base with the plug and with the casing about the air-inlet opening, whereby the said openings may be simultaneously closed, substantially as set forth.

3. In combination, a casing having an air-inlet and an air-outlet opening, a partition between said openings, and a combined cap and nozzle, the opening in the nozzle being oblique to the axis of the nozzle, the base of the cap-nozzle having an engagement with the partition and with the casing about the air-inlet opening, whereby the lower end of the nozzle-opening may be swung over the air-outlet in the casing to afford a free passage of air, and over the partition to shut off the passage of air, substantially as set forth.

412,909. TELESCOPE BAG. JACOB W. BEYER, Schenectady, N. Y. Filed July 19, 1889. Serial No. 317,997. (No model.)

Claim.—1. A telescope bag composed of a lower oblong-shaped box open at the top, with a larger oblong-shaped box open at the bottom passing partly over the smaller box, the said upper box being divided laterally into two sections connected near the lower part of each end by means of pins passing through the ends near the adjacent edges into a longitudinal slot in a connecting-bar, said upper portion capable of being separated and opened by passing off from the lower box on each side, substantially as described.

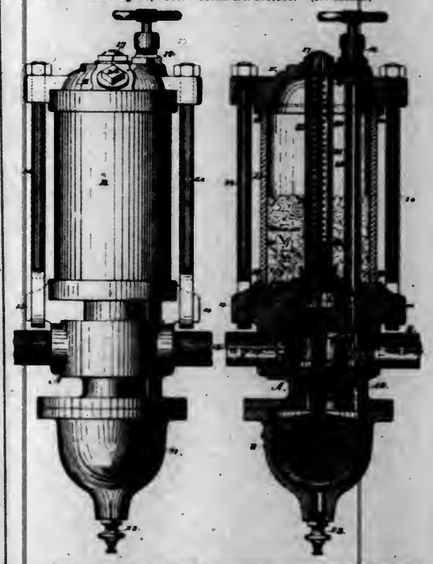


2. A telescope bag composed of a lower oblong-shaped box open at the top, with a larger oblong-shaped box open at the bottom passing partly over the smaller box, the said upper box being divided laterally into two sections connected near the lower part of each end by means of pins passing through the ends near the adjacent edges into a longitudinal slot in a connecting-bar, the edge of one of the sections of the top overlapping the adjacent edge of the other section, substantially as described.

3. A telescope bag composed of a lower oblong-shaped box open at the top, with a larger oblong-shaped box open at the bottom passing partly over the smaller box, the said upper box being divided laterally into two sections connected near the lower part of each end by means of pins passing through the ends near the adjacent edges into a longitudinal slot in a connecting-bar, the adjoining edge of the top of one section overlapping and resting upon the edge of the other section, the said overlapping edge passing into a clasp composed of a metallic plate provided with two parallel horizontal surfaces attached to the section opposite the overlapping edge, with a handle attached to the upper portion of the bag, all substantially as described.

4. A telescope bag composed of a lower oblong-shaped box open at the top, with a larger oblong-shaped box open at the bottom passing partly over the smaller box, the said upper box being divided laterally into two sections connected near the lower part of each end by means of pins passing through the ends near the adjacent edges into a longitudinal slot in a connecting-bar, with the straps passing around both upper and lower parts of the bag, substantially as described.

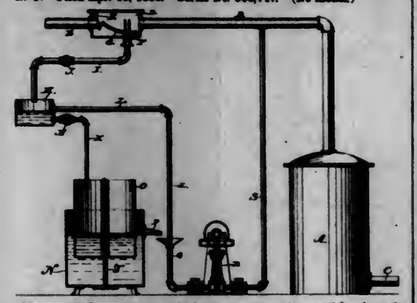
412,910. AUTOMATIC FEEDER. JAMES H. RENWICK, Albany, N. Y. Filed May 26, 1888. Serial No. 275,169. (No model.)



Claim.—1. In an automatic coagulating and pressure-reducing attachment for water-purifying apparatus, the combination of a valve-casing having a cylindrical valve-chamber and provided with inlet and outlet water-passages, which communicate through corresponding induction and eduction ports with said valve-chamber, said inlet water-passage having constantly-open branch passages—one leading into a coagulant-chamber and the other into a chamber beneath the lower open end of said valve-chamber—a water-controlling valve fitted to reciprocate freely in said valve-chamber, a coagulant-chamber that is connected to the inlet water-opening by a pipe having a shut-off valve, and a spring-actuated valve that is contained in said coagulant-chamber and is fitted to close the opening between said chamber and the valve-chamber, the lower end of said spring-actuated valve lying in the path of motion of said water-controlling valve, as and for the purpose herein specified.

2. An attachment for automatically controlling the supply of liquid coagulant fed into a water-purifying apparatus, the same consisting of a valve-chamber, which contains an automatic water-controlling valve, and a coagulant-chamber provided with an opening which leads into said valve-chamber, and with a spring-actuated valve, which is fitted to close said opening, and which extends downward into said valve-chamber, said water-controlling valve being actuated by the water-pressure, and said spring-actuated valve being governed by the movement of the water-controlling valve, as and for the purpose herein specified.

412,911. COAGULANT-FEEDER. JAMES H. RENWICK, Albany, N. Y. Filed Apr. 10, 1888. Serial No. 270,747. (No model.)



Claim.—1. In a water-purifying apparatus, the combination of a filter whose supply-pipe is provided with an automatic inlet-valve which is connected to an outlet-valve that controls a discharge-opening from said supply-pipe into a discharge-pipe which branches therefrom, said inlet and outlet valves being fitted to move coincidently in their opening and closing movements, a tank arranged to receive the water from said branch discharge-pipe and provided with a drip-pipe and outlet-pipe, a coagulant-tank provided with an outlet-spout and containing an open-top float, said float being adapted to receive the water that trickles from said drip-pipe, and a pump connected so as to force the coagulant emitted from said coagulant-tank into said supply-pipe, as and for the purpose herein specified.

2. In a water-purifying apparatus, a supply-pipe provided with an inlet-valve adapted to be opened by the force of the water-current which passes through said pipe, said inlet-valve being connected to and fitted to move coincidently with an outlet-valve which controls the discharge of water from a pipe which branches from said supply-pipe, as and for the purpose herein specified.

412,912. APPARATUS FOR HEATING AND PURIFYING FEED-WATER. JAMES H. RENWICK, Albany, N. Y. Filed May 15, 1888. Serial No. 310,794. (No model.)

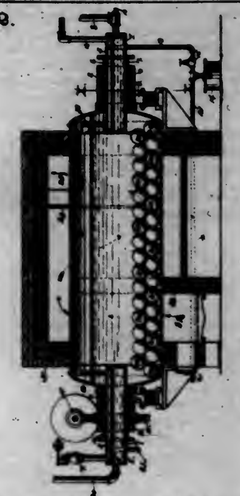
Claim.—1. In an apparatus for heating and purifying feed-water for steam-boilers, a revolving heater containing a series of balls or rollers and provided with inlet and outlet water-pipes, said heater being fitted to rotate over the fire of a furnace, as and for the purpose herein specified.

2. The combination, with a steam engine and boiler, of a water-feeding device, a heater in which the feed-water is primarily heated by the exhaust-steam from said engine, a revolving reheater which is exposed to the action of a fire, and a filter fixed between said reheater and boiler, as and for the purpose herein specified.

3. The combination, with a steam engine and boiler, of a water-feeding device, a heater in which the feed-water is primarily heated by the exhaust-steam from said engine, a revolving reheater containing a series of balls or rollers and exposed to the action of a fire, and

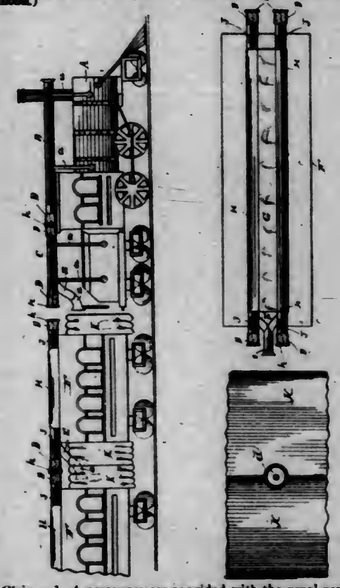


412,912.



a filter fixed between said reheater and boiler, as and for the purpose herein specified.

412,913. CAR-VENTILATION. H. PARMLY BROWN, Flushing, N. Y. Filed Feb. 16, 1884. Renewed Apr. 6, 1889. Serial No. 306,259. (No model.)



Claim.—1. A passenger-car provided with the usual ventilating-roof, in combination with the inclosing-pieces H, whereby air-ducts are formed at the sides of said roof, the pipes J and branch pipes E E e, connecting with said air-ducts, and means whereby pure air is supplied to said air-ducts, substantially as set forth.

2. The ventilating air-duct having a flexible end consisting of canvas or like material, a spiral spring, and a stiffening-ring, substantially as and for the purpose set forth.

412,914. BAND-SECURING MECHANISM FOR GRAIN-BINDERS. JOHN S. DAVIS, Toledo, assignor to Adam E. Sumner, Cleveland, Ohio. Filed Aug. 7, 1888. Serial No. 282,003. (Model.)

Claim.—1. The combination of the knotter-shaft, a knotter-head

having a reduced neck formed on the end of the shaft, and a bill-hook pivoted upon one side of the shaft and vibrating in a plane parallel to the axis thereof and at a right angle to a radial line therefrom, its outer curved end when closed lying over the neck and gradually merging into the plane of the end of the knotter-head, substantially as and for the purpose hereinbefore set forth.



2. The combination of a knotter-head having a reduced neck formed on the end of the knotter-shaft, a bill-hook pivoted upon one side of the shaft and vibrating in a plane parallel to its axis and at a right angle to a radial line therefrom, with a bar reciprocating longitudinally in a groove in the shaft and provided with two lugs which embrace the curved tail of the bill-hook, substantially as and for the purpose hereinbefore set forth.

3. The combination of a knotter-head having a reduced neck formed upon the end of the knotter-shaft, a bill-hook pivoted upon one side of the shaft, and push-fingers reciprocating in longitudinal grooves in the shaft, one of them being provided with lugs which embrace the curved tail of the bill-hook to vibrate it when the fingers are reciprocated, substantially as and for the purpose hereinbefore set forth.

4. The combination of a knotter-head having a reduced neck formed upon the end of the knotter-shaft, a bill-hook pivoted to one side of the shaft, push-fingers reciprocating in grooves in the shaft, one of said fingers controlling the movement of the bill-hook, and a sliding collar on the shaft, to which the push-fingers are attached, substantially as and for the purpose hereinbefore set forth.

5. The combination of the knotter-shaft, the vibrating bill-hook, reciprocating push-fingers, a sliding collar to which said push-fingers are attached, a spring for moving said collar outwardly to open the bill-hook, with means for retracting said collar against the stress of the spring and holding the bill-hook closed positively across the neck of the knotter during the tying operation, substantially as described.

6. The combination of a revolving knotter-shaft, a pivoted bill-hook and reciprocating push-fingers mounted thereon, a sliding collar to which the push-fingers are attached, a fixed bearing in which the shaft revolves provided with projecting flanges, and a lug on the reciprocating collar which takes in the space between the flanges in the bearings when the collar is thrust outwardly and the bill-hook opened to positively lock the shaft against rotation until the collar is retracted and the hook closed, substantially as described.

7. The combination of a knotter-shaft, a bill-hook and reciprocating push-finger mounted on said shaft and actuated by a sliding collar which also locks the shaft against rotation, a looping-hook also controlled by a sliding collar on the shaft, and a spiral spring wound round the shaft and bearing against both collars, with means for retracting the first-mentioned collar to close the bill-hook, unlock the shaft, and put the spring under compression, substantially as and for the purpose hereinbefore set forth.

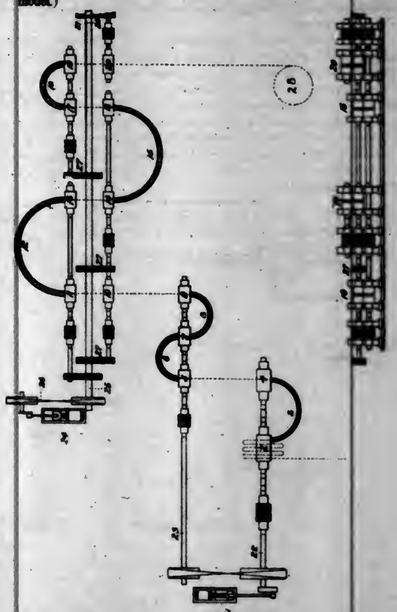
8. The combination of a knotter-shaft, a bill-hook mounted thereon, a sliding collar provided with means for actuating the bill-hook and locking the knotter-shaft, substantially as described, a sliding plate having a forked projection which embraces the collar and bears against a flange thereon, a link-rod connecting the plate to a lever, and a master-wheel provided with a cam-ledge which bears against the lever to vibrate it on its pivot and retract the sliding collar on the shaft, substantially as and for the purpose described.

9. The combination of a knotter-shaft, a bill-hook, and push-finger positively controlled by a sliding collar, a sliding plate for retracting said collar, and a link-rod connecting said plate with a positively-actuated lever, with a spring or block of elastic material interposed between the link and the sliding plate, substantially as and for the purpose hereinbefore described.

10. The combination of a knotter-shaft and the pinion attached thereto and a bill-hook mounted thereon, a sliding collar provided with means, substantially as described, for locking the shaft against rotation, a master-wheel provided with a cam for actuating the collar through suitable means, and also a sector-gear which engages the pinion, substantially as and for the purpose hereinbefore described.

11. The combination of a knotter-shaft, a reciprocating looping-hook mounted thereon and controlled by a sliding collar, and a spring normally bearing with slight pressure against said collar, with cams, substantially as described, which give the spring its greatest compression when the hook is projected to catch the loop and then relieve it almost wholly of pressure after the hook is retracted, substantially as and for the purpose hereinbefore described.

412,915. ROD-ROLLING MILL. ANDREW J. DAY and HENRY ROBERTS, Pittsburg, Pa. Filed June 6, 1889. Serial No. 313,170. (No model.)

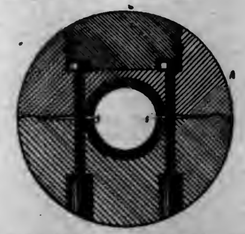


Claim.—1. In a rod-rolling-mill plant, rolls arranged in two or more adjacent series—such as the series of rolls 10 and 11, 13 and 14, 16 and 17, and 19 and 20—connected by repeaters, the grooves of the delivery-rolls of each series being shaped to impart a substantially square or round section to the rod, and the last pair in order of the rolls forming a finishing pass for the rod, substantially as and for the purposes described.

2. In a rod-rolling-mill plant, rolls arranged in two or more adjacent series—such as the series of rolls 10 and 11, 13 and 14, 16 and 17, and 19 and 20—roughing-rolls, and two or more intermediate sets of rolls—such as the rolls 4, 5, 7, and 9—substantially as and for the purposes described.

3. In a rod-rolling-mill plant, rolls arranged in two or more adjacent series—such as the series of rolls 10 and 11, 13 and 14, 16 and 17, and 19 and 20—connected by repeaters, the grooves of the delivery-rolls of each series being shaped to impart a substantially square or round section to the rod, and the last pair in order of the rolls forming a finishing pass for the rod, roughing-rolls, and two or more intermediate sets of rolls—such as the rolls 4, 5, 7, and 9—substantially as and for the purposes described.

412,916. PULLEY. WALLACE H. DODGE, Mishawaka, Ind. Filed June 5, 1889. Serial No. 313,154. (No model.)



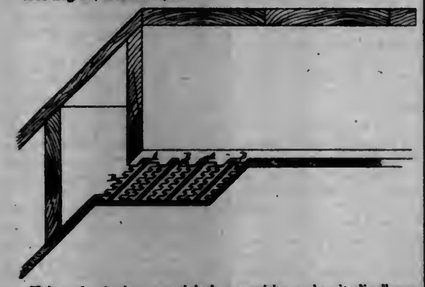
Claim.—1. A solid pulley separable on a line substantially in the plane of the axis, provided with clamping-bolts transverse to said line of separation, and one or more removable sections *b* to cover and conceal the nuts of said clamping-bolts, said sections *b* having such boundary-lines that they may be keyed in place by fastenings inserted from the ends, combined with the fastening-pins *d*, substantially as set forth.

2. A solid pulley separable on a line in the plane of the axis, or thereabout, having the opposing surfaces slightly separated, except near the periphery, clamping-bolts transverse to said line of separation, one or more removable sections of the periphery to cover and conceal said bolts, and removable fastenings inserted in the ends to retain said sections, substantially as set forth.

3. The pulley A, divided substantially in the plane of the axis, with its opposing surfaces slightly out of contact, except near the periphery, provided with one or more removable pieces *b* and dowel-keys *d*, the direction of the boundaries of said piece *b* being such that it cannot move from its place when said key is in place, substantially as set forth.

4. A pulley A, provided with a removable peripheral section *b* and retaining-keys *d*, inserted from the end, substantially as set forth.

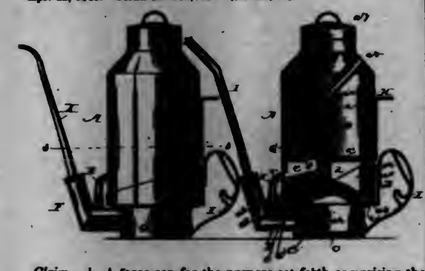
412,917. METAL LATH. GEORGE M. EDWARDS, London, England. Filed May 14, 1888. Serial No. 273,862. (No model.) Patented in England Aug. 27, 1883. No. 4,127.



Claim.—1. A sheet-metal lath comprising a longitudinally-extending projecting rib having a flat attaching-web, and laterally-extending notched flanges extending in a plane different from that of the attaching-web but parallel therewith, substantially as set forth.

2. A metallic lath, having a longitudinally-extending dovetailed projecting rib having a flat attaching-web, and laterally-extending notched flanges extending in a different plane from that of the attaching-web but parallel therewith, substantially as set forth.

412,918. FORCE-CAN. EMANUEL H. REITEMAN, Pullman, Ill. Filed Apr. 12, 1889. Serial No. 307,066. (No model.)

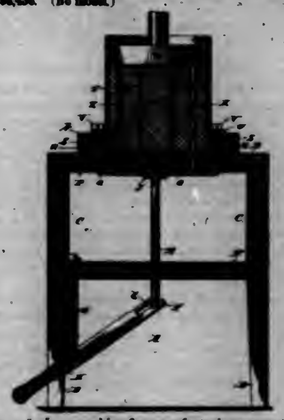


Claim.—1. A force-can for the purpose set forth comprising the reservoir-chamber *a*, the ejecting-chamber c^1, the chamber a^2, intervening between said two chambers, the flexible diaphragm B, arranged to normally rise within said intervening chamber, the vertically-sliding piston arranged to bear upon the flexible diaphragm, a thumb-slide for operating the piston, a valved passage leading from the reservoir-chamber to the ejecting-chamber, and a spout connected with the ejecting-chamber by a lateral passage, said members being combined and organized for operation, substantially as set forth.

2. The combination, with the can provided with an ejecting-chamber, a flexible diaphragm, and a piston, for the purpose set forth, of the spout connected with the ejecting-chamber and having a widened discharge end *l*, provided with a set of spray-regulating devices M, each consisting of a conical tube *m*, having an inlet *m'*, and containing a screw m^2, arranged so that its head can be set with reference to the larger outer end of the tube, substantially as and for the purpose set forth.

3. The combination, substantially as hereinbefore set forth, of the body of the can containing a reservoir-chamber, the cap C, provided with a spout and an ejecting-chamber and detachably applied to the body of the can, the piston and flexible diaphragm for forcing liquid from the ejecting-chamber, and a valved passage connecting the reservoir-chamber with the said cap and consisting of the tube E and a coupling for detachably connecting said tube with the cap, for the purpose described.

412,919. MACHINE FOR MANUFACTURING CONVERTER-BOTTOMS. WILLIAM L. GROFF, Steelton, Pa. Filed Feb. 2, 1889. Serial No. 298,436. (No model.)



Claim.—1. In a machine for manufacturing converter-bottoms in a single piece, the combination of a suitable frame, a ring or head secured detachably to the upper bed-plate of said frame, and the mold having a flange, whereby it is attached to the said ring, substantially as set forth.

2. In a machine for manufacturing converter-bottoms in a single piece, the combination, with a suitable frame, of a ring or head secured detachably to the upper bed-plate of said frame, the inner side of said ring being beveled, as herein described, and a mold provided with a flange, whereby it is connected to the said ring by means of set-screws, substantially as and for the purpose set forth.

3. In a machine for manufacturing converter-bottoms in a single piece, the combination of the frame, a ring having a beveled inner side and secured detachably to the upper bed-plate of said frame, a series of stems sliding vertically in the latter and through a sheet-metal plate interposed between the said ring and the upper bed-plate, a mold secured detachably to the said ring, and a follower arranged to slide in the said mold, substantially as and for the purpose set forth.

4. In a machine for manufacturing converter-bottoms in a single piece, the combination of the frame, a ring having a beveled inner side and secured detachably to the upper bed-plate of said frame, a sheet-metal plate interposed between said bed-plate and ring and secured detachably to the latter, a mold secured detachably to the ring, the vertically-sliding stems, and the follower sliding within the mold, substantially as set forth.

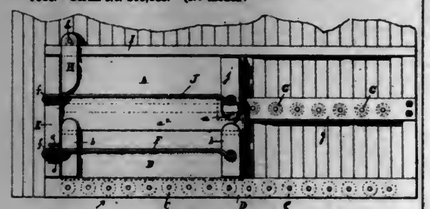
412,920. DENTAL ENGINE. JOHN HOOD and STEPHEN H. REYNOLDS, Boston, Mass. Filed Dec. 19, 1888. Serial No. 294,060. (No model.)



Claim.—1. In an arm for dental engines, the flexible coupling B, provided with coupling-pieces at each end, in combination with their connected shafts A and A', screwed into said coupling-pieces, and set-screws, whereby said shafts are firmly fastened thereto, substantially as shown and described.

2. As an improvement in arms for dental engines, the shafts A A' the flexible coupling B, and case F, consisting of the coiled spring *d* and an outer covering, in combination with ferrules *e e* and set-screws *d' d'*, all arranged substantially as and for the purpose set forth.

412,921. DOOR. DANIEL W. HOWARD, Cain, Kans. Filed Dec. 10, 1888. Serial No. 293,085. (No model.)

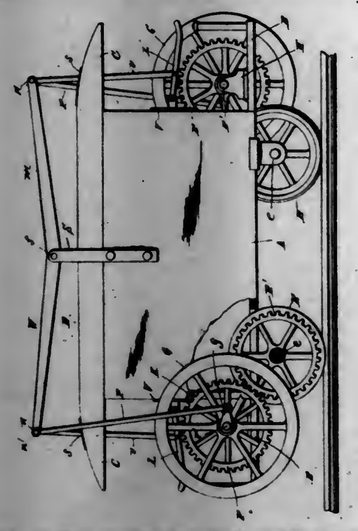


Claim.—1. The combination, in a car, of the lower and upper guide-rails and the intermediate short guide-rail with a door composed of two independent parts, the lower part being supported and guided by the lower guide-rail and intermediate rail, and the upper part having a hanger engaging the upper guide-rail and supported on the intermediate rail, and the securing devices for said parts, all constructed substantially as specified.

2. The combination of a car having a bottom guide-rail and friction-rollers, and an intermediate short guide-rail and friction-rollers, with the door composed of independent parts A and B, part B being supported on the lower friction-rollers and guided by the intermediate rollers, and part A being supported and guided on the intermediate rollers and by a hanger on its upper front end, all substantially as and for the purpose specified.

3. The combination of the lower horizontal series of rollers C C, the intermediate horizontal series of rollers G G, the grooved block *a*, and the upper guide track-rail with a door composed of two parts A and B, part A being supported by the rollers G G and by a hanger engaging the guide track-rail, and part B being supported on rollers C and guided by rollers G, and the fastening devices for the door, all substantially as set forth.

412,922. HAND-POWER MOTOR FOR STREET-CARS. JAMES H. JOHNSON, Decatur, Ill. Filed June 20, 1889. Serial No. 314,067. (No model.)



Claim.—1. The hand-power mechanism for propelling cars, consisting of the lever-frame W, pivoted by its middle portion to standards projecting above the car-top, the driving-shafts, their fly-wheels, gear-wheels, and cranks, the gear-wheels of the carrying-axles, the vertical pitmen connecting the cranks of the driving-shafts to the lever-frame, and the operating-levers pivoted to plates secured to the car-frame and connected by rods to the ends of the lever-frame, substantially as specified.

2. The combination, with the slotted end of a car, its top having fulcrum-standards projecting above its surface, and its platforms, of the lateral driving-shaft, their cranks, fly-wheels, and gear-wheels, the cogged wheels of the carrying-axles, the operating-levers at the ends of the car, the vibratory lever-frame above the car-top, and its connections to the cranks of the driving-shafts and the operating-levers, substantially as specified.

412,923. NECKTIE-FRAME. JOSEPH KAISER, San Francisco, Cal. Filed July 1, 1889. Serial No. 316,255. (No model.)



Claim.—1. A necktie-frame consisting of a plate having on its back center spaced parallel bars raised from the plate to permit the passage of the tie ends in opposite directions, substantially as described.

2. A necktie-frame consisting of a curved plate having on its back center the spaced parallel bars extending diagonally and raised from the plate to permit the smooth folding of the tie ends and their passage in opposite directions, substantially as described.

3. A necktie-frame consisting of a curved plate having an enlarged center and spaced parallel bars on the back of said center and raised therefrom to permit the passage of the tie ends in opposite directions, substantially as described.

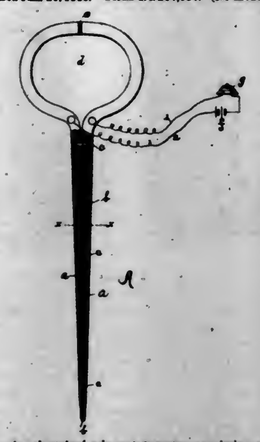
4. The necktie-frame consisting of a curved plate having on its back center the spaced parallel bars raised from the plate to permit the passage of the tie ends in opposite directions, and the tongues D on the back of said plate, for holding the tie, substantially as described.

5. A necktie-frame consisting of a plate having on its back center the spaced parallel bars raised from the plate to permit the passage of the tie ends in opposite directions, and the spring-hook E, secured to one end of the plate for attaching it to the collar-button and having a coil *e*, substantially as described.

6. A necktie-frame consisting of the plate having on its back center the spaced parallel bars raised from the plate to permit the passage of the tie ends in opposite directions, the spring-hook attached to the end of the plate to attach it to the collar-button, and the spring-arms C, attached to the plate center for holding the frame in place, substantially as described.

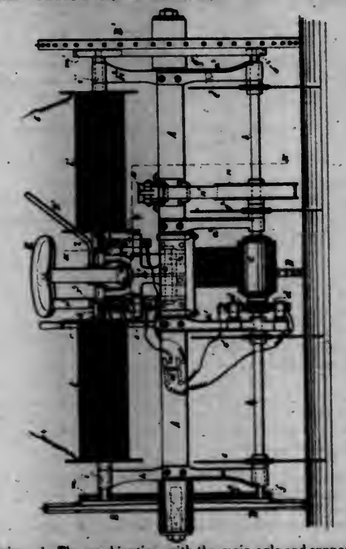
7. A necktie-frame consisting of the plate having on its back center the spaced parallel bars raised from the plate to permit the passage of the tie ends, the tongues D on the back of the plate, for holding the tie, and the spring-hook E, for attaching the plate to the collar-button, said hook having a coil *e* at its plate end, serving with the tongues to hold the tie, substantially as described.

412,924. ELECTRICAL METAL-DETECTOR. JAMES F. KISTER, Terre Haute, Ind., assignor of one-fourth to Owen R. Duffy, Washington, D. C. Filed Jan. 29, 1889. Serial No. 297,957. (No model.)



Claim.—An electrical mineral-detector consisting of a solid elongated tapering blade composed of a pair of metal strips riveted securely together throughout their length and having their upper ends extended to form a handle, said strips and extended ends being insulated from each other and the rivets insulated from the strips, the edges of the strips projecting beyond the insulating material, so that a circuit can be closed between the same, said strips adapted to form the terminals of a normally-open circuit, including an indicator, substantially as described.

412,925. ELECTRICALLY-OPERATED ICE-CUTTING MACHINE. FRANK R. KINSMAN, Plainfield, N. J. Filed Nov. 2, 1888. Renewed Sept. 7, 1889. Serial No. 323,232. (No model.)



Claim.—1. The combination, with the main axle and supporting-wheels, of a shaft and saws on such shaft, and an electric motor for rotating the shaft and saws, and gearing connecting the shaft and the supporting-wheels, substantially as specified.

2. The combination, with the main axle and supporting-wheels, of a shaft and gang of saws, and electric motor for rotating said shaft and saws, and pinions upon the ends of the saw-shaft, and toothed rings upon the main wheels meshing with each other for revolving the main wheels, substantially as specified.

3. The combination, with the main axle and supporting-wheels, of hangers connected to the main axle and extending downwardly and provided at their ends with bearings, an electric motor supported from the main axle, the shaft of whose armature is extended at one or both ends and supported in the bearings of the hangers, saws forming a gang mounted upon the armature-shaft, arms extending above the main axle, shafts and drums or reels supported by said arms, electric conducting-wires 4 5, leading from a source of supply to and around said drums, and electric connections from said wires to the electric motor, substantially as set forth.

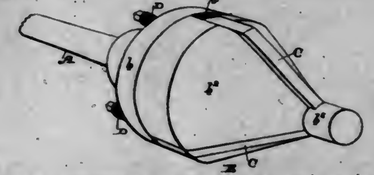
4. The combination, with the main axle and supporting-wheels and an electric motor *c*, supported by said axle, of the armature-shaft *b*, the gang of saws connected therewith, and bearings for said shaft the pinions *f f'*, the toothed rings *g g'*, connected to the main wheels the shafts *i i'* and supports for the same, the drums *l l'*, and the pinions *m m'*, whereby the rotation of the electrically-revolved shaft turns the main wheels and the electric-conductor drums, substantially as set forth.

5. The combination, with the main axle and supporting-wheels, of the electric motor and a switch, a gang of saws mounted upon the armature-shaft, a spine C, pivoted to the main axle, a steering-wheel and lever-handle, a lever and friction-wheel for stopping the armature-shaft, and a hand-lever for elevating the gang of saws by giving a partial rotation to the axle, substantially as set forth.

6. The combination, with the main axle and wheels, the electric motor, and the drums and the electric conducting-wire, of the insulated sleeves 6 7, the metal plates 8 9, the switch 10, and the conducting-wires connecting the insulated sleeves and the electric motor, and the gearing for connecting the drums to the supporting and propelling wheels, substantially as set forth.

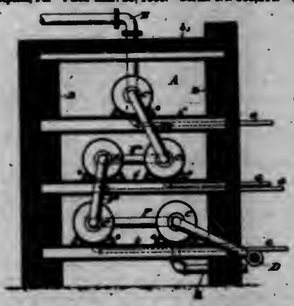
412,926. ADJUSTABLE CONE-CENTER FOR LATHES. JOHN KINSEY, San Francisco, Cal. Filed June 7, 1889. Serial No. 313,516. (No model.)

Claim.—1. In a cone-center for lathes, the combination of a plate *b*, the conically-shaped piece b^3, bolted thereto and having radial grooves e in its periphery or face, said plate and piece being centrally perforated to receive the lathe-center, the movable jaws C, seated in said grooves and adapted to be projected from the periphery or face of the conically-shaped piece and retracted, and the screws D, seated in the plate and engaging the jaws, whereby they are operated, substantially as described



2. In a cone-center for lathes, the conically-shaped body thereof having a cylindrical point or extension b^3 and provided with grooves in radial planes, as described, in combination with the sliding jaws C, mounted in said grooves and having their forward ends guided by the cylindrical extension of the cone-shaped body, and the screws seated in said body and engaging the rear ends of the jaws for operating them, substantially as described.

412,927. FEED-WATER HEATER. FREDERICK D. LAPOINTE, Philadelphia, Pa. Filed Mar. 20, 1888. Serial No. 305,211. (No model.)



Claim.—1. A feed-water heater consisting of a number of drums arranged one above the other, pipes connecting said drums at their ends in a continuous series, said pipes being located above the bottoms of the drums, so that the lower portions of the latter shall serve as settling-chambers, a water-exit pipe leading from the last or uppermost drum of the series, and a water-supply pipe leading to the first or lowermost drum thereof, substantially as described.

2. A feed-water heater consisting of a number of drums arranged one above the other, pipes connecting said drums at their ends in a continuous series, said pipes being located above the bottoms of the drums, so that the lower portions of the latter shall serve as settling-chambers, a water-exit pipe leading from the last or uppermost drum of the series, and a water-supply pipe leading to the first or lowermost drum thereof, and blow-off pipes at the bottom of the several drums, substantially as described.

3. The combination, with the flue A, of cross-pieces or girders one above the other therein, saddles *c*, located upon said girders, and a series of drums supported in said saddles and connected end to end in a continuous series and provided with a water-supply pipe and a water-exit pipe, substantially as described.

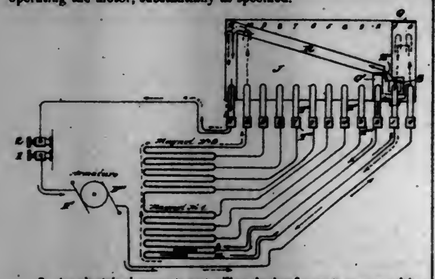
4. A feed-water heater consisting of a number of drums located in pyramid arrangement within a heating-flue, a water-supply pipe connected to one of the lower drums and a water-exit pipe to the uppermost drum, and pipes connecting said drums in a continuous series, said pipes opening into the heads of the drums at substantially the center of said heads, substantially as described.

412,928. GOVERNOR OR REGULATOR FOR ELECTRIC MOTORS. RODERICK MACRAE, Baltimore, Md. Filed July 25, 1889. Serial No. 318,389. (No model.)

Claim.—1. The combination, with an electric motor, of a mechanical speed-governor, an oscillating current-controller connected with the speed-governor, and a counter oscillating spring adjustably connected with the current-controller, substantially as specified.

2. The combination, with an electric motor, of a mechanical speed-governor and an oscillatory current-controller having conducting and non-conducting surfaces at opposite ends, an intermediate diagonal or spiral conducting-surface, and contact-points electrically connected

with the main circuit at the extremities of the controller and with the several coils of the field-magnet, whereby variations of speed in the motor cause changes in the extent of the field-magnets employed in operating the motor, substantially as specified.



3. An electrical current-controlling device for motors, comprising a cylinder having mainly a non-conducting periphery provided with conducting-surfaces, of which one extends completely around the cylinder at one end, another extends spirally from the said complete surface to or near to the opposite end of the cylinder, where it is electrically connected with an insulated conducting-plate and surrounded, but disconnected electrically from a third conducting plate or surface, substantially as specified.

4. A current-controller for electric motors, comprising a cylinder having end peripheral conducting-surfaces, a spiral conducting-surface electrically connected with an electrically-separated conducting-surface surrounded by and electrically disconnected from an opposite terminal conducting-surface, and a series of contact-points arranged to bear upon the periphery of the cylinder and electrically connected with the field-magnets of the motor and with the main circuit thereof, substantially as specified.

5. A current-controller for electric motors, consisting of a cylinder of the character described, and electrically connected with the field-magnets, and mechanically connected with the speed-governor operated by the motor, a cam adjustably mounted for oscillation with the cylinder and connected by a chain with an adjustable counter oscillating spring, substantially as specified.

6. The combination, with an electric motor, of a current-controlling cylinder mounted in a frame arranged parallel with the field-magnets, and provided with devices for mechanically connecting the same with a speed-governor mounted on the armature-shaft of the motor, substantially as specified.

7. The combination, with an oscillatory current-controller, of a cam mounted for oscillation with said controller, means for adjusting the cam to and from the center of oscillation, a chain connected with and extending along said cam and connected with an adjustable spring, substantially as specified.

412,929. **AUTOMATIC LAMP-EXTINGUISHER.** LYMAN R. MELIUS, Copake Iron Works, assignor to himself, and JAMES M. HALSTED, New York, N. Y. Filed Dec. 27, 1888. Serial No. 295,108. (No model.)



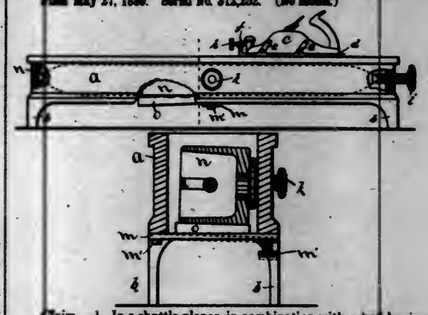
Claim.—1. The combination, with a frame arranged to engage a wick-tube and provided with laterally-extending arms, of hood-sections pivotally connected to the frame and a weighted frame supported by the arms, substantially as described.

2. The combination, with a frame arranged to engage a wick-tube and provided with laterally-extending arms, of hood-sections pivotally connected to the frame and provided with laterally and outwardly extending lugs or ears, and a weighted frame supported by the laterally-extending arms of the hood-supporting frame, substantially as described.

3. The combination, with a sleeve 10, provided with arms 12 and with pivot-pins 13, the whole constituting a frame, of hood-sections 14, mounted upon the pivot-pins 13 and formed with lugs or ears 15 and 16, a frame made up of wires 17, bent as described, and weights 18, carried by said wires, said frame being mounted upon the arms 12, substantially as described.

4. The combination, with a frame arranged to engage a wick-tube and provided with laterally-extending arms, of hood-sections pivotally connected to the frame and a frame provided with downwardly-extending weighted arms, said frame being supported by the laterally-extending arms of the hood-carrying frame, substantially as described.

412,930. **SHUTTLE-PLANER.** JOHN M. HEWTON, Norwich, Conn. Filed May 27, 1889. Serial No. 312,252. (No model.)



Claim.—1. In a shuttle-planer, in combination with a bed having centers, as set forth, for supporting a shuttle, a cross-bar secured to the under side of said bed, and a wedge inserted between said bar and the shuttle, substantially as and for the purpose specified.

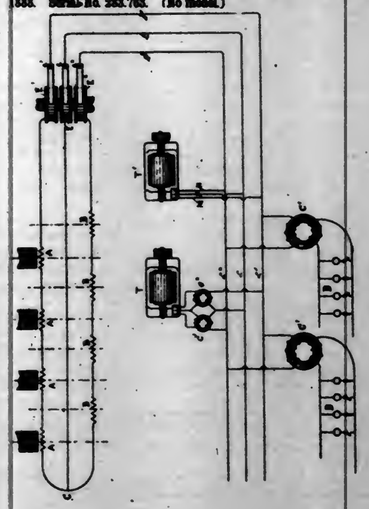
2. A bed having centers, as set forth, for supporting a shuttle, and a cross-bar attached to the under side of said bed and having one end vertically adjustable, as described, in combination with a wedge inserted between the said cross-bar and shuttle, substantially as and for the purpose specified.

412,931. **PROCESS OF PURIFYING ALCOHOL.** CARL M. PIEPENBROCK, London, County of Middlesex, England. Filed Aug. 4, 1888. Serial No. 281,969. (No specimens.)

Claim.—1. The herein-described process of purifying alcohol, which consists in diluting the same, then adding an oxidizing agent, then adding an alkaline solution, thereby setting up voltaic action between suitable voltaic elements immersed in the mixture, then adding a hydrocarbon, then heating the mixture and agitating the same, and then separating the pure alcohol by gravity.

2. The herein-described process of purifying alcohol, which consists in diluting the same, then adding an oxidizing agent, then adding an alkaline solution in presence of voltaic elements immersed in the mixture, thereby setting up voltaic action between said elements under the influence of the alkaline solution, and creating an electric current in the alcohol to be purified.

412,932. **SYSTEM OF DISTRIBUTION BY ALTERNATING ELECTRIC CURRENTS.** OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Aug. 26, 1888. Serial No. 283,763. (No model.)

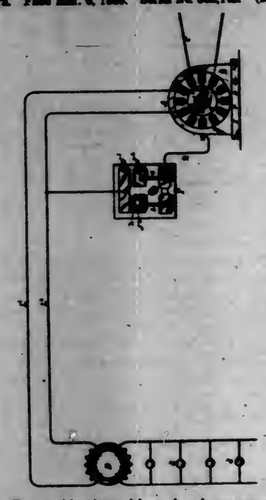


Claim.—1. The combination of an alternating-current generator having armature-coils producing currents differing in phase and connected in series, translating devices connected across the extremities of these coils, and motor-circuits derived, respectively, from the portions of the winding included between the extremities and a point intermediate thereto.

2. The combination, with an alternating-current generator adapted to deliver two currents differing in phase, of translating devices deriving currents due to their resultant action and other translating devices deriving currents due to their independent action.

3. The combination of two sources of alternating electric currents of non-synchronous phases, a circuit in which said sources are connected in series, a conductor leading from a point in the circuit between said sources, translating devices connected in series with the two sources, and electrical devices connected in series with each of the respective sources.

412,933. **DISCHARGE DEVICE FOR DYNAMOS.** OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Mar. 6, 1889. Serial No. 302,142. (No model.)



Claim.—1. The combination, with an electric generator, of main-line conductors leading therefrom, a discharge-plate connected with one of the main-line conductors, and a discharge-plate electrically connected with the generator.

2. The combination, with the armature of an electric generator and its contact-brushes, of discharge-plates electrically connected with the armature-circuit and a discharge-plate directed toward the same, but insulated therefrom and electrically connected with the body of the armature, substantially as described.

3. The combination, with the armature of an electric generator and its circuit, of a discharge-plate connected with the circuit, a second discharge-plate directed toward but insulated from the same and electrically connected with the body of the armature, and a fusible strip in circuit with one of the plates, substantially as described.

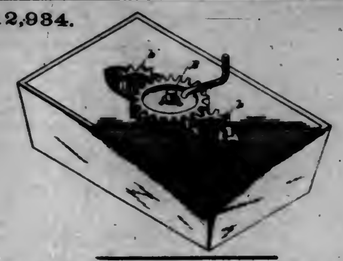
4. The combination, with an electric generator, of a discharge-plate in proximity to the armature-circuit and electrically connected to the frame of the generator.

5. The combination, with the armature of an electric generator and its contact-brushes, of a discharge-plate electrically connected with the armature-circuit, a discharge-plate directed toward the same, but insulated therefrom and electrically connected with the body of the armature, a reserve discharge-plate directed toward a different portion of the first plate, and means for connecting it with the armature.

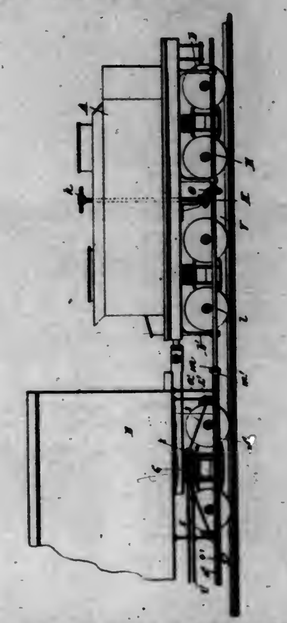
412,934. **CHURN.** WILLIAM H. SNOW, Middlebury, Ind. Filed Apr. 6, 1889. Serial No. 306,251. (No model.)

Claim.—The combination, with the rectangular body, of two elliptically-shaped dashers set at right angles to each other and arranged to rotate in opposite directions, and having an opening in each end of each dasher, one of such openings being provided with a rotary wheel, while the other is covered by a wire screen, and cog-wheels *b b* and B, connected to the dashers by proper shafting, all substantially as described, and for the purpose named.

412,934.



412,935. **CAR-BRAKE.** FRANK M. SHILEY, Goshen, Ind. Filed May 20, 1889. Serial No. 311,378. (No model.)



Claim.—1. In car-brake-operating mechanism, the sliding bar of the engine-tender having a worm-thread, and the internally-threaded pinion, the squared bearing, and the operating gear-wheel engaging said pinion, substantially as specified.

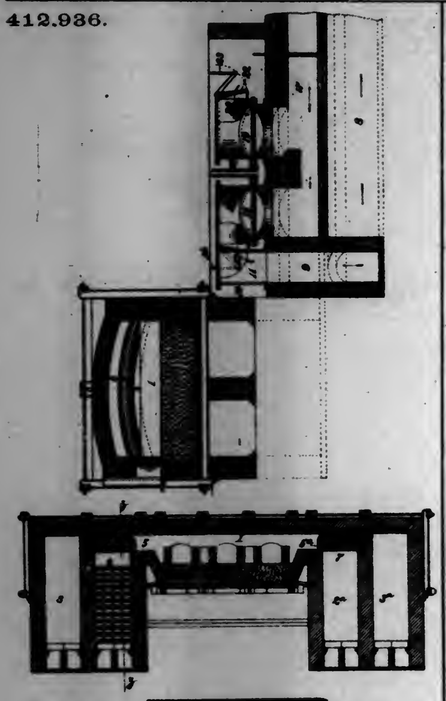
2. In car-brake mechanism, the combination, with the reciprocating operating-bar of the engine-tender, of the reciprocating longitudinal brake-bar under the car engaging the vertical brake-lever, the horizontal transverse lever of the truck connected to the brake-beams, its sliding connection with said vertical lever, the middle transverse lever of the car, its connection to said vertical lever, and its sliding connection to the transverse lever of the truck, substantially as specified.

3. The car-brake-operating mechanism, consisting of the worm-threaded bar of the tender and its operating-gear, the swinging longitudinal brake-bars under the cars abutting against each other in series, their vertical swinging levers, the transverse levers connected to the brake-beams, the transverse reversing-levers, and the sliding connection of said levers, substantially as specified.

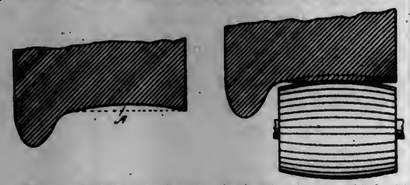
412,936. **HEATING-FURNACE.** HENRY SWINDELL, Allegheny, Pa. Filed Apr. 2, 1889. Serial No. 305,876. (No model.)

Claim.—In a furnace, the combination of a hearth having charging-doors on one side thereof, gas and air regenerative chambers arranged at opposite ends of the hearth, and flues connecting the hearth with said chambers, said flues being made of a width approximately equal to the width of the hearth and of a height greater at the front side of the furnace than at the opposite side, substantially as set forth.

412,936.



412,937. DRIVING-WHEEL. Charles E. Swinerton, New York, N. Y. Filed Jan. 31, 1889. Serial No. 298,309. (No model.)



Claim.—A driving-wheel having its bearing-face provided with facets concaved transversely to the tread of the wheel to approximately conform to the surface of the rail, substantially as set forth.

412,938. RAZOR-STROP. Lewis C. Tower, Rochester, N. Y., assignor to the Electric Cutlery Company, of New York. Filed Apr. 15, 1889. Serial No. 307,253. (No model.)

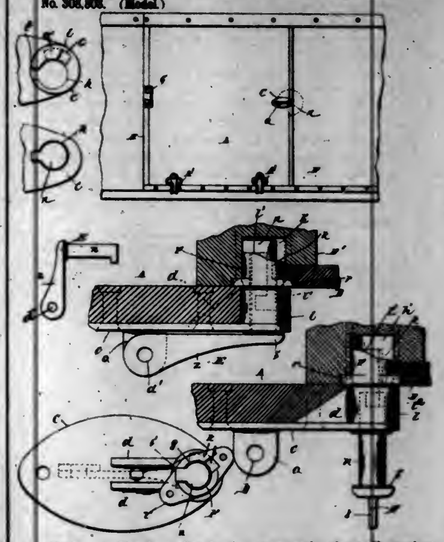


Claim.—1. In a strop, the combination, with the base or support having the flanges or ledges at the sides, of the thin elastic strip supported thereon at the ends only, the stropping-cushion on said strip, and the covering for the same fastened to the sides below said flanges, substantially as described.

2. In a strop, the combination, with the base or support having the flanges at the sides, of the thin elastic strip supported thereon at the ends only, and the stropping-cushion on the strip projecting over the flanges on the support, substantially as described.

3. In a strop, the combination, with the base or support having the flanges at the sides, of the strip, the stropping-cushion thereon, and the covering material for the cushion secured to the strip below the flanges on the support, substantially as described.

412,989. TIGHTENING AND FASTENING DEVICE FOR CAR-DOORS. John C. Wabbe, St. Louis, Mo. Filed Apr. 27, 1889. Serial No. 308,803. (Model.)

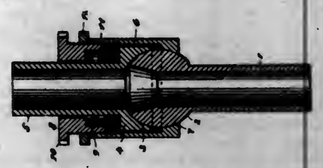


Claim.—1. The door-plate having at one end an inwardly-projecting slotted or notched barrel provided with an offset notch, in combination with a bevel-edged thimble secured to the door-jamb, and the fastening or tightening bolt having a lug engaging said barrel and thimble, substantially as set forth.

2. In a car-door fastening, the combination, with the door-plate having at one end a perforated stop-lug and at the other end an inwardly-projecting slotted or notched barrel, of the bevel-edged thimble bolted to the door-jamb, and the tightening-bolt having a lug on one end and the perforated handle on the other, substantially as specified.

3. The car-door-tightening devices and fastening, consisting of the keeper-plate on the middle portion of the front jamb, the bevel-edged thimble on the middle portion of the rear jamb, the door-plate having the slotted or notched barrel and the perforated stop-lug, and the fastening or tightening bolt having a toe-lug engaging an angular notch or groove of the barrel of the door-plate, and a perforated lever-handle adapted to be locked or sealed to said stop-lug of the door-plate, substantially as specified.

412,940. BALL-AND-SOCKET PIPE-COUPLING. Thomas Aldcorn, New Durham, N. J. Filed June 15, 1889. Serial No. 314,329. (No model.)

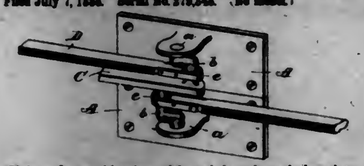


Claim.—1. A pipe-coupling joint consisting of a casing with a bevel-edged opening at one end and a cylindrical screw-head at the other end, a pipe having a ball at its end resting within the bevel-edged opening, a pipe extending through the cylindrical head and having a socket fitting against the ball within the casing, and a coiled spring mounted on the pipe extending through the cylindrical head and located between the cylindrical head and the head of the pipe, substantially as shown and described.

2. A pipe-coupling joint consisting of a casing with a bevel-edged opening at its outer end, an externally-screw-threaded cylindrical head screwing into the casing at its inner end, a collar screwed on the cylindrical head, a ball-and-socket pipe-joint located in the casing with the ball resting within the bevel-edged opening, and a coiled spring mounted on the pipe, having the socket end between its head and the cylindrical head, substantially as shown and described.

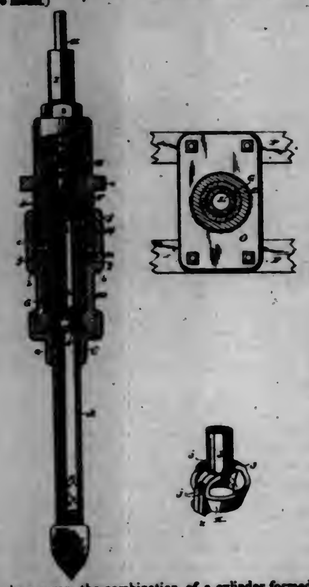
3. A pipe-coupling joint consisting of the casing 6, with an opening at its outer end having a beveled edge 7, a pipe 1, having a ball 2 at its end resting within the beveled edge 7, a cylindrical externally-threaded head 8, screwing into the inner end of casing 6 and formed with a chamber 9 at its inner end and a notched flange 10 at its outer end, a pipe 5, extending through the cylindrical head 8 and having a head 4, with a socket 3, fitting against the ball 2, a coiled spring 11, mounted on pipe 5, between its head 4 and the top of chamber 9, and a ring 12, screwed on the cylindrical head 8, substantially as shown and described.

412,941. END-BOARD FASTENING FOR WAGONS. Robert Allen, Arbela, assignor of one-half to John L. Richardson, Tuscola, Mich. Filed July 7, 1888. Serial No. 279,548. (No model.)



Claim.—In combination with end-boards and the plates A A, the lever C, with its cranks *b b*, the slotted rods D D, and the screw-shanked hooks *f f*.

412,942. PUMP. Ezra S. Babcock, Milton, Wis., assignor of one-half to Paul M. Green, same place. Filed May 31, 1889. Serial No. 312,993. (No model.)



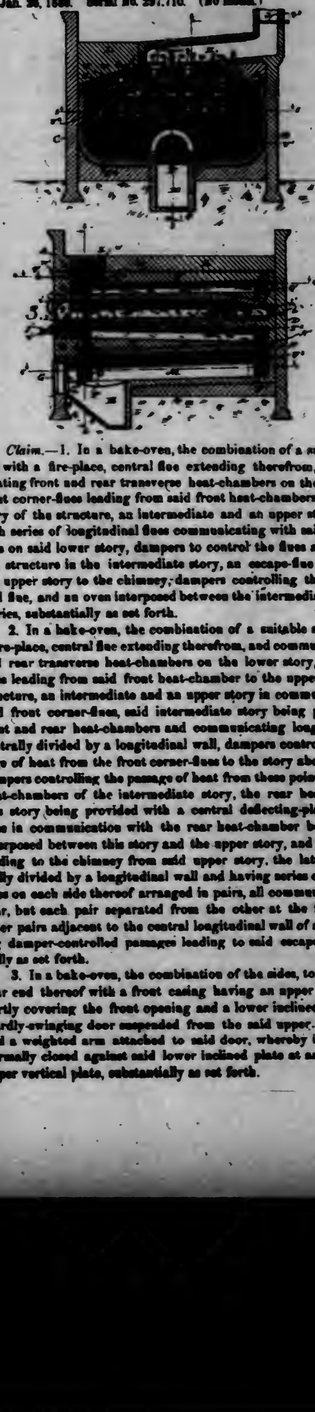
Claim.—1. In a pump, the combination of a cylinder formed in two parts only, one screwing into the other, with packing interposed between their opposing interior faces, a pump-rod passing down through the upper part and carrying a valved plunger passing through the packing and in contact therewith, and a wrench-bearing formed on top of and integral with the upper part of the cylinder, which screws directly within the lower part of said cylinder, whereby the same may be screwed down as the packing wears away and the cylinder thereby tightened without detaching any of the parts of the pump, substantially as set forth.

2. In a pump, the combination of a two-part cylinder, one part screwing into the other and each part partially bored out, with glass thimbles fitting into said bored-out portions and having horizontal flanges and rings or layers of packing interposed between the opposing faces of the said thimble-flanges, substantially as set forth.

3. In a pump, the combination, with a cylinder having a centrally-arranged packing, of a pump-rod and a split rod united to said pump-rod by a coupling and terminating in a spider-cage, and an inclined clamping-ring, a hollow plunger having an inclined contracted neck held by said clamping-ring, and a ball-valve within said spider-cage and another valve below said plunger at the bottom of the cylinder, substantially as set forth.

4. In a pump, the combination of a two-part cylinder, one part screwing into the other and each provided with glass thimbles having opposing horizontal flanges, rings or layers of packing interposed between said flanges, pump-tubes above and below said cylinder, a pump-rod passing down through the upper part of the cylinder, a split rod coupled to said pump-rod and carrying a ball-valve cage and inclined clamping-ring, a glass plunger with inclined contracted neck held by said inclined ring, and provided with a ball-valve, and passing through and in contact with said packing a wrench-bearing formed on the upper part of the cylinder, and a ball-and-cage valve located at the bottom of the cylinder below the plunger, substantially as set forth.

412,943. BAKE-OVEN. John D. Barnhill, Milwaukee, Wis. Filed Jan. 26, 1889. Serial No. 297,710. (No model.)



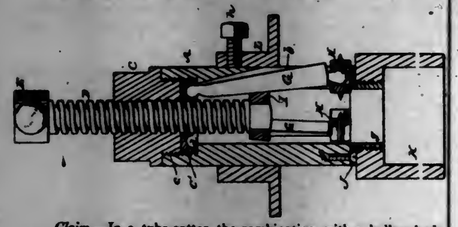
Claim.—1. In a bake-oven, the combination of a suitable structure with a fire-place, central flue extending therefrom, and communicating front and rear transverse heat-chambers on the lower story, front corner-flues leading from said front heat-chambers to the upper story of the structure, an intermediate and an upper story provided with series of longitudinal flues communicating with said heat-chambers on said lower story, dampers to control the flues at the front of the structure in the intermediate story, an escape-flue leading from the upper story to the chimney, dampers controlling the openings to said flue, and an oven interposed between the intermediate and upper stories, substantially as set forth.

2. In a bake-oven, the combination of a suitable structure with a fire-place, central flue extending therefrom, and communicating front and rear transverse heat-chambers on the lower story, front corner-flues leading from said front heat-chamber to the upper story of the structure, an intermediate and an upper story in communication with said front corner-flues, said intermediate story being provided with front and rear heat-chambers and communicating longitudinal flues centrally divided by a longitudinal wall, dampers controlling the passage of heat from the front corner-flues to the story above, and other dampers controlling the passage of heat from these points to the front heat-chambers of the intermediate story, the rear heat-chamber of this story being provided with a central deflecting-plate, but otherwise in communication with the rear heat-chamber below, an oven interposed between this story and the upper story, and an escape-flue leading to the chimney from said upper story, the latter being centrally divided by a longitudinal wall and having series of longitudinal flues on each side thereof arranged in pairs, all communicating at the rear, but each pair separated from the other at the front, and the inner pairs adjacent to the central longitudinal wall of said story having damper-controlled passages leading to said escape-flue, substantially as set forth.

3. In a bake-oven, the combination of the sides, top, bottom, and rear end thereof with a front casing having an upper vertical plate partly covering the front opening and a lower inclined plate, an inwardly-swinging door suspended from the said upper vertical plate, and a weighted arm attached to said door, whereby it will be held normally closed against said lower inclined plate at an angle to said upper vertical plate, substantially as set forth.

4. In a bake-oven, the combination of a suitable structure, fire-place, and flues and heat-passages, an oven, a steam-boiler with a pipe leading to said oven and extending through the front wall thereof and having a suitable valve outside of the oven, a branch pipe leading from said first-named pipe between said valve and said steam-boiler and having also a suitable valve, and an escape-pipe leading from the rear of said oven, above the same, to the smoke-escape flue and terminating in a valve, with an operating-rod projecting through the wall of the main structure, substantially as set forth.

412,944. TUBE-CUTTER. PATRICK H. BERADS, Punxsutawney, Pa. Filed Dec. 5, 1888. Serial No. 292,602. (No model.)



Claim.—In a tube-cutter, the combination, with a hollow body A, having longitudinal slots *b* and transverse openings *c*, the screw-box C, and a recessed ring C', of the cutter-bars G, having their outer ends fitting in the recess of the ring, the cutters H, connected by a ball-and-socket joint with the inner ends of the bars G, and the screw D, provided with the roller I on its end, substantially as herein shown and described.

412,945. SIDE-HILL PLOW. JOHN D. BURKHART, Dayton, Wash. Filed Mar. 6, 1889. Serial No. 302,195. (No model.)

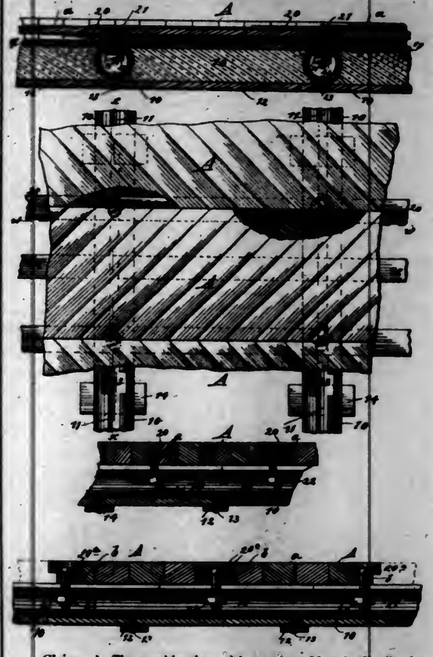


Claim.—1. In a hillside-plow, the combination, with a beam, of the double-pointed plow having the standard formed in two pieces, and the top plate, the vertical pivot-bolt passing through the beam, the hinged locking-stirrups, the locking-lever, the link, the link-arms, the pivot-bolt connecting the same and having the enlarged head, and the vertical guideway, substantially as set forth.

2. The combination, with the beam, of the handles, the V-shaped casting pivoted on the beam, the perforated rear casting secured to the handles, the guard, the locking-bar and its pin, and the pivoted brace-rod connecting the handles and the beam, substantially as set forth.

3. The combination, with a plow-beam, of a clevis pivotally secured thereto, a clip extending over the clevis, the centrally-pivoted cross-bar, the wedges pivoted to the ends of the cross-bar, and an operating-rod, substantially as set forth.

412,946. FLOORING. THOMAS CANTWELL, Brooklyn, assignor, by direct and mesne assignments, to the Nightingale Floor Company, New York, N. Y. Filed Dec. 17, 1888. Serial No. 293,052. (No model.)



Claim.—1. The combination, with a series of longitudinally-slotted tubes, of a series of floor-sections, tie-bars or retaining-strips bearing on shoulders formed at the edges of said floor-sections, and fastening devices which connect the tie-bars and the tubes, substantially as described.

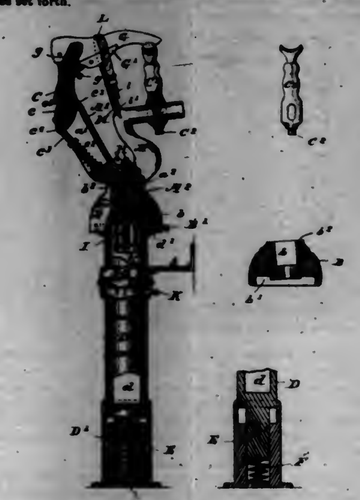
2. The combination, with a series of longitudinally-slotted tubes, of uniting-strips 12, connected to the tubes, floor-sections having shoulders, tie-bars or retaining-strips which rest upon said shoulders, bolts passing through the tie-bars or retaining-strips and the slots of the tubes, and nuts arranged within the tubes, which nuts the bolts engage, substantially as described.

3. The combination, with a series of spaced and longitudinally-slotted tubes having enlarged apertures 23, of floor-sections, tie-bars or retaining-strips which engage shoulders formed on the floor-sections, and bolts passing through the retaining-strips and the slots of the tubes to engage nuts arranged within the tubes, substantially as described.

4. In an attaching device for floors, the combination, with a series of longitudinally-slotted tubes, of bars by which said tubes are connected and spaced, anchor-plates connected to the tubes, and bolts 21, which extend through the tube-slots, substantially as described.

412,947. LASTING-JACK AND SUPPORT. SAMUEL CLARK, Rochester, N. H. Filed June 20, 1888. Serial No. 314,909. (No model.)

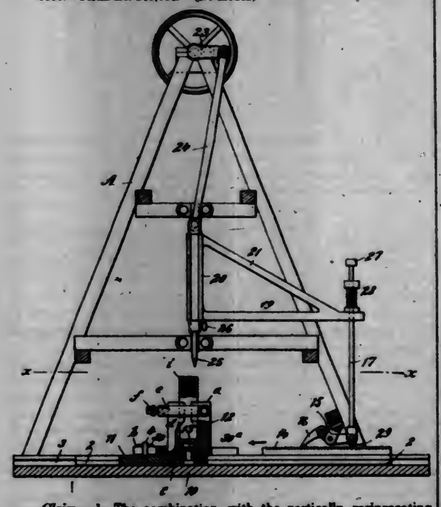
Claim.—1. A lasting-jack and its support combining the following elements: a pivoted adjustable heel-block provided with a spindle for mounting a last and shoulders for limiting its motion by contact with the arm of the jack to which it is pivoted, a horizontal arm and an adjustable toe-rest provided with a set-screw for securing it at any desired point upon said arm, a strap provided with a buckle and connected by set-screw to said arm, a jack-block to which said jack is swiveled, as shown, and provided with an annular flange at its bottom, a vertically-adjustable support fitting within the flange of said jack-block and provided with an annular groove in its side, and two or more set-screws threaded to the flange of said jack-block and adapted to enter and rest in the groove of said support, all substantially for the purpose set forth.



2. The combination, with an adjustable hollow support having an annular groove near its top, of a jack-block having its bottom chambered to receive said hollow support, provided with set-screws in its sides to enter the groove therein, and a socket in its top, a lasting-jack having a turned portion fitting the socket in said jack-block, and a bolt passing through both said jack and jack-block, provided with a helical spring upon its lower end operating expansively against said jack-block.

3. In a lasting-jack, a hollow adjustable support, a jack-block mounted and capable of adjustment in a rotative course thereon, having its top surface inclined and provided with a socket sunk at right angles therewith, a lasting-jack having a turned portion fitting the socket in said jack-block, and a bolt passing through both jack and jack-block, provided with a helical spring operating expansively against the latter, all substantially for the purpose specified.

412,948. SCRUB-BRUSH MACHINE. ADDISON M. COOK, Bridgehampton, assignor to Arthur S. French, Brooklyn, N. Y. Filed Nov. 1, 1888. Serial No. 289,711. (No model.)



Claim.—1. The combination, with the vertically-reciprocating cutter or knife, of a horizontal slide thereunder, provided with a vise or holder and a rack, a pawl engaging said rack, a lever to which said pawl is pivoted, and an operating-rod connected to said lever, substantially as set forth.

2. The combination, with the vise-carrying slide and its rack, of a lever having a stop projection and a pivoted pawl engaging said rack, and an operating-rod connected to said lever, substantially as set forth.

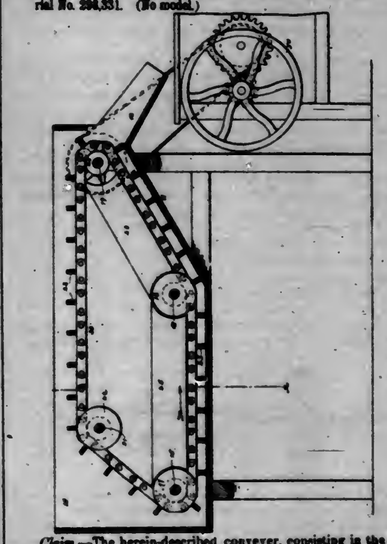
3. The combination, with a vertically-reciprocating arm having an aperture in its outer end, a vertical rod extending through said aperture and having a head at its upper end, and a cushioning-spring between the head and arm, of the vise-carrying slide having a rack, and a lever connected to the lower end of the rod and having a pawl engaging said rack, substantially as set forth.

4. The combination, with the reciprocating cutter, of the slide thereunder, a vise mounted on said slide and provided with vertical fixed jaw, a horizontal plate to which said jaw is rigidly secured, provided with a vertical recess in front of said fixed jaw, a movable jaw stepped at its lower end in said recess, and a stirrup pivoted to the upper end of the fixed jaw and having a set-screw to bear against the movable jaw when the outer end of the stirrup is swung thereover, substantially as set forth.

5. The combination, with a base-plate, of a slide mounted thereon, a vise carried by the slide, stops, as 30 and 30ª, arranged in connection with the vise, a rack carried by the slide, a pawl-carrying lever arranged above the rack, a vertically-reciprocating slide, a knife carried thereby, an arm extending outward from the slide, and a rod connecting said arm and the pawl-carrying lever, as and for the purpose stated.

6. The combination, with a base-plate, of a slide 11, a vise 12, connected thereto by a bolt 13, stops 30 and 30ª, carried by the slide, a rack 14, a lever 15, provided with a pawl 16 and with a tooth 29, a reciprocating slide 20, a knife 25, carried by the slide, an arm 19, extending outward from the slide, and a rod 17, connected to the lever 15 and to the arm 19, substantially as described.

412,949. CONVEYER. WILLIAM R. CROW, Buffalo, assignor to himself and Edward R. Ulrich, Jr., Springfield, Ill. Filed Feb. 1, 1889. Serial No. 298,331. (No model.)

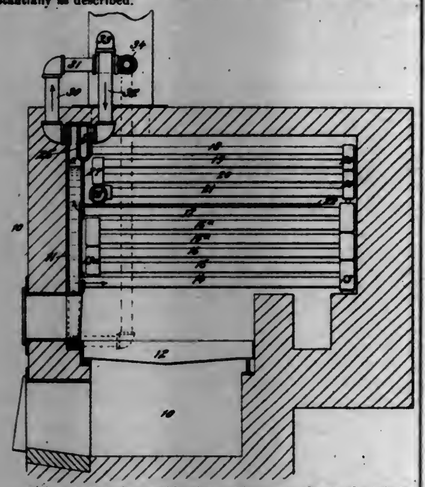


Claim.—The herein-described conveyer, consisting in the casing 10, having a discharge-chute 12 and an upwardly-inclined floor-section 11, wheel 20 at the upper end of said section, wheel 18 at the lower end, lower and upper wheels 17 and 22 at the opposite end of the casing, the wheel 22 being in advance of the wheel 17, a shield between wheels 17 18, an inclined shield between wheels 18 19, and the endless chain passing around said wheels and under the shields provided with transverse flights or blades 23, substantially as set forth.

412,950. STEAM-BOILER. HARRY A. R. DEUTNER, South Bethlehem, Pa. Filed Feb. 7, 1889. Serial No. 299,949. (No model.)

Claim.—1. In a boiler, the combination, with a water-front, of a tubular steam-generating section arranged in connection therewith, a pipe or tube leading upward from the steam-space of the water-front,

and then downward to a steam-receiving chamber, and a superheating-section communicating with said steam-receiving chamber, substantially as described.



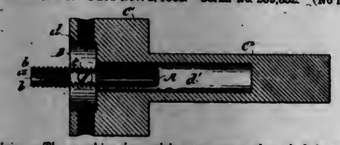
2. In a boiler, the combination, with a water-front, of a tubular steam-generating section, a pipe or pipes leading upward from the steam-space of the water-front, horizontal pipes connected to the upwardly-extending pipes, arched connections which establish communication with the horizontal sections and downwardly-extending sections, said downwardly-extending sections, and a superheating-section, with which the downwardly-extending sections communicate, substantially as described.

3. In a boiler, the combination, with a water-front having compartments *a* and *b*, of upwardly and then downwardly extending pipes, by which said compartments are placed in communication, a steam-generating section arranged in connection with the water-front, and a steam-superheating section which communicates with the chamber *b* and with a steam-distributing pipe 28, substantially as described.

412,951. PROCESS OF TREATING CEREALS. FRANKLIN DORR, Baltimore, Md. Filed July 25, 1889. Serial No. 318,666. (Specimens.)

Claim.—The process herein described of preparing cereals, consisting in first cooking the grains, then partially drying and cooling the same, then crushing the grains by a prolonged frictional grinding, and in the same operation drying the product and also stimulating chemical changes by the frictional heat generated by the prolonged grinding, substantially as described.

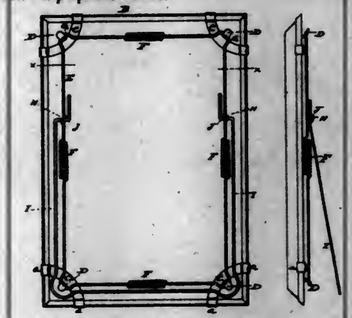
412,952. TAP AND HOLDER THEREFOR. CHARLES ELTERICH, New York, N. Y. Filed Nov. 2, 1888. Serial No. 289,852. (No model.)



Claim.—The combination, with a tap screw-threaded throughout its length, of a holder having a cavity and the hollow shank, a block smooth on its periphery and having a threaded hole to receive the tap, and a screw or pin fitted in the block and engaging with the tap, substantially as specified.

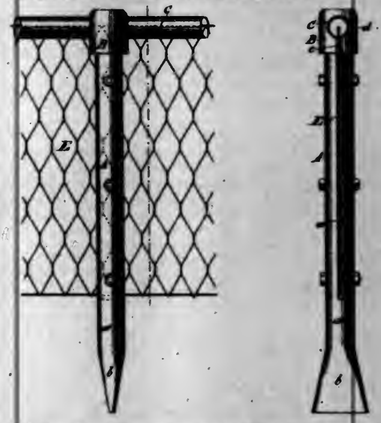
412,953. MOUNT FOR PHOTOGRAPHS. HERBERT N. GALE, Bristol, Conn., assignor of one-half to John H. Twisden, Boston, Mass. Filed June 4, 1889. Serial No. 313,035. (No model.)

Claim.—1. The herein-described mount for photographs, consisting of a metal border for the glass composed of the U-shaped sides B, combined with clips C, the two ends of the clips bent to form hooks *a*, to engage the adjacent sides of the respective angles, and also constructed with an outwardly-turned hook D, and a binder made from wire, its angles adapted to engage the said hooks D of the clips, and the sides of the binder between the said clips coiled to form a spiral spring, two opposite sides of the binder constructed with eyes H, and a U-shaped wire brace, the ends of the legs bent at right angles and extending through the said eyes H to form pintles J, substantially as and for the purpose described.



2. The combination of the glass A, the clips C, the two ends of the said clips bent to form hooks *a*, and adapted to embrace the edges of the glass, the said clips also constructed with a hook D, and an elastic binder made from wire, bent corresponding to the shape of the glass, the angles of the wire forming loops G, to engage said hooks D, and the said wire between the said angles coiled to form spiral springs F, substantially as described.

412,954. FENCE-POST. EDWIN GILBERT, Georgetown, Conn., assignor to the Gilbert & Bennett Manufacturing Company, same place. Filed Feb. 25, 1889. Serial No. 301,048. (No model.)



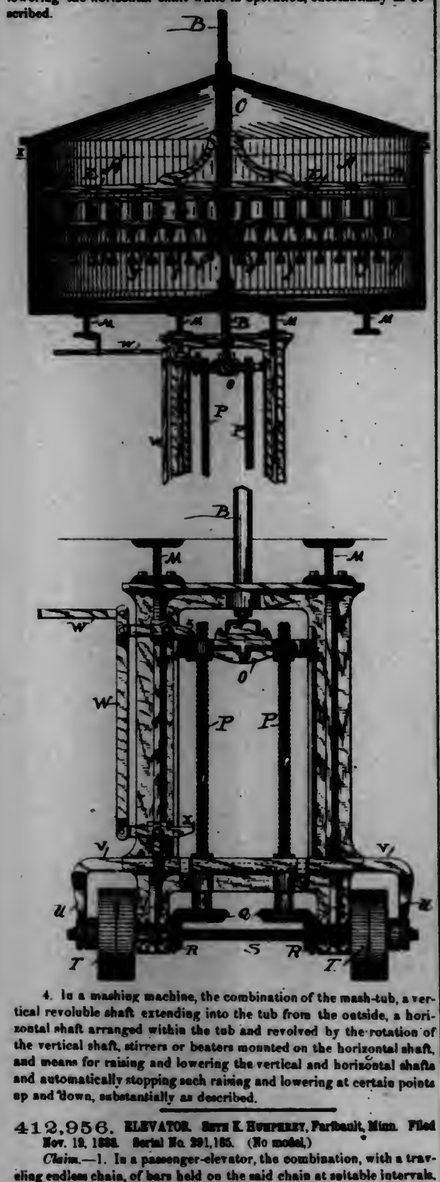
Claim.—The combination, with a fence-post made of a single tube slotted longitudinally to receive a wire-fence web, of a cap for said post, also slotted to receive the wire web and provided with an aperture to receive a top rail, substantially as specified.

412,955. MASHING-MACHINE. MATHIUS GOTTFRIED, Chicago, Ill. Filed Apr. 12, 1886. Serial No. 198,543. (No model.)

Claim.—1. In a mash-tub, the combination of a horizontal arm centrally mounted and rotated in a horizontal plane, stirrers or beaters carried by said horizontal arm and operated by such rotation, and means for raising and lowering said horizontal arm while in rotation and automatically stopping said raising and lowering at predetermined limits, substantially as described.

2. In a mashing-machine, the combination of a mash-tub, a vertical revoluble shaft, a horizontal shaft arranged within the tub and revolved by the rotation of the vertical shaft, stirrers or beaters mounted on the horizontal shaft, and means for raising and lowering the vertical and horizontal shafts and stopping such raising and lowering at points up and down while the same are revolving in use, substantially as described.

3. In a mashing-machine, the combination of a mash-tub, a vertical revoluble shaft, a horizontal shaft within the tub, revolved by the rotation of the vertical shaft, stirrers or beaters mounted on the horizontal shaft and operated by such rotation, and means for raising and lowering the horizontal shaft while in operation, substantially as described.



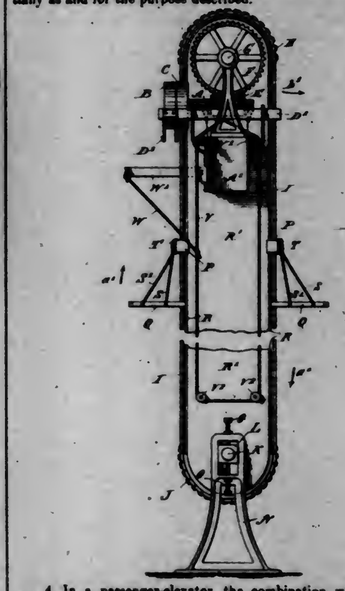
4. In a mashing machine, the combination of the mash-tub, a vertical revoluble shaft extending into the tub from the outside, a horizontal shaft arranged within the tub and revolved by the rotation of the vertical shaft, stirrers or beaters mounted on the horizontal shaft, and means for raising and lowering the vertical and horizontal shafts and automatically stopping such raising and lowering at certain points up and down, substantially as described.

412,956. ELEVATOR. SETH E. HUMPHREY, Faribault, Minn. Filed Nov. 19, 1888. Serial No. 291,185. (No model.)

Claim.—1. In a passenger-elevator, the combination, with a traveling endless chain, of bars held on the said chain at suitable intervals, rods pivoted on each of the said bars, one above the other, and a platform pivoted on the lower ends of the said rods, substantially as shown and described.

2. In a passenger-elevator, the combination, with a traveling endless chain, of bars held on the said chain at suitable intervals, rods pivoted on each of the said bars, one above the other, platforms pivoted on the lowermost ends of the said rods, and fixed guide-plates, against which one end of each of the said platforms rests, substantially as shown and described.

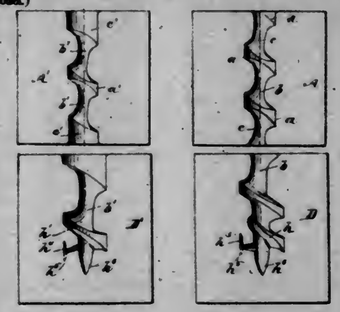
3. In a passenger-elevator, the combination, with the traveling endless chain, the vertical guide-bars, and the transverse bars hung on the endless chain at suitable intervals, said transverse bars provided with guide-lips projecting over the outer edges of the vertical guide-bars, of rods pivoted one above the other on each of said transverse bars, and a platform pivoted on the lower ends of said rods, substantially as and for the purpose described.



4. In a passenger-elevator, the combination, with a traveling chain, of bars held on the said chain at suitable intervals, a self-reversing platform hung on each of said bars, fixed guide-plates, against which rest one end of each of the said platforms, and gravity-catches pivoted on the inner end of each of said transverse bars, said catches having cam-faces adapted to normally engage the fixed guide-plates on the ascending side of the elevator, and adapted to swing from contact with the guide-plates when on the descending side, all arranged substantially as and for the purpose described.

5. In a passenger-elevator, the combination, with the upper and lower drive-shafts carrying sprocket-wheels, an endless chain passing over said sprocket-wheels, said chain carrying self-reversing platforms, a worm secured on the upper drive-shaft, a worm-wheel meshing into said worm, a shaft carrying said worm-wheel provided with a loose and fast pulley, and the stopping and starting rope, of a belt-shifter operating over the said fast and loose pulleys, a rope connecting the said shifter and starting and stopping rope, a lever pivoted to the frame of the elevator, projected over the path of the platforms, and a rope connecting the free end of said lever with the starting and stopping rope, said lever arranged for contact with the body of the ascending passenger, substantially as and for the purpose described.

412,957. AUGER-BIT DIE. CHARLES H. IRWIN, FRANCIS I. HOSFLR, and JAMES W. STEBBINS, Wilmington, Ohio; said Hosfle and Stebbins assignors to said Irwin. Filed Aug. 27, 1889. Serial No. 322,140. (No model.)



Claim.—1. In dies for forging auger-bits, the bit-body dies made with adjacent inclined spiral-blade-forming concavities, and with contiguous diagonally-ranging semi-spiral center-stem-forming depressions made shallow at their center parts and gradually deeper and broader toward their ends, which merge into the spiral-blade-forming concavities, substantially as described, whereby the dies will produce a bit-body having a spiral blade or flange surrounding the central stem, which itself has a spiral form between the convolutions of said blade or flange, as set forth.

2. In dies for forging auger-bits, the bit-heading dies provided with concavities and depressions receiving the outer parts of the central stem of the blank and its surrounding main spiral blade or flange, and provided, also, with semi-spiral flange-forming depressions at or between the concavities and depressions producing the last convolution of the main spiral flange of the bit, substantially as described, whereby the bit-blank will have support at its outer part in the die while an auxiliary semi-spiral flange is produced on it by the dies within the last convolution of the main spiral flange of the bit, as set forth.

3. In dies for forging auger-bits, the bit-head-forming dies provided with concavities and depressions receiving the outer parts of the center stem of the bit-blank and its surrounding main spiral blade or flange, and provided, also, with semi-spiral flange-forming depressions at or between the concavities or depressions forming the last convolution of the main spiral flange of the bit, and provided, also, with an extension of the center-stem-forming depressions beyond those forming the main and auxiliary spiral flanges, substantially as described, whereby the bit-blank will have support at its outer part in the dies while an auxiliary semi-spiral flange and a central gimlet-point-stud blank is produced on it by the dies, as set forth.

4. In dies for forging auger-bits, the bit-point and cutter-forming dies provided with concavities and depressions receiving the outer parts of the central stem of the blank and its surrounding main spiral blade or flange, and also receiving the auxiliary semi-spiral flange formed within the last convolution of the main spiral flange, and provided, also, with depressions producing cutting-edges at the extremities of the main and auxiliary flanges, and provided, also, with depressions forming from the projecting end of the center stem the tapering gimlet-point stud of the bit, substantially as herein set forth.

5. In dies for forging auger-bits, the bit-body dies A A′, formed with adjacent inclined spiral-blade-forming concavities *a a′ a″*, contiguous diagonally-ranging semi-spiral center-stem-forming depressions *b c b′*, which are shallow at their center parts and gradually deepen and broaden toward their ends, which merge into the spiral-blade-forming concavities and end depressions *c′ c″ d*, substantially as described, for the purposes set forth.

6. In dies for forging auger-bits, the heading-dies B B′, provided with inclined spiral-blade and center-stem receiving depressions *a a a′ b b′*, and provided also, with depressions b^3 b^3, forming on a bit-blank an auxiliary cutter-supporting flange within the last convolution of the main spiral blade or flange, and provided, also, with a depression b^4, forming the gimlet-point-stud blank, substantially as herein set forth.

7. In dies for forging auger-bits, the bit-pointing dies C C′, formed with concavities *a a a′ a″*, depressions *b c b′* b^3 b^3, receiving the main spiral blade, the center stem, and the auxiliary flange of the bit, and provided, also, with gimlet-point-forming depressions *d′ d″* and cutter-forming depressions d^3 d^3 d^3, substantially as herein set forth.

412,958. CENTRAL-DRAFT LAMP. JOSEPH JAUCH, Meriden, Conn., assignor to the Bradley & Hubbard Manufacturing Company, same place. Filed Apr. 22, 1889. Serial No. 308,135. (No model.)



Claim.—1. In a central-draft lamp, the combination, with the central tube, of a concentric sleeve C, removably set in the upper end of said central tube, and a perforated tube D, attached by its lower end to said sleeve, the said tube of conical shape, diminishing in diameter from its lower end upward within the said sleeve, and terminating at its upper end in a perforated air-distributer above the upper end of said tube A, substantially as described.

2. In a central-draft lamp, the combination of the perforated concentric conical tube D, arranged within the central-draft tube, terminating at its upper end in a distributer composed of a perforated body F and perforated crown G, with a concentric partition J between the said crown and body, substantially as and for the purpose described.

3. In a central-draft lamp, the combination of a conical perforated tube D, arranged concentrically in the central tube, terminating at its upper end in a distributer composed of a body F and crown G, the body F springing from and of larger diameter than the upper end of the conical tube D, the under surface of the said body perforated, the upper edge of the body turned outward to form an annular flange I of larger diameter than the central tube, the crown G receding from the said flange I, and its surface adjacent to the flange perforated, with a concentric partition J between the said crown and body, substantially as described.

4. In a central-draft lamp, the combination of the sleeve C, adapted to set into the central tube and be supported thereby, a concentric conical tube D, attached by its lower and larger end to the said sleeve below its upper end, the said conical tube terminating in an air-distributer above the upper end of the central tube, the said distributer expanded from the conical tube to form a flange I of larger diameter than the central tube, the sides of the distributer below the said flange perforated, and the distributer above the said flange receding and perforated adjacent to the flange, substantially as described.

5. An air-distributer for central-draft lamps, composed of the body F and the crown G, the body F expanding to form an annular flange I of larger diameter than the central-draft tube, the body perforated below the said flange, the crown G receding from said flange and forming a series of annular shoulders, each presenting a substantially vertical and horizontal surface, and the said vertical and horizontal surfaces perforated, with a partition J between the said body F and the crown, substantially as and for the purpose described.

6. An air-distributer for central-draft lamps, composed of the body F and the crown G, the body F expanding to form an annular flange I of larger diameter than the central-draft tube, the body perforated below the said flange, the crown G receding from said flange, and the surface of the said crown adjacent to the flange perforated, with a partition J between the crown and body, substantially as described.

412,959. BUNG-BUSHING OR FAUCET-SOCKET. FRANK H. KANE, Riverside, assignor of one-half to George R. Messmer, Cincinnati, Ohio. Filed May 31, 1889. Serial No. 312,694. (No model.)



Claim.—1. A bung-bushing or faucet-socket having cut on its outer surface a screw-thread which increases in height toward the flange on the outer end of the bushing and a recess at 11 between screw-thread and flange 5, thereby allowing a full and close insertion of the whole into the wood without breaking or otherwise injuring the same, as shown and described.

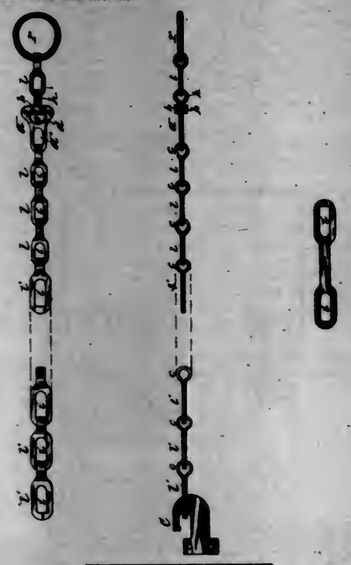
2. In combination with a bung-bushing or faucet-socket having cut on its outer surface a screw-thread which increases in height toward the flange on the outer end of the bushing and a recess at 11 between the screw-thread and flange 5, the inside wooden lining 12 inserted for the purpose of protecting the inner metallic surface of the bushing and forming a packing for the faucet, as explained.

3. A bung-bushing or faucet-socket having cut on its outer surface a screw-thread which increases in height toward the flange on the outer end of the bushing, a recess at 11 between screw-thread and flange 5, an inwardly-increasing diameter, and a flange 13, in combination with a wooden lining 12, being compressed into the space formed by the inwardly-increasing diameter of the bushing and by flange 13, all as shown, and for the purpose described.

412,960. TRACE-CHAIN. MYRON H. KINSLEY, Niagara Falls, assignor to the Oneida Community, (Limited,) Community, N. Y. Filed June 3, 1889. Serial No. 312,946. (No model.)

Claim.—As an improved article of manufacture, a trace-chain composed of the links *l l*, each consisting of an elongated strip perforated at its ends and bent into the loop *c*, embracing the end cross-bars of the perforated portions of one of the adjacent links, and the other adjacent link embracing by its loop the end cross-bars of the perforated portions of the first-named link, and a swivel *a* between two of the links at one end, and also composed of sheet metal, the above member of said swivel consisting of two plates lying one upon the other and provided with coinciding perforations *a′* at one end, semi-cylindrical bends *b b* at the opposite ends, and openings *d d* back of said bends, rivets uniting said plates, and the headed member of said swivel, consisting of a sheet-metal strip bent into the loop A and provided with heads *e e*, lying one upon the other and embraced

back of the heads by the bends *b b* of the sleeved member, substantially as described and shown.

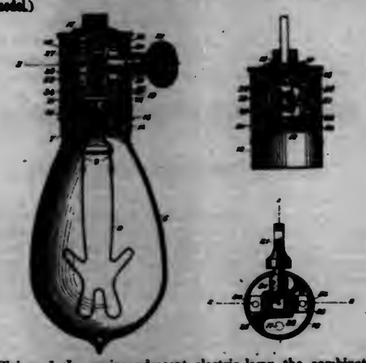


412,961. BUTTON. WILLIAM J. LESKIE, 2d, Boston, Mass. Filed Mar. 27, 1889. Serial No. 305,008. (No model.)



Claim.—As an improved article of manufacture, a button comprising a head 10, an integral shank 11, reduced at its outer end and externally screw-threaded, a sleeve 13, secured on the said shank above the screw-threaded part thereof, resting against the under side of the head, and having an outward-projecting flange 13ª in line with shoulder 12, and provided with peripheral teeth 14, extending toward the threaded end of the shank, and a thumb-nut 15 on the threaded end of the shank, substantially as set forth.

412,962. INCANDESCENT-LAMP SOCKET. GEORGE P. LOCKIE, Somerville, Mass., assignor to the Locnite Electric Manufacturing Company, New York, N. Y. Filed Sept. 3, 1888. Serial No. 284,396. (No model.)



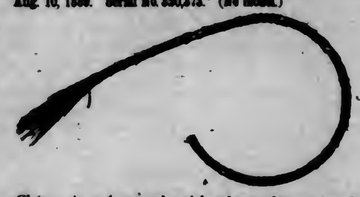
Claim.—1. In an incandescent electric lamp, the combination, with the lamp-stem 7, having the lamp-terminals 11 and 12 mounted thereon and connected to the leading-in wires and projecting from the face of the lamp-stem, of a lamp-socket 13, adapted to receive and hold the said lamp-stem, and provided with the guide-plate 19, presenting an insulating surface or face toward the lamp-stem, said guide-plate formed with suitable perforations 32 and 34, for receiving the lamp terminals 12 and 11, respectively, and the spring-contacts 31 and 33, mounted within the lamp-socket 13 and connected to line, the said contacts arranged to the opposite side of said guide-plate from where the lamp-terminals are entered and having their free ends disposed so as to extend transversely across the perforations 32 and 34 of the guide-plate 19 and near thereto, so as to engage with spring-pressure the flat ends of the lamp-terminals 11 and 12, respectively, when the lamp is put together, substantially as and for the purpose set forth.

2. In an incandescent electric lamp, the combination, with a pair of suitably-spaced spring contact-fingers 27 and 28, connected to line, of a switch-key 21, mounted to rotate in its bearings and having its shank formed with a transverse opening 23, a switch-block 22, made of insulating material and loosely mounted on the shank of the key 21 and covering the opening 23 thereof, a fixed metallic pin 24, extending transversely through the block 22 and passing through the opening 23 of the key-shank, the diameter of the pin 24 being considerably less than that of opening 23 to give the necessary lost motion to the switch-block, and the contact-plates 25 and 26, mounted, respectively, upon opposite sides of the switch-block and in electric communication through means of the pin 24, the said block being embraced by the said contact-fingers 27 and 28, substantially as and for the purpose set forth.

3. In an incandescent electric lamp, the combination, with the lamp-stem 7, having the lamp-terminals 11 and 12, of the lamp-socket 13, adapted to receive and sustain the said stem in position, the non-conducting guide-plate 19, formed with the guide-perforations 32 and 34, the contacts 31 and 33 for the lamp-terminals, such contacts being secured to the guide-plate by screws 30 and 36, respectively, and the screws having their heads embedded in the said plate, so as not to be exposed upon the outer face thereof, substantially as and for the purpose set forth.

4. In an incandescent electric lamp, the combination, with the lamp-stem 7, having the lamp-terminals 11 and 12 projecting therefrom, of the lamp-socket 13, adapted to receive said lamp-stem, a lock for uniting the socket and stem, such lock operated by turning said stem on its axis, the insulating guide-plate 19, located within said socket and provided with the perforations 32 34, arranged to correspond with the disposition of said lamp-terminals which enter therethrough and having a diameter considerably greater than the diameter of said terminals, whereby the lamp-stem may be turned on its axis to lock and unlock the stem and socket, and the spring-contacts 31 33, engaging with firm spring-pressure the said lamp-terminals when the same are entered through the perforations of the guide-plate and the stem and socket are united, substantially as and for the purpose set forth.

412,963. TWINE FOR BINDING GRAIN. GEORGE A. LOWRY, Des Moines, Iowa, assignor of one-half to William L. May, same place. Filed Aug. 10, 1889. Serial No. 320,373. (No model.)



Claim.—As an improved article of manufacture, a twine made of grass, hay, or straw, twisted together and wrapped with a thread made of cotton or other suitable material, substantially as shown and described, for the purposes stated.

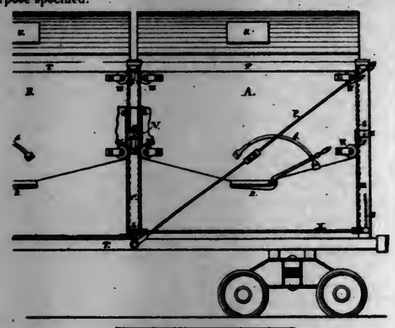
412,964. RAILWAY FREIGHT-CAR. CHARLES MACKELL, Baltimore, Md. Filed June 26, 1889. Serial No. 315,561. (No model.)

Claim.—1. The combination, in a freight railroad-car for hauling material in bulk on railroads, of a horizontal shaft secured to frame-work, with worm and ratchet lever communicating and transferring power to worm-wheels, and upright screws revolving in nuts secured to hoppers or detached bodies of cars independent of each other and unattached to the frame-work of the car, except by the aforesaid screws, permitting vertical motion only.

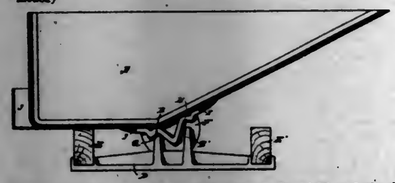
2. In a dumping freight-car where the hoppers are independent of the frame-work, the combination of anti-friction grooved and plain wheels secured to hoppers and guides secured to parts, with elevating-screws, nuts, thrust-bearing boxes secured to cross-beams, and worm-wheels, worms, shaft, and ratchet, all substantially as set forth.

3. The slide in the bottom of a dumping-door, in combination with and attached to a dumping-hopper car, the hopper being con-

fixed in a frame-work attached to the sills of a car, but being independent therefrom, with the dump-door shaft and toothed arc, for the purpose specified.



412,965. AUTOMATIC SEWER-FLUSHING TANK. EDWIN R. MARTICK, Alameda, Cal. Filed Jan. 11, 1889. Serial No. 296,099. (No model.)



Claim.—1. The fulcrum or fulcrum-posts B and B', and the depressions or channels formed in the bottom or base of a tank having the bottom formed of a horizontal and inclined portion, in combination with the standards or supports E and E', placed beneath opposite ends of the tank so as to support it in conjunction with one or the other of the fulcrums, substantially as and for the purpose herein described.

2. The fulcrum or fulcrums and the standards E and E', standing in line, in combination with the tank, the bottom of which forms an obtuse angle, and depressions or points of support upon said bottom, about which it may turn upon the fulcrum or fulcrums, so as to be supported alternately upon the fulcrum and standard E and the fulcrum and the standard E', substantially as and for the purpose herein described.

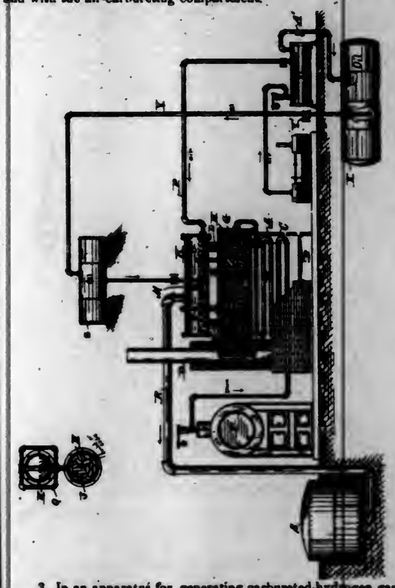
3. The tank having the bottom formed of two planes meeting each other at an obtuse angle, and the variable fulcrum and standards upon which the tank turns and is supported, in combination with the channeled or grooved plates having the flanges or disks F to retain the tank in place, substantially as and for the purpose herein described.

4. A tank so shaped that its center of gravity will be changed as it is filled or discharged, and a fulcrum or fulcrums with varying points of rest beneath its bottom, about which it turns to discharge or right itself automatically, substantially as and for the purpose herein described.

412,966. APPARATUS FOR MANUFACTURING GAS. JAMES R. MENDENHALL, Springfield, Ohio. Filed Apr. 25, 1889. Serial No. 308,581. (No model.)

Claim.—1. In an apparatus for manufacturing carbureted-hydrogen gas, the combination, with a furnace, steam-pipes, and a retort containing a refractory material, the said pipes and retort being in and over the fire-box proper, and one end of the pipes connecting with a steam-supply and the other discharging into said retort, of a chamber divided into air-carbureting and gas-carbureting compartments, pipes connecting said compartments respectively with the retort, a compressed-air tank, an oil-tank connected therewith and with the air-carbureting chamber, the compressed air acting to deliver the oil from the oil-tank to the air-carbureting chamber, a pipe connecting the air-tank with said carbureting-tank, and a gas-exit pipe for the gas-carbureting compartment.

2. An apparatus for generating carbureted-hydrogen gas, consisting of a furnace, steam-pipes, and a retort containing refractory material, the pipes and retort being in and over the fire-box, a steam-generator connected to one end of the pipes and the other end connected with the retort, an oil-chamber divided into air-carbureting and gas-carbureting compartments, a pipe leading from one of said compartments into the retort, and from the retort into the other of said compartments, an exit-pipe leading from the latter, an air-pump, a compressed-air tank connected with the pump and with the air-carbureting compartment, a buried oil-tank connected with the air-tank, and an intermediate elevated oil-tank connected with the buried tank and with the air-carbureting compartment.



3. In an apparatus for generating carbureted-hydrogen gas, the combination, with a furnace, steam-pipes within the fire-box thereof, a retort connected with one of said pipes and located above the said fire-box and containing refractory material, and a steam-generator connected with the other end of said pipes, of a chamber divided by a perforated partition into air and gas carbureting compartments, an air-supply for the former compartment, a pipe leading from the said compartment to the retort, a pipe leading from the retort to the gas-carbureting compartment, and an exit-pipe leading from the latter compartment.

4. In an apparatus for generating carbureted-hydrogen gas, a chamber divided by a perforated partition into two compartments, a pure-air pipe connected to one of the compartments below the surface of the oil-supply contained therein, a carbureted-air pipe leading from said compartment, an oil-supply pipe discharging into said compartment, a gas-pipe discharging into the other compartment below the surface of said oil-supply and the gas-discharge pipe, and a retort connected with the carbureted-air pipe and the gas-pipe.

412,967. SURFACE CATTLE-GUARD. PARKER MERRELL, St. Louis, Mich. Filed Aug. 12, 1889. Serial No. 320,510. (No model.)



Claim.—1. A surface cattle-guard comprising sections between and outside of the rails of the track, said sections being composed of transverse bars bent from stripe of metal, so as to have their sides converge from the base to the apex, and separated rods in two parts connected by turn-buckles, the ends of said rods being detachably attached to the transverse bars at the ends of the sections, substantially as set forth.

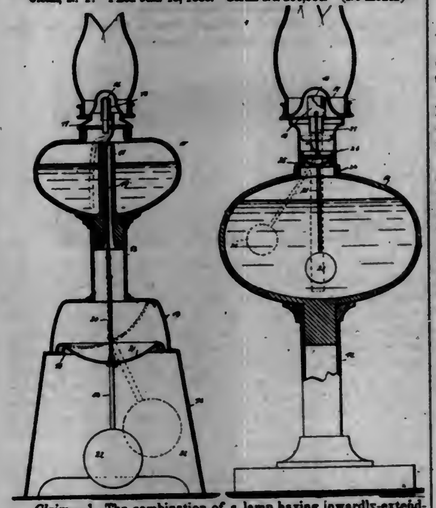
2. A surface cattle-guard comprising sections between and outside of the rails of the track, said sections being composed of strips of metal bent to form the transverse bars having their sides converging from the base to the apex, the ends of said bars contiguous to the rails being attached to said rails, said bars at the ends of the sections having a row of holes at or near the apex, and the separated rods made of two parts connected by turn-buckles, the ends of said rods being bent to form hooks which are detachably caught into said holes, substantially as set forth.

3. A surface cattle-guard comprising sections between and outside the rails of the track, said sections being composed of transverse bars having converging sides, the ends of said bars next to the rails being attached to the flanges of the rails by bolts attached to the sides of the bars at the end, and a clip-plate beneath the rails, through which said bolts pass, and separated rods supported by said bars, substantially as set forth.

412,968. MAKING COMPRESSED YEAST. CHARLES MILDENBERGER, New York, N. Y. Filed Jan. 26, 1889. Serial No. 297,967. (No specimens.)

Claim.—The process herein described of making compressed yeast, consisting in washing a quantity of ale-yeast with a bath of a solution of bicarbonate of soda, so as to remove the hop-bitter from the same; second, mixing the washed ale-yeast with a sweet wash, freed from alkalies; next, skimming off the lighter yeast or froth, and then drawing off the liquid from the heavier yeast, mixing the froth or lighter yeast with the heavier yeast, and washing the mixture and subjecting the washed mass to pressure, whereby the moisture is removed and cakes are formed, substantially as described.

412,969. LAMP-EXTINGUISHING APPARATUS. JOSEPH MILLER, Olean, N. Y. Filed Jan. 16, 1889. Serial No. 296,381. (No model.)

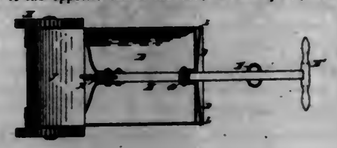


Claim.—1. The combination of a lamp having inwardly-extending annular shoulder or flange, a loose disk resting upon said shoulder or flange, and a pendulum-weight secured rigidly to the center of the disk, with a movable extinguisher on the burner-tube and a rod depending therefrom and operated by the tilting of the disk, substantially as set forth.

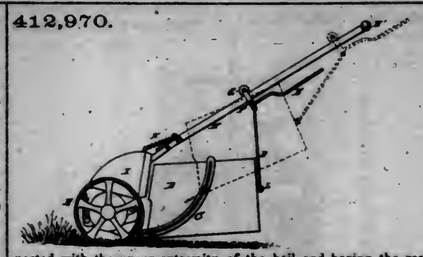
2. The combination, with a lamp provided with a vertical tube attached to the bottom of the body, a disk loosely supported in the lamp below the said tube, and a sleeve adjustably held upon the wick-tube above the body-tube, of a pendulum-weight attached to the under side of the disk and a jointed rod connecting the disk and the wick-tube and passing upward from the body-tube of the lamp, all combined for operation as and for the purpose specified.

412,970. LAWN-MOWER. HORACE G. MILLER, Mount Vernon, Iowa. Filed July 6, 1889. Serial No. 316,702. (No model.)

Claim.—In a grass-gathering device for lawn-mowers, the combination, with the mower, of the slotted segmental arms C, the box B, suspended therefrom by suitable bolts or studs, the bail D, connected to the opposite end of the box, the stirrup F, pivotally con-



412,970.



nected with the upper extremity of the bail and having the rearwardly-extending handle E, the mower-handle H, and the roller G, mounted in said stirrup and adapted to ride on said handle H, all substantially as and for the purpose set forth.

412,971. FIRE-ALARM BOX. GEORGE F. MILLIKEN, Boston, Mass. Filed Aug. 7, 1889. Serial No. 320,000. (No model.)



Claim.—1. A fire-alarm box provided with a keyless self-locking door or cover and an aperture covered with a plate of easily-fractured material, substantially as and for the purposes set forth.

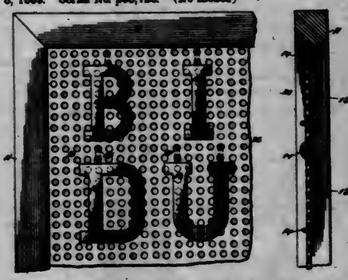
2. In a fire-alarm box, the combination of the box with a keyless self-locking door or cover having an aperture covered with a plate of easily-fractured material, substantially as and for the purposes set forth.

3. A fire-alarm box provided with a keyless self-locking door or cover, the means for locking and unlocking being upon the inside of the said box and door or cover, and an aperture covered with a plate of easily-fractured material, substantially as and for the purposes set forth.

4. In a fire-alarm box, the combination of the box with a keyless self-locking door or cover, the means for locking and unlocking being upon the inside of the said box and door or cover, having an aperture covered with a plate of easily-fractured material, substantially as and for the purposes set forth.

5. In a fire-alarm box, the combination of the box with a removable keyless self-locking door or cover, the means for locking and unlocking being upon the inside of the said box and door or cover, and an aperture covered with a plate of easily-fractured material, substantially as and for the purposes set forth.

412,972. SIGN. FREDERICK MITCHELL, Yonkers, N. Y. Filed Jan. 8, 1889. Serial No. 295,736. (No model.)



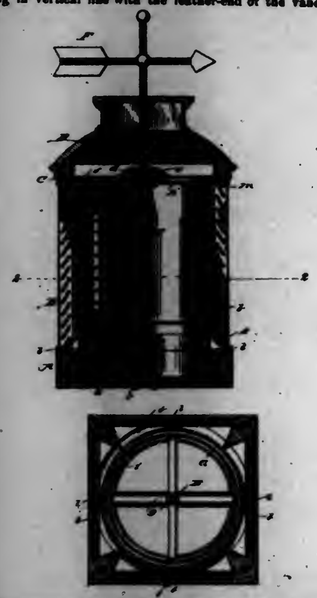
Claim.—1. The combination, with the sign-plate having a series of perforations one above another, of a letter having a fixed curved stud or prong on its back, which is adapted to pass freely through said perforations, as shown and described, whereby said letter may be attached and held suspended against the face of the plate, and also detached, as specified.

2. As an article of manufacture, a letter having a fixed curved prong on its back, as and for the purpose specified.

412,973. VENTILATOR. CARL MIELENTZ, Dunning, Ill. Filed Feb. 5, 1889. Serial No. 299,776. (No model.)

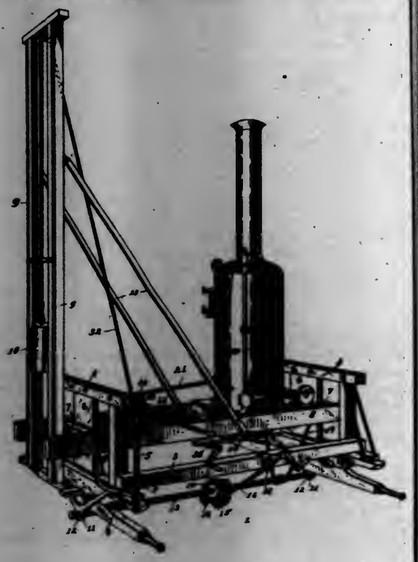
Claim.—1. In a ventilator, the combination, with a slatted cupola, of a shaft E, extending vertically through it, a drum G, and vane F, secured upon the shaft, said drum having a segmental opening *i*, cor-

responding in vertical line with the feather-end of the vane, as set forth.



2. In a ventilator, the combination, with a cupola having blind-slats on its sides and a closed roof and provided with a cross-brace *f*, having the anti-friction rollers *d* and *e*, and an inclined ring *h* and upright ring *j* at the base thereof, of a shaft E, extending vertically through the ventilator, and a drum G, secured to the shaft, having its lower edge projected into the space between the flanges or rings *h* and *j*, and provided with a segmental opening *i* and a vane on top of the shaft, as set forth.

412,974. **POST OR PILE DRIVING MACHINE.** MARTIN L. MOWERS and GEORGE W. MOWERS, Lucas, Ohio. Filed May 4, 1889. Serial No. 309,591. (No model.)



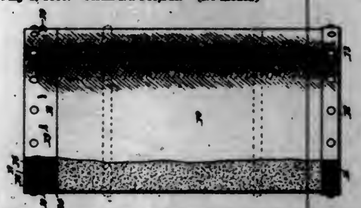
Claim.—1. In a post or pile driving machine, the combination, with the running-gear, of the frame mounted thereon, the tilting frame pivoted to said frame, the chains connected to the pivoted frame, and the shaft for drawing the chains and tilting the pivoted frame, substantially as and for the purpose described.

2. In a post or pile driving machine, the combination of the running-gear, the yokes depending therefrom, the shaft mounted in said yokes, the gear-wheel and worm for rotating said shaft, the frame mounted on the running-gear, the frame pivoted in said frame, and the chains connecting the pivoted frame with the shaft, substantially as and for the purpose described.

3. In a post or pile driving machine, the combination of the frame, the frame pivoted in said frame, the chains and shaft for tilting the pivoted frame, the derrick pivoted in the pivoted frame, the inclined bars connected to said derrick, the cross-bar connected to the inclined bars, and the sprocket chains and wheels for moving said cross-bar, substantially as and for the purpose described.

4. In a post or pile driving machine, the combination of the tilting frame, the motor mounted thereon, the band driven by said motor, the shaft rotated by said band, the shaft rotated by said shaft, the drum on the latter shaft, the clutch on the drum and shaft, the lever engaging the drum for shifting the same, the rope or chain passing around the drum, the weight connected to said rope, and the derrick for guiding said weight, all arranged and operating substantially as and for the purpose described.

412,975. **BARREL.** THOMAS I. NORMAN, West Point, Ga. Filed July 1, 1889. Serial No. 316,242. (No model.)



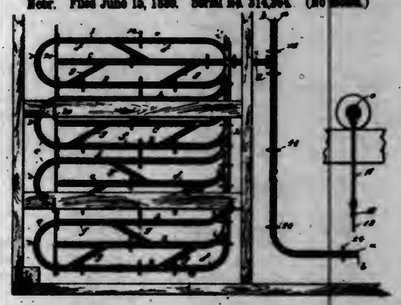
Claim.—1. As an improved article of manufacture, a barrel or package formed of fabric and having its upper edge turned inward, separable and removable inner and outer rigid head-sections between which said inturned portion extends, and removable fastenings extending down through the outer head-section and the inturned portion into the inner head-section, thereby connecting the outer head-sections together and to the said inturned portion, substantially as set forth.

2. As an improved article of manufacture, a barrel having its upper edge turned inward, separable and removable inner and outer head-sections between which said inturned portion is clamped, a hoop or band covering the joint between and secured to both of said two sections, substantially as set forth.

3. In a barrel, the combination, with a fabric body having a head fixed at one end, of an upper intermediate head and upper outer head, a hoop or band secured to the upper outer head, and staples uniting the intermediate and outer head and the body, substantially as shown and described.

4. In a barrel, the combination, with a seamless fabric body, a head fixed at one end, and an upper intermediate head upon which the upper end of the body is folded, of an upper outer head united to the upper face of the intermediate head, a band or hoop attached to the upper outer head, and staples uniting the two upper heads and body at the sides, substantially as shown and described.

412,976. **CARRYING APPARATUS.** JOHN O'BRIEN, Canada, Heir. Filed June 15, 1889. Serial No. 314,304. (No model.)

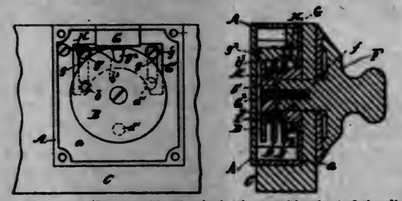


Claim.—1. In a meat-carrying apparatus, a set of parallel storage-tracks A B C, and a track A, with which the outer ends of all of said tracks communicate, as at *i*, stationary switch-tracks *g*, rigidly connecting the inner rails of the tracks A B with the rails of the intermediate track, substantially as set forth.

2. In a meat-carrying apparatus, the set or group of double-rail tracks A B C, communicating at their ends, as at *i*, with a track A, the opposite ends of the tracks A B being connected to form a continuous track, and the double-rail switch-tracks *g* between the rails of the inner track C and the inner rails of the outer tracks A B, substantially as set forth.

3. A meat-carrying apparatus consisting in the receiving and distributing track consisting in the parallel rails *a b*, the track A, the rails *c d*, connecting said tracks, and the series of storage-tracks, each comprising a set or group of double-rail tracks A B C, the rails of tracks A B being connected at their inner ends by a curved section and at their opposite ends communicating with the track A, as at *i*, and the central tracks of each group having switch-tracks *g* connecting with the rails of tracks A B, and communicating at their outer ends with the track A, the hangers suspending said tracks from the outer sides of their rails, and the carriers having flanged wheels and rods 11, passed between the rails, the switch and other rails being rigidly connected, substantially as set forth.

412,977. **PERMUTATION-LOCK.** WILLIAM F. PIPPEN, Cincinnati, Ohio. Filed Sept. 17, 1888. Serial No. 285,696. (Model.)



Claim.—1. In a combination-lock, the combination of the dial-stem *f*, having at its end the lug *f'*, and the tumbler-disk B, having hub *b'*, provided with groove *b²*, the lug *f'*, engaging any one of said grooves at will, and screw G^2, passing through tumbler B and screwed to stem *f* and binding the same together, and having its head at the rear side of the tumbler B, substantially as and for the purpose specified.

2. In a combination-lock, the combination of the stem-dial *f*, provided with end lug *f'*, and tumbler-disk B, having hub *b'*, carrying groove *b²* for receiving the lug *f'*, securing-screw G^2, hollow sleeve or hub A', provided with shoulder *a'* and inclosing stem *f*, and hub *b* of tumbler-disk B, and one or more tumblers D, rotatable on sleeve A' and held from lateral displacement by the tumbler B and shoulder *a'*, substantially as and for the purpose specified.

3. The combination of the casing A, having drum A', the bolt G, guide-frame G', arm g^5, retracting-spring H, disk D, having notches *d*, disk B, having notch b^5, and hub *b'*, having groove b^2, dial F, having stem *f*, provided with lug *f'*, and screw G, substantially as and for the purpose specified.

412,978. **PRODUCTION OF YELLOW DYE-STUFFS.** JAMES ROSENBERG, Mülheim, near Frankfort-on-the-Main, assignor to Leopold Cassella & Co., Frankfort-on-the-Main, Germany. Filed Apr. 13, 1889. Serial No. 306,966. (Specimens.) Patented in France Oct. 16, 1888, No. 193,522.

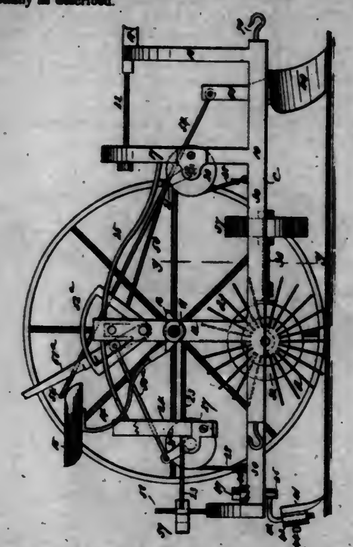
Claim.—As a new article of manufacture, the coloring-matter obtained by introducing alcohol radicals into the primary thiosated bases from paratoluidine and xylidine, which as chlorhydrate is soluble in water, alcohol, and diluted acid, and dyes mordanted cotton a bright yellow.

412,979. **PRODUCTION OF YELLOW COLORING-MATTERS.** JAMES ROSENBERG, Mülheim, near Frankfort-on-the-Main, assignor to Leopold Cassella & Co., Frankfort-on-the-Main, Germany. Filed Apr. 13, 1889. Serial No. 306,968. (Specimens.) Patented in France Oct. 16, 1888, No. 193,523.

Claim.—As a new article of manufacture, the yellow coloring-matter obtained by sulphonating the alkylated thio bases from paratoluidine and xylidine, dyeing cotton a bright yellow in alkaline bath, being in the form of an alkaline salt easily soluble in water, scarcely soluble in alcohol, with green fluorescence.

412,980. **COTTON-CULTIVATING MACHINE.** EDWIN B. RENTON, Burns, Tex. Filed May 3, 1889. Serial No. 309,807. (No model.)

Claim.—1. In a cotton-cultivating machine, the combination, with a main supporting-frame, of a frame adjustably connected thereto, a chopper-wheel carried by the adjustably-mounted frame, driving-wheels, also carried by the adjustably-mounted frame, and connections between said driving-wheels and the chopper-wheel, substantially as described.



2. In a cotton-cultivating machine, the combination, with a main supplemental frame 10, of a frame 30, adjustably connected to the frame 10, a chopper-wheel 37, which is supported by the frame 30, driving-wheels 32 upon the supplemental frame, a gear 34, controlled by said driving-wheels, and a pinion 35, that is engaged by the gear and carried by the chopper-wheel shaft, substantially as described.

3. In a cotton-cultivating machine, the combination, with a main supporting-frame, of shafts 19 and 26, carried thereby, pulleys 20 and 27, supported by the shafts, chains or ropes 28, connected to the pulleys, a frame 30, connected to the chains or ropes 28, a shaft 36, carried by the frame 30, a chopper-wheel 37, mounted upon the shaft, a driving-shaft 31, driving-wheels carried thereby, a gear carried by the shaft 31, a pinion 35, carried by the shaft 36 and engaged by the gear 34, and a mechanism, substantially as described, for turning the shafts 19 and 26.

4. In a cotton-cultivating machine, the combination, with a main supporting-frame, of a frame 30, connected thereto, scraper-shovels carried by the frame 30, a chopper-wheel and the chopper-wheel-driving attachment, also carried by the frame 30, and cultivating-shovels, substantially as described.

5. In a cotton-cultivating machine, the combination, with a supporting-frame, of a frame 30, suspended therefrom, scraper-shovels carried by the frame 30, a chopper-wheel and means for driving it, also carried by the frame 30, cultivator-shovels adjustably connected to the frame 30, a means for raising the frame 30, and a lever 54, connected to the forward end of the frame 30 and fulcrumed in the main supporting-frame, substantially as described.

412,981. **SHOE-NAIL.** HOPKINS A. SANFORD, New Haven, Conn., assignor to the New Haven Nail Company, same place. Filed Sept. 24, 1888. Serial No. 286,171. (No model.)

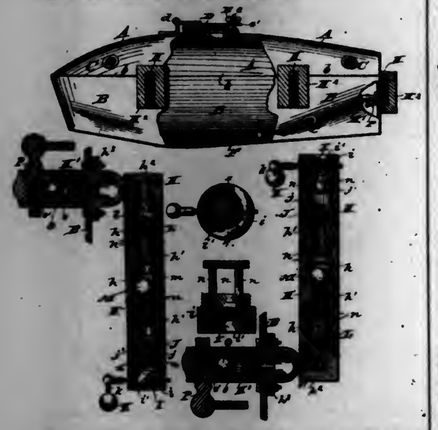


Claim.—1. A nail for boot-heels, made from sheet metal, one end constructed in the form of a point *a*, the other end terminating in points *b c*, turned in opposite directions from the plane of the nail, the body of the nail between its two ends of irregular shape, substantially as described.

2. A flat nail for the heels of boots or shoes, made from a strip of sheet metal, pointed at its respective ends, the body of the nail between its two ends diagonally corrugated, substantially as described.

3. A nail for the heels of boots or shoes, made from a strip of sheet metal, one end terminating in a point *a*, the other end terminating in points *b c*, turned in opposite directions from the plane of the nail, the body of the nail between the two points diagonally corrugated, substantially as described.

412,982. LIFE-BOAT. PETER F. SCHENCK, Highland, N. J. Filed Feb. 9, 1889. Serial No. 299,243. (No model.)



Claim.—1. The combination, with a life-saving car, of one or more air-inlet tubes opening without and within the car, the outer parts of said air-tubes provided with valve-chambers having opposing perforate and imperforate seats, ball-valves placed in said chambers, and a self-acting sand-excluding valve fitted at the outer end of the tube, substantially as herein set forth.

2. The combination, with a life-saving car, of series of air-inlet tubes opening without and within the car, one or more of said tubes being set in reversed position relatively to the other tubes, and the outer parts of said air-tubes provided with valve-chambers having opposing perforate and imperforate seats, ball-valves placed in said chambers, and a self-acting sand-excluding valve fitted at the outer ends of the tubes, substantially as herein set forth.

3. The combination, with a life-saving car, of one or more air-inlet tubes comprising a main body portion H and a side spout H', provided with valve-chambers having opposing perforate and imperforate seats, and ball-valves J L O, placed in said chambers, said part H provided with a self-closing sand-excluding valve I, substantially as herein set forth.

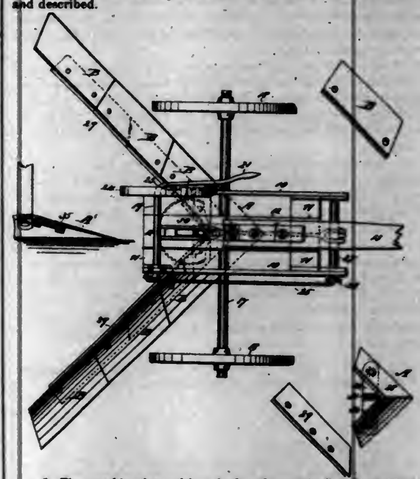
4. The combination, with a life-saving car, of one or more air-inlet tubes comprising a main body portion H and a side spout H', provided with valve-chambers having opposing perforate and imperforate seats, valves L O and J or M, placed in said chambers, a self-acting sand-excluding valve I at the outer end of part H, and a plug-valve P at the inner part of the spout H', all arranged for operation substantially as herein set forth.

5. In a life-saving car, the air-inlet tubes provided at their outer ends with a self-acting valve I, the box of which has a guard-plate i' outside the valve and provided with a beveled inner face, substantially as herein set forth.

412,983. WEED-CUTTER. ERNST SCHMIDT, Marysville, Cal. Filed May 18, 1889. Serial No. 311,315. (No model.)

Claim.—1. In a weed-cutter, the combination, with a body, a forward and a rear rock-shaft journaled upon the said body, a link connecting the said rock-shafts, and a vertical post connected with the rear rock-shaft, of an angular share secured to the said vertical post near its point and a pitman connecting the said post above the share with the forward rock-shaft, substantially as shown and described, whereby, when the rear rock-shaft is manipulated to raise or lower the share, the heel of the share will rise or fall in a line parallel with the point, as specified.

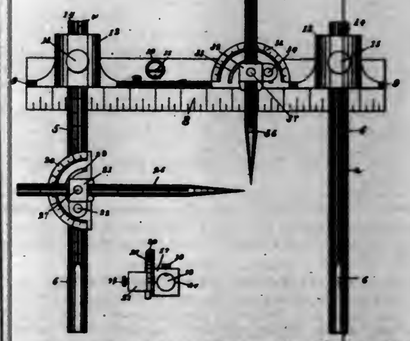
2. The combination, with a body, of a vertically-adjustable angled share carried thereby, said share comprising a series of cutting-blades and tie-plates or frogs secured to the under face of said blades and rigidly holding the opposed ends in contact, substantially as shown and described.



3. The combination, with a body, of a vertically-adjustable angled share carried thereby, said share comprising a series of cutting-blades and a series of tie-plates or frogs secured to the under side of said blades, holding the ends thereof in rigid contact, the said tie-plates being arranged to break joints with the blades, and means, substantially as shown and described, for raising and lowering the said share, as set forth.

4. A sectional share for weed-cutters, comprising an angled point, a series of side blades, and a series of tie-plates or frogs secured to the under side of the several blades, and the vertical post or standard provided with laterally-extending members adapted to be secured to the under side of the angle tie-bar or frog, substantially as shown and described.

412,984. INSTRUMENT FOR TAKING AND TRANSFERRING MEASUREMENTS. JOHN H. W. SCHMIDT, Davenport, Iowa. Filed June 5, 1889. Serial No. 313,252. (No model.)



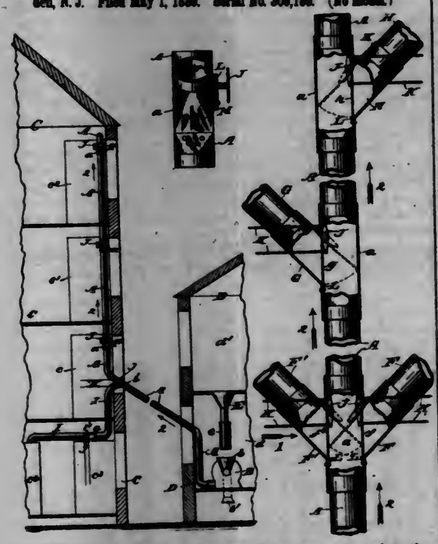
Claim.—1. In an instrument for measuring surfaces or objects and for transferring measurements from drawings to actual work, and vice versa, the combination of the graduated standards, movable holder on one of the standards, and indicator-point holder attached to said movable holder moving around a fixed center therein, a graduated indicator-point movably attached to such indicator-point holder, a graduated semicircle-plate attached to the holder on said standard, a head-block upon each standard, a graduated cross-bar carried by such head-block, a spirit-level in such cross-bar movable around a fixed center, a holder and graduated semicircle-plate movably carried on such cross-bar, an indicator-point holder attached to such holder and plate moving around a fixed center therein, a graduated indicator-point movably attached to each indicator-point holder, and a base index-finger on each standard in line of all center points, substantially as described.

2. In an instrument for measuring surfaces or objects and for transferring measurements from drawings to actual work, and vice versa, in combination with a graduated cross-bar, cross-heads and standards, the movable holders, one carried upon the standard and the other carried upon the cross-bar, each provided with a semicircle-plate indicating degrees, and an indicator-point holder moving around a fixed center, and each indicator-point holder provided with a movable graduated indicator-point, substantially as described.

3. In an instrument for measuring surfaces or objects and for transferring measurements from drawings to actual work, and vice versa, in combination with a graduated cross-bar, cross-heads and standards, the movable holder and semicircle angle-plate provided with the pendent finger-index, and the indicator-point holder with the vertical index-finger carrying the movable graduated indicator-point, and attached to such movable holder to move around a fixed center of the diameter of said semicircle angle-plate, substantially as described.

4. In an instrument for measuring surfaces or objects and for transferring measurements from drawings to actual work, and vice versa, in combination with a graduated cross-bar, cross-heads and standards, the movable holder on the standard and semicircle angle-plate, and the indicator-point holder with index-finger carrying the movable graduated indicator-point, and attached to such standard movable holder to move around a fixed center of said semicircle angle-plate, substantially as described.

412,985. PNEUMATIC CONVEYER. CHARLES H. SCHNEIDER, Camden, N. J. Filed May 1, 1889. Serial No. 309,189. (No model.)

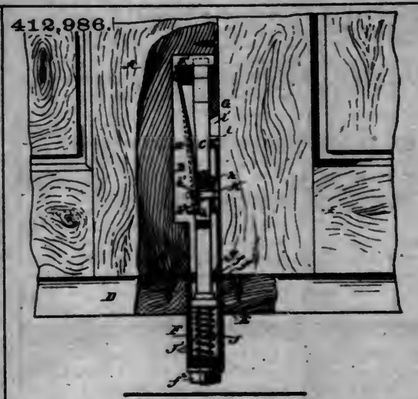


Claim.—1. A pneumatic conveyer for carpet, yarn, and woolen mills, consisting of a blower B, located in the picker-room and having a feanel *b* for the staple, a tube A, leading from the blower to the several stories of the mill and provided with branches F F', valves *f f'*, hinged at their upper ends and extending downwardly over the branch openings, cross-bars J, connected to said valves and provided with cords for operating them, and the receiving-boxes on the several floors into which the branch pipes discharge, substantially as set forth.

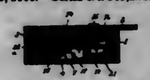
2. In pneumatic conveyers, the combination, with main-line and branch pipes and a flap-valve hinged at their junction and provided with a cross-bar J and pull-cords K, of a ratchet L on the valve-stem, a spring-pressed pawl M, adapted to the ratchet, and pull-cords N O, connected to the pawl, substantially as herein set forth.

412,986. BOLT. LOUIS SCHOEN and SIMON FRIEDMEYER, New York, N. Y. Filed Mar. 30, 1889. Serial No. 305,230. (No model.)

Claim.—The plate G, having bearings for the door-bolt C, in combination with said bolt, spring H, and push-button K, attached to the spring and held in a recess in the plate G, substantially as described.



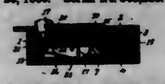
412,987. SASH-FASTENER. FERDINAND F. SCHUMANN, Brooklyn, N. Y. Filed Mar. 29, 1889. Serial No. 305,226. (No model.)



Claim.—1. In a sash-lock, the combination, with a bevel-nosed stump adapted for attachment to the casing, of pivoted locking-catches carried by the sash, springs acting to throw said catches to the locked position, and a sliding finger-piece having lugs engaging the locking-catches and acting when said finger-piece is moved to throw them outward to disengage the stamp.

2. The combination, with stump 4, beveled upon the sides and back, of pivoted locking-catches upon the sash having inclined shoulders 12 and cut-away portions 21, springs 10, acting to hold said catches in the locked position, a loosely-suspended spring locking-plate having upwardly-curved ends, and a finger-piece having lugs 13, engaging shoulders 12, and a lug 17, engaging the lower end of the locking-plate, whereby, when the parts are moved to the locked position, the lower end of the locking-plate is lifted between the spring-catches, retaining them in the locked position, and when the finger-piece is operated the locking-catches are thrown to the unlocked position and the lower end of the locking-plate pressed downward so that the locking-catches swing over it.

412,988. SASH-FASTENER. FERDINAND F. SCHUMANN, Brooklyn, N. Y. Filed Mar. 30, 1889. Serial No. 305,229. (No model.)



Claim.—1. In a sash-lock, the combination, with a bevel-nosed stump adapted for attachment to a window-sill, of pivoted locking-catches upon the sash, springs acting to throw said catches to the locked position, and a swinging finger-piece having lugs projecting inward and acting when said finger-piece is swung outward to disengage the locking-catches from the stump.

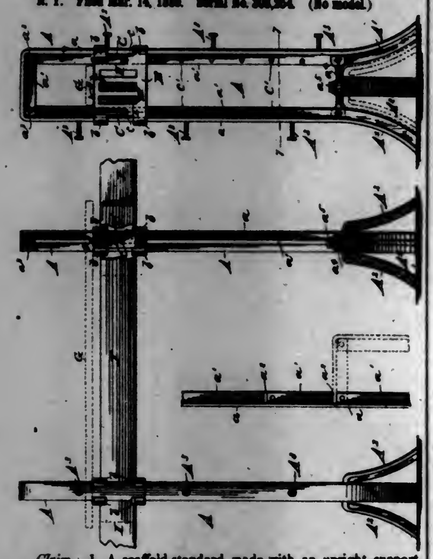
2. The combination, with a bevel-nosed stump adapted for attachment to the sill, of pivoted locking-catches carried by the sash, each of which is provided with an inclined shoulder, springs acting to throw said catches to the locked position, and a swinging finger-piece having inwardly-projecting lugs which engage said shoulders, and thereby disengage the catches from the stump.

3. The combination, with stump 4, having inclines 5 and 7, of pivoted locking-catches upon the sash having inclined shoulders, as shown, springs holding said catches in the locked position, a swinging finger-piece having inwardly-extending lugs adapted to engage said shoulders, a loosely-suspended spring locking-plate having upwardly-curved ends, which is tilted by the engagement therewith of incline 7 upon the stamp, and means, substantially as described and shown, for moving said plate out of operative position.

4. The combination, with stump 4, having inclines 5 and 7, of pivoted locking-catches upon the sash having inclined shoulders, as shown, springs to hold said catches in the locked position, a swinging finger-piece having inwardly-extending lugs adapted to engage said shoulders, a loosely-suspended spring locking-plate having upwardly-curved ends, which is tilted by the engagement of incline 7, and a push-pin projecting through the case and engaging the upper end of

said locking-plate, whereby said plate is pressed beyond the plane of the locking-catches to permit the latter to be disengaged from the stump by the movement of the finger-piece.

412,989. SCAFFOLD-STANDARD. THOMAS SEXSMITH, New York, N. Y. Filed Mar. 14, 1889. Serial No. 303,254. (No model.)



Claim.—1. A scaffold-standard made with an upright support, and a block thereon provided in its body portion with one or more openings adapted to sustain ordinary scaffold-planks set edgewise, and having a supporting-face of sufficient width to safely sustain one of said planks flatwise, substantially as herein set forth.

2. A scaffold-standard made with an upright support, and a block thereon provided in its body portion with two or more independent vertically-ranging slots or openings, each adapted to sustain the end of an ordinary scaffold-plank set edgewise, said block having a supporting-face of sufficient width to safely sustain one of said planks flatwise, substantially as set forth.

3. A scaffold-standard made with an upright support, a block vertically adjustable thereon and provided in its body portion with an opening adapted to sustain ordinary scaffold-planks set edgewise, and having a supporting-face of sufficient width to sustain one of said planks flatwise, and a detent for the block on the support, substantially as herein set forth.

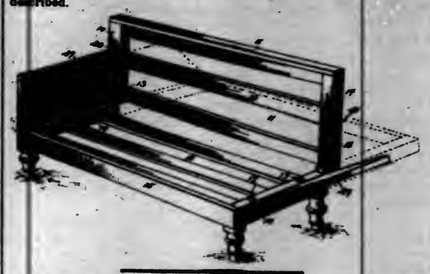
4. A scaffold-standard made with an upright support, a block vertically adjustable thereon and provided in its body portion with two or more independent vertically-ranging slots or openings, each adapted to receive an ordinary scaffold-plank set edgewise, said block having a supporting-face of sufficient width to sustain one of said planks flatwise, and a detent for the block on the support, substantially as herein set forth.

5. A scaffold-standard made with an upright support formed as an open frame, a block vertically adjustable on the frame and provided in its body portion with one or more openings adapted to sustain ordinary scaffold-plank set edgewise, and having a supporting-face between the opposite sides of the frame of sufficient width to sustain one of said planks flatwise, and a detent sustaining the block on the open-frame upright, substantially as herein set forth.

6. A scaffold-standard made with an upright support formed as an open frame provided at its lower end with two legs or feet in the plane of the frame, and provided also with another pair of legs or feet swiveled to a lower cross-piece of the frame and adapted to be swung around at right angles to the plane of the frame and to fold in like plane therewith, combined with a block held to the frame and adapted to sustain scaffold-planks, substantially as described, for the purposes set forth.

412,990. SOFA-BED. GEORGE H. BUNNELL, Guelph, Ontario, Canada. Filed Nov. 9, 1888. Serial No. 290,376. (No model.)

Claim.—The combination, with the base-frame 10, provided with apertures 17 18, of different inclinations, in their end pieces, and the back frame 11, hinged to the base-frame 10, as shown, of detachable end arms 27, provided with rods adapted to enter the apertures 17 18, said arms each provided with a straight edge 28 and an inclined edge 29, said inclined edges adapted to be adjusted for contact with the hinged back frame when used as a sofa-back and adjusted with said inclined edges outward when used as a sofa-bed, and means for holding said ends and hinged back in position, substantially as and for the purpose described.



412,991. RULING-PEN. JONAS S. SOUDER, New York, N. Y. Filed Feb. 21, 1889. Serial No. 300,663. (No model.)

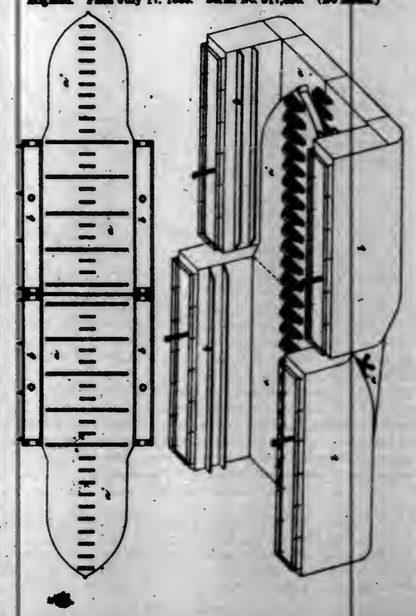


Claim.—1. A ruling-pen comprising a socket consisting of a split ring, resilient jaws extending from said socket, and bearing-points upon the inner sides of said jaws intermediate of said socket and the free ends of the jaws, substantially as specified.

2. A ruling-pen comprising a socket consisting of a split ring, resilient jaws extending from said socket, and bearing-points upon the inner sides of the jaws intermediate of said socket and the free ends of the jaws, the whole being formed from a single piece of metal, substantially as specified.

3. The combination, with a ruling-pen comprising a socket consisting of a split ring and resilient jaws extending from said socket, provided with bearing-points upon their inner sides, of a handle comprising a tapering spreader portion adapted, when inserted through the socket, to contact with said bearing-points to spread the jaws, substantially as specified.

412,992. FLOATING-DOCK. JOHN SPARKHALL, Westminster, England. Filed July 17, 1889. Serial No. 317,880. (No model.)

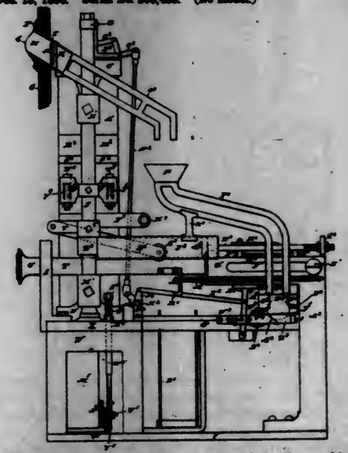


412,992.



Claim.—A floating-dock separable into two or more portions, such portions having along part of their length raised sides a sufficient distance apart to receive between them that portion of another section which is without raised sides, so that one portion can be docked upon the other.

412,993. AUTOMATIC VENDING-MACHINE. JOHN C. SEVERS, Mount Vernon, assignor to John F. Lovejoy, New York, N. Y. Filed Dec. 13, 1886. Serial No. 203,662. (No model.)



Claim.—1. In an automatic vending-machine, the combination, with a vertically-movable holder, of a hook secured to the upper end thereof, a swinging hook for engagement with the holder-hook, an operating slide-bar for operating the machine, and connection between such swinging hook and slide-bar, substantially as set forth.

2. In an automatic vending-machine, the combination, with a vertically-movable holder, of a hook secured to the upper end thereof, a swinging hook for engagement with the holder-hook, an operating slide-bar, and connections between the swinging hook and operating slide-bar, including links, a bell-crank lever, a rock-shaft carrying rock-arms, and a long connecting-rod, substantially as set forth.

3. The combination, with a trip having a nose and tail and adapted to be moved so as to depress its nose and elevate its tail, of an adjusting device—such as the screw H^2—operating-connections attached to the trip, a pawl engaging with the nose and tail of the trip, and a movable part carrying the pawl, whereby when such part is moved the pawl positively moves the trip, which frees itself from the pawl by its tail, substantially as set forth.

4. In an automatic vending-machine, the combination, with a vertically-movable holder, of an operating-lever and an adjustable cam carried by such operating slide-bar for lifting the holder, substantially as set forth.

5. In an automatic vending-machine, the combination, with a vertically-movable holder, of an operating slide-bar, a cam carried thereby, and a pivotal arm engaged by such cam and connected with the holder to lift the same, substantially as set forth.

6. The combination, with a vertically-movable holder, of suspension mechanism, substantially as described, located at the upper end thereof and to which the holder is detachably connected, lifting mechanism, substantially as described, connected with the holder, an operating slide-bar connected with both the said mechanisms and adapted to detach and drop the holder and to restore it to its raised position, uprights located on opposite sides of the holder, and guides mounted on the said uprights and receiving guiding-extensions carried by the holder, substantially as described.

7. In an automatic vending-machine, the combination, with a vertically-movable tubular holder adapted to contain and deliver singly a series of articles to be vended, of uprights between which it is located, guides secured to such uprights for guiding the holder, buffers carried by the uprights, and buffer-heads secured to the holder on its opposite sides, substantially as set forth.

8. In an automatic vending-machine, the combination, with an operating slide-bar, of an unlocking-pawl, such operating slide-bar being adapted to positively move a coin edgewise, whereby the coin operates the pawl to unlock the operating slide-bar, substantially as set forth.

9. In an automatic vending-machine, the combination, with an operating slide-bar having a coin-recess, of a pawl normally locking the operating slide-bar and located below it, so as to partially close the lower end of its recess and support a coin therein until the coin is positively moved by the operating slide-bar to displace the pawl and unlock the operating slide-bar, substantially as set forth.

10. In an automatic vending-machine, the combination, with an operating slide-bar having a coin-recess, of a pawl normally locking the operating slide-bar and located below it, so as to partially close the lower end of its recess, and provided with a bevel, upon which the coin rests and against which it is pressed by the operating slide-bar to displace the pawl and so unlock the operating slide-bar, substantially as set forth.

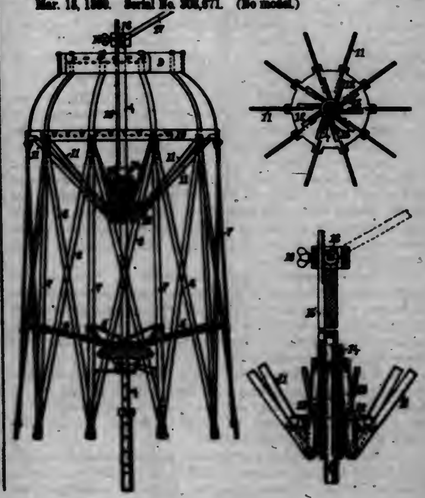
11. In an automatic vending device, the combination, with an operating slide-bar, of a gravity safety-pawl carried thereby, a rigid rack for engagement by such pawl, and a rail having an incline at one end to lift the pawl above the rack in the normal forward movement of the operating slide-bar, substantially as set forth.

12. In an automatic vending mechanism, the combination, with a sleeve, of two wheels, one of which is rigid and the other loose thereupon, a driven shaft passing through the sleeve, a snail-cam secured to the shaft, an oscillating lever actuated by such cam for operating the rigid wheel, and hence rotating the sleeve, a snail-cam carried by the sleeve and rotating therewith, and an oscillating lever actuated by the cam last mentioned and actuating the loose wheel in rotation, substantially as set forth.

13. In an automatic vending-machine, the combination, with a vertically-movable holder adapted to carry a number of blanks, of two type-wheels, an inking-ribbon, two spools, respectively located on opposite sides of the wheels, spool-frames removably secured in place, a ratchet-wheel carried by the spindle of one of the spools, a pawl normally disengaged from such ratchet-wheel, and an operating slide-bar for operating the holder and actuating such pawl, substantially as set forth.

14. In an automatic vending device, the combination, with a case having an indicator-opening and a coin-slot, of an indicating-slide adapted to be displayed through such opening, a slide to obstruct the coin-slot, a holder, a follower located therein, a weight located in the follower, having a projecting ear and normally supported by the contents of the holder, fingers adapted to be engaged by the ear when the weight drops after the removal of the last article from the holder, and connections between such fingers and slides for operating the latter, substantially as set forth.

412,994. DERRICK-CRANE. JOHN B. BROWN, Providence, R. I. Filed Mar. 18, 1889. Serial No. 303,671. (No model.)



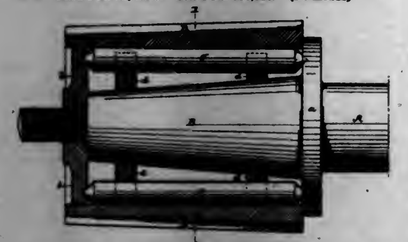
Claim.—1. In a dress-form, the combination, with the standard, the spider 12, the vertical ribs, and the hinged radial braces, of the block 14, connected with the radial braces by strips, the rack-bar 15, the pinion 16, the crank 17, and clamp 18, constructed to adjust the dress-form by raising or lowering the block, as described.

2. The combination, with the central standard, the vertical ribs, the waistband, and hip-band of a dress-form, of radial braces pivotally secured to the vertical ribs at their outer ends, hinged on a spider secured to the central standard near their inner ends and connected by connecting-strips with a block sliding on the central standard, said sliding block provided with a rack operated by a pinion at or near the upper end of the dress-form to adjust the form, as described.

3. The combination, with the standard 4, the vertical ribs 7, the cross-ribs 8, the radial braces 5, and block 6, of the radial braces 11, pivoted at their outer ends to the vertical ribs hinged in the spider 12 and connected with the sliding block 14 by the strips 13, the block 14 being operated to adjust the form by the rack-bar 15, as described.

4. A dress-form consisting of the central standard 4, the vertical ribs 7, the cross-ribs 8, the block 6, the radial braces 5, connecting the vertical ribs with the block, the waistband 9, and hip-band 10, the spider 12, braces 11, the connecting-strips 13, the sliding block 14, rack-bar 15, pinion 16, the crank 17, and clamp-screw 18, as described.

412,995. JOURNAL FOR VEHICLES. THOMAS H. SUBERS, Philadelphia, Pa., assignor of three-fourths to Samuel B. Coughlin, Burlington, N. J. Filed Feb. 15, 1889. Serial No. 300,016. (No model.)



Claim.—1. The combination of the axle and its journal, the series of rings or collars mounted on said journal, and a series of rollers adapted to bearings in said rings or collars and forming the bearings for the journal-box of the wheel, but free from contact with the journal, substantially as specified.

2. The combination of the axle and its journal, the rings or collars mounted upon said journal, the rollers adapted to bearings in said rings or collars and serving as bearings for the journal-box of the wheel, and flanges or collars serving as bearings for the ends of said rollers and confining them in position longitudinally, substantially as specified.

3. The combination of the axle and its journal, the rings or collars mounted thereon and having in their outer peripheries segmental recesses each of greater extent than a half-circle, and rollers having their bearings in said segmental openings and serving as the bearings for the journal-box of the wheel, substantially as specified.

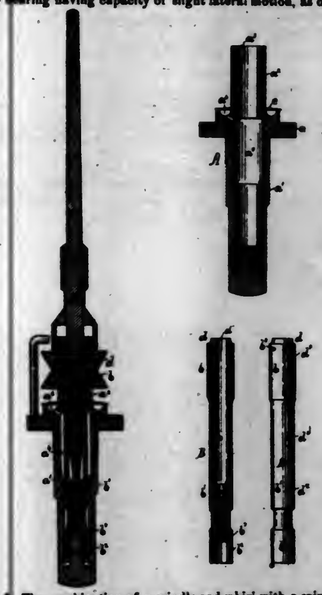
412,996. SUPPORT FOR SPINNING-FRAME SPINDLES. GUSTAVUS E. TAFT and HENRY F. WOODWARDT, Whitinsville, assignors, by mesne assignments, to the Sawyer Spindle Company, Boston, Mass. Filed Oct. 3, 1885. Serial No. 178,913. (No model.)

Claim.—1. A combined bolster and step having its upper part of a diameter to closely fit the bolster-case above and below the center of the whirl, and its lower end provided with a chamber and an elastic disk placed within said chamber, in combination with a bolster-case provided with an internal stem projecting upward from its bottom to support the bolster upon its elastic disk, substantially as and for the purpose described.

2. The combination of a spinning-spindle and its whirl, and a bolster-case provided with an internal stem projecting upward from its bottom, with a combined bolster and step having a chamber and elastic disk in its lower end, its upper part *b* forming a cylinder to fit closely into the bolster-case above and below the center of the whirl, as and for the purpose described.

3. A spindle-support consisting of a combined bolster and step, and the bolster-case supporting and inclosing it and forming a close-fitting bearing for the bolster above and below the center of the whirl, and a loose fit on the lower portion of the bolster, in combination with a spindle and whirl, as described.

4. The combination of a spindle and whirl with a spindle-support consisting of a bolster-case constructed to be secured to a spinning-machine and form an oil-reservoir from which oil is supplied to the spindle-bearings and bolster and step bearings contained in said case, the bolster-bearing being firmly held in the bolster-case against lateral motion above and below the center of the whirl, and the lower or step bearing having capacity of slight lateral motion, as described.



5. The combination of a spindle and whirl with a spindle-support consisting of a bolster-case forming an oil-reservoir, and a bolster-tube containing the bolster and step bearings held in the bolster-case firmly against lateral motion above the whirl and below the same, the step portion being of less diameter than the interior of the bolster-case, and an elastic or yielding cushion supporting said bolster and step bearing, as described.

6. The combination, with the bolster-case A and the bolster-tube B, rigidly secured in the bolster-case against axial or lateral motion near the upper end, of an elastic or yielding material supporting said bolster-tube to form a yielding vertical bearing for the spindle, as and for the purpose set forth.

7. The combination, with the bolster-case and the sleeve whirl-spindle, of the tube B, containing bolster and step bearings for the spindle, the said tube being fixed in the bolster-case at *b* opposite the bolster-bearing within the sleeve-whirl to resist the band-pull and supported within the chamber of the bolster-case, the said bolster-bearing extending both above and below the center of the whirl, substantially as described.

8. The combination, with the sleeve whirl-spindle, of a tube B, containing the bolster and step bearings of the spindle, and a support for the said tube supporting the latter within the whirl to resist the band-pull, the said tube extending below the point of its support, and the bolster-bearing extending both above and below the center of the whirl, substantially as described.

9. A sleeve whirl-spindle and a rigid bolster or support therefor below its junction with the whirl, combined with a step and means to support the same loosely and permit it to move laterally with the foot of the spindle.

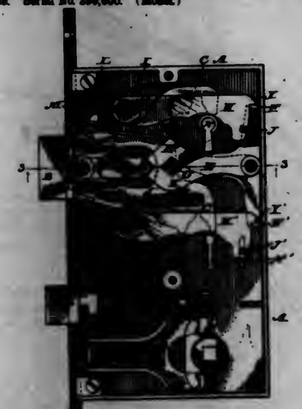
10. The combination, with a sleeve whirl-spindle, of a bolster case or support having a rigid bearing therein for the spindle, the sleeve-whirl surrounding the said bearing so that the band pulls the spindle against the said rigid bearing, and a step mounted loosely in the bolster case or support to move laterally therein with the foot of the spindle.

11. The combination, with a holder having a rigid bearing therein and a spindle, of a cushioned step-bearing having both vertical and lateral motion in or with relation to the said holder.

12. The combination of a bolster-case with bolster and step bearings placed therein, the said case having an oil-chamber and constructed to hold the bolster or upper bearing against axial or lateral motion, and the step or lower bearing having lateral motion.

13. The combination, with the bolster-case and the bearing-tube rigidly secured in the bolster-case against axial or lateral motion near the upper end, of an elastic or yielding support for the said bearing-tube to form a yielding vertical bearing for the spindle.

412,997. LOCK. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Feb. 12, 1889. Serial No. 299,600. (Model.)



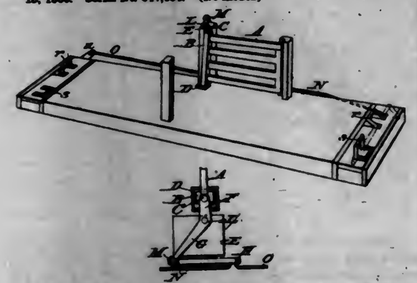
Claim.—1. In a key-lock, the combination, with the bolt and two independent sets of tumblers, of two movable dogs and a fence upon each dog adapted to enter the gatings of the tumblers when set in alignment, and a separate key to operate each set of tumblers and the bolt, substantially as set forth.

2. In a lock, the combination of a bolt, a movable stamp, and two movable dogs, substantially as set forth.

3. In a lock, the combination of a bolt provided with key-arms C C', two independent tumbler mechanisms, two independent keys, a movable stamp upon the bolt, and movable dogs engaging with the stamp at one end and with tumbler mechanism at the other end, so as to hold the bolt either in the locked or unlocked position, the whole so arranged that each key will operate one set of tumbler mechanism, one of the movable dogs, and the bolt, substantially as set forth.

4. In a lock, the combination of a bolt carrying a movable stamp, with a movable dog carrying a fence, and a tumbler mechanism, substantially as set forth.

412,998. GATE. ISAAC M. THOMPSON, Franklin, Ind. Filed July 15, 1889. Serial No. 317,631. (No model.)



Claim.—The combination of the gate having an upper and a lower vertical pivot at one of its edges, the fixed bearing for the lower pivot, the gate-post, the bent lever pivoted to the post so as to swing horizontally across its top, and forming at one end a shifting bearing for the upper pivot of the gate, the lever pivoted to the outer edge of the post so as to swing in a vertical plane thereon, and having at its upper end the swivel-coupling M, and the pair of double-cranked shafts mounted in bearings on opposite sides of the gateway, and each having an arm which is connected with the lower end of the vertical lever by a connecting-rod, all being arranged to co-operate substantially as and for the purpose specified.

412,999. OBSTETRICAL APPLIANCE. JOHN P. TURNEY, Arlington, Oreg. Filed Feb. 4, 1889. Serial No. 299,067. (No model.)

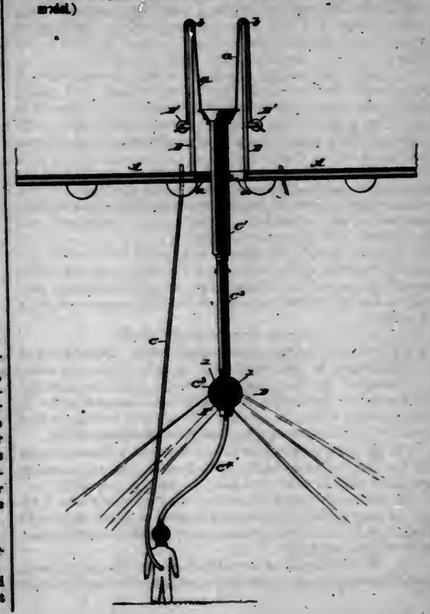
Claim.—1. An obstetrical harness consisting of a back-pad B and an abdominal pad A, loosely connected, so as to have independent action, shoulder-loops connecting with the back-pad, and stirrups or foot-supports connecting with the abdominal pad to give a tightening action and downward progressive motion to the abdominal pad, as described.



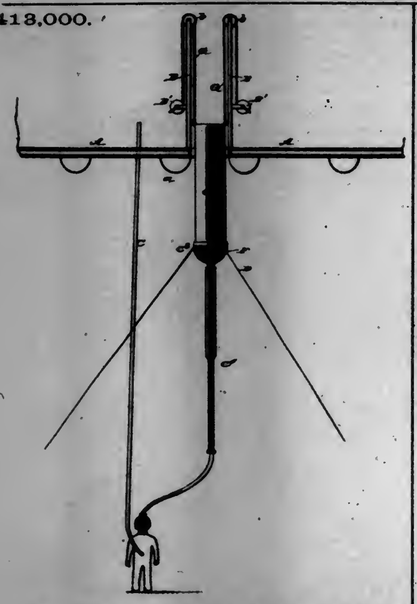
2. An obstetrical harness consisting of a back-pad B and an abdominal pad A, loosely connected, shoulder-loops connected to the back-pad, and stirrups and hand-holds connected to the abdominal pad, the hand-holds being extended through a roller or loop of the stirrup-straps, as described.

3. The combination, with the stirrup-straps and the shoulder-straps, of the back-pad B, with plate A^3 connected to it by straps and buckles, the link-bars D D, and the abdominal pad A, having plate A^4 connected to it by straps and buckles and jointed to the links D D, and the underlying pad or shields X, substantially as shown and described.

413,000. SUBMARINE DIVING APPARATUS. FRANK VANSHAN, Elizabeth City, N. C. Filed Feb. 23, 1889. Serial No. 301,569. (No model.)



413,000.



Claim.—1. In an apparatus substantially as described, the combination of the diver's armor, casing, or inclosure, the air-supply tube leading thereto, the air-discharge tube leading therefrom, a transparent lamp-holder supported between lengths of said air-discharge tube at a point above the armor, casing, or inclosure and below the surface of the water, and a lamp supported in said holder, whereby to serve the double purpose of an illuminator and a draft-producer, substantially as set forth.

2. In an apparatus substantially as described, the diver's armor, casing, or inclosure and the tube supplying air thereto, combined with the air-discharge tube having a submerged transparent lamp-holder arranged at a point above the armor, casing, or inclosure, and a reflector or reflectors, whereby the light from the lamp in said holder may be cast downward, substantially as set forth.

3. In an apparatus substantially as described, the combination of the diver's armor, casing, or inclosure, the air-supply pipe leading thereto, the air-discharge tube leading therefrom and having at its upper end a cylinder-like section or sections, and provided at the lower end of the same with a glass globe-like lamp-holder, substantially as set forth.

4. An apparatus substantially as described, consisting of the diver's armor, casing, or inclosure, the air-supply pipe leading thereto, the air-discharge pipe, the transparent lamp-holder arranged above the casing, armor, or inclosure, the lamp arranged in said holder, and the reflectors arranged above said lamp.

5. In an apparatus substantially as described, the combination of the diver's armor, casing, or inclosure, the boat or support having a well-like opening, the air-supply pipe, the air-discharge pipe movable through the well-like opening, and hoisting devices, substantially as set forth.

418,001. TOOTH-CLEANING IMPLEMENT. JOSEPH A. WALSH, Philadelphia, Pa. Filed July 8, 1889. Serial No. 316,823. (No model.)

Claim.—1. The combination of the rubber band with the holder, comprising two arms having near their outer ends openings for the reception of the band, and provided with means for holding the band in position at the outer ends of the arms, substantially as specified.

2. The combination of the rubber band with a holder comprising two arms, means for supporting the band thereon, and a yoke for governing the expansion of the arms, substantially as specified.

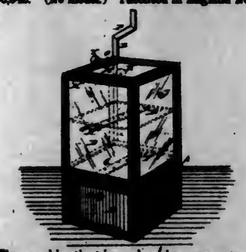
3. The combination of the rubber band, the elastic arms carrying the same and having an inherent tendency to spread apart, and a confining-yoke movable on the arms and tending to contract the same, substantially as specified.

4. The combination of the rubber band with the carrying-arms therefor, having enlarged ends with openings for the reception of the band, and slots to permit the passage of the band into said openings, substantially as specified.



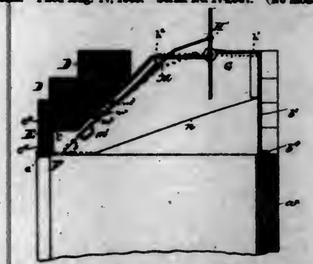
5. The combination of the rubber band with the holder, consisting of a recessed handle, and band-holding arms pivoted to said handle so as to be turned down into the same, said arms having near their outer ends openings for the reception of the band, and means for retaining said band, substantially as specified.

418,002. CHECK-RECEIVING APPARATUS. JOHN R. WARD, Kensington, County of Middlesex, England. Filed Nov. 30, 1887. Serial No. 256,542. (No model.) Patented in England Nov. 16, 1887, No. 15,732.



Claim.—The combination, in a checking apparatus, of the tubing L, fitted into the top of said checking apparatus, of a valve connected with said tubing, of the speaking-tube O, the breaks P, fitted with pieces of india-rubber or other compressible material Q, and means whereby said tubing may be run together, substantially as set forth.

418,003. FIRE-PLACE. CHARLES A. WELLINGTON, Lexington, Mass. Filed Aug. 17, 1888. Serial No. 174,567. (No model.)

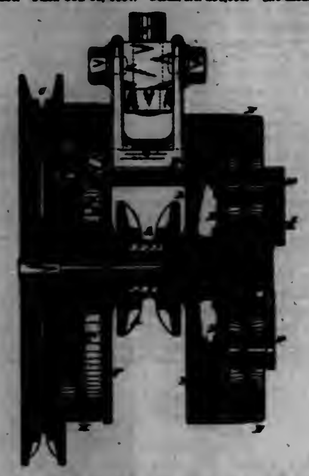


Claim.—1. The fire-place top or hood B, having an inclined front wall or plate *b*, provided near its lower edge with the angular brick-support C, having a horizontal ledge above the bottom of the said hood for the bricks to rest on, and below said ledge a vertical wall to support or steady the tiles or the backing therefor, substantially as set forth.

2. The combination, with a fire-place provided with a flanged tile-supporting angle-plate *c*, of the fire-place top or hood B, having an inclined front wall provided near its lower edge with the angular brick-support C, having a horizontal ledge above the bottom of the said top or hood for the bricks to rest upon, and below said ledge a vertical wall to steady or support the tiles or tile-backing resting on the said angle-plate, substantially as set forth.

3. The combination, with the fire-place top or hood B, having the opening G, the front plate or wall of said hood being provided with the wedge-shaped ribs m^2 and the plate m^3, of the centrally-pivoted damper H, provided with the operating-rod M, extending downward beneath the said front plate or wall and adapted to be moved sidewise so as to be wedged between the said ribs and plate m^3 to retain the damper in any position to which it may be adjusted.

418,004. HOISTING MECHANISM. THOMAS A. WIESS, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Oct. 10, 1887. Serial No. 251,869. (No model.)



Claim.—1. The combination, with a hoist-frame, of a driving-sheave exterior to the frame on one side thereof, a train of sun-and-planet gearing exterior to the frame on the other side thereof and carried on the flanged extension of the hollow shaft, a driving-shaft upon which said sheave is fixed, and which gears with and gives motion to said train of gearing, a hollow shaft journaled in the two sides of the frame through which said driving-shaft passes, and the main lifting-sheave carried on said hollow shaft, substantially as set forth.

2. The combination, with a hoist-frame provided with a train of sun-and-planet gearing, of a main lifting-sheave secured to a hollow rotatory main shaft, the latter journaled at each end in the frame, and provided with a flange exterior to the hoist-frame and carrying the planet-pinions, and within the said rotatory hollow main shaft a driving-shaft, substantially as set forth.

3. The combination, with a hoist-frame, of a purchase-gearing consisting of a driving-sheave and its attached shaft, the latter journaled within a hollow main shaft, a driving-pinion made integral with the said driving-shaft, planet-pinions engaged with the driving-pinion, and also with a fixed annular wheel integral with the hoist-frame and external thereto, the said planet-pinions pivoted to and driving a flange or disk integral with the main hollow shaft, and the main hollow shaft journaled at each end in the frame and attached to a main lifting-sheave, substantially as set forth.

4. In a portable hoist, the combination of the hoist-frame in two parts D E, connected together by studs, as shown, said part D being provided with the annular flange D′, the lifting-sheave A between the two parts D E, the hollow shaft B, to which the sheave is fixed, provided with the flange B′, the pinions B^4 thereon, the driving-pinion C^3 and its shaft C, the brake-pulley I, check-wheel K and rollers, brake-strap H, and yoke G, substantially as set forth.

5. In a portable hoist, the combination of the hoist-frame in two parts D E, connected together by studs, as shown, said part D being provided with the annular flange D′, the lifting-sheave A between the two parts D E, the hollow shaft B, to which the sheave is fixed, provided with the flange B′, the pinions B^4 thereon, the driving-pinion C^3 and its shaft C, driving-pulley C, brake-pulley I, check-wheel K and rollers, brake-strap H, yoke G, and brake-releasing lever H^3, substantially as set forth.

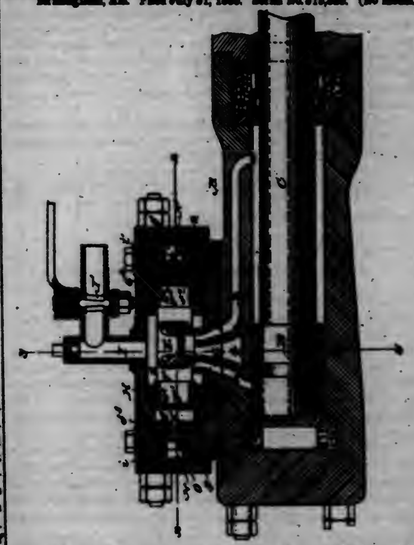
6. In a portable hoist, the combination, with pulleys between which a check action is effected, of a separate cam check-wheel, which, with its rollers, occupies an annular groove in the body of one of the said pulleys and is loosely clutched to the other, substantially as set forth.

7. In a portable hoist, the combination of the pulley C with the brake-pulley I, and the check-wheel K, having lock K^4, located within the pulley I, and clutched to the pulley C by said lug K^4, substantially as set forth.

8. The combination, in a hoist embodied in a pulley-block frame, of a strap-brake, and a pivoted yoke, which is attached to the suspension-hook, whereby the brake is operated by the weight of the hoist and of any load thereon, substantially as set forth.

9. The combination, in a hoist embodied in a pulley-block frame, of a strap-brake and a pivoted yoke, which is attached to the suspension-hook, whereby the brake is operated by the weight of the hoist and of any load thereon, and an operating-lever for withdrawing the brake from action, substantially as set forth.

413,005. STEAM-ACTUATED VALVE. JAMES A. WIESS, Jr., Birmingham, Ala. Filed July 31, 1888. Serial No. 281,282. (No model.)



Claim.—1. In a steam-actuated valve, the combination, with a main valve and a main piston carrying the said main valve, of an auxiliary piston carrying an auxiliary valve, and two tappet reversing-valves controlled by the movement of the said pistons and valves, substantially as shown and described.

2. In a steam-actuated valve, the combination, with a steam-chest provided with two compartments in communication with each other, of a main piston held to slide in one of the said compartments and carrying a slide-valve controlling the egress of the motive agent from or its ingress to the cylinder, an auxiliary piston carrying an auxiliary valve and held to slide in the other compartment of the steam-chest, and tappet-valves controlled by the said main and auxiliary pistons, substantially as shown and described.

3. In a steam-actuated valve, the combination, with a steam-chest provided with two compartments in communication with each other, of a main piston held to slide in one of the said compartments and carrying a slide-valve controlling the egress of the motive agent from or its ingress to the cylinder, an auxiliary piston carrying an auxiliary valve and held to slide in the other compartment of the steam-chest, tappet-valves controlled by the said main and auxiliary pistons, and means, substantially as described, for regulating the communication between the two compartments of the said steam-chest, as set forth.

4. In a steam-actuated valve, the combination, with two pistons and two slide-valves arranged to move in alternation and adapted to control the necessary supply-ports and passages, of reversing tappet-valves adapted to produce said alternating movement independently of the movement of the main piston, substantially as shown and described.

5. The combination, with two tappet reversing-valves, of a valve-operating mechanism therefor, consisting of a pair of reciprocating pistons, one of which is connected to and moves the main valve of the engine, the other operating a similar valve for controlling the movements of the main-valve piston independently of the movements of the cylinder-piston, substantially as shown and described.

6. The combination, with the main valve, of a main piston actuated by a motive agent and carrying the said valve, two tappet reversing-valves for reciprocating the said main piston, and a second similar piston and valve for imparting an alternating reciprocating

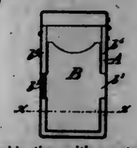
movement to the said main and auxiliary valve pistons independently of the movement of the cylinder-piston, substantially as shown and described.

7. The combination, with a main piston actuated by the motive agent, of two tappet reversing-valves arranged to open and close the main supply and exhaust ports independently of the movement of the cylinder-piston, and an auxiliary piston and valve controlling ports and passages for actuating the said main piston in conjunction with the said tappet reversing-valves, substantially as shown and described.

8. The combination, with the main piston actuated by the motive agent, of two tappet reversing-valves arranged to open and close the main supply and exhaust ports independently of the movement of the cylinder-piston, an auxiliary piston and valve controlling ports and passages for actuating the said main piston in conjunction with the said tappet reversing-valves, and means, substantially as shown and described, for regulating the admission of the motive agent from the main piston to the auxiliary piston, substantially as shown and described.

9. The combination, with two pistons and valves, of two tappet reversing-valves for producing alternating movement of the said piston and valves, substantially as shown and described.

418,006. COMBINED MATCH-SAFE AND TICKET-HOLDER. SOLOMON WOLHEIMER, New York, N. Y. Filed Dec. 4, 1888. Serial No. 292,641. (No model.)

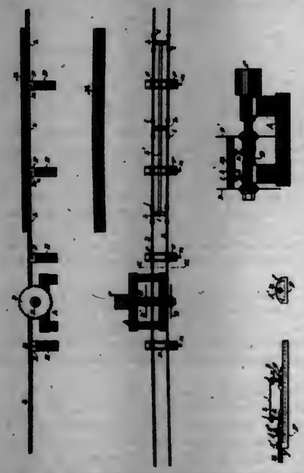


Claim.—1. The combination, with a match-safe, of a pocket for tickets upon the exterior thereof made separate from the match-safe, said pocket having side portions extending into the interior of the match-safe, and springs for forcing the pocket toward the match-safe, substantially as specified.

2. The combination, with a match-safe, of a pocket for tickets upon the exterior thereof made separate from the match-safe and having side portions extending into the interior of the match-safe, springs for forcing the pocket toward the match-safe, and a jacket within the match-safe, in which said springs are contained, substantially as specified.

3. The combination, with a match-safe, of the pocket B, having portions extending into the interior of the match-safe, springs b^3, and the jacket D, provided with lips d^3, substantially as specified.

418,007. JOINT-CROWNING MACHINE. CHARLES R. WOODRUFF, Duluth, Minn. Filed Dec. 28, 1888. Serial No. 294,850. (No model.)



Claim.—1. The combination, with a saw-frame provided with one or more saws, of a joist-carriage, a guide, sleepers for supporting said guide, ties mounted on said sleepers, and means for adjusting said ties, substantially as set forth.

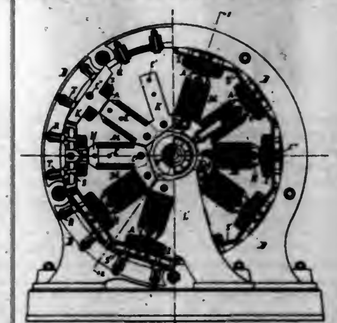
2. The combination, with a saw-frame provided with one or more saws, of a joist-carriage guide constructed of material adapted to be sprung upon itself to the true arcs of different circles, and means for adjusting said guide to such arcs, substantially as and for the purpose specified.

3. The combination, with a fixed saw-frame provided with one or more saws, of a joist-carriage guide through the cutting-plane of the saws adjustable to the true arcs of different circles, consisting, essentially, of fixed sleepers, transversely-movable independent ties mounted on said sleepers, and one or more continuous guiding-rails rigidly secured to said ties, substantially as described.

4. The combination, with a fixed saw-frame provided with the pair of saws, of the joist-carriage track herein described, consisting of fixed sleepers provided with tie-seats, the transversely-movable ties mounted in said seats, the adjusting-screws for controlling the movement of the ties independently of each other, and the continuous parallel rails rigidly secured to said ties, substantially as described.

5. The combination, with a saw-frame and saws, of track-rails adjustable by flexure to the true arcs of different circles transversely-adjustable ties in which the rails are seated, means for independently adjusting said ties, and a carriage movable upon said rails, substantially as set forth.

418,008. ALTERNATING-CURRENT MACHINE. CHARLES ZIPERNOWSKY, Buda-Pesth, Austria-Hungary. Filed Apr. 19, 1889. Serial No. 307,663. (No model.) Patented in England Dec. 27, 1887, No. 17,812; in France Jan. 17, 1888, No. 183,187; in Italy Mar. 22, 1888, No. 22,961; in Austria-Hungary June 7, 1888, No. 15,663 and No. 62,908; in Belgium July 13, 1888, No. 82,563, and in Spain July 26, 1888, No. 8,507.



Claim.—1. An alternating-current electric generator consisting of a fixed armature having inwardly-projecting armature-cores and bobbins, and a field-magnet wheel rotating inside the said armature, having outwardly-projecting field-magnet cores and bobbins, the said armature and field-magnet cores being composed of a number of segmental iron laminæ lying in the plane of rotation and pressed together with interposed layers of insulating material.

2. An armature-core for alternating-current electric generators, formed of T-shaped iron laminæ pressed together by strong press-plates and screw-bolts, the armature-bobbin being slipped over the perpendicular limb of this T-shaped core and fixed by clamps screwed to the press-plates.

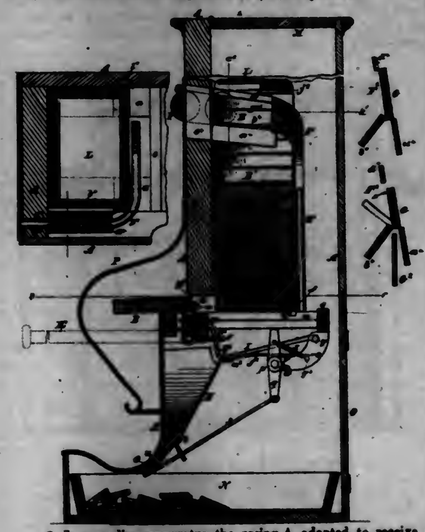
3. An armature for alternating-current electric generators, composed of T-shaped cores with bobbins arranged in a circle with inwardly-projecting perpendicular limbs and fixed to but insulated from the frame-work of the machine.

4. A field-magnet wheel for alternating-current electric generators, consisting of many layers of V-shaped iron laminæ arranged in a circle with outwardly-projecting limbs, the interstices between the several laminæ of one layer being covered by the laminæ of the next, and of bobbins slipped over the outwardly-projecting limbs, the said laminæ being pressed together by strong press-plates and screw-bolts, and the said bobbins being held by suitable clamps and screw-bolts.

418,009. VENDING APPARATUS. BENJAMIN ADELMANN, Brooklyn, assignor to John H. Volkmann, New York, N. Y. Filed Jan. 26, 1888. Serial No. 261,940. (No model.)

Claim.—1. The movable coin support and conveyer D, combined with means, substantially as described, for moving the conveyer D, and with the coin-chute F and spring n^2, for holding the conveyer D in position to receive and move a coin and the package in front thereof immediately after the coin is inserted, as set forth.

2. The casing A, combined with the movable coin-support and conveyer D, which forms a rest for and embraces the lower end of the coin, as and for the purpose set forth, and with means, substantially as described, for moving said conveyer, as specified.



3. In a vending apparatus, the casing A, adapted to receive a number of packages, combined with a reciprocating coin support and conveyer D, having the movable coin-overlapping retainer J, and with the rod E, for reciprocating the support and conveyer, as specified.

4. In a vending apparatus, the combination, with the reciprocating coin support and conveyer D, having the recess r, and being adapted to receive a coin G, of the rocking lever q, adapted to be actuated by the coin when moving in one direction and to prevent the return of the support and conveyer holding a coin when moving in the reverse direction, substantially as described.

5. In a vending apparatus, the combination, with the reciprocating coin support and conveyer D, adapted to receive a coin and to hold it in the path of a package to expel the same, said support and conveyer having a recess r, of the rocking lever q, rod s, and chute H, said rod s being adapted to close the lower end of said chute to hold a coin therein and to uncloss said lower end, substantially as described.

6. In a vending apparatus, the combination, with a coin support and conveyer D, for holding a coin in the path of a package to expel the same, and the spring-pressed pawl J on said support and conveyer, of the lever I, for engaging the pawl J, and thereby preventing the return of the carrier before the package has been expelled, substantially as described.

7. In a vending apparatus, the combination of a coin support and conveyer adapted to receive a coin and hold it in the path of a package, said coin acting as the expelling medium, with the levers q I, spring-pressed pawl J, and stop w, for preventing the return of the support and conveyer before the package started by the coin is expelled from the machine, and for permitting said return after such package is expelled, substantially as described.

8. In a vending apparatus, the combination of the casing A, having the glass u, and the chute H, for receiving a coin from a support and conveyer, with a reciprocating support and conveyer D, adapted to hold a coin, a rocking lever q, and the movable rod s, connected to said lever, for supporting a coin under the glass u, substantially as described.

9. In a vending apparatus, a coin-chute provided with lower rails a^4 b^4, placed side by side and at such a distance apart that a proper coin will ride along the upper edges of said rails, but a thinner coin will fall between and pass below them, the chute being wider than the space between the rails, substantially as herein shown and described.

10. In a vending apparatus, a coin-chute provided with lower rails a^4 b^4, arranged side by side and at such a distance apart that a proper coin will ride along the upper edges of said rails, but a thinner coin will fall between and pass below them, and with the upper rail d^4 at such a distance above the lower rails that a proper-sized coin will rest against it, but a smaller coin will pass under it, the chute being wider than the space between the rails, substantially as herein shown and described.

11. In a vending apparatus, the weight L, adapted to rest on the package B, and having a foot j^3, combined with the coin support and conveyer D and rails a, having notch l^3, substantially as and for the purpose specified.

12. In a vending apparatus, the coin support and conveyer D, constructed with an opening in one side, incline i, and lug g, for preventing a coin passing downward through the support and conveyer, but permitting its passage from the side, substantially as described.

13. In a vending apparatus, the coin support and conveyer D, constructed with an opening in one side, incline i, and lugs h and g, for holding a coin in the support and conveyer and preventing its passage down and through the same, substantially as described.

14. In a vending apparatus, the combination of the coin support and conveyer D, having the incline i, with the catch j, having lug m, guide-rail a, and pin n, for engaging the lug m to turn the catch j, substantially as described.

15. In a vending apparatus, the combination of the coin support and conveyer D, having the incline i and lugs h and g, with the catch j, having lug m, guide-rail a, and pin n, all arranged for operation substantially as herein shown and described.

16. In a vending apparatus, the combination of the coin support and conveyer D, having recess r and coin G, with the rocking lever q and stops v and w, all arranged for operation substantially as described.

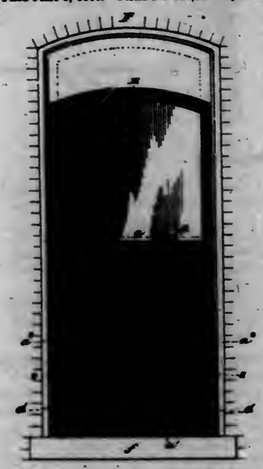
17. In a vending apparatus, the combination of the coin support and conveyer D and catch j, having lug m, with the guide-rail a, pin n, for engaging the lug m to turn the catch j to release a coin, and the stop c, for turning back the catch j by contact with the lug m, substantially as described.

18. In a vending apparatus, the lever I, having inclined part d^3, upon which a package operates to move the lever, combined with the coin support and conveyer D, having pawl J for engagement with said lever when held out of its normal position by a package, substantially as described.

19. In a vending apparatus, the spring-lever I, having upright part b^3, notch l^3 in said part b^3, and the inclined part d^3, combined with the coin support and conveyer D, having pawl J, all arranged for operation substantially as herein shown and described.

20. In a vending apparatus, the chute F, cut away at its lower end in front, combined with the coin support and conveyer D, constructed to receive a coin from the chute F, to hold it independently by itself, and to carry the coin away from the chute through said opening, substantially as described.

418,010. WINDOW-SCREEN. STEPHEN J. ANDERSON, St. Louis, Mo. Filed June 5, 1889. Serial No. 313,197. (No model.)



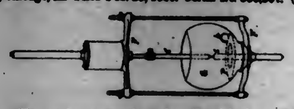
Claim.—1. The combination, with the screen-frame, of the strip H, rigidly secured to the inner surface of one side rail of the said frame and projecting laterally outward therefrom, and the strip H', projecting similarly outward from the opposite side rail of the frame and attached to said side rail by the hinges A, so that it can be turned inward on the rail, substantially as specified.

2. The combination, with the screen-frame, of the strips H H', attached to the inner surfaces of the opposite side rails of the frame and projecting laterally outward therefrom, the hinges A, connecting

the strip H' to the corresponding side rail of the frame, and the catch or detent K, pivoted to said rail, substantially as specified.

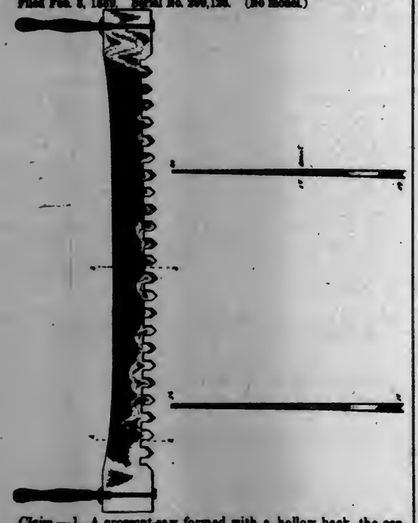
3. The combination, with the screen-frame, the strip H, rigidly secured to one side rail thereof, the strip H', attached to the opposite side rail of the frame, and the hinges A, connecting the strip H' to the said side rail, of the upper sash E, the lower rail of which forms a rest for the upper rail of the screen-frame, and the window-strips G G, against which the strips H H' bear, substantially as specified.

418,011. GLOBE-PROTECTOR FOR ARC LAMPS. GERRAY C. ARMEN, Chicago, Ill. Filed Feb. 23, 1889. Serial No. 300,967. (No model.)



Claim.—The globe-protecting plate P, with the metal binding-strips r r on the inside and outside rim r r, and handle A, for the purpose of strengthening the thin plate and facilitating the handling of the same during the cleaning process of the lamps, substantially as specified.

418,012. CROSSCUT-SAW. ELIAS C. ATKINS, Indianapolis, Ind. Filed Feb. 8, 1889. Serial No. 299,126. (No model.)



Claim.—1. A crosscut-saw formed with a hollow back, the central portion of which is ground thinner on the back than it is at the ends.

2. A crosscut-saw formed with its ends ground of a regularly-diminishing thickness from front to back and from a point near each end, on a line running to near the front edge at the center of the saw, ground thinner than said ends.

3. A crosscut-saw formed with a hollow back and ground from a point near each end, upon a curved line toward the center and front edge of the saw, thinner than the remaining portion.

418,013. ORE-SEPARATOR. WILLIAM RAINSBRIDGE, Omaha, Nebr. Filed Aug. 20, 1888. Serial No. 284,062. (No model.)

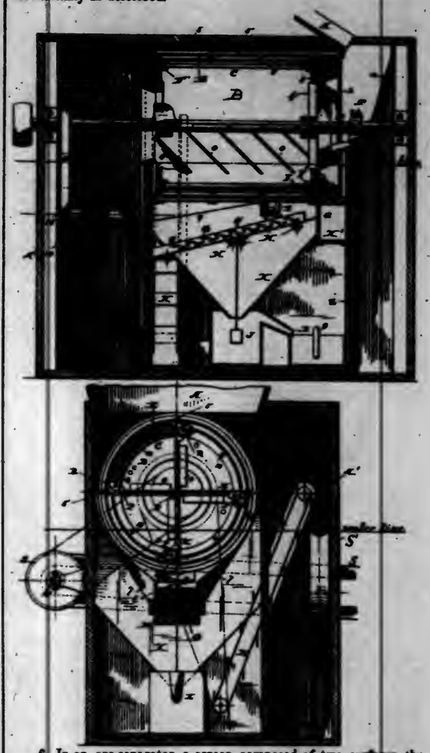
Claim.—1. In an ore-separator, a shoe composed of a frame, and Z-shaped plates mounted therein and arranged with spaces between them, forming horizontal shelves and settling-pockets for the gold, substantially as described.

2. An ore-separating screen divided longitudinally by partitions provided with flights or advancing plates carried by the partitions, substantially as described.

3. In an ore-separator, a cylinder having concentric screening-surfaces, the outer one being the finer, the pockets P, communicating with the space between the screening-surfaces, and the openings into the pockets through the outer surface closed by slides, substantially as described.

4. In combination with a rotary screen provided with an oblique cam, an inclined shoe mounted on rollers beneath the screen and having a projection to engage the oblique cam, substantially as described.

5. In an ore-separator, a screen composed of two cylindrical surfaces, the inner being made up of angular metallic bars placed edge to edge with spaces between, and the outer consisting of flat bars of very hard material overlapping each other with small spaces between, substantially as described.

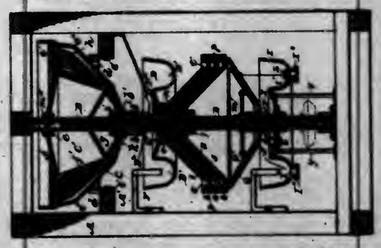


6. In an ore-separator, a screen composed of two surfaces, the inner coarser than the outer and having a portion of its cylinder hinged to swing open into the central space, substantially as described.

7. In an ore-separator, a rotating screen divided longitudinally into compartments provided with two concentric screening-surfaces, the outer finer than the inner, and the inner provided with swinging traps opening into the interior, substantially as described.

8. In an ore-separator, a rotating screen composed of two screening-surfaces, the outer finer than the inner, longitudinal partitions, traps in the inner surface opening into the interior, and pockets between the surfaces and next the partitions, arranged substantially as described.

413,014. ORE-MILL. WILLIAM RAINSBRIDGE, Omaha, Nebr. Filed Dec. 17, 1888. Serial No. 293,783. (No model.)



Claim.—1. In an ore-pulverizing machine, the combination, with a hopper, of a grinding-disk composed of two sections, the upper section having a rotary and a free vertical movement and the lower a rotary movement only, and mechanism to operate the hopper and grinding-disks in opposite directions, substantially as described.

2. In an ore pulverizing and concentrating machine, the combination, with a hopper, a vertically-reciprocating grinding-disk, and mechanism to rotate these parts oppositely, of a washer-pan that is rotated by the same spindle that revolves the grinding-disk and a fixed scraper, substantially as set forth.

3. In an ore pulverizing and concentrating machine, the combination, with a washer-pan and a fixed scraper, of a series of conic disks provided with grooves and arranged so that adjacent disks will rotate in opposite directions, substantially as set forth.

4. In an ore-pulverizing device, the combination, with a hopper having tapering grinding-ribs and an external gear-rim, of a grinding-disk having free vertical play and mechanism to revolve the grinding-disk and hopper in opposite directions, substantially as described.

5. In an ore-pulverizing machine, the combination, with a rotating hopper having a series of tapering grinding-ribs, of an inverted conical grinding-disk that has tapering ribs on its surface and is composed of two sections, one of which has free vertical play, and mechanism to rotate the grinding-disk and hopper in opposite directions, in the manner and for the purpose described.

6. In an ore pulverizing and concentrating machine, the combination, with a hopper forming a portion of a pug-mill, a conical grinding-disk composed of two sections, one vertically movable and the other fixed, and means to rotate the cylinder and hopper oppositely, of a washing or concentrating chamber located immediately below the hopper, having a dished bottom and an integral annular outer chamber, and a scraper to remove the contents of the dished chamber, substantially as set forth.

7. In an ore pulverizing and concentrating machine, the combination of a primary reducing-mill, a concentrating-chamber, a series of oppositely-actuated scouring-disks, an amalgamating-chamber, all mounted on a common shaft, and a concentrating and settling chamber with an operating mechanism which is adapted to rotate the mill and scouring-disks, substantially as set forth.

8. In an ore pulverizing and concentrating machine, the combination, with a mill that first operates on the crude ore and is composed of a hopper and a grinding-disk provided with tapering ribs and rotated in opposite directions, of a washing-chamber, a series of scouring conic disks, and a lower receiving-chamber, all mounted on the same spindle, and a driving mechanism which is adapted to rotate the mill and disks to afford grinding action in each independent of the other, substantially as set forth.

9. In an ore pulverizing and concentrating machine, the combination, with a milling device that operates on the crude ore and reduces it to powder, a receptacle located immediately below it, a series of conic grinding-disks, and an inverted conic disk located below and containing a corresponding plain-faced disk mounted to rotate with the spindle, of a rigid amalgamating-receptacle located below the latter, a spindle that supports the milling and concentrating devices, and mechanism adapted to afford rotary motion to the milling devices, substantially as set forth.

10. In an ore-pulverizing machine, the combination, with a cup-shaped hopper having a central boss perforated to receive a spindle and orifices near said boss for the passage of the ore, of a grinding-disk composed of two sections, the upper section capable of free vertical play and the lower having a rotary motion only, and mechanism to rotate the parts, substantially as described.

11. In an ore-grinding machine, a series of oppositely-actuated grinding-disks provided with a series of feed-orifices near the center, and grooves in the upper and lower surfaces of the disks, which grooves open into said feed-orifices and are deep near the center and become wide and shallow as they proceed from the center, ending before they reach the periphery, and mechanism for oppositely revolving said disks, substantially as described.

12. In an ore-grinding machine, a series of oppositely-actuated conical grinding-disks provided with a series of feed-orifices near the center which register with each other, the alternate disks extending beyond the intermediate disks and forming gutters for the reception of the ores, in combination with mechanism for actuating the same, substantially as described.

13. In an ore-grinding machine, a series of oppositely-actuated grinding-disks provided with a series of feed-orifices near the center, and grooves in the upper and lower surfaces of said disks opening from said feed-orifices and extending toward the periphery, and mechanism for oppositely revolving the disks, substantially as described.

14. In an ore-grinding machine, a series of oppositely-actuated conical grinding-disks provided with a series of feed-orifices near the center which register with each other, the alternate disks extending beyond the intermediate disks forming gutters and having teeth of the same pitch cut in their peripheries, thus forming a composite gear-wheel, and mechanism for oppositely revolving the disks, substantially as described.

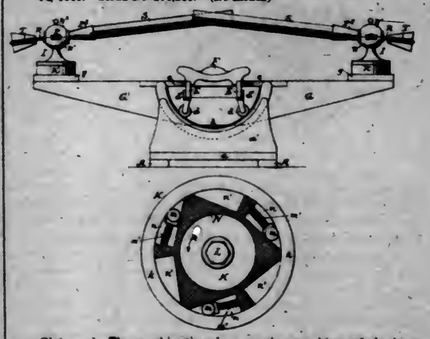
15. In an ore-grinding machine, a series of oppositely-actuated grinding-disks provided with registering feed-orifices and grooves in the upper and lower surfaces, the alternate disks extending beyond the intermediate disks forming gutters and having teeth of the same pitch cut in their peripheries, and mechanism for revolving the same in opposite directions, in the manner and for the purpose substantially as described.

16. In an ore-grinding machine, a series of oppositely-actuated conical disks, alternate disks being keyed to a central spindle, and intermediate disks extending beyond the others forming gutters, in the bottom of which are registering discharge-openings, in combination with an inverted conical shell whose outer periphery fits the outer periphery of the lower cone-disk and is fastened to and revolved by it, and an inner inverted cone-disk keyed to the central spindle, and mechanism for oppositely revolving the spindle and intermediate disks, substantially as described.

17. In an ore-grinding machine, a series of grinding-disks alternately keyed to a central spindle, the intermediate disks being extended beyond the others, having teeth of the same pitch cut in their peripheries, and with central perforations which fit collars on the central spindle to admit of independent rotation, in combination with said central spindle and collar and mechanism for oppositely revolving the disks, in the manner and for the purpose set forth.

18. In an ore-grinding machine, a series of oppositely-revolving grinding-disks, in combination with an inverted conical shell fitting the lower grinding-disk, and an inner inverted conical disk having vertical play and revolved in a direction opposite to that of the conical shell, and mechanism for oppositely revolving the inverted conical shell and conical disk, substantially as described.

413,015. ROWING-MACHINE. THOMAS J. BIGGS, Philadelphia, Pa., assignor of one-half to Thomas A. Clough, same place. Filed Jan. 14, 1889. Serial No. 296,235. (No model.)



Claim.—1. The combination, in a rowing-machine, of the base-frame having transverse supporting-rails, with a boat-frame supported on said rails, a seat mounted on said boat-frame, with oar-pieces and supporting devices therefor secured to said boat-frame, substantially as described.

2. The combination, in a rowing-machine, of the oar-piece-supporting casing, the oar-piece adapted to said casing, with a feathering-indicator having projecting wings, substantially as and for the purpose described.

3. The combination of the base A, the supporting-brackets, and the concave rails *b*, with a boat-frame D, having rollers *d*, adapted to said rails and carrying both the seat and the oar-piece supporting mechanism, substantially as described.

4. The combination, in a rowing-machine, of the disk K, having a frictional surface on its under side, with a friction-disk J, secured to the frame of the machine, with a carrier N, oar-pieces connected thereto, with friction-balls between the edge of the carrier and a rim on the disk K, with an adjustable spindle L, by which the disks J and K can be drawn toward each other without binding upon the carrier, substantially as described.

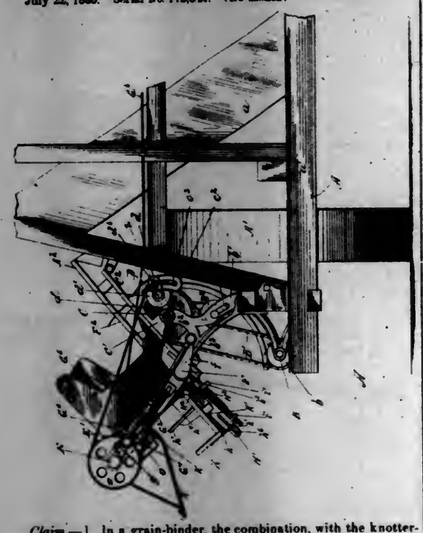
5. The combination of the friction-disks J and K and intervening washer M with the carrier N and oar-pieces B, connected to said carrier, said carrier having tapered recesses in its periphery, in which fit rollers *m*, having springs *m'*, all substantially as described, whereby on the movement of the carrier in one direction the rollers will frictionally couple the carrier to the disk K, and when moved in the opposite direction the carrier will be released from the disk, substantially as set forth.

6. The combination of the disks J and K, the spindle L, the carrier N, and its rollers, said carrier having a socket and an elongated open-

ing *q* therein, with a ball P', adapted to said socket, and an oar-piece projecting from said ball and adapted to have a free vertical movement in said opening *q*, substantially as and for the purpose described.

7. The combination of the friction-disks J and K, the carrier N, its socket, with a ball P' adapted thereto, a longitudinal slot in the wall of the socket, and a weighted rod passing through the slot and secured to the ball, substantially as described.

413,016. GRAIN-BINDER. JOSEPH W. BLOOD, Plano, Ill., assignor of one-half to the Plano Manufacturing Company, same place. Filed July 22, 1885. Serial No. 172,347. (No model.)



Claim.—1. In a grain-binder, the combination, with the knotter-operating shaft and packer-shaft, of a counter-shaft driven by the packer-shaft, sprocket-wheels mounted on the said counter-shaft and the knotter-operating shaft, and a sprocket-chain passing over the sprocket-wheels, substantially as and for the purposes specified.

2. In a grain-binder, the combination, with the knotter-operating shaft E, having sprocket-wheel *e*, and the packer-shaft C, having pinion *c'*, of the counter-shaft D, mounted in a bearing supported on the packer-shaft and adjustable around the same, said counter-shaft being provided with a pinion d^2, to mesh with the pinion *c'*, and with a sprocket-wheel *d'*, and a sprocket-chain E', passing over the sprocket-wheels *d'* and *e*, substantially as and for the purposes specified.

3. The combination, with the packer-shaft C, having pinion *c'*, of the counter-shaft D, mounted in a bearing supported by arms *d*, loosely supported on the packer-shaft, curved slotted arm c^2, a bolt d^3, connecting one of the arms *d* to the arm c^2, a pinion d^2, mounted on the counter-shaft and meshing with the pinion *c'*, and a sprocket-wheel *d'*, connected by a sprocket-chain with the sprocket-wheel on the cam-shaft, substantially as and for the purposes specified.

4. The combination, with the cam-shaft and sprocket-wheel, of the arm G, attached to the cam-shaft and carrying the locking-pawl, and the sliding piece G^3, carrying the stop-arm and having inclined surface g^4, and recess g^5, with inclined wall g^7, substantially as and for the purposes specified.

5. The combination, with the sliding tripper H and stop-arm G^4, of the bell-crank levers H^2-H^3 and connecting-rods A^3 and A^4, substantially as and for the purposes specified.

6. The combination, with the sliding tripper H and stop-arm G^4, of the bell-crank levers H^2 H^3 and connecting-rods A^3 A^4, and a spring H^4, of adjustable tension, connected to one of the bell-crank levers, substantially as and for the purposes specified.

7. The combination, with the sliding tripper and stop-arm and the bell-crank levers and connecting-rods, of the spring H^4, coiled around the pivot of one of the bell-crank levers, and having one of its ends connected to the said lever and its other end retained by the notched segment H^5, substantially as and for the purposes specified.

8. The combination, with the sliding tripper H, provided with a series of holes h^3, of the bell-crank lever H^2, having one of its arms in engagement with one of the holes in the tripper and its other arm connected to the stop-arm G^4, substantially as and for the purposes specified.

9. The combination, with the needle-arm provided with a slotted segment f^2, of the sliding tripper H and the sliding spring-bar I, carried by the tripper and having a pin *i* to engage with the slotted segment, substantially as and for the purposes specified.

10. The combination, with the needle-arm F^2, having slotted segment f^2, of the sliding tripper H, having lugs i^2, the sliding bar I, having pin *i* to engage the slotted segment and mounted in the lugs i^2, and the spring I', coiled around the said bar and bearing against the upper lug *i* and the adjustable pin i^3, substantially as and for the purposes specified.

11. In a grain-binder, the combination, with the sheaf-sustaining bar, of the pivoted and spring-controlled supporting-arm arranged in the path of said bar and adapted to engage directly with and support the same when elevated, but not positively connected thereto, a spring-pawl mounted on said supporting-arm and free to move in one direction only, and the needle-arm provided with a single projection to engage the sustaining-bar to carry the same positively upward and to engage the spring-pawl to trip the supporting-arm, substantially as and for the purposes specified.

12. In a grain-binder, the combination, with the swinging sheaf-sustaining bar H', of the spring-controlled supporting-arm J and its pivot J^1, the spring-pawl J^3, provided with two arms, one of which is held normally against the pivot J^4, while the other is arranged in the path of the projection on the needle-arm, and the needle-arm F^2, provided with a projection J^5 to engage with the second arm of the spring-pawl and with the sustaining-bar, substantially as and for the purposes specified.

13. In a grain-binder, the combination, with the swinging sheaf-sustaining bar H', having elongated slot A^2, of the end-gate K, pivoted to the under side of the deck A^3 and constructed in two sections arranged one on each side of the sustaining-bar, and provided with arms *k'*, engaging the slot A^2, substantially as and for the purposes specified.

14. The combination, with the knotter-frame provided with slot *n* and the swinging cord-holder frame having slot o^2, of the sliding pawl O', which actuates the cord-holder, the said pawl being provided with a pin O^2, passing through the slots o^2 and *n*, substantially as and for the purposes specified.

15. In a grain-binder, the combination, with the swinging cord-holder and its frame, of a pawl mounted thereon actuated by the cam-wheel and engaging both the cord-holder and its frame, whereby said pawl simultaneously rotates the cord-holder and swings the cord-holder frame, substantially as and for the purposes specified.

16. In a grain-binder, the combination, with the knotter-frame provided with a slot, of the cam-wheel M, having cam-groove M', the bell-crank lever P, pivoted on the knotter-frame and operated by said cam-groove, and the swinging cord-holder frame O, provided with a slot and having pawl O', operated by the bell-crank lever, and provided with a pin passing through said slots, whereby the said pawl operates to simultaneously rotate the cord-holder and swing the cord-holder frame, substantially as and for the purposes specified.

17. In a grain-binder, the combination, with the breast-plate R, having slot *r*, with bend *r'*, projection r^2, extending over the slot above the bend, and lower extension r^3, of the cord-stop R', having arm R^3, and slot R^2 and the swinging cord-holder frame connected to the said cord-stop to operate the same, substantially as and for the purposes specified.

18. The combination, with the swinging cord-holder frame, of the breast-plate R, slotted as described, and the cord-stop R', pivoted to the breast-plate at r^4 and having a pin R^4 to engage the slot r^4 in the swinging cord-holder frame, substantially as and for the purposes specified.

19. In a grain-binder, the main or cam shaft, the driving-wheel mounted loosely thereon, a spring-clutch for connecting said wheel to the shaft, a bracket secured on the shaft, and a stop-arm for disconnecting the spring-clutch, in combination with a spring locking-bolt adapted to engage the bracket to move the shaft slightly after the pawl is disconnected from the wheel, substantially as and for the purposes specified.

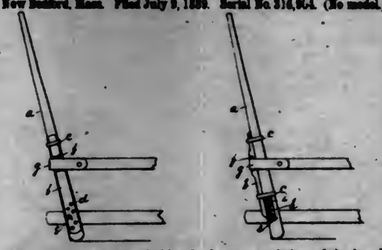
413,017. VEHICLE-BODY. CHARLES M. BLYDENBURGH, Riverhead, N. Y. Filed Aug. 5, 1889. Serial No. 319,733. (No model.)



Claim.—1. In a vehicle, the hollow front box or frame and a front seat hinged to the front wall thereof and adapted to be turned forward, in combination with a rear box or frame hinged to the rear of said front box, and having a seat supported thereon, said box or frame being adapted to fold forward into the rear open end of the front box, whereby the bottom of said rear box becomes the end-gate or rear panel of the front box or frame, substantially as described.

2. In a vehicle, the bottom thereof having a rearward extension, a front box or frame having a hinged seat thereon, and a hinged end-gate adapted to fold into and to close the rear open end of the front box, said end-gate forming a part of a rear box or frame and having a cushioned seat, substantially as described.

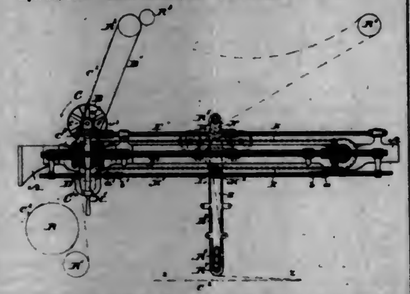
413,018. TUG-STRAP HOLDER FOR LOOMS. ANDREW R. BRAY, New Bedford, Mass. Filed July 9, 1889. Serial No. 316,904. (No model.)



Claim.—1. A tug-strap holder for looms, consisting of the bar *b*, having offset *f*, formed with a depression or recess adapted to receive and hold the tug-strap, and provided with a thimble *c*, adapted for inclosing the picker-staff, and having a series of holes for the reception of a device for holding it in place upon the picker-staff, as and for the purpose shown and described.

2. A tug-strap holder for looms, consisting of the bar *b*, having offset *f*, formed with a depression or recess to receive and hold the tug-strap, the thimbles *c e*, and the projection A, secured to the lower thimble *c*, and provided with a series of holes for the reception of a fastening-screw for securing the tug-strap holder in place upon the picker-staff, substantially as shown and described.

413,019. MACHINE FOR FOLDING CLOTH. WILLIAM P. BROOK, Philadelphia, Pa., assignor to Tetlow & Brookfield, same place. Filed Apr. 20, 1887. Serial No. 235,505. (No model.)



Claim.—1. A cloth-folding device having a carriage with feed-rollers thereon, feeding-rollers independent of said carriage feed-rollers, a driving-shaft, mechanism, substantially as described, connected to said driving-shaft, and consisting of shafts, a belt, and pinions, for operating the feed-rollers on said carriage, and mechanism, substantially as described, consisting of belts and pulleys connected to the driving-shaft for operating said independent rollers, substantially as and for the purpose set forth.

2. A cloth-folding machine having a driving-shaft, a shaft connected to said driving-shaft by intermediate gearing and having a bevel-wheel thereon, a counter-shaft with a clutch member splined thereon, and sleeves with bevel-wheels loosely mounted thereon, a tripping mechanism for said member, the shaft C having a bevel-wheel meshing with a fixed bevel-wheel on the counter-shaft, pulleys on the first-mentioned shaft and the shaft C, a chain on said pulleys, and a carriage connected to said chain and provided with feed-rolls, said parts being combined substantially as and for the purpose set forth.

3. In a cloth-folding machine, a carriage with feeding-rollers thereon, in combination with rollers independent of said carriage feeding-rollers, a driving-shaft, mechanism, substantially as described, connected to the said driving-shaft for operating said carriage feed-rollers and said independent rollers, a belt or chain for moving said carriage, shafting for imparting motion to said belt, and shifting devices for changing the direction of the movements of said belt or chain at the end of the folds, substantially as described.

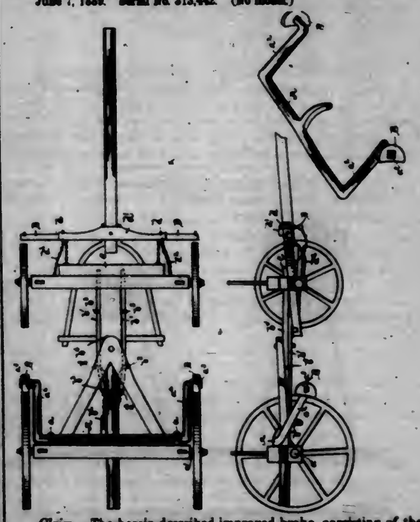
4. In a cloth-folding machine, a series of feed-rollers with a driving-shaft, gearing, and belt, for giving to the cloth a constant feed, a carriage with cloth guiding and feeding rollers and an extended bearing thereon, mechanism, substantially as described, connected with the shaft of one of said rollers for rotating the same, and a belt connecting said roller with one of the other rollers, a shaft parallel with the driving-shaft and connected therewith by gearing and carrying the bevel-wheel, D, a shaft having a chain-connection with the carriage and carrying a bevel-wheel, a shaft having on one end a bevel-wheel gearing with the last previously-mentioned bevel-wheel and on the other end two loose cog-wheels, a clutch member splined on said last-mentioned shaft between said loose wheels, a sliding rod with blocks thereon, and a pivoted handle having fixed bearings on said sliding rod and carrying the intermediate clutch member, said parts being combined substantially as described.

5. In a cloth-folding machine, the frame A, in combination with the shaft C, having driving-pulley B thereon, the cross-shaft C^2, having a pinion meshing with a pinion on the shaft C, and a bevel-wheel w^2 thereon, the shaft F', operated by the shaft C and having the bevel-wheel w^3 and the feathered bevel-wheel *w'*, the carriage N, having a bearing for said wheel *w'*, the roller R^2, having wheel *w*, gearing with bevel-gear *w'*, and arms S, having rollers R^3 R', and the belt B^2, substantially as and for the purpose set forth.

6. In a cloth-folding machine, the frame A, in combination with shaft C, with driving-pulley B thereon, the shafts C^2 and C^3, with connecting-gearing, the bevel-wheel D on shaft C^4, the shaft F, with loose bevel-gearing E E and clutch member D', and fast bevel-gear G, the shaft C', with bevel-wheel H, the pulleys I I' on shafts C^5 and C', respectively, the chain K, and the carriage N, secured to said chain, substantially as described.

7. In a cloth-folding machine, the frame A, in combination with the driving-shaft C, having pinion *c*, the shaft C^2, having pinion *c'*, and shaft C^3, operated by the shaft C, the bevel-wheel D on said shaft C^4, the shaft F, with bevel-wheels E E, loosely mounted thereon, and the fixed bevel-wheel G thereon, the shaft C', with bevel-wheel H, meshing with bevel-wheel G, pulleys I I' on shafts C^5 and C', respectively, the chain K, and carriage N, secured thereto, the bearing M^2, the rod M', having spring-buffers *b b'* and stops *a a'*, and the clutch member D', with handle, substantially as described.

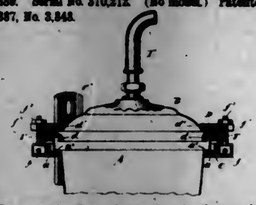
413,020. WAGON-BRAKE. JOSEPH S. BROWN, Bremen, Ky. Filed June 7, 1889. Serial No. 313,442. (No model.)



Claim.—The herein-described improved brake, consisting of the combination of the brake-rod having outer curved arms formed integral therewith and provided with shoes secured thereon, and a central projecting arm also formed integral with said rod, the sliding bar resting on said hounds, and the two chains or straps connected at their

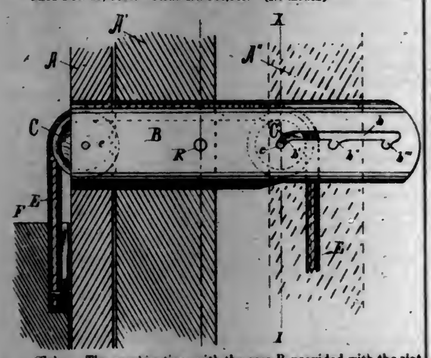
forward ends to said bar and at their rear ends to said central arm, the whiffletree, the chains connected thereto and to said sliding bar, and the chains d^3, also connected to said whiffletree and to the front axle, substantially as set forth.

413,021. FILTER. CARL J. BORRING, Hamburg, Germany. Filed May 10, 1889. Serial No. 310,212. (No model.) Patented in England Mar. 14, 1887, No. 3,843.



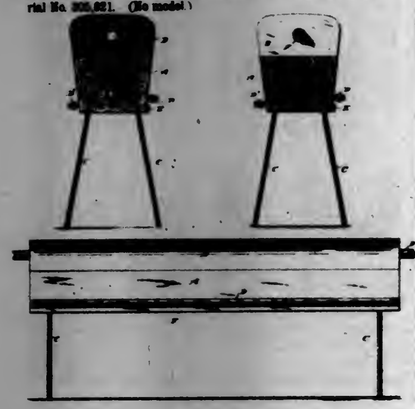
Claim.—The combination of a casing having a shoulder at its top edge, an interiorly-shouldered ring for supporting said casing, a vertical plate made integral with said supporting-ring, a cover fitting on the top of the casing, an elastic washer or gasket interposed between the top edge of the casing and the cover, a flanged top ring on the cover, screw-nuts pivoted to recessed lugs of the supporting-ring and engaging recessed lugs of the top ring, and screw-nuts applied to the upper ends of said screw-bolts, substantially as set forth.

413,022. SASH-CORD GUIDE. JOHN A. BURCHARD, Freeport, Ill. Filed Feb. 23, 1889. Serial No. 300,805. (No model.)



Claim.—The combination, with the case B, provided with the slot *b*, having notches *b' b''*, &c., in its lower margin, of a sash-pulley C, journaled at a fixed point in one end of said case, and a second pulley C', provided with gudgeons *c*, adapted to be shifted from one to the other of said notches, substantially as and for the purpose set forth.

413,023. APPARATUS FOR SHAPING AND DRYING BASKET-HANDLES. ANDREW BURNS, Westfield, N. Y. Filed Apr. 1, 1889. Serial No. 305,621. (No model.)

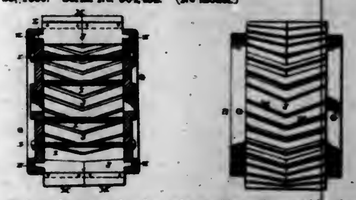


Claim.—1. In basket-handle-drying machines, the combination of the shaper and drier proper, mounted on suitable supports, and rods or rails extending along either side thereof for holding the handles in place while being dried, substantially as described.

2. In basket-handle-drying machines, the combination of the shaper and drier proper, mounted on suitable supports, rods or rails extending along either side thereof for holding the handles in place while being dried, and a gage for fixing the position of the handles to be dried, substantially as described.

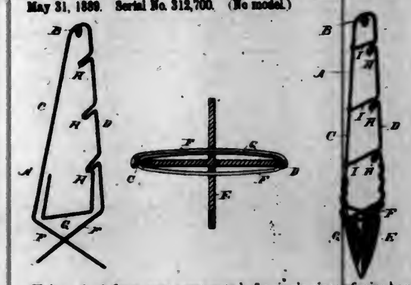
3. A basket-handle forming and drying machine, embracing the combination of a long hollow drum or dome part, a suitable base part upon which the dome is mounted, said base part corresponding in general contour with the dome, a gage or ledge extending along one side of the base part, and rods or rails supported adjacent to the opposite sides of said base part, substantially as described.

413,024. MACHINE FOR GRINDING WOOD. JOHN R. CARTER and JOHN W. PERTH, Kokomo, Ind., assignors of one-half to Monroe Seiberling, same place, and Emil S. Levi, New York, N. Y. Filed Mar. 23, 1889. Serial No. 304,462. (No model.)



Claim.—In a grinder for pulp-machines, the combination, with the circular end plates provided with grooves or recesses on their inner faces near their peripheries, and angular centrally-pointed castings having their ends placed in the recesses, and supported thereon radially to the axis of the grinder, of the two knives which are secured to the said castings, substantially as described.

413,025. FENCE-POST. ROLLIN S. CASE, Cleveland, Ohio. Filed May 31, 1889. Serial No. 312,700. (No model.)



Claim.—1. A fence-post constructed of a single piece of wire having its ends carried past each other and then wrapped around the adjacent portion of the wire, as set forth.

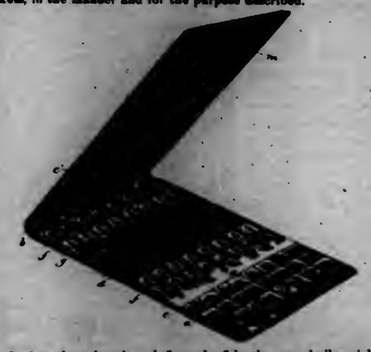
2. A fence-post consisting of a single piece of wire doubled on itself and having its ends carried past each other and wrapped around the adjacent portions of the wire, and the tie-wire also wrapped around the lower portion of the body of the post, as set forth.

3. The improved fence-post herein described and shown, consisting of a single wire doubled on itself and having its front portion provided with a series of loops or hangers, and having its ends carried past each other and then wrapped around the adjacent portions of the wire, the tie-wire having its ends wrapped around the main portion of the post, and the brace-wires connecting the front and rear sides of the post, as set forth.

413,026. POCKET CHESS-BOARD. FRED GAYLER, Brooklyn, N. Y. Filed May 22, 1889. Serial No. 311,658. (No model.)

Claim.—1. A pocket chess-board provided with a folding flap and formed of leather, having pockets punched in its surface contiguous to the squares, in combination with men having a wedge-shaped portion adapted to enter said pockets, whereby the men are securely held in place, in the manner and for the purpose substantially as described.

2. In a pocket chess-board, a pair of folding leaves, one of which is provided with a board composed of leather, having pockets punched in its surface, and the other arranged to fold over the board when the latter is not in use, and to fold under it when in use, in combination with men having a wedge-shaped portion adapted to enter said pockets, in the manner and for the purpose described.



3. A pocket chess-board formed of leather or similar yielding material, having pockets punched in its surface contiguous to the squares, in combination with men having a wedge-shaped portion adapted to enter the pockets and to engage their edges, whereby they are securely held in place, in the manner and for the purpose described.

413,027. HAND-STAMP. EDMUND D. CHAMBERLAIN, Westfield, N. J. Filed July 11, 1888. Serial No. 279,610. (No model.)

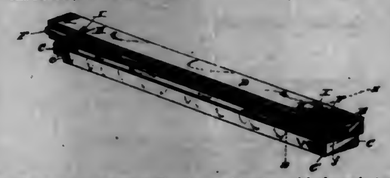


Claim.—1. In a hand-stamp, the combination, with the casing, the pivoted arm D, the inking-ribbon, and the rolls upon which it is wound, of a plural number of double-acting pawls, one of said pawls being connected with and actuated by the pivoted arm of the stamp, and both pawls being adapted to be thrown from engagement with one roll to another, whereby the inking-ribbon is alternately and automatically wound upon the rolls, substantially as described.

2. The combination, with a hand-stamp having a pivoted arm, an inking-ribbon, and rolls upon which the latter is wound, of a longitudinally-moving bar connected with and operated by said pivoted arm, a double-acting pawl carried by said arm, and a second double-acting retaining-pawl, said pawls being adapted for engagement with the inking-ribbon rolls, whereby the direction of travel of the inking-ribbon may be automatically changed and the said ribbon wound upon either roll, substantially as described.

3. The casing, the pivoted arm having a short-arm extension, the inking-ribbon, the rolls for the same, and a ratchet-wheel on the axis of each roll, in combination with the pivoted longitudinally-moving bar actuated by the pivoted arm, a double-acting pawl pivoted thereto and adapted to be thrown alternately into engagement with the ratchet-wheels, and a second double-acting retaining-pawl pivoted upon a stud projecting from the casing and adapted for engagement with both ratchets, whereby the inking-ribbon may be wound upon either roll by the movement of the pivoted arm and pawls, substantially as described.

413,028. DRAWER-GUIDE FOR BUREAUS, &c. DWIGHT C. CLAPP, Owosso, Mich., assignor of two-thirds to David M. Estey and the Estey Manufacturing Company, same place. Filed Feb. 15, 1889. Serial No. 300,044. (No model.)



Claim.—In a drawer-guide, the combination, with the strip having the recess in one side and the circular openings in the top wall of the said recess, of the spring guide-strips arranged in said recess and having pins arranged in the circular openings of the recess, whereby the guide-strip is capable of a universal movement in all directions and binding of the drawer is prevented, substantially as described.

413,029. ANGULAR PAPER BOX. DWIGHT S. CLARK, Cambridge, assignor to Emma L. Porter, Boston, Mass. Filed Aug. 6, 1889. Serial No. 319,862. (Model.)



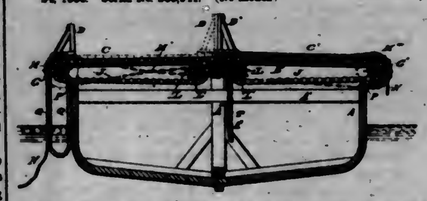
Claim.—1. A blank for an angular paper box, scored or indented for folding, so as to form the sides A, B, C, and D, and the pasting-strip *p*, the full back flap *d*, the half front flap *b*, subdivided to form a trapezoidal figure, and two triangles 4 4 at the ends thereof, with two side flaps, each subdivided to form the triangular fields 1, 2, and 3, substantially as described.

2. A blank for an angular paper box, scored or indented for folding to form the sides A, B, C, and D, and the pasting-strip *p*, all connected together, and the four flaps *a*, *b*, *c*, and *d*, to form the end, all connected together and to the sides, of which one is a full flap, one a half-flap provided with two triangular fields at its sides, as shown, and two five-eighth flaps placed alternately and subdivided into three triangles, as set forth, substantially as described.

3. An angular paper box consisting of the sides A, B, C, and D, united to form a four-sided prism and closed by ends constructed each of the side flaps *a* and *c* folded in part upon themselves and in part against two equal folds of the front flap, of the remainder of said front flap, and of a large back flap covering the whole end of the box and all the flaps below it, substantially as described.

4. An angular paper box consisting of the sides A, B, C, and D, united to form a four-sided prism and closed by ends composed of, first, the adjacent triangular fields 2 and 3 of each of the side flaps in contact, respectively, with the triangular fields 1 1 of the same flaps and 4 4 of the front flap, with the remainder of the front flap laid flat upon the fields 4 4, and the folded side flaps, a full-sized back flap covering the whole and joined to fields 1 1 of said side flaps, substantially as described.

413,030. SHIFTING DECK FOR DUMPING-SCOWS. EDDY L. CLARK and LYMAN D. HOWARD, Brooklyn, N. Y., assignors to the Clark-Howard Excavator and Conveyor Company, of New Jersey. Filed July 24, 1888. Serial No. 280,941. (No model.)



Claim.—1. A vessel provided with a laterally-shifting flexible deck composed of planks or bars Q Q, attached to laterally-moving chain drive-belts J J, and to carrying-belts K K, wheels H I L, to carry said belts, and shafts G L', to drive the wheels, all actuated by power applied to one of said shafts, substantially as described.

2. A vessel provided with a laterally-shifting flexible deck in two longitudinal separate halves, formed of planks or bars and adapted to move in opposite directions toward the sides of the vessel, each half being provided with belts J J K K, attached to the under side of the deck, substantially as described, wheels H I L, shafts G L', said shafts actuated by power applied to one of them under each half of the deck to drive its half in a direction opposite to that of the other half, whereby the deck-load is dumped equally and simultaneously on both sides, substantially as set forth.

3. A vessel provided with a laterally-shifting flexible deck composed of planks or bars Q Q, attached to laterally-moving belts J K, wheels H I L, to carry the belts, shafts G L', to one of which power is applied to drive the wheels, and tarpaulin or sheet N, to cover the joints of the deck, substantially as described.

4. A vessel provided with a laterally-shifting flexible deck composed of planks or bars Q Q, attached to laterally-moving belts J K, wheels H I L, to carry the belts, shafts G L', to one of which power is applied to drive the wheels, and side pocket O, to receive the flexible deck as it drops over the side, substantially as described.

5. A vessel provided with a laterally-shifting flexible deck com-

posed of planks or bars Q Q, attached to laterally-moving belts J K, wheels H I L, to carry the belts, shafts G L', to one of which power is applied to operate the mechanism, and back D, attached to one edge of the shifting deck, substantially as described.

6. The combination, with the shifting deck C, of chains J K, provided with blocks S and rollers S', adapted to engage with and upon the guide-track B, to facilitate the movement of the deck and to guide the chain, substantially as described.

7. The combination, with the shifting deck C, of chains J K, provided with blocks S, with side rollers S', attached thereto, and trough-shaped guide-track B, said blocks projecting downwardly between the sides of the trough to guide the chain in its traverse, and said rollers S' impinging upon said track to facilitate the movement of the superincumbent deck, substantially as described.

8. The combination, with the shifting deck C, of chains J K provided with blocks S and rollers S', and guide-track B, slanted downwardly toward the side over which the load is to be dumped, substantially as described.

9. A vessel having a rotary driving-shaft extending lengthwise of the hull thereof, with sprocket-wheels thereon, parallel shafts to said driving-shaft, having sprocket-wheels thereon, sprocket-chains connecting said driving-shaft to said side shafts, and shifting decks operated by the rotation of the driving and side shafts, said parts being combined substantially as described.

10. A vessel provided with a laterally-shifting flexible deck composed of planks or bars Q Q, attached by screws, bolts, or rivets to laterally-moving chains on sprocket-wheels, shafts G L', and actuating-shaft E, said parts being combined substantially as described.

11. A vessel provided with a laterally-shifting flexible deck composed of planks or bars Q Q, attached by screws, bolts, or rivets to laterally-moving chains on sprocket-wheels, shafts G L', and actuating-shaft E, said deck being secured at its outer edge to the edge of the side of the vessel, whereby it will loop up as it falls over the side in dumping, substantially as described.

12. A vessel having a driving-shaft journaled in the hull thereof, shafts journaled in the sides of said hull, sprocket-wheels on said driving and side shafts, other shafts parallel to said shafts, having sprocket-wheels thereon, endless chains connecting last-mentioned shafts with the side shafts, and sprocket-chains connecting the driving-shaft with the side shaft, and flexible decks connected to said endless chains, said parts being combined substantially as described.

13. A vessel with a central shaft having bearings and provided with sprocket wheels, shafts at the sides of the vessel with sprocket-wheels thereon, shafts near the driving-shaft, also having sprocket-wheels, sprocket-chains connecting said driving-shaft and side shaft, and endless belts connecting said side shafts with the shafts near the driving-shaft, flexible decks hinged to the side of the vessel and connected to said endless belts, said parts being combined substantially as described.

14. A vessel having flexible half-decks with backs at their inner ends, and endless belts with rotating shafts, the said decks being secured to said belts, the said parts being combined substantially as described.

413,031. TOWER FOR THE ELEVATION AND STORAGE OF COAL. EDDY L. CLARK, Brooklyn, N. Y., assignor to the Clark-Howard Excavator and Conveyor Company, of New Jersey. Filed Mar. 15, 1889. Serial No. 303,367. (No model.)

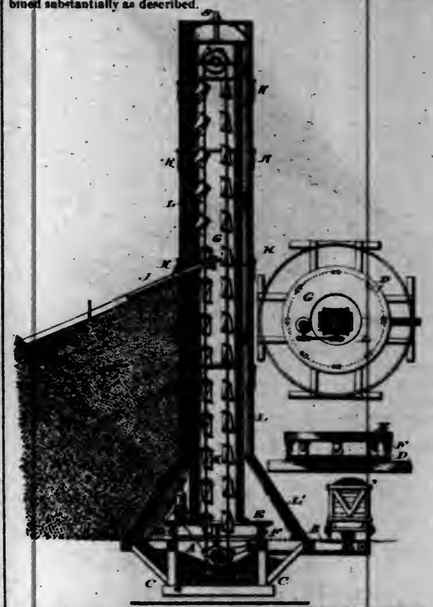
Claim.—1. An apparatus for the purpose named having a pit with scaffolding therein, a circular track on said scaffolding, a truck with central opening on said track, a tower on said truck provided with side openings, an elevator, and a chute, said parts being combined substantially as described.

2. In an apparatus for the purpose named, a pit with scaffolding therein, a circular track on said scaffolding, a truck with central opening on said track, a tower on said truck and having side windows, an outer casing on said scaffolding, and provided with side openings, said casing having a widened lower part, said parts being combined substantially as described.

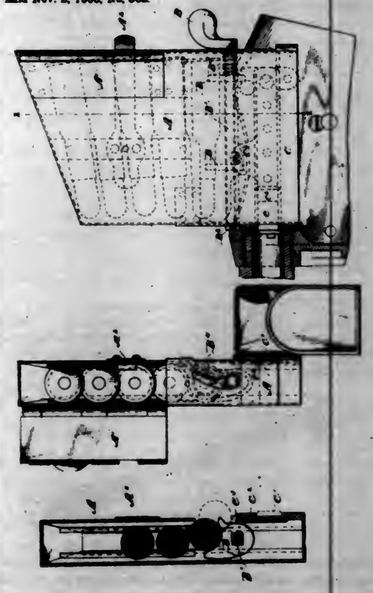
3. In an apparatus for the purpose named, a pit with scaffolding therein, a circular track on said scaffolding, a truck on said track, a tower on said truck provided with side openings, an outer casing on the scaffolding having side openings, and a shaft connected with the top of the tower and journaled in the top of the casing, said parts being combined substantially as described.

4. In an apparatus for the purpose named, a pit with scaffolding therein, a trimming device leading into said pit, a circular track on said scaffolding, a truck on said track, a tower having side windows on said truck, and an outer casing on said scaffolding, said parts being combined substantially as described.

5. In an apparatus for the purpose named, a pit with scaffolding therein, a circular track on said scaffolding, a truck on said track, a tower on said truck having side openings and provided with rollers journaled on the outer wall thereof, and a casing on said scaffolding having a circular track secured to its inner wall, said parts being combined substantially as described.



413,032. CARTRIDGE-MAGAZINE ATTACHMENT FOR RIFLES. ABRAHAM COLLEY, South Richmond, Victoria. Filed Apr. 24, 1888. Serial No. 271,748. (No model.) Patented in Victoria July 27, 1887, No. 5,205; in New South Wales Mar. 9, 1888, No. 538; in Tasmania Mar. 13, 1888, No. 550/10; in South Australia Mar. 13, 1888, No. 304; in New Zealand Mar. 19, 1888, No. 2,870; in England Apr. 12, 1888, No. 5,471; in Belgium Apr. 14, 1888; in India June 12, 1888, No. 230, and in Queensland Nov. 2, 1888, No. 502.

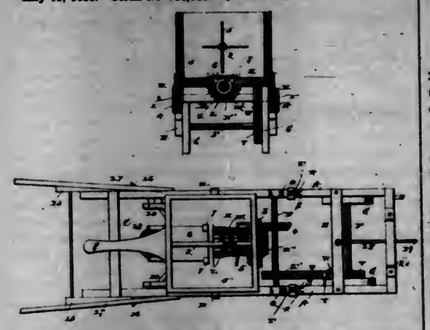


Claim.—1. The herein-described magazine, consisting of the case or box A, provided with the end-gate A', a lock for said gate, a discharge-slot E in its side wall, a dovetailed groove below said slot, and a spring-latch C, whose hook end C^3 projects into the groove, substantially as described, for the purposes specified.

2. In a magazine-gun in which the magazine is applied to one side of the receiver, the combination, with said receiver, of a magazine provided with a discharge-opening of less diameter at the forward than at the rear end, and an ejector consisting of a revolvable shaft and two saddles mounted thereon, having horns of unequal length, and operating to support the lowermost cartridge and eject the same into the receiver and hold the next succeeding cartridge against downward motion, substantially as described.

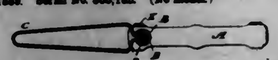
3. The herein-described magazine, consisting of the case or box A, provided with the end-gate A', a lock for said gate, a discharge-slot E in the side wall, a dovetailed groove below said slot, and a spring-latch C, whose locking-hook C^3 projects into said groove, and which is provided with the thumb-piece C^3, in combination with an injector consisting of a revolvable shaft, two saddles B, having horns of unequal length, mounted on said shaft, and a spring for returning the ejector into its normal position when moved out of it, substantially as and for the purposes specified.

413,033. COTTON-PLANTER. JOHN R. COOK, Rico, Tex. Filed May 15, 1889. Serial No. 310,861. (No model.)



Claim.—In a cotton-planter, the combination of a rectangular frame provided near its front end with an axle having the transporting-wheels, the hopper having a longitudinally-grooved bottom in which is mounted a spirally-threaded conveyer extending through the rear end of said hopper, a transverse shaft in front of the hopper, having a sprocket-wheel connected by a chain with a sprocket-wheel upon the axle, intermeshing pinions upon the transverse shaft and the conveyer-shaft, a regulating-slide, a shaft mounted longitudinally in the hopper and having a series of agitators and provided at its front end with a pinion meshing with a spur-wheel upon the conveyer-shaft, the arms 10, carrying the shank of the furrow-opener and having an inclined chute secured to their rear sides, the standards connected to the rear end of the frame and having the coverers, and the handles, all arranged and combined to form an organized machine, as herein set forth.

413,034. BUTTONER. THOMAS W. G. COOK, New York, N. Y. Filed Mar. 23, 1889. Serial No. 305,182. (No model.)



Claim.—1. A buttoner consisting of the handle A, having a pivot, and a wire loop having its free ends formed into a duplex eye for engaging the pivot, substantially as described.

2. A buttoner consisting of the handle A, having a pivot, and a wire loop having its free ends formed into a duplex eye for engaging the pivot, one portion of said duplex eye being made to surround or clasp the other portion, substantially as described.

413,035. PROCESS OF MAKING SOAP. ALEXANDER L. CRAIG, Hot Springs, Ark. Filed Nov. 30, 1888. Serial No. 292,267. (No specimens.)

Claim.—The process of producing an alkaline borax soap, consisting of dissolving ordinary soap, rosin, and sal-soda in water, and in a separate vessel borax and salts of tartar, combining the two at boiling heat and then thoroughly mixing them, adding thereto beeswax, which solidifies the mixture, substantially as described.

413,036. ABSORBENT CARTRIDGE FOR PIPE-STEMS. WILLIAM DENUTH, New York, N. Y. Filed May 20, 1889. Serial No. 312,077. (No model.)



Claim.—A cylindrical cartridge for pipe-stems, made of a compressed absorbent material saturated with tar and having a smoke-passage extending centrally through it from end to end, substantially as shown and described.

413,037. AUGER-HANDLE. JAMES H. DEVOT, St. Louis, Mo. Filed Jan. 29, 1889. Serial No. 297,911. (No model.)

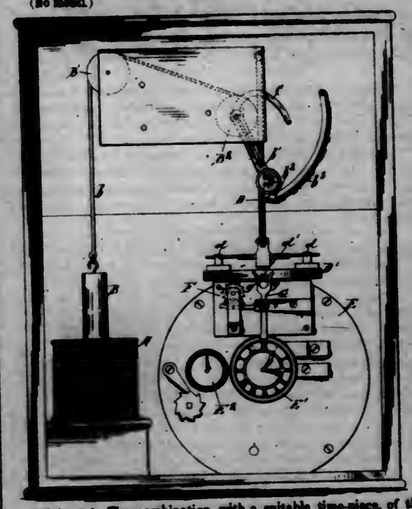


Claim.—1. An auger-handle having a removable grip 2, a ferrule 3, having a screw-threaded socket, a longitudinal rod 7, for securing the ferrule to the grip, a turning-barrel adapted to receive the shank of an auger, a head 6, containing said barrel, and a screw-stud 5, onto which the ferrule of the grip is screwed, substantially as set forth.

2. An auger-handle having a socket 19 for the auger-shank, with a dovetail seat or groove 20, and a wedge-formed dovetail key working in the seat, substantially as and for the purpose set forth.

3. The combination, in an auger-handle, of a grip 1, a removable grip 2, a turning-barrel 9, having the shank-socket extending from top to bottom, a ratchet device governing the rotation of the barrel, a screw-threaded projection 24, and a socket-piece 25, adapted to screw on the projection and to receive a feed-screw adapted to bear on the top of the auger-shank either above or below the top of the turning-barrel, substantially as and for the purpose set forth.

413,038. ELECTRIC METER. WILLIAM H. DOUGLAS, Stourbridge, County of Stafford, England. Filed May 5, 1888. Serial No. 273,073. (No model.)



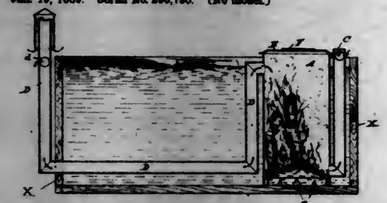
Claim.—1. The combination, with a suitable time-piece, of the curb C, for regulating the movement thereof, the pulley B^3, to which said curb is attached, the cord *b*, attached to said pulley, the solenoid A, located in the circuit, and the core B, suspended within the same by means of the cord *b*, substantially as and for the purposes specified.

2. The combination, with a suitable time-piece, of the pulley B^3,

provided with curb C and counterpoise arm *b'*, the solenoid A, located in the circuit, the core B, and the cord *b*, connected to the pulley and supporting said core, substantially as and for the purposes specified.

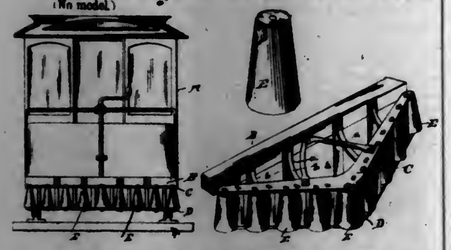
3. The combination, with the solenoid and core or ammeter, of a curb controlled thereby, a detached vibrating pendulum controlled by said curb, and a time-piece the escapement of which is provided with an additional lever to operate the said pendulum, substantially as and for the purposes specified.

413,039. **WATER-HEATER.** JULIUS C. EATON, Lyndon, Vt. Filed Jan. 19, 1889. Serial No. 296,795. (No model.)



Claim.—In a apparatus for heating water for stock, a heater composed of a single iron or metal shell having a slightly-elevated shallow conical bottom, and means whereby water may circulate below it, and provided with a suitable top having an opening for introducing fuel, and a hinged cover for same, a draft-tube connecting with the interior of said shell at a point just above said shallow conical bottom, and a suitable smoke-pipe and spark-arrester attached thereto, all constructed substantially in the manner and for the purpose set forth.

413,040. **FENDER-GUARD ATTACHED TO CARS.** ROBERT M. EDWARDS, San Francisco, Cal. Filed Apr. 13, 1889. Serial No. 307,196. (No model.)



Claim.—1. In a safety-guard or fender for cars and like vehicles, a series of vertical conical rolls arranged in double-inclined planes converging toward and intersecting each other in front of the car, substantially as described.

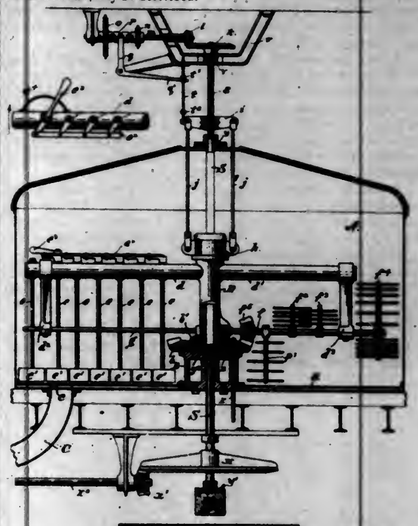
2. In a safety-guard or fender for cars and like vehicles, the combination, with the front of the car, of an upper and lower triangular-shaped platform and a series of vertical conical rolls arranged between said platforms with their enlarged ends downward, substantially as described.

413,041. **MASH-TUB MECHANISM.** JOHN H. BOCKENKOVT, Cincinnati, Ohio, assignor, by mesne assignments, to Matthew Gottfried, Chicago, Ill. Filed Nov. 21, 1887. Serial No. 255,725. (No model.)

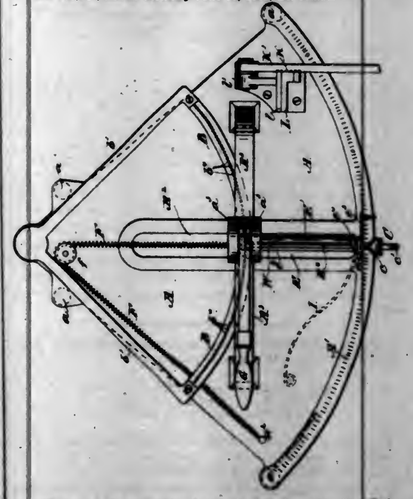
Claim.—1. In a mash-tub, the combination of a central vertical driving-shaft, a horizontal arm centrally pivoted thereon and carried thereby, but free to be moved vertically on the driving-shaft, stirrers or beaters carried upon said horizontal arm and operated by the rotation of the driving-shaft, and means for automatically raising or lowering said horizontal arm while in rotation and automatically stopping said raising and lowering at predetermined limits, substantially as described.

2. In a mash-tub, the combination, with a central spindle D, having stirrers and scrapers suitably supported thereon, and means for raising and lowering said spindle, of the bevel-gear *b*, loosely supported by said spindle and meshing with the gearing *f*^3, for rotating shaft *f*, said bevel-gear and gearing so adapted as to be raised and lowered with the spindle D and remain in mesh, substantially as described.

3. In a mash-tub, the combination, with a central spindle D, having stirrers and scrapers suitably supported thereon and carrying the yoke A, and a shaft S, adapted to rotate said spindle, of a screw-shaft *s*, mounted upon shaft S, but rotatable independently thereof, and the screw-yoke *i*, engaging with said screw-shaft *s*, and connections between said screw-yoke *i* and yoke A, for raising and lowering the spindle D, substantially as described.



413,042. **MACHINE FOR MAKING TYPE-BARS.** ANTOINE J. ROELEN, Brussels, Belgium, assignor to Antoine Mullers, Rheinfeld, Cologne, and Gustave Maecks, Cologne, Germany. Filed Mar. 20, 1888. Serial No. 267,892. (No model.) Patented in Belgium July 11, 1884, No. 65,744; in England Aug. 2, 1884, No. 10,901; in France Jan. 9, 1885, No. 166,347, and in Germany June 16, 1885, No. 34,214.



Claim.—1. In a machine for producing characters in relief on a bar of compressible material, a matrix-plate having a plane face in which the characters are formed *in intaglio* and in which is formed a concave recess in front of each character, substantially as and for the purposes specified.

2. In a machine for producing characters in relief on a bar of compressible material, a matrix-plate having a plane face in which the characters are formed *in intaglio* and in which is formed a concave recess in front of each character extending from the character-space to the edge of the matrix-plate, said concave recess varying in length according to the width of the character-space, substantially as and for the purposes specified.

3. In a machine for producing characters in relief on a bar of compressible material, a matrix-plate having a plane face, in which the characters are formed *in intaglio* and in which is formed a concave recess in front of each character extending from the character-space to the edge of the matrix-plate, whereby when an impression is made a shoulder will be formed in front of each character by the depression of the latter below the face of the bar, in combination with a lever and connections to force the matrix-plate into the bar, feeding devices to automatically feed the bar forward, and a stop in the path of the bar adapted to engage the shoulder formed in front of each character to hold the bar against the action of the feeding devices, substantially as and for the purposes specified.

4. In a machine for producing characters in relief on a bar of impressible material, a matrix-plate having substantially the form of a right angle or L, having in the under face of its vertical portion a single row of characters *in intaglio*, a recess or depression in front of each character, and a cutting-edge on opposite sides of the character-space, one of said cutting-edges projecting beyond the face in which the characters are formed, for the purposes specified.

5. In a machine for producing type-bars, the combination of the following elements: a pivoted matrix-plate having the form of a segment of a circle, a vertical pivot therefor, elastic supporting-arms connecting the segment with its pivot, a lever for rotating the matrix-plate on its pivot, a power-lever, transmitting devices for transmitting the power exerted by the lever to the matrix-plate to depress the same against the stress of its supporting-arms, a stop to limit the downward movement of the matrix-plate, and a stop to lock the matrix-plate against movement on its pivot controlled by the power-lever through the transmitting devices, substantially as described, for the purposes specified.

6. In a machine for producing type-bars, the combination of the following elements: a pivoted matrix-plate having the form of a segment of a circle, a vertical pivot therefor, elastic supporting-arms connecting the segment with its pivot, a lever for rotating the matrix-plate on its pivot, a power-lever, transmitting devices for transmitting the power exerted by the lever to the matrix-plate to depress the same against the stress of its supporting-arms, a stop to limit the downward movement on its pivot, and feeding devices, the operation whereof is controlled by the matrix, to feed the type-bar blank a step forward at each impression, substantially as and for the purposes specified.

7. In a machine for producing type-bars, the combination of the sector-shaped matrix-plate B, connected by elastic arms to a pivot or stud *b*, the sector-shaped platform A, to which said matrix-plate is pivoted, the pointer-lever C, and a power-lever and plunger for forcing the matrix-plate down toward its support, said parts being arranged for operation for the purposes specified.

8. The combination, substantially as herein described, of the table A, having a guide-groove A^3 along its median line, the matrix-plate B, pivotally connected with the table, as described, and having a projecting edge b^3, and the spring-actuated carriage E, substantially as and for the purposes specified.

9. In a machine for producing type-bars, the combination, with the table A, provided with a guide-groove A^3 along its axial line, the matrix-plate B, having a horizontal and vertical movement on the table and being provided on opposite sides of its character-space with projecting cutting-edges b^3 b^3, respectively, and the spring-actuated carriage E, of the bridge D, said parts being arranged for operation for the purpose specified.

10. The combination, substantially as herein described, with the table A, the matrix-plate B, the carriage E, the spring F, and mechanism to depress the matrix-plate, of the bridge D and the guide-finger D', adjustable thereon, said parts being constructed and arranged for operation for the purposes specified.

11. The combination, with the table A, provided with the guide-groove A^3, the matrix-plate B, and the bridge D, of the carriage E, having vertical end walls and a like side wall, and the eccentric-roller E', journaled in said end walls, substantially as and for the purposes specified.

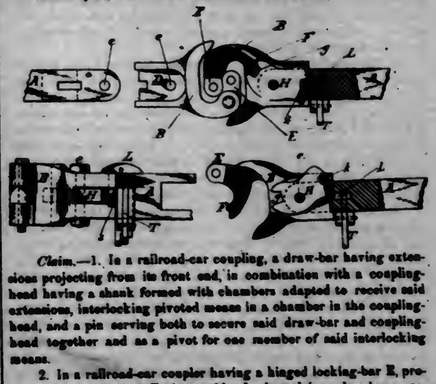
12. The combination, with the table A, having a guide-groove A^3, the matrix-plate B, and bridge D, of the carriage E, having vertical end walls and a like side wall, the eccentric-roller E', journaled in said end walls, and the laterally-movable clamping-plate E^3, interposed between the roller and the side wall of the carriage, substantially as and for the purposes specified.

413,043. **GAGE ATTACHMENT FOR SEWING-MACHINE PRESSER-FEET.** JOSEPH FARRIS, New York, N. Y. Filed Feb. 4, 1889. Serial No. 298,697. (No model.)

Claim.—The combination, with the sewing-machine presser-foot provided in one side with a recess D, of the piece E, placed and fitting in said recess and having its edges curved, the same as the front and rear edges of the presser-foot, a gage-arm F, projecting laterally from the bottom part of said piece E, the bottom surface of said gage-arm being inclined upward at its inner end and adjacent to the point where the needle passes through the presser-foot, and the remaining portion of the under side of said gage-arm being a short distance above the plane of the bottom of the presser-foot, whereby the material will be pressed down on the sewing-plate by the gage-arm from the edge of said material to the point where the needle enters, a sliding gage J, mounted on the arm F, through which gage the said gage-arm passes, the bottom of said gage J being in the same plane with the bottom of the presser-foot, screw K, for locking the gage J on the gage-arm F, and the screw H, for locking the piece E on the presser-foot, substantially as set forth.



413,044. **CAR-COUPLING.** FRANK A. FOX, San Francisco, Cal. Filed July 25, 1888. Serial No. 312,067. (No model.)



Claim.—1. In a railroad-car coupling, a draw-bar having extensions projecting from its front end, in combination with a coupling-head having a shank formed with chambers adapted to receive said extensions, interlocking pivoted means in a chamber in the coupling-head, and a pin serving both to secure said draw-bar and coupling-head together and as a pivot for one member of said interlocking means.

2. In a railroad-car coupler having a hinged locking-bar E, provided with a tail-piece F, the tumbler A, pivoted in a chamber or recess in the coupler-head and having a notch *g* in its front edge adapted to receive the end of the tail-piece F, and a notch *k* in its rear end to receive a key or pin L, substantially as specified.

3. In a car-coupling device, a separable coupling-head B, having a chamber in line with the tail-piece F of the locking-bar E, and a tumbler H, pivoted in said chamber or recess, the front end of which engages the rear end of the tail-piece when the locking-bar is closed, while its rear end is provided with means for locking it in position when closed, substantially as described.

4. In a car-coupling device, a locking-bar E, having a tail-piece F, a tumbler H, mounted on a center bolt in a recess or chamber in the bumper-head adapted to receive the end of the tail-piece and swing it into a locked position, a key or pin adapted to lock the tumbler in its locked position, and a lever adapted to raise the pin and release the tumbler and tail-piece, substantially as described.

5. In a car-coupling device, a tumbler H and locking-pin L, having the center bolt on which the tumbler moves, and the locking-pin in line with the center line of the draw-bar, substantially as described.

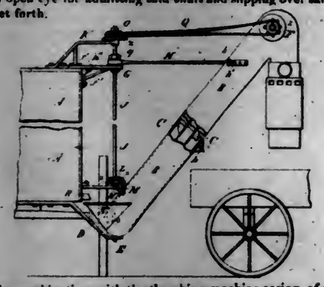
6. In a car-coupler, the combination, with a draw-bar provided with a chambered coupling-head having a pivoted extension formed with a tail-piece, of a tumbler in the chamber of said coupling-head having a notch in its rear end, and a key or pin adapted to engage said notch, the pivot of the tumbler and the key being located in line with the center of the draw-bar, substantially as shown, and for the purposes set forth.

7. In a car-coupling device having a locking-tumbler H, and a pin L, for engaging a notch *k* in the rear end of the tumbler, the tumbler H having one side beveled, substantially as and for the purposes described.

413,045. **GRAIN-ELEVATING ATTACHMENT FOR THRASHING-MACHINES.** ROBERT S. GARRET, Russville, Kans. Filed Dec. 14, 1888. Serial No. 293,962. (No model.)

Claim.—1. The combination, with the thrashing-machine casing, a conveyer pivoted at its lower end, the shaft J, means for driving said shaft, and connections between said shaft and the conveyer-belt, of

the hollow support G, through which said shaft passes, and the guy H, secured at one end to the casing of said conveyer and having at the other the open eye for admitting said shaft and slipping over said support, as set forth.



2. The combination, with the thrashing-machine casing, of a conveyer pivoted at its lower end, the shaft J, means for driving said shaft, connections between said shaft and the conveyer-belt, the hollow support G, through which said shaft passes, the guy H, having at one end an open eye for admitting said shaft and receiving said support, and the nut *g*, adapted to be turned onto said support and constituting a keeper, substantially as set forth.

3. The combination, with the thrashing-machine casing and the conveyer, of the bracket D, to which said conveyer is pivoted, the bracket F, having hollow support G, the guy H, secured at one end to the casing of said conveyer and at the other engaging said support, the bracket I, the shaft J, stepped onto said bracket and passing through the hollow support G, means for driving said shaft J, the wheel O, fixed to said shaft, and connections between said wheel O and the conveyer-belt, the axis of the shaft J being coincident with the axis of the pivot of the conveyer, substantially as set forth.

4. The combination, with the thrashing-machine casing and the wheel M, secured to one of the thrashing-machine shafts, of the pivoted conveyer, the wheel P, situated at the top thereof, the wheel O, the belt Q, embracing wheels O and P, the shaft J, to which wheel O is secured, the wheel L, also secured to said shaft, and the belt N, embracing wheels L and M, substantially as set forth.

5. In an elevating attachment for thrashing-machines, the combination, with the thrashing-machine casing and the pivoted conveyer, of the sprocket-wheel P, situated at the top of the conveyer and having a flange projecting radially from the side next to the conveyer, the shaft J, means for connecting said shaft with one of the shafts of the thrashing-machine, the sprocket-wheel O, secured to said shaft and having a flange on the under side thereof, and twisted belt Q, embracing the wheels O and P, said wheels being situated in intersecting planes, substantially as set forth.

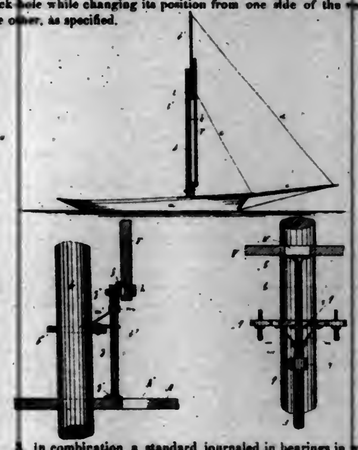
6. In a grain-elevating attachment, the combination, with the thrasher-casing and pivoted conveyer, of the vertical shaft J, situated with its axis coincident with the pivot of the conveyer, the sprocket-wheel L on the lower part of said shaft, the sprocket-wheel M on a shaft of the thrasher, said wheels being situated in intersecting planes and each with its traction side in the plane of the other, the half-crossed drive-chain N, embracing said wheels, the sprocket-wheel O, secured to the upper part of said shaft, the sprocket-wheel P, secured to the conveyer-shaft, said wheels being situated in intersecting planes, substantially as described, and the drive-chain embracing said wheels, as and for the purpose set forth.

7. The combination of the casing of the thrasher, the spout R, and the brackets D and F, situated in the vertical plane of said spout, the former below and the latter above it, the conveyer pivoted at its lower end to bracket D, and having the hopper S extending beyond the end of the spout R, the shaft J, journaled in bracket F, with its axis coincident with the pivot of the conveyer, the guy H, connected at one end to the conveyer and at the other having an eye through which said shaft J passes, the sprocket-wheel L on the lower part of said shaft, means for imparting to said wheel motion from one of the shafts of the thrasher, the sprocket-wheel O on the upper part of said shaft, the sprocket-wheel P on the conveyer-shaft, and the drive-chain Q, embracing said wheels, substantially as set forth.

413,046. SPINNAKER-BOOM STANDARD. FREDERIC J. GEVALT, Chelsea, Mass. Filed Feb. 4, 1889. Serial No. 298,556. (No model.)

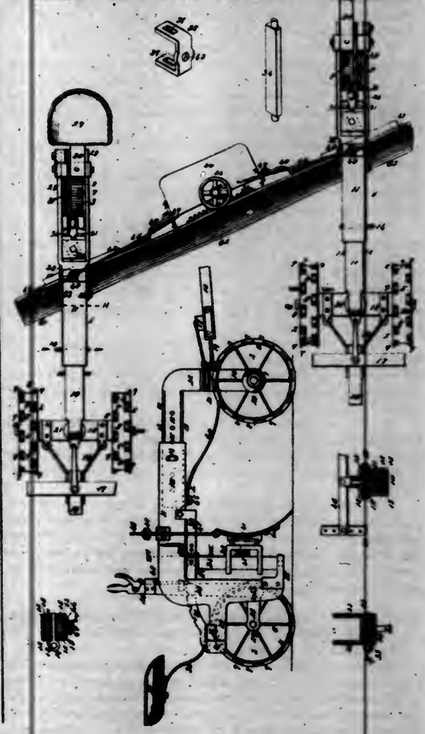
Claim.—1. The standard *g*, having the lower step *g'*, middle bearing *b*, and upper bearing *m*, secured by means of braces *m' m'* to the mast-saddle and having pivoted to its upper end the ring *h*, combined with the spinnaker-boom F, sliding therein, and means for hoisting, lowering, and supporting the same, substantially as and for the purpose set forth.

2. The spinnaker-boom F, adapted to slide in the ring *h*, pivoted to the standard *g*, said standard being supported in bearings in which it can rotate, and said boom having means for lowering it through a deck-hole while changing its position from one side of the vessel to the other, as specified.



3. In combination, a standard journaled in bearings in which it is rotatable, a spinnaker-boom ring pivoted to said standard, a spinnaker-boom adapted to slide and to be supported in said ring, and a deck-perforation for receiving the spinnaker-boom while its position is being changed, substantially as and for the purpose set forth.

413,047. ROAD SCRAPER AND GRADER. JOHN C. GUNSON, Monmouth, Ill. Filed Jan. 23, 1889. Serial No. 297,377. (No model.)



Claim.—1. The two draft-carriages 1, having beams or arches composed each of two parts 10 and 11, telescoped together and sustaining a single scraper-blade, for the purpose set forth.

2. The beam or arch having a part 10 with flanges 12, and the part 11, having a socket adapted to receive the rear portion of part 10, and having grooves 13, in which the ribs 12 fit, substantially as and for the purpose set forth.

3. The combination of the two carriages 1 1, carrying the turn-bars 34, clevises 38, sliding on said bars, a bar or frame 40, pivoted to the clevises 38, and a scraper-blade adapted to slide endwise on the bar or frame 40, substantially as set forth.

4. The combination of the scraper-blade, the bar or frame 40, giving support to the blade, the clevises 38, and the turn-bars 34, working at the upper ends in adjustable bearings 36, substantially as and for the purpose set forth.

5. The combination of the carriages 1, the scraper-blade supported on levers 46, fulcrumed to the carriages, the ground-wheels 3, and the bell-crank levers 25, fulcrumed to the carriages and carrying the wheel-spindles 27, for the purpose set forth.

6. The two carriages 1, the bar or frame 40, connected to the carriages and carrying a hand-shaft 53, with cog-wheel 52, and the scraper-blade sliding on the bar or frame 40, and having a cog-rack engaged by the cog-wheel 52, substantially as and for the purpose set forth.

7. The combination, with the endwise-sliding scraper-bar having a cog-rack, of the dog 55, engaging the rack and connected to the treadle 57, substantially as and for the purpose set forth.

8. The combination of the two carriages 1, the bar or frame 40 connected to the carriages, the scraper-blade sliding endwise on the bar and carrying a cog-rack 51, a wheel 52, engaging the cog-rack, and a dog 55, engaging the cog-rack, with means for turning the cog-wheel and lifting the dog out of engagment with the cog-rack, substantially as and for the purpose set forth.

9. The combination of the two draft-carriages 1 1, supported at the front on the turn-axle 18 and wheels 2, and at the rear on wheel 3, carried by the adjusting-lever 25, and consisting of two parts 10 11, telescoped together, the turn-bars 34, clevises 38, sliding vertically on the turn-bars, bar or frame 40, pivoted to the clevises, a scraper-blade sliding on the bar or frame 40, the sustaining-levers 46, and the device for giving endwise movement to the scraper-blade and holding it in place, the same consisting of a rack on the scraper-blade, and a cog-wheel 52 and dog 55 on the bar or frame 40 engaging the cog-rack, substantially as and for the purpose set forth.

413,048. VIOLET COLORING-MATTER. ROBERT GNEHM and JAKOB SCHMID, Basle, Switzerland, assignors to the Society of Chemical Industry, same place. Filed Apr. 6, 1883. Serial No. 308,711. (Specimens.) Patented in France Apr. 18, 1888, No. 190,067.

Claim.—As a new product, the violet coloring-matter or dye-stuff monophenylmeta-amidophenolphthaleine, which forms a powder of a glistening copper-like appearance, insoluble in water and in benzine, soluble in alcohol with a violet-red color, and which dyes silk a beautiful violet with a strong copper-red fluorescence.

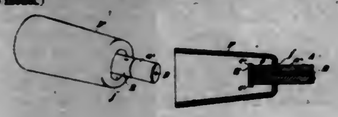
413,049. BLUE COLORING-MATTER. ROBERT GNEHM and JAKOB SCHMID, Basle, Switzerland, assignors to the Society of Chemical Industry, same place. Filed May 16, 1889. Serial No. 311,041. (Specimens.) Patented in France Apr. 18, 1888, No. 190,067.

Claim.—As a new product, the blue coloring-matter or dye-stuff diphenylmeta-amidophenoldichlorphthaleine, which forms a dark indigo-blue powder with a metallic luster, insoluble in water, difficultly soluble in hot benzine, soluble in alcohol with a blue color, and which dyes silk with a strongly fluorescent blue.

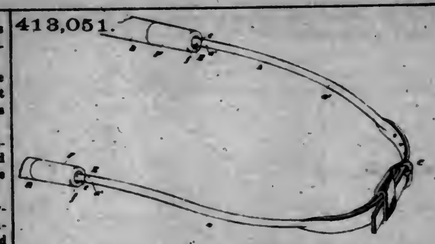
413,050. GRAY COLORING-MATTER. ROBERT GNEHM and JAKOB SCHMID, Basle, Switzerland, assignors to the Society of Chemical Industry, same place. Filed May 16, 1889. Serial No. 311,042. (Specimens.) Patented in France Apr. 18, 1888, No. 190,067.

Claim.—As a new product, the gray coloring-matter or dye-stuff, phenylmeta-amidophenoltetrachlorphthaleine, which forms a dark-green powder insoluble in water, difficultly soluble in hot alcohol, still more difficultly soluble in benzine, and which dyes silk with a gray color, showing a strong fluorescence.

413,051. SHAFT ATTACHMENT FOR CARRIAGES. CHARLES C. GRAHAM, Crawfordsville, Ind. Filed Aug. 14, 1889. Serial No. 320,662. (No model.)



413,051.



Claim.—A shaft attachment comprising the caps having the openings *f* in their ends, the strap consisting of sections and adapted to be buckled together, and the tips secured to the ends a^2 of the strap and provided with annular flanges, whereby the ends a^2 of the strap are swiveled to said caps, substantially as described.

413,052. BUCKLE. JACOB GOUP, Baltimore, Md. Filed June 4, 1889. Serial No. 313,042. (No model.)



Claim.—1. In a buckle, the combination of a frame with a sliding tongue or tongues secured to the frame and adapted to move back and forth in a plane parallel to that of the frame and engaging with one end of the frame to form a buckle, the end of said frame with which the tongue or tongues engage being provided with a slot or rigid shield covering the point or points of the tongue, substantially as described.

2. In a buckle, the combination of a frame one end of which is slotted or provided with a rigid shield, and a spring-stop with a sliding tongue or tongues suitably mounted upon said frame to move back and forth in a plane parallel to that of the frame and in such position that the extremity of the tongue or tongues will enter the shield on one end of the frame and the spring-stop will lock the tongue or the device to which they may be attached in that position, substantially as described.

3. In a buckle, the combination of a frame-plate provided with a transverse slot at one end and a spring-stop consisting of a spring-hook with an upwardly-turned end secured to the frame-plate, with a sliding tongue-plate the edges of which surround the sides of the frame-plate, the spring-stop of the frame-plate being so located that when the tongue-plate is in its extreme former position it will be engaged and held by the spring-stop, substantially as described.

4. In a buckle, the combination of a frame-plate with a sliding tongue or tongues secured to a plate which is suitably mounted upon the frame so as to move back and forth in a plane parallel to that of the frame, the tongue or tongues engaging with the frame to form a buckle, and a spring-stop for locking the tongue-plate in a desired position, which consists of a spring-hook with an upwardly-turned end secured to the frame-plate and engaging the tongue-plate, substantially as described.

5. In a buckle, the combination of a frame-plate with a sliding tongue or tongues secured to a plate, which is suitably mounted upon the frame so as to move back and forth in a plane parallel to that of the frame, the tongue or tongues engaging with the frame to form a buckle, and a spring-stop for locking the tongue-plate in a desired position, which consists of a spring-hook with an upwardly-turned end secured to the frame-plate and engaging the tongue-plate, and a releasing device for the tongue-plate, which consists of a spring-hook with a downwardly-projecting point secured to the tongue-plate and located so as to stand immediately above the end of the upwardly-projecting spring-hook when the tongue is locked by the latter hook, substantially as described.

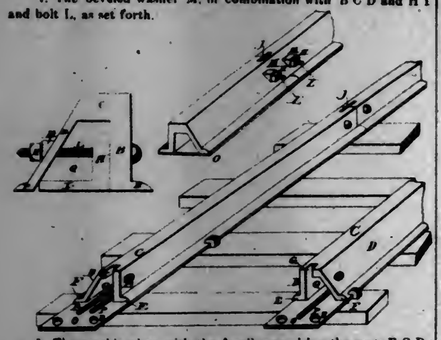
413,053. RAILROAD-RAIL. JOHN R. HALDEMAN, Bloomington, Ill. Filed Dec. 17, 1888. Serial No. 293,986. (No model.)

Claim.—1. The A railroad-rail with the upright standard B, top bed C, brace D, and feet E F, as set forth.

2. The combination, with the A-rail comprising the parts B C D, of the fish-plate or coupling having the standard H and the foot-rest I, as set forth.

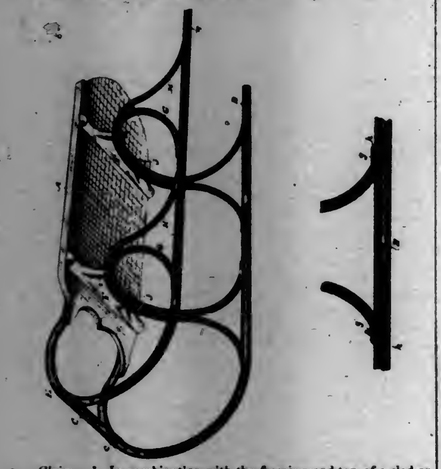
3. The combination, with the A-rail comprising the parts B C D, the parts C being provided with the slots at the ends of the fish-plates H I, having the projections J J, as set forth.

4. The beveled washer M, in combination with B C D and H I and bolt I, as set forth.



5. The combination, with the A-rail comprising the parts B C D, of the plate O, perforated as at R, the whole forming a tube or tunnel for the inclosure of electric wires, as set forth.

413,054. SLED. JOHN I. HANCOCK, Montrose, Pa. Filed Aug. 19, 1889. Serial No. 321,295. (No model.)



Claim.—1. In combination with the framing and top of a sled or sleigh, paired braces having spreading ends, substantially as and for the purpose set forth.

2. In combination with the gas-pipe framing and the top of a sled or sleigh, U-shaped braces of gas-pipe having downwardly and laterally curved ends, arranged in pairs, with the ends extending oppositely, substantially as and for the purpose set forth.

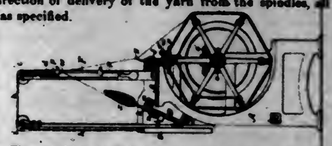
3. In a sled or sleigh, the combination of the top, cleats on the under side thereof, the gas-pipe framing, and paired U-shaped braces curving downwardly and laterally, the arms of each pair extending oppositely and having compressed ends concave on their under sides to fit the gas-pipe runners, means for connecting the ends to the runners, and means for connecting the braces to said cleats, said braces affording a broad bearing for the cleats, substantially as and for the purpose set forth.

4. A sled in which the runners are constructed of pipe, having the herein-described means for attaching the braces thereto, consisting of shouldered fastenings, the shoulders of which are adapted to engage the inner sides of the runners.

5. A sled in which the runners are constructed of pipe, having the herein-described means for attaching the braces thereto, consisting of rivets having enlarged lower ends passing through the runners and engaging the inner sides of the top thereof, and means for securing the braces to the rivets on the upper sides of the runners.

413,055. YARN-REELING MACHINE. HARRY HARDWICK, ADOLPH M. ULLMER, and FRANK FOWLER, Philadelphia, Pa. Filed Mar. 11, 1887. Serial No. 230,493. (No model.)

Claim.—1. The combination of the reel and its shaft, the spindles, bearings in which said spindles are free to turn, and a bar carrying guides for the yarn, said bar being movable vertically, so as to change the direction of delivery of the yarn from the spindles, all substantially as specified.

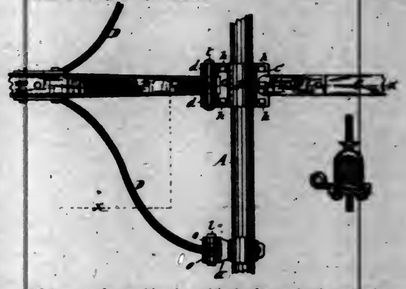


2. The combination of the reel and its shaft, the spindles, and bearings in which said spindles are free to turn, a movable bar having guides for the yarn, and weights connected to said bar and serving to counterbalance the same, all substantially as specified.

3. The combination of the reel and its shaft, the spindles, and bearings in which said spindles are free to turn, a bar having guides for the yarn and movable vertically, so as to change the direction of delivery of the yarn from the spindles, and a traverse-bar having guides for receiving the yarn after the same passes through the guides of the shifting-bar, all substantially as specified.

4. The combination of the reel and its shaft, the spindles, bearings in which said spindles are free to turn, a bar having guides for the yarn, and movable so as to change the direction of delivery of the yarn from the spindles, and hooked catches for retaining said bar in either of its extreme positions, all substantially as specified.

413,056. POLE-COUPLING. HANS M. HANSON, St. Paul, Minn., assignor of one-half to John H. Kennedy, same place. Filed Jan. 7, 1889. Serial No. 295,986. (No model.)



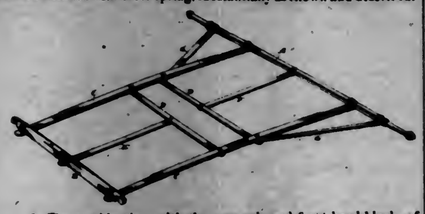
Claim.—1. In combination with the forward axle and pole-couplings *a a*, attached to the end portions of said axle, the saddle *b*, placed astride the central portion of the axle and formed with forwardly and rearwardly extending flanges *c* and *c'* and with perforated ears *d d* on the flange *c*, the clip-tie *e*, embracing the bottom portion of the axle and formed with flanges *f f*, tie-bolts *h h*, passing through the flanges of the saddle and clip-tie, the reach coupled to the rear flanges of the aforesaid parts, the pole P, formed with the extension P' terminating with the shackle-eye *i* between the ears *d d*, and a coupling-bolt passing through said ears and intervening eye, substantially as described and shown.

2. In combination with the axle A and reach C, the saddle *b*, placed astride the central portion of said axle and formed with the forwardly and rearwardly extending flanges *c c'* and with the perforated ears *d d*, the clip-tie *e*, embracing the bottom portion of the axle and formed with flanges *f f*, tie-bolts A A, passing through the flanges of the saddle and clip-tie, and the coupling-iron *g*, attached to the reach and having its forward end bifurcated and embracing the rearwardly-extending flanges of the aforesaid saddle and clip-tie and pivotally connected thereto, substantially as described and shown.

3. In combination with the forward axle and pole-couplings *a a*, attached to the end portions of said axle, and the pole P, formed with the extension P', terminating with the shackle-eye *i*, the clip *b*, placed astride the central portion of the axle and having the king-bolt integral with it, the clip-tie *e*, formed with the perforated ears *d d* for the reception of the shackle-eye *i*, and a coupling-bolt passing through said ears and intervening eye, substantially as described and shown.

413,057. SPRING-GEAR FOR VEHICLES. CHARLES C. HAVEN, Penn Yan, N. Y. Filed July 24, 1889. Serial No. 318,563. (No model.)

Claim.—1. The combination, with the rear axle and front head-block, of the side springs connecting the axle and head-block, the cross-springs connecting the side springs, the longitudinal spring connected at its front end with the king-bolt, and the rear longitudinal spring connecting the rear cross-spring with the rear axle, and the inclined springs extending from the axle to the side bars at their intersection with the rear cross-spring, substantially as shown and described.



2. The combination, with the rear axle and front head-block, of the side springs connecting the axle and head-block, the cross-springs connecting the side springs, the longitudinal spring connected at its forward end with the king-bolt and at its rear end to the front cross-spring, the rear longitudinal spring connecting the rear cross-spring with the rear axle, and the inclined springs connected with the rear axle and attached to the side bars at the point of intersection of the rear cross-spring, substantially as shown and described.

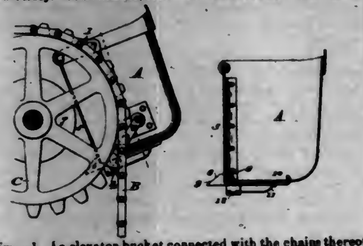
413,058. ELECTRICAL TOY. LUDWIG HIRSCH, New York, N. Y. Filed Mar. 8, 1889. Serial No. 302,594. (No model.)



Claim.—1. An electrical toy figure composed of a main part or body of tissue or other thin paper and a supporting-strip of stiff paper for said body, so that the latter can be attracted by a body charged with frictional electricity, substantially as set forth.

2. An electrical toy figure composed of a body of tissue or other thin paper, a supporting-strip of stiff paper, and a base made integral with strip, so that the latter and the body of the toy figure can be folded into one plane with the same, substantially as set forth.

413,059. ELEVATOR-BUCKET. LYMAN D. HOWARD, Philadelphia, Pa., assignor to the Clark-Howard Excavator and Conveyor Company, of New Jersey. Filed Mar. 15, 1889. Serial No. 303,386. (No model.)



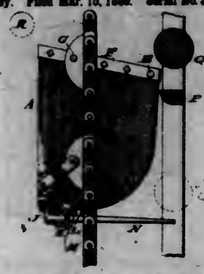
Claim.—1. An elevator-bucket connected with the chains thereof at top and bottom, respectively, inside and outside of the center-lines of strain, substantially as described.

2. An elevator-bucket, in combination with a bucket-chain, links pivotally connected to said bucket and chain at the top and bottom thereof, the lower link being longer than the upper link and the points of connection of the said links with the bucket being on different sides of the line of strain, said parts being combined substantially as and for the purpose set forth.

3. The elevator-bucket A, with pivoted door 5, a catch pivotally connected with the bottom of the bucket and having noses adapted to engage the lower end of the door, a guard secured to the under side of the bucket, and a spring bearing against said catch, said parts being combined substantially as described.

4. The elevator-bucket A, with pivoted door 5, a catch pivotally connected with the bottom of the bucket and having noses adapted to engage the edge of the door, a guard secured to the under side of the bucket and embracing the catch, and a spring within the guard bearing against the catch, the nose of said catch being wider than said guard, said parts being combined substantially as and for the purpose set forth.

413,060. ELEVATOR-BUCKET. LYMAN D. HOWARD, Philadelphia, Pa., assignor to the Clark-Howard Excavator and Conveyor Company, of New Jersey. Filed Mar. 15, 1889. Serial No. 303,384. (No model.)



Claim.—1. A bucket formed in sections and provided with a catch which has a nose engaging with one section and an arm engaging with a shoulder of the other section, substantially as described.

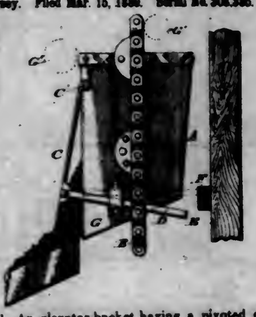
2. A bucket formed in sections and provided with a catch for locking the sections, in combination with abutments, one of which serves to tilt the bucket outward and the other to operate the catch for disconnecting the sections, substantially as described.

3. An elevator-bucket consisting of obliquely-connected sections, one of which is pivotally connected to a ring secured to the other, the band-section having a pivoted-link connection at its lower part with the bucket-chain, said parts being combined substantially as described.

4. An elevator-bucket consisting of two sections pivotally connected and a catch connected to one of said sections and having an arm adapted to engage a shoulder on the other section, and provided with a rearwardly-extending arm adapted to trip said catch, said parts being combined substantially as described.

5. An elevator-bucket consisting of two sections, one having a band to which the other section is pivoted and a bucket-chain to which the band-section is directly pivoted at its upper part and pivotally connected by a link near its lower part, and a catch connected to the band-section and having an arm engaging the pivot-section, and provided with a rearwardly-projecting arm adapted to trip said catch and release the sections, said parts being combined substantially as described.

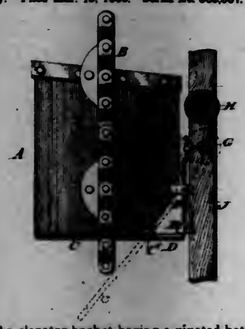
413,061. ELEVATOR-BUCKET. LYMAN D. HOWARD, Philadelphia, Pa., assignor to the Clark-Howard Excavator and Conveyor Company, of New Jersey. Filed Mar. 15, 1889. Serial No. 303,385. (No model.)



Claim.—1. An elevator-bucket having a pivoted door, catches connected with said door and having noses adapted to engage the back of the bucket when the door is closed, keepers secured to the sides of the bucket and in which the catches play, and springs in said keepers bearing against said catches, said parts being combined substantially as and for the purpose set forth.

2. An elevator-bucket having a pivoted door, catches secured to said door, keepers in which said catches play, and springs bearing against said catches, the said catches having noses adapted to engage the back of said bucket, and a tripping device consisting of a beam with sides rounding upward, the outer ends of the noses being adapted to engage said beam, said parts being combined substantially as described.

413,062. ELEVATOR-BUCKET. LYMAN D. HOWARD, Philadelphia, Pa., assignor to the Clark-Howard Excavator and Conveyor Company, of New Jersey. Filed Mar. 15, 1889. Serial No. 303,367. (No model.)

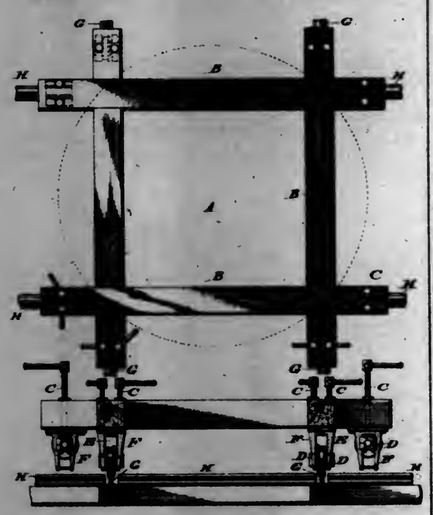


Claim.—1. An elevator-bucket having a pivoted bottom with an extension, a catch adapted to bear against the said extension, and means, substantially as described, for disengaging said catch from said extension, said parts being combined substantially as described.

2. An elevator-bucket having its dropping bottom provided with a rearward extension and a catch pivoted to said bucket engaging with said extension, said catch having also a deflector, whereby the catch may be moved from engagement with the bottom, substantially as described.

3. An elevator-bucket having a dropping bottom, a catch having a heel, and a deflector, said heel engaging with said bottom and formed with an inclined face, the deflector being adapted to engage with an abutment on the elevator-frame for clearing said heel from said bottom, substantially as described.

413,063. TRUCK-TRANSFERRING DEVICE. LYMAN D. HOWARD, Philadelphia, Pa., assignor to the Clark-Howard Excavator and Conveyor Company, of New Jersey. Filed Mar. 15, 1889. Serial No. 303,368. (No model.)

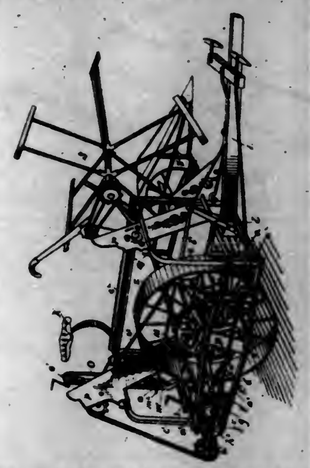


Claim.—1. An elevator-truck provided with two sets of wheels at an angle to each other and means for raising and lowering them, combined and operating substantially as described.

2. A truck provided with two sets of wheels at an angle to each other, boxes bearing said wheels, pedestals containing said boxes, and screws connected with the boxes for raising and lowering the same, the parts being combined substantially as described.

413,064. WITHDRAWN.

413,065. HARVESTER. GEORGE G. HUNT, Bristol, assignor to the Piano Manufacturing Company, Chicago, Ill. Filed Apr. 2, 1888. Serial No. 269,261. (No model.)



Claim.—1. In a harvester-frame, the inner cross-sills a^3 a^4, in combination with the front platform-sill b, connected at its inner end to the lower of said cross-sills, and a diagonal brace b^2, connected at its upper end to the upper cross-sill, and extending downward and outward toward the platform to the front sill b, to which it is connected at its lower end, substantially as and for the purposes specified.

2. In a harvester-frame, the inner cross-sills a^3 a^4, in combination with the front platform-sill b, connected at its inner end to the lower of said cross-sills, the post b^3, connecting the two cross-sills at the point where the platform-sill joins the lower, and the inclined brace b^2, connecting the said platform-sill with the upper cross-sill, substantially as and for the purposes specified.

3. In a harvester, a metal platform-frame B, composed of a front sill b, a pair of rear sills b^4 b^5, arranged one over the other, and an end sill b^7 and beam b^6, all rigidly connected together, substantially as and for the purposes specified.

4. In a harvester, the metal rear sills a a' of the gearing-frame, arranged one over the other, in combination with the metal rear sills b^4 b^5 of the platform-frame, arranged one over the other, and the metal post a^{10}, constructed as described, and connected to the inner ends of both said pairs of sills, substantially as and for the purposes specified.

5. In a harvester, the metal sills a a', arranged one above the other and one pair at the front and the other at the rear of the gearing-frame, in combination with the metal cross-sills a^3 a^4, arranged one above the other and with one pair on each side of the main wheel, the single metal sill b at the front of the platform, the pair of metal sills b^4 b^5, arranged one above the other at the rear of the platform, the metal end sill b^7 and beam b^6 at the outer end of the platform, the upright metal sections e e', arranged one at the front and the other at the rear of the gearing-frame and rigidly connected thereto, and the metal cross-bars c^6, arranged upon the top of the upright sections and rigidly fastened to each, all substantially as and for the purposes specified.

6. In a harvester, the gearing-frame, in combination with a straight guide-rack set on said frame at an inclination, and the main-wheel axle provided with pinions engaging with said racks, substantially as and for the purposes specified.

7. In a harvester, the gearing-frame and the main-wheel axle, provided with pinions, in combination with the straight guide-racks set at an inclination on the gearing-frame, the counter-shaft, movable journal-boxes in which said shaft is mounted, and a chain-gearing connecting the axle and counter-shaft, substantially as and for the purposes specified.

8. In a harvester, the gearing-frame, in combination with the blocks F, set therein and provided with horizontal slots f, the journal-boxes f', sliding in said slots, the counter-shaft G, having its bearings in said boxes, and a chain-gearing connecting said shaft with the main axle, substantially as and for the purposes specified.

9. The counter-shaft G, in combination with the movable journal-boxes f', the bevel gear-wheel g on the end of said shaft, the cutter crank-shaft H, and the sliding bevel-pinion h^2, mounted thereon and connected to the sliding journal-boxes so as to move therewith, substantially as and for the purposes specified.

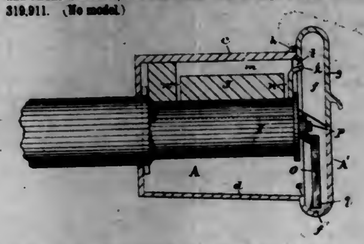
10. The counter-shaft G, in combination with the movable boxes in which it is mounted, the bevel gear-wheel g, crank-shaft H, bevel-pinion h^2, arranged to slide on said shaft, and the arm f^5, connected to the movable boxes and embracing said bevel-pinion, substantially as and for the purposes specified.

11. The hinged pole, in combination with the sliding rod M, connected to a post or frame on the pole, the chain-nut o, the chain O, and the chain-pinion o' on the crank-shaft o^2, substantially as and for the purposes specified.

12. The block F, provided with socket f^6 at its rear end, arranged transversely to the block, in combination with the crank-shaft H, parallel to said block, and the journal-box h' for the crank-shaft, seated in said socket, substantially as and for the purposes specified.

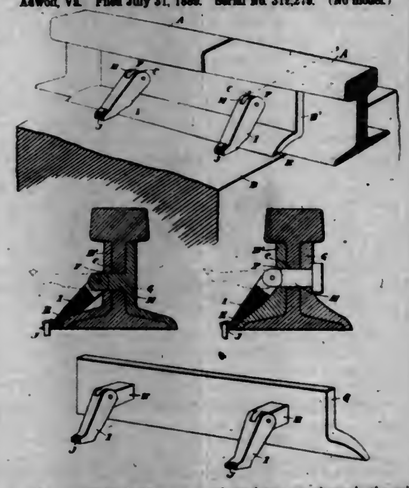
13. In a harvester, the gearing-frame, in combination with the guide-racks mounted thereon and inclined forward, the main wheel and its axle, adjusting devices for raising and lowering the gearing-frame on the axle, and a grain-binder mounted on the machine and adjustable toward the front or rear thereof, substantially as and for the purposes specified.

413,066. CAR-AXLE BOX AND LUBRICATOR. AMBROSE INDSER and PATRICK LYNCH, Baltimore, Md. Filed Aug. 6, 1889. Serial No. 319,911. (No model.)



Claim.—The combination of the box having a bottom which inclines toward the front, a circular head at the front of the box, the lowermost part of which projects below the box-bottom and forms a receptacle f', an axle or shaft, a bearing J, having a projecting oil-lip, a longitudinal groove m, extending therefrom across the top of the bearing, a duct passing down from said groove, and an arm secured to the axle and having at its extremity a dipper which projects to both sides of the arm.

413,067. RAIL-JOINT. EDGAR F. KILLINGER and JOSEPH U. WOLFE, Adwolf, Va. Filed July 31, 1889. Serial No. 319,270. (No model.)



Claim.—1. The locking-arms adapted to pass through the rail and having pawls pivoted to their ends adapted to be secured to the ties, as set forth.

2. The combination of the locking-arms adapted to pass transversely through the rails and one of the fish-plates, and the pawls pivoted to the ends of said arms and provided at their free ends with notches through which the securing-spikes are driven, as set forth.

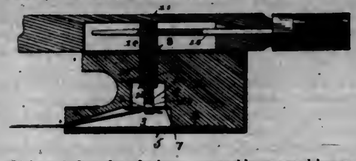
3. The combination, with the rails, of the fish-plate D, having openings registering with the bolt-holes in the rails, the fish-plate G, having integral arms passing through the said bolt-holes and openings, and the pawls pivoted to the ends of said arms and adapted to be secured to the ties, as set forth.

413,068. COAL-BIN OR COAL-CABINET. JOSEPH J. KUYKENDALL, Cairo, Ill. Filed Apr. 2, 1889. Serial No. 305,955. (No model.)



Claim.—In a coal-cabinet, the combination of the rectangular body A, having the rearwardly-inclined bottoms B and E, the sliding door C, supported by cleats c, the lever b, so bent as to form two right angles, and at the same time leaving the ends parallel with each other, and provided on each side of the first bend with journals d, and joined by its inner end to the center of the sliding door C, all as shown, and for the purpose named.

413,069. VIOLIN-BOW. CLARENCE L. LANDAU, Titusville, Pa. Filed Apr. 25, 1889. Serial No. 308,508. (No model.)



Claim.—1. In a frog for bows, a movably-mounted key provided with a head having an opening, and a plate slotted for the reception of the head, in combination with means for operating the key, substantially as specified.

2. In a frog for bows, a bearing-plate having a slot, in combination with a key provided with a head having a slot and provided with a reduced spindle portion having screw-threads, and a binding-bolt mounted upon the key and internally bored and screw-threaded for the reception of the spindle, substantially as specified.

3. In a bow, a frog provided with a recess and a vertical perforation, in combination with a bearing-plate mounted in the recess and a key mounted in a perforation and provided with a slotted head adapted to be projected through an opening in the plate, and with a reduced screw-threaded spindle, and a binding-bolt provided with an internally-screw-threaded bore for the reception of the spindle, and with a transversely-apertured head for the reception of the adjustment-shaft, substantially as specified.

4. In a frog for bows, the key 10, longitudinally movable and having the slot 19, for the passage of the hairs, as set forth.

5. In a frog for bows, the key 10, longitudinally movable and having the hairs connected therewith, and the binding-bolt 14, having a threaded connection with the key, as set forth.

6. In a frog for bows, the key 10, longitudinally movable and having the hairs connected therewith, and the binding-bolt 14, having a threaded connection with the key, and the adjustment-shaft 16, connected with the binding-bolt, as set forth.

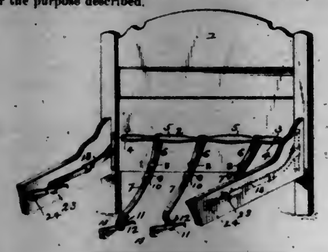
413,070. MANUFACTURE OF EXPLOSIVES. EDUARD LIEBERT, Berlin, Germany. Filed July 10, 1889. Serial No. 317,073. (No specimens.)

Claim.—The process of producing a new explosive compound, consisting in adding isoamyl nitrate to the nitro-glycerine, or nitrating a mixture containing glycerine with isoamyl nitrate or isoamyl alcohol.

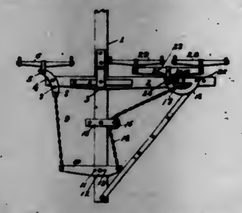
413,071. DEVICE FOR SECURING THE COVERS OF BEDS. ROSA H. LOWE, Sumner, Wash. Filed Jan. 15, 1889. Serial No. 296,280. (No model.)

Claim.—In a device for securing bed-covers, the combination, with the rod or bar having swells, of the straps having rings at each end, the sliding snap-loops secured to the rings at one end of the straps, and clamps connected to and operated by the rings at the other ends

of said straps, said parts being arranged and operating substantially as and for the purpose described.



413,072. DRAFT-EQUALIZER. ISAAC R. LUCAS, Clartsville, Iowa. Filed Apr. 18, 1888. Serial No. 271,094. (No model.)



Claim.—1. A draft-equalizer comprising a pole, an unequal-armed spreader-bar pivoted to said pole to swing thereon, a strut, swinging connections between said strut and spreader-bar, an evener, and connections between said evener and spreader-bar, substantially as described.

2. In a draft-equalizer, an unequal-armed spreader-bar, a plate or clevis pivotally connected thereto, a strut pivotally connected to said clevis, an evener, and chains connecting said evener and said spreader-bar, substantially as described.

3. In a draft-equalizer, an unequal-armed flexible spreader-bar having each end provided with pivoted clevis or plate, a pole or tongue, a strut connecting said pole or tongue and one of said clevis-plates, an evener, and connections between said evener and said spreader-bar, substantially as described.

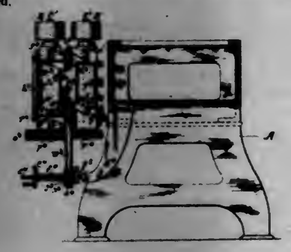
4. In a draft-equalizer, a pole or tongue, an adjustable evener pivoted thereto, a flexible spreader-bar, adjustable clevis-plates pivoted to said spreader-bar, a strut connecting one of said plates with said pole, a pulley pivoted to said pole, and chain-connections between said evener, spreader-bar, and pulley, substantially as described.

5. In a draft-equalizer, a spreader-bar, an unequal-armed double-tree, a strut, and a plate or clevis pivotally connected to said spreader-bar, doubletree, and strut, substantially as described.

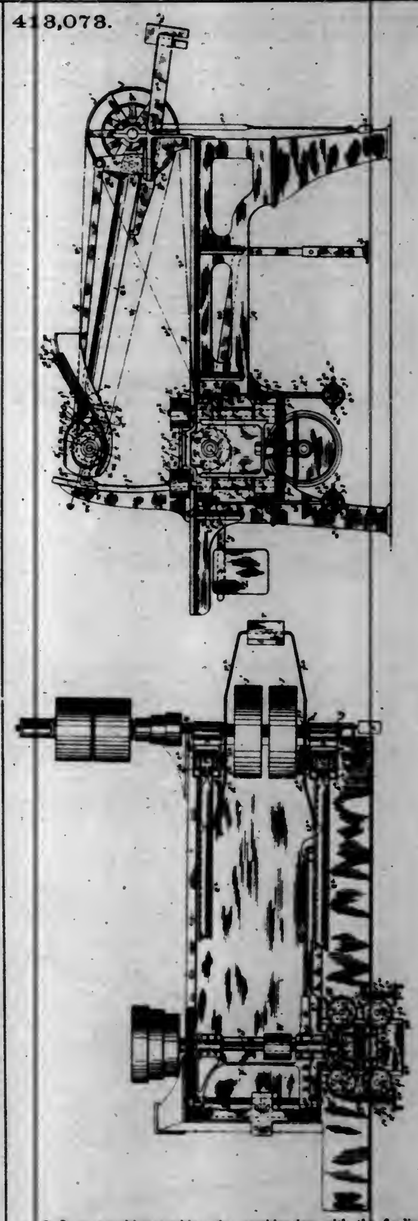
413,073. MATCHING-MACHINE. BENJAMIN G. LUTHER, Worcester, Mass. Filed May 3, 1889. Serial No. 309,477. (No model.)

Claim.—1. In a matching-machine, the combination, with the cutter and the cutter-shaft, of a cutter-holding frame pivoted for movement in both a vertical and a horizontal plane, substantially as and for the purpose specified.

2. In a matching-machine, the combination, with the feeding-rollers, of the cutter-holding frame pivoted for movement in both a vertical and a horizontal plane, the cutter-shaft held in the pivoted frame, the cutter, and the vertically-adjustable gage for adjusting the depths of the cut to be made in the edge of the board, substantially as described.



413,073.



3. In a matching-machine, the combination, with the feeding-rollers, of the cutter-holding frame pivoted for vertical movement, the cutter-shaft held in the pivoted frame, the cutter, the gage for adjusting the depth of the cut to be made in the edge of the board, and the spring-operated side guides adapted for equal movement toward or from the plane of the cutter, substantially as described.

4. In a matching-machine, the combination, with the feeding-rollers, of the cutter-holding frame pivoted for movement in both a vertical and a horizontal plane, the spring-guide for limiting the horizontal movement of the frame, the cutter-shaft held in the pivoted frame, the gage for adjusting the depth of the cut to be made in the edge of the board, and the spring-operated side guides adapted for equal movement toward or from the plane of the cutter, substantially as described.

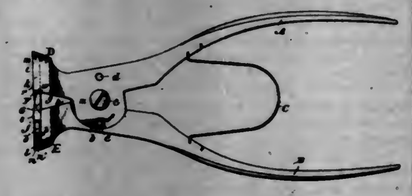
5. In a matching-machine, the combination, with the feeding-rollers, of the cutter-holding frame pivoted for movement in a vertical plane, the cutter-shaft held in the pivoted frame, the gage for adjusting the depth of the cut to be made in the edge of the board, and the spring-operated side guides provided with the shoes for resting upon the edge of the board and adapted for equal movement toward or from the plane of the cutter, substantially as described.

6. In a matching-machine, the combination, with the intervening cutter, of the opposite feeding-rollers, each held on a separate carrier, and the levers connected to the opposite carriers and adapted to cause the equal movement of the feeding-rollers toward or from the plane of the cutter, substantially as described.

7. In a matching-machine, the combination, with the intervening cutter, of the duplicate sets of opposite feeding-rollers, each roller being held on a separate carrier, the levers connected to the carriers of the opposite feeding-rollers and adapted to cause the equal movement of the feeding-rollers toward or from the plane of the cutter, and the opposite intermediate guides pivoted at each end to the corresponding carriers of each set of opposite feeding-rollers, substantially as described.

8. The combination, in a matching-machine provided with a cutter and duplicate sets of opposite feeding-rollers, each roller being held on a separate carrier, of an intermediate guide pivoted at each end to the corresponding carriers of each set of opposite feeding-rollers, substantially as described.

413,074. WIRE-TIGHTENER. EDWIN E. MACK, Marshalltown, Iowa. Filed June 27, 1889. Serial No. 315,732. (No model.)



Claim.—1. In a wire-tightener, a pair of levers provided with cams upon their short arms, said cams having their axes arranged at right angles to the fulcrum of the levers, in combination with gripping-surfaces against which the wires are held by the cams, in the manner and for the purpose substantially as described.

2. In a wire-tightener, a pair of levers provided with spring-actuated cams upon the outer extremities of the short arms thereof, said cams having their axes substantially at right angles to the fulcrum of the levers, and gripping-surfaces against which the wires are held by the cams, in the manner and for the purpose set forth.

3. In a wire-tightener, a pair of levers provided with spring-actuated cams, in combination with gripping-surfaces against which the cams bear and arms upon the cams arranged to engage the opposite arms of the levers, whereby the cams are held open for the reception of the wires and are released and thrown into action when receding from each other, in the manner and for the purpose described.

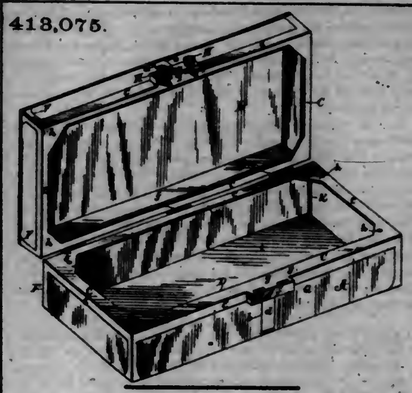
4. The combination, in a wire-tightener, of a pair of spring-actuated levers provided with spring-actuated cams upon their short arms, gripping-surfaces for the cams, and arms upon the cams arranged to engage oppositely-located recesses in the levers, all arranged and adapted to operate in the manner and for the purpose substantially as described.

5. In a wire-tightener, the combination of a pair of spring-actuated arms, enlarged heads on the ends of said arms having depressions formed therein, cams pivoted on said heads and arranged to be set by engaging said depressions, springs for actuating said cams, and grooved shoulders against which they bear, all arranged and adapted to operate as described.

413,075. TOILET-CASE. LOUIS B. MARSH, Fostoria, Ohio. Filed May 22, 1888. Serial No. 311,707. (No model.)

Claim.—The combination, in a toilet-case, of the bottom section, its false bottom, the metallic frame embracing the walls of the box and having inwardly-projecting corners A, and the bolts K, seated in said corners and bearing upon the false bottom, whereby it is held in position, substantially as set forth.

413,075.

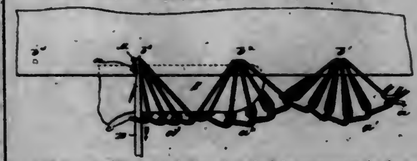


413,076. PLANT CANE-SHAVER. ROBERT MAURER, Dunlapsville, Ia. Filed May 7, 1889. Serial No. 309,573. (No model.)



Claim.—In a cane-cutter, the triangular cutter A, concavo-convex transversely, as shown, in combination with the triangular shield B, having the three vertical sides or branches and secured to the upper convex side of the cutter at a distance from its marginal edges, the standard D', and the braces H and C, connecting the cutter and shield with the beam, and the whole secured to the cutter within the shield, substantially as specified.

413,077. METHOD OF FORMING A BORDER ON THE EDGES OF FABRICS. JOSEPH M. MERROW, Merrow, Ogn. Filed Apr. 20, 1889. Serial No. 307,989. (No specimens.)



Claim.—1. The hereinbefore-described improvement in the art of forming a finish upon fabrics, which consists in forming a cluster of loops extending beyond the edge of the fabric by passing the thread through the fabric, (a number of times at substantially the same place,) drawing a series of loops of the thread from opposite sides of the fabric beyond the edge thereof and around the finger, holding said loops under tension upon said finger and connecting the outer ends of said loops in a flexible chain, and then passing the thread through the fabric at another point and repeating the loop-forming operation one or more times, as set forth.

2. As an improvement in the art of forming a finish or border upon fabrics, the hereinbefore-described mode of forming and spreading clusters of loops, the same consisting in carrying the thread through the fabric and drawing loops therefrom above and below the fabric and on opposite sides of a finger located in proximity to the edge of the fabric, and connecting the loops together beyond the edge of said finger while held under tension thereon, repeating the operation a number of times by passing the thread through the fabric at substantially the same point, thereby forming a connected cluster around and upon the finger, and then feeding the fabric, passing the thread through the latter at another point, drawing loops therefrom and connecting said loops to the preceding cluster while supported upon the finger.

3. The hereinbefore-described improvement in the art of forming a finish upon fabrics, the same consisting in passing the thread through

the fabric and drawing loops therefrom on opposite sides of and beyond the edge of the fabric and connecting said loops, supporting the connected loops beyond the edge of the fabric, passing the thread again through the fabric at substantially the same point and forming and supporting the loops as before, and subsequently passing the thread through the fabric at another point and repeating the loop-forming operation.

4. The hereinbefore-described improvement in the art of forming a finish upon fabrics, the same consisting in forming a cluster of loops radiating from substantially the same point, projecting beyond the edge of the fabric, and connected together at their outer ends by carrying the thread through the fabric, drawing loops therefrom on opposite sides and beyond the edge of the fabric, connecting said loops, holding said connected loops under tension, carrying the thread again through the fabric at substantially the same point, and repeating the loop forming and connecting operations while the preceding loops are still under tension, and then, when a cluster has been completed, advancing the fabric and passing the thread again therethrough at another point, as set forth.

413,078. MAGAZINE FIRE-ARM.

KOSTA R. MILOVANOVITCH-KOKA, Vienna, Austria-Hungary. Filed Dec. 4, 1888. Serial No. 292,685. (No model.) Patented in Germany Oct. 30, 1888, No. 47,777; in France Oct. 30, 1888, No. 192,806; in Belgium Oct. 30, 1888, No. 83,779; in Switzerland Nov. 15, 1888, No. 46, and in Italy Dec. 31, 1888, Nos. 128 and 24,230.



Claim.—1. In a breech-loading gun, a receiver provided with a longitudinal slot in one of its sides and a guide composed of guide-ribs extending partly along the slot toward the receiver and at an angle to its longitudinal axis to guide the cartridge-bullet end foremost into the receiver and breech-chamber at a point in proximity to the latter, in combination with a magazine provided with suitable means to force the cartridge into said slot, substantially as and for the purposes specified.

2. In a breech-loading gun, the combination, with the receiver provided with a longitudinal slot in one side thereof, the forward portion of said slot being wider than the rear portion, said narrower rear portion being formed by guide-ribs arranged at an angle to the longitudinal axis of the receiver, of a magazine and a guide to guide the cartridges therefrom into the slot, substantially as and for the purposes specified.

3. In a breech-loading gun, the combination, with the receiver provided with a longitudinal slot in one of its sides, the forward portion of said slot being wider than the rear portion, said narrower rear portion being formed by guide-ribs arranged at an angle to the longitudinal axis of the receiver, and said ribs merging into guide-grooves, of a magazine and a guide to guide the cartridges therefrom into the slot, substantially as and for the purposes specified.

4. In a breech-loading gun, the combination, with the receiver provided with a longitudinal slot in one of its sides, the forward portion of said slot being wider than the rear portion, said narrower rear portion being formed by guide-ribs arranged at an angle to the longitudinal axis of the receiver, of a magazine and an elastic guide to guide the cartridges therefrom into the slot, said guide being provided with an opening leading into the magazine for the purpose of feeding the cartridges to the breech-chamber by hand, substantially as and for the purposes specified.

5. In a breech-loading gun, the combination, with the receiver provided with a longitudinal slot in one of its sides, of a magazine and a vertically-adjustable guide-cover therefor, consisting of an elastic plate having diverging arms extending over the open end of the magazine and arranged at an angle to the longitudinal axis of the receiver, substantially as and for the purposes specified.

6. In a breech-loading gun, the combination, with the receiver provided in one of its sides with a longitudinal slot whose rear portion is narrower than its front portion, said narrower portion being formed by guide-ribs arranged at an angle to the longitudinal axis of the receiver and merging into guide-grooves, of a magazine provided with a vertically-adjustable elastic cover arranged at an angle to the horizontal and a spring lug or finger projecting into the magazine and adapted to impinge on the projectile end of the cartridges, substantially as and for the purposes specified.

7. In a breech-loading gun, the combination, with the receiver, of a magazine having its rear wall slotted vertically and provided with a graduated index, a feed-spring and follower, and a pointer connected with said follower and arranged to travel along the graduated index, substantially as and for the purposes specified.

8. In a breech-loading gun, the combination, with the receiver and a magazine and a laterally-movable cover shorter than said magazine and having a central opening or cut-away portion to form two diverging arms, of a cartridge-case open at top, bottom, and one side, and provided with spring-fingers at its lower edge to retain the cartridges therein, and with an ear projecting centrally across the open top, said case fitting into the magazine, substantially as and for the purposes specified.

9. In a breech-loading gun, the combination, with the receiver provided with a longitudinal slot in one of its sides, the forward portion of said slot being wider than the rear portion thereof, said narrower rear portion being formed by guide-ribs b, arranged at an angle to the longitudinal axis of the receiver and merging into grooves b', of a magazine provided with a vertically and laterally movable cover arranged at an angle to the horizontal, a spring-actuated follower, and the locking-lever a^{10}, substantially as and for the purposes specified.

10. A magazine for breech-loading guns, consisting of a rectangular receptacle or case and a spring-cover composed of the spring-shank a' and the inclined diverging arms a^{21}, provided with the lugs or ears a^4, said cover being secured to the box by a screw extending through a vertical slot in said box, in combination with a locking-lever a^{10}, for locking the cover against lateral movement, substantially as and for the purposes specified.

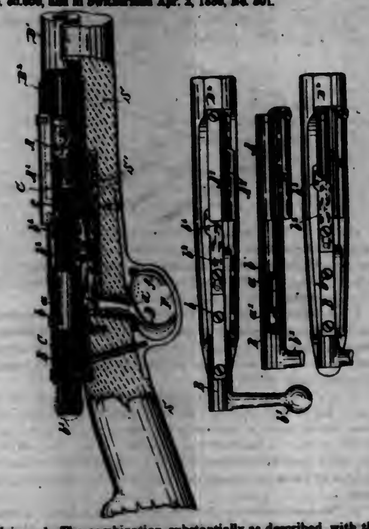
11. A magazine for breech-loading guns, consisting of a rectangular receptacle or case having vertical slots formed in both end walls and provided with an index graduated to the number of cartridges the magazine can hold, the graduations being numbered from top downward, and a horizontal slot a^{15} near the lower end of said merging into said vertical slots, and a spring-actuated follower arranged within the magazine and having extensions or lugs a^2 projecting through the vertical end slots of the magazine, substantially as and for the purposes specified.

12. A magazine for breech-loading guns, consisting of a rectangular receptacle and a cover therefor, composed of the diverging inclined arms a^{21}, provided with lugs or ears a^4, the re-enforced portion A^3, terminating in a slotted thumb-plate A^2, and an intermediate spring-shank a', said cover being secured to the front wall of the receptacle by a screw a^{11}, passing through the re-enforced portion of the cover-shank and through a slot in said receptacle, in combination with a spring-catch a^9, secured by said screw a^{11} to the cover-shank and extending through the slot of the thumb-plate, substantially as and for the purposes specified.

13. A magazine for breech-loading guns, consisting of a rectangular receptacle and a cover therefor, composed of diverging and laterally-movable spring-arms terminating in a hand-hold, the spread of said arms being less than the length of the box and constructed to form a notch or recess between them, in combination with a cartridge-case C, open at top, bottom, and front, and provided at its lower edge with spring-fingers c^3, with the outwardly-bent flange c^4 along the upper edge at one end, and with the central leg or ear c, provided with a strap c^4, said case being adapted for insertion into the magazine, substantially as and for the purposes specified.

413,079. FIRE-ARM.

KOSTA R. MILOVANOVITCH-KOKA, Vienna, Austria-Hungary. Filed Apr. 24, 1888. Serial No. 308,400. (No model.) Patented in France Apr. 2, 1888, No. 187,150; in Belgium Apr. 2, 1888, No. 85,050, and in Switzerland Apr. 2, 1888, No. 301.



Claim.—1. The combination, substantially as described, with the tubular breech-bolt A of a breech-loading gun, provided with a longitudinal slot having at its rear end an inwardly-projecting inclined face or shoulder, of a longitudinally-movable pull-bar carrying a pin or stud that projects into the slot of the bolt, a firing-pin and its actuating-spring contained within the breech-bolt, said firing-pin having its rear end connected with the pull-bar, an actuating-arm secured to and projecting from the forward end of the pull-bar and adapted to impart to the breech-bolt a partial revolution, a sear adapted to engage a full-cock notch on the pull-bar, and a trigger in engagement with the sear, for the purpose specified.

2. The combination, substantially as described, with the pull-bar B, provided with the full-cock notch, the sear adapted to engage said notch, and the trigger in engagement with the sear, of a locking-lever pivoted to the trigger-guard and adapted to engage a locking notch or shoulder on the trigger to lock the same into position and hold the sear out of the path of the full-cock notch on the pull-bar, substantially as and for the purpose specified.

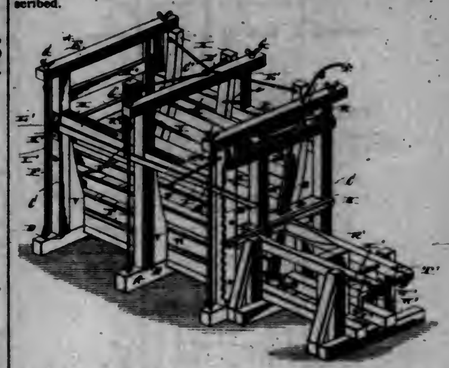
3. In a breech-loading gun, the combination, with the receiver, of a breech-bolt provided with the locking-rib A' and with a longitudinal slot contracted at its rear end, said contracted portion of the slot having one of its lateral faces inclined, a firing-pin and its actuating-spring arranged within the bolt, a longitudinally-movable support for the bolt, to which support the rear end of the firing-pin is secured, and a stud or pin projecting from the support into the slot of the bolt, for the purposes specified.

4. In a breech-loading gun, the combination, with the receiver, of a breech-bolt provided with the locking-rib A' and with a longitudinal slot contracted at its rear end, said contracted portion of the slot having one of its lateral faces inclined, a firing-pin and its actuating-spring arranged within the bolt, a longitudinally-movable support for the bolt, to which support the rear end of the firing-pin is secured, a stud or pin projecting from the support into the slot of the bolt, and a locking-arm provided with a laterally-inclined face secured to and projecting from the forward end of the bolt, for the purposes specified.

413,080. PORTABLE STANCHION.

JOHN T. MORRIS and BENJAMIN S. COOK, Modern, Iowa. Filed Feb. 26, 1889. Serial No. 301,532. (No model.)

Claim.—1. In a cattle-stanchion, the frame having the rigid curved side, the hinged side arranged inside the frame and normally held away from the curved side by a spring and adapted to be swung toward or from the rigid curved side, the rigid post N at one end of the frame, the pivoted bar O, adapted to be swung toward and from the said post, and the latch to lock the said bar, substantially as described.



2. The stanchion-frame comprising the sills, the floor-board connecting them, the posts of the rigid side having their lower ends socketed in the sills and detachable therefrom, the cross-beams E mortised and tenoned on the upper ends of the posts, the side beams H, detachably secured to the posts, and the clamping-rods connecting the projecting ends of the sills and of the beams E, in combination with the pivoted side, an operating-lever pivoted at the opposite side of the frame, and the ropes connecting the pivoted side to the lever, substantially as described.

3. The combination, in a cattle-stanchion, of the rectangular frame having a rigid side and comprising the cleats V and connecting-strips W, the hinged side arranged opposite the rigid side and comprising the bars X and connecting-strips Y, the strips and cross-beams K at one end of the frame, the rigid post N, connecting said cross-bars, and the pivoted bar O, adapted to be moved toward and from the said post N, substantially as described.

413,081. JOURNAL-BEARING.

JOSEPH T. MURRAY, Newark, N. J. Filed Jan. 22, 1889. Serial No. 297,196. (No model.)



Claim.—1. A journal-bearing provided with a series of grooves or depressions whose outer edges diverge and converge throughout their entire length, and form contiguous circumferential channels consisting of a series of wedge-shaped communicating chambers adapted to hold a solid or semi-solid lubricant, the sides or walls of said chambers converging in the direction of rotation of the shaft, substantially as described.

2. A journal-bearing provided with a series of wedge-shaped grooves and a series of angular pockets, said grooves and pockets overlapping each other at their ends, the grooves forming continuous circumferential channels consisting of a series of wedge-shaped communicating chambers adapted to hold solid or semi-solid lubricant, the sides or walls of the chambers converging in the direction of rotation of the shaft, substantially as described.

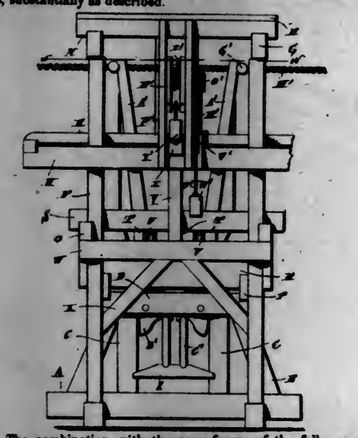
413,082. COTTON-PRESS.

WILLIAM W. MCALPINE, Beligne, Ala. Filed July 25, 1888. Serial No. 281,012. (No model.)

Claim.—1. The combination, with the press-frame, of the follower, the levers A', connected thereto, the rocking arms D', and levers E', the right and left hand screw-shaft journaled in and supported by the levers E' and engaging blocks mounted on the levers A', and gears to rotate the said screw-shaft, substantially as described.

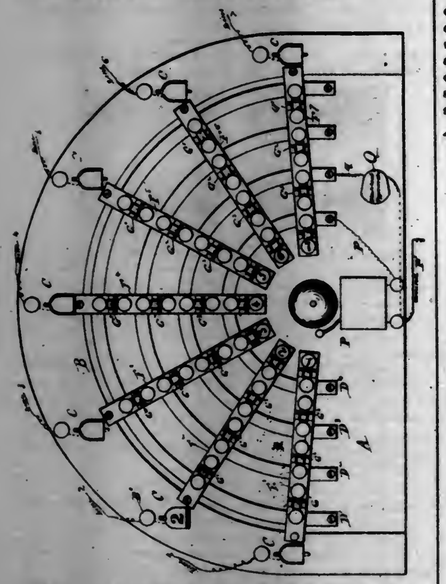
2. The combination, with the press-frame, of the follower, the levers A', connected thereto, the rocking arms D' and counterbalanced levers E', the right and left hand screw-shaft journaled in the levers E' and engaging blocks mounted on the levers A', spur-wheel I' on said shaft, the shaft K', journaled in the levers E', having pinion L' and spur-wheel M', the shaft N', having gear P' and pulley O', the

counter-shaft having pulley V, and the endless belt connecting said pulleys, substantially as described.



3. The combination, with the press-frame, of the follower, the levers A', connected thereto, the rocking arms D' and levers E', the right and left hand screw-shaft journaled in levers E' and engaging blocks mounted on the levers A', the spur-wheel I' on said shaft, the shaft K', journaled in the levers E', having pinion L' and spur-wheel M', the shaft N', having gear P' and the pulley O', the counter-shaft having the pulley V, the endless belt connecting pulleys V and O', and the weighted slide bearing on said belt, for the purpose set forth, substantially as specified.

413,083. SWITCH-BOARD. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Dec. 27, 1887. Serial No. 259,149. (No model.)



Claim.—1. In a switch-board, the combination, with two sets of metallic strips, one above the other, of rocking switch-keys mounted between cars on the upper set of strips, and having lugs projecting through the said strips and into operative relation to the lower set of strips, substantially as described.

2. In a switch-board, the combination, with two sets of metallic strips, one set being provided with apertures, of pivoted switch-keys mounted upon and provided with contact-lugs extending through said apertured strips, each key having a thumb-piece on each side of its pivot, substantially as described.

3. In a switch-board, the combination, with two sets of metallic strips, one set being provided with contact-springs and the other set with apertures, of pivoted switch-keys mounted on the apertured strips, each key having a thumb-piece on each side of its pivot, and also having a contact-lug projecting through an aperture in the strip toward one of the springs on a strip of the other, substantially as described.

413,084. GRAIN-TOLLER. THOMAS M. HERBETT, Hemitt, S. C. Filed Mar. 13, 1889. Serial No. 303,125. (No model.)



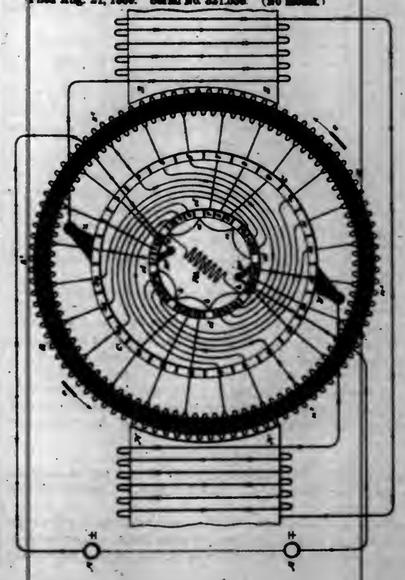
Claim.—1. An automatic toller for elevators, comprising a casing attached to the elevator-chute, a flap between said chute and casing, a bracket attached to the elevator-belt, and connections between said bracket and flap, whereby the latter will be opened by the passage of the former, substantially as described.

2. In a toller for elevators, a casing connected with the elevator-chute, a flap or door closing communication between said chute and casing, a pivoted lever connected with said flap or door, and a bracket connected to the elevator-belt to actuate said lever and its connected flap, substantially as described.

3. In a toller for elevators, a casing connected with the elevator-chute, a flap or door opening from said chute to said casing, a lever pivoted to said chute, a connection between one end of said lever and said flap or door, a pendent arm connected to the free end of said lever, and a bracket connected with the elevator-belt to contact with said lever and arm to actuate said flap or door, substantially as described.

4. The combination, with an elevator chute and belt, of a casing connected with said chute, a flap or door between said chute and casing, flexible strips connected to the opposite side edges of said flap or door to impinge against the sides of said chute, a pivoted lever connected with said flap or door, a bracket upon the elevator-belt to contact with said lever to raise said flap, and a spring connected with said flap to return the same to closed position, substantially as described.

413,085. ELECTRIC MOTOR. FRANCIS J. PATTEN, New York, N.Y. Filed Aug. 21, 1889. Serial No. 321,596. (No model.)

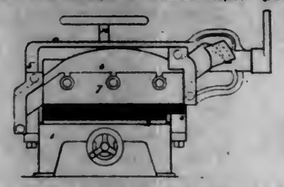


Claim.—1. An electric motor having an armature provided with a commutator or collector in which adjacent groups of bars are connected with the armature-winding at points respectively contiguous to and opposite to the said adjacent groups of segments in rotation around the ring.

2. An electric motor provided with two commutators or collectors, one having its bars or segments connected to successive points of the armature-winding in rotation, the other set having adjacent groups of bars connected alternately to segments of the first commutator, and through the latter to points of the ring-winding which lie respectively contiguous to and opposite to the said adjacent groups of bars in rotation around the ring.

3. An electric motor having an armature provided with two collectors or commutators and two pairs of brushes, one collector or commutator having its bars or segments connected in rotation to successive points of the ring-winding, and the brushes bearing on these connected to the field-circuit, the adjacent groups or bars of the other collector being connected in succession to points of the ring-winding respectively contiguous to and opposite to the said adjacent groups of segments in rotation around the ring, and the brushes bearing on this collector or commutator connected to a source of alternating current.

413,086. PAPER-CUTTING MACHINE. BENJAMIN J. PAYNE and THOMAS BURNS, St. Louis, Mo., assignors to the St. Louis Type Foundry, of Missouri. Filed Dec. 31, 1888. Serial No. 295,054. (No model.)



Claim.—1. The clamping-bar of a paper-cutter, with the piece 12 movable vertically in a recess 11 of the bar, substantially as and for the purpose set forth.

2. The combination, in a clamping-bar for paper-cutters, of the main part 8, having a recess 11 and a rabbet-groove 17, and the piece 12, movable vertically in each recess and having a rib 16 adapted to occupy the groove 17, substantially as and for the purpose set forth.

3. The combination, in the clamping-bar of a paper-cutter, of the main part or body 8, having a recess 11, and the piece 12, vertically movable in the recess, having guide-ribs 15 at the ends, and slotted lugs 18, and the screw-bolts 20, substantially as and for the purpose set forth.

4. The combination, in a clamping-bar of a paper-cutter, of the main part 8, with recess 11 and rabbet-groove 17, the piece 12, having a rib 16, slotted lugs 18, and spring-catches 21, and the bolts 20, all substantially as and for the purposes set forth.

413,087. MACHINE FOR MAKING TYPE. JAMES S. PAYNE, St. Louis, Mo. Filed Mar. 14, 1889. Serial No. 303,201. (No model.)

Claim.—1. The combination of a pusher 15, working through one side of the mold, and a pusher 16, engaging the projection 24', substantially as set forth.

2. The nipple-plate 25, having a recess, and the pusher 16, having a slot 23, adapted to engage an elongated projection 24' upon the type, for the purpose set forth.

3. The combination, with the vibrating plate 8, of the adjustable bracket 9, giving bearing to a slide 14, carrying the pusher 15, substantially as set forth.

4. The combination, with the slide 14, carrying the pusher 15, of the adjustable piece 29, having a hole 34 for the engagement of the actuating-lever 36, substantially as set forth.

5. The combination of slide 14 and lever 36, having bearing on the vibrating plate 8, lever 42, fulcrumed to the fixed frame, and cam 45 upon the main shaft 46, substantially as set forth.

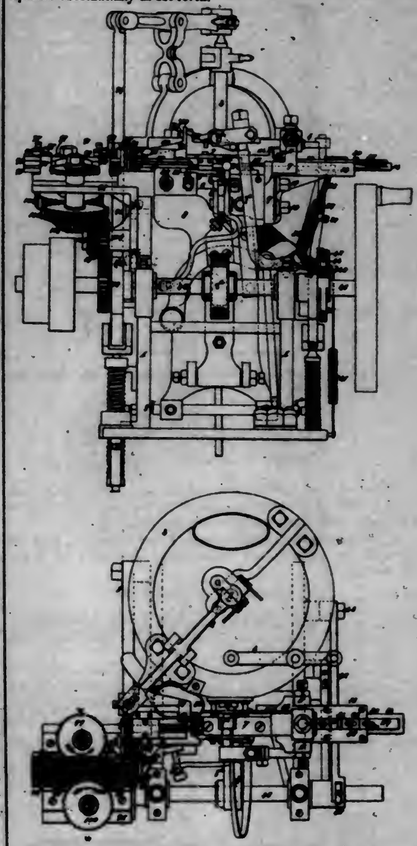
6. The combination of slide 14 and lever 36, having bearing on the vibrating plate 8, lever 42, fulcrumed to the fixed frame and having an adjustable block 47, and the cam 45 upon the main shaft 46, substantially as and for the purpose set forth.

7. The combination of slide 14, lever 36, lever 42, cam 45, and spring 41, all adapted to operate substantially as set forth.

8. The combination of the slide 14, having a projection 115, and the vibrating mold-block 7, having a push-piece 116, substantially as and for the purpose set forth.

9. The combination of the pump-rod 79, having tappets, and the jet-breaker 78, constructed and operating substantially as set forth.

10. The combination, with the vibrating upper mold-block 7, of the dog 66, connected to the mold-block by link 68, and adapted to operate substantially as set forth.



11. A dressing-plate, as 49, having inclined file-teeth adapted to press the base of the type against the cutter 58, substantially as set forth.

12. The combination of dressing-plates 49 57, carried by the vibrating plate 8, and dressing-plates 95 and 96, carried on a stationary bracket 92, substantially as and for the purpose set forth.

13. The combination of the transverse dressing-plates 91 and 91', carried, respectively, by the vibrating plate 8 and the stationary bracket 92, and adapted to operate substantially as set forth.

14. A type-dressing file, as 91, having teeth 113 and 114, presenting in opposite directions, substantially as and for the purpose set forth.

15. The combination, with the vibrating plate 8, of the two adjustable brackets 9 and 52, carrying, respectively, the slide 14, carrying a pusher, and dressing-plates 49 57, substantially as set forth.

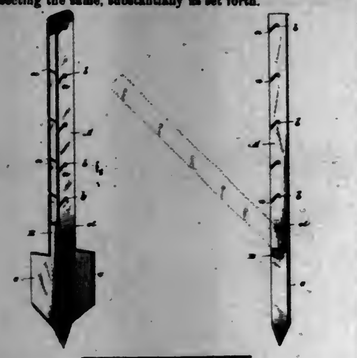
16. The transverse oppositely-reciprocating dressing-files 91 91', and suitable supporting-brackets, said files being adjustably supported on the brackets by holding-block 86 and screws 86 87, substantially as set forth.

17. The vibratory breaker 78, in combination with the dressing-plates 49 57, the latter serving to hold the type firmly while the jet is broken off.

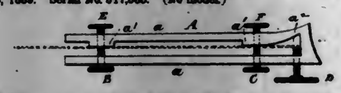
413,088. FENCE-POST. JAMES S. PAYNE, Virginia, Ill. Filed Apr. 13, 1889. Serial No. 307,031. (No model.)

Claim.—A fence-post having a base provided with central pointed portion wedge-shaped, as described, laterally-extending side wings, and upwardly-extending central portion having upper and lower perforations, an upper part formed of a strip of metal bent upon itself, its free ends being connected to the said perforated portion, the two

sides of said strip having registering openings and oppositely-arranged slots intersecting the same, substantially as set forth.



413,089. SAW-SET. HENRY PETER, Houston, Tex. Filed July 13, 1889. Serial No. 317,285. (No model.)



Claim.—1. A saw-set consisting of the frame A, having the arms *a a*, blade-bearings *a' a'*, setting-recess a^3, and the three screws B C D, all arranged substantially as shown and described.

2. The combination, with the frame A and screws D C D, of the screws E F, for regulating the degree of the set to be given to the teeth, as set forth.

413,090. HEEL-TRIMMING MACHINE. JOHN W. PLUMMER, Somerville, assignor to the Acme Heel Trimmer Company, Boston, Mass. Filed May 20, 1889. Serial No. 311,372. (No model.)

Claim.—1. In a heel-trimming machine, the combination, with the cutter-head and the counter-guard, of the carriage supporting the counter-guard, a screw journaled in a bearing on the carriage, a fixed bracket having guides in which said carriage is movable parallel with

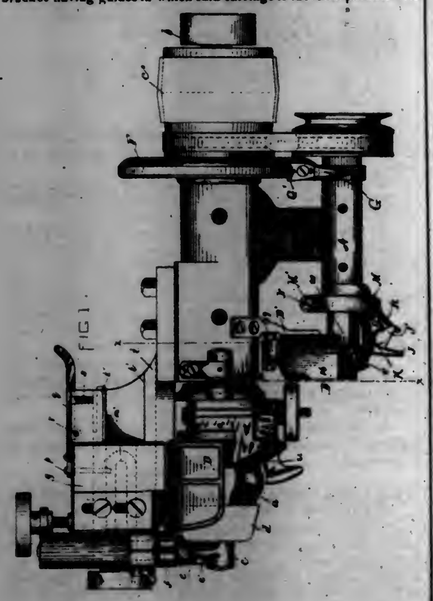


FIG 1.

413,090.

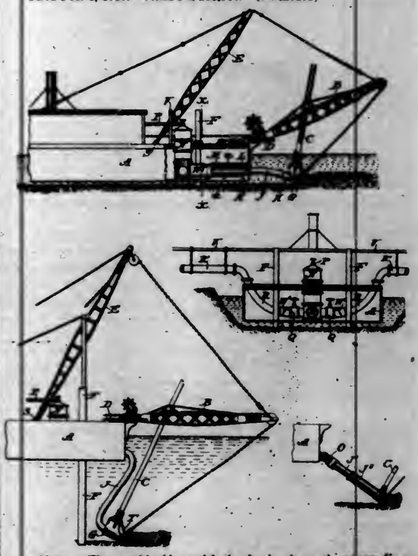


the axis of the cutter-head, a nut fitted to slide in a slot or guide in said bracket and engaged with said screw, and means for locking said nut to the bracket and for disengaging it therefrom, whereby when the nut is locked to the bracket the carriage and counter-guard can be adjusted only by the rotation of said screw, but when the nut is unlocked or released from the bracket said nut, screw, carriage, and counter-guard may be moved rapidly as one piece, as set forth.

2. In a heel-trimming machine, the combination, with the cutter-head and the counter-guard, of the carriage supporting the counter-guard, a fixed bracket having guides *i'*, in which said carriage is movable parallel with the axis of the cutter-head, a nut secured to said bracket and engaged with a screw on the carriage, a bolt *p* in said bracket, adapted to engage said nut, and a spring-pressed lever pivoted to the bracket and engaged with said bolt, as set forth.

3. The heel-rest J, having an arm J', combined with a rotary trimmer, a support to which said rest is pivoted, and a spring secured at one end to said support and bearing at the other end on said arm J', as set forth.

413,091. PNEUMATIC DREDGE. CARROLL L. RIKER, Bergen, N. Y. Filed Feb. 1, 1889. Serial No. 298,367. (No model.)



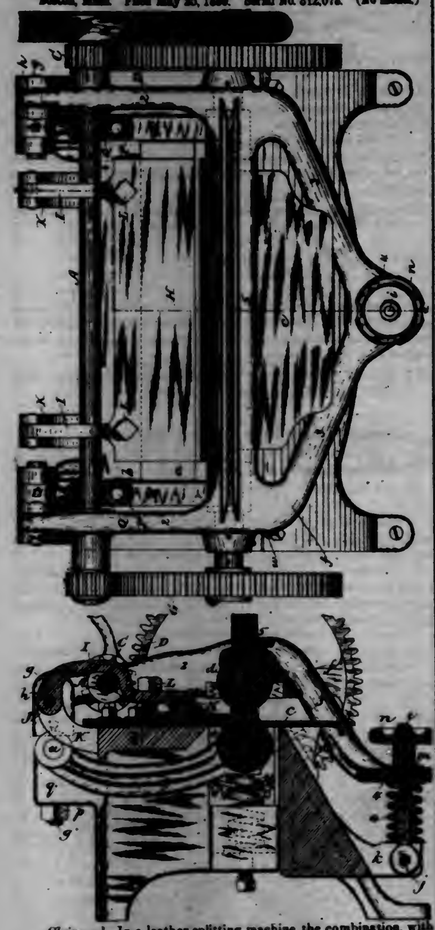
Claim.—The combination, with the dredge-boat, the scoop-dipper, the traveling handle supporting the same, and means, substantially as described, for supporting, guiding, and moving the handle, of a suction-pump, an adjustable suction-pipe extending from the pump to the bottom of the dipper, one or more discharge-pipes extending from the pump outwardly, and valves controlling said pipes, substantially in the manner and for the purpose herein set forth.

413,092. ELASTIC SOCKET FOR PEN-HOLDERS. MICHAEL I. RODRIGUE, San Francisco, Cal. Filed Mar. 29, 1888. Serial No. 268,763. (No model.)



Claim.—In a pen-holder, the combination, with the butt or handle portion C of the stock, of a split sleeve A, of metal, surrounding the portion C, to receive the pen between it and said portion, and a soft-rubber tube B, surrounding and clamping the sleeve C, substantially as and for the purpose set forth.

413,093. LEATHER-SPLITTING MACHINE. JOSEPH A. SAFFORD, Boston, Mass. Filed May 25, 1889. Serial No. 312,073. (No model.)



Claim.—1. In a leather-splitting machine, the combination, with a splitting-knife and a pressure-roll, of a gage-roll, the frame or yoke supporting the gage-roll and composed of the side arms 2 2, pivoted to the supporting-frame at their rear ends, and the cross-piece 3, connecting the outer portions of said arms with each other, the screw-threaded rod *i*, pivotally connected with the frame of the machine and passing through an opening in the central portion of the cross-piece 3, a nut on said rod constituting an adjustable stop or support for the gage-roll-supporting frame or yoke, and a spring whereby said frame or yoke is held against said nut, as set forth.

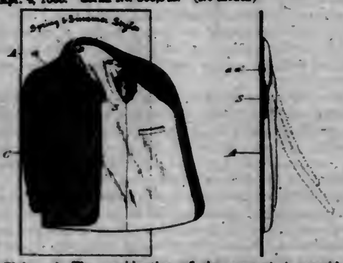
2. In a leather-splitting machine, the combination, with the pressure-roll, the knife, and the leather-supporting table, of the gage-roll, the supporting-frame made as one piece and composed of the side arms 2 2, in which the gage-roll is journaled, said arms being pivoted to the supporting-frame at one side of the gage-roll, and the connecting portion 3 3, curved downwardly and terminating in the end 4, which is below the table and located at the opposite side of the gage-roll from the pivoted ends of said arms, as set forth.

3. In a leather-splitting machine, the combination of the supporting-frame, the gage-roll, the adjustable gage-roll-supporting arms 2 2, pivoted to said frame, the pressure-roll, the arms *t t*, pivoted to the supporting-frame and carrying the pressure-roll, the gears D G, attached, respectively, to the gage-roll and the pressure-roll, the shaft A, journaled in the gage-roll-supporting arms between the gage-roll and the pivots of said arms and provided at one end with a pinion C, meshing with the gear D on the gage-roll, and at the other end with a pinion E, and the intermediate pinion F, mounted on a stud supported by one of the gage-roll-supporting arms and meshing with the pinion E and the gear G on the pressure-roll, said intermediate pinion being located between the pressure-roll and the pivots that connect the carrying-arms of said roll with the supporting-frame, the arrangement of said shaft A, pinion C E F, and gears D G being such that the operative engagement of said pinions and gears is not affected by the movements of the rolls, as set forth.

4. The combination of the bed *b*, the splitting-knife *a*, the clamping-plate having the arms I, hinged to fixed ears on the bed, and the screws engaged with the bed and having heads bearing on said arms I, whereby said plate is pressed upon the knife, as set forth.

5. In a leather-splitting machine, the combination, with the knife and the pressure-roll, of the gage-roll, the frame in which said roll is journaled, the vertically-movable supports *h h*, to which said frame is pivoted, said supports being located at one side of the gage-roll, means for vertically adjusting said supports, and an adjusting device for the forward end of said frame located at the opposite side of the gage-roll from the supports *h h*, as set forth.

413,094. SAMPLE-CARD. JACOB SAFFORD, Albany, N. Y. Filed Apr. 4, 1883. Serial No. 290,542. (No model.)



Claim.—1. The combination of the support A, provided with fastenings *a a'*, and a miniature garment fastened thereon and having within it an expanding or inflating device, substantially as described.

2. A miniature garment or its described equivalent provided with an expanding or inflating device for conforming it to represent the shape appropriate for use, with a suitable support having lists, marks, or headings thereon descriptive of the garment, substantially as described.

413,095. COMBINED MOP AND WRINGER. CHARLES SANDIFER and ALVA R. ORMSBY, Mansfield, assignors to said Ormsby, and Nellie M. Bradman, Boston, Mass. Filed July 9, 1888. Serial No. 316,970. (No model.)



Claim.—1. The combination of a mop-handle provided with a longitudinal groove, a cloth loop attached to said handle, a rod disposed in the groove in said handle, a cloth loop attached to said rod, and a sliding cap on said handle, the upper end of said rod being secured to said cap, substantially as described.

2. In a mop, the combination of a handle grooved longitudinally, a ferrule on one end thereof, a cloth-holder on said ferrule, a cap sliding on the opposite end of said handle, a rod sliding in said groove and secured to said cap, and a holder on said rod, substantially as described.

413,096. RUFFLING ATTACHMENT FOR SEWING-MACHINES. EDWARD SMITH, Peoria, Ill. Filed Oct. 11, 1888. Serial No. 287,890. (Model.)



Claim.—1. A ruffler comprising a base-plate, a reciprocating ruffler-blade, a plate secured to the base-plate and extending over and bearing upon the ruffler-blade and provided with a transverse guide-slot at one end extending through the edge of the plate, and a

spring-tongue yieldingly extending from the plate transversely across the open end of the slot to normally close the same, substantially as described.

2. In a ruffler, a swinging plate having a tube or socket extending laterally therefrom provided with a longitudinal opening and normally closed at its outer end, in combination with a reciprocating blade extending through said opening and having its upper end journaled in said tube or socket, substantially as described.

3. In a ruffler, the combination of a lever, a pivoted plate swung by the same, a tube extending laterally from the plate and having a longitudinal slot, a ruffling-blade extending loosely through said slot and having a head fitting loosely in said tube, and a screw-cap for the outer end of the tube, substantially as described.

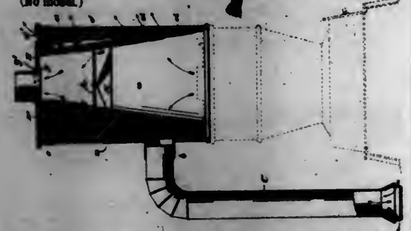
4. In a ruffler, a frame and a ruffling-blade, in combination with a separator-blade and a plate carrying the same and provided with a slot to receive a headed stud on the frame, having a contracted portion smaller than the head of the stud, said plate extending beneath the frame and provided in the rear of the separator-blade with a pair of parallel slots separated by a finger bent upwardly at its point of connection with the plate, for the purpose set forth.

5. A ruffler comprising the combination of a main frame, a ruffler-blade, a plate to reciprocate the blade, an operating-lever to swing said plate, a rotary circular cam carried by the lever, having a continuous contact periphery, a circular scale carried by the lever, each division of which corresponds to a certain portion of the periphery of the cam, and an indicator for the scale, the relative positions of the scale and indicator varying with the adjustment of the cam, for the purpose set forth.

6. In a ruffler, the combination of a frame, a ruffler-blade, a swinging plate reciprocating the blade, an operating-lever to swing the plate, a rotary spindle extending through the lever, a milled head on one end of the spindle, and a circular cam on the opposite end of the spindle, having a continuous-contact periphery forming a gradually-increasing curve around the axis of the cam, substantially as described.

7. In a ruffler, the combination of a frame, a reciprocating ruffler-blade, a swinging plate carrying the blade, provided with lateral lugs on opposite sides of its pivotal point, an operating-lever having a stationary point on one side of its fulcrum to engage one of said lugs, a rotary spindle extending through the lever on the opposite side of its fulcrum, a circular cam on one end of the spindle, having a continuous-contact periphery adapted to engage the opposite lug of said plate, a face-plate upon the opposite end of the spindle, having a scale, an indicator for the scale, and a milled head on the scale end of the spindle, substantially as described.

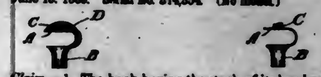
413,097. AIR HEATING AND CIRCULATING DEVICE. ABRAHAM SHIVELY, Hanoverton, Ohio. Filed Feb. 17, 1888. Serial No. 264,378. (No model.)



Claim.—1. The combination, in an air heating and circulating attachment for stoves, of an outer cylindrical drum B, provided near its lower edge with an air-inlet opening to which is attached a depending pipe, the opposite side of said drum having perforations *d d*, an inner conical casing the walls of which converge upwardly, said casing being of the same diameter at its base as the inner portion of the drum B, a top plate having a central exit-opening for the products of combustion, and depending flanges which engage with the upper portions of the inner and outer drums, said top having perforations *d'* located on a line with the perforations *d d*, the parts being organized substantially as shown, and for the purpose set forth.

2. The combination, in an air heating and circulating device which is adapted to be used in connection with a stove and supported thereon, of an outer cylindrical drum B, having a depending air-inlet pipe connected near the base thereof, the opposite side of said drum having exit-perforations *d d*, an inner conical drum D, secured at its base to the lower edge of the outer drum, a deflector of less diameter than the inner drum supported within the same, and a top plate E, with a central exit-opening and depending flanges which engage with the upper edges of the inner and outer drums, the parts being made up of sheet metal and organized substantially as shown, and for the purpose set forth.

413,098. SHOE-HOOK. WILLIAM H. SMITH, New York, N. Y. Filed June 15, 1889. Serial No. 314,354. (No model.)



Claim.—1. The hook having the stock of its head perforated and the edges of said perforations thrown up, in combination with the external jacket of plastic material, as pyroxyline, surrounding said stock, substantially as set forth.

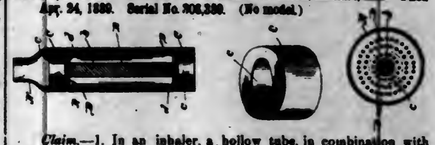
2. The hook having the eyelet thrown up from the top of its head and an exterior jacket of pyroxyline material compressed on said top and clinched thereto by said eyelet, substantially as shown and described.

413,099. SHOE-LACING HOOK. WILLIAM H. SMITH, New York, N. Y. Filed June 15, 1889. Serial No. 314,356. (No model.)



Claim.—A lacing-hook provided with a perforated head, and an external jacket of pyroxyline material applied to said head above and below and extending through the perforation, substantially as described.

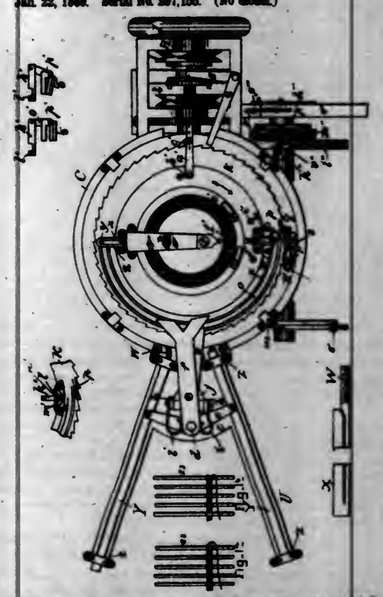
413,100. INHALER. WILLIAM W. SMITH, Elkhart, Ind. Filed Apr. 24, 1889. Serial No. 308,289. (No model.)



Claim.—1. In an inhaler, a hollow tube, in combination with oppositely-located perforated disks, and an intermediate brace extending from disk to disk, substantially as specified.

2. In an inhaler, a hollow tube, in combination with oppositely located and bored corks, and an opposite intermediate brace provided with perforated disks at its ends bearing against the corks, substantially as specified.

413,101. CIRCULAR-KNITTING MACHINE. WALTER H. STEWART, Franklin, N. H., assignor to Morgan Wright, Norristown, Pa. Filed Jan. 22, 1889. Serial No. 297,155. (No model.)



Claim.—1. The combination, with the needle-bed and needles D E, of the cam-plate provided with needle-operating cams 2 3 4 5 6 7, ratchet-ring *h*, supported on the cam-plate and provided on its inner

edge with a notch, cam *n'*, block *h'*, provided with the stud *l*, adapted to rest against the inner edge of the ratchet-ring and be operated by said cam *n'*, connections, substantially as set forth, between block *h'* and cam 5, and means for operating the cam-plate and ratchet-ring, as set forth.

2. A rotary cam-plate, a needle-bed, two sets of needles D E, the former set provided with extensions or tails, movable chains supported by the bed and adapted to form a support for the tails of the needles, grooved or slotted slides attached to the said chains to engage the tails of said needles to lower or depress the same, brackets upon which said chains may be moved and guided from and to the bed, a pawl connected with each of said chains, rack-bars for engaging said pawls, lever *e*, connected with said rack-bars, lever *f*, connected at its outer end with lever *e* and extending over the cam-plate, lever *g*, fulcrumed upon said bracket, pivotally connected with lever *f* and also extending over the cam-plate, and pins which may be arranged in the cam-plate to engage said levers *f* and *g*, as set forth.

3. The combination, with the needle-bed, needles, and rotary cam-plate, of a rotary arbor H, a gear connecting said arbor with said cam-plate, pulleys I I, loose on said arbor, a clutch member splined on said arbor to be moved longitudinally thereon but to rotate therewith, arms or levers Q S and their arbor P, a ratchet-ring on the cam-plate, and means for moving it, a cam on said ratchet-ring, a lever *r*, fulcrumed on the cam-plate and provided on one end with a pin resting on said cam and connected at the other end with a vertically-arranged pin, and a spring for pressing said vertically-arranged pin upward, as set forth.

4. A rotary cam-plate, a needle-bed, two sets of needles D E, the former set provided with extensions or tails, movable chains supported by the bed and adapted to form a support for the tails of the needles, grooved or slotted slides attached to the said chains to engage the tails of said needles to lower or depress the same, brackets upon which said chains may be moved and guided from and to the bed, a pawl connected with each of said chains, rack-bars for engaging said pawls, lever *e*, connected with said rack-bars, lever *f*, connected at its outer end with lever *e*, and extending over the cam-plate, lever *g*, fulcrumed upon said bracket, pivotally connected with lever *f*, and also extending over the cam-plate, a ratchet-ring arranged on the cam-plate and provided with cams *n o*, means for moving said ratchet-ring, pins arranged to travel on said cams and on the face of the ratchet-ring, and springs for pressing said pins downward, as set forth.

5. The combination, with the needle-bed, needles, and cam-plate, of a ratchet-ring on said cam-plate, a lever pivoted upon the cam-plate and provided with a pawl to engage the ratchet-ring, a vertically-movable pin *m* to engage and move said lever, a rotary arbor, a cam on said arbor, a lever resting on said cam, a connecting-bar between said last-mentioned lever and pin, whereby the latter may be raised and lowered, a driving-shaft, and connections between the driving-shaft and cam-plate and between the driving-shaft and rotary arbor, whereby they may be operated, as set forth.

6. The combination, with the needle-bed, needles, and cam-plate, of a ratchet-ring on said cam-plate, a lever pivoted upon the cam-plate and provided with a pawl to engage the ratchet-ring, a vertically-movable pin *m* to engage and move said lever, a rotary arbor, a cam on said arbor, a lever resting on said cam, a connecting-bar between said last-mentioned lever and pin, ratchet-wheel *l''*, having one tooth cut away, secured to said arbor, ratchet-wheel *f''*, loose on said arbor, sprocket-wheel *l''*, secured to ratchet-wheel *f''*, chain *m''* on said sprocket-wheel, and provided with the pin *n''*, disk *o''*, provided with pin *p''*, fast on said arbor, a pawl engaging said ratchet-wheels, a driving-shaft, and connections between said driving-shaft and cam-plate and between the driving-shaft and pawl for operating the same, as set forth.

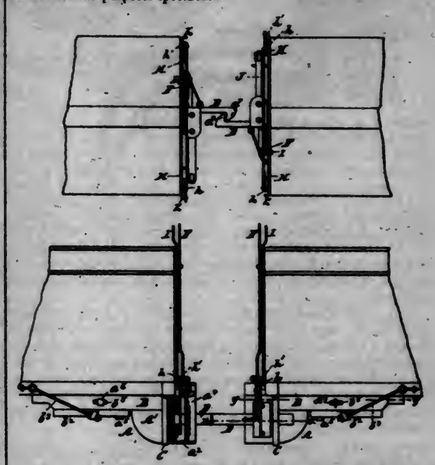
7. The combination, with needle-bed, needles, and cam-plate, of a rotary arbor H, a gear connecting said arbor with said cam-plate, pulleys I I, loose on said arbor, a clutch member splined on said arbor to be moved longitudinally thereon but to rotate therewith, arbor P, and its arms S T, gears *c''* and *b''*, the latter provided with cam *s''*, arbor *b''*, and means to rotate it from gear *b''*, disk *o''*, provided with cams *b''' c''*, lever *d''*, provided with pin *m''*, spring *l''*, slide *c''*, and lever *k''*, as set forth.

413,102. CAR-COUPLING. ARTHUR L. STOVER, Hamilton, Ohio. Filed Sept. 18, 1888. Serial No. 285,903. (No model.)

Claim.—1. The draw-bar A, having enlarged head A', provided with vertical groove a^3 and ridge a^4, and coupling-bar D, pivoted to the draw-head and provided with hook *d* and yoke d^1, and spring *d'*, substantially as and for the purposes specified.

2. The draw-bar A, having enlarged head A', provided with vertical groove a^3 and ridge a^4, and coupling-bar D, pivoted to the draw-head and provided with hook *d* and yoke d^1, and spring *d'*, and means for moving the bar D laterally, substantially as and for the purposes specified.

3. The combination of a car-body, box B, provided with shoulders *b b'*, draw-bar having shank A^2, provided with pins a^5 and a^6, projecting through the box B, and rod A^2, the latter having head a^6, collars *a a'* on rod A^2, and spring E' between collars *a a'*, substantially as and for the purposes specified.



4. The combination of a car-body, box B, provided with shoulders *b b'*, draw-bar having vertically-enlarged head A', provided with groove a^3 and ridge a^4, having shank A^2 and rod A^2, the latter having head a^6, collars *a a'* on rod A^2, and spring E' between collars *a a'*, and coupling-link D, pivoted to the draw-bar and having hook *d*, substantially as and for the purposes specified.

5. The combination of a car, draw-bar, coupling-bar, lever E, attached to the coupling-bar, and lever F, for operating lever E, substantially as and for the purposes specified.

6. The combination of a car, draw-bar, coupling-bar, lever E, attached to the coupling-bar, and rod J and levers J', for operating lever E, substantially as and for the purposes specified.

7. The combination of a car, draw-bar, coupling-bar, lever E, having tooth *e*, arc G, having shoulder *g*, and lever F, for operating lever E, substantially as and for the purposes specified.

8. The combination of a car, draw-bar, coupling-bar, and having tooth *e*, arc G, having shoulder *g*, lever E, attached to the coupling-bar, and rod J and levers J', for operating lever E, substantially as and for the purposes specified.

9. The combination of a car, draw-bar, coupling-bar, lever E, attached to the coupling-bar, and lever F, for operating lever E, and bar H, having inclined plane h^3 and handles *h'*, substantially as and for the purposes specified.

10. The combination of a car, draw-bar, coupling-bar, lever E, attached to the coupling-bar, and lever F, for operating lever E, bar H, having inclined plane h^3 and handles *h'*, and lever I, having hook *i*, catching behind the inclined plane h^3, substantially as and for the purposes specified.

11. The combination of a car, draw-bar, coupling-bar, yoke d^3, and spring *d'*, lever E, attached to the coupling-bar, and lever F, for operating lever E, and bar H, having inclined plane h^3 and handles *h'*, substantially as and for the purposes specified.

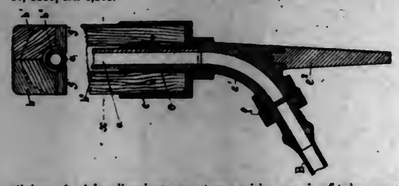
12. The combination of a car, draw-bar, coupling-bar D, yoke d^3, spring *d'*, lever E, attached to the coupling-bar, lever F, rod J, levers J', bar H, having inclined plane h^3 and handles *h'*, and lever I, having hook *i*, substantially as and for the purposes specified.

13. The combination of a car, draw-bar, coupling-bar, lever E, attached to the coupling-bar, and rod J and levers J', for operating lever E, and bar H, having inclined plane h^3 and handles *h'*, substantially as and for the purposes specified.

14. The combination of a car, draw-bar, coupling-bar, lever E, attached to the coupling-bar, and rod J and levers J', for operating lever E, bar H, having inclined plane h^3 and handles *h'*, and lever I and hook *i*, catching behind the inclined plane h^3, substantially as and for the purposes specified.

15. The combination of a car, draw-bar, coupling-bar, yoke d^3, and spring *d'*, lever E, attached to the coupling-bar, and rod J and levers J', for operating lever E, and bar H, having inclined plane h^3 and handles *h'*, substantially as and for the purposes specified.

413,103. LEVELING-INSTRUMENT. CARL T. STRAUB, Riga, Russia. Filed May 3, 1889. Serial No. 309,464. (No model.) Patented in Belgium Apr. 16, 1889, No. 85,853; in England Apr. 16, 1889, No. 6,505; in France Apr. 16, 1889, No. 197,535; in Switzerland Apr. 16, 1889, No. 871; in Spain Apr. 16, 1889, No. 9,457, and in Portugal Apr. 17, 1889, No. 1,373.



Claim.—1. A leveling-instrument comprising a pair of tubes open at the top and bottom, a flexible tube connecting the lower ends of the tubes, and supports having grooves in their sides in which said tubes are secured, rings embracing the opposite ends of the supports, said supports being provided with vertical scales besides the tubes, and pins or bases on the lower ends of the supports, substantially as described.

2. In a leveling-instrument, the combination of a tube normally open at each end, a rod or support to which the tube is longitudinally secured, a cap on the lower end of the support surrounding the lower end of the tube, an arm or pointed base extending down from said cap to enter the ground, and a conduit forming a continuation of the lower end of said tube and extending downwardly and laterally through said arm, and provided with a nozzle to which the flexible pipe can be connected, substantially as described.

413,104. VELOCIPEDE. DANIEL W. SAXTON, Brewster, Nebr. Filed Feb. 20, 1889. Serial No. 300,545. (No model.)

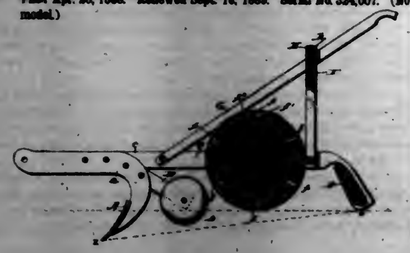


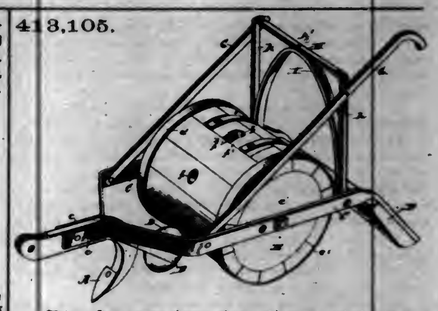
Claim.—1. The combination, in a velocipede, of the driving-wheel having the ratchets on opposite sides thereof, the levers, the vibrating arms V, the pawls connected to the said arms and adapted to engage the ratchets, and the rods connecting the said pawls to the levers, substantially as described.

2. The combination, in a velocipede, of the driving-wheel having the ratchets, the vibrating arms V, pivotally connected to the frame, the pawls pivotally connected to the vibrating arms, the levers, the rods connecting the same to the pawls, and the tappet-rods arranged in the paths of the pawls and adapted to move the latter into engagement with the ratchets, substantially as described.

3. The combination, in a velocipede, of the frame, the steering-axle pivotally connected thereto, the driving-wheel journaled to the frame and having the ratchets, the vibrating arms pivotally connected to the frame, the pawls connected to the vibrating arms and adapted to engage the ratchets, the levers, the rods connecting the same to the pawls, and the yoke pivoted to the frame connected to the steering-axle, and having the tiller, substantially as described.

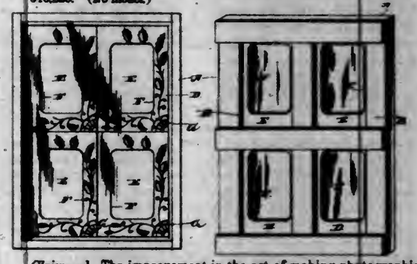
413,105. COTTON-SEED PLANTER. LOUIS R. SECRIST, Paris, Tex. Filed Apr. 20, 1888. Renewed Sept. 16, 1889. Serial No. 324,007. (No model.)





Claim.—In a cotton-planter, the combination, with the side bars C C of the main frame, the plow-standard *a*, connecting the front ends thereof, and the covering-board D, connecting the rear ends of the side bars, of the handles secured to the side bars near the front end of the machine, the rectangularly-bent brace-bar H, secured to the side bars and to the handles, and the centrally-bent brace-bar I, secured to the side bars and the brace-bar H, substantially as specified.

413,106. ART OF MAKING PHOTOGRAPHIC PICTURES. WILLIAM H. STAUFFER, Asbury Park, N. J. Filed May 10, 1889. Serial No. 310,225. (No model.)

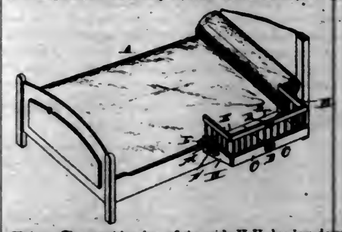


Claim.—1. The improvement in the art of making photographic copies, which consists in arranging the pictures to be copied in a frame, each surrounded and partially covered by a separate frame design, making a negative from the said frame, printing from the said negative, and finally mounting and separating the individual pictures, substantially as and for the purpose herein set forth.

2. A duplicate frame for photographic copying, having a series of suitable openings, each surrounded by a separate frame design, the edges of said frame designs meeting each other so as to be readily separable, substantially as herein described, and for the purpose set forth.

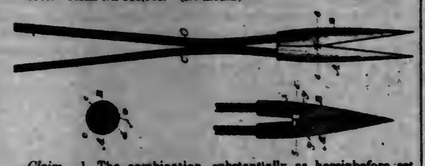
3. The combination, with the copying-frame having a number of separate compartments, each provided with a spring-cleat and backing, of the duplicate frame suitably secured to the front of said copying-frame and having a series of openings registering with the compartments in said copying-frame, each of said openings being surrounded by a separate frame design, and the edges of said frame designs meeting each other so as to be readily separable, substantially as and for the purpose herein set forth.

413,107. CRIB ATTACHMENT FOR BEDSTEADS. JULIAN M. STOY, Augusta, Ga. Filed May 20, 1889. Serial No. 311,486. (No model.)



Claim.—The combination of the ends H H, having downwardly-extending portions adapted to bear against the side rail of a bedstead, the folding bottom secured to the ends, the folding front secured to the said bottom, the hooks L, adapted to engage over the edge of a bedstead-rail and provided with longitudinal slots, and the securing-screws passed through said slots into the downwardly-extended portions of the ends, as set forth.

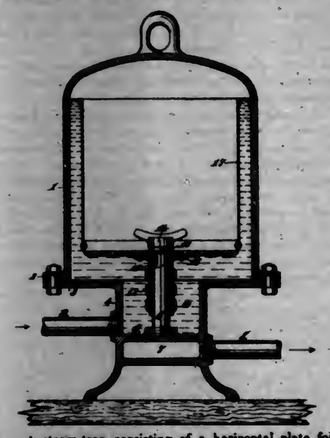
413,108. POST-HOLE DIGGER. ELBERT C. TAYLOR and DAVID H. LIGHTFOOT, Hunnewville, Ind., assignors, by direct and mesne assignments, of one-half to John S. Lightfoot, Alfred W. Mitchell, John R. Akins, C. F. Kersey, and D. C. Kersey, all of same place. Filed May 16, 1889. Serial No. 310,970. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the solid conical working ends A and B, formed in two parts hinged together near their upper ends, but below the top, and provided with upwardly-inclined faces *y* above the hinge-connection, and each provided with a handle projecting upwardly and then inclined outwardly.

2. The combination, substantially as hereinbefore set forth, of the working end or head formed of two sections A and B, the section B being formed with a recess *d'* and a lug *c* on its inner face, and section A formed with a pair of lugs *c*, between which the lug *c* extends, and a bolt for securing the lugs together and forming a hinge-connection between the sections A and B.

413,109. STEAM-TRAP. BURCHARD TROBIS, New Orleans, La. Filed May 13, 1889. Serial No. 310,581. (No model.)



Claim.—A steam-trap consisting of a horizontal plate formed with a central pendent well having a bottom wall, a closed bell-shaped casing surmounting the horizontal plate, a float located in the bell-shaped casing and open at its top for the water to overflow thereinto, a vertical pipe secured to the bottom wall of the well, rising in the latter above its horizontal top plate and having its upper end provided with a fixed valve, and lateral orifices beneath the latter, a sleeve extending downward into the well from the bottom wall of the float, sliding up and down on the valved pipe and having its upper end opening through the said bottom wall of the float and there provided with a valve-seat, an inlet-pipe communicating with the well, and an outlet-pipe connected with the vertical pipe, substantially as shown and described.

413,110. ARTIFICIAL FUEL. DANIEL C. FISHER, Troy, N. Y., assignor to himself and MAX STADTMÜLLER, same place. Filed July 16, 1889. Serial No. 317,730. (Specimens.)

Claim.—1. An artificial fuel composed of vegetable refuse, coal-tar, charcoal, coal-dust, furnace-slag, and oyster or clam shells, substantially as set forth.

2. An artificial fuel composed of vegetable refuse, thirty-five parts; coal-tar, five parts; charcoal, ten parts; coal-dust, ten parts; furnace-slag, thirty parts, and oyster or clam shells, ten parts.

413,111. SHUTTLE-ACTUATING MECHANISM FOR SEWING-MACHINES. JAMES TRIPP, New York, N. Y. Filed Feb. 14, 1889. Serial No. 300,319. (No model.)

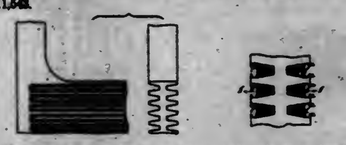


Claim.—1. The combination, in a sewing-machine, of a shuttle-shaft, three or more reciprocating plungers mounted upon said shaft, a shuttle provided with holes to receive the plungers, a cam for reciprocating the plungers to and from engagement with the shuttle, and a face-plate to hold the shuttle in its plane of revolution, the parts being arranged so that two of the plungers will at all times be in engagement with and carrying the shuttle, while the other plunger or plungers are being withdrawn to let the needle-loop pass and being again reinserted in the shuttle.

2. The combination, in a sewing-machine, of a shuttle-shaft, three or more reciprocating plungers mounted upon said shaft, a shuttle provided with holes to receive the plungers, a cam for reciprocating the plungers to and from engagement with the shuttle, a plate arranged to bear against the front face of the shuttle, and a yielding plate arranged to bear upon the rear face of the shuttle, for holding the shuttle in its plane of revolution, the plungers and cam being arranged so that two of the plungers will at all times be in engagement with and carrying the shuttle.

3. The combination, in a sewing-machine, of a shuttle-shaft, three or more reciprocating plungers mounted upon said shaft, a shuttle provided with holes to receive the plungers, a cam for reciprocating the plungers to and from engagement with the shuttle, and two plates arranged to bear against the peripheral edge of the shuttle upon its front and rear faces for holding the shuttle in its plane of revolution, the plungers and cam being arranged so that two of the plungers will at all times be in engagement with and carrying the shuttle.

413,112. ELECTRODE FOR SECONDARY BATTERIES. HENRY TUDOR, Rospert, Luxemburg, Germany. Filed May 31, 1889. Serial No. 311,564. (No model.) Patented in Belgium Oct. 30, 1888, No. 78,066; in France Nov. 2, 1888, No. 179,203, and in England Aug. 24, 1887, No. 11,542.



Claim.—1. A plate or element for secondary batteries having projections or ribs with sloping sides and enlarged or spread edges, substantially as set forth.

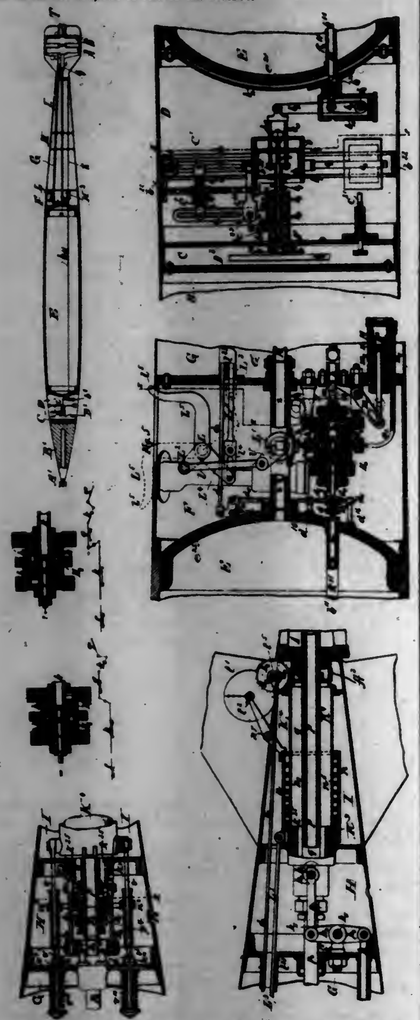
2. In a secondary battery, the combination of a support-plate having an oxidized surface and an additional coating or filling of an active material, as set forth.

3. In a secondary battery, an element consisting of a lead base or support-plate converted wholly or partially into a crystalline adherent bed of peroxide of lead and an additional coating or filling of peroxide of lead, substantially as and for the purpose set forth.

413,113. AUTO-MOBILE TORPEDO. ADOLF G. VON R. DE PRESSA, Vienna, Austria-Hungary. Filed Apr. 18, 1888. Serial No. 271,067. (No model.) Patented in Germany Feb. 24, 1888, No. 49,194; in France Feb. 24, 1888, No. 186,945; in Belgium Mar. 12, 1888, No. 81,008; in England Mar. 30, 1888, No. 4,397; in Italy Mar. 31, 1888, XXII, 23,126 and XLV, 431; in Portugal May 17, 1888, No. 1,344; in Norway May 28, 1888, No. 984; in Austria-Hungary June 30, 1888, No. 6,668 and No. 21,102, and in Spain June 30, 1888, No. 6,668.

Brief.—The torpedo has a diaphragm exposed to the hydrostatic pressure of the surrounding water. Suitable connections convey the movements of the diaphragm to a valve located in a cylinder, which valve controls the admission of the motive fluid to the cylinder. The piston in the cylinder is connected to a horizontal immersing-rudder, whereby the movements of the diaphragm cause the cylinder and its piston to operate the rudder. The diaphragm has adjustable springs by means of which it can be set to operate at any predetermined hydrostatic pressure and a pendulum which restores the diaphragm and the rudder to their normal position when disturbed. A spring-actuated mechanism is arranged to be connected at will to the piston-rod which is connected to the rudder, and is held in check by a detent. A timing mechanism connected to the propeller operates the detent

at any predetermined time, releasing the mechanism, thereby causing it to pull on the piston-rod and so operate the immersing-rudder as to cause the torpedo to rise to the surface.



Claim.—1. In a torpedo, the combination, with an immersing-rudder and a diaphragm exposed to the hydrostatic pressure of the ambient water, of a power-operated piston between said rudder and diaphragm, transmitting devices between the diaphragm and piston and controlling the power for said piston, and operating devices between the piston and the immersing-rudder, substantially as described.

2. In a torpedo, the combination, with an immersing-rudder and a diaphragm exposed to the hydrostatic pressure of the ambient water, of a cylinder connected to the supply of motive fluid, a valve for said cylinder controlling the admission and exhaust of said motive fluid and connected to be operated by the motion of said diaphragm, and a piston in said cylinder and connected to operate said rudder, substantially as described.

3. In a torpedo, the combination, with an immersing-rudder and a diaphragm exposed to the hydrostatic pressure of the ambient water, of a pneumatic cylinder, a compressed-air supply connected to said cylinder, a controlling-valve for the same having its rod connected to be actuated by said diaphragm, and a piston within said cylinder and having its rod connected to operate said rudder, substantially as described.

4. In a torpedo, the combination, with an immersing-rudder, a diaphragm exposed to the hydrostatic pressure of the ambient water, and a propeller, of an intermediate transmitting device having a power-supply, means connected to said diaphragm for controlling said power-supply, a locking device engaging said controlling means, a trip mechanism for said locking device and having its gearing engaged with and operated by said propeller, and operating means connected to said transmitting device and to said rudder, substantially as described.

5. In a torpedo, the combination, with an immersing-rudder, a diaphragm exposed to the hydrostatic pressure of the ambient water, and a propeller, of a cylinder connected with the supply of motive fluid, a valve for said cylinder controlling the admission and exhaust of said motive fluid and connected to be operated by the motion of said diaphragm, a locking device engaging the rod of said valve, a trip mechanism for said locking device and having its gearing engaged with and operated by said propeller, and a piston in said cylinder connected to operate said rudder, substantially as described.

6. In a torpedo, the combination, with an immersing-rudder, a diaphragm exposed to the hydrostatic pressure of the ambient water, and a propeller, of a pneumatic cylinder, a compressed-air supply for said cylinder, a controlling-valve for the same, having its rod connected to be actuated by said diaphragm, a locking device engaging the rod of said valve, a trip mechanism for said locking device and having its gearing engaged with and operated by said propeller, and a piston within said cylinder and having its rod connected to operate said rudder, substantially as described.

7. In a torpedo, the combination, with an immersing-rudder and automatic operating mechanism for the same, of a locking device which engages said operating mechanism, and a tripping mechanism for said locking device and operated and controlled by the propelling mechanism of the torpedo, substantially as described.

8. In a torpedo, the combination, with an immersing-rudder and an automatic operating mechanism for the same, which consists of a diaphragm exposed to the hydrostatic pressure of the ambient water, and devices for communicating the movement of said diaphragm to said rudder, of a locking device which engages said devices, and a trip mechanism for said locking device and operated from a time mechanism, substantially as described.

9. In a torpedo, the combination, with an immersing-rudder, a diaphragm exposed to the hydrostatic pressure of the ambient water, and a pneumatic transmitting device having its piston-rod connected to operate said rudder and having its valve-rod connected to said diaphragm and formed with a groove or recess, of a rod sliding in suitable guides and formed with a ring which engages said groove or recess from below, a bell-crank having one arm pivoted to said rod, a rod pivoted to the other arm of said bell-crank, and a disk connected to be revolved by the propelling mechanism of the torpedo and having a pin upon its face which engages the hooked end of said rod, substantially as described.

10. In a torpedo, the combination, with an immersing-rudder, a diaphragm exposed to the hydrostatic pressure of the ambient water, a pneumatic transmitting device having its piston-rod connected to operate said rudder and having its valve-rod connected to said diaphragm and formed with a groove or recess, and a screw-propeller formed with a worm upon its hub, of a rod sliding in guides and formed with a ring which engages said groove or recess with its lower end, a bell-crank having one arm pivoted to said rod, a connecting-rod having one end pivoted to the other arm of said bell-crank and formed with a hook at its other end, and a cogged disk engaging the worm upon the propeller and provided with a pin upon its face for engaging said hook, substantially as described.

11. In a torpedo, the combination, with an immersing-rudder and a diaphragm exposed to the pressure of the ambient water, of a pneumatic cylinder having an inlet-pipe and a central annular port, a piston in said cylinder having an axial bore, and channels extending from the middle of said bore to the end of the piston, a valve connected to said diaphragm and reciprocating within the central bore of said piston, and a rod secured to said piston and connected to said rudder, substantially as described.

12. In a torpedo, the combination, with an immersing-rudder and a diaphragm exposed to the pressure of the ambient water, of a pneumatic cylinder having an inlet-pipe at its middle and an annular port connected with said pipe, a piston having tubular extensions sliding through the head of said cylinder and formed with an axial bore and with channels opening at the middle of said bore and at the ends of the piston, a valve within said bore and connected to be operated by said diaphragm, and a rod secured to one of the extensions of said piston and connected to operate said rudder, substantially as described.

13. In a torpedo, the combination, with an immersing-rudder, a diaphragm exposed to the hydrostatic pressure of the ambient water, and a pneumatic transmitting apparatus for operating said rudder, of a casing secured to the middle of said diaphragm, a lever having one arm pivoted to said casing, and a valve-rod for said transmitting apparatus having its end pivoted to the other arm of said lever, substantially as described.

14. In a torpedo, the combination, with an immersing-rudder, a diaphragm exposed to the hydrostatic pressure of the ambient water, and a pneumatic transmitting apparatus for operating said rudder, of a casing secured to the middle of said diaphragm, a pendulum connected to said casing, a lever having one arm pivotally connected to the end of said casing, and a valve-rod for said transmitting apparatus having its end pivoted to the other arm of said lever, substantially as described.

15. In a torpedo, the combination, with an immersing-rudder, a diaphragm exposed to the hydrostatic pressure of the ambient water, and a pneumatic transmitting apparatus for operating said rudder, of a casing secured to the middle of said diaphragm and formed with a tube through its axis, a hollow nut sliding in guides and having said tube projecting into it, guides for said nut, a spring coiled around said tube and bearing against said nut and the other closed end of said casing, a rod secured to said closed end of the casing and passed through said nut and adjustably secured to the guides for the same, rods secured to the end of said axial tube, a lever having one arm pivoted to the united ends of said rod, and a valve-rod for said transmitting apparatus and pivoted to the other arm of said lever, substantially as described.

16. In a torpedo, the combination, with an immersing-rudder, a diaphragm exposed to the hydrostatic pressure of the ambient water, a pneumatic transmitting apparatus for operating said rudder, and a valve-rod connected to control the operation of said apparatus, of a casing secured to the center of said diaphragm and provided with lugs upon its upper side, a lever having one arm adjustably connected to said casing and the other arm adjustably connected to said valve-rod, a lever having a slotted upper arm and having its lower short arm projecting between the lugs of said casing, a pendulum having a longitudinal slot, and a rod having its ends adjustably secured in the slots of said lever and pendulum, substantially as described.

17. In a torpedo, the combination, with an immersing-rudder, a diaphragm exposed to the hydrostatic pressure of the ambient water, a pneumatic transmitting apparatus for operating said rudder, and a valve-rod connected to control the operation of said apparatus, of a casing secured to the center of said diaphragm and provided with lugs upon its upper side, a lever having one arm adjustably connected to said casing and the other arm adjustably connected to said valve-rod, two set-screws in the lugs of said casing, a lever having a long slotted upper arm and a short lower arm projecting between the ends of said set-screws, a pendulum having a longitudinal slot, a set-screw projecting toward said pendulum to limit its play, screw-threaded rods having their ends sliding in the slots of said lever and pendulum, a screw-threaded sleeve connecting said rods, a revoluble screw, and a nut upon said screw and formed with a ring fitting around said sleeve, substantially as described.

18. In a torpedo, the combination, with a screw-propeller and the immersing-rudder, of endwise-movable propeller-shaft connected with and controlling the operation of the rudder by such movement, substantially as described.

19. In a torpedo, the combination, with a reaction screw-propeller and the immersing-rudder, of a tubular endwise-movable propeller-shaft connected with and controlling the operation of the rudder by its longitudinal movement, substantially as described.

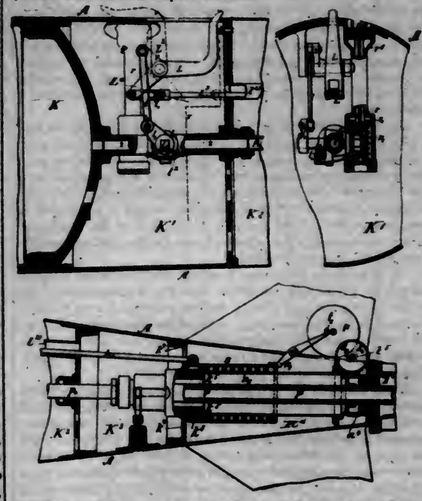
20. In a torpedo, the combination, with a reaction screw-propeller and the immersing-rudder, of a pipe for supplying compressed air to the propeller and a tubular propeller-shaft mounted and movable endwise on said pipe, said shaft being connected with and controlling the operation of the rudder by its longitudinal movement, substantially as described.

21. In a torpedo, the combination, with a reaction screw-propeller, the immersing-rudder, a diaphragm exposed to the hydrostatic pressure of the ambient water, and a pipe for supplying compressed air to the propeller, of a tubular propeller-shaft mounted and movable endwise on said pipe, a connection between the shaft and rudder, and transmitting mechanism connecting the diaphragm with the propeller-shaft, substantially as and for the purposes specified.

22. The combination, with the diaphragm D', of the compressed-air main, the cut-off valve connected to and operated by said diaphragm, the piston-cylinder H^3, connected with said main, the piston H', having annular passage H^4, and the piston-rod *k*, provided with a radial pin m^4, of the piston-cylinder M, a pipe connecting one end of said cylinder with the cylinder H^3 and the piston-passage H^4, the spring-actuated piston *m*, and lever m^3, connected with said piston *m* and engaging the pin m^4 on piston-rod *k*, substantially as and for the purposes specified.

413,114. **SELF-PROPELLING TORPEDO.** ADOLF G. VON R. DE PRERAUA, Vienna, Austria-Hungary. Filed Nov. 13, 1888. Serial No. 290,903. (No model.) Patented in Germany June 19, 1887, No. 42,019; in Austria-Hungary Nov. 14, 1887, No. 34,063 and No. 49,331; in France Feb. 24, 1888, No. 183,945; in Belgium Mar. 12, 1888, No. 81,003; in England Mar. 20, 1888, No. 4,397; in Italy Mar. 31, 1888, XXII, 28,135, XLV, 431; in Portugal May 17, 1888, No. 1,944; in Norway May 30, 1888, No. 984, and in Spain June 30, 1888, No. 8,086.

Brief.—The torpedo is propelled by compressed air acting on reactionary screw-propellers. The supply of air is cut off from the propellers by means of a spring-operated mechanism which is tripped by a peg on a timing device which is attached or connected to the propellers, and can be set by the operator to come into action at any specified time after the torpedo is started.





Claim.—1. In a torpedo of the class described, the combination, with the reservoir for the motive power, the propelling mechanism, and the pipe connecting said mechanism with the reservoir, of a stop-cock interposed in said pipe, and a lever connected with said stop-cock, the end of which lever projects through the shell of the torpedo, substantially as and for the purposes specified.

2. In a torpedo of the class described, the combination, with the reservoir for the motive power, the propeller, and the supply-pipe for supplying such motive power to the propeller, of a cut-off valve interposed in said supply-pipe, an automatically-movable device connected therewith to close said cut-off valve, and a trip mechanism connected to said device and operated by the propeller to release said device, substantially as described.

3. In a torpedo of the class described, the combination, with the reservoir for the motive power, the propeller, and the supply-pipe for supplying such motive power to the propeller, of a cut-off valve in said supply-pipe, an automatically-movable device connected therewith to close said cut-off valve, a detent for engaging said device and keeping it set, and a trip for engaging said detent, operated by the revolutions of the propeller, substantially as described.

4. In a torpedo of the class described, the combination, with the reservoir for the motive power, the propeller, and the supply-pipe for supplying such motive power to the propeller, of a cut-off valve in said supply-pipe, a spring-actuated shifting device connected to close said valve, a detent for holding said device against the stress of its spring, and a disk revolved by the propeller and having a pin engaging said detent, substantially as described.

5. In a torpedo of the class described, the combination, with the reservoir for the motive power, the propeller, and the supply-pipe for supplying such motive power to the propeller, of a cut-off valve, a spring-actuated shifting device connected to close said valve, a detent for holding said device against the stress of its spring, and a timed tripping mechanism connected to the detent, operated by the propeller to trip the detent, substantially as described.

6. The combination, in a torpedo, with the supply-pipe *z*, the stop-cock L', its plug l^3, and radial arm *l'* on said plug, of the angular valve-lever L, projecting through the shell of the torpedo, the arm L^2 thereof, and the link *l*, connecting said arm with the arm *l'*, substantially as and for the purposes specified.

7. The combination, in a torpedo, with the supply-pipe for the motive power, of a stop-cock having a plug formed with a square end, means for turning said plug one-fourth of a revolution, and an elliptical spring bearing with its side against one face of the square end of said plug to hold said plug in an open or closed position, substantially as described.

8. The combination, in a torpedo, with the propeller, the supply-pipe for the motive power, a stop-cock and its plug in said pipe, of shifting mechanism consisting of a lever connected with the stop-cock, a spring-actuated shifting rod connected with the lever, a locking device to lock the rod against movement, and intermediate mechanism operated by the propeller and operating the locking device to release the shifting-rod, substantially as and for the purposes specified.

9. The combination, in a torpedo, with the propeller, the supply-pipe for the motive power, and a stop-cock and its plug in said pipe, of shifting mechanism consisting of a lever connected with the stop-cock, a shifting-rod connected with the lever, a spring-actuated cylinder connected with the shifting-rod, a locking device for locking the cylinder against motion, and a disk revolved from the propeller and provided with a pin for tripping said locking device, substantially as described.

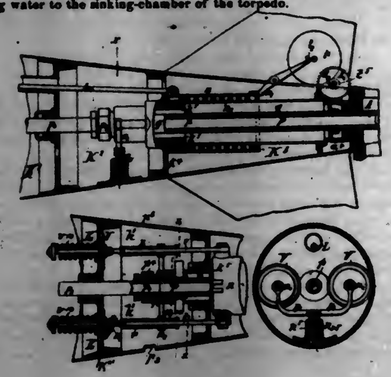
10. The combination, in a torpedo, with the propeller, the supply-pipe for the motive power, a stop-cock and its plug in said pipe, of shifting mechanism consisting of a lever connected with the stop-cock, a shifting-rod connected with the lever, a spring-actuated cylinder connected with the shifting-rod, a detent for locking the cylinder against motion, a revolable disk provided with a pin projecting from the face thereof and traveling in the path of the detent, and gearing connected with the propeller to revolve the disk, substantially as and for the purposes specified.

11. In a torpedo of the class described, the combination, with the reservoir for the compressed motive fluid, the distributing-pipe, and the distributing-valve, of feeding devices comprising a valve-casing interposed in the distributing-pipe between the distributing-valve and fluid-reservoir, said valve-casing having its open outer end secured to the shell of the torpedo, and a check-valve arranged in said casing, substantially as and for the purposes specified.

12. In a torpedo of the class described, the combination, with the reservoir for the compressed motive fluid, the distributing-pipe, and the distributing-valve, of feeding devices comprising a valve-casing interposed in the distributing-pipe between the distributing-valve and fluid-reservoir, said valve-casing having its outer end enlarged and interiorly screw-threaded, said enlarged outer end being secured to the shell of the torpedo, a screw-plug r^4, for said enlarged outer end of the casing, and a spring-actuated check-valve r^2 arranged therein, substantially as and for the purposes specified.

418,115. AUTOMATIC SINKING-VALVE FOR SUBMARINE TORPEDOES. Adolf G. von B. de Pirquia, Vienna, Austria-Hungary. Filed Nov. 15, 1888. Serial No. 290,969. (No model.) Patented in Germany Feb. 24, 1888, No. 49,129; in France Feb. 24, 1888, No. 186,945; in Belgium Mar. 12, 1888, No. 81,053; in England Mar. 20, 1888, No. 4,397; in Italy Mar. 31, 1888, XXII, 23,135, XLV, 431; in Portugal May 17, 1888, No. 1,244; in Norway May 26, 1888, No. 994; in Austria-Hungary June 26, 1888, No. 3,068 and No. 21,102, and in Spain June 30, 1888, No. 3,095.

Brief.—A spring-actuated rod is attached to the sinking-valves, and this rod is held against the action of its spring by a detent. This detent is arranged so as to be tripped by a timing device in connection with and operated by the propeller. Upon the tripping of the detent the rod is pulled by its spring, thereby opening the valves and admitting water to the sinking-chamber of the torpedo.



Claim.—1. In a torpedo, the combination, with the motor and an immersing or sinking valve located in one of the heads or partitions of the sinking-chamber and communicating with the outside water, of an automatically-movable valve-operating device connected to said sinking-valve, a locking device or detent engaging said valve-operating device and holding it in position against the action of its operating power, and a trip mechanism, substantially such as described, operated from the motor and engaging said locking device or detent to trip the same, whereby to permit the automatically-movable valve-operating device to operate, substantially as described.

2. In a torpedo, the combination, with the motor for the same and a sinking-valve, of a timed valve-shifting mechanism comprising a spring-actuated valve-rod, a locking-lever to lock the rod against the stress of its spring and hold the valve to its seat, and a tripping mechanism operated by the motor to trip the locking-lever and release the spring, substantially as and for the purposes specified.

3. In a torpedo, the combination, with the motor for the same and a sinking or immersing valve located in one of the heads or partitions of the sinking-chamber and communicating with the outside water, of a rod provided with a hook at one end hooked to said valve, and an automatically-movable valve-operating device controlled from the motor for pulling said rod to operate said valve, substantially as described.

4. In a torpedo, the combination, with the motor for the same and a sinking or immersing valve, of a rod provided with a hook at one end hooked to said valve, an automatically-movable valve-operating device, and a screw inserted through the shell of the torpedo for raising the hooked end of said rod out of connection with said valve, substantially as described.

5. In a torpedo, the combination, with the sinking or immersed valves provided with eyes, of rods having hooked ends engaging said eyes, a fork which supports the hooked ends of said rods, and a screw inserted through a socket in the shell of the torpedo, the upper end of said screw being pivoted in said fork, substantially as described.

6. In a torpedo, the combination, with the motor for the same, a stop mechanism for said motor and controlled by the same, and a sinking-valve, of rods connected to said valve and to said stop mechanism, substantially such as described, and adapted to be pulled by said mechanism, substantially as described.

7. In a torpedo, the combination, with the motor for the same and a sinking-valve, of a spring-actuated device connected to open said valve, a detent for keeping said device set, and a trip mechanism operated by the motor to release said detent, substantially as and for the purposes described.

8. In a torpedo, the combination, with the motor for the same and a sinking-valve, of a spring-actuated sleeve, a rod which connects said valve and sleeve, a detent which holds said sleeve against the action of its spring, and a disk operated from said motor and provided with a pin for tripping said detent, substantially as described.

9. In a torpedo, the combination, with a motor for the same, a supply-pipe for said motor, and a cut-off valve for said supply-pipe, of a sinking-valve, a spring-actuated sleeve, a detent which holds said sleeve against the action of its spring, a trip mechanism operated by said motor for releasing said detent, a rod connecting said sleeve and cut-off valve, and a rod connecting said sleeve and sinking-valve, substantially as described.

10. In a torpedo, the combination, with the motor for the same, a supply-pipe for said motor, and a cut-off valve for said supply-pipe, of a sinking-valve, a spring-actuated device connected to close said cut-off valve, a detent for keeping said device set, a trip mechanism operated by said motor for releasing said detent, and a partly-extensible rod connected to said sinking-valve and to said spring-actuated device, substantially as described.

11. In a torpedo, the combination, with the motor for the same, a supply-pipe for said motor, and a cut-off valve for said supply-pipe, of a sinking-valve, a spring-actuated sleeve, a detent for holding said sleeve against the action of its spring, a trip mechanism operated by said motor for releasing said detent, a rod connected to said sleeve and to said cut-off valve, and a partly-extensible rod connected to said sleeve and to said sinking-valve, substantially as described.

12. In a torpedo, the combination, with the motor for the same, a supply-pipe for said motor, and a cut-off valve for said supply-pipe, of a sinking-valve, a spring-actuated sleeve, means operated by the motor for holding and releasing said sleeve, a rod connecting said sleeve and cut-off valve, a rod connected to said sinking-valve, and a rod connected to said sleeve and telescoping in the rod connected with the sinking-valve, substantially as described.

418,116. GUARD-FINGER. Randall W. Walker, Oxford, N. Y. Filed July 31, 1889. Serial No. 319,313. (No model.)

Claim.—1. The combination, with the guard-finger having vertical aperture, of the ledger-plate, the locking-plate B, and the wedge-shaped key C, substantially as described.

2. The combination, with the guard-finger having vertical aperture and recess *l*, of the locking-plate having horizontal lug B^3, fitting said recess, the ledger-plate, and the wedge-shaped key, as set forth.



3. The combination, with the guard-finger having vertical aperture, of the ledger-plate recessed and formed with inclined portion *c'*, the locking-plate having undercut lug B^3, and the wedge-shaped key, as set forth.

4. The combination, with the guard-finger having vertical aperture, a depression *g*, and ledges *i*, of the recessed ledger-plate having inclined portion *c'*, the wedge-shaped locking-plate having extended head and undercut lug, and the wedge-shaped key, substantially as described.

5. The combination, with the guard-finger having vertical aperture, depression *g*, shoulders *i*, and recess *l*, of the recessed ledger-plate having inclined portion *c'*, the locking-plate having wedge-shaped shank, horizontal lug B^3, extended head and undercut lug B^3, and the wedge-shaped key having a T-head, substantially as shown and described.

6. The combination, with the finger-guard having legs *b b c*, vertical aperture and spaces *d* between the legs, and the lug *c*, cut away upon its front face, of the recessed ledger-plate, the wedge-shaped locking-plate having lug B^3 upon its head, and the wedge-shaped key having T-head with reduced portion C^2, all arranged and operating substantially as and for the purpose specified.

418,117. BACK-BAND ATTACHMENT FOR HARNESS. Charles R. Ward, Rowey, Wis. Filed May 31, 1889. Serial No. 312,743. (No model.)



Claim.—1. The combination, with the back-band 1, terminating in opposite tag-loops 2 and having the central loop 4, of the ring 5, mounted loosely in the loop, and the back-strap 6, terminating in the loop 7, and the checkrein-hook 9, having the eye 11, engaging the loop 7, and the forwardly-projecting hook 10, substantially as specified.

2. In a harness, the back-band 1, having the ring 5, mounted loosely on the band, in combination with the back-strap attached to the ring 5 and carrying the checkrein-hook 9, as set forth.

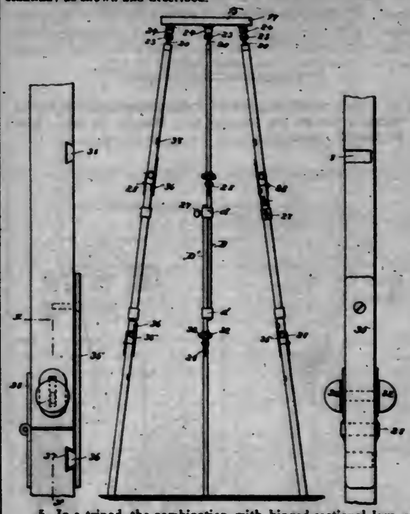
418,118. TRIPOD. Jonathan Warner, Bag Harbor, N. Y. Filed May 16, 1889. Serial No. 311,092. (No model.)

Claim.—1. In a tripod, the combination, with a head provided with a series of recesses and a clamp-plate having toothed legs covering each of the said recesses, of a leg provided with a threaded extension, a jam-nut traveling upon said extension, and a toothed clamp sliding upon the extension and manipulated by a jam-nut, substantially as shown and described.

2. In a tripod, the combination, with a head provided with a series of recesses, and a clamp-plate partially covering each recess provided with spaced toothed lugs, of legs having an upper threaded extension provided with a head, a jam-nut adapted to travel on the screw-extension, and a toothed clamp held to slide upon the said screw-extension above the jam-nut, all combined for operation substantially as shown and described.

3. The combination, with the head of a tripod and toothed legs or projections secured thereto, of a leg having an upper threaded extension, a jam-nut held to travel upon the said threaded extension, and a toothed clamp provided with a concave upper face held to slide upon the screw-extension above the jam-nut, substantially as shown and described.

4. The combination, with a tripod-head having a series of recesses produced in its under face, and a clamp-plate secured over each recess provided with a central slot and a toothed lug at each side of the said slot, of a leg having a screw-extension at the upper end provided with a head, a jam-nut held to travel upon the screw-extension, and a clamp held to slide above the jam-nut provided with a concave upper face and a tooth in said face, all combined for operation substantially as shown and described.



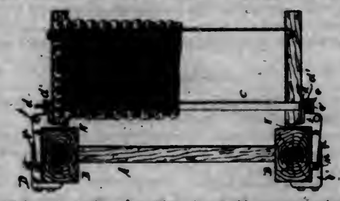
5. In a tripod, the combination, with hinged sectional legs, one leg-section being provided with a tongue and the opposed section with a groove to receive said tongue, of a locking-plate pivoted to one section adapted to cross the joint of the sections and unite with the opposed leg-section, substantially as shown and described.

6. In a tripod, the combination, with hinged leg-sections, one leg-section being provided with a tongue and the opposed section with a groove to receive said tongue, of a locking-plate pivoted to one of the leg-sections adapted to cross the joint of the sections, and a stud formed upon the free end of the said plate capable of engaging a slot in the leg-sections, substantially as and for the purpose specified.

7. The combination, with the hinged sectional leg of a tripod, one section being provided with a tongue having a recess therein and the opposed leg-section with a recess to receive the said tongue, of a spring-actuated thumb-bolt held to slide in the recessed section capable of entering the recess in the tongue when the sections are extended, substantially as shown and described.

8. The combination, with the hinged sectional leg of a tripod, one section being provided with a tongue having a recess therein and the opposed leg-section with a recess to receive the said tongue, of a spring-actuated thumb-bolt having longitudinal movement in the recessed leg-section capable of contact with the slot in the said tongue, and a locking-plate pivoted upon one section having a stud upon its free end capable of entering a depression in the face of one leg-section, substantially as shown and described.

418,119. PILLOW-SHAM HOLDER. Thomas R. Wetaft, New York, N. Y. Filed June 5, 1889. Serial No. 313,191. (No model.)



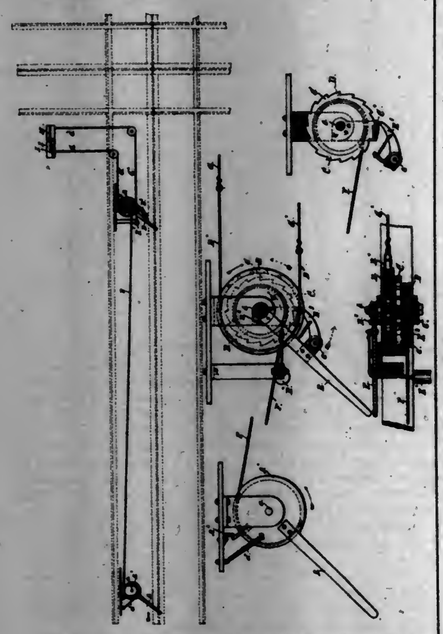
Claim.—1. A clamp for pillow-sham holders, composed of a front section provided with a bracket for supporting a pillow-sham holder, a rear section adapted to be secured to a bed-post, and a connecting screw-bolt engaging a threaded socket of the front section, substantially as set forth.

2. A clamp for pillow-sham holders, composed of a front section

provided with a bracket for a pillow-sham holder, a rear clamp adapted to be attached to a bed-post and provided with a beveled flange sliding on a beveled face of the front section, and a connecting screw-bolt engaging an interiorly-threaded socket of the front section, substantially as set forth.

3. A supporting-clamp adapted to be attached to a bed-post and composed of a front section, a rear section, a connecting screw-bolt engaging a threaded socket of the front section, said front section being provided with a socket-hole, and a bent arm fitting therein and adapted to support a mosquito-frame, substantially as set forth.

418,120. SIGNAL DEVICE FOR CABLE-RAILWAY CROSSINGS. George H. Wright, San Francisco, Cal. Filed Feb. 20, 1889. Serial No. 300,562. (No model.)



Claim.—1. The combination of the lever E, having the pawl E^3, with the ratchet C, and the sprocket-wheels B and H, and connection between the said sprocket-wheels to effect the lowering of the signal, as described.

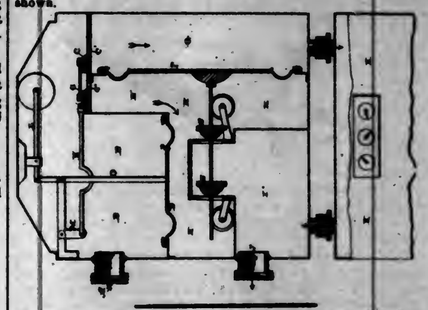
2. The combination of the lever E, the pawl E^3, with the ratchet C, and the sheaves D and A^x, having the lever A and connections between the sheaves, substantially as and for the purpose set forth.

3. The combination of the lever E, the pawls E^3 and L, the ratchet-wheels C and K, the weight E^x, and stop E^3, substantially as and for the purpose set forth.

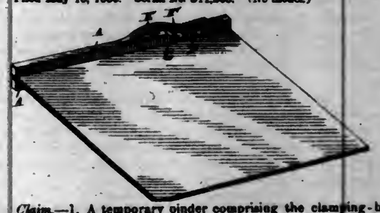
4. The combination of an apron C^x with the ratchet-wheels C and K, and the pawls E^3 and L on the lever E with the sheaves D and A^x, sprocket-wheels B and H, and connections between the sprocket-wheels and between the sheaves, substantially as and for the purpose set forth.

418,121. PROPORTIONAL METER. Fred E. Young, Pittsburg, Pa. Filed May 20, 1889. Serial No. 312,497. (No model.)

Claim.—The combination, in a proportional meter, of an inlet-chamber, a balance-chamber, a meter-feeding chamber, an outlet-chamber, a counterweighted diaphragm placed between the inlet-chamber and the balance-chamber, a proportional valve placed with the large opening leading to the balance-chamber, and the small opening leading to the meter-feeding chamber and operated by the counterweighted diaphragm, a balance-valve placed between the balance-chamber and the outlet-chamber, a diaphragm placed between the meter-feeding chamber and the balance-chamber and operating the balance-valve, and a tally-meter placed or connected between the meter-feeding chamber and the outlet-chamber, substantially as shown.



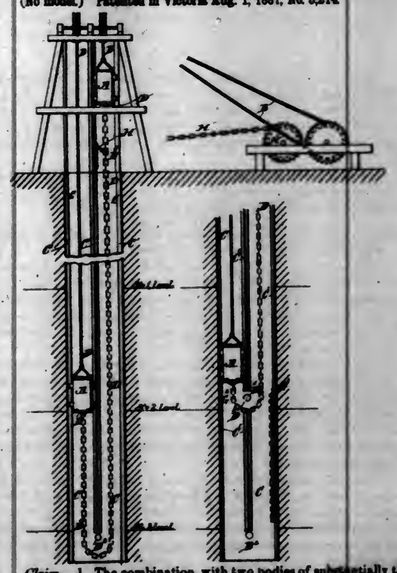
418,122. TEMPORARY BINDER. Joshua S. Akers, Millard, Dak. Filed May 16, 1889. Serial No. 311,265. (No model.)



Claim.—1. A temporary binder comprising the clamping-bars, the links having their ends journaled in the said bars, the bail pivoted to the lower clamping-bar and extending over the upper bar, and means for fastening the bail, as set forth.

2. The improved temporary binder comprising the clamping-bars A A, the links having their ends journaled in said bars, the bail pivoted to the lower clamping-bar, means for fastening the bail to the upper clamping-bar, and the stop on the lower clamping-bar adjacent to the pivot of the bail, as set forth

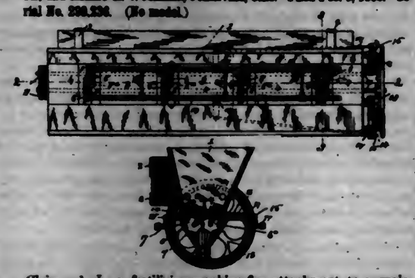
418,128. COUNTER-BALANCE FOR MINING-CAGES. Richard H. Arthur, Inglewood, Victoria. Filed Jan. 5, 1889. Serial No. 269,905. (No model.) Patented in Victoria Aug. 1, 1887, No. 5,214.



Claim.—1. The combination, with two bodies of substantially the same weight, haulage-ropes from which said bodies are suspended and adapted to move vertically in reverse directions, and a flexible counterpoise of substantially the same weight as the haulage-ropes, having its terminals connected with said bodies and depending therefrom, of the auxiliary chain H and auxiliary winding-drum H', arranged relatively to and adapted to co-operate with the counterpoise, substantially as and for the purposes specified.

2. The combination, with two bodies of substantially the same weight, haulage-ropes from which said bodies are suspended and adapted to move vertically in reverse directions, and a flexible counterpoise of substantially the same weight as the haulage-ropes, and having its terminals connected with said bodies and depending therefrom, said counterpoise being made up of sections detachably connected together, of the auxiliary chain H and the auxiliary winding-drum H', arranged relatively to and adapted to co-operate with the counterpoise, substantially as and for the purposes specified.

418,124. FERTILIZING-MACHINE. Isaac S. Brandebura, Pearia, Ill., and Harry H. Workman, Johnsville, Ohio. Filed Feb. 9, 1889. Serial No. 299,236. (No model.)



Claim.—1. In a fertilizing-machine for attachment to a grain-drill, &c., the combination of a suitable hopper or receptacle for containing the fertilizing material, having stepped openings through the bottom connected with funnels, as shown, and pairs of oppositely-rotating cutters located in the openings between the hopper and the funnels for cutting the material and feeding it into the funnels, as set forth.

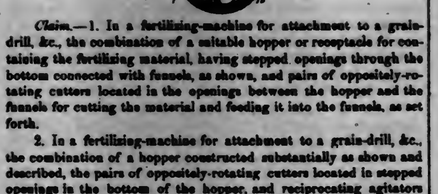
2. In a fertilizing-machine for attachment to a grain-drill, &c., the combination of a hopper constructed substantially as shown and described, the pairs of oppositely-rotating cutters located in stepped openings in the bottom of the hopper, and reciprocating agitators within the hopper for feeding the material to the cutters.

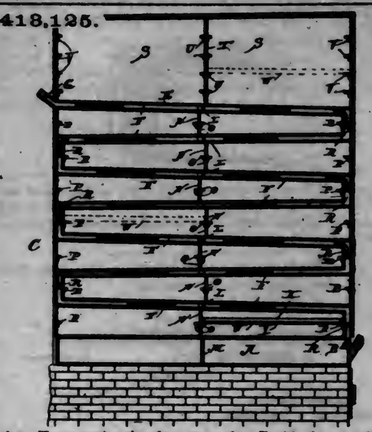
3. The combination of the hopper or receptacle provided with stepped openings in the bottom thereof, the funnels located beneath the openings, the pairs of oppositely-rotating cutters constructed substantially as shown and described, the reciprocating agitators, and the means for operating the agitators and the cutters, substantially as and for the purposes set forth.

4. In a fertilizing-machine, the combination of an oblong hopper provided with clamps or hooks for attachment to the grain-drill, stepped openings in the bottom of said hopper, funnels located beneath said openings, and mechanism for feeding the fertilizing material in the direction of the openings, and pairs of oppositely-rotating cutters for forcing the same into the funnels.

418,125. FRUIT-DRIER. James H. Baer, Oakland, Oreg. Filed Nov. 15, 1888. Serial No. 291,303. (No model.)

Claim.—The improved fruit-drier herein described and shown, consisting of the casing C, having an opening D in one side at its lower end, the boiler arranged within the casing out of contact with the sides of the same and provided with a feed-pipe B; the steam-conducting pipe E, communicating with and rising from the boiler and equal in width thereto, the said pipe having the inclined sections F and the straight sections R connecting the same, and having its upper end extended through the casing and provided with escape-pipes G, the plates H, connecting the alternate sections F with the opposite sides of the casing, the doors K in the front side of the casing, the braces L, arranged in the centers of the sections F, the brace M in the center of the boiler, the partition-plates N, having the brackets O, the brackets P, and the plate T, having the brackets U, all arranged substantially as specified.





418,126. VEHICLE-SPRING. Andrew J. Barney, Prairieville, Mich. Filed Jan. 3, 1889. Serial No. 295,970. (No model.)



Claim.—1. A vehicle-spring consisting of two inverted semi-elliptical end sections B, a semi-elliptical central section D, the ends of which are connected to the concaved faces of the end sections at or near the center, and links G, pivoted at their lower ends to the inner ends of the end sections and at their upper ends to the concaved face of the central section at or near its center, substantially as described.

2. The combination of the downcurved semi-elliptic spring D, of a given strength, pivoted links G, secured adjacent to the center of said spring, upcurved semi-elliptic springs B, of about half the strength of spring D, connected at their inner ends to the lower ends of said links, and provided at center with clips to secure the ends of the downcurved spring D, substantially as described.

418,127. COMPOSITION FOR BASIC BRICK. Rudolf Bertrand, Kladno, Bohemia, Austria-Hungary, assignor to the Pottstown Iron Company, Pottstown, Pa. Filed July 19, 1888. Serial No. 280,698. (No specimens.)

Claim.—1. A refractory lining consisting of a mixture of calcareous phosphatic slag and lime.

2. The herein-described lining-brick for basic converters or furnaces, said brick consisting of a mixture of limestone or dolomite and calcareous phosphatic slag, burned, substantially as described.

3. The herein-described lining brick for basic converters or furnaces, said brick consisting of a mixture of limestone or dolomite with calcareous phosphatic slag and iron ore, burned, substantially as set forth.

418,128. LOCK FOR DRAWERS. Frank Brabbs, Newark, N. J. Filed Oct. 15, 1888. Serial No. 288,486. (No model.)

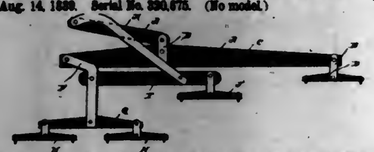
Claim.—1. The combination, with a plate having in its body a series of graduated perforations K, a finger-piece F, formed at one end of said plate, and a perforated lip projecting beyond the finger-piece in the line of the body of the plate, of a stop adapted to engage the graduated perforations in the plate, the perforation in the

lip being made to receive the shackle of a lock, substantially as described.



2. The combination, with a plate having in its body a perforation K, a finger-piece F, and a perforated lip, of a stop having a head and a shank, said shank being adapted to rest and to be turned in said perforation K, and said head having bearing-faces placed at various distances from the shank, substantially as described.

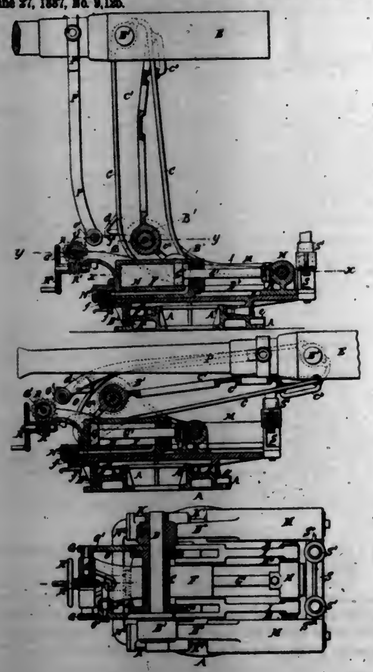
413,129. DRAFT-EQUALIZER. JOHN BUTLER, Gaza, Iowa. Filed Aug. 14, 1889. Serial No. 320,675. (No model.)



Claim.—1. The combination of the main evener-bar A, the lever C, secured thereto and having a single whiffletree at one end and a pair of whiffletrees at the other end, the evener-bar I, carrying a single whiffletree and connected with the pair of whiffletrees, and connections between said evener-bars and the main evener-bar A, as set forth.

2. The improved draft-equalizer consisting of the main evener-bar A, the lever C, secured thereto, the angle-irons F at one end of the said lever, a pair of whiffletrees connected to the angle-irons and a single whiffletree connected to the end of the lever, the evener-bar I, secured to and extending from the angle-irons, and the braces extending between the evener-bars A and I, as set forth.

413,130. GUN-CARRIAGE. JEAN B. G. A. CANET, Paris, France, assignor of one-half to Sir Joseph Whitworth & Company, (Limited,) Manchester, England. Filed June 21, 1888. Serial No. 277,733. (No model.) Patented in France Mar. 1, 1887, No. 181,898, and in England June 27, 1887, No. 9,125.



Claim.—1. In a carriage or mounting for a disappearing gun, the combination of a rocking lever on which the gun is supported, arms or levers loosely mounted on the fulcrum-pin of the said rocking lever and provided with toothed segments, rods or links connecting the said arms or levers with the gun in such a manner that, together with the said arms or levers, the rocking lever, and the gun, they form a parallelogram, and pinions geared with said toothed segments and connected with elevating-gear, substantially such as above described, whereby the gun, after disappearing and before retraining to its firing position, can be adjusted to or nearly to the angle of elevation at which it is to be fired, but which will yield to abnormal or excessively severe stresses and thus prevent straining or breaking of the parts by the recoil, substantially as described.

2. In a carriage or mounting for a disappearing gun, the combination of a rocking lever on which the gun is supported, arms or levers loosely mounted on the fulcrum-pin of the said rocking lever and provided with toothed segments, rods or links connecting the said arms or levers with the gun in such manner that, together with the said arms or levers, the rocking lever, and the gun, they form a parallelogram, and pinions geared with the said toothed segments and connected with elevating-gear by means of friction cones or clutches, substantially as described.

3. In a carriage or mounting for a disappearing gun, the combination of a rocking lever on which the gun is supported, and which in the recoil turns through an angle of about ninety degrees, a hydraulic brake the piston of which is connected with the short arm of the said lever below its fulcrum, recuperative apparatus comprising hydraulic cylinders, communicating by a pipe or passage with the cylinder of the said brake and having rams or plungers connected with elastic resisting devices, substantially such as above described, a loaded valve in the said pipe or passage, and an adjustable valve in a by-pass around the said loaded valve, substantially as described.

4. In a carriage or mounting for a disappearing gun, the combination, with the rocking lever, the hydraulic brake, and the recuperative apparatus connected therewith, substantially as described, of a cross-head fixed on the piston-rod of the said brake and a buffer or cushion against which the said cross-head will impinge when the gun reaches its firing position, substantially as described.

5. The combination, with the gun, of the rocking lever C, having the fulcrum-pin D, the arms or levers O, loosely mounted on the said fulcrum-pin and provided with toothed segments O', rods or links P, connecting the said arms or levers with the gun, pinions Q, geared with the said toothed segments and fixed upon shafts Q', friction cones or clutches Q^2, a worm-wheel R, connected thereby with the said shafts, and a worm R', geared with the said worm-wheel and provided with a hand-wheel R^2 for actuating it, substantially as described.

6. The combination, with the gun, of a rocking lever on which the said gun is supported, and which in the recoil turns through an angle of about ninety degrees, the pivot or fulcrum pin of the said lever being situated in rear of the point of connection of the gun therewith when the said lever is at the forward or upper extremity of its stroke or movement, arms or levers loosely mounted on said fulcrum-pin and provided with toothed segments, rods or links connecting the said arms or levers with the gun in such a manner that, together with the said arms or levers, the rocking lever, and the gun, they form a parallelogram, and pinions geared with the said toothed segments and connected with elevating-gear, substantially as described, so that the gun, after disappearing and before retraining to its firing position, can be adjusted to or nearly to the angle of elevation at which it is to be fired, substantially as and for the purpose set forth.

7. In a carriage or mounting for a disappearing gun, the combination, with a rocking lever supporting the gun, and a hydraulic brake connected with the short arm of the said lever below the fulcrum thereof, and the piston of which has orifices in or around the same, of two recuperators arranged one on each side of the said brake, and each comprising a ram or plunger working in a cylinder in communication with the brake-cylinder and elastic resisting devices connected with the said plunger, substantially as and for the purpose set forth.

8. The combination, with the gun and the rocking lever C, of the hydraulic brake F, the cross-head H, fixed on the piston-rod G' of the said brake and working in guides B^3, the rods or links I, connecting the said cross-head with the short arm of the said rocking lever, and recuperative apparatus comprising a ram or plunger working in a cylinder in communication with the brake-cylinder and elastic resisting devices connected with the said plunger, all substantially as and for the purpose set forth.

9. In a carriage or mounting for a disappearing gun, the combination, with a rocking lever supporting the gun and a hydraulic brake connected with the said lever, and the piston of which has orifices in or around the same, of a hydraulic cylinder K, communicating with the said brake by a pipe or passage provided with a loaded valve, a ram or plunger K', working in the said cylinder, and springs L, acting upon the said plunger, substantially as described.

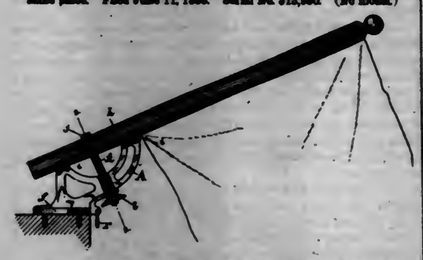
10. In a carriage or mounting for a disappearing gun, the combination, with a rocking lever for supporting the gun and a hydraulic brake connected with the said lever, of a recuperator-cylinder communicating by a pipe or passage with the brake-cylinder, a ram or plunger working in the said recuperator-cylinder, elastic resisting devices connected with the said plunger, a loaded valve in the said pipe or passage, a by-pass around the said loaded valve, and an adjustable valve for controlling the flow of liquid through the said by-pass, substantially as and for the purposes set forth.

11. In a carriage or mounting for a disappearing gun, the combination of the turn-table B, the brake F, the pipes or passages N N^3, the loaded valve N', the by-pass *f*, the valve *f'*, the cylinders K, provided with the plungers K', the boxes M, containing the springs L, the bearings B', the fulcrum-pin D carried thereby, and the rocking lever C, mounted upon the said fulcrum-pin and supporting the gun, substantially as described.

12. In a carriage or mounting for a disappearing gun, the combination of the turn-table B, the brake F, the pipes or passages N N^3, the loaded valve N', the by-pass *f*, the valve *f'*, the cylinders K, provided with the plungers K', the boxes M, containing the springs L, the bearings B', the fulcrum-pin D carried thereby, the rocking lever C, mounted upon the said fulcrum-pin and supporting the gun, the arms or levers O, and toothed segments O', the rods or links P, the pinions Q, the shafts Q', friction cones or clutches Q^2, and elevating-gear connected thereby with the said shafts, substantially as described.

13. In a carriage or mounting for a disappearing gun, the combination of a rocking lever, arms or levers loosely mounted on the fulcrum-pin of the said rocking lever and provided with toothed segments, rods or links connecting the said arms or levers with the gun in such a manner that, together with the said arms or levers, the rocking lever, and the gun, they form a parallelogram, pinions geared with the said toothed segments and connected with elevating-gear, a hydraulic brake the piston of which is connected with the short arm of the said rocking lever below its fulcrum, recuperative apparatus comprising hydraulic cylinders communicating by a pipe or passage with the cylinder of the said brake and having rams or plungers connected with springs, a loaded valve in the said pipe or passage, and an adjustable valve in a by-pass around the said loaded valve, substantially as described.

413,131. FLAG-STAFF HOLDER. FLORENCE J. D. CRAFFELL, Baltimore, Md., assignor of forty-nine one-hundredths to Wilbur H. Riddle, same place. Filed June 11, 1889. Serial No. 313,990. (No model.)



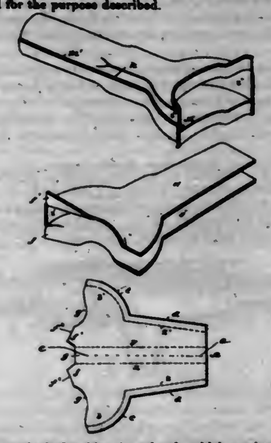
Claim.—1. In a flag-staff holder, the combination, with a shank having a supporting-base and concave seats for a flag-staff, of a screw-bolt passing through an aperture in said shank and having a hook at one end to embrace the staff, and a screw-nut at the other end whereby the staff is clamped to the concave seats, substantially as specified.

2. In a flag-staff holder, the combination, with the standards *d* and the supporting-base, of the shank A, pivoted between the standards and having a notched edge adapted to be held by a bolt *g*, the shank being provided with concave seats *i*, and a clamping-bolt passing through an aperture of the shank, whereby the flag-staff is held, substantially as described.

413,132. METHOD OF MANUFACTURING DRAW-HEADS. EVANDER H. CALWELL, Allegheny, Pa., assignor of one-half to Christian F. Kennweg, same place. Filed Mar. 28, 1889. Serial No. 304,982. (No model.)

Claim.—1. The method of making draw-heads, consisting, first, in cutting or forming a blank from a single piece of metal, then bending said blank longitudinally along two parallel lines to form one side, the top, and bottom of an embryo draw-head, then bending the edges of the top and bottom toward each other, and uniting the same together by welding, substantially as described, for the purpose set forth.

2. The method of making draw-heads, which consists, first, in cutting or forming a blank from a single piece of metal having the lateral wings *b b'* and the ears *f f'* and the recesses *g* at its front edge, then bending said blank longitudinally in two parallel lines to form the top, bottom, and one side of the embryo draw-head, then bending the free edges of the top and bottom and welding the bent portions together, and, finally, bending the front edge of the blank along the ears *f f'* and recessed edges *g* to form the vertical flanges, substantially as and for the purpose described.



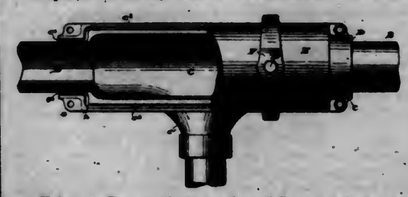
3. The method of making draw-heads, which consists, first, in cutting a blank from a single piece of metal, then bending the blank longitudinally in two parallel lines to form the bottom, top, and one side of the embryo draw-head, then bending the edges of the top and bottom to form the meeting flanges and welding said flanges together to complete the remaining side of the draw-head, then uniting an end piece in the open rear end of the shank of the draw-head, and, finally, welding a hinge-piece to one side of the draw-head, substantially as described, for the purpose set forth.

4. The method of making draw-heads, which consists, first, in cutting a blank from a single piece of metal having the straight edge *g* at its front edge, the ears *f f'* on opposite sides of said straight edge, and the recesses, then bending the blank longitudinally in two parallel lines which extend from the terminals of the straight edge *g* at the front of the blank to the rear end thereof, to form the bottom, the top, and one side of the embryo draw-head, then bending the front edges of the top and bottom of the blank or embryo draw-head in opposite directions to form the vertical flanges at the front of the draw-head, then bending the side edges of the top and bottom to form the meeting flanges, and, finally, welding the side flanges together, substantially as described, for the purpose set forth.

5. A blank for use in making draw-heads, struck up from a single piece of metal and having the lateral wings *b b'* at its side edges near one end thereof, the recesses, the ears, and straight portion *g* at its front edge, and the inclined side edges, substantially as described.

6. A blank for making draw-heads, struck up from a single piece of metal and having the lateral wings *b b'*, the longitudinal score-lines equidistant from a median line drawn through the blank, and the score-lines along and parallel with the side edges of said blank, substantially as described.

413,133. COUPLING-BOX FOR ELECTRICAL CONDUITS. SYLVESTER P. DARROW, Brooklyn, N. Y., assignor to George B. Thompson, Philadelphia, Pa. Filed July 27, 1889. Serial No. 318,916. (No model.)



Claim.—1. The combination, substantially as set forth, of the lower coupling-section, the half-collars bolted to the ends thereof, the cover fitting over the lower section and half-collars, and clamping devices for securing the cover.

2. The combination, substantially as set forth, with the cover and clamping devices for securing it in place, of the remaining portion of the coupling upon which the cover lies, comprising a lower section and rings or collars at the ends thereof for embracing the ends of the pipes, said coupling having a lateral passage, for the purpose described.

3. The combination, substantially as set forth, of the lower section having the lateral passage for house-connections, semicircular ends, and packing-grooves, the half-collars having the transverse packing-grooves, the cover, and clamping devices for securing the cover in place.

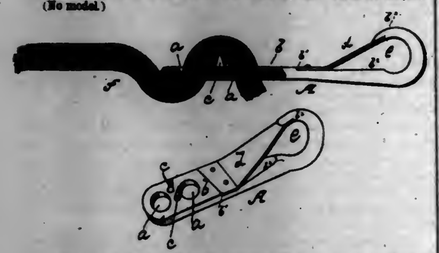
4. The combination, substantially as set forth, with the cover and clamping devices for securing it in place, of the remaining portion of the coupling upon which a cover lies, comprising a lower section and sectional rings or collars at the ends thereof for embracing the ends of the pipes, said coupling having a lateral passage, for the purpose described.

413,184. METHOD OF MAKING LATERAL CONNECTIONS IN UNDERGROUND CABLES. SYLVESTER P. DENISON, Brooklyn, N. Y., assignor to George R. Thompson, Philadelphia, Pa. Original application filed July 27, 1889, Serial No. 318,916. Divided and this application filed Sept. 21, 1889. Serial No. 324,613. (No model.)



Claim.—The herein-described method of making lateral or house connections with conductors inclosed in conduit-pipes, which method consists in cutting out a section of the conduit-pipe without injuring the inclosed conductors or cable, making the lateral connections with the conductors in the pipe, coupling the ends of the conduit-pipe by a closed sectional coupling, and leading out the house-connections through a lateral passage in said coupling.

413,185. SNAP-HOOK. ANDREW J. DENNE, Franklin, assignor to Adolf Dahlgren, Nashville, Tenn. Filed Feb. 12, 1889. Serial No. 299,618. (No model.)



Claim.—The within-described improved article of manufacture, consisting of a straight shank-hook having two tables in different planes, a shoulder *b'* at the junction of the two tables, the vertical apertures *a a* through the main portion of the flat shank, spurs *c c* between the two apertures, an obtuse angular spring *d*, secured to the shank and tapered, as described, and a shoulder b^2, formed on the inner side of the hook *e*, all constructed and adapted to operate in the manner and for the purposes described.

413,186. METHOD OF ELECTRIC REFRIGERATION. MARK W. DEWEY, Syracuse, N. Y., assignor to the Dewey Corporation, same place. Filed July 20, 1889. Serial No. 318,110. (No model.)



Claim.—1. The method of electric cooling or freezing, consisting in establishing an electric circuit having one or more parts adapted to be cooled and one or more parts adapted to be heated by the current therein, locating the cooled part or parts within or in contact with a receptacle to cool the interior thereof, and diffusing or conducting the heat from the heated part or parts of the circuit.

2. The method of electric cooling or freezing, consisting in establishing an electric circuit having one or more parts adapted to be cooled and one or more parts adapted to be heated by the current therein, locating the cooled part or parts within or in contact with a receptacle containing an uncongealable medium, insulating said receptacle from the influence of heat on the exterior thereof, and exposing the substance to be cooled to the cooling influence of said medium.

3. The method of electric cooling or freezing, consisting in establishing an electric circuit having one or more parts adapted to be cooled by the current therein, locating said part or parts within or in contact with a receptacle containing an uncongealable medium, insulating said receptacle from the influence of heat on the exterior thereof, and exposing the substance to be cooled to the cooling influence of said medium.

4. The method of electric cooling or freezing, consisting in establishing an electric circuit having one or more parts adapted to be cooled by the current therein, locating said part or parts within or in contact with a refrigerator or ice-chamber, and exposing the substance to be cooled within the said refrigerator.

5. The method of cooling or freezing a substance contained in a receptacle, consisting in removing the heat from the interior of said receptacle by or through the convection of heat produced by an electric current or currents.

6. The method of electric cooling or freezing, consisting in establishing an electric circuit having one or more parts adapted to be cooled by the current therein, locating said part or parts within or in contact with a receptacle containing an uncongealable medium, electrically insulating the receptacle and medium from the circuit, insulating said receptacle from the influence of heat on the exterior thereof, and exposing the substance to be cooled to the cooling influence of said medium.

7. The method of electric cooling or freezing, consisting in establishing an electric circuit having one or more parts adapted to be cooled by the current therein, locating said part or parts within or in contact with a receptacle, electrically insulating the receptacle from the circuit, insulating the said receptacle from the influence of heat on the exterior thereof, and exposing the substance to be cooled within said receptacle.

8. The method of electric cooling or freezing, consisting in establishing an electric circuit having one or more parts adapted to be cooled and one or more parts adapted to be heated by the current therein, locating the cooled part or parts within or in contact with a receptacle, electrically insulating the same from the circuit, insulating the receptacle from the influence of heat on the exterior thereof, diffusing or conducting the heat from the heated part or parts of the circuit, and exposing the substance to be cooled within said receptacle.

9. The method of electric cooling or freezing, consisting in establishing an electric circuit having one or more parts adapted to be cooled and one or more parts adapted to be heated by the current therein, locating the cooled part or parts within or in contact with a receptacle, insulating the receptacle from the influence of heat on the exterior thereof, locating the heated part or parts of the circuit within or in contact with a conduit, passing a current of water or air through the conduit to dissipate the heat of said part or parts of the circuit, and exposing the substance to be cooled to the cooling effect of the said receptacle.

10. The method of electric cooling or freezing, consisting in establishing an electric circuit having one or more parts adapted to be cooled and one or more parts adapted to be heated by the current therein, locating the cooled part or parts within or in contact with a receptacle, insulating the receptacle from the influence of heat on the exterior thereof, diffusing or conducting the heat from the heated part or parts of the circuit, and exposing water to be frozen in a vessel within said receptacle containing an uncongealable medium.

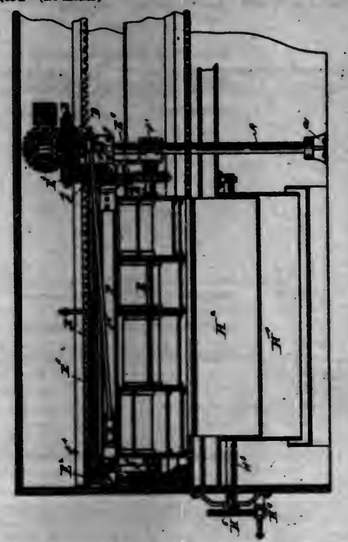
11. The method of electric cooling or freezing, consisting in establishing an electric circuit, including a thermo-pile, locating the alternate junctions adapted to be cooled by the current within or in contact with a receptacle to be cooled, and dissipating or conducting the heat from the heated junctions.

12. The method of electric cooling or freezing, consisting in establishing an electric circuit, including a thermo-pile, locating the alternate junctions adapted to be cooled by the current within or in contact with a receptacle to be cooled, insulating said receptacle from the influence of heat on the exterior thereof, and dissipating or conducting the heat from the heated junctions.

13. In a system of electric cooling or freezing, consisting in connecting two or more thermo-piles or conductors having parts adapted to be cooled by a current flowing therein in multiple arc relations with leads from a suitable source of electricity, and regulating the current flowing through the thermo-piles or conductors independently of each other.

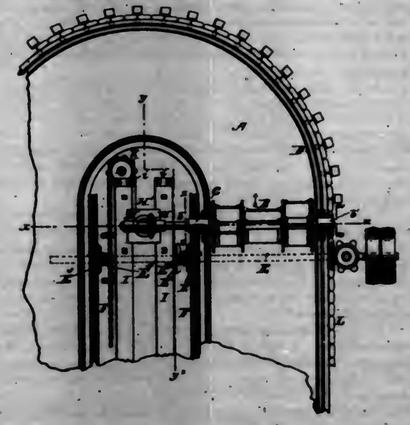
14. In a system of electric cooling or freezing, consisting in connecting two or more thermo-piles or conductors having parts adapted to be cooled by a current flowing therein in multiple-arc relation with leads from a suitable source of electricity, locating the cooled parts of each of said thermo-piles or conductors within or in contact with a suitable receptacle to be cooled, and regulating the current flowing through the said thermo-piles or conductors by any suitable and well-known method.

413,187. MALT-MACHINE. JOHN W. PREE, Boston, Mass., and MICHAEL A. BARBER, Norwich, Conn. Filed Feb. 4, 1889. Serial No. 298,634. (No model.)



Claim.—In combination with a frame F, adapted to be rotated horizontally around a central axis located at one end of said frame, a pair of shafts E' E^1, carried by said frame, one of said shafts, E', being higher than the other, stirrers on shaft *e*, a sprocket-gearing connecting the two shafts and causing the same to move harmoniously, a central driving-gear upon the central shaft A, a fixed rack F^3, arranged in arc about the axis of rotation of the frame above the shaft E', and an exterior gear E^2 on shaft E', engaging said rack, substantially as described.

413,188. MALT-STIRRING MACHINE. JOHN W. PREE, Boston, Mass., and MICHAEL A. BARBER, Norwich, Conn. Filed Feb. 4, 1889. Serial No. 298,633. (No model.)



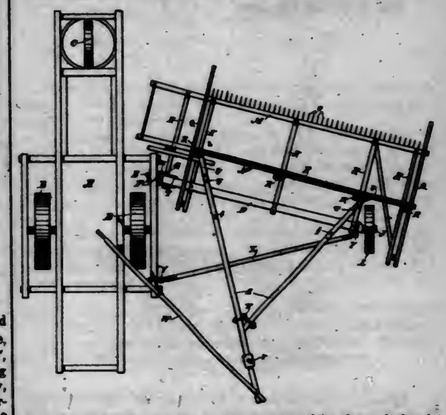
Claim.—1. In a malting-machine, a malting-floor oblong in shape, having parallel sides and semicircular ends, the straight sides of said walls equal in length to each other, and the curved sides of the inner and outer walls being concentric with each other, in combination with the stirring-drum B, mounted on the two shaft-carriages *b'* and G, the inner endless chain F, and outer endless chain L, operating the shaft-carriages, and drum, and the reciprocating shaft-carriage H' and its ways I, carrying the inner end of the stirring-drum shaft, substantially as described.

2. In an oblong malt-machine, the combination of the shaft-carriage G, having hook *g*, with the endless chain F, engaging said hook, and means for operating said chain, substantially as described.

3. In a malt-machine, the combination of the carriage H', the yoke H, pivoted in said carriage, bevel-gear *h'* and sprocket h^2, having bearing in said carriage, shaft *b*, mounted in said yoke and carrying bevel-gear A, which engages the bevel-gear *h'*, and the operating-chain K, substantially as described.

4. The combination of the malting-floor having semicircular ends, with the stirring-drum B, the pivoted yoke H, and the exterior driving-chain L, substantially as described.

413,189. HEADER AND THRASHER. GEORGE W. HAINES, Stockton, Cal., assignor to the Stockton Combined Harvester and Agricultural Works, same place. Filed July 12, 1889. Serial No. 317,331. (No model.)



Claim.—1. The combination, in a combined header and thrashing-machine, of a sickle and carrying-belt frame, a single timber to which this frame is secured, a diagonally-disposed combined hinge and pivot by which the inner end of said timber is adjustably connected with the thrashing-machine frame in front of the axis of the main bearing-wheels, a single bearing-wheel journaled to the outer end of said timber, with its axis in a vertical plane with the axis of the main bearing-wheels of the thrashing-machine, and a counterbalance frame and weight attached to and extending rearwardly from the fulcrum-bearing timber, substantially as described.

2. In a combined header and thrashing-machine, a single fulcrum-bearing timber D, supporting the sickle and carrying-belt frame of a header, having its outer end supported upon a wheel journaled in line with the main bearing-wheels of the thrasher and its inner end connected with the thrasher-frame A in front of said wheels by means of a pivot-bolt extending through said frame, the beveled washers F upon each side of the frame A, the T-head upon the bolt, and the hinge connecting it with the fulcrum-timber of the header-frame, substantially as described.

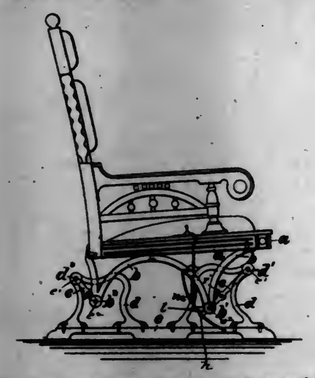
3. In a combined header and thrashing-machine, the header having a single fulcrum-timber, the outer end of which is supported upon a bearing-wheel in line with the axis of the main bearing-wheels of the thrasher and the forward end connected by a pivot and hinged joint with the thrashing-machine frame in front of said axis, the sickle and carrying-belt frame secured to and standing in front of the fulcrum-timber, and the counterbalance frame and weight extending rearwardly therefrom, in combination with the brace-rod X, having its inner end connected with the rear of the thrashing-machine frame by a loose or swivel joint and its outer end connected with the movable timber of the header-frame by a similar joint, substantially as described.

4. In a combined header and thrashing-machine, a header comprising a single timber standing diagonally outward from the thrashing-machine frame, having its outer end supported upon a bearing-wheel in line with the axis of the main bearing-wheels of the thrash-

ing-machine frame, and the inner end connected with the side timbers of the thrashing-machine by a pivot and hinged joint, a sickle and carrying-belt frame secured to this fulcrum-timber, and counterbalance-levers extending rearwardly therefrom, in combination with a board P, secured to the header-frame timbers behind the carrying-belt and standing upon edge upon said timbers, substantially as described.

5. In a combined header and thrashing-machine, the header composed of sickle and carrying-belt frame-timbers secured to a single fulcrum-timber, a bearing-wheel by which the outer end of said timber is supported, and a pivot and hinged joint by which the inner end of said timber is connected with the thrashing-machine frame, timbers U, secured to said fulcrum-beam and the header-frame timbers, in combination with the lever-arms S, bolted to the timbers U, the loose or hook connection T, by which these levers are united, the operating-lever W, fulcrumed upon the thrashing-machine frame, having its outer end connected with the rear end of one of the levers S, and the brace-bar X, with the eyebolt-connections Y and Z, whereby its inner and outer ends, respectively, are united to the thrashing-machine and the fulcrum-beam of the header-frame, substantially as described.

413,140. ROCKING-CHAIR. George F. Hall, Newark, N. J., assignor of one-half to Ellis R. Carhuff, same place. Filed May 25, 1889. Serial No. 312,144. (No model.)



Claim.—1. The combination, with a base and supporting-frame *d*, provided with the bearings d' and d^3, of a chair-seat provided with the bearings b' and b^3, suspended below the level of the bearings d' and d^3, the links *c*, connecting the bearings and provided with the studs c' and c^3, and one or more sleeves *f*, applied to one or more of the studs c^3 and provided with studs f^3, as and for the purpose set forth.

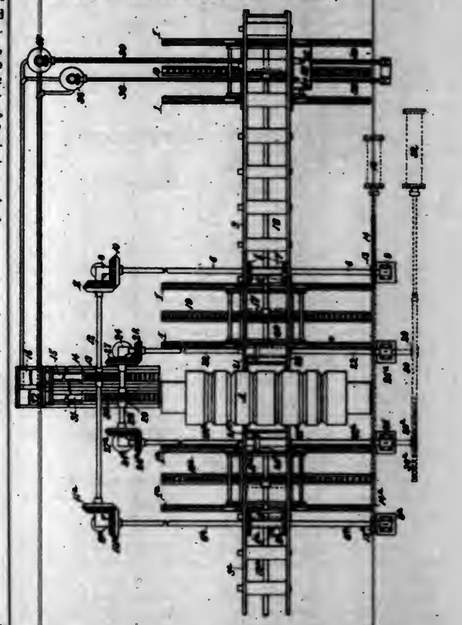
2. The combination, with a base and supporting-frame *d*, provided with the bearings d' and d^3, of a chair-seat provided with the bearings b' and b^3, suspended below the level of the bearings d' and d^3, the links *c*, connecting the bearings and provided with the studs c' and c^3, the rods *r*, connecting the links in pairs, and one or more sleeves *f*, applied to the studs c^3 and provided with studs f^3, as and for the purpose set forth.

3. The combination, with a base-frame *c* and supporting-frame *d*, provided with the bearings d' and d^3, of a chair-seat provided with the bearings b' and b^3, suspended below the level of the bearings d' and d^3, the links *c*, connecting the bearings and provided with the studs c' and c^3, a sleeve *f*, applied to one of the studs c^3 and provided with perforated ear *h* and arm *l*, as described, a stationary curved rod *m*, secured at its ends to the frame *d* and base *c*, concentric with the bearing d^3, and passing through the aperture in the ear *h*, and means for turning the arm *l*, as and for the purpose set forth.

4. The combination, with a base-frame *c* and supporting-frame *d*, provided with the bearings d' and d^3, of a chair-seat provided with the bearings b' and b^3, suspended below the level of the bearings d' and d^3, the links *c*, connecting the bearings and provided with the studs c' and c^3, a sleeve *f*, applied to one of the studs c^3 and provided with perforated ear *h* and arm *l*, as described, a stationary curved rod *m*, secured at its ends to the frame *d* and base *c*, concentric with the bearing d^3 and passing through the aperture in the ear *h*, the lever *p*, pivoted to the chair-seat, and a link connecting the lever *p* with the arm *l*, the whole arranged and operated as and for the purpose set forth.

5. The combination, with the base-frame *c* and supporting-frame *d*, provided with the bearings d' and d^3, of a chair-seat provided with the bearings b' and b^3, suspended below the level of the bearings d' and d^3, the links *c*, connecting the bearings and provided with the studs c' and c^3, a sleeve *f*, mounted upon the stud c^3 and provided with perforated ear *h* and arm *l*, as described, a stationary curved rod *m*, secured at its ends to the frame *d* and base *c*, concentric with the path of the stud when the chair is in motion, and means for raising and depressing the arm *l*, as and for the purpose set forth.

413,141. ROLLING-MILL. Patrick F. Hamlet, Homestead, Pa. Filed Aug. 19, 1889. Serial No. 321,261. (No model.)



Claim.—1. In a rolling-plant, the combination of a laterally-moving carriage, a table provided with feed-rolls pivoted thereto, a shaft having a pinion keyed thereto, a fluid-pressure cylinder independent or outside of the carriage and adapted through interposed gearing to rotate said shafts, and stationary racks with which said pinion intermeshes, substantially as set forth.

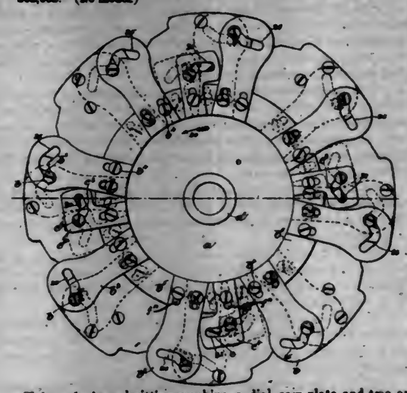
2. In a rolling-mill plant, the combination of a carriage, a table provided with feed-rolls pivoted thereto, a curved rack attached to said table, a shaft having a pinion keyed thereto engaging the rack, and a fluid-pressure cylinder located outside of the carriage and adapted through interposed gearing to rotate the shaft, substantially as set forth.

3. In a rolling-plant, the combination of rolls, two carriages arranged on opposite sides of the rolls, tables pivoted to said carriages, racks arranged parallel with the axes of said rolls, shafts mounted on the carriages and provided with pinions engaging the racks, and a fluid-pressure cylinder independent of or outside of the carriages and adapted through interposed gearing to rotate said shafts, thereby effecting a simultaneous lateral movement of both carriages, substantially as set forth.

4. In a rolling-mill plant, the combination of rolls, two frames or carriages arranged on opposite sides of the rolls, tables pivoted to the carriages, curved racks secured to the tables, shafts having pinions keyed thereto engaging said racks, and a fluid-pressure cylinder located outside of the carriages and adapted through interposed gearing to rotate said shafts, thereby moving both tables simultaneously, substantially as set forth.

5. In a rolling-plant, the combination of rolls, two frames or carriages arranged on opposite sides of the rolls, tables pivoted to the carriages, fluid-pressure cylinders adapted by interposed gearing to shift the carriages and tables, a platform secured to one of the carriages, and levers connected to the valve mechanism of the cylinders and located in convenient proximity to the platform, substantially as set forth.

413,142. CIRCULAR-KNITTING MACHINE. Warren D. Hunt and Charles F. Carr, Laconia, N. H. Filed Aug. 13, 1888. Serial No. 282,603. (No model.)



Claim.—1. In a knitting-machine, a dial cam-plate and two or more sets of cams carried thereby and movable with relation to each other, as described, combined with arms provided with cam-slots and connected to the said cams, and with a movable ring carried by the cam-plate and to which the said arms may be connected, substantially as described.

2. In a knitting-machine, a dial cam-plate and movable drawing-in and throwing-out cams, combined with arms provided with cam-slots and connected to the said cams, and with a movable ring carried by the cam-plate, and to which the said arms may be connected, substantially as described.

3. In a knitting-machine, a dial cam-plate and two or more sets of cams, each consisting of a throwing-out and a drawing-in cam, one or more of the said throwing-out cams being made movable, combined with arms provided with cam-slots to engage the studs on the movable cams, and with a movable ring carried by the cam-plate, and to which the said arms are connected, substantially as and for the purpose specified.

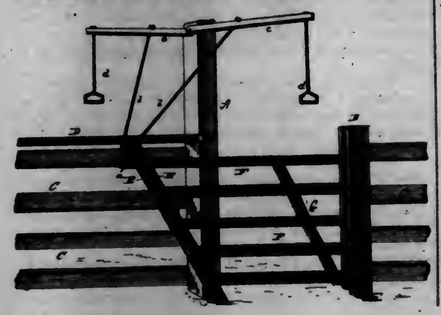
413,143. HOLDBACK FOR VEHICLES. Henry A. Koogler and Charles H. Slonecker, near De Graff, Ohio. Filed July 27, 1889. Serial No. 318,958. (No model.)



Claim.—1. The combination, with the shaft-bearer L and strap O of the adjustable piece B, having shoulder C, and attachded to the plate I on the shaft by thumb-screw F, playing in a slot and secured by the nut G, as and for the purpose set forth.

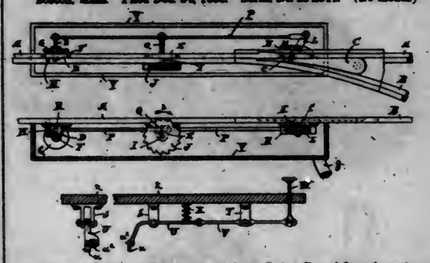
2. The combination of the buggy-shaft and plate I, with the adjustable shoulder-piece B, the bevel groove and slot K, the thumb-screw F, and bevel-nuts G, as and for the purpose set forth.

413,144. GATE. Charles P. Lancaster, Fairmount, Ind. Filed Feb. 13, 1889. Serial No. 299,755. (No model.)



Claim.—In a folding gate, the combination of the posts A B, a horizontal rail D, attached to the said post A, the stationary battens E E, attached to the post A and rail D and inclined away from the former, the horizontal gate-rails F, pivoted between the said battens and pivotally connected together near their ends by means of an inclined bar, the upper one of said rails being provided with an extension *a*, extending beyond its pivotal point, operating-rods pivotally connected to the said extension *a*, and pivoted levers and handles for operating these rods, as and for the purpose set forth.

413,145. SWITCH FOR STREET-RAILROADS. Hosea W. Libbey, Boston, Mass. Filed Dec. 24, 1888. Serial No. 294,511. (No model.)

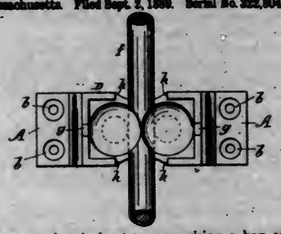


Claim.—1. The switch-tongue C, lever L, bar P, rod Q, and ratchet-wheel J, in combination with a lever U, secured to a car, substantially as and for the purpose set forth.

2. The combination of the tongue C, lever L, bar P, disk G, presser-bar H, and ratchet-wheel J, and their intermediate connections, whereby the tongue will be thrown in one direction by the depression of the lever H, and in the opposite direction by a partial revolution of the ratchet-wheel J, substantially as shown and described.

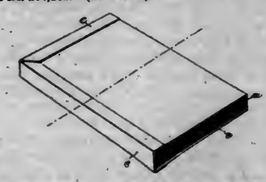
3. The treadle-rod W, lever V, bent lever U, and spring X, supported by brackets S T on the under side of a car, in combination with the ratchet-wheel J, bar P, lever L, switch-tongue C, and their intermediate connections, substantially as shown and described.

413,146. INSULATOR. Louis McCarthy, Boston, Mass., assignor to Charles Tennant Lee, same place, and the Gould & Watson Company, of Massachusetts. Filed Sept. 2, 1889. Serial No. 322,804. (No model.)



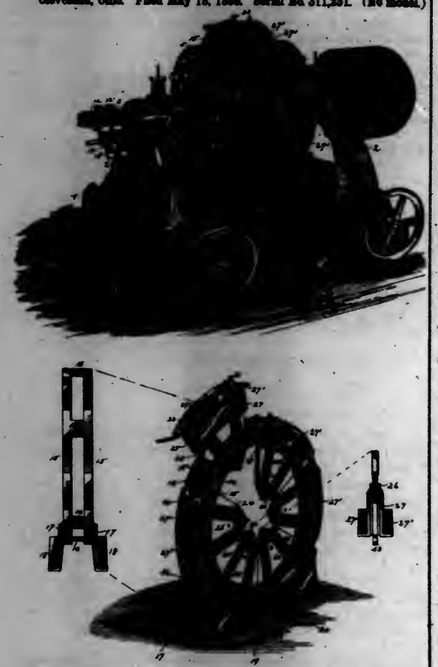
Claim.—An electric insulator comprising a box or case with a suitable base for securing it in position, the sides of said case being open for the passage of the wire, and two rolls composed of insulating material and placed loosely within said case, said rolls being grooved circumferentially to receive the wire, substantially as shown and described.

413,147. BLACK TABLET. Charles S. Perry, Boston, assignor of one-half to Robert M. Cable, Hyde Park, Mass. Filed Jan. 23, 1889. Serial No. 297,192. (No model.)



Claim.—As an improved article of manufacture, the herein-described black tablet, composed of superimposed sheets of heavy black paper with a hard-finished surface adapted to be marked on by a pencil and the marks erased without injury thereto, said sheets being secured together and united to a back, substantially as described.

413,148. DYNAMO-ELECTRIC MACHINE. GUSTAV PFANHEUSER, Cleveland, Ohio. Filed May 18, 1889. Serial No. 311,231. (No model.)



Claim.—1. In a dynamo-electric generator, the combination of rotating field-magnets and a stationary armature made of non-magnetic material, substantially as described.

2. A dynamo-electric generator consisting, essentially, of rotating field-magnets and a stationary armature, the generating portions of which are exposed to the inductive action of the magnets, and the inactive and structural portions of which are beyond the inductive sphere of the same, substantially as set forth.

3. A dynamo-electric generator consisting, essentially, of annular series of rotating field-magnets and an annular series of stationary armature-coils arranged with their active portions within the field or fields of force and with their inactive portions outside of said field or fields, substantially as described.

4. In a dynamo-electric generator, the combination of annular series of rotating field-magnets with an annular series of stationary armature-coils mounted upon a non-magnetic support and wound upon insulating-coils, said coils being arranged with their active portions within the field or fields of force and with their inactive portions outside of said field or fields, substantially as described.

5. In a dynamo-electric generator, the combination of two annular series of rotating field-magnets forming an annular magnetic field of force or an annular series of magnetic fields of force between the opposed pole-faces of the magnets, with an annular series of stationary segmental armature-coils wound upon non-magnetic cores, and occupying, with their radial branches, the magnetic field, while their inactive portions are outside of said field, substantially as described.

6. In a dynamo-electric generator, the combination of two annular series of rotating field-magnets forming an annular magnetic field of force or an annular series of magnetic fields of force between the opposed pole-faces of the magnets, with a stationary annular armature-support of non-magnetic metal composed of detachable segments and located in the plane of the magnetic field, but beyond the inductive influence of the same, substantially as described.

7. In a dynamo-electric generator, the combination of two annular series of rotating field-magnets forming an annular magnetic field of force or an annular series of magnetic fields of force between the opposed pole-faces of the magnets, with a stationary annular armature-support of non-magnetic metal composed of detachable segments and located in the plane of the magnetic field, but beyond the inductive influence of the same, and a series of segmental armature-coils removably mounted in the annular support, with their radial branches exposed to the action of the field and with their peripheral portions beyond the inductive sphere of the magnets, substantially as described.

8. In a dynamo-electric machine, the combination of a series of rotating field-magnets with a series of stationary armature-coils mounted on a non-magnetic support, the conductor of the armature-coils being disposed in a plane parallel to the plane of rotation of the field-magnets, substantially as described.

9. In a dynamo-electric machine, the combination of a series of rotating field-magnets with a series of stationary armature-coils mounted on a non-magnetic support, the conductor of the armature-coils being disposed in a plane parallel to the plane of rotation of the field-magnets, and the outer portion of the coils being faced with insulating material, substantially as set forth.

10. In a dynamo-electric machine, the combination of a series of rotating field-magnets with a series of stationary armature-coils mounted on a support located outside of the field of force, substantially as set forth.

11. In a dynamo-electric machine, the combination of a series of rotating field-magnets with a series of stationary armature-coils mounted on a non-magnetic support located outside of the field of force, substantially as set forth.

12. In a dynamo-electric machine, the combination of a series of rotating field-magnets with a stationary supporting-frame encircling the field of force, and armature-coils removably secured thereto, substantially as set forth.

13. In a dynamo-electric machine, the combination, with a series of rotating field-magnets, of a series of stationary armature-coils mounted on a non-magnetic support, the inner ends of said coils arranged to encircle but out of contact with the shaft of the field-magnets, substantially as set forth.

14. In a dynamo-electric machine, an armature consisting in the combination, with a supporting-frame, of a series of radially-detachable coils secured at their outer ends to said frame, substantially as set forth.

15. In a dynamo-electric machine, an armature comprising a supporting-frame, and a series of armature-coils connected together by interlocking plates and secured at their outer ends to said supporting-frame, substantially as set forth.

16. In a dynamo-electric machine, an armature comprising a supporting-frame, a series of armature-coils provided with tongue-and-groove plates for connecting together the adjacent coils, said coils being secured at their outer ends to the supporting-frame, substantially as set forth.

17. In a dynamo-electric machine, the combination, with a support, of a series of radially-disposed armature-coils connected with said support, said armature-coils mounted on interlocking supports, substantially as set forth.

18. In a dynamo-electric machine, an armature composed of a series of armature-coils, each having a plate of insulating material secured to its side, which plates are furnished with interlocking tongues and grooves, substantially as set forth.

19. In a dynamo-electric machine, the combination of rotating field-magnets with a stationary annular armature-support of non-magnetic metal surrounding the field of force and provided with equally-spaced slots, and armature-coils removably seated in said slots and extending into the fields of force, substantially as described.

20. In a dynamo-electric generator, the combination of rotating field-magnets with a stationary annular armature-support of non-magnetic metal surrounding the field of force and provided with equally-spaced slots, armature-coils clamped at their inactive ends between non-magnetic plates seated in said slots, and interlocking spacing-plates of insulating material between the coils, substantially as set forth.

21. In a dynamo-electric generator, the combination of field-magnets carried by a rotating shaft with an annular armature-support of non-magnetic metal concentric to but not in contact with the shaft and composed of two semicircular sections detachably secured together upon the line of a diameter, whereby the armature may be removed from the machine without disturbing the shaft, substantially as described.

22. In a dynamo-electric generator, the combination of field-magnets carried by a rotating shaft, and a series of armature-coils mounted upon the two semicircular detachable sections of an annular support of non-magnetic material, each semicircular section being movable upon guides at right angles to said shaft, substantially as described.

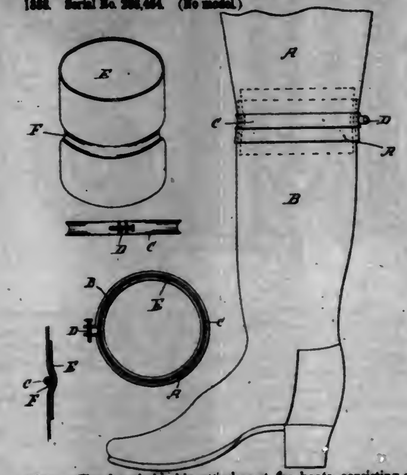
23. In a dynamo-electric machine, a stationary armature composed of a series of segmental coils removably seated in an annular skeleton support of non-magnetic metal composed of flanged plates parallel to each other, with bridge-pieces extending between them, whereby the support is divided into a number of equally-spaced seats for the coils, substantially as described.

24. In a dynamo-electric machine, the combination of parallel annular series of rotating field-magnets with an armature composed of a series of segmental coils removably seated in a stationary annular skeleton support of non-magnetic metal in the plane of but beyond the inductive influence of the magnetic field of force, said support consisting of flanged plates arranged parallel to each other, with bridge-pieces extending between them, whereby the support is divided into a number of equally-spaced seats for the coils, substantially as described.

25. In a dynamo-electric machine, an armature provided with coils wound upon cores composed of silicious or other equivalent material, substantially as set forth.

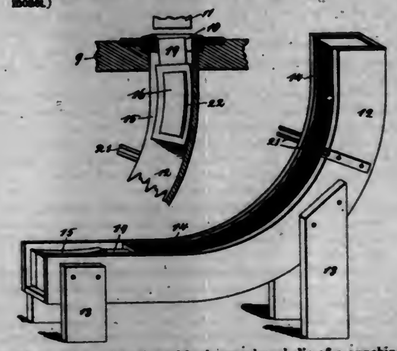
26. In a dynamo-electric machine, an armature provided with coils wound upon cores of insulating material, said coils being provided with interlocking plates composed of silicious or equivalent material, substantially as set forth.

413,149. HIP ATTACHMENT FOR BOOTS. CHARLES G. REXER and ALEXANDER W. SIDENBERG, Bellefontaine, Ohio. Filed Sept. 26, 1888. Serial No. 286,494. (No model.)



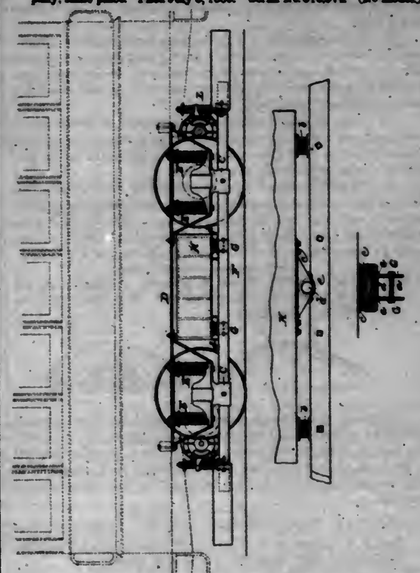
Claim.—The detachable hip attachment for boots, consisting of the detachable top, the tubular piece provided with the circumferential groove, and the attaching-band, as and for the purpose set forth.

413,150. RECEIVING-BOX FOR PUNCHING-MACHINES. WILLIS W. RUSSELL, Norwood, assignor to the Russell & Morgan Printing Company, Cincinnati, Ohio. Filed Mar. 26, 1889. Serial No. 304,883. (No model.)



Claim.—In combination with the punch and die of a punching-press or similar machine, the blank-receiving box being curved and having its front side and lower end fully open to permit the removal of the blanks or cards at any point therefrom, further having a sliding support 15, being curved and shaped to correspond to the box, and having two of its sides yielding and pressed outwardly against the two opposite sides of the box by a spring, two forks 21, connected opposite each other to the sides of the box, and a stop 20, held in position by said forks, as and for the purposes fully explained.

413,151. ELECTRIC-RAILWAY CAR. FRANK J. SPRAGUE, New York, N. Y., assignor to the Sprague Electric Railway and Motor Company, same place. Filed July 5, 1889. Serial No. 316,574. (No model.)



Claim.—1. The combination, with a railway-car, of secondary batteries supported independently of the body of the car, substantially as set forth.

2. The combination of a railway-car truck, a car-body supported thereby, and secondary batteries supported by the truck beneath the car-body and independent thereof, substantially as set forth.

3. The combination of a railway-car truck, a car-body carried thereby, and secondary batteries carried by the axles of the truck independently of the car-body, substantially as set forth.

4. The combination of a railway-car truck, a car-body carried thereby, a frame joining the axles of the truck, and secondary batteries carried by said frame, substantially as set forth.

5. The combination of a railway-car truck having vertically-movable axle-boxes and secondary batteries supported by said axle-boxes independently of the car-body, substantially as set forth.

6. The combination of a railway-car truck having vertically-movable axle-boxes and equalizing-bars joining the axle-boxes on each side, and secondary batteries supported by said equalizing-bars, substantially as set forth.

7. The combination, with a railway-car truck having rails or bars extending across it beneath the car-body, of secondary batteries supported upon said rails or bars, substantially as set forth.

8. The combination of a railway-car truck, a car-body carried thereby, and secondary batteries flexibly supported on said truck beneath the car-body, substantially as set forth.

9. The combination of a railway-car truck, a car-body carried thereby, a frame joining the axles of the truck, and secondary batteries and an electric motor carried by said frame, substantially as set forth.

10. The combination of a railway-car truck, a car-body carried thereby, and secondary batteries and an electric motor independently flexibly supported by said truck, substantially as set forth.

11. The combination of a railway-car truck having vertically-movable axle-boxes, a frame joining the axle-boxes, and secondary batteries and an electric motor independently flexibly supported by said frame, substantially as set forth.

12. The combination of a railway-car truck having vertically-movable axle-boxes, equalizing-bars joining the axle-boxes on each side of the truck, cross bars or rails connecting said equalizing-bars at or near the middle of the truck, and secondary batteries supported on said cross bars or rails, substantially as set forth.

13. The combination of a railway-car truck having vertically-movable axle-boxes, equalizing-bars joining the axle-boxes on each side of the truck, cross bars or rails connecting said equalizing-bars at or near the middle of the truck, and secondary batteries flexibly supported on said cross bars or rails, substantially as set forth.

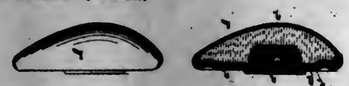
14. The combination of a railway-car truck having vertically-movable axle-boxes, equalizing-bars joining said axle-boxes on each side of the truck, and secondary batteries and an electric motor supported by separate cross-pieces from said equalizing-bars, substantially as set forth.

15. The combination of a railway-car truck having vertically-movable axle-boxes, equalizing-bars joining said axle-boxes on each side of the truck, and secondary batteries and an electric motor independently flexibly supported upon cross-pieces from said equalizing-bars, substantially as set forth.

16. The combination, with a railway-car truck, of electric motors and secondary batteries located beneath the car-body, the batteries counterbalancing the weight of the motors to effect an even distribution of weight, substantially as set forth.

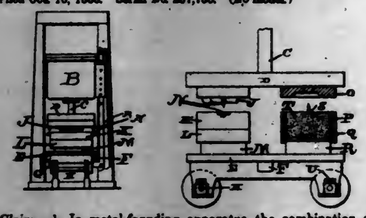
17. The combination of a railway-car truck, a frame joining the axles of said truck, and secondary batteries and electric motors supported by said frame and distributed thereon, so that a portion of the weight of said batteries and motors is at the middle part of the frame and a portion at each end of the frame, substantially as set forth.

418,152. TRUSS. GEORGE M. STERETER, Philadelphia, Pa., and AUGUSTUS D. SHELLENBERGER, College Point, N. Y. Filed Apr. 26, 1889. Serial No. 308,765. (No model.)



Claim.—A pad having a metal back provided with a thickened portion for a screw-socket extending partially through it, a soft-rubber front, a sheet of soft rubber covering the back and vulcanized to the front, and the rigid back being provided with a groove in its edge for the reception of the edge of the soft rubber, substantially as specified.

418,153. METAL-FOUNDING MACHINE. HARRIS TABOR, New York, N. Y., assignor to the Tabor Manufacturing Company, same place. Filed Oct. 10, 1888. Serial No. 287,780. (No model.)



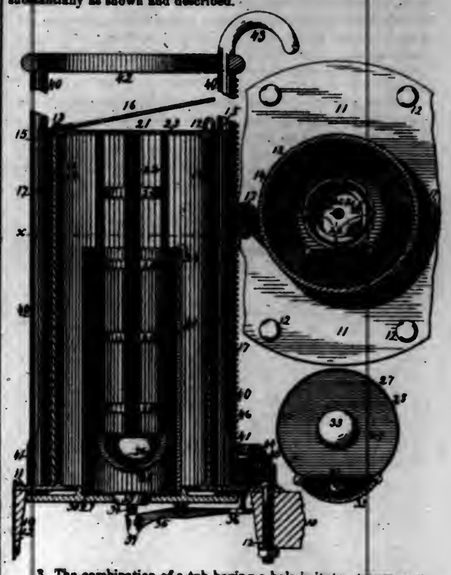
Claim.—1. In metal-founding apparatus, the combination, substantially as set forth, with a press arranged to force two horizontal opposing press-surfaces toward each other, of a face pattern part upon one of said press-surfaces and provided with dowels, a back pattern part alongside of but away from said face pattern part and upon the same press-surface of the press and provided with dowel elements of intermembering correspondence with the dowel elements of said face pattern portion, and a horizontal axis of oscillation for the support of one of said press-surfaces arranged in the vertical plane of the space between the said two pattern parts.

2. In a metal-founding machine, the combination, substantially as set forth, with a press arranged to force two opposing pressing-surfaces toward each other, of one such pressing-surface arranged at right angles to the path of pressing motion, an opposite pressing-surface disposed normally parallel to said first-mentioned pressing-surface, a central horizontal pivot of oscillation centrally supporting said second surface, and springs supporting said surface at each side of said pivot.

418,154. WHISKY-TESTER. KNEBEL TAYLOR, Frankfort, Ky., assignor of one-half to John Meagher, same place. Filed July 31, 1888. Serial No. 319,234. (No model.)

Claim.—1. The combination of a covered liquor-tub, a chamber thereon having one or more transparent sides, a crib for loosely supporting a hydrometer hung within the chamber, a thermometer-cup adapted to rise within the chamber and around the crib, there being an opening from the chamber into the tub through which the said cup may pass, and a rod or rods attached to the cup, whereby it may be dipped in the tub and brought into the said chamber, substantially as shown and described.

2. The combination of a tub having a hole in its top, a transparent cover for the hole, a crib or equivalent hydrometer-holder beneath the said cover, and a cup adapted to be raised around the said crib, substantially as shown and described.



3. The combination of a tub having a hole in its top, transparent cover for the hole, a cup adapted to be raised through the hole beneath the cover, a thermometer secured to one side of the cup, and a transparent cover to the thermometer, convex on its outer face, substantially as shown and described.

4. The combination of a covered liquor-tub having a hole in the cover, a transparent chamber secured over the said hole, a crib for holding a hydrometer removably suspended within the chamber, and a cover hinged to the chamber and adapted to be locked, substantially as shown and described.

5. The combination of a liquor-tub having a hole in its top, a transparent chamber secured over the hole, a thermometer-cup adapted to pass up through the hole, guide-rods attached to the cup, whereby it may be sunk into and drawn up out of the contents of the tub, and guides for the said rods fixed relatively to the said chamber, whereby the raising of the rods will draw and direct the cup into the chamber.

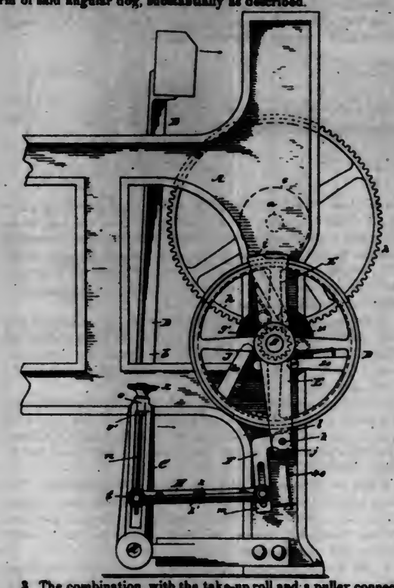
6. The combination of a thermometer-cup, guide-rods therefor, one of which is provided with a toothed rack, a support provided with guides through which the rods may slide, a toothed barrel-wheel journaled on the said support to engage the said rack, and a balance-spring within the barrel, substantially as shown and described.

7. The combination of a thermometer-cup, a puppet-valve in its bottom having a depending stem, a lever hung to the bottom of the cup and provided with a weight beneath the said stem, rods supporting the cup, fixed guideways for the rods, a trip-rod located in the guide-frame over the free end of the said lever, and a spring for supporting the said trip-rod, substantially as shown and described.

418,155. TAKE-UP MECHANISM FOR LOOMS. AMARIAH S. WARNER and ALLEN I. STEBBER, Springfield, Mass., assignors of one-fourth to George C. Wilson, same place. Filed Mar. 18, 1889. Serial No. 303,794. (No model.)

Claim.—1. In a take-up mechanism for looms, the combination, with the lay-frame and the radial arm C, fixed on the pivotal shaft of said lay-frame, provided with the longitudinal slot, and the driver-lever, of the block *p*, movable in said slot, having at one end a head and at the other a spindle projection, a sleeve fitted on the said spindle and bearing on the side of the arm, the link by one end suitably connected to the driver-lever and at its other provided with a bored hub fitting over said sleeve, and the nut *i*, substantially as described.

2. The combination, with the take-up roll and a pulley connected thereto, the lay-frame and the radial arm C, fixed on the pivotal shaft thereof, of a driver-lever having a hub-bore elongated in the direction of the length of said driver and provided at the end of one arm with the angular projection *i*, and having an angular dog F, pivoted to the end of its other arm, and a connection between said arm C and one arm of said angular dog, substantially as described.



3. The combination, with the take-up roll and a pulley connected thereto, the lay-frame, and the radial arm C, fixed on the pivotal shaft thereof, of a driver-lever having a hub-bore elongated in the direction of the length of said driver and provided at the end of one arm with the angular projection *i*, and having an angular dog F, pivoted to the end of its other arm, a spring applied between said dog and said driver, and a connection between said arm C and one arm of said angular dog, substantially as described.

4. In a take-up mechanism for looms, the combination, with the lay-frame and the radial arm C, fixed on the pivotal shaft of said lay-frame, provided with a longitudinal slot, and the driver-lever and the angular dog F, having an aperture or slot in the arm *m* thereof, of the blocks *p p*, fitting in said slots, each having at one end a head with a circular portion *y*, and at the other a spindle projection, a sleeve fitted on each of said spindles and bearing on the adjacent side of the arm, a link H, provided at each end with bored hubs fitting over said sleeves, and a duplicate link fitting by its bored hubs over the circular headed portions of said blocks, and a bolt-and-nut connection intermediately of said links, substantially as described.

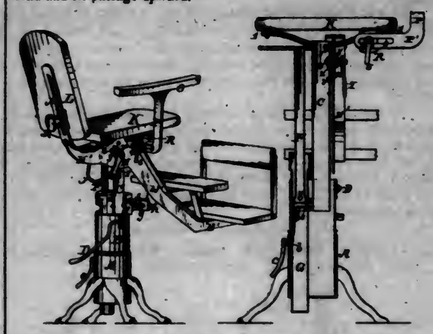
5. In a take-up mechanism for looms, the combination, with the take-up roll and the pulley connected thereto, of a spring-actuated pawl-arm pivotally attached to the frame of the loom and provided with an aperture 30, and a spring-arm 24, by one end fixed to the frame of the loom and having its other end formed with an angular projection, substantially as and for the purpose described.

6. In a take-up mechanism for looms, the combination, with the take-up roll and the pulley connected thereto, of a spring-actuated pawl-arm pivotally attached to the frame of the loom and provided with the channel 29 and the aperture 30, and a spring-arm 24, by one end fixed to the frame of the loom and having its other end formed with an angular projection, substantially as and for the purpose described.

7. In combination, the take-up roll and a pulley connected thereto, the lay-frame and the radial arm C, fixed on the pivotal shaft thereof, the driver-lever having angular projection *i* and provided with the elongated hub-bore fitting over the pulley-carrying shaft, and the angular dog F, pivoted thereto, the spring 40, applied between said dog and driver, a block longitudinally movable in said arm C, and means for securing it against movement, a link between and secured to said block and one arm of said dog, and a clutch mechanism affixed to the frame of the loom and engaging said pulley, substantially as and for the purpose described.

418,156. DENTAL CHAIR. BASIL M. WILKERSON, Baltimore, Md., assignor, by mesne assignments, to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Mar. 14, 1878. (No model.)

Claim.—1. The combination, substantially as set forth, of a liquid-carrying cylinder, a plunger movable up and down in the liquid in the cylinder, the plunger-head by which the liquid above and below it communicates at all times, and the chair-frame connected with the plunger and partaking of its movements, whereby the descent of the chair-frame, when the plunger is free to move downward, may automatically be retarded by gradual displacement of the liquid beneath the plunger-head and its passage upward.



2. The combination, substantially as set forth, of a liquid-carrying cylinder, a hollow plunger movable up and down in the cylinder, the plunger-head, an automatically-acting valve seated in the plunger-head and by which communication is at all times maintained between liquid above and below said head, and the chair-frame connected with and partaking of the movements of the plunger, whereby descent of the chair-frame, when the plunger is free to move downward, may automatically be retarded by gradual displacement of the liquid beneath the plunger-head and its passage upward.

3. The combination, substantially as set forth, of a liquid-carrying cylinder, a hollow plunger movable up and down in the liquid in the cylinder, the plunger-head by which the liquid above and below it is the cylinder communicates at all times, an automatically-acting valve seated in the plunger-head and by which communication is at all times maintained between liquid in the plunger and in the cylinder, and the chair-frame connected with and partaking of the movements of the plunger, whereby the descent of the chair-frame, when the plunger is allowed downward movement, may automatically be retarded by gradual displacement of the liquid beneath the plunger-head and its passage upward around and into the plunger.

4. The combination of the liquid-carrying cylinder, a hollow plunger movable up and down in the cylinder, the chair-frame connected with and partaking of the movements of the plunger, the plunger-head, an automatically-acting main valve seated in the plunger-head, and by which communication is at all times maintained between liquid above and below said head, and the automatically-acting supplemental valve for varying the area of the communicating way or passage afforded by the main valve, substantially as and for the purpose set forth.

5. The combination of a liquid-carrying cylinder, a chair-frame support or plunger movable up and down in the cylinder, having bearings at the upper end thereof and fitting loosely at its lower end or head therein below said bearings to allow of constant communication between the liquid above and below said head, the lifting devices, and the locking or upholding devices, substantially as and for the purpose set forth.

6. The combination of the pedestal or base, the chair-frame support or plunger carried thereby, the lifting devices, the automatic clamping devices sustained by connection with the pedestal or base, consisting of the clamp-block and the self-adjusting knee-jointed support therefor, said clamping devices yielding to allow the chair-frame support or plunger to ascend but preventing its descent, and the lever for tripping the clamping devices to release said plunger, substantially as set forth.

7. The combination, substantially as set forth, of the chair-frame support or plunger, the clamp-bar provided with the end flange for engaging the plunger at one side, the slide-block for engaging the plunger at the opposite side, the lever, and the cam by which the lever is connected with the clamp-bar and slide-block, whereby the clamp-bar flange and slide-block may be caused to grip the plunger for elevating it.

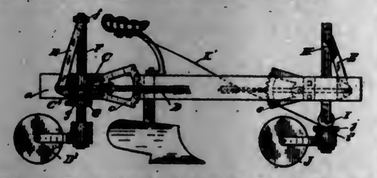
8. The combination, substantially as set forth, of the pedestal or base, the vertically-adjustable support or plunger carried thereby, the clamp-block acting on said plunger, and the adjustable thrusting jointed support of said block, said support yielding to allow upward movement of the plunger.

9. The combination, substantially as set forth, of the pedestal or base, the vertically-adjustable plunger carried thereby, the clamp-block acting on said plunger, the self-adjusting thrusting-support for the clamp-block, said support yielding to allow upward movement of the plunger and acting on said block to automatically lock the plunger against descent, and the lever acting on the clamp-block to release the plunger.

10. The combination of the seat, the arm, the supporting standard or stem of the arm, and the pivot extending parallel, or nearly so, with said arm, and passing through said stem to connect it with the seat, whereby the arm may be swung in a plane transverse to the seat and adjusted toward and from it, substantially as and for the purpose set forth.

11. The combination of the vertically and centrally slotted chair-frame-back standard, the vertically-adjustable and laterally-tilting chair-back, and the screw-clamp secured to and carrying or moving up and down with the chair-back, and engaging with and movable in the slot of said standard, whereby the chair-back may be moved up and down by and swung about said clamp, substantially as and for the purpose set forth.

413,157. SULKY-PLOW. ROBERD C. WESTERVELT, South Bend, Ind. Filed June 20, 1889. Serial No. 315,019. (No model.)



Claim.—1. The combination of the casting formed with a sleeve and segment, the lever pivoted thereon and vertical rod playing through said sleeve having a bent lower end, and the lever connecting said rod, with a sleeve on the lower end of said rod, the latch carried thereby, and the caster-wheel, all substantially as specified.

2. The combination of the casting, the vertically-movable rod, and the levers and link for operating said rod, with the adjustable sleeve on the lower end of the rod having a depending stud, and a caster-wheel attached to said stud, substantially as set forth.

3. The combination of the plow, its side wheel, and adjustable rear caster-wheel, with the casting secured to the front end of the beam, having a segment and sleeve formed integral therewith, a vertical rod playing through said sleeve, having a bent lower end, the lever pivoted to said casting, the link connecting said lever and rod, the sleeve on the bent lower end of said rod having a depending stud, the caster-wheel suspended on said stud having a flanged and notched arm, and the spring-controlled latch on said sleeve engaging said arm, all constructed and arranged to operate as and for the purpose set forth.

REISSUES.

11,084. PHOTOGRAPHIC DEVELOPING-BATH. CHARLES SPIRO, New York, N. Y. Filed Sept. 9, 1889. Serial No. 323,457. Original No. 402,612, dated Apr. 30, 1889.

Claim.—1. The combination, with a photographic developer, of a non-actinic coloring-matter, so as to produce a transparent and non-actinic developing mixture, as and for the purpose set forth.

2. The combination, with a photographic developer, of a solution of non-actinic aniline coloring-matter, substantially as and for the purpose set forth.

3. The combination, with a photographic developer, of orange aniline, substantially as and for the purpose set forth.

11,085. TOOL FOR PACKING STUFFING-BOXES. FRANK J. SMITH, Philadelphia, Pa., assignor to himself and Joseph R. C. Smith, same place, and William R. Smith, Washington, D. C. Filed Feb. 27, 1889. Serial No. 301,868. Original No. 367,456, dated Aug. 7, 1888.



Claim.—1. The herein-described packing-tool, consisting, essentially, of a tubular packer-rod adapted to fit upon the part to be packed and provided with a longitudinal guide-slot extending along the tubular portion of the rod for the reception and guidance of the packing-strand, whereby when said rod is placed upon the part to be packed and revolved said strand will be wound around such part, substantially as and for the purposes specified.

2. The herein-described packing-tool, consisting, essentially, of a tubular packer-rod adapted to fit upon the part to be packed and provided with a longitudinal guide-slot, and a guide-eye arranged in proximity to the closed end of said slot, substantially as and for the purposes specified.

3. The herein-described packing-tool, consisting of a tubular and longitudinally-slotted packer-rod adapted to fit onto the part to be packed, and in combination therewith of a friction-brake to maintain the packing-strand at the proper tension, substantially as and for the purposes specified.

4. The herein-described packing-tool, consisting, essentially, of a tubular longitudinally-slotted packer-rod adapted to fit upon the part to be packed, a friction-brake for the packing-strand, and a guide for said strand interposed between the friction-brake and slot, substantially as and for the purposes specified.

5. The herein-described packing-tool, consisting of a tubular packer-rod adapted to fit upon the part to be packed and provided with a longitudinal slot extending along the tubular portion of the rod for the reception and guidance of the packing-strand, in combination with a revolvable carrier for the packing, substantially as and for the purposes specified.

6. The herein-described packing-tool, consisting of a tubular packer-rod adapted to fit upon the part to be packed and provided with a longitudinal slot formed in the tubular portion thereof, said slot curving from right to left at the open end of said tubular portion of the rod, and a guide-eye a^3, arranged in proximity to the closed end of said slot, substantially as and for the purposes specified.

7. The herein-described packing-tool, consisting of a tubular packer-rod adapted to fit upon the part to be packed and provided with a longitudinal slot formed in the tubular portion thereof, one of the walls of said slot having its outer end formed into or provided with a cutting-lip, whereby the rod is made to perform the function of an auger when revolved in a given direction, substantially as and for the purposes specified.

8. The herein-described packing-tool, consisting of a tubular packer-rod provided with a guide-slot for the packing-strand, in combination with a revolvable packing-carrier, and a friction-brake for said carrier, substantially as and for the purposes specified.

9. A tool of the class described, comprising a tubular packer-rod adapted to fit upon the part to be packed and provided with a guide groove or slot for the reception and guidance of the packing, a handle for said rod, and a revolvable carrier for the packing, said parts being detachably connected together, substantially as and for the purposes specified.

10. The herein-described packing-tool, consisting of a tubular packer-rod A, provided with a slot a and a cutting-lip a^2, in combination with the spool B and the spring-plate b^3, provided with the cone-pin b', that constitutes one of the journals for the spool and operates as a friction-brake, substantially as and for the purposes specified.

PHOTO LITH. NORRIS PETERS WASHINGTON D.C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Eastern District of Missouri, Eastern Division.

CARSON *v.* URY *et al.*

Decided September 2, 1889.

1. LABEL WHICH IS NOT A VALID TRADE-MARK.

A label which does not indicate with any degree of certainty by what particular person or firm the articles to which it may be affixed were manufactured, or serve to distinguish the goods of one manufacturer from the goods of another, and in which complainant appears to have no vendible interest, but merely a right to use it on articles of his own make, so long and only so long as he remains a member of a certain union, is not a valid Trade-Mark.

2. SAME—BILL TO RESTRAIN THE MAKING AND SELLING COUNTERFEITS THEREOF—PRESUMPTION ARISING FROM SUCH MANUFACTURE AND SALE.

A bill to restrain defendants from making and selling counterfeits of Labels that are not Trade-Marks may be maintained, even though it does not show that defendants have affixed any of the spurious Labels to articles of their own manufacture, or that they have sold any articles bearing the counterfeit Labels, where it appears that complainant has a right to use the Label and the right to use it is a valuable one, and the adoption of the Label is not unlawful or opposed to public policy, and that he has sustained such special pecuniary damage as gives him a right to complain of the fraud. From the fact that defendants have made and sold spurious Labels and advertised them for sale, it will be presumed that they intended that they should be used by the persons who buy them on articles similar to those on which complainant uses them, and that they manufacture and sell them for that purpose.

3. SAME.

Such case is not a Trade-Mark case, and the court cannot interfere as in ordinary Trade-Mark cases.

4. SAME.

Cases of *Cigar Makers' Protective Union, No. 98, v. Conhaim et al.* (41 N. W. Rep., 943) and *Schneider v. Williams* (14 Atlantic Rep., 812) distinguished from the case at bar.

ON demurrer to the amended bill.

STATEMENT OF THE CASE.

The case made by the bill and admitted by the demurrer may be summarized as follows:

The "Cigar Makers' International Union of America" is a voluntary unincorporated association of practical cigar-makers, having many members, and was formed to promote the mental, moral, and physical welfare of its members, to assist them in obtaining remunerative wages, to extend pecuniary aid to members and their families in case of sickness or death, and generally to maintain a high standard of workmanship.

In September, 1880, at a convention held by members of the union, a Label was adopted to be placed on cigar-boxes for the purpose of designating cigars made by members of the union. The Label is nothing more than a certificate printed on blue paper, and purporting to have been issued by authority of the union, to the effect that the cigars contained in the box to which it is affixed have been made by first-class workmen, members of the union, and not by "inferior rat-shop, coolie, prison, or tenement-house workmanship." All members of the "Cigar Makers' International Union of America" (and the membership is said to exceed 25,000) are allowed to affix the Label to cigars made and sold by themselves, provided they do not employ others to make cigars. It is also the practice of the union to furnish the Label gratuitously to all cigar-manufacturers throughout the United States who employ exclusively members of the union at an agreed schedule of wages.

Complainant in this case is a member of the union, and for two years past has been making and selling cigars of his own manufacture in the city of New York; and in the course of his business has used (as he is entitled to) the union Label aforesaid and built up a profitable trade.

The wages received by members of the union are about three dollars higher per 1,000 cigars than the wages received by other cigar-makers, and cigars bearing the union Label are worth in the market $3 per 1,000 more than they would be worth without it, because in public estimation the Label is a guaranty that the cigars bearing it have been made by competent workmen in clean and healthy shops.

By the use of the genuine Label in question on cigars of his own manufacture the complainant has made great profits, and the public has also been protected from purchasing inferior cigars.

Since the adoption of the union Label and since complainant began to use the same the defendants have conspired to cheat and defraud complainant and other members of the union as well as the public by making and selling and offering for sale counterfeit Labels for cigar-boxes. The Label made and sold by defendants is a fac-simile of the union Label, and cannot fail to deceive. In furtherance of the scheme to defraud defendants have adopted a fictitious name under which they manufacture and sell the counterfeit Label in question, and they also have their correspondence concerning the same sent to a false address in the city of St. Louis, whence it is forwarded to defendants' real place of business. By making and selling such spurious and counterfeit Labels to cigar-manufacturers throughout the country the public is deceived and a great pecuniary loss is occasioned, which is borne by the complainant and other members of the union, who, like him, manufacture and sell cigars and make use of the genuine union Label in the course of their business to enhance the value of their product and increase the demand therefor.

Such in brief is the case made by the bill.

Messrs. Briesen, Steele & Knauth, and *Messrs. Hough, Overall & Judson* for the complainant.

Mr. Chester H. Krum for the defendants.

THAYER, *D. J.*, (after stating the facts as above:)

On the facts stated I think that complainant is entitled to equitable relief. It is no doubt true that the union label does not answer to the definition ordinarily given of a technical Trade-Mark, because it does

not indicate with any degree of certainty by what particular person or firm the cigars to which it may be affixed were manufactured, or serve to distinguish the goods of one cigar-manufacturer from the goods of another manufacturer, and because the complainant appears to have no vendible interest in the Label, but merely a right to use it on cigars of his own make so long, and only so long, as he remains a member of the union. In each of these respects the Label lacks the characteristics of a valid Trade-Mark. The court cannot interfere in this instance, as in ordinary Trade-Mark cases, on the ground that one person is intentionally or unintentionally appropriating a mark, symbol, design, or word which has become the exclusive property of another when used by him to distinguish goods of a certain class. In short, this is not a Trade-Mark case. As I view it, it is a bill filed to restrain the defendants from perpetrating a fraud which injures the complainant's business and occasions him a pecuniary loss. Even where no Trade-Mark was infringed or involved, courts of equity have granted injunctions on more than one occasion against the use upon goods of certain marks, labels, wrappers, &c., when the evident design of such use was to deceive the public by concealing the true origin of the goods and making it appear that they were the product of some other manufacturer of established reputation, thereby depriving the latter of a portion of the patronage that would otherwise come to him or injuring the reputation of his goods. (*Croft* v. *Day*, 7 Beavan, 84; *McLean* v. *Fleming*, 96 U. S., 245; *Wotherspoon* v. *Currie*, 5th H. L. Cases, 508; *Seixo* v. *Provezende*, L. R. 1st Chan., 195; *Thompson* v. *Winchester*, 19 Pick., 214; *Perry* v. *Truefitt*, 6 Beavan, 66; *Newman* v. *Alvord*, 51 N. Y., 189; *Avery & Sons* v. *Meikle*, 81 Ky., 73; *Burton* v. *Stratton*, 12 Fed. Rep., 696; *Brown Chemical Co.* v. *Meyer*, 31 Fed. Rep., 453; Browne on Trade-Marks, sections 43 and 44.)

No valid reason can be assigned why the principle which underlies these decisions does not entitle the complainant to relief. The right of the court to grant relief in the cases cited was predicated on the ground that the conduct of the parties proceeded against in intentionally marking, labeling, wrapping, or advertising their wares so that they would be mistaken for the goods of some other manufacturer was fraudulent. That, and the fact that the fraud complained of had a natural tendency to injure the business of the person whose marks, labels, &c., had been simulated, by lessening his sales or injuring the reputation of his goods, was held sufficient to give the person who had thus sustained or was liable to sustain special damage a right to equitable relief.

In the case at bar complainant shows that he has a clear right to use the union Label and that the right to use it is a valuable privilege, inasmuch as it enhances the value of the cigars which he manufactures and sells and increases the demand therefor.

It does not appear from the averments of the bill that the action of the Cigar Makers' Union in adopting a Label to distinguish cigars made by its members was or is in any respect unlawful or opposed to public policy. On the other hand, the action of the defendants is confessedly fraudulent.

The demurrer admits that they are engaged in making and selling counterfeit Labels purporting to have been issued by the "Cigar Makers' International Union of America." The bill avers that the sale of such counterfeit Labels injures the complainant's trade and business, and such would seem to be the necessary and immediate result of such fraudulent acts. In other words, complainant shows that he has sustained such special pecuniary damage as gives him the right to complain of the fraud. It is true that the bill does not show that the defendants have affixed any of the spurious Labels to cigars of their own manufacture, or that they have sold any cigars bearing the counterfeit certificates or Labels; but this is not important. From the fact that they have made and sold spurious Labels and advertised them for sale the court must presume that defendants intend that they shall be used on cigar-boxes by the persons who buy them, and that they manufacture and sell them for that purpose.

The conduct of the defendants is equally as culpable as that of the manufacturers of cigars who buy and use the spurious Labels, and the loss which complainant sustains by the use of the same on cigar-boxes is as directly attributable to the persons who make and sell the counterfeit Labels as to the dealers in cigars who buy and use them.

In conclusion, I will add that my attention was called on the hearing of the demurrer to a recent decision of the Supreme Court of Minnesota affecting the union Label in the case of the *Cigar Makers' Protective Union, No. 98*, v. *David E. Conhain et al.*, (41 N. W. Rep., 943.) Also, to a decision of the Court of Chancery of New Jersey in the case of *Schneider* v. *Williams*, (14 Atlantic Rep., 812.) In both of those cases the bill seems to have been framed upon the theory that the union Label was a technical Trade-Mark, and that as such it was the property of the members of the union in the aggregate, and that any one or more members of the union, whether they were or were not engaged on their own account in the manufacture and sale of cigars and in the use of the Label might maintain a suit to restrain an unauthorized party from using the Label. The decision in each case was adverse to such contention. The bills appear to have been filed by persons and by an association who were not engaged in the manufacture and sale of cigars on their own account. Hence they were not injuriously affected by the fraudulent acts complained of, or, if they were liable to suffer a pecuniary loss to any extent or at any time in consequence of such acts, the loss to be apprehended was indirect and speculative.

It may well be conceded that the plaintiffs in those cases had no such property rights involved as would enable them to maintain an action, even on the theory on which this decision proceeds. The case at bar differs from those cases, however, in the respect before mentioned, that complainant is himself a manufacturer of cigars, and according to the averments of the bill has built up a profitable trade by the use of the union Label, which trade has been damaged and is liable to be further damaged by the fraudulent acts of the defendants. I think that he is entitled to relief on the facts stated in the amended bill, and accordingly overrule the demurrer.

U. S. Circuit Court—District of Oregon.

ASBESTINE TILING AND MANUFACTURING COMPANY *v.* HEPP *et al.*

Decided June 28, 1889.

1. INFRINGEMENT—ACCOUNTING.
Under section 4921 of the Revised Statutes, where a decree is given in a suit in equity restraining the infringement of a right secured by patent, the court may also decree a recovery of the profits arising from such infringement and the damages the plaintiff has sustained thereby.

2. MUNICIPAL CORPORATION—INFRINGEMENT OF PATENT.
Where the council of Portland authorizes a contractor to lay a sewer in one of its streets in pursuance of a power contained in its act of incorporation, and in so doing the contractor infringes upon the patent of another for making sewer-pipe, the act being a corporate one for the benefit of the corporation, it is liable for such infringement the same as a private corporation or person.

SUIT IN equity for the infringement of a patent.

Mr. Albert H. Tanner for the plaintiff.

Mr. William H. Adams for the defendants.

DEADY, *J.*:

This suit is brought by the Asbestine Tiling and Manufacturing Company, a corporation formed under the laws of Washington, against V. Hepp and F. D. Ball, citizens of the State of Oregon, and the city of Portland, a municipal corporation of said State. It is brought to restrain the defendants from using or vending certain molds for making mortar-pipes for which Ezra Hamilton, the inventor, on October 28, 1877, obtained a patent from the United States for the term of 14 years, for an account of the profits arising from the making, using, and vending of said molds, and damages for the same. The defendants Hepp and Ball answer the amended bill and the city of Portland demurs thereto.

It appears from the bill that the plaintiff is the assignee of this patent for this county, and that the city of Portland is authorized by its act of incorporation to lay down sewers within the corporate limits, designate the material to be used in the construction of the same, exercise exclusive control in all matters relating thereto, and to assess the cost thereof on the property benefited thereby; that the defendant, by its common council, has employed and contracted with the defendants Hepp and Ball to put down numerous sewers constructed of pipe made with said molds, and in pursuance thereof has used a large number of said molds and a large quantity of pipe made by means thereof, and is about to contract with them for the construction of other sewers therewith.

On the argument of the demurrer the points made in support of it were these:

(1.) The city of Portland, in constructing sewers, exercises a police power for the benefit of the public health, which "in no way inures to the profit or advantage of the city in its corporate capacity," and therefore it "is not liable for the infringement of a patent in prosecuting such work."

(2.) The city of Portland is not liable for profits on account of the alleged infringement, "none being realized" or "claimed by the bill." Hence equity has no jurisdiction.

(3.) The city, if liable at all, is only liable for damages, and these can only be recovered in an action at law.

By section 4921 of the Revised Statutes (section 55, act of July 8, 1870, 16 St., 206) it is provided that in cases arising under the patent laws this court shall have power to grant injunctions—

to prevent the violation of any right secured by patent, and upon a decree being rendered in any such case for an infringement the complainant shall be entitled to recover, in addition to the profits to be accounted for by the defendant, the damages the plaintiff has sustained thereby.

Presumably the city has made no profits out of the alleged infringement; but, whether it has or not or will not, the complainant is presumably damaged thereby to the extent of the royalty or license-fee usually charged for the use of the patent.

Prior to the act of 1870 damages could not have been recovered in a suit in equity for the infringement of a patent, but resort must have been had to an action at law for this purpose.

The city, like any natural person, may be enjoined from violating any right secured to the patentee in this patent or his assigns, and the statute expressly provides that in case of a decree for an injunction to restrain the infringement of a patent the plaintiff shall be entitled to recover the damages sustained thereby.

In *Root* v. *Railway Co.* (105 U. S., 189) the whole subject of redress in equity for the violation of a right secured by a patent is exhaustively examined by the late Mr. Justice Matthews. The bill was filed after the expiration of Letters Patent for the profits derived by the defendant from the use of an improvement in railway-car brakes, and, as there could be no further infringement after the expiration of the patent, it was not a case for an injunction, and consequently not of equitable cognizance.

In stating the conclusion of the Court, Mr. Justice Matthews said, (page 215:)

That a bill in equity for a naked account of profits and damages against an infringer of a patent cannot be sustained; that such relief ordinarily is incidental to some other equity, the right to enforce which secures to the patentee his standing in court; that the most general ground for equitable interposition is to insure to the patentee the enjoyment of his specific right by injunction against a continuance of the infringement.

In the case under consideration, on the demurrer to the bill, the plaintiff is entitled to an injunction against the continuance of the infringement by the city, and this gives this court, sitting as a court of equity, jurisdiction. Incidental to this, according to the rules of procedure in equity and the express language of the statute, (section 4921, Rev. St.,) the court may give the plaintiff further relief by way of the recovery of the profits made by the infringer or the damages sustained by the plaintiff.

By the act of October 24, 1882, incorporating the city of Portland, the common council thereof is authorized to open, lay out, widen, grade, and improve the streets of the city, and by section 121 of such act "to lay down all necessary sewers and drains, and cause the same to be assessed on the property directly benefited by such drain or sewer," and by subdivision 30 of section 37 of said act the council is given the power "to regulate * * * the building and repairing of sewers."

In Dillon on Municipal Corporations (3d Ed., section 966) it is said that such corporations "are liable for acts of misfeasance positively injurious to individuals done by their authorized agents or officers in the course of the performance of corporate powers constitutionally conferred, or in the execution of corporate duties." But, the writer adds, there is "not a little diversity of opinion as to what duties are corporate duties." However this may be, it is certain that the State may authorize the officers of a municipal corporation to perform a duty which is not corporate in its character or purpose, and for the omission or wrong-doing of which the corporation is not, and

ought not to be, liable to any one. My attention has not been attracted to any specific instance of this kind, but many suggest themselves. For instance, if the State were to authorize and require the mayor of the city to keep a rain-gage or weather-record in Portland, or an account of the immigrants arriving at the port, in the performance of such duties he would be serving the public at large, and not the agent of the corporation. But where the act is a corporate one, to be performed primarily for the benefit of the corporation—the inhabitants of the municipality—it is none the less a private, corporate act, because the public at large may be incidentally benefited thereby.

What few cases there are on this subject refer to and follow the ruling in *Bailey* v. *Mayor, &c.*, (3 Hill, 531.) In this case it appeared that certain "water commissioners," appointed by the State under an act of the legislature to provide the city of New York with pure and wholesome water, employed persons to build a dam across the Croton river. The action was brought against the corporation to recover damages for injuries caused by the insufficient construction of the dam. The court held that the work was a corporate one; that the commissioners were the agents of the corporation, and that the latter was therefore liable for the injury.

In delivering the opinion of the court, Mr. Chief Justice Nelson, in speaking of the grants of power to municipal corporations for exclusive public purposes and those for private purposes and the difficulty sometimes of distinguishing them, said:

> But the distinction is quite clear and well settled and the process of separation practicable. To this end regard should be had not so much to the nature and character of the various powers conferred as to the object and purpose of the legislature in conferring them. If granted for public purposes exclusively, they belong to the corporate body in its public, political, or municipal character. But if the grant was for purposes of private advantage and emolument, though the public may derive a common benefit therefrom, the corporation, *quoad hoc*, is to be regarded as a private company. It stands on the same footing as would any individual or body of persons upon whom the like special franchises had been conferred.

Certainly the purpose of the power to drain the streets of the corporation for the health and convenience of the inhabitants thereof is quite as much a private one as that of the power to furnish them with water. Like the power to maintain fire-engines and lights, the power to drain the streets by constructing sewers therein to carry off the waste water and refuse matter is granted and intended for the benefit and emolument of the corporation—the dwellers in the city—and not the general public, although the latter may be and is incidentally benefited thereby.

When the municipal corporation of Portland was created by the legislature, it was not contemplated that the inhabitants thereof should be left to perish in their own filth and the place become a nuisance, and therefore the corporation is authorized, for its own benefit, to provide for the removal of its waste water and refuse matter by laying down sewers or constructing drains in its streets.

In *Ransom* v. *New York* (1 Fish. Pat. Cas., 254) and *Bliss* v. *Brooklyn* (4 Fish. Pat. Cas., 596) it was held that the municipal corporation was liable as an infringer for acts done in the course of the execution of its corporate powers and duties, the patents infringed being in the one case for fire-engines and the other for an improvement in hose-couplings.

In *Elizabeth* v. *Pavement Co.* (97 U. S., 126) it was not questioned that the corporation, having contracted with third persons to lay down a pavement on its streets, which was in fact an infringement of the pavement company's patent, was liable therefor as an infringer for profits, if any were made, and for damages, if any were sustained. But the suit having been commenced before the passage of the act of 1870 "damages" could not be recovered therein, and it not appearing that any profits had been made by the corporation, there were none to recover.

Nor is it material whether the council contracted for or required that the pipe to be used by the contractor should be made on the machine of the plaintiff. It is enough that it has accepted the same, or allowed the contractor to use it, without the license of the patentee or his assignee.

The demurrer is overruled.

U. S. Circuit Court—District of New Jersey.

ZINSSER *et al. v.* KREMER.

Decided August 27, 1889.

1. INFRINGEMENT—APPLICATION FOR REHEARING.

In a suit for infringement of a patent an application for rehearing after settlement of the case must be denied.

2. SAME—PETITION FOR LEAVE TO INTERVENE.

After litigation is closed in suit for infringement of a patent, a petition in behalf of a party for leave to intervene as a defendant, alleging that he had actually defended respondent's case and was most interested in the defense against complainants' patent, must be dismissed.

STATEMENT OF THE CASE.

The decision on final hearing in this case was published in the OFFICIAL GAZETTE of July 2, 1889, p. 114. Since then the defendant's counsel made an application for a rehearing, and also a petition in behalf of one Charles Zoller for leave to intervene as a defendant, Zoller alleging that he had actually defended Mr. Kremer's case, and that he, being the manufacturer of the infringing lumps of bicarbonate of soda, was most interested in the defense against complainants' patent. The question came up on Zoller's motion for leave to intervene.

Mr. Arthur v. Briesen for the complainants.

Mr. Joseph M. Deuel for the defendant and for petitioner Zoller.

BUTLER, *J.*:

The respondent's application for rehearing fell with his settlement of the case.

The only matter now before me is the petition of Charles Zoller for leave to intervene. Whether such leave should have been granted if applied for earlier in the litigation need not be decided. It certainly should not be now, when the litigation has closed. The petitioner waited until the judgment of the court had been pronounced and the case settled in pursuance of it.

The fact that the petitioner assisted in the defense by arrangement with respondent does not entitle him to favorable consideration on this motion. If it was proper that he should take part in the litigation, he should have come into the case as a party, and have made himself answerable to the complainant for any just demand which the latter might have against him, as well as for costs; otherwise the complainant was liable to be harassed, delayed, and subjected to liability for costs by the petitioner without any remedy against him.

The petition is therefore dismissed.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 49—No. 4. TUESDAY, OCTOBER 22, 1889. PRICE—$5 per year.

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Changes in Classification.

(ORDER No. 567.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., October 18, 1889.

The following sub-classes are hereby established in Division IV:

In Class 108, Roofing:
- Car.
- Portable.
- Thatch.

In class 104, Railways:
- Track-cleaners—
  - Flangers—Rotary.
  - Vibrating.
- Hot plows.

In Class 37, Excavating:
- Snow road machines.

C. E. MITCHELL,
Commissioner.

Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1862, to June 30, 1887, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1861, with an appendix, July 1, 1861, to June 30, 1862. One volume, 280 pages. In paper covers, $3; bound, $4.

Vol. 2. Appendix No. 2, July 1, 1862, to June 30, 1863. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1863, to June 30, 1864. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1864, to June 30, 1865. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1865, to June 30, 1866. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1866, to June 30, 1867. One volume, 52 pages. In paper covers, $1.50.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Issue of October 22, 1889.

Patents	482—No. 418,158 to No. 418,639,	inclusive.
Designs	13—No. 19,363 to No. 19,375,	inclusive.
Trade-Marks	23—No. 17,120 to No. 17,142,	inclusive.
Labels	4—No. 6,041 to No. 6,044,	inclusive.
Reissues	2—No. 11,086 to No. 11,087,	inclusive.
Total issue	524	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	4	.....	Nebraska	4	.....
Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	1	.....	New Hampshire	3	.....
California	11	.....	New Jersey	24	.....
Colorado	1	.....	New Mexico Terrty	.....	.....
Connecticut	17	1	New York	90	10
Dakota Territory	1	.....	North Carolina	.....	.....
Delaware	.....	.....	Ohio	39	.....
District of Columbia	5	.....	Oregon	1	.....
Florida	2	.....	Pennsylvania	37	1
Georgia	10	.....	Rhode Island	7	.....
Idaho Territory	.....	.....	South Carolina	2	.....
Illinois	31	.....	Tennessee	4	1
Indiana	16	.....	Texas	7	.....
Iowa	5	.....	Utah Territory	.....	.....
Kansas	7	.....	Vermont	2	.....
Kentucky	6	1	Virginia	3	.....
Louisiana	1	.....	Washington Terrty	.....	.....
Maine	1	.....	West Virginia	5	.....
Maryland	10	.....	Wisconsin	13	.....
Massachusetts	46	2	Wyoming Terrty	.....	.....
Michigan	22	.....	U. S. Army	.....	.....
Minnesota	4	1	U. S. Navy	1	.....
Mississippi	3	.....			
Missouri	15	2	Total to citizens of the United States	461	19
Montana Territory	.....	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Australia	.....	.....	Germany	6	.....
Austria-Hungary	1	1	Japan	.....	1
Belgium	.....	.....	Netherlands	.....	.....
Bermuda	.....	.....	New South Wales	.....	.....
Brazil	.....	.....	Norway	.....	.....
Canada	4	.....	Portugal	.....	.....
Canary Islands	.....	.....	Scotland	.....	.....
Colombia, U. S. of	.....	.....	South Australia	.....	.....
Cuba	.....	.....	Switzerland	2	.....
Denmark	.....	.....	Victoria	.....	.....
Ecuador	.....	.....		.....	.....
England	18	6	Total to citizens of foreign countries	84	8
France	3	.....			

DESIGNS.

19,362.—FONT OF PRINTING-TYPE.—*Charles H. Beeler, Jr.*, Philadelphia, Pa. Application filed August 29, 1889. Serial No. 322,366. Term of patent 7 years.

19,364.—FONT OF PRINTING-TYPE.—*Henry W. De Witt* and *Charles E. Tiede*, Chicago, Ill., assignors to *Barnhart Brothers & Spindler*, same place. Application filed September 26, 1889. Serial No. 325,217. Term of patent 14 years.

19,365.—COMB.—*Joseph P. Noyes*, Binghamton, N. Y., assignor to *Joseph P. Noyes & Co.*, same place. Application filed July 9, 1889. Serial No. 316,998. Term of patent 7 years.

19,366.—STAIR-CARPET BUTTON.—*David Walker*, Newark, N. J. Application filed September 25, 1889. Serial No. 325,061. Term of patent 14 years.

19,367.—CULTIVATOR-FRAME.—*Samuel L. Allen*, Cinnaminson, N. J. Application filed July 27, 1889. Serial No. 318,972. Term of patent 14 years.

19,368.—LABEL.—*Abigail A. Draper*, Blue Island, Ill. Application filed August 29, 1889. Serial No. 322,375. Term of patent 3½ years.

19,369.—EXTERIOR OF A STABLE.—*Antoine Lacroix, Jr.*, Brooklyn, assignor to *The Co-operative Building Plan Association*, New York, N. Y. Application filed September 28, 1889. Serial No. 325,452. Term of patent 3½ years.

19,370 to 19,373, inclusive.—EXTERIOR OF A COUNTRY HOUSE.—*Antoine Lacroix, Jr.*, Brooklyn, assignor to *The Co-operative Building Plan Association*, New York, N. Y. Applications filed September 28, 1889. Serial Nos. 325,453 to 325,456, inclusive. Term of patents 3½ years.

19,374.—EXTERIOR OF A COUNTRY HOUSE.—*Antoine Lacroix, Jr.*, Brooklyn, N. Y. Application filed September 28, 1889. Serial No. 325,457. Term of patent 3½ years.

19,375.—JEWEL-HOLDER.—*John L. Remlinger*, Providence, R. I. Application filed August 17, 1889. Serial No. 321,150. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

17,120.—WATER-TUBE VERTICAL BOILERS.—*The Hazelton Boiler Company*, New York, N. Y. Application filed September 7, 1889. Used since July, 1860.

"The word 'PORCUPINE.'"

17,121.—WATER-TUBE VERTICAL BOILERS.—*The Hazelton Boiler Company*, New York, N. Y. Application filed September 7, 1889. Used since July, 1860.

"The word 'HAZELTON.'"

17,122.—WATER-TUBE VERTICAL BOILERS.—*The Hazleton Boiler Company*, New York, N. Y. Application filed September 7, 1889. Used since January, 1869.

"The representation of a porcupine."

17,123.—CERTAIN NAMED WOOL DRESS-GOODS.—*Hilton, Hughes & Denning*, New York, N. Y., and Paris, France. Application filed September 21, 1889. Used since 1872.

"The word 'HORTENSE.'"

17,124.—CORSETS.—*William S. Thomson*, London, England. Application filed September 14, 1889. Used since January, 1867.

"The words 'THOMSON'S GLOVE FITTING CORSET.'"

17,125.—CUTLERY AND EDGE-TOOLS.—*B. Worth & Sons*, Sheffield, England. Application filed September 23, 1889. Used since 1873.

"The word 'WORTH.'"

17,126.—LAGER-BEER.—*Conrad Geise & Co.*, Chattanooga, Tenn. Application filed May 7, 1889. Used since May 1, 1888.

"The word 'FAULTLESS' associated with a pair of spread wings and diverging rays of light."

17,127.—BEER, ALE, AND LAGER.—*Crystal Spring Brewing Company*, Syracuse, N. Y. Application filed August 19, 1889. Used since October 1, 1888.

"The representation of a spring with a background of rocks and female figures clinging to the rocks and holding a vessel catching water."

17,128.—FOODS AND RELISHES, SUCH AS FRUITS AND VEGETABLES.—*Henry Ferdinand Ihlee*, Battersea, county of Surrey, England. Application filed August 28, 1889. Used since June 20, 1888.

"The words 'FRAME FOOD.'"

17,129.—MEDICATED FOODS AND MEDICINAL TONICS.—*Henry Ferdinand Ihlee*, Battersea, county of Surrey, England. Application filed August 28, 1889. Used since June 20, 1888.

"The words 'FRAME FOOD.'"

17,130.—MALT LIQUORS, COFFEE, TEA, AND COCOA.—*Henry Ferdinand Ihlee*, Battersea, county of Surrey, England. Application filed August 28, 1889. Used since June 20, 1888.

"The words 'FRAME FOOD.'"

17,131.—CONFECTIONERY, CANDIES, AND PREPARED SUGAR.—*Henry Ferdinand Ihlee*, Battersea, county of Surrey, England. Application filed August 28, 1889. Used since June 20, 1888.

"The words 'FRAME FOOD.'"

17,132.—LEATHER MADE FROM SHEEP AND GOAT SKINS.—*James F. Ingraham*, West Peabody, Mass. Application filed August 19, 1889. Used since January 15, 1886.

"The representation of the head of a bear and the word 'BEAR.'"

17,133.—KEROSENE-OIL.—*Mourilyan, Heimann & Co.*, Yokohama and Hiogo, Japan, and New York, N. Y. Application filed August 21, 1889. Used since July 1, 1869.

"The representation of the national flags of the United States and Japan on crossed poles tied by a rope which ends in tassels."

17,134.—MEDICINES FOR THE PREVENTION AND CURE OF MICROBE DISEASES.—*Chas. Alf Chemical Company*, St. Louis, Mo. Application filed September 2, 1889. Used since August 20, 1889.

"The representation of a man seated before a table, upon which are supported a jar and a tumbler, a mortar, and a bunch of herbs in a suitable stand, the left hand of the man, resting upon the table, holding the mortar, and in his right hand holding a magnifying-glass, through which he is examining the herbs."

17,135.—MINERAL WATER.—*Brooklyn Purified Mineral Water Co.*, Brooklyn, N. Y. Application filed August 24, 1889. Used since March 1, 1887.

"The representation of a mortar and pestle."

17,136.—SALT.—*Genesee Salt Company*, New York, N. Y. Application filed June 27, 1889. Used since January, 1886.

"The conventional representation of a cube impressed on a dark ground."

17,137.—HERB TEA.—*Gunton & Curtis*, Philadelphia, Pa. Application filed September 10, 1889. Used since April 8, 1889.

"A group of fern leaves and blossoms with the words 'VEGETABLE TEA' interwined in it in a fanciful manner."

17,138.—IN-DOOR BASE-BALL GAMES.—*Ida Parmly*, Bridgeport, Conn. Application filed September 26, 1889. Used since September 16, 1889.

"The word 'WINTER' and the representation of a game of base-ball."

17,139.—STICKY FLY-PAPER.—*Ryan Drug Company*, St. Paul, Minn. Application filed August 27, 1889. Used since May 1, 1889.

"The word 'EAGLE.'"

17,140.—VARNISHES, JAPANS, AND HARD OIL FINISH.—*James P. Sloane*, Brooklyn, N. Y. Application filed August 2, 1889. Used since July 22, 1889.

"The words 'KINGS COUNTY VARNISHES' and the representation of a crown."

17,141.—WHISKY.—*E. H. Taylor, Jr., & Sons*, Frankfort, Ky. Application filed August 13, 1889. Used since January 1, 1887.

"The script fac-simile 'E. H. TAYLOR, JR.'"

17,142.—PRESERVED MEAT, FISH, AND FRUIT.—*Carl Warhanek*, Vienna, Austria-Hungary. Application filed August 6, 1889. Used since May, 1868.

"A representation of the mythological figure known as a 'SPHINX' or the word 'SPHINX.'"

LABELS.

6,041.—Title: "HOLLOWAYS CELEBRATED STOMACH BITTERS."—*George W. Holloway*, Syracuse, N. Y. Application filed September 28, 1889.

6,042.—Title: "SHERMAN'S HEADACHE CAPSULES."—*Charles A. Sherman*, Rochester, N. Y. Application filed September 24, 1889.

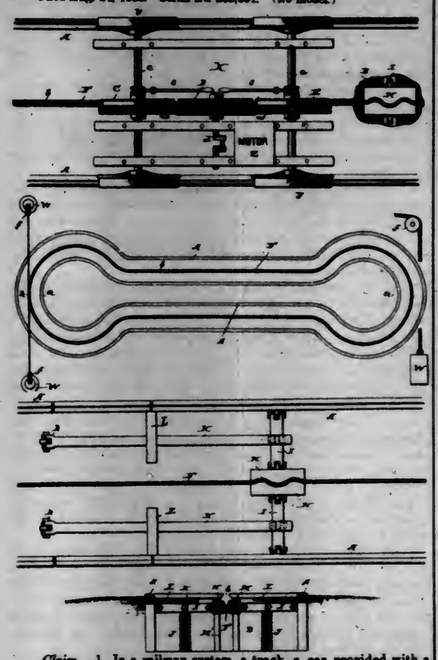
6,043.—Title: "CHAS. ALFF'S GERM EXTERMINATOR."—*Chas. Alf Chemical Company*, St. Louis, Mo. Application filed September 2, 1889. (Trade-Mark Registered.)

6,044.—Title: "TAFT'S BOTTOM POLISH."—*George H. Taft*, Worcester, Mass. Application filed August 15, 1889.

PATENTS

GRANTED OCTOBER 22, 1889.

418,158. RAILWAY SYSTEM. CHARLES B. ADSIT, Chicago, Ill. Filed Aug. 24, 1888. Serial No. 283,061. (No model.)



Claim.—1. In a railway system, a track, a car provided with a driven winding-wheel, and a stationary cable mounted adjacent to the track and arranged to pass over the said winding-wheel on the car, the end of the cable being free and weighted, substantially as described.

2. In a railway system having a continuous looped track, a single stationary cable mounted adjacent to the track, having its end portions crossed, and a car provided with a winding-wheel, substantially as and for the purpose set forth.

3. In a railway system having a continuous looped track, a stationary cable mounted in a channel adjacent to the track, and having its end portions crossing each other and free and weighted, and a car provided with a winding-wheel for the cable, substantially as described.

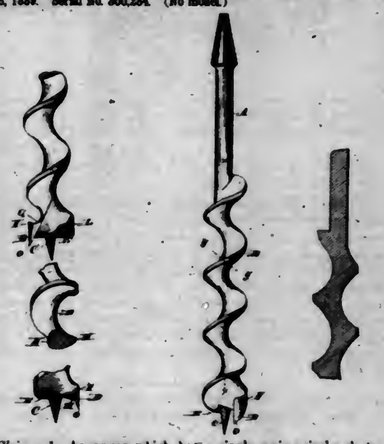
4. In a railway system, the combination of a stationary cable lying adjacent to the track and stationary gripping devices for engaging with the cable between its ends, substantially as described.

5. In a railway system, a track, a car traveling thereon provided with a winding-wheel, a stationary cable arranged adjacent to the track, and a stationary gripping device having blocks or jaws which clamp the cable and connected to be separated by the passing of a car, substantially as described.

6. In a railway system, a track, a car traveling thereon provided with a driven winding-wheel, a stationary cable arranged adjacent to the track, the stationary cable-clamping blocks or jaws, the springs which hold the jaws clamping the cable, and levers connected with the blocks or jaws and operated by a passing car to separate the blocks or jaws against the action of the springs, substantially as described.

7. In a railway-car, the combination of the traction-wheels, a driven wheel *w*, mounted loosely on the axle of the wheels, a clutch whereby the wheel *w* may be connected with the axle to drive the traction-wheels, and a cable-winding pulley connected with the wheel *w*, to be driven thereby, substantially as described.

418,159. AUGER. JOHAN BAILEY, Wilmington, Ohio. Filed Feb. 18, 1889. Serial No. 300,284. (No model.)



Claim.—1. An auger which has a single main spiral web, together with a pointed cutter backed by a spiral web which has a pitch greater than the pitch of the main spiral web of the auger, and which decreases gradually in radius as it ascends and runs into and coincides with the said main spiral web at a short distance from the cutter, substantially as described.

2. An auger which has a single spiral main web which increases in thickness gradually and uniformly from the outer to the inner edge, together with a pointed cutter placed to one side of and at some distance from the axis of said auger, and a support for said cutter projecting from said axis, substantially as described.

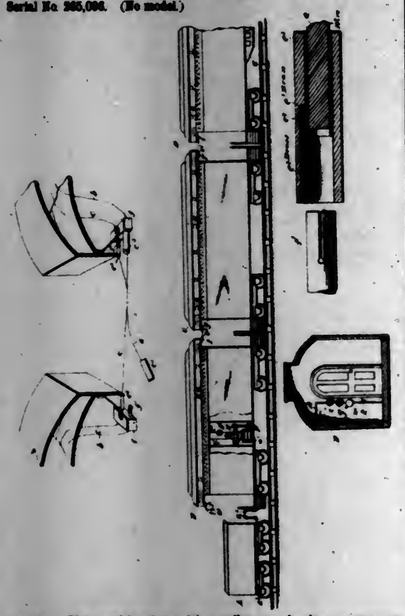
3. An auger which has a single main spiral web which terminates in a suitable edge for removing the chips, together with a pointed cutter backed by a spiral supporting-web which has a pitch greater than the pitch of the main spiral web, and which decreases gradually in radius as it ascends and runs into and coincides with the said main spiral web, substantially as described.

4. An auger which has a single main spiral web which increases in thickness gradually and uniformly from the outer to the inner edge, together with a pointed cutter which is backed by a short spiral web which has a pitch greater than that of the main spiral web, and which decreases gradually in diameter as it ascends and runs into and coincides with the main spiral web, substantially as described.

5. In an auger, the single pointed cutter supported upon and projecting downward from a suitable web, which terminates in a straight

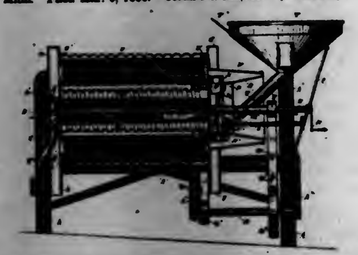
cutting-edge, a portion of the cutting-edge of the pointed cutter being above said web, substantially as described.

413,160. ELECTRIC CAR-LIGHTING. SIDNEY H. BARRETT, Springfield, Mass., assignor to Dwight Holland, same place. Filed Feb. 24, 1888. Serial No. 265,096. (No model.)



Claim.—The combination, with a railway-train the cars composing which are provided with the main wires *b c*, of wires *d e*, connecting said main wires of the several cars in a continuous circuit, wires *h* within each car, connected by switch with said main wire *c*, lamps *a*, connected to wires *b h*, dynamo E, located in one of the cars and connected with the main wires thereof, engine F, operatively connected with said dynamo, pipes $a' a^2$ and coupling a^3, connecting said engine with the locomotive-boiler, storage-battery G, and wires *k l*, connecting said battery with the main wires of one of the cars through switch *m*, arranged and operating substantially as and for the purpose set forth.

413,161. GRAIN-SEPARATOR. GEORGE C. BEEMAN, Minneapolis, Minn. Filed Mar. 9, 1889. Serial No. 302,703. (No model.)



Claim.—1. The combination, with a revoluble shaft, of a separating-cylinder mounted thereon, multiple small-diameter separating-cylinders grouped about the central cylinder outside thereof and outside each other, imperforate partitions between the separating-surfaces of the different cylinders, and a conveyer-case inclosing the whole group of cylinders and in communication with the central cylinder, adapted to receive the screenings from the outside cylinders and force them into the central screen, substantially as described.

2. The combination, with a revoluble shaft, of a central separating-cylinder mounted thereon, a central imperforate conveyer or shell with spiral corrugations surrounding said central cylinder, multiple small-diameter separating-cylinders grouped about said central conveyer outside thereof and outside each other, imperforate partitions between the separating-surfaces of the outside cylinders, and an exterior conveyer case or shell with spiral corrugations inclosing the whole group of cylinders and in communication with the central cylinder, substantially as described.

3. The combination, with a revoluble shaft, of a central cylindrical screen mounted thereon, a central imperforate conveyer-shell inclosing said central screen, multiple small-diameter cylindrical screens grouped about said central conveyer outside thereof and outside each other, an exterior conveyer-shell inclosing the whole group of screens, chutes connecting the upper end of the exterior conveyer with the upper end of the central screen, and radial partitions between the outside screens, extending outward from the periphery of the central conveyer near to, but stopping short of, the exterior conveyer, substantially as described.

4. The combination, with a revoluble shaft, of separating-cylinders, mounted thereon, a mouth-piece in communication with said separating-cylinders, and a sectional receiving-screen removably mounted in said mouth-piece, substantially as described.

5. The combination, with a revoluble shaft, of separating-cylinders mounted thereon, a mouth-piece in communication with said cylinders, screen-section seats in said mouth-piece, and a sectional receiving-screen having its separate sections removably mounted in said seats, substantially as described.

6. The combination, with a revoluble shaft, of separating-cylinders mounted thereon, a mouth-piece in communication with said cylinders a receiving-screen in said mouth-piece, and a blast-fan between said receiving-screen and separating-cylinders, adapted to blow the chaff and light material out at the head of the machine, substantially as described.

7. The combination, with a revoluble shaft, of separating-cylinders mounted thereon, a mouth-piece in communication with said cylinders, a receiving-screen in said mouth-piece, an adjustable fan-case in said mouth-piece, and a blast-fan in said case, substantially as described, whereby the blast may be made to pass under, over, or clear of said receiving-screen at will.

8. The combination, with a revoluble shaft, of separating-cylinders mounted thereon, a mouth-piece in communication with said cylinders, a receiving-screen in said mouth-piece, a cylindrical fan-case in said mouth-piece between the receiving-screen and the separating-cylinders, having a blast-outlet near its periphery approximately in line with its axis, a blast-fan therein having straight radial blades, and spiral peripheral blades connecting the inner and outer corners of adjacent radial blades, substantially as described.

9. The combination, with a revoluble shaft, of separating-cylinders mounted thereon, a mouth-piece in communication with said cylinders, a receiving-screen in said mouth-piece, a partially-revoluble fan-case in said mouth-piece b*y* *k* of the receiving-screen, having a blast-outlet near its periphery approximately in line with its axis, and a blast-fan in said case having straight radial blades and spiral peripheral blades connecting the inner and outer corners of adjacent radial blades, substantially as described.

10. The combination, with a revoluble shaft, of separating-cylinders mounted thereon, a mouth-piece in communication with said cylinders, a receiving-screen in said mouth-piece, a partially-revoluble fan-case with blast-fan in said mouth-piece, having a toothed section attached thereto, and a hand-shaft mounted on main frame, having a pinion at one end adapted to engage with said ratchet for adjusting said case, substantially as described.

11. The combination, with a revoluble shaft, of multiple separating-cylinders rigidly mounted thereon, a mouth-piece surrounding the upper end of said shaft in communication with said cylinders, a blast-fan loosely mounted on said shaft within said mouth-piece and provided with a driving-pulley, a counter-shaft on the main frame provided with a large and a small pulley, an inclosing shell or case surrounding said multiple cylinders, a belt from said case to said small pulley, and a belt from said large pulley to said fan-driving pulley, substantially as described.

12. The combination, with a revoluble shaft, of a central separating-cylinder mounted thereon, multiple separating-cylinders grouped about said central cylinder, but entirely outside thereof and outside of each other, a conveyer for conducting the screenings from the interior cylinder to the head of the central cylinder, and a separate outlet for the discharge from said central cylinder, substantially as described.

13. The combination, with the revoluble shaft, of the central screen, the multiple screens grouped about the central screen, each outside of every other, the lower end drum-head adapted to fit over the group of screens, the inwardly-projecting flange thereon and separate outlet-chute therefrom, and the outwardly-projecting flange on the end of the central screen, adapted to telescope therewith, substantially as described.

14. The combination, with the revoluble shaft, of the central screen, the exterior multiple screens, each outside of every other, the exterior conveyer-case, the radial inlet-chutes therefrom to the head of the central screen, and the deflector on the inside of said central screen for preventing the discharge from said radial chutes interfering with each other, substantially as described.

15. The combination, with the revoluble shaft, of the central screen having an imperforate upper section, the outside multiple screens, each outside of every other, the exterior conveyer-case, and the inlet-chutes from the head of said conveyer-case to the head of the imperforate section of the central screen for avoiding impact and securing better distribution of the central screen, substantially as described.

16. The combination, with a revoluble shaft, of a series of separating-cylinders supported thereby and a conveyer-case provided with spiral corrugations surrounding said series of cylinders, substantially as set forth.

17. The combination, with a revoluble shaft, of a separating-cylinder mounted thereon, multiple small-diameter separating-cylinders grouped about the central cylinder outside thereof and outside each other, and a conveyer-case inclosing the whole group of cylinders and in communication with the central cylinder, substantially as and for the purpose described.

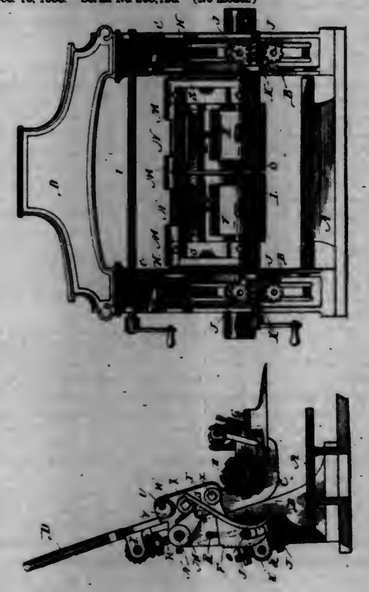
413,162. FLUID CAN AND PUMP. FRANK S. BELCHER, Charlotte, Mich. Filed May 15, 1889. Serial No. 310,806. (Model.)



Claim.—1. In a liquid-pump, the combination, with the can or tank having a central filling and vent opening, of the plunger having its handled or outer end provided with a plug entering or closing said opening, substantially as set forth.

2. The liquid-pump having the discharge-pipe adapted to enter at its discharge or outlet end, a pocket or well in the can cover or top, and the plunger having its outer or handled end provided with a plug entering or filling an opening in the can or tank, substantially as set forth.

413,163. PLANING-MACHINE. EDWIN BENJAMIN, South Evanston, Ill., assignor to the Benjamin Machine Company, of Illinois. Filed Dec. 10, 1888. Serial No. 293,128. (No model.)



Claim.—1. The combination, with the cylinder of a planing-machine, of a pivoted link downwardly inclined toward the cylinder, a chip-breaker suspended from the end of said link nearest the cylinder and having a slot in its lower portion, as described, and a guide-rod through said slot, whereby the lower edge of the chip-breaker will move in a circular path concentric with the cylinder, substantially as described.

2. The combination, with the cylinder of a planing-machine, of a pivoted link downwardly inclined toward the cylinder, a chip-breaker suspended from the end of said link nearest the cylinder and having a slot in its lower portion, as described, a guide-rod through said slot, and a set-screw passing through the chip-breaker and abutting against said guide-rod, substantially as described.

3. The combination, with the housing and cylinder of a planing-machine, of side pieces horizontally adjustable thereon for supporting the chip-breaker or the pressure-bar, a shaft, and eccentrics on said shaft by which the side pieces may be simultaneously adjusted, as and for the purpose set forth.

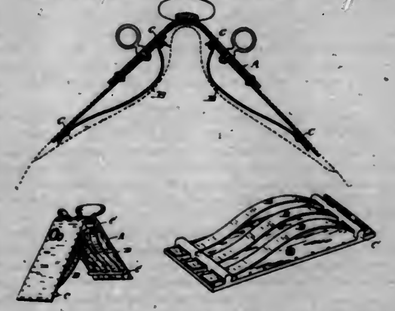
413,164. END-GATE. WILLIAM C. BLEE, Manilla, Iowa. Filed Aug. 10, 1889. Serial No. 320,280. (No model.)



Claim.—1. The combination, with the end-gate and the body, of the hinged bars pivoted to the end-gate and the wagon, the locking-lever, and the rod swiveled to the locking-lever and adapted to engage the body, substantially as described.

2. The combination, with the end-gate and the body, of the hinged bars pivoted to the end-gate and the wagon, the nut having an eye, the locking-lever pivoted to the end-gate, and the rod swiveled to said lever and having its free end hooked and adapted to engage the eye of the nut, substantially as described.

413,165. HARNESS-SADDLE. JOHN D. BRAHM, Detroit, Mich. Filed Apr. 25, 1888. Serial No. 308,542. (No model.)



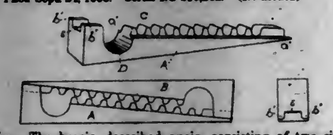
Claim.—1. The combination, with a saddle, of a plurality of springs arranged side by side, each spring having one of its ends pointing toward the center of the saddle and fixedly connected with said saddle, and the other loosely engaged with a loop connected with the saddle so as to be free to expand toward the end of said saddle, substantially as described.

2. In a pad for harness-saddles, the combination, with a foundation-plate, of a plurality of curved metal leaf-springs B, secured thereto with their ends extending in opposite directions, free to expand each independent of the other in the longitudinal direction of the pad by means of loops C, into which the springs are engaged loosely at one end and rigidly secured at the other end, substantially as described.

3. As an improved article of manufacture, a skeleton harness-saddle pad, consisting of a metallic saddle-tree section provided at its under side with two rows of loops C at the ends of the pad, and of a plurality of metallic leaf-springs curved in the form of the pad and

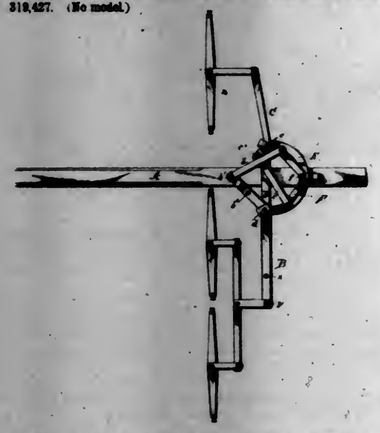
secured to these loops, with their ends extending in opposite directions, free to expand at one end, each independent of the other, substantially as described.

413,166. PRINTER'S QUOIN. ABRAHAM T. H. BROWER, Chicago, Ill. Filed Sept. 24, 1888. Serial No. 286,202. (No model.)



Claim.—The herein-described quoin, consisting of two similar reversible wedges A and B, each having a single rack-bar C centrally along its inner face, with continuous marginal bearings *a a'* on either side of the same, projecting guide-bearings *b b'* at its thick end, upon which said marginal bearings slide, and notch D at said thick end, forming a socket for the key, substantially as shown and described.

413,167. DRAFT-EQUALIZER. ALFRED G. BROWN, La Crosse, Wis., assignor of one-half to Erwin G. Boynton. Filed Aug. 1, 1889. Serial No. 319,427. (No model.)



Claim.—In a draft-equalizer, independent draft-levers pivoted at equal distances from the center line of the vehicle-pole, in combination with a cross-arm pivoted on said pole, the inner ends of the draft-levers being attached to the opposite ends of the cross-arm by means of suitable connecting-bars, substantially as and for the purpose described.

413,168. MACHINE FOR WIPING CANS. CHARLES A. BURT, Rochester, N. Y. Filed Oct. 16, 1888. Serial No. 288,262. (No model.)

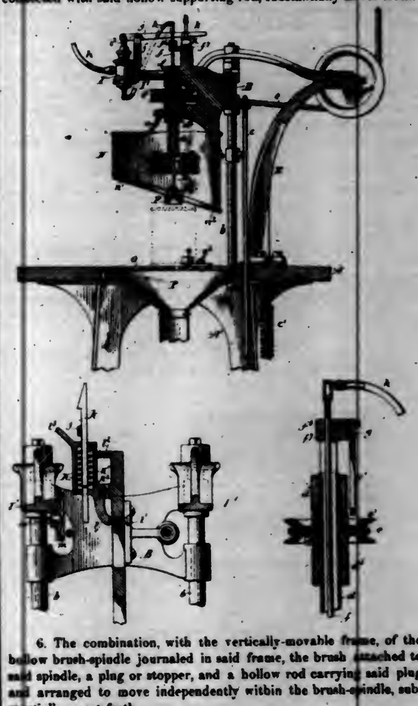
Claim.—1. The combination, with a stationary support upon which the cans are placed, of a vertically-movable frame arranged above said support, and a revolving brush and a plug mounted in said frame and moving therewith toward and from the can-support, substantially as set forth.

2. The combination, with a stationary support upon which the cans are placed, of a vertically-movable frame arranged above said support, a revolving brush and plug mounted in said frame and moving therewith toward and from the can-support, a water-supply pipe and valve, and a trip mechanism mounted on said movable frame, whereby said valve is opened and closed, substantially as set forth.

3. The combination, with the stationary can-support and the vertically-movable frame, of the hollow brush-spindle journaled in said frame, the brush attached to said spindle, a plug or stopper, and a rod carrying said plug or stopper and arranged within the bore of the brush-spindle, substantially as set forth.

4. The combination, with the hollow brush or wiper spindle and the brush attached thereto, of a plug or stopper closing the opening in the can, a hollow supporting-rod arranged within the hollow brush-spindle, carrying said plug and provided with water-escape openings, and a water-pipe connected with said hollow supporting-rod, substantially as set forth.

5. The combination, with the hollow brush-spindle and the brush attached thereto, of a plug or stopper closing the opening in the cans, a hollow plug-supporting rod arranged within the hollow brush-spindle, and provided with water-escape openings above said plug, a deflector arranged above said escape-openings, and a water-supply pipe connected with said hollow supporting-rod, substantially as set forth.



6. The combination, with the vertically-movable frame, of the hollow brush-spindle journaled in said frame, the brush attached to said spindle, a plug or stopper, and a hollow rod carrying said plug and arranged to move independently within the brush-spindle, substantially as set forth.

7. The combination, with the vertically-movable frame and the hollow brush-spindle journaled in said frame, of a plug or stopper, a hollow rod carrying said plug and arranged within the brush-spindle, a water-supply pipe connected with said hollow rod, and a cut-off valve arranged in said supply-pipe and operated by the vertically-movable frame, substantially as set forth.

8. The combination, with the vertically-movable frame and the hollow brush-spindle journaled in said frame, of a plug or stopper, a hollow rod carrying said plug and arranged within the brush-spindle, a water-supply pipe connected with said hollow rod, a cut-off valve arranged in said supply-pipe and provided with an actuating-lever, and a trip mechanism attached to said movable frame, whereby said actuating-lever is operated and released, substantially as set forth.

9. The combination, with the vertically-movable frame and the hollow brush-spindle journaled in said frame, of a plug or stopper, a hollow rod carrying said plug and arranged within the brush-spindle, a water-supply pipe connected with said hollow rod, a cut-off valve arranged in said supply-pipe and provided with an actuating-lever, and a movable pawl-frame attached to said vertically-movable frame and provided with a pawl engaging with said actuating-lever and with a trip-cam which engages against a stationary part of the machine, substantially as set forth.

10. The combination, with the supply-pipe A and the cut-off valve I, provided with an actuating-lever, of the movable brush-frame B, the yielding pawl-frame K, pivoted to said movable frame and provided with a pawl *k* and a tripping-cam *P*, and an adjustable stop against which said tripping-cam engages, substantially as set forth.

11. The combination, with the fixed stop and the vertically-movable brush-frame, the water-supply valve, and its lever, of the movable pawl-frame attached to the movable brush-frame, a pawl made vertically movable in the pawl-frame, and a spring interposed between the pawl and its frame, substantially as set forth.

12. The combination, with the vertically-movable brush-frame, the revolving brush and the plug mounted in said frame, and a water-supply pipe, of a table provided with an opening underneath the brush-frame, a grate arranged in said opening for supporting the cans, and a sink arranged below said grate, substantially as set forth.

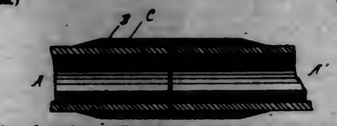
413,169. HYDROCARBON GENERATOR AND BURNER. LEWIS R. CALDER, Terre Haute, Ind. Filed Mar. 6, 1889. Serial No. 302,064. (No model.)



Claim.—1. In a hydrocarbon-burner, the vertically-extended mixing-chamber B, provided at its lower end with air-ports *c*, the combination, with the superheating-chamber C, provided with the vertical extension E, located wholly within the mixing-chamber and having a jet *e* located within the field of the air-ports *c*, of the mixing-chamber, whereby the commingled vapor and air are caused to ascend through a heated space before ignition, substantially as and for the purpose hereinbefore set forth.

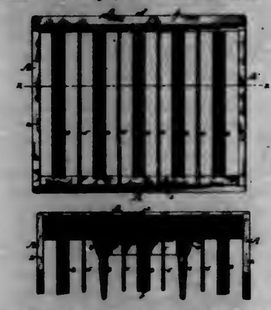
2. In a hydrocarbon generator and burner, the combination, with the vertically-extended mixing-chamber provided at its lower end with air-ports, of valves for controlling the admission of air to said chamber, the superheating-chamber provided with the hollow extension located wholly within and being entirely inclosed by the mixing-chamber and having a jet at its lower end, and the supply-pipe entering the side of the superheating-chamber and brought around adjacent to the flame-orifices of the mixing-chamber, substantially as described.

413,170. COUPLING FOR STONEWARE PIPES. HORACE B. CAMP, Cuyahoga Falls, Ohio. Filed May 27, 1889. Serial No. 312,351. (No model.)



Claim.—In a pipe-coupling, the combination of a strip of fabric saturated with asphaltum and wrapped about the adjacent ends of the pipe-sections with a strip of like material saturated with a solution of water-lime cement wrapped about the inner strip and extending beyond it and uniting with the pipe in each direction, substantially as shown and described, and for the purpose specified.

413,171. RIBBON OR NOTION TRAY. WILLIAM H. CARRIGO, Manistee, Mich. Filed July 6, 1889. Serial No. 316,663. (No model.)

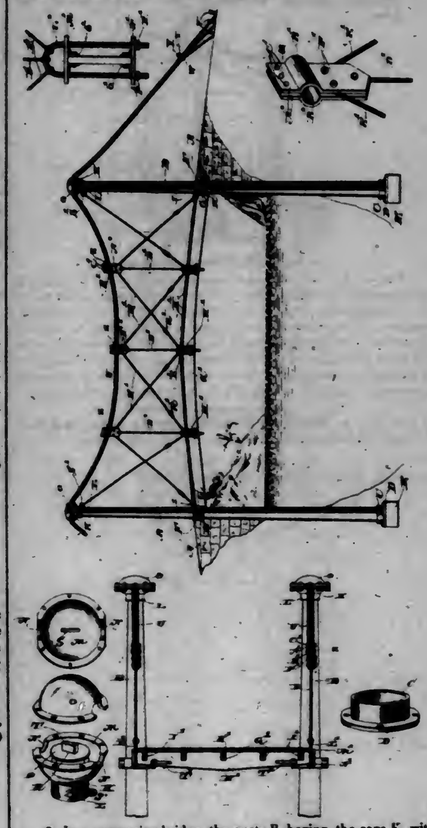


Claim.—1. The ribbon-tray herein described, composed of the frame A, having concave bottom pieces arranged at intervals across the bottom and narrow top partition-strips arranged parallel with and between the bottom pieces, legs hinged to one side of the frame, and a spring-catch to hold the legs when in upright position, substantially as described.

2. The ribbon-tray herein described, composed of the frame A, having bottom pieces arranged at intervals across the bottom, and partition-pieces arranged parallel with and between the bottom pieces, and supporting-legs on one side of the frame, substantially as described.

413,172. SUSPENSION-BRIDGE. GEORGE H. GLUYER, Bloomingsburg, Ind. Filed Mar. 22, 1889. Serial No. 304,245. (No model.)

Claim.—1. In a suspension-bridge, the posts having the caps with concavities M, in combination with the cables strung through the caps, the cam-blocks around which the cables are wound, and the removable keys inserted in openings in said blocks and in said caps, for the purpose set forth, substantially as described.



2. In a suspension-bridge, the posts B, having the caps K, with flanges having openings N, and the caps O, bolted on the caps K and having the flanges provided with the openings registering with openings N, whereby the cables are adapted to pass through the said openings, substantially as described.

3. The supporting-saddles for the girder of a bridge, these saddles comprising the inverted-U-shaped bars L', having opposite arms, through which the girders are passed, and the upper and lower plates notched to receive the arms, adapted to embrace the girders, and nuts threaded on the ends of the arms, and the vertically-opposite pairs of lugs O', bolted to the inner surface of the plates and to the girders at opposite sides, substantially as specified.

4. The combination, in a suspension-bridge, of the cables, the clamps Z, attached thereto, the stringers, the girders connecting the same, the saddles at the ends of the girders, the supporting-rods D', having their upper ends attached to the clamps and their lower ends attached to the saddles, and the truss-rods E', crossed midway between the supporting-rods, and also having their upper and lower ends attached to the clamps and saddles, substantially as described.

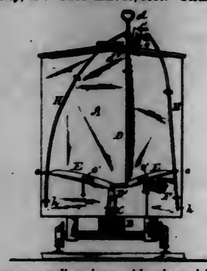
5. In a suspension-bridge, the cables strung over the posts and having their ends untwisted, the separate strands of the cables being attached to independent anchor posts or devices, substantially as described.

6. In a suspension-bridge, a post provided with a cable-receiving rotatable drum, in combination with a key for locking the drum against rotation, substantially as specified.

7. In a suspension-bridge, opposite pairs of posts, each provided with rotatable cams locked in position thereon, in combination with cables wound intermediate their ends around the blocks, and anchors

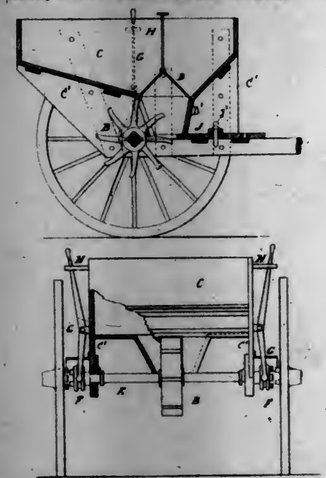
arranged in rear of the posts and connected with the ends of the cables, substantially as specified.

413,173. CAR-COUPLING. ANTHONY COBLE and JAMES H. MOORE, Montgomery City, Mo. Filed Mar. 13, 1889. Serial No. 303,113. (No model.)



Claim.—In a car-coupling, in combination with the vertical rod D, supporting the coupling-pin C, and having the handle *d* and shoulder *d'* and laterally-extending hand-levers E *e* E *e*, pivotally connected to said rod D, the slotted bolt G, hinged at the top of the car, rods H H, secured upon opposite sides of the bolt G and extending down to the lower outer edge of the car, as shown, and hinged or folding stop F, adapted to close against the car when not in use, or be extended outward to engage above or below the hand-levers E, as described.

413,174. MANURE-DISTRIBUTER. RUFUS A. CORNELL, Whigham, Ga. Filed May 17, 1889. Serial No. 311,180. (No model.)



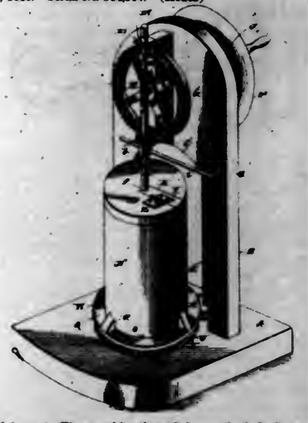
Claim.—1. The combination, substantially as hereinbefore set forth, of the hopper having an opening at the bottom, the axle below the opening in the hopper, the supporting-wheels, the toothed distributing-wheel below the hopper, but extending into the opening in the hopper, and the vertically-removable cover D.

2. The combination, substantially as hereinbefore set forth, of the hopper having an opening in the bottom with the vertically-removable cover D, having inclined sides, for the purpose specified, the wheel B, having flat forwardly-projecting teeth extending into the opening of the hopper, and the axle on which the wheel is carried, and on each end of which is a supporting-wheel.

3. The combination, substantially as hereinbefore set forth, of the hopper having oppositely-inclined bottom pieces, the vertically-removable cover having inclined sides, the toothed wheel below the opening in the hopper, the axle to which it is secured, the supporting-wheels loosely mounted on the ends of the axle, and clutch mechanism for rigidly securing the supporting-wheels to the axle.

4. The combination, substantially as hereinbefore set forth, of the hopper having oppositely-inclined bottom pieces, the vertically-removable cover for the opening in the bottom of the hopper, the front piece D', the horizontally-moving slide J below the front piece, the supporting wheels, the axle, and the toothed wheel secured to the axle and projecting into the opening in the hopper in rear of the front piece D'.

413,175. CHURN. WILLIAM H. CRAWFORD, Paris, Tex. Filed Mar. 23, 1889. Serial No. 304,397. (Model.)

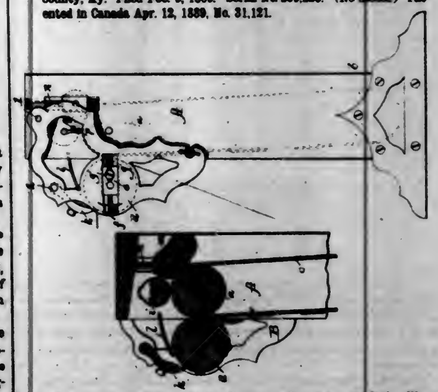


Claim.—1. The combination of the vertical shaft, mechanism for rotating said shaft, the rotary base provided on its edge with gear-teeth, and a rib or flange above said gear-teeth, having a portion cut away, and the pinion mounted on the lower end of the vertical shaft engaging the gear-teeth on the rotary base and adapted to pass through the space in the rib or flange, as set forth.

2. The combination, with the standard, of the bracket L, having key-hole slots in its ends, the dasher-rod having recesses in its sides, and cylindrical above said recesses, whereby the recesses are adapted to enter the key-hole slots, and the dasher-rod depressed until the cylindrical portions bear against the key-hole slots, and suitable mechanism supported by the standard for rotating the dasher, as and for the purpose set forth.

3. The combination of the standard, the rotary base having gear-teeth on its edge, the churn-body removably secured on said base, the driving-shaft mounted in the upper end of the standard, the dasher-rod, gearing between the driving-shaft and the dasher-rod, the vertical shaft provided at its lower end with a pinion engaging the gear-teeth on the edge of the rotary base, and gearing between said shaft and the driving-shaft, as set forth.

413,176. PRINTING APPARATUS. CHARLES H. DRAKE, Woodford County, Ky. Filed Feb. 9, 1889. Serial No. 299,229. (No model.) Patented in Canada Apr. 12, 1889, No. 31,121.



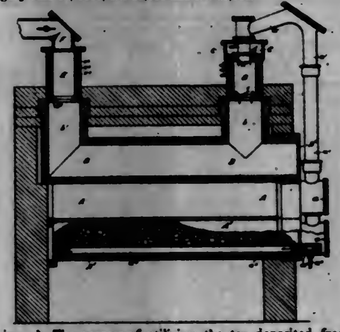
Claim.—1. A printing device for wrapping-paper and the like, consisting of an endless band having upon its surface the characters, suitable supporting-rollers, a pivoted frame, an impression-roller carried by said frame, and a retaining device for holding said frame in its operative position, substantially as described.

2. In a printing apparatus, an inking device consisting of a feed-roller and an inking-cylinder having a perforated swell portion on one side and a handle connected to said cylinder for turning the same until the perforated swell portion comes in contact with the distributing-roller, substantially as described.

3. In a printing apparatus, the rollers *a d*, between which the paper is passed to be printed, a pivoted knife supported above the roller *d*, and an arm or arms supported so as to extend between the roller *d* and the knife, thus preventing upward movement of the paper when the knife is lifted, substantially as described.

4. A printing apparatus consisting of a suitable frame, rollers *a b*, carrying an endless printing-belt, inking devices for said belt, a pivoted frame, an impression-roller carried by said frame, and a pivoted knife above said impression-roller, also carried by the pivoted frame, substantially as described.

413,177. PROCESS OF MANUFACTURING GAS. JOHN H. R. DICKSON, Liverpool, County of Lancaster, England. Filed July 18, 1888. Serial No. 280,208. (No model.) Patented in France July 17, 1888, No. 191,851; in Belgium July 18, 1888, No. 82,605; in Spain Oct. 2, 1888, No. 8,519; in Canada Nov. 16, 1888, No. 30,201, and in Austria-Hungary Jan. 13, 1889, No. 29,633 and No. 49,962.



Claim.—1. The process of utilizing the tar deposited from the gases produced from coal or analogous substances, consisting in artificially cooling said gas and thereby condensing both the lighter and heavier liquids carried therewith, collecting the liquids thus condensed, separating the tar from the lighter liquids of condensation, reheating and fixing said gas, and revaporizing said tar in the presence of said gas while it is being fixed, and subsequently cooling said combined gases.

2. The process of utilizing the tar deposited from the gases produced from coal or analogous substances, consisting in mixing said gas with water-gas or other diluent gas, artificially cooling said combined gases and thereby condensing both the lighter and heavier liquids carried therewith, collecting the liquids thus condensed, separating the tar from the lighter liquids of condensation, reheating and fixing said combined gases, and revaporizing said tar in the presence of said gases while being fixed, and subsequently cooling said combined gases.

3. The process of utilizing the tar deposited from the gases produced from coal or analogous substances, consisting in cooling said gas, collecting the tar thus condensed, reheating and fixing the said gases, and revaporizing said tar in the presence of said gas while being fixed by subjecting it while chilled suddenly to the action of a cherry-red heat without its coming in contact with surfaces below said heat.

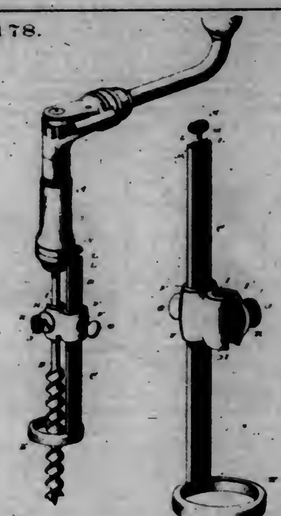
4. The process of utilizing the tar deposited from the gases produced from coal or analogous substances, consisting in condensing and separating from said gas the tar carried thereby, reheating and fixing said gas, revaporizing said tar in the presence of the gas while being fixed by subjecting it while chilled to the action of a cherry-red heat without its coming in contact with surfaces below said heat, and subsequently passing said tar-gas through a heated retort to fix it.

413,178. COMBINED SCRATCH AND BIT GAGE. ELMER E. DOE, Mount Tom, Mass. Filed Mar. 9, 1889. Serial No. 302,649. (No model.)

Claim.—The combination, with the bit and the strip C, formed with recess L at one end, ring E at the other end, and provided with the scale, as shown, of the casting F, adjustable on said strip and adapted to hold said strip to the bit and the piece L' at one end of said strip and formed with sharpened edges, and the set-screw N, passed

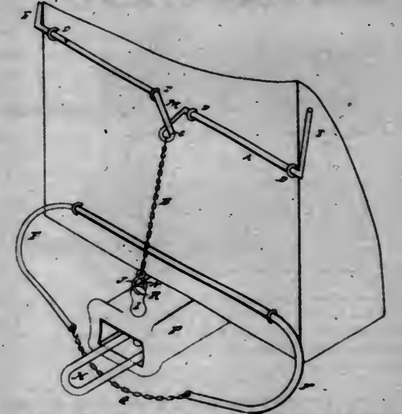


413,178.



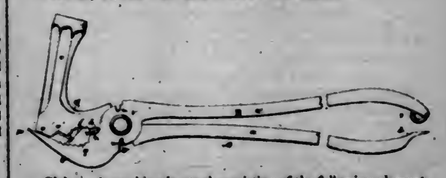
through said piece L' into the strip C, substantially as and for the purpose specified.

413,179. CAR-COUPLING. JOHN H. RAKER, Detroit, Mich. Filed Oct. 29, 1888. Serial No. 289,664. (No model.)



Claim.—The rod A, provided with handles E E at its ends supported in bearings horizontally across the end of a car, said rod being bent to form at its center the loop M, and the loop C at the part of the loop M which is farthest from said rod, substantially as shown and described.

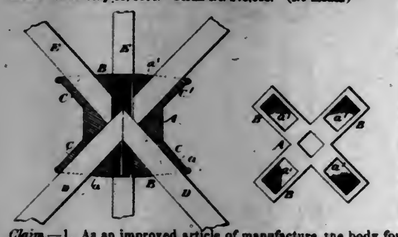
413,180. COMBINATION-TOOL. ELISHA D. ELY, Canton, Ohio. Filed May 13, 1889. Serial No. 310,547. (No model.)



Claim.—A combination-tool consisting of the following elements, namely: the members A and B, pivoted together, the member A, provided with a handle *a*, terminating at one end in a screw-driver *b*, and provided at its opposite end with recesses of different diameters, the

walls of each provided with teeth, a hammer portion *e*, and a hammer-pole *c*, the other member provided with a curved recess provided with teeth and with a tack-claw, the two members provided with opposite notches to produce wire-cutters *m m* and *n*, substantially as set forth.

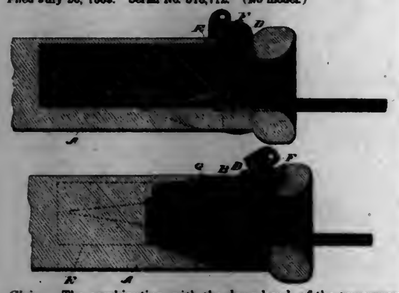
413,181. SUPPORT FOR WASH-TUBS. ORRIN GERSLEY, Owatonna, Minn. Filed May 11, 1888. Serial No. 273,605. (No model.)



Claim.—1. As an improved article of manufacture, the body for a tub-support herein shown and described, consisting of a metal casting formed with the upper and lower ribs extending diametrically oppositely from the center and formed with the inclined openings extending through from the upper to the opposite lower rib and through the same, substantially as shown and described.

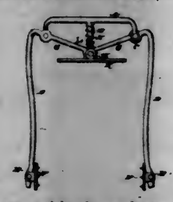
2. The combination of the casting A, formed with the upper and lower ribs extending diametrically in opposite directions from the center, and said ribs formed with the inclined openings extending through the casting from one upper rib to the opposite lower rib, the inclined legs in the openings in the lower ribs, with their ends abutting within the casting, and the tub-supports E, with their lower ends in the openings in the upper ribs, with their ends abutting against the upper ends of the legs, substantially as shown and described.

413,182. CAR-COUPLING. CLERMONT C. HODGES, Gonzales, Tex. Filed July 26, 1889. Serial No. 318,712. (No model.)



Claim.—The combination, with the draw-head, of the transverse pivot-pin in the top of the draw-head, the coupling-pin provided with a longitudinal slot engaging said pivot-pin, and the weights mounted on said pivot-pin and adapted to bear on the end of the link, as set forth.

413,183. FIRE-TONGS. CHARLES E. HOUSE, Canton, Ohio. Filed Mar. 18, 1889. Serial No. 303,751. (No model.)

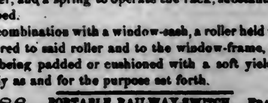


Claim.—1. As a new article of manufacture, a fire-tong consisting, essentially, of the frame A, legs, as D, pivotally secured thereto, arms G, projecting inwardly from said legs and loosely secured together at their end portions, and a spring interjacent said arms and frame, substantially as described, and for the purpose set forth.

2. The combination, in fire-tongs, of the U-shaped frame-piece A, having a tubular portion B, a spring N about said portion, legs D, pivotally secured to said frame, having inwardly-projected arms G, a hand-piece J, having a horizontal portion K, and stem portion L, adapted to enter said tubular portions, pivotally secured to the end portion of said arms, substantially as described, and for the purpose set forth.

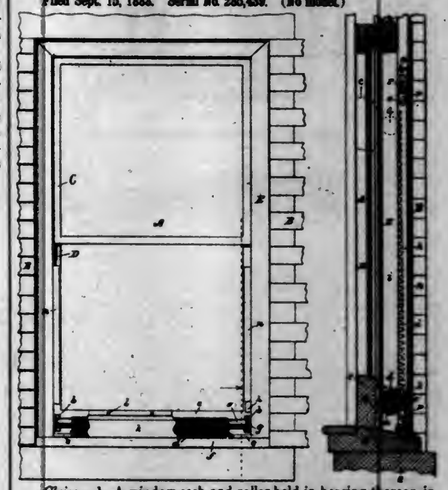
3. The combination, in fire-tongs, of the frame A, legs D, arms G, hand-piece J, spring N, and plates F, pivotally secured to the foot portion of said legs, substantially as described, and for the purpose set forth.

413,184. HOLDBACK FOR VEHICLES. GEORGE L. HYDORN, Lacona, N. Y. Filed June 6, 1888. Serial No. 313,273. (No model.)



Claim.—A holdback constructed from a single piece of wire bent to form a point 1, thence curved outwardly, thence bent to form a shoulder 3, thence extending back, and a cross-bar across the arms adjacent to the shoulder secured by a screw, and a screw through the eye upon the rear end of the arms, in combination, as set forth.

413,185. WINDOW-SCREEN. GABRIEL A. JACOBS, Red Creek, N. Y. Filed Sept. 15, 1888. Serial No. 285,439. (No model.)



Claim.—1. A window-sash and roller held in bearing thereon, in combination with a screen secured to said roller and to the window-frame, a pinion on the roller and a rack to engage the pinion secured to the frame, a housing for the roller secured to the sash, and angular side strips *n*, secured to the frame parallel with the sash, substantially as shown and described.

2. In combination with a window-sash, a roller held in bearings thereon, a screen for the window attached to said roller and secured to the window-frame, and a rack and pinion for turning the roller as the sash is moved, said rack being provided with means whereby it may move endwise upon its bearings, substantially as and for the purpose set forth.

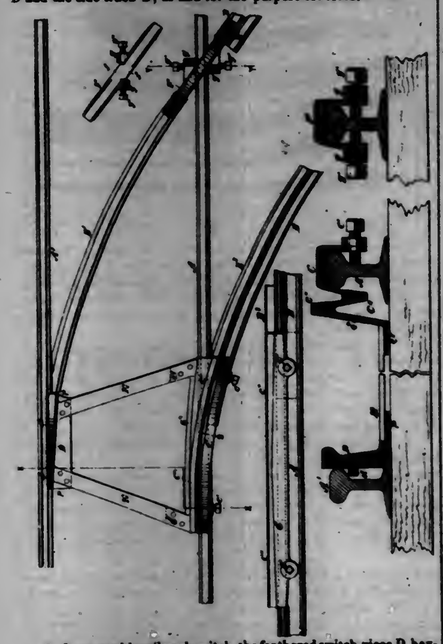
3. A window-sash, in combination with a roller held thereby, a screen having one edge attached to said roller, and the opposite edge secured to the window-frame, a yielding rack and a pinion for turning the roller, and a spring to operate the rack, substantially as shown and described.

4. In combination with a window-sash, a roller held thereon, and a screen secured to said roller and to the window-frame, the surface of said roller being padded or cushioned with a soft yielding material, substantially as and for the purpose set forth.

413,186. PORTABLE RAILWAY-SWITCH. FRANK G. JOHNSON, New York, N. Y. Filed Dec. 19, 1888. Serial No. 294,057. (No model.)

Claim.—1. In a portable railroad-switch, the gutter-shaped bridge-rail F, having the legs *g g*, set-bolts *g' g'*, and vertical sides diagonally cut away at *f f* to straddle the main track, in combination with the ends of the broken side-track rail B' B', main-track rail A, bridge switch-piece C, guard-rail *c' c'*, guard-rail B', and feathered switch-piece D, the top of the said bridge-rail resting on the head of the said main rail, and being laterally, vertically, and longitudinally held in place, substantially as described.

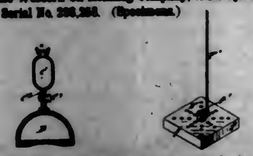
2. In a portable railroad-switch, the peculiarly-formed curved gutter-like bridge switch-piece C, having the guard-rail *c' c'* in line with the guard-rail B', in combination with the main-track rail A and side-track rail B, whereby the said piece C, besides furnishing a bridge from the main-track rail A to the side-track rail B, also furnishes a guard-rail *c' c'* to keep the car-wheels free from and from jumping the curve of the opposite rail formed by the feathered switch-piece D and the side-track B', as and for the purpose set forth.



3. In a portable railroad-switch, the feathered switch-piece D, having the projection *d* to extend under the head of the main-track rail A, in combination with the switch bridge-piece C, having the guard-rail *c' c'*, connecting-bars E E, main-track rail A' and side-track rail B', whereby, when the the portable switch is laid for use, the said feathered switch-piece cannot be lifted or otherwise misplaced until the said bridge-piece C is raised from the rails A and B, as and for the purposes described.

4. In a portable railroad-switch, the peculiarly-formed curved gutter-like switch-piece C, having the guard-rail *c' c'* in line with the guard-rail B', the lugs and set-bolts *c' c'*, in combination with the feathered switch-piece D, having the projection *d*, connecting-bars E E, main-track rail A and side-track rail B, whereby both of the said switch-pieces C, with the guard-rail *c' c'* and the said feathered switch-piece, are securely fastened to the main-track rail A' on the one side and to the main-track rail A and side-track rail B on the other by the two set-screws *c' c'*, as and for the purpose set forth.

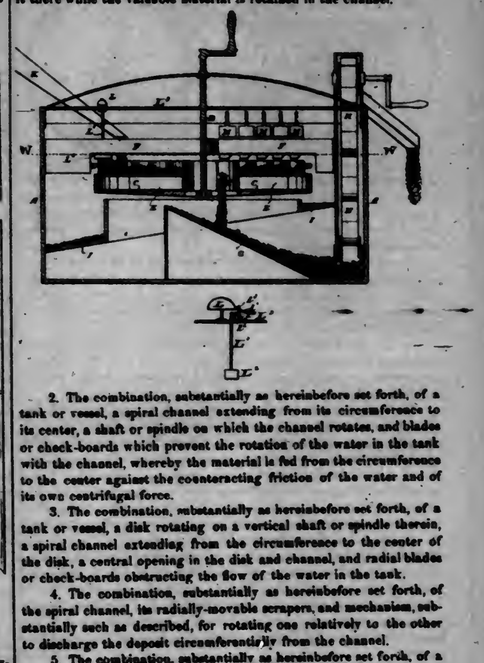
413,187. PROCESS OF FREEING MALODOROUS HYDROCARBONS FROM OFFENSIVE ODOR. EDWARD D. KENDALL, Brooklyn, N. Y., assignor to the Western Oil Refining Company, of New York. Filed Dec. 11, 1888. Serial No. 293,293. (Specimens.)



Claim.—The process of freeing malodorous hydrocarbons from offensive odor, which consists in subjecting the same to the action of chlorids of sulphur, substantially as described.

413,188. APPARATUS FOR SORTING MINERALS. GEORGE ELLIOTT, Westminster, England. Filed Feb. 7, 1889. Serial No. 299,092. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of a tank or vessel, a spiral channel extending from its circumference to its center, blades or check-boards overlying the channel, and mechanism, substantially such as described, for traversing the blades and water in the tank relatively to each other, to feed the refuse material from the circumference to the center of the channel and discharge it there while the valuable material is retained in the channel.



2. The combination, substantially as hereinbefore set forth, of a tank or vessel, a spiral channel extending from its circumference to its center, a shaft or spindle on which the channel rotates, and blades or check-boards which prevent the rotation of the water in the tank with the channel, whereby the material is fed from the circumference to the center against the counteracting friction of the water and of its own centrifugal force.

3. The combination, substantially as hereinbefore set forth, of a tank or vessel, a disk rotating on a vertical shaft or spindle therein, a spiral channel extending from the circumference to the center of the disk, a central opening in the disk and channel, and radial blades or check-boards obstructing the flow of the water in the tank.

4. The combination, substantially as hereinbefore set forth, of the spiral channel, its radially-movable scrapers, and mechanism, substantially such as described, for rotating one relatively to the other to discharge the deposit circumferentially from the channel.

5. The combination, substantially as hereinbefore set forth, of a tank or vessel, a disk rotating on a vertical shaft or spindle therein, a spiral channel above the disk, and an air-chamber counterbalancing the weight of the disk and channel.

6. The combination, substantially as hereinbefore set forth, of a tank or vessel, a disk rotating therein, a spiral channel on the disk, an air-chamber or float counterbalancing the weight of the disk and channel, and blades or check-boards opposing the tendency of the water to rotate relatively to the disk.

7. The combination, substantially as hereinbefore set forth, of a rotating disk, its channel, and an alarm provided with a vertically-moving spindle having a plate or knob on its lower end, against which the material in the channel strikes when the channel is full and causes the alarm to be sounded.

8. The combination, substantially as hereinbefore set forth, of a tank or vessel, a spiral rotary channel therein, a circumferential feed-chute, a central tailings-discharge opening, and a circumferential discharge-chute through which the material escapes from the channel.

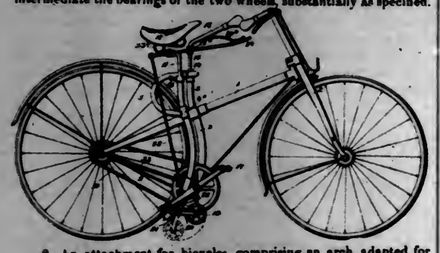
9. The combination, substantially as hereinbefore set forth, of a tank or vessel, a disk revolving on an axis therein, a spiral channel extending from the circumference to the center thereof, radially-movable scrapers, and a circumferential discharge-chute into which the material is discharged from the channel by the scrapers.

10. The hereinbefore-described sorting apparatus, consisting of the combination, substantially as hereinbefore set forth, of a tank or vessel, a disk revolving on a vertical axis therein, a spiral channel on the disk, having a central discharge-opening, a counterbalancing air-chamber, radial blades, radially-movable scrapers thereon, a circumferential feed-chute, a central tailings-discharge chute, and a circumferential discharge-chute for the material scraped from the channel.

413,189. ATTACHMENT FOR BICYCLES. JOHN A. KIRK, Washington, D. C., assignor of one-half to Josiah J. Bumbaugh, Chicago, Ill. Filed May 20, 1889. Serial No. 311,267. (No model.)

Claim.—1. An attachment for a two-wheeled machine, adapted to carry cranks and treadles, and means, substantially as described,

for connecting the attachment to a fixed part of the machine-frame intermediate the bearings of the two wheels, substantially as specified.



2. An attachment for bicycles, comprising an arch adapted for connection with the standard of a machine occurring between the bearings of the two wheels, and saddle-supporting standards, each of which is provided at one end with a box for a crank-shaft and treadle and at the other end with means for connection therewith of a saddle, substantially as specified.

3. An attachment for bicycles, consisting of an arch bent to embrace the saddle-standard of a machine, and having at the bent portion a clamp and saddle-screw, and carrying standards each of which is adapted to receive at one end a crank-shaft and treadles and at the other end a saddle, substantially as specified.

4. An attachment for bicycles, consisting of an arch having a clamp and terminating in standards having shaft and saddle receiving devices at opposite ends, and safety-wheels and means for raising and lowering the wheels, substantially as specified.

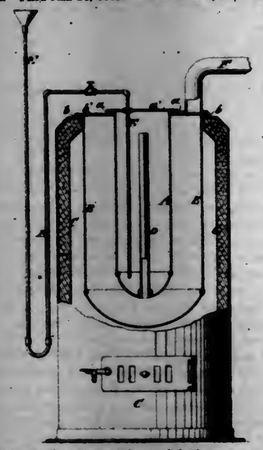
5. A saddle-standard provided with a clamp terminating in a flat plate, in combination with a saddle mounted on a plate adapted to fit the plate of the clamp, and bolts for adjustably securing the plates together, the whole combined and operating substantially as specified.

6. An attachment for bicycles, comprising a U-shaped frame adapted to be attached to the frame-work of a bicycle, and carrying crank-shafts and treadles, one crank of each pair being adapted for connection with the treadles of the machine, substantially as specified.

7. In an attachment for bicycles, the combination of treadle and saddle-standards 4, and connecting and supporting arch 5, adapted at its center 5× for connection with the seat-standard of a machine and provided with a clamp, substantially as specified.

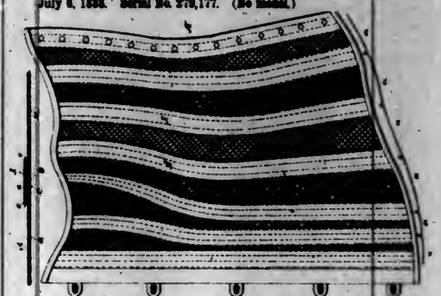
8. The combination of the standards 4, having the boxes 15, and adapted to support the rock-shaft 21, the machine-standard 3, the arch 5, the wheels 19, arms 20 22 23, and lever 24, substantially as specified.

413,190. APPARATUS FOR THE MANUFACTURE OF GAS. DAVID H. KRAFF, Norwich, N. Y., assignor of one-half to Reed Campbell, same place. Filed Jan. 21, 1889. Serial No. 297,097. (No model.)



Claim.—The combination of the upright inner vaporizing-retort, the outer upright decomposing-retort, and the furnace outside of the latter, the oil-pipe entering the inner retort, and an upright pipe connected with the inner retort at its lower end and opening into the outer retort and having its open upper end extending into the inner retort, and an outlet-pipe for gas communicating with the outer retort, substantially as specified.

413,191. CORSET. LEOPOLD KRAUS, Birmingham, Conn. Filed July 6, 1888. Serial No. 279,177. (No model.)



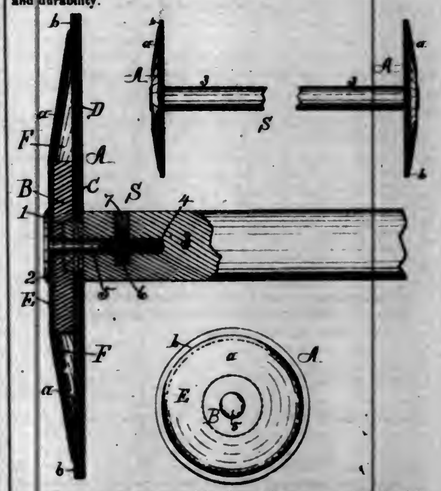
Claim.—1. The combination, in a corset, of the inner sections joined at their edges and an outer section upon each of the inner sections, the turned-down portions of the inner sections lying upon the same side of said sections as that on which the outer sections are placed, and lying between the adjacent edges of said outer sections, substantially as described.

2. The combination, in a corset, of the inner sections joined at their edges with the turned-down portion of each seam upon the outside, an outer section of facing material upon each inner section, the downturned portion of the inner sections lying between the adjacent edges of the outer sections, and overlying strips secured to the body of the corset upon the outside, substantially as described.

3. The combination, in a corset, of the inner sections *a*, joined at their edges with the turned-down portion *c* upon the outside, narrower sections of ornamental facing material *d* upon the outside of the inner sections, the edges of which are adjacent to the turned-down portions of the seams, and overlying boned strips I, overlapping the downturned portions of the seams and the edges of the outer sections and secured thereto and to the inner sections, substantially as described.

413,192. HEAD FOR JACK-SPOOLS. FREDERICK LATTLE, Syracuse, N. Y., assignor to Armstrong Maltbie, same place. Filed Feb. 6, 1889. Serial No. 298,837. (No model.)

Brief.—The object of the invention is to produce an improved head for jack-spools, &c., which shall combine lightness with strength and durability.



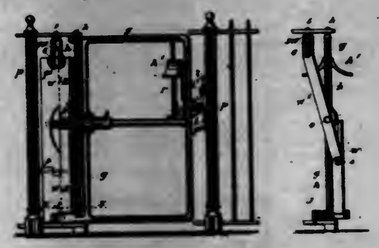
Claim.—1. As a new article of manufacture, a rawhide head for jack-spools, formed of two disks of rawhide held apart centrally by an interposed retaining-block, and secured together at their circumferential meeting edges, substantially as described.

2. As a new article of manufacture, an attachable head for jack-spools, consisting of two rawhide disks of desired contour, formed of one or more integral thicknesses of rawhide held out of central contact with each other by an axially-disposed retaining-block interposed between them, to whose opposite faces they are respectively secured, and secured together at their circumferential meeting edges, which extend some distance beyond the periphery of the retaining-block, substantially as described.

3. As a new article of manufacture, an attachable head for jack-spools, comprising two rawhide disks formed of one or more thicknesses of rawhide cemented together, a retaining-block interposed centrally of their circumference and to a face of which they are respectively cemented, and extending radially a sufficient distance beyond the periphery of the retaining-block to create an annular chamber between said block and their circumferential edges when they come in meeting contact and are cemented together, and creating a flanged portion, and means for connecting the head to an end of the body or spindle portion of the jack-spool, substantially as described, and for the purposes set forth.

4. As a new article of manufacture, a rawhide head for jack-spools, formed of two disks of rawhide provided with an interposed retaining-block, to which their contacting portions are secured, and secured one to the other at their circumferential meeting edges, substantially as described.

413,193. SELF-CLOSING GATE. WILLIAM LEDO, Tipton, Ind. Filed July 24, 1889. Serial No. 318,582. (No model.)



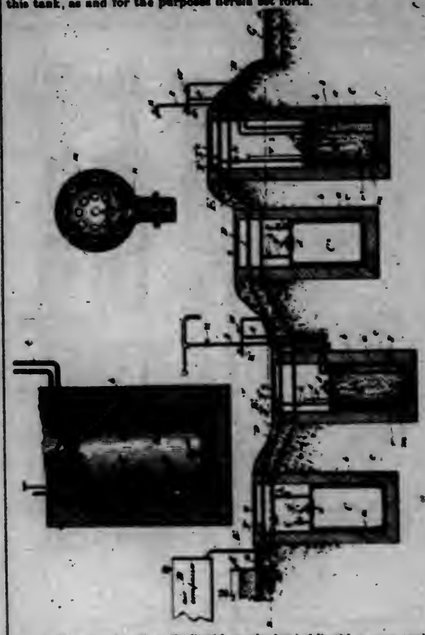
Claim.—1. A self-closing gate hinged to a rod passing through extensions of the upper and lower cross-bars, a jaw connected to the extension of the lower cross-bar, an automatic closing device comprising a weight, its lower end normally resting in said jaw and suspended at its upper end from a swivel or its equivalent connected to an upper plate supported upon the fence-post, the central part of the upper section of the closing device grooved to admit a headed pin connected to an extension of the central cross-bar of the gate, said upper section pivoted to the lower weighted section, and a frame-work for supporting the gate and its closing mechanism, substantially as shown and described.

2. A self-closing gate comprising a frame-work hinged to a rod having bearings in upper and lower supports, an automatic closing device connected to the rear of such gate, comprising a weighted section pivoted to an upper section, the latter in turn pivoted to a swivel, and the whole suspended upon a pivotal pin passing through the upper plate of the frame-work of the fence, the central part of the upper section grooved to admit a headed pin connected to an extension of the central cross-bar of the gate, a latch passing through a mortise in the front bar of the gate-frame, which is mounted on a vertical rod secured therein, and a pair of gravity-catches pivoted to a front plate connected to the gate-post and adapted to engage with the latch of the gate, all combined substantially as shown and described.

3. In a self closing and locking gate, a pair of gravity-catches pivoted to a plate secured to the inner face of the post, such plate provided with stops *b* to limit the upward and downward movement of the gravity-catches, a latch passing through a mortise in the gate-frame and adapted to engage with such gravity-catches and connected to a lifting-handle mounted on a rod supported in the gate-frame, in combination with a gate and automatic weight-closing device connected at the rear thereof, substantially as shown and described.

413,194. HYDRAULIC AND COMPRESSED-AIR SYSTEM FOR CONVEYING LIQUIDS. JOHN K. LEEDY, Tom's Brook, Va. Filed Jan. 30, 1889. Serial No. 298,069. (No model.)

Claim.—1. The combination of a liquid-supply, a liquid-conveying pipe connected to this liquid-supply, buried liquid-storage tanks connected to the said conveyor by means of valved pipes, valved supply-pipes leading from these buried storage-tanks to the surface of the ground, and a discharge-tank C, located below the level of the said liquid-supply, the discharge end of the conveyor being submerged in this tank, as and for the purposes herein set forth.



2. The combination of a liquid-supply, buried liquid-storage tanks connected to the said liquid-supply by means of valved pipes, valved discharge-pipes leading from the buried liquid-tanks, compressed-air-storage tanks buried beneath the surface of the ground, and a main compressed-air conveyer connected to these tanks and the liquid-tanks by means of valved pipes, substantially as and for the purpose herein set forth.

413,195. TENSION-REGULATING DEVICE FOR LOOM-SHUTTLES. HENRY C. LYNDEBORG, Lawrence, Mass. Filed Mar. 8, 1889. Serial No. 302,576. (No model.)



Claim.—The combination, with the shuttle-body having a slot X, a chamber I, with groove D around the same, and the educt E, of the plug B, having the holes C F, the post P, the disk K, and the pin L, substantially as shown and described.

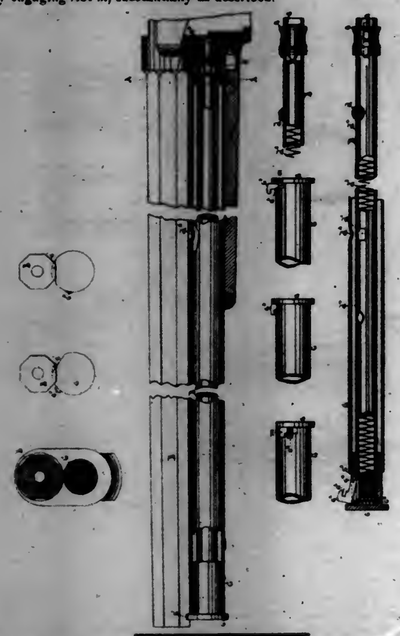
413,196. MAGAZINE FIRE-ARM. JOHN M. MARLIN, New Haven, Conn. Filed Nov. 23, 1884. Serial No. 148,902. (No model.)

Claim.—1. The combination of the removable magazine D, the sleeve *e*, having stop d^3 attached thereto, and the shoulder e^2, located in the magazine-case C in the path of sleeve *e* when the magazine is introduced into the case, and adapted to be brought into contact with and move the sleeve and stop when the magazine is inserted in its case, substantially as described.

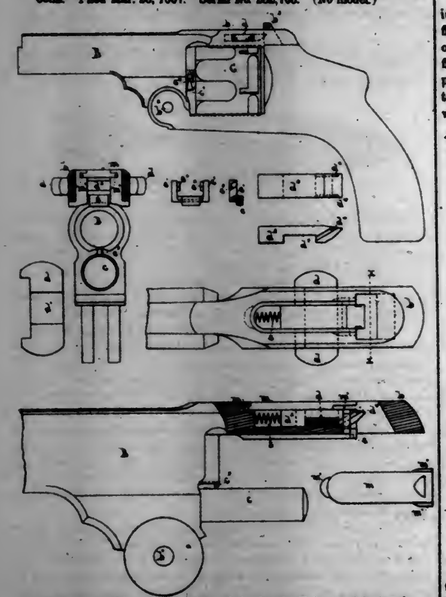
2. The combination of the removable magazine D, provided with the latch c^2, attached thereto, and the head *e*, projecting laterally therefrom, with the magazine-case provided with the slot *m*, and the barrel of the arm, provided with the slot *c'*, said slots *m* and *c'* being respectively located and adapted to engage with said latch and head of the magazine, substantially as described.

3. The combination of the magazine-case C, provided with the slot *m* and stop d^3, projecting inwardly, the removable magazine D, fitting within the case and provided with the slot d^4 and stop-notch *d'*, the spring d^5 and the sliding bolt *d* within the magazine, provided with a head adapted to engage with notch *d'* to lock the same and with stop d^6 to unlock the same, and the latch c^2, adapted to lock said magazine and its case together, substantially as described.

4. The combination of the magazine-case C, provided with the shoulder c^2 and slot *m*, with the removable magazine D, provided with the sliding sleeve *e*, adapted to engage with said shoulder and the stop e', and the latch e^3, adapted to lock said magazine and case together by engaging slot *m*, substantially as described.



413,197. REVOLVING FIRE-ARM. JOHN M. MARLIN, New Haven, Conn. Filed Mar. 28, 1887. Serial No. 232,763. (No model.)



Claim.—1. The combination of the latch d^3, located in its chamber in the barrel-extension *b* and provided with one or more grooves d^5, and the cylinder C, with the stop *e*, mounted in a vertical guideway in said extension, and provided with one or more tongues e^3, engaging with said groove or grooves and adapted to raise and lower said stop by the movement of the bolt, substantially as described.

2. The combination of the latch or bolt d^3, having the transverse slot d^4, embracing the cross-bar *d* and the inclined slot or slots d^5 and adapted to lock the extension *b* to the frame of the arm, the cross-bar *d*, having the slot d', embracing the bolt, the catch *e*, having the tongue or tongues e^3, engaging with said inclined slot or slots, and the revolving cylinder C, substantially as described.

413,198. BUTTON. LOUIS C. H. MEISSNER, Chelmsford, County of Essex, England. Filed Feb. 9, 1888. Serial No. 263,467. (No model.)



Claim.—1. In a stud or button, the combination of the back, the supports carried thereby, the retaining-wings pivoted to such supports, a cap or face having a rotary movement only on the back and carrying a screw, a longitudinally-movable nut, and arms connected to the nut and to the wings, substantially as set forth.

2. The combination of the back, the supports *c* carried thereby, the retaining-wings pivoted in the supports, a cap or face connected with the said back so as to have a rotary movement only thereon, a screw carried by the cap or face, a block *f*, engaging with the said screw, and the arms *b*, connecting the block and the wings, substantially as described.

413,199. COTTON-PLANTER. MAURICE M. MILLER, Law's Hill, Miss. Filed June 13, 1889. Serial No. 314,109. (No model.)



Claim.—The planter and distributer having the agitator consisting of a spiral or twisted shaft provided with a series of stirrers or fingers, one series comprising two inwardly-curved projecting fingers, one arranged near each end of the shaft, others of said stirrers or fingers being formed in pairs, each pair being in a single piece and passing through and projecting beyond the opposite side of the shaft, the projecting portions of the latter-referred-to fingers or stirrers converging at their free or distant ends, substantially as set forth.

413,200. HANGING WASH-STAND. JOHN C. MILLIGAN, Brooklyn, assignor to the Lalance & Grosjean Manufacturing Company, New York, N. Y. Filed Dec. 14, 1888. Serial No. 293,565. (No model.)



Claim.—1. The combination of a hanger comprising side portions, cross-bars at the lower end of said side portions and extending back beyond the line of the side portions and holding the hanger in a vertical position, cushions on said extended portions, outstanding hooks supporting the hanger, and a shelf pivotally connected to the cross-bars by knuckle-joints, substantially as specified.

2. The combination, with a metal hanger consisting of a horizontal portion and side portions extending downwardly from the horizontal portion, of a water-tank secured to the inner surfaces of the side portions of the hanger and a shelf pivoted below the water-tank, substantially as specified.

3. The combination, with a hanger and a shelf pivotally connected thereto, of a water tank or reservoir arranged within the hanger and a receptacle for brushes and combs forming a cover for said tank, substantially as specified.

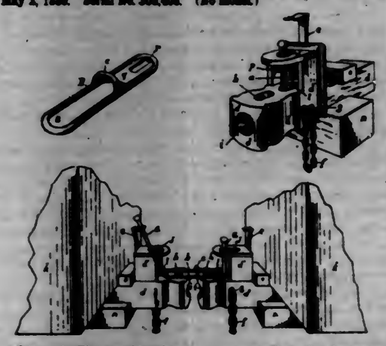
4. The combination, with a hanger and a shelf pivotally connected thereto, of a water tank or reservoir arranged within the hanger and detachably connected thereto and a brush or comb receptacle supported in the top of the reservoir, substantially as specified.

5. As a new article of manufacture, a shelf and a hanger to which the shelf is pivotally connected, the hanger being provided with a horizontal portion constructed to engage with hooks supported from a wall, and a water-tank removably connected within the hanger, substantially as specified.

6. The combination, with a hanger and a reservoir removably secured to the hanger, of a receptacle arranged within the reservoir and forming a cover therefor, a shelf pivotally connected to the hanger, and a basin fitted in said shelf, the parts being so disposed that the shelf may be swung up in front of the hanger without necessitating a disturbance of the said parts arranged within the hanger and shelf, substantially as specified.

7. In a portable wash-stand, the combination of a hanger, a water-tank removably secured thereto, a receptacle secured in the top of the tank and serving as a cover, a shelf pivotally connected to the hanger, a basin, and a cup and soap-dish secured to the shelf, the parts being so disposed that the shelf may be swung up and in front of the hanger without necessitating a disturbance of the said parts arranged within the hanger and shelf, substantially as specified.

413,201. CAR-COUPLING. RICHARD P. MCBRIDE, Canandaigua, N. Y., assignor of one-half to Elbridge G. Lapham, same place. Filed May 2, 1889. Serial No. 309,403. (No model.)



Claim.—1. The combination, in a car-coupler, of a bumper *d*, having on its top side a draw-head d', to which may be attached a pin-rest *e*, all as substantially set forth.

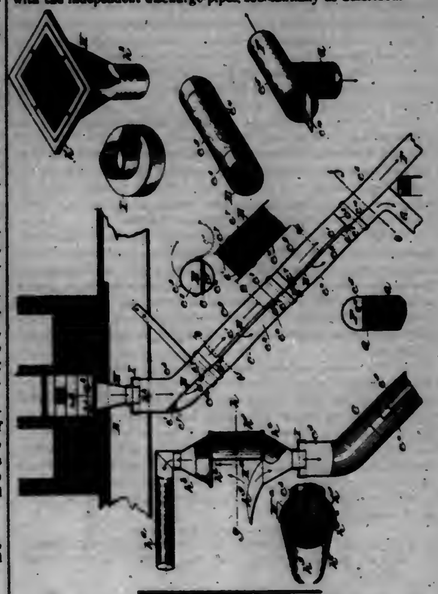
2. In a car-coupling, the combination, with the bumper having the draw-head in its upper portion, of the link weighted at one end and provided with a handle, substantially as described.

3. The herein-described link provided with openings for the reception of a pin at each end, having one end weighted, and a handle attached to the link at about its center, substantially as described.

413,202. SCREEN. WILLIAM MCCORMACK, Philadelphia, Pa., assignor of one-half to Daniel J. Birmingham, same place. Filed Sept. 26, 1888. Serial No. 286,707. (No model.)

Claim.—1. The combination, with a range, &c., of the hopper opening into the ash-pit thereof, the inclined chute connected with said hopper and composed of attachable and detachable pipe-sections, each of which is provided with an opening and door on one side thereof, the longitudinal screen or partition contained within said chute and composed of a series of separable sections successively supported within said pipe-sections, together with the independent discharge-pipes communicating with the upper and lower divisions, respectively, formed by said screen, substantially as described.

2. The combination of the hopper provided with the external supporting-flange at its upper end, the elbow-pipe section c^6, the collar I, connecting the same with the hopper, the inclined-chute sections c^5, the cross-bars therein, the screen-sections supported upon said bars and provided with the stop-hooks c', and the lower section c^3, provided with the independent discharge-pipes, substantially as described.



413,203. BIT-STOCK. LEONARDO MCMANUS, Spaulding, Neb. Filed Jan. 14, 1889. Serial No. 296,260. (No model.)



Claim.—1. The stationary box provided with apertures at right angles to each other, and the chuck having a shank adapted to enter either of said apertures, in combination with the rotary handle swiveled to said box and engaging and turning said chuck in either position, substantially as described.

2. The stationary box having an elongated bearing at its rear and provided with two apertures at right angles to each other, one in its face opposite said bearing and the other in its side, and the rotary handle turning on said bearing, in combination with a chuck having a shank adapted to enter either of said apertures and to engage with and be rotated by said handle in either position, substantially as described.

3. The stationary box B, having a hollow elongated bearing *b* at its rear end and provided with two apertures Q, one in its face opposite said bearing and the other in its side at right angles thereto, and the handle A, bevel-gear G thereon having hollow hub *g*, and a wrench having an enlarged head W, provided with a squared recess, the shank *w* of said wrench fitting within said hollow bearing *b* and hub *g* and both being secured to said handle, in combination with the chuck C, having a reduced shank C, fitting loosely in either of said apertures Q, and squared at its end to fit said squared recess in the wrench, and a bevel-gear G' on said clutch, adapted to mesh with said gear G when the shank is inserted in the side aperture of the box, substantially as described.

4. The stationary box B, having a hollow elongated bearing *b* at its rear end, and provided with two apertures Q, one in its face opposite said bearing and the other in its side at right angles thereto, and the handle A, bevel-gear G thereon, having hollow hub *g*, and a wrench

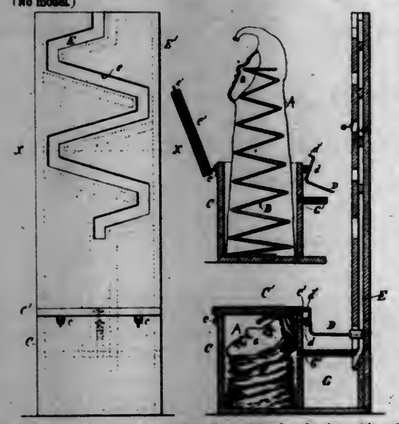
having an enlarged head W, provided with a squared recess, the shank *w* of said wrench fitting within said hollow bearing *b* and hub *g* and both being secured to said handle, in combination with the chuck C, having a reduced shank C', fitting loosely in either of said apertures Q, and squared at its end to fit said squared recess in the wrench, and a bevel-gear G' on said chuck adapted to mesh with said gear G when the shank is inserted in the side aperture of the box, and with a thumb-screw T in one side of said box provided with a rounded point *t*, engaging an annular groove *t'* in said shank C', substantially as described.

5. The box B, having an elongated bearing *b*, the handle A, journaled upon said bearing, and the cap S, swiveled in one side of said box and having a squared recess in its inner face, said box having two recesses Q, one opposite said bearing, the other opposite said cap, in combination with the chuck C, having a reduced shank C', fitting either of said apertures Q, and squared at its end to fit said recess in the cap S, as and for the purpose described.

6. The handle A, having a cavity in its face, the bevel-gear G, having a hollow hub *g* fitting said cavity, and a wrench having an elongated shank *w* fitting within said hollow hub, said wrench also having an enlarged head W, in combination with the pin *p*, passing through said handle, hub, and shank, and with the box B, having a hollow bearing fitting within said hollow gear and swiveled upon said elongated shank *w* and over said head W, as and for the purpose described.

7. The handle A, carrying bevel-gear G, wrench W, secured thereto and having a squared recess in its face, the box B, journaled upon said wrench, and the cap S, swiveled in the side of said box and having a squared recess in its inner face, in combination with the chuck C, having a reduced shank C' with squared end adapted to enter an aperture in the face of said box and engage with said recess in the wrench, and a bevel-gear G' on said chuck adapted to engage said bevel-gear G when the shank C' is passed into an aperture in the side of said box and its squared end seated in the recess in the cap, as and for the purpose described.

413,204. COIN-OPERATED TOY. MOSES NEWMAN and GEORGE H. BENNETT, New York, N. Y. Filed Aug. 5, 1889. Serial No. 319,843. (No model.)

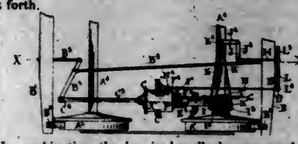


Claim.—1. In a toy, the combination, with a box having a hinged lid, of a movable figure in said box having a flexible body, a motor for actuating the figure, a detent for engaging with the lid of the box, and a sinuous chute, into which one end of the detent extends to be operated upon by the weight of a coin, substantially as specified.

2. The combination, with a movable figure having a motor controlled by a detent, of a sinuous chute for coin, having a sinuous slot or opening in its front, so that a coin may be seen as it passes to the detent, substantially as specified.

413,205. AIR-BRAKE. THOMAS V. MORRIS, Rockford, Ill. Filed Nov. 16, 1888. Serial No. 291,070. (No model.)

Claim.—1. In combination, an air-pump, an eccentric mounted upon and taking power from the axle of a railway-truck, an eccentric-strap constructed and arranged in such a manner as to readily admit of being engaged with and disengaged from said eccentric while revolving, an eccentric-lever connecting said eccentric-strap with the piston-rod of said air-pump, a brake-rod L, the arm L', rigidly secured thereto, the rod M, hinge-jointed to said arm L', the bell-crank hinge-jointed to said rod M, and the rods K, hinge-jointed to said bell-crank and eccentric-strap, substantially as described, and for the purpose set forth.



2. In combination, the herein-described compressed-air cylinder and air-pump having the operative parts and connections, as shown, an eccentric I, mounted upon and taking power from an axle A^4, the eccentric-strap I^3, mounted upon and depending from the eccentric-lever C^3, the brake-rod L, the arms L' L^3, secured thereto, the connecting-rod M, hinge-jointed to said arm L', the bell-crank J, hinge-jointed to said rod M, the rods K, hinge-jointed to said bell-crank and eccentric-strap, the valve-crank F^4, and the rod N, connecting the latter with said arm, substantially as set forth.

413,206. REGISTERING-RECEPTACLE FOR COINS. ISAAC PFORZHEIMER, New York, N. Y., assignor of one-half to Carl Zallud, same place. Filed Oct. 4, 1888. Serial No. 287,174. (No model.)



Claim.—1. In a receptacle for coins or other articles, the combination, with an indicator, of a movable carriage, jaws upon said carriage for gripping the coin or other article, a lever or levers for operating the indicator, and a notched piece with which the coin or other article will contact when the carriage is moved in one direction to cause a movement of said notched piece, so as to permit the rocking of the lever or levers to operate the indicator, substantially as specified.

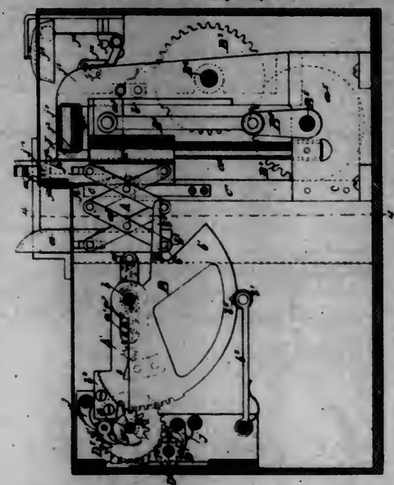
2. In a receptacle for coins or other articles, the combination, with an indicator, of a movable carriage, a rocking arm pivoted near one end and provided with notches at its other end, levers for operating the indicator provided with projections bearing upon said rocking arm, said arm being adapted to be struck by the coin or other article during the movement of the carriage in one direction and rocked to permit a projection on the lever to pass into a notch on the arm and rock the lever to cause the operation of the indicator, substantially as specified.

3. In a receptacle for coins or other articles, the combination, with an indicator, of a movable carriage, a lever or levers for operating the indicator, a pawl for maintaining said levers in a normal position, a notched piece adapted to be struck by the coin or other article during the movement of the carriage in one direction and moved a distance depending upon the diameter of the coin or other article, said carriage operating to release said pawl after the notched piece has been struck by the coin or other article, substantially as specified.

413,207. TICKET-REGISTERING MACHINE. ISAAC PFORZHEIMER, New York, N. Y., assignor of one-half to Carl Zallud, same place. Filed Jan. 8, 1889. Serial No. 295,732. (No model.)

Claim.—1. In a ticket-registering machine, the combination, with a longitudinally-movable carriage having a movable jaw and adapted to receive tickets of different widths and different thicknesses, of a movable device in the path of said carriage and adapted to be moved by said carriage, a register-train operated from said movable device, a second movable device arranged in the path of a ticket when the latter is inserted in the carriage and moved by the ticket independently of the carriage, a second register-train, and mechanism, substantially such as described, between the second-named movable device and the second-named register-train operated by said second-named movable device, substantially as specified.

2. In a ticket-recording machine, the combination of a register-train, a carriage having jaws adapted to receive tickets of different thicknesses, a movable device extending into the path of a ticket when the latter is inserted between the jaws and adapted to be moved outwardly by said ticket, and mechanism, substantially such as described, between the movable device and the register-train operated by the said movable device, substantially as specified.



3. In a ticket-registering machine, the combination, with a box or case, of a carriage into which a ticket to be recorded is passed, said carriage being provided with a movable jaw, a yielding abutment for said movable jaw, and mechanism, substantially such as described, for imparting longitudinal movement to said carriage, substantially as specified.

4. In a ticket-registering machine, the combination of a carriage adapted to receive a ticket, a movable jaw comprised in said carriage, a yielding abutment for said jaw, mechanism, substantially such as described, for imparting longitudinal movement to the carriage, and a releasing device for releasing the ticket from the carriage, substantially as specified.

5. In a ticket-registering machine, the combination of a carriage adapted to receive a ticket, a movable jaw comprised in said carriage, a rigid jaw also comprised in said carriage, said jaws being provided with grooves into which the ticket is inserted, a yielding abutment for the movable jaw, mechanism, substantially such as described, for causing the longitudinal movement of the carriage, a releasing device for a ticket, and a spring operating to force a ticket to one side in said grooves, substantially as specified.

6. In a ticket-registering machine, the combination of a carriage, a movable jaw comprised in said carriage, adapted to be moved by a ticket upon its insertion between the jaws, a lock for securing the carriage in its normal position, a trip operated by the ticket upon its insertion to release the lock, and mechanism, substantially such as described, for imparting longitudinal movement to the carriage, substantially as specified.

7. In a ticket-registering machine, the combination of a carriage provided with a fixed jaw and a movable jaw, a trip on the fixed jaw moved in one direction by a ticket upon its insertion between the jaws, a signal operated from said trip, and a stop for limiting the movement of said trip, substantially as specified.

8. In a ticket-registering machine, the combination of a carriage comprising a movable jaw moved by the insertion of a ticket into the carriage, mechanism, substantially such as described, for imparting longitudinal movement to said carriage, a movable device having a portion extending into the path of said carriage when moved in one direction, and with which said carriage will contact upon being moved, and a register-train operated from said movable device, substantially as specified.

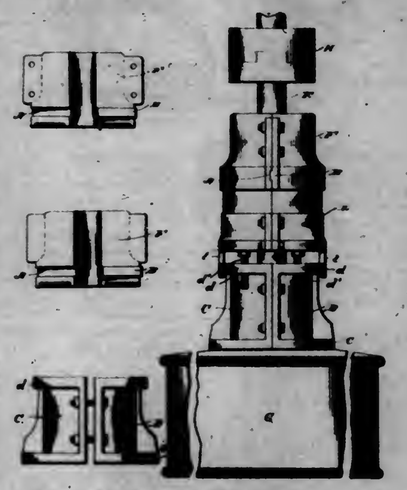
9. In a ticket-registering machine, the combination of a carriage comprising a movable jaw, a yielding abutment for said jaw, mechanism, substantially such as described, for imparting longitudinal movement to the carriage, a segment provided with gear-teeth and having a portion extending into the path of said carriage, and with which the latter will contact when moved in one direction, in order to rock the segment, and a graduated step on said yielding abutment for limiting the rocking movement of the segment, substantially as specified.

10. In a ticket-registering machine, the combination of a carriage having a movable jaw, of mechanism, substantially such as described for imparting longitudinal movement to said carriage, a segment provided with gear-teeth and having a portion extending into the path of said carriage, and with which the carriage will contact when moved in one direction, an arm on said segment, and a pin or projection on said carriage contacting with said arm and operating to return the segment to its normal position when the carriage is moved in the other direction, substantially as specified.

11. In a ticket-registering machine, the combination of a carriage having a movable jaw and a fixed jaw, said jaws being provided with longitudinal grooves into which a ticket is passed, a movable device extending into the path of the ticket and moved by the ticket upon its insertion in the groove, a register-train, and mechanism, substantially such as described, between said movable device and the register-train operated by the said movable device, substantially as specified.

12. In a ticket-registering machine, the combination of a carriage adapted to receive a ticket, a movable device arranged in the path of said ticket and adapted to be moved by the latter when the same is inserted in the carriage, a rock-shaft, an arm on said rock-shaft with which said movable device will contact, a second arm on the rock-shaft, provided with a bifurcated portion, a shaft, a sleeve on said shaft embraced by said bifurcated portion, a cam on the sleeve, a lever, and a time-register train, substantially as described, whereby when the rock-shaft is rocked by the movable device said cam will be shifted into a position to operate said lever.

413,208. BEARING FOR TURBINE WHEELS. GEORGE I. RISLARRISON, Brunswick, Me. Filed Apr. 13, 1889. Serial No. 307,079. (No model.)



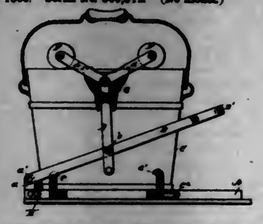
Claim.—1. The combination of the wheel-casing, the wheel-shaft, a sectional collar F, surrounding said shaft, an adjustable collar L, and a supporting-stand for the adjustable collar, substantially as described.

2. The combination, with the wheel-casing, the wheel-shaft, and the coupling rigidly secured to said shaft, of a supporting-stand made in sections adapted to be bolted together around the shaft, said stand resting on the wheel-casing, collars surrounding said shaft, and screws working in the stand and engaging one of said collars to give it vertical adjustment, as set forth.

3. As a bearing for turbine water-wheels, a collar F, made in sections provided with interlocking devices and adapted to be bolted together around the wheel-shaft, combined with the wheel-casing, the wheel-shaft, and a supporting-stand bearing on the wheel-casing and interposed between the collar and the wheel-casing, substantially as described.

4. The combination, with the wheel-casing, the wheel-shaft, and the coupling rigidly secured to the upper end of said shaft, of a stand made in sections adapted to be bolted together around the shaft, said stand having a flange at its lower end adapted to rest on the wheel-casing, and having also a flange at its upper end provided with threaded holes, screws working in said holes, a metal collar surrounding said shaft and being vertically adjustable by means of said screws, and a sectional wooden collar supported by said metal collar, substantially as set forth.

413,209. MOP-WRINGER. SOLOMON H. SCHNUCK, Cleveland, Ohio. Filed May 1, 1889. Serial No. 309,312. (No model.)



Claim.—1. In a mop-wringer, the combination, with rollers mounted on links, the latter being arranged in pairs and operatively connected with a depressible treadle, of yokes embracing, respectively, each pair of links for collapsing the links with the depression of the latter, substantially as set forth.

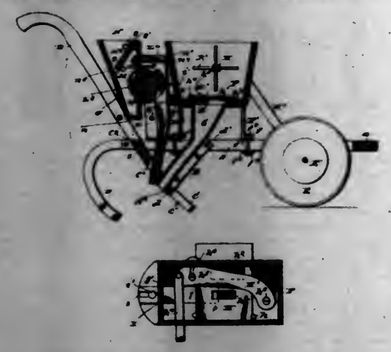
2. The combination, with a base, a treadle pivoted thereto, and a receptacle mounted thereon, of yokes secured to the sides of the receptacle, links arranged in pairs and passing through the yokes, and rollers mounted in the upper ends of the links, substantially as set forth.

413,210. SEED-PLANTER. CORYDON W. SIMS, Waynesborough, Ga. Filed Jan. 8, 1889. Serial No. 295,809. (No model.)



Claim.—The combination, with the hopper, of the plate N, secured above the opening in the bottom of the hopper, the sprig M, secured within the hopper across one end thereof, above one end of said plate, and at right angles to the said plate, the sliding dropper-plate working in guides in the bottom of the hopper and sliding in the plate N, the arm *a*, extending through the opening in the bottom of the hopper and attached to the dropper-plate, and the rod J, connecting said arm with the crank of the furrow-wheel, substantially as shown and described.

413,211. SEED-PLANTER. CICERO S. TYNDAW, Walnut Grove, Ga. Filed Apr. 19, 1889. Serial No. 307,779. (No model.)

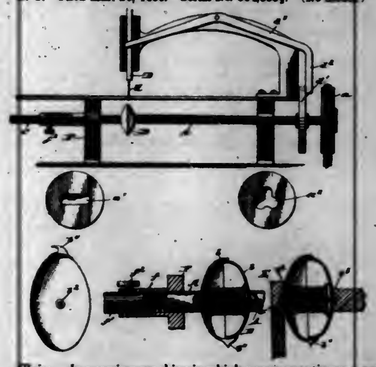


Claim.—1. The combination of the hopper having a discharge-opening in its bottom and provided with a longitudinal groove, the gage-slide fitted adjustably in said groove, and a knife mounted pivotally in the bottom of the hopper above said gage-slide and having an operating-lever, substantially as set forth.

2. The combination of the hopper having slotted sides and provided with a longitudinal groove and a discharge-opening in its bottom, the gage-slide fitted in said groove, the transversely-adjustable plate having slots of different sizes fitted in the side slots of the hopper above the gage-slide, the knife pivoted in the bottom of the hopper and extending above said transversely-adjustable plate, and a handle pivoted to the free end of said knife and extending through the slot in one side of the hopper substantially as set forth.

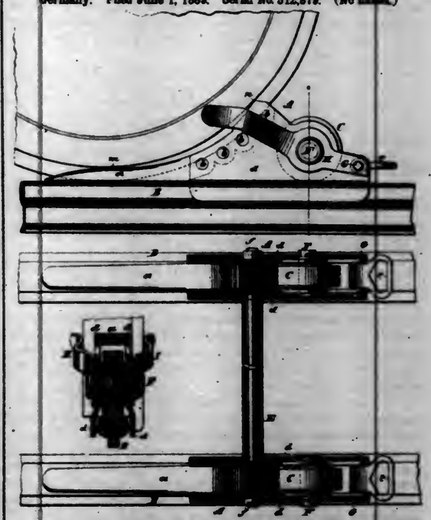
3. The combination, with a hopper having a discharge-opening in the bottom and long narrow slots in each side, of a knife pivoted at one end to the bottom of the hopper and having at its other end a slotted enlargement or projection, a screw passing through the slot in the enlargement into the bottom of the hopper, and an operating-lever attached to the knife and extending through one of the slots in the side of the hopper, substantially as specified.

413,212. SEWING-MACHINE. HARRIET R. TRACY, New York, N. Y. Filed Mar. 26, 1889. Serial No. 304,880. (No model.)



Claim.—In a sewing-machine in which a reciprocating eye-pointed needle is employed, a driving-shaft provided with a rounded-oblong or rounded-polygonal engaging end, in combination with a correspondingly-provided case or shuttle mounted loosely against the said end, contiguous to the needle, there being complemental means upon the opposite face of the shuttle to engage and support the same, and driven from the shaft by the described rounded-oblong or rounded-polygonal engaging end thereof, the case or shuttle having a thread-engaging device and a continuous opening, whereby the loop of thread thrown out by the needle will be taken by the thread-engaging device, be spread over the outer surface of the shuttle, and be passed through the juncture thereof with the driving-shaft to be locked by the thread from the shuttle, all substantially as set forth.

413,213. RAILWAY SHOE-BRAKE. LUDWIG TRAPP, Göttingen, Germany. Filed June 1, 1889. Serial No. 312,879. (No model.)



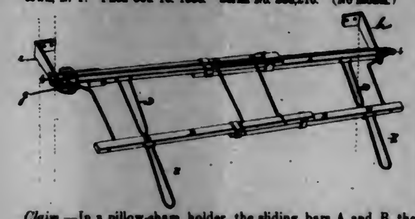
Claim.—1. A railway shoe-brake having the tongue at one end and a roller at the other, the tongue having a curved upper surface with contact-points for the car-wheel, whereby, when in use, the shoe may be alternately thrust forward and retarded, substantially as set forth.

2. A railway shoe-brake having a tongue at one end to rest on the rail, a roller at the other end to enable the shoe to slide forward, and a guide for retaining it in position, the upper surface of the tongue being curved to receive the car-wheel and provided with contact-points on different planes, whereby, when in use, the car-wheel may alternately impel and check the shoe, substantially as set forth.

3. The shoe consisting of the tongue *a*, plates *d d*, and roller C, the tongue being adapted to rest on the track-rail and having contact-points *m n* for the car-wheel, substantially as set forth.

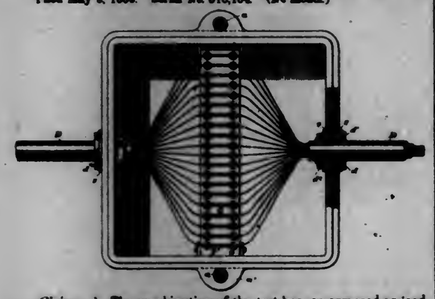
4. The shoe consisting of the tongue *a*, plates *d d*, roller C, and plates H I, substantially as set forth.

413,214. PILLOW-SHAM HOLDER. WILLIAM C. VAN CISE, Jamestown, N. Y. Filed Oct. 16, 1888. Serial No. 288,216. (No model.)



Claim.—In a pillow-sham holder, the sliding bars A and B, the connecting wire arms D, secured to the bars A and hinged to the bars B, the arms E, and the wire frame secured to the sliding bars, said arms being adapted to support the wire frame when the latter is thrown outward, and means for locking the holder in position, substantially as herein described.

413,215. UNDERGROUND CONDUIT. GEORGE H. WARD, New York, N. Y., assignor to William Hampden Johnstone, Philadelphia, Pa. Filed May 9, 1889. Serial No. 310,104. (No model.)



Claim.—1. The combination of the test-box, an armored or lead-covered cable extending through an opening in the box, a collar *d*, secured to the cable and fitting said opening and having a flange *d'* exterior to the box, and clamping devices on the collar within the box, substantially as set forth.

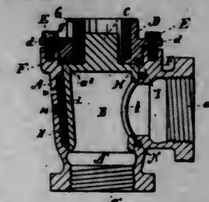
2. The combination, with the sides or walls of the box having an aperture for the passage of the armored or lead-covered cable, of the flanged collar secured to the cable, the washers *e*, and the clamping devices, as d^3, substantially as set forth.

3. The combination of the enameled wall of the test-box, the cable extending through the enameled wall, the flanged collar secured to the cable and passing through the wall of the box, the clamping-nut on the end of the collar, and washers interposed between the nut, the flanged collar, and the wall of the box.

4. The combination, substantially as set forth, in a subway manhole, of the interally-projecting bolts *c*, a vertically hung test-box into which cables run, having suspending ears or lugs through which said bolts pass, the test-box cover, and clamping devices, as a clamp a^2, and nuts on the end of the bolts to secure the vertical cover of the test-box.

413,216. VALVE. ADOLPH WEBER, Detroit, Mich., assignor of one-half to William L. B. Mahon, same place. Filed Apr. 24, 1889. Serial No. 308,366. (No model.)

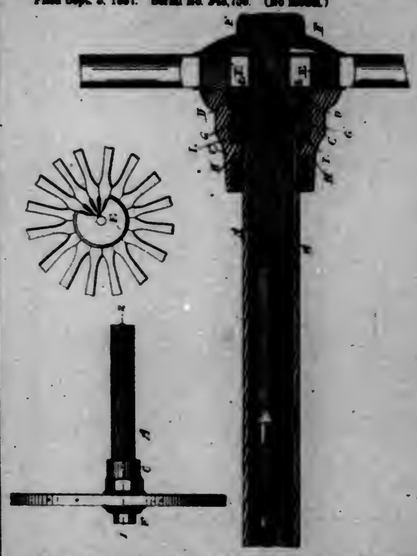
Claim.—1. The combination of the valve-case A, containing the valve B, with the valve B, seated in the valve-case, the rectangular valve-stem C, turning the valve B, the cap D, retaining the valve in the valve-case and perforated to allow the passage of the valve-stem, the annular flange G, projecting from the upper face of the cap D as high as the valve-stem, the recess G', cut in the annular flange to permit the insertion of the key H, the shoulders *g g'* on the flange G, limiting the movement of the key H, the circular key H, having the rectangular aperture to engage with the rectangular valve-stem, and the stud O on the key, limiting its movement by contact with the shoulders *g g'*, all substantially as described.



2. The combination of the valve-case A, having the shoulders a^3, with the valve B, seated in the valve-case, the cap D, retaining the valve in its seat and carrying the packing I, the recess H, cut out on the under side of the cap to receive the packing, the shoulder A, formed by the recess H, holding the packing on the cap, and the packing I, held on the cap by the shoulder A, all substantially as set forth.

3. The combination of the valve-case A, containing the valve B, with the valve B, the recess L, cored out of the valve-case to receive the soft-metal valve-seat, the annular flange around the port *a* to prevent the outflow of the fluid soft metal, the orifice M, through which the fluid soft metal is poured to form the valve-seat, and the soft-metal valve-seat, all substantially as set forth.

413,217. WHEEL AND AXLE. AARON B. WHITE, Meadow, Mich. Filed Sept. 3, 1887. Serial No. 248,730. (No model.)

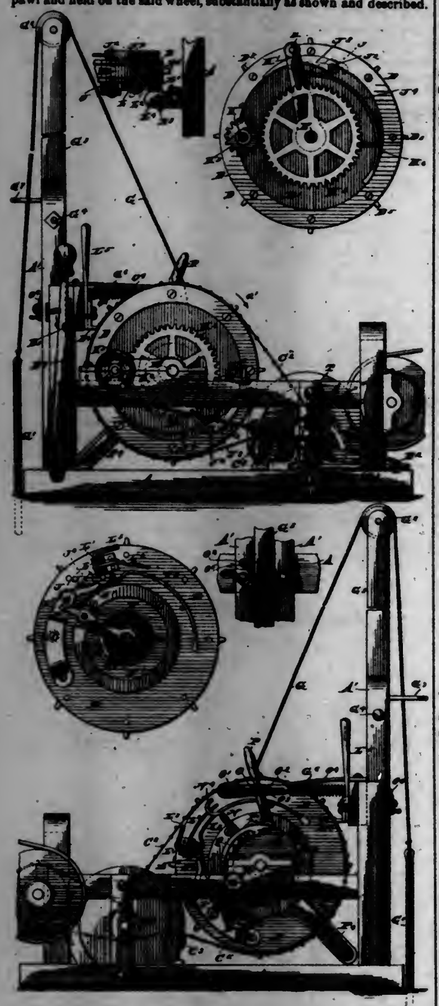


Claim.—The combination of hollow axle A with arm B revolving within it and held in position by screw-cap C, in connection with collars D and G, with the hub E, rigidly secured by flanged nut F, all constructed and operating substantially as described.

413,218. DRILLING-MACHINE. VALENTINE WIBON, Rochelle, Ill., assignor to himself, and John H. Sutphen, Huron, Dak. Filed Dec. 3, 1888. Serial No. 292,066. (No model.)

Claim.—1. In a drilling-machine, the combination, with a shaft, a drum mounted to rotate loosely thereon, and a rope held on the said drum and supporting the drilling-tool, of an arm secured to the shaft and engaging the said drum, a tripping-pawl adapted to engage and disengage the said arm, a wheel having a rotary motion and carrying the

said pawl, and a notched arm adapted to engage and disengage the said pawl and hold on the said wheel, substantially as shown and described.



2. In a drilling-machine, the combination, with a shaft, a drum mounted to rotate loosely thereon, and a rope held on the said drum and supporting the drilling-tool, of an arm secured to the shaft and engaging the said drum, a tripping-pawl adapted to engage and disengage the said arm, a wheel having a rotary motion and carrying the said pawl, a notched arm adapted to engage and disengage the said pawl and held on the said wheel, and a spring secured on the said wheel and acting on the said tripping-pawl, substantially as shown and described.

3. In a drilling-machine, the combination, with a shaft, a drum mounted to rotate loosely thereon, and a rope held on the said drum and supporting the drilling-tool, of an arm engaging the said drum, a tripping-pawl adapted to engage and disengage the said arm, a wheel having a rotary motion and carrying the said pawl, a notched arm adapted to engage and disengage the said pawl and held on the said wheel, a curved arm secured on the shaft of the said notched arm, a friction-roller arm adapted to be locked in place and engaged by the said curved arm at every revolution of the said wheel, and a spring secured to the said wheel and pressing the said curved arm outwardly, substantially as shown and described.

4. In a drilling-machine, the combination, with a shaft, a drum mounted to rotate loosely thereon, and a rope held on the said drum and supporting the drilling-tool, of an arm engaging the said drum, a tripping-pawl adapted to engage and disengage the said arm, a wheel having a rotary motion and carrying the said pawl, a notched arm adapted to engage and disengage the said pawl and held on the said wheel, a curved arm secured on the shaft of the said notched arm, a friction-roller arm adapted to be locked in place and engaged by the said curved arm at every revolution of the said arm, and means, substantially as described, for shifting the position of the said friction-roller arm, as set forth.

5. In a drilling-machine, the combination, with an adjustable friction-roller arm, of a wheel having a rotary motion and carrying a tripping device operated by the said friction-roller arm, a shaft on which the said wheel is mounted, a rope-drum mounted to rotate loosely on the said shaft and carrying the drilling-tool, and a yielding arm secured to the said shaft and acting on the said drum and being engaged and disengaged by the said tripping device at every revolution of the said wheel, substantially as shown and described.

6. In a drilling-machine, the combination, with a friction-roller arm held adjustable, of a wheel having a rotary motion and carrying a tripping device operated by the said friction-roller arm, a shaft on which the said wheel is mounted, a rope-drum mounted to rotate loosely on the said shaft and carrying the drilling-tool, a yielding arm secured to the said shaft and acting on the said drum and being engaged and disengaged by the said tripping device at every revolution of the said wheel, a stopping-arm secured on the said drum, and a yielding rod against which strikes the said stopping-arm after the drum is disengaged, substantially as shown and described.

7. In a drilling-machine, the combination, with a friction-roller arm held adjustable, of a wheel having a rotary motion and carrying a tripping device operated by the said friction-roller arm, a shaft on which the said wheel is mounted, a rope-drum loosely mounted on the said shaft and carrying the drilling-tool, a yielding arm secured to the said shaft and acting on the said drum and being engaged and disengaged by the said tripping device at every revolution of the said wheel, a stopping-arm secured on the said drum, a yielding rod against which strikes the said stopping-arm after the drum is disengaged, and a brake mechanism operated from the said yielding rod and acting on the said drum, substantially as shown and described.

8. In a drilling-machine, the combination with a friction-roller arm held adjustable, of a wheel having a rotary motion and carrying a tripping device operated by the said friction-roller arm, a shaft on which the said wheel is mounted, a rope-drum loosely mounted on the said shaft and carrying the drilling-tool, a yielding arm secured to the said shaft and acting on the said drum and being engaged and disengaged by the said tripping device at every revolution of the said wheel, a stopping-arm secured on the said drum, a yielding rod against which strikes the said stopping-arm after the drum is disengaged, and an adjustable pin to limit the forward movement of the said stopping-arm when the drilling-tools are lifted, substantially as shown and described.

9. In a drilling-machine, the combination, with a friction-roller arm held adjustable, of a wheel having a rotary motion and carrying a tripping device operated by the said friction-roller arm, a shaft on which the said wheel is mounted, a rope-drum loosely mounted on the said shaft and carrying the drilling-tool, a yielding arm secured to the said shaft and acting on the said drum and being engaged and disengaged by the said tripping device at every revolution of the said wheel, a stopping-arm secured on the said drum, a yielding rod against which strikes the said stopping-arm after the drum is disengaged, a brake mechanism operated from the said yielding rod and acting on the said drum, a ratchet-wheel secured on the said drum, and a pawl adapted to engage the said ratchet-wheel to prevent a return motion of the drum, substantially as shown and described.

10. In a drilling-machine, the combination, with a wheel having a rotary motion and carrying a tripping device provided with a curved arm, of a friction-roller under which passes the said curved arm, an arm carrying the said friction-roller, a gear-wheel held concentric with the said wheel and carrying the said arm, a pinion meshing into the said gear-wheel, a hand-wheel for turning the said pinion, and a pawl for locking the said gear-wheel in place, substantially as shown and described.

11. In a drilling-machine, the combination, with a wheel having a rotary motion and carrying a tripping device, of a shaft on which turns loosely the said wheel, a drum loosely mounted on the said shaft and provided at one end with a recess, and an arm secured to the said shaft and projecting through the recess in the said drum and being also engaged and disengaged by the said tripping device at every revolution of the said shaft, substantially as shown and described.

12. In a drilling-machine, the combination, with a wheel having a rotary motion and carrying a tripping device, of a shaft on which turns loosely the said wheel, a drum loosely mounted on the said shaft and provided at one end with a recess, an arm fulcrumed loosely on the said shaft and projecting through the recess in the said drum, being also engaged and disengaged by the said tripping device at every revolution of the said shaft, and a spring pressing against the said arm, substantially as shown and described.

13. In a drilling-machine, the combination, with a shaft, a drum, and a yielding arm for rotating the said drum mounted to rotate loosely thereon, of a tripping-pawl adapted to engage the said yielding arm, a spring acting on the said tripping-pawl, a yielding wheel mounted to rotate and carrying the said tripping-pawl, a notched arm held to swing on the said wheel and adapted to engage and disengage the said tripping-pawl, and an arm held to swing on the said wheel and serving to lock the said notched arm in place when disengaged from the said tripping-pawl, substantially as shown and described.

14. In a drilling-machine, the combination, with a shaft a drum, and a yielding arm for rotating the said drum mounted to rotate loosely thereon, of a tripping-pawl adapted to engage the said yielding arm, a spring acting on the said tripping-pawl, a yielding wheel mounted to rotate and carrying the said tripping-pawl, a notched arm held to swing on the said wheel and adapted to engage and disengage the said tripping-pawl, an arm held to swing on the said wheel and serving to lock the said notched arm in place when disengaged from the said tripping-pawl, and a lever mounted to swing and adapted to operate the said arm so as to unlock the latter and the said notched arm, substantially as shown and described.

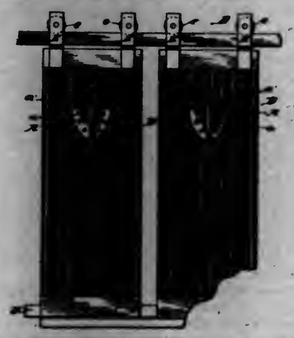
15. In a drilling-machine, the combination, with a shaft and a drum mounted to turn loosely thereon, of a stopping-arm secured on the said drum, and a yielding rod carrying a pin against which strikes the said stopping-arm, substantially as shown and described.

16. In a drilling-machine, the combination, with a shaft and a drum mounted to turn loosely thereon, of a stopping-arm secured on the said drum, a yielding rod carrying a pin against which strikes the said stopping-arm, a brake-lever pivotally connected with the said yielding rod, and a brake-band connected with the said lever and acting on the said drum, substantially as shown and described.

17. In a drilling-machine, the combination, with a shaft and a drum mounted to turn loosely thereon, of a stopping-arm secured on the said drum, a yielding rod carrying a pin against which strikes the said stopping-arm, a brake-lever pivotally connected with said yielding rod, a brake band connected with said lever and acting on the drum, and an arm carrying a link pivoted to the said brake-lever, the said rod being also connected by a second link with the said brake-band, substantially as shown and described.

18. In a drilling-machine, the combination, with a shaft, a drum mounted to turn loosely thereon, and a stopping-arm secured on the said drum, of a slotted disk held concentric with the said drum, a pin projecting from the said disk and forming a stop for the said stopping-arm, and a bolt passing through the slot in the said disk and serving to lock the latter in place, substantially as shown and described.

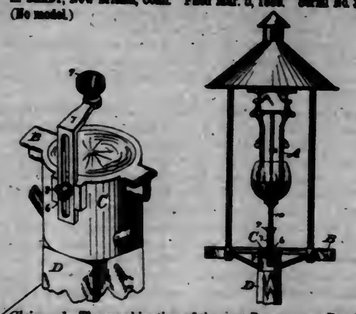
418,219. SHUTTER-WORKER. CONRAD ANDREES, Omaha, Nebr. Filed July 1, 1889. Serial No. 316,217. (No model.)



Claim.—1. The combination, with the supporting-rail and with the door or shutter mounted to slide thereon, of the striker-plate projecting from said shutter or door and in position to receive the impact of the hose-stream, whereby the door or shutter may be shifted, substantially as described.

2. The combination, with the supporting-rail and with the door or shutter mounted to slide thereon, of the striker-plate projecting from said shutter or door and having an overhang at its top to form a pocket or cavity against which a hose-stream may be directed to shift the door or shutter, substantially as described.

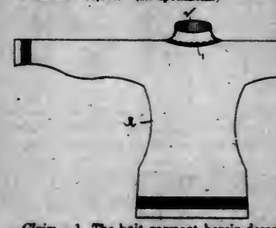
418,220. HOLDING ATTACHMENT FOR ARC LAMPS. THOMAS H. BRADY, New Britain, Conn. Filed Mar. 5, 1889. Serial No. 301,886. (No model.)



Claim.—1. The combination of the post D, cross-arm B at its top, the lamp A, suspended from the upper ends of the uprights on said cross-arm, the holder 7, adjustably secured at the top of said post, and the insulating-socket secured to the upper member of said holder and engaging the lamp at the end farthest from its point of suspension, substantially as described, and for the purpose specified.

2. The combination of the post D, cap-iron C, and cross-arm B at the top of said post, the lamp A, supported on said cross-arm, the vertically-recessed socket at one side of said cap-iron, the insulating-socket 9, and the holder 7, fitted to said vertically-recessed socket and provided with fastening devices for said holder, substantially as described, and for the purpose specified.

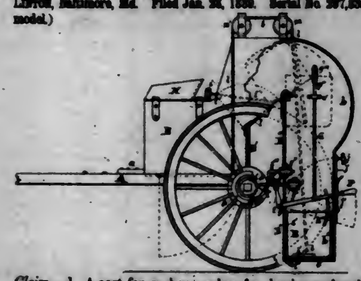
418,221. KNIT GARMENT. WALTER BRAMLEY, Chicopee Falls, Mass., assignor to Taylor & Bramley, same place. Filed Feb. 15, 1889. Serial No. 300,067. (No specimens.)



Claim.—1. The knit garment herein described, having a folding collar composed of an endless band, which from its line of juncture with the body of the garment to the fold-line thereof is of a slightly-decreasing diameter and from said fold-line to the outer edge thereof is of a constantly-increasing diameter, substantially as described.

2. The knit garment herein described, consisting of a seamless jersey having a collar composed of an endless band united at one edge thereof to the body of the garment, said collar having a slightly-decreasing diameter from said line of juncture to a fold-line located between its edges, and having a constantly-increasing diameter from said fold-line to the outer edge thereof, substantially as and for the purpose set forth.

418,222. GARBAGE-CART. ROBERT S. BREWINGTON and JOHN W. LINTON, Baltimore, Md. Filed Jan. 28, 1889. Serial No. 297,836. (No model.)



Claim.—1. A cart for garbage, ashes, &c., having a closed cover, in combination with a bucket located in the rear and operated automatically by the rotation of the wheels when the cart is in motion, as described.

2. A garbage-cart having two compartments or more with a movable double sliding cover supplied with holes or slots, as described, and a bucket hung on cords, and operative mechanism for elevating and dumping the bucket automatically.

3. A garbage-cart having two or more compartments and a movable cover to them made of two plates constructed with holes or slots therein to be opened or closed, substantially as and for the purpose described.

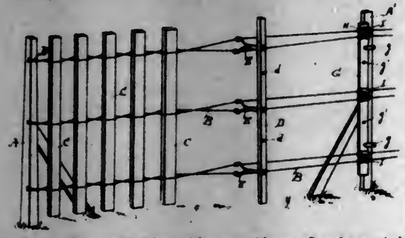
4. The bucket suspended by cords, in combination with the pulleys, drums, and ratchets attached to the hubs of cart-wheels, whereby the bucket is elevated and detached automatically, as described.

5. The bucket E suspended by cords *l l*, in combination with the pulleys *m m'*, drums D D on the axle, ratchets *c' c'*, attached to the hubs of the wheels, the pawl *c''*, spring *c'''*, bolts *f' f'*, and the lever F, substantially as and for the purpose described.

6. The lever F, vertical connecting-rod G, having a bent end *g''*, and the bolt *f''*, in combination with the pawl *c''*, ratchet *c'*, wheel-hub c, and drum D, substantially as and for the purpose described.

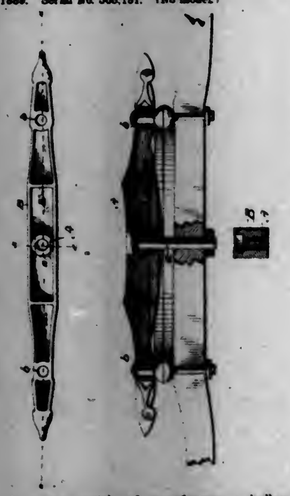
7. The bucket E, having pins *e'* on its side and hook *l''* on or near the bottom, in combination with the vertical rod G, having a pin *g''* at its end, whereby the pins *e* engage the hooks *k* and the hook *l''* elevates the rod G to automatically release the ratchets and drums to let the bucket fall to its place, as described.

413,223. MACHINE FOR MAKING SLAT-AND-WIRE FENCE. WILLIAM CARTER, Martinsville, Ohio, assignor of one-half to Daniel M. Turner, same place. Filed June 27, 1889. Serial No. 278,329. (No model.)



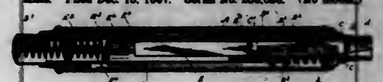
Claim.—The combination, with a movable post D and a nut-bolt bifurcated at one end, of the bibranched wire-carrier E, bent as shown at *e e'*, and pivoted in the middle on a cross-pin of the bolt, as shown and described.

413,224. HEAD-BLOCK FOR VEHICLES. FRANKLIN P. CIRCLE, Springfield, Ohio, assignor of one-half to A. Parthurst, same place. Filed Mar. 13, 1889. Serial No. 303,181. (No model.)



Claim.—As a new article of manufacture, a hollow metallic head-block cast integrally with all its component parts, open on its lower sides and having a cylindrical shaft A, securely attached to the inner sides of the center of the head-block to form a journal-box to receive the king-bolt, and provided with apertures for attaching the fifth-wheel, and transverse braces arranged to support the sides intermediately between the center and the ends, and provided on its upper side with a bed to receive the head of the king-bolt.

413,225. FINGER-NAIL CUTTER. GEORGE H. COATES, Worcester, Mass. Filed Dec. 15, 1887. Serial No. 258,098. (No model.)



Claim.—1. The combination, with a shell or case forming a handle, of elastic clamping-jaws rigidly attached to said handle, a sliding ring sliding over said jaws, and a spring whose tension is applied to said ring to hold said jaws in a state of compression, substantially as described.

2. In combination, the shell or case forming the handle, clamping-jaws rigidly attached to said handle and inclosing a sliding blade, said jaws having inwardly-projecting edges arranged to engage notches in the sliding blade, a sliding blade inclosed within said jaws and having notches, a sliding ring sliding over said clamping-jaws, by which they are compressed, and a spring actuating said sliding ring to compress said jaws, substantially as described.

3. The combination, with a shell or case forming a handle and a sliding blade inclosed in said handle and provided with a pin, of a pair of clamping-jaws rigidly attached to said handle, said jaws being provided with a lug to limit the outward movement of said sliding blade, and a notch arranged to inclose the pin on said blade, a sliding ring sliding over said clamping-jaws, and a spring actuating said sliding ring, substantially as described.

4. The combination, with a shell or case forming a handle and a sliding blade inclosed in said handle, of clamping-jaws C C, provided with a tubular stem *b*, attached to the shell or case, a sliding ring D^4, and a spiral spring D^5, by which said jaws are compressed upon said sliding blade, substantially as described.

5. The combination, with a shell or case forming the handle, clamping-jaws attached to said handle and provided with projecting lugs, and a sliding wedge placed between said lugs, whereby the clamping-jaws are opened, substantially as described.

6. The combination, with a shell or case forming the handle, and a sliding blade sliding in said handle, of a pair of clamping-jaws attached to said handle, a sliding sleeve sliding in said handle and having a ring-shaped section inclosing said clamping-jaws, and a wedge-shaped section passing between lugs on said clamping-jaws whereby they are opened, and a spring applied to said sliding sleeve for the purpose of holding the ring-shaped section over said clamping-jaws and maintaining said jaws compressed against the sliding blade, substantially as described.

7. In combination, a shell or case forming a handle, a blade inclosed by and capable of sliding in said handle, clamping devices by which said blade is held in position in said handle, a sliding rod with one end resting against the inner end of said blade and having an attached disk, and a spring inclosed in said handle, with its tension applied to said sliding rod, whereby it is moved and said blade forced out of the handle, substantially as described.

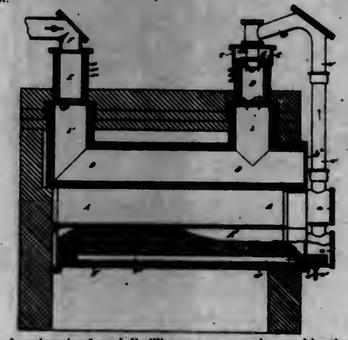
8. The combination, with a shell or case forming the handle and a blade sliding within said handle, of the clamping-jaws C C, sleeve D, operatively connected with said jaws, rod E^1, provided with an attached disk E^2, said rod resting against the inner end of the blade, and a spring E^3, with its tension applied to said blade through said rod and disk to force the blade out of the handle when released by the clamping-jaws, substantially as described.

9. The combination of a shell or case forming the handle, a blade sliding within said handle, clamping-jaws attached to said handle, a sliding tube or sleeve sliding over said jaws, by which they are compressed upon said blade, said tube or sleeve extending through the handle and terminating in a cap to receive pressure, and a spring with its tension applied to said tube or sleeve to compress said clamping-jaws, substantially as described.

10. The combination, with a metallic blade having a mortise or slit whose end walls form cutting-edges with one side of said blade, of projecting ribs running lengthwise said blade upon each side of said cutting-edges for the purpose of guards to said cutting-edges, substantially as described.

413,226. APPARATUS FOR MAKING ILLUMINATING-GAS FROM COAL. JOHN R. R. DUNCAN, Liverpool, County of Lancaster, England. Filed July 16, 1888. Serial No. 280,209. (No model.) Patented in France July 17, 1888, No. 191,051; in Belgium July 16, 1888, No. 82,605; in Spain Oct. 2, 1888, No. 8,519; in Canada Nov. 16, 1888, No. 30,201, and in Austria-Hungary Jan. 13, 1889, No. 29,[illegible] and No. 49,982.

Claim.—1. In a bench of coal-distilling apparatus, the combination of a distilling-retort adapted to receive the fuel to be distilled, a fixing-retort adapted to be externally heated, and a duct adapted to be artificially cooled, said duct being arranged directly above and springing vertically from said fixing-retort, and provided with a pipe connecting the distilling-retort with said duct, substantially as described.



2. In a bench of coal-distilling apparatus, the combination of a distilling-retort adapted to receive the fuel to be distilled, a fixing-retort adapted to be externally heated, ducts adapted to be artificially cooled, one of said ducts being at each end of said fixing-retort and both being arranged directly above and springing vertically from the same, a liquid seal in direct contact with one of said ducts, and a pipe connecting the distilling-retort with said duct, substantially as described.

3. In a bench of coal-distilling apparatus, the combination of a distilling-retort adapted to receive the fuel to be distilled, a fixing-retort adapted to be externally heated, a duct adapted to be artificially cooled, a liquid seal in direct contact with said duct, and a pipe connecting the distilling-retort with said liquid seal, substantially as described.

4. In a bench of coal-distilling apparatus, the combination of a fixing-retort adapted to be externally heated, ducts adapted to be artificially cooled, one arranged on each end of said retort, in communication therewith and arranged directly above and springing vertically from it, and a liquid seal in connection with one of said ducts, substantially as described.

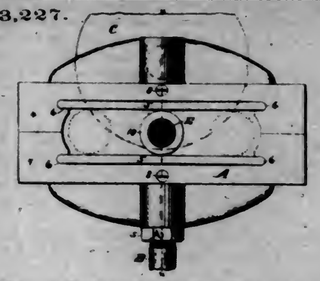
5. In a bench of coal-distilling apparatus, the combination of a retort, a duct adapted to be artificially cooled in communication therewith and arranged directly above and springing vertically from said retort, provided with an opening thereto smaller than the communicating passage, substantially as described.

6. In a bench of gas-making retorts, a distilling-retort adapted to receive the fuel to be distilled, a fixing-retort adapted to be externally heated, a duct adapted to be artificially cooled, and a valve-chamber having inlet-pipes connected, respectively, with said duct, said distilling-retort, said fixing-retort, and with an exit-pipe, combined with a four-way valve within said valve-chamber, so arranged that the course of the gas from said distilling-retort to said exit-pipe may be either through said duct and said fixing-retort or from said distilling-retort directly to said exit-pipe, substantially as described.

7. In an apparatus for making gas, the combination of a distilling-retort, a fixing-retort adapted to be externally heated, a suitable device for introducing liquid tar into said fixing-retort at the entrance end, and an artificially-cooled duct arranged immediately upon the exit or gas-outlet end of said fixing-retort, whereby the tar-gas after it is distilled passes through the fixing-retort to make it permanent, and on leaving said retort immediately enters the cooled duct, substantially as described.

413,227. CROSS-HEAD. ARTHUR H. ENDY, Hartford, Conn. Filed Apr. 8, 1889. Serial No. 306,309. (No model.)

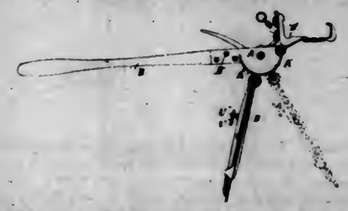




Claim.—1. The herein-described slotted cross-head provided with friction-plates for the crank-pin or crank-pin roller, with the middle point between the plates closely fitted thereto, and with a slightly-increasing space upon each side of said middle point, substantially as described, and for the purpose specified.

2. The combination of a slotted cross-head, two friction-plates secured therein, screw-adjusting devices for springing the middle portion of said plates toward each other, and the crank-pin or crank-pin roller working between said plates, substantially as described, and for the purpose specified.

413,228. CAR-MOVER. LORD B. OFFORD, Toledo, Ohio. Filed July 22, 1889. Serial No. 318,180. (No model.)



Claim.—1. In a car-mover, an angle-plate and a lever connected therewith by means of side plates formed with a semicircular bearing concentric with a pivot-bolt, in combination with a leg movable upon the pivot-bolt and provided with rollers adapted to rest upon the circular bearings, said leg moving concentrically when adjusted to push or pull by means of the pivot-bolt passing through a circular perforation formed in the upper part of the same, substantially as and for the purpose set forth.

2. In a car-mover, an angle-plate formed with a recess in the rear side thereof and lugs projecting at right angles thereto, in combination with a chain-holder formed with elongated openings, into which the lugs project, a lever for raising the chain-holder, and a chain resting within the recess and held to any desired adjustment by being engaged with the chain-holder and put in tension thereby, as and for the purpose set forth.

3. In a car-mover, side plates, an angle-plate pivoted thereto, a lever pivoted between the side plates, and a stud-lever pivotally connected with the angle-plate and with said lever, whereby, when the first-named lever is raised, the stud is projected through an opening in the angle-plate, as and for the purpose set forth.

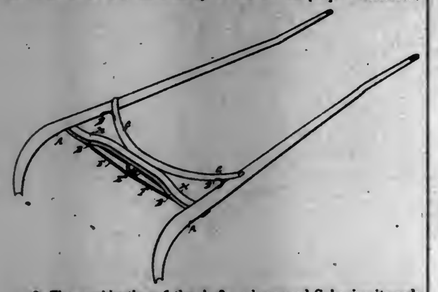
4. In a car-mover, an angle-plate, a lever pivotally connected therewith, a chain-holder movably connected with the angle-plate and with the lever by plates of a length to lock in vertical alignment with the plate-holder when raised, and a plate upon the chain-holder formed with a recess, in combination with a chain passed through the recess and engaging with the sides of the plate, as and for the purpose set forth.

5. In a car-mover, a leg formed of an upper section having a series of perforations, in combination with a lower section movably secured to the upper section and formed with a perforation having a keyway, and a catch within the perforation formed with a key adapted to register with the keyway and allow of lateral movement thereby and be locked from lateral movement when out of alignment therewith, as and for the purpose set forth.

413,229. VEHICLE-SHAFTS. JACKSON W. HEWITT, Jackson, Mich. Filed June 27, 1889. Serial No. 315,811. (No model.)

Claim.—1. In a vehicle, as described, the combination of the shafts, a brace-rod C, having its ends secured at the upper surface of the shafts, a cross-bar having its ends secured at the lower surface of the shafts, said brace-rod and cross-bar being secured together at

their centers, and rods D, secured to and forming loops between said shafts and brace-rod, substantially as and for the purpose described.



2. The combination of the shafts, a brace-rod C, having its ends secured to the upper surface of said shafts, a cross-bar B, provided with double bends H H between its center and each of its ends and having its ends secured at the lower surface of the shafts, said brace-rod and said cross-bar being secured together at their centers, the rods D D, secured to and forming loops between said brace-rod and shafts, the hanger E, extending downward from the center of said cross-bar, and the singletree secured to said hanger, substantially as and for the purpose described.

413,230. HARROW. ALBERT HIRSHHEIMER, La Crosse, Wis. Filed Dec. 18, 1888. Serial No. 294,013. (No model.)



Claim.—1. In a harrow, a tooth-bar of channel or equivalent form having two sides with parallel edges and connecting back, and a clamp-plate adapted to embrace the outside of said edges to prevent the same from spreading, in combination with a tooth passing through said plate and the back of said bar, and means, substantially as described, for securing the same therein, as and for the purpose specified.

2. In a harrow, a tooth-bar of channel or equivalent form having two sides with parallel edges and a connecting back, and a clamp-plate having flanges adapted to abut against the inside of said parallel sides and rest against said edges, in combination with a tooth passing through said plate and the back of said bar and means, substantially as specified, for securing the same therein, as and for the purpose set forth.

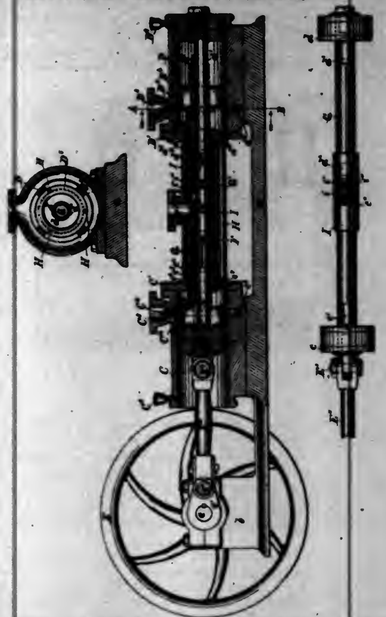
3. In a harrow, a tooth-bar of channel or other equivalent form having two sides with parallel edges and a connecting back, and a clamp or truss plate having grooves adapted to receive said edges, in combination with a tooth passing through said plate and the back of said bar and means, substantially as described, for retaining the said tooth and plate removably in position, as and for the purpose set forth.

4. In a harrow, a tooth-bar of channel or other equivalent form having two sides with parallel edges and connecting back, a clamp or truss plate adapted to embrace said parallel edges, and a tooth having its upper end adapted to pass through said plate and back, having a shoulder adapted to abut against the under side of said plate, and a screw-thread and nut at the upper end of said tooth outside of said back, substantially as and for the purpose specified.

5. In combination, in a harrow, a tooth-bar of channel or other equivalent form having two sides with parallel edges and connecting back, a clamp or truss plate adapted to embrace said parallel edges, said plate and back having a circular aperture therein for the insertion of the tooth, and said plate having an angular countersink on its under side around said aperture, and a tooth having an upper cylindrical portion adapted to pass through said aperture, a lower angular portion terminating in a shoulder adapted to fit said countersink, and a screw-thread and nut at said cylindrical end, substantially as and for the purpose herein specified.

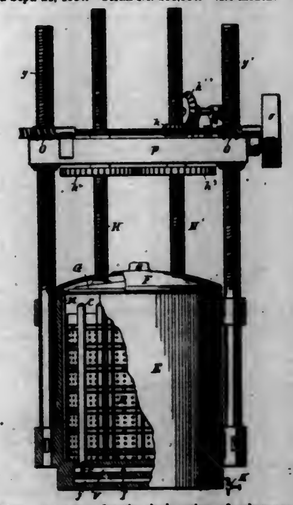
6. The combination, with a tooth-bar of a harrow, of a flanged clamp-plate fitting the bottom and sides thereof, said tooth-bar and clamp-plate being provided with a circular aperture therethrough, and the said clamp-plate having an angular countersink around said aperture on the under side thereof, and a tooth having an upper cylindrical portion adapted to fit said aperture and a lower angular portion terminating in a shoulder adapted to fit said countersink, and a screw-thread and nut on said upper portion, substantially as and for the purpose herein specified.

413,231. STEAM-ENGINE. ADDISON S. HODGES, Chelsea, Mass. Filed Feb. 4, 1889. Serial No. 298,654. (No model.)



Claim.—The cylinders C D, open in their outer ends, and having the pressure-supply pipe F secured to and connecting their inner ends, and having the respective circumferential exhausts c^3 d^3, combined with the pistons c d, connected together by means of the ported pipe G, having partition G', supply-ports c'' d'' on opposite sides of said partition, the ported valve-sleeve I, surrounding the pipe G, as described, ports c' d' at or near the respective pistons c d, and the annular valves C^3 D^3, connected together for operation, as herein set forth.

413,232. PROCESS OF DESICCATION. THOMAS R. HOUSEMAN and CHRISTIAN R. M. SPROWLES, Philadelphia, Pa., assignors to the United States Food Fertilizer and Manufacturing Company, of Pennsylvania. Filed Sept. 21, 1887. Serial No. 250,307. (No model.)

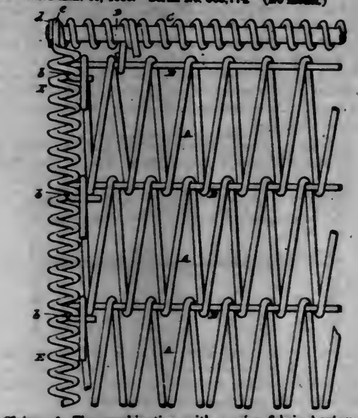


Claim.—A process for the desiccation of substances, which consists in compressing the substance and at the same time heating it by a dry heat throughout its mass.

413,233. ALTERATIVE TONIC. CARRIE R. DEERE, Paris, Ky. Filed Mar. 20, 1889. Serial No. 303,976. (No specimens.)

Claim.—The herein-described alterative tonic or remedy for blood and cutaneous diseases, consisting of blackberry, poke, burdock, sarsaparilla, silk-weed, May-apple, and wild-cherry roots, horehound, hops, and spirits, in the proportions specified.

413,234. FLEXIBLE-WIRE FABRIC. GEORGE KELLY, Chicago, Ill. Filed Mar. 13, 1889. Serial No. 303,774. (No model.)

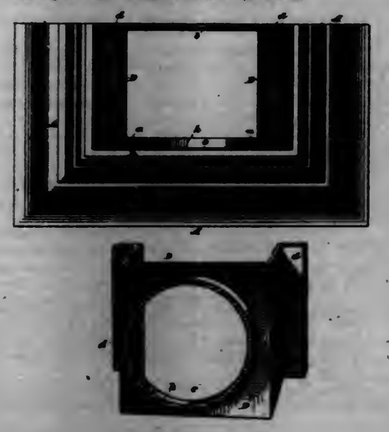


Claim.—1. The combination, with a wire fabric having transverse rods B, of the border E, when said border is secured to the fabric by the engagement with the coils of the border, and the eyes b upon the transverse rods, substantially as set forth.

2. A flexible-wire fabric comprising in combination the body of the fabric formed of a series of flattened spirals A, connected together by transverse tie-rods B, the ends of which are formed with eyes or loops b, and side borders consisting of cylindrical spirals E, engaged in the eyes b of the transverse tie-rods B, essentially as herein described.

3. A flexible-wire fabric comprising, in combination, the body of the mat formed of a series of flattened spirals A, connected together by transverse tie-rods B, the ends of which are formed with eyes or loops b, rigid end borders formed of spirals inclosing transverse rods D, and side borders consisting of cylindrical spirals E, engaged in the eyes b of the transverse tie-rods B, and having at their ends longitudinal eyes e, engaging over the ends of the rods D, and secured in place by washers d and an upset on the ends of said rods, essentially as herein described.

413,235. CLOCK-CASE. FLORENCE KROMER, New York, N. Y. Filed July 23, 1889. Serial No. 318,363. (No model.)

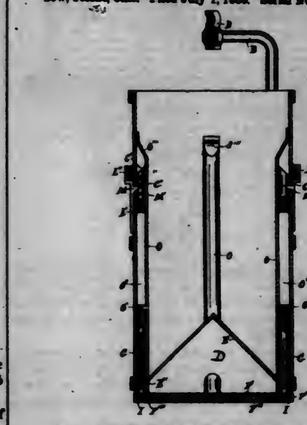


Claim.—1. The internal metal framing D, open at the back and forming an aperture e in front, combined with the ornamental clock-case A, for the purpose of carrying the movement E and the sash B of said clock, as specified.

2. The internal cast-metal framing D, open at the back and having the perforation e in front, combined with the annulus h, which projects from the front of said frame D, as and for the purpose specified.

3. The combination of the clock-case A with the internal cast-metal framing D, open at the back and forming or helping form the aperture e in front, and with the movement E, which is directly secured to the front wall of said frame D from behind, and with the sash B, which is directly secured to said frame D in front thereof, substantially as and for the purpose herein shown and described.

413,236. COAL-BUCKET. WILLIAM R. LUDLOW and EDGAR S. LUDLOW, Toledo, Ohio. Filed July 1, 1889. Serial No. 316,152. (No model.)



Claim.—1. A coal-bucket in which are comprised a body portion provided with ways or guides, spring-catches, and a vertically-slidable cone-shaped bottom provided with rods within said guides, which rods are adapted to engage said catches, substantially as shown and described.

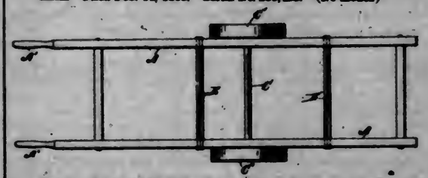
2. A coal-bucket in which are comprised a body portion, a band having a projection or cam, a lever to actuate said band, a vertically-slidable cone-shaped bottom, and means whereby said bottom may be either held in contact with the body portion or permitted to drop therefrom, substantially as shown and described.

3. A coal-bucket comprising a body portion having a series of vertical guideways and pins passing through said guideways, a vertically-slidable bottom portion, and the rods rigidly connected to the bottom portion and working in the guideways, said rods being slotted centrally, in which slots work the pins, substantially as described.

4. A coal-bucket in which are comprised a body portion provided with ways or guides and spring-catches, a band having a projection or cam, a lever to actuate said band, a vertically-slidable bottom portion, and the rods rigidly secured to said bottom and working in the guideways, said rods being constructed and adapted to engage the spring-catches, substantially as shown and described.

5. In a coal-bucket, the combination, with a body portion provided with guideways and catches arranged in the upper ends of said ways, of a vertically-slidable cone-shaped bottom portion, the rods rigidly secured to said bottom working in the guideways and adapted to engage with the catches within the same, and the stops arranged near the lower ends of the guideways to limit the downward movement of the bottom portion, substantially as shown and described.

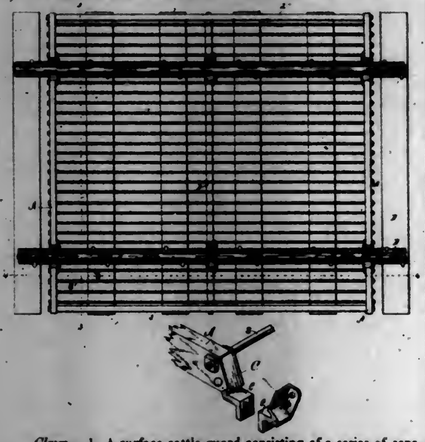
413,237. BARREL-SHEET TRUCK. HUGO MATTHIAS, Detroit, Mich. Filed Feb. 11, 1889. Serial No. 299,426. (No model.)



Claim.—A barrel-sheet truck consisting of horizontal bearers A,

having straight upper surfaces, the inclined supports B, the wheels C, the leg-supports D, and braces E, substantially as described.

413,238. CATTLE-GUARD. PARKER MERRILL, St. Louis, Mich. Filed June 22, 1889. Serial No. 315,218. (No model.)



Claim.—1. A surface cattle-guard consisting of a series of separated bars arranged between the rails and entirely supported by said rails, and a series of separated bars on the outside of each rail, the ends of the outside sections next to the rails being supported by said rails, substantially as set forth.

2. A surface cattle-guard, consisting of the beams between and outside of the rails of the track, having their contiguous ends attached to said rails, and a series of separated bars supported by said beams, with a space between the ties and said bars, substantially as set forth.

413,239. BEE-HIVE. FRANCIS R. MERRIMAN, Boston, Mass. Filed Apr. 3, 1889. Serial No. 305,842. (No model.)



Claim.—1. The combination, with a hive having an entrance or aperture leading to its interior, of a removable and reversible alighting-board having a back piece E', provided with securing devices, substantially as described, said back piece being of a width sufficient to close the inlet-opening when the alighting-board is reversed, substantially as herein set forth.

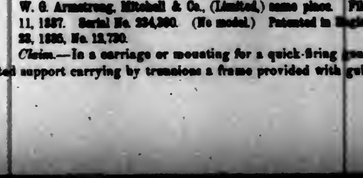
2. The combination, with a hive having an entrance or opening leading to its interior and provided with slots in its front wall, of a removable and reversible alighting-board having a back piece provided with headed pins or bolts adapted to engage said slots, said back piece being sufficiently wide to close the said entrance or opening when the alighting-board is reversed, substantially as herein set forth.

3. A hive having a brood-chamber, a honey-rack having honey-sections, and slightly elevated above the comb-frames in the brood-chamber to form the bee space or passage *t*, and an exterior casing having an opening or passage leading to the bee-space *t*, in combination with a removable and reversible bridge interposed between the space *t* and the entrance, and having a passage in communication with said bee-space and entrance, substantially as herein described.

4. The combination, with a hive having a brood-chamber and a honey-rack, said brood-chamber having some of its central comb-frames extended, whereby the honey-rack and comb-frames of the brood-chamber are separated from each other to form the bee space or passage *t*, and an exterior casing having an entrance in alignment with the bee space or passage between the honey-rack and comb-frames in the brood-chamber, of a bridge spanning the vertical space between the inner wall of the casing and the front of the comb-frames in the brood-chamber, and having a passage communicating at its central portion with the entrance-opening and at its end portions with the bee space or passage, substantially as and for the purpose described.

5. An improved bee-hive comprising a base, the casing formed of the sections A' and A'', and ventilating top or cover A''', the brood-chamber in the section A', the honey-rack in the section A'', and separated from the comb-frames in the brood-chamber by the horizontal bee space or passage *t*, an entrance or opening between the sections A' and A'' and in alignment with the bee-space *t*, a removable and reversible bridge between the front of the bee-space *t* and the entrance, and having a passage communicating with both, and a removable and reversible alighting-board exterior of the hive, and detachably secured to the casing just below the entrance-opening, substantially as and for the purpose described.

413,240. HORSE-DETACHING DEVICE. JOHN H. HALL, Berryton, Kans. Filed July 6, 1889. Serial No. 316,691. (No model.)



Claim.—1. In a shaft-detaching device, the combination, with detaching mechanism, a movable bolt, and a supporting-clip therefor, of a flat spring secured at one end to the bolt and at the other at a higher plane to the clip, substantially as set forth.

2. In a shaft-detaching device, a releasing-bolt co-operating with the eye of the shaft, said bolt being provided with a peripheral groove at a point corresponding to the side of the shaft-eye toward which the bolt moves in detaching, whereby liability of failure on account of wear is avoided.

3. In a shaft-detaching device, a securing-bolt provided at its outer end with a beveled groove, in combination with a shaft-shank having its outer shoulder beveled, substantially as described.

4. In a shaft-detaching device, the combination of sliding bolts for securing the shafts, means for limiting the play of said bolts, a bracket supported by a lug extending under the axle of the vehicle and perforated to allow the king-pin to pass through it, and by a brace secured at its ends to the axle and at its middle to the bracket, and a lever supported in the bracket for withdrawing the bolts, substantially as described.

5. In a shaft-detaching device, the combination, with sliding bolts, of a cylinder, chains connecting the bolts to the cylinder, a bracket supporting the cylinder, a rod rigid with the cylinder and extending upward therefrom, a standard to support the rod, and a handle-bar connected to the rod, substantially as described.

6. In a shaft-detaching device, securing-bolts, a cylinder, chains connecting the bolts to the cylinder, a rod rigid with the cylinder, a handle-bar surmounting the rod, and upturned handles at the extremities of the bar, in combination with a supporting-bracket, substantially as described.

7. In a shaft-detaching device, a handle-bar provided with upturned handles at its ends, and adapted thereby to serve as a rein-rest, and a clip for holding the bar rigid, said clip being provided with a knob to serve as a rein-holder, substantially as described, in combination with detaching mechanism, substantially as set forth.

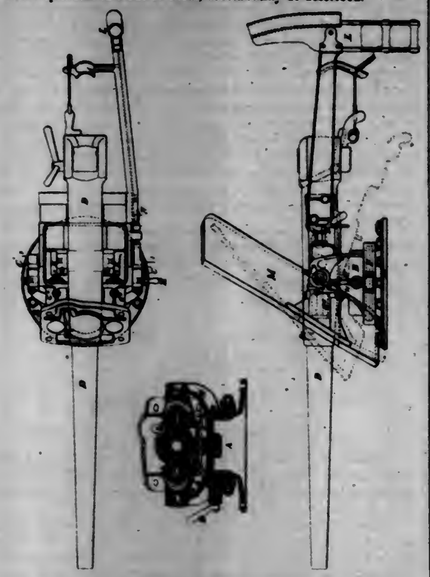
8. In a detaching device for shafts, the combination, with movable connecting-bolts, of a shaft-shank provided with a beveled shoulder, as and for the purpose set forth.

9. In a shaft-detaching device, shafts, the cross-bar of which is provided on the under side with a pad, in combination with detaching means, substantially as described.

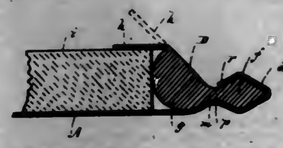
10. In a shaft-detaching device, in combination, a handle-bar provided with upturned handles at its ends, a standard, and a clasp hinged to the rear of the standard and capable of being turned up over the handle-bar to lock it in place, substantially as described.

413,241. CARRIAGE OR MOUNTING FOR QUICK-FIRING GUNS. ANDREW NOBLE, Newcastle-upon-Tyne, England, assignor to W. G. Armstrong, Mitchell & Co., (Limited,) same place. Filed Apr. 11, 1887. Serial No. 234,360. (No model.) Patented in England Oct. 23, 1885, No. 12,730.

Claim.—In a carriage or mounting for a quick-firing gun, a pivoted support carrying by trunnions a frame provided with guide-surfaces along which blocks attached to the gun slide, and provided, also, with springs in rear of the blocks, and pistons working hydraulic buffer-cylinders in front of them, substantially as described.



413,242. BEADED FILLET FOR STREET-LAMPS. RICHARD PATTISON, Boston, Mass., assignor to the Wheeler Reflector Company, same place. Filed July 1, 1889. Serial No. 316,142. (No model.)



Claim.—A beaded fillet for reflectors, having one leaf approximately diamond-shaped in cross-section, substantially as described.

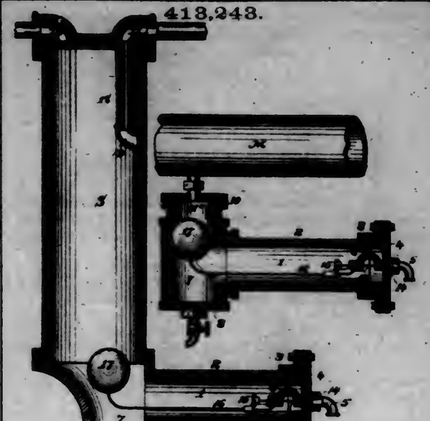
413,243. SEPARATOR AND TRAP. JOHN W. PERRY, Kokomo, Ind., assignor of one-half to George R. Stewart, same place. Filed Feb. 11, 1889. Serial No. 299,446. (No model.)

Claim.—1. In a fluid-trap, the combination, with the trap-chamber, of an elbow-lever pivoted by its angle within said chamber, an outwardly-opening discharge-valve connected by its stem with one arm of said elbow-lever, and a float connected with the opposite arm of said elbow-lever, substantially as and for the purposes specified.

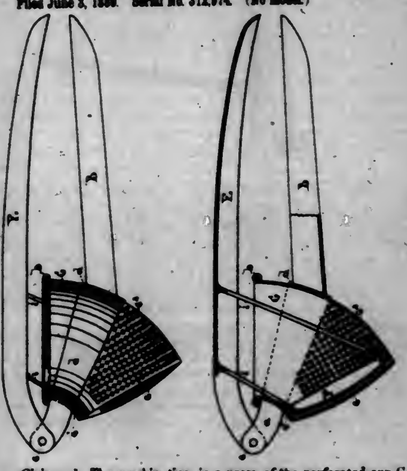
2. In a fluid-trap, the combination, with a trap-chamber, of a U-shaped valve-casting having a discharge-port therethrough and a valve-seat on its outer end, an outwardly-opening valve having a stem which extends through the port or passage of said valve-casting, an elbow-lever pivoted at its angle and connected by one arm with the valve-stem, and a float connected with the other arm of said elbow-lever, substantially as and for the purposes specified.

3. In a combined separator and fluid-trap, the combination, with an L-shaped chamber the vertical arm of which forms an expansion or separator chamber and the horizontal arm a fluid chamber or trap, of an inlet-pipe arranged in said vertical arm to deliver against the walls thereof, and an outlet-pipe, a trap-valve at the distant end of the horizontal arm of the L-shaped chamber, a valve-lever arranged longitudinally in said arm to actuate the valve, and a float arranged in the vertical arm and connected with the valve-lever, substantially as and for the purposes specified.

4. In a separator and fluid-trap, the chamber S, having the horizontal extension 1, the inlet-pipe 18 19, outlet 12, trap-valve 13 14, bell-crank lever 15, float-lever 16, and float 17, said parts arranged and combined substantially as and for the purposes specified.



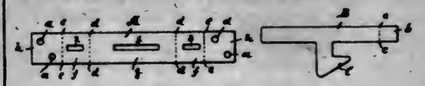
413,244. FRUIT-SQUEEZER. DAVID H. RICE, Brookline, Mass. Filed June 3, 1889. Serial No. 312,974. (No model.)



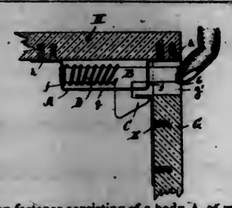
Claim.—1. The combination, in a press, of the perforated cup C, having its opposite sides c' c^2 in substantially parallel curves, the concave side c' being shorter than its convex side c^2, with the handle E, pivoted outside on the shorter side c' and carrying the follower F, attached thereto in position to pass down into and fit said cup, substantially as described.

2. The combination, in a press, of the perforated cup C, having its opposite sides c' c^2 in substantially parallel curves, the concave side c' being shorter than the convex side c^2, the band *d*, secured circumferentially around said cup between its mouth and its lower end, the handle E, pivoted to one side of said band opposite the side c' of said cup and carrying the follower F in position to enter into and fit said cup, and the handle B, attached to the opposite side of said band and opposite to the handle E, substantially as described.

413,245. BOX-FASTENING. CHARLES C. RICHARDSON, Boston, Mass. Filed June 1, 1889. Serial No. 312,907. (No model.)

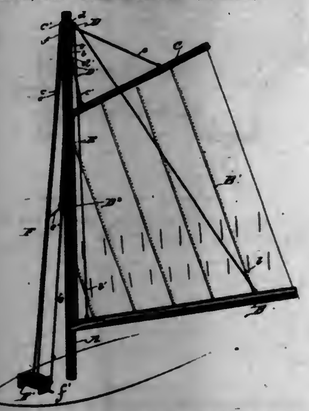


413,245.



Claim.—A box-fastener consisting of a body A, of wrought metal bent into form and having slots 1 2 3, a push-bar B, and catch C, of wrought metal, the coil-spring D, and catch-plate E, substantially as shown and described.

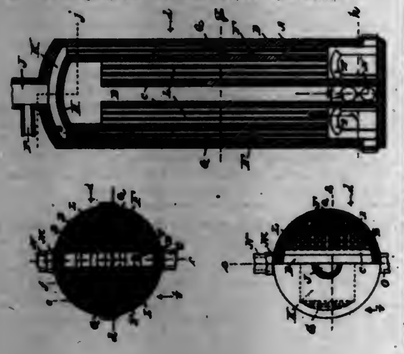
413,246. RIGGING FOR SAILS. CHARLES T. SEGAR, Utica, N. Y. Filed June 27, 1889. Serial No. 315,770. (No model.)



Claim.—1. The combination, with the mast and gaff, of an endless belt extended alongside the mast, ropes *c c'*, suspended on the mast with one end connected to the gaff and the other to the endless belt, ropes *b b'*, also suspended on the mast, with one end connected to a movable block D' and the other to the boom or suitable weight for counterbalancing the gaff, a fixed block D^2, and a rope E, said rope being attached to said movable block, passed to and through the fixed block, and connected to the endless belt, substantially as specified.

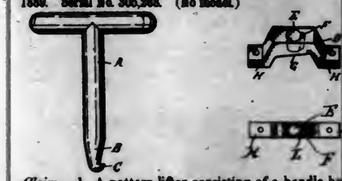
2. The combination, with the mast, boom, and gaff, of an endless belt extended alongside the mast, ropes *b b'*, suspended on the mast, with one end connected to the boom and the other through a movable block, a fixed block, and a rope E, connected with the endless belt, and ropes *c c'*, also suspended on the mast, with one end connected to the gaff and the other to the endless belt, substantially as specified.

413,247. HOT-BLAST STOVE. VICTOR O. STRÖBEL, Philadelphia, Pa. Filed July 22, 1889. Serial No. 318,288. (No model.)



Claim.—In a regenerative hot-blast stove, the combination, substantially as set forth, of a circular shell-wall, a metallic jacket for the stove, a pair of vertical walls arranged as chords of the stove-circle and extending from side to side of the stove and from the base of the stove to near the top thereof and forming a combustion-chamber between them, a pair of walls exterior to said combustion-chamber walls and parallel thereto and extending from near the base of the stove to the top of the stove, regenerative wall-work arranged in the two chambers formed between said last-mentioned walls and the shell-wall of the stove, a chimney-connection and cold-blast inlet at the top of the stove, a roof-flue placing said regenerative work in communication at the top of the stove with said chimney-connection and cold-blast inlet, regenerative flues formed in the two chambers immediately exterior to the combustion-chamber and extending from near the base of the stove to near the top thereof, and connections for gas and air of combustion and hot blast communicating with the base of said combustion-chamber.

413,248. PATTERN-LIFTER. JACOB R. WEIRICK, Reading, Pa., assignor of one-half to Henry J. Hunsicker, same place. Filed Mar. 29, 1889. Serial No. 305,263. (No model.)



Claim.—1. A pattern-lifter consisting of a handle having a stem with a hooked end of reduced size, in combination with a receiver perforated to admit said hooked end and having a beveled under surface, all substantially as set forth.

2. A pattern-lifter consisting of a handle having a stem with tapering hooked end, substantially as described, in combination with a receiver having a tapering perforation adapted to admit said end and a beveled under surface, whereby said handle is firmly secured by rotating it, substantially as set forth.

413,249. COMPOSITION FOR PRESERVING ORANGES. AUGUST C. WUERPEL, Tampa, Fla. Filed May 24, 1889. Serial No. 311,909. (No specimens.)

Claim.—The herein-described composition of matter, to be used for removing the acid from the rinds of oranges and preventing them from rotting, consisting of water, alcohol, slaked or unslaked lime, flour of sulphur, spirits of ammonia, bicarbonate of soda, and alum, in the proportion specified.

413,250. AUTOMATIC RECORDING-COMPASS. CHARLES O. FARCOT, San Francisco, Cal., assignor of two-thirds to Nathan W. Spaulding and Charles Goodall, same place. Filed Sept. 22, 1886. Serial No. 214,269. (No model.)

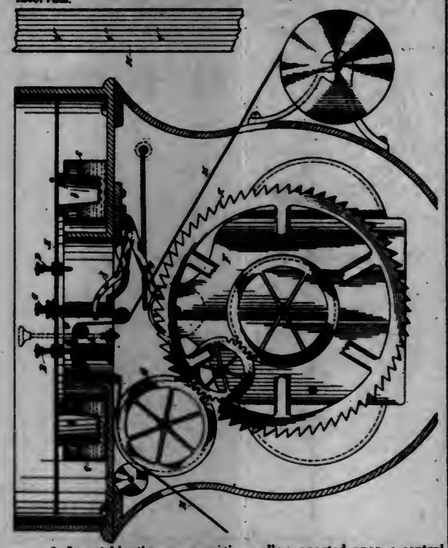
Claim.—1. In combination, a compass having a pivoted or suspended magnetic needle, indicating or marking points or pencils arranged at different places upon said needle and at approximately equal distances from the pivot, each of said points being adapted to make a distinctive mark, and a surface upon which the said indicating-points may inscribe their marks, whereby the course of the vessel with any variations thereof, and also all complete changes of course, will be automatically indicated by the different marking-points being brought into action and making different marks upon said surface.

2. A compass having a centrally suspended or pivoted magnetic needle, with a series of indicating or marking points fixed to it in a circle around the central pivot, each of said points being adapted to make a distinctive mark, a surface or tablet beneath the needle, and a clock work or mechanism by which said surface is moved at a uniform rate of speed, in combination with a lever or equivalent mechanism connected with the clock, whereby the needle with its marking-points and the indicating-surface may be made to approach each other at regular intervals, substantially as herein described.

3. In combination, a centrally-suspended magnetic needle having marking-points arranged about its center corresponding to the various points of the compass, each of said marking-points being adapted to make a distinctive mark, and a strip with which the marking-points may be separately brought into contact, said strip being divided by transverse lines and moved at a uniform rate, whereby the times at which the vessel changed its course or deviated from its mean course may be automatically recorded.

4. In combination, a pivoted magnetic needle having marking-points depending therefrom, a receiving-surface arranged below the needle, said points being adapted to mark upon said surface, an annular float depending from the said needle, and an annular chamber containing liquid, all substantially as described.

5. In combination, a magnetic needle having marking-points B C D E having distinctive characters, said points being held rigidly to the needle and depending therefrom, a surface adapted to receive the marks from said points, a central pivot-pin for the needle, the whole structure—viz., needle, pivot-pin, and depending points—being adapted to have vertical movement, a lever or arm engaging with the pivot-pin, and an arm connected with said lever and actuated by clock-work, whereby at regular intervals the pivot-pin and needle will be raised, lifting the depending point from the receiving-surface, so that the needle will be free to turn and drop by gravity at regular intervals.



6. In combination, a magnetic needle supported upon a central pivot-pin, marking-points having distinct characters arranged at different points in a circle about the needle-center, and a marking-surface placed tangential to the path of the marking-points, whereby the said points separately engage with the marking-surface, substantially as described.

7. A pivoted magnetic needle having marking-points depending therefrom, an annular float fixed beneath the needle, and a corresponding chamber containing liquid in which the float rests, in combination with a table supported within the inner circumference of the liquid-containing chamber and above the plane of its bottom and a traveling tape or receiving-surface upon the top of said table in a vertical line beneath one side of the circle in which the marking-points are arranged, substantially as herein described.

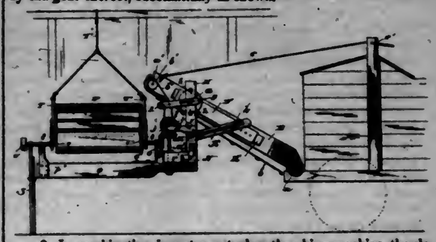
8. A pivoted magnetic needle having marking-points projecting downward at intervals in a circle around the pivot, an annular float fixed beneath the needle in a circle of larger diameter than that of the markers, and a similarly-shaped annular liquid-containing chamber within which the float dips, in combination with a receiving-surface and table and a lever by which the pivot-pin and needle are alternately elevated and depressed, all arranged within the inner circumference of the annular chamber, substantially as herein described.

9. A pivoted magnetic needle having marking-points projecting downward from it in a circle around its pivot, an annular float, and chamber with a table to support a receiving-surface beneath one side of the circle of the marking-points, as shown, in combination with a traveling receiving-surface moving across the table and an ink or printing ribbon passing across the table transversely to the receiving-surface.

10. A compass-needle fulcrumed upon a pivot and float within a bowl having gimbals, as shown, in combination with arms extending upward from the supporting-frame and the hinged suspending-joints N, substantially as herein described.

413,251. STRAW-CARRIER FOR THRASHING-MACHINES. JOSEPH H. FULTON, West Lebanon, Pa. Filed June 20, 1889. Serial No. 314,826. (No model.)

Claim.—1. The combination, in a straw-stacker thrashing-machine, of the elevator-frame B, provided with an adjustable frame carried thereby, said frame having suitable driving-gear, with a second adjustable carrier-frame secured to the adjustable frame and driven by the gear thereof, substantially as shown.



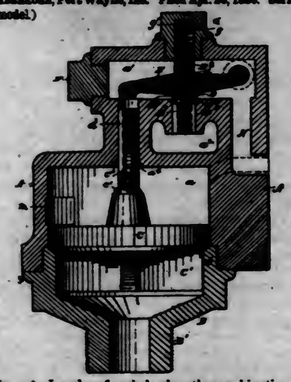
2. In combination, in a straw-stacker thrashing-machine, the elevator-frame B, pivotally attached to the thrashing-machine, and said frame to be adjustable vertically, a plate attached to the side of the elevator-frame and adapted to support adjustably one end of a frame composed of a standard H, foot-piece N, and beam O, gearing supported by the standard H, and a second adjustable conveyer secured to the foot-piece N of the adjustable frame, substantially as and for the purpose set forth.

3. The combination, in a straw-stacker for thrashing-machines, of an elevator B, carrying a frame which is adjustable thereon, said frame carrying a horizontal shaft having a sprocket-wheel and beveled pinion mounted thereon, the sprocket-wheel being driven by a belt from the sprocket-wheel on the elevator-frame, and a gear-wheel M, having teeth on both faces thereof, its lower teeth meshing with the beveled wheel attached to the shaft of the conveyer-frame P by an adjustable frame, substantially as shown, and for the purpose set forth.

4. In combination, in a straw-stacker thrashing-machine, an elevator B, either one of the side frames thereof having a plate E attached thereto, a disk G, rigidly secured to a movable plate adjustable upon the plate E, a standard H, pivotally secured to the disk and provided with clamps A, a slotted arm K, serving as a brace for the standard H, belt-tightener, and guide I, and bearings for horizontal shafts, through which power is transmitted to a second conveyer pivotally attached to the foot-piece of the standard H, substantially as shown, and for the purpose set forth.

5. The combination, in a straw elevator or carrier for thrashing-machines, of an elevator B, provided with a conveying-belt, and an adjustable frame, as shown, secured to one side of the elevator-frame, a second carrier mounted between the side frames T T, said side frames being adapted to be pivotally secured upon the shaft O' so as to be reversed thereon and convey the straw from the first elevator either to the right or left of the thrashing-machine, and a supplemental conveyer U, substantially as shown, and for the purpose set forth.

413,252. VALVE MECHANISM FOR AIR-BRAKES. THEODORE H. HAMERSLY, Fort Wayne, Ind. Filed Apr. 26, 1889. Serial No. 308,703. (No model.)

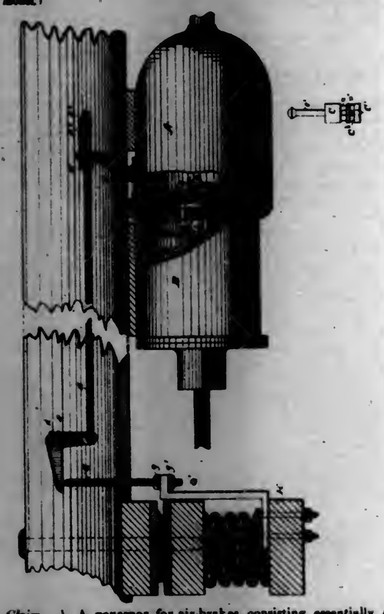


Claim.—1. In valves for air-brakes, the combination, with the casing having primary, secondary, and exhaust chambers, and having ports and connecting-openings, substantially as indicated, of primary valve C, so constructed as, when depressed, to close the induction-opening of the casing, and when elevated to close communication between primary and secondary chambers, and a valve for closing the exhaust-

opening, the latter valve having a lever attachment for engaging the primary valve, whereby the exhaust-valve is opened by the upward movement of the primary valve, substantially as set forth.

2. The combination, with valve-casing having primary, secondary, and exhaust chambers, of ducts respectively connecting the primary and secondary chambers and connecting the secondary and exhaust chambers, the primary chamber being connected with the air-supply and having a port connecting with the auxiliary air-reservoir, the secondary chamber having a port connecting with the brake-cylinder, a double-seated differential gravity-valve operating in the primary chamber for closing, when depressed, the induction-opening, and closing, when elevated, communication between auxiliary reservoir and brake-cylinder, such valve having a stem adapted to extend into the secondary chamber, and an exhaust-valve having a lever attachment adapted to engage the stem of the primary valve, whereby the exhaust-valve is opened by means of elevating the primary valve, substantially as set forth.

413,253. GOVERNOR FOR AIR-BRAKES. THEODORE H. HABERKORN, Fort Wayne, Ind. Filed Apr. 26, 1889. Serial No. 308,704. (No model.)



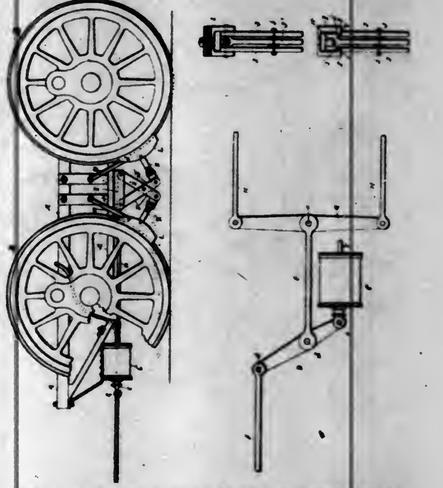
Claim.—1. A governor for air-brakes, consisting, essentially, of a valve located in the line of communication between the auxiliary air-reservoir and co-operating brake-cylinder, a spring for depressing the valve to its open position, the valve being raised to or toward its closed position by means of compressed air from the reservoir admitted under the valve, and a variable stop for limiting the upward or closing movement of the valve, such stop being automatically depressed by the down movement of the car-body caused by the load of the car, substantially as set forth.

2. In a governor for air-brakes, a valve located in the line of communication between cylinder and co-operating air-reservoir, the valve being adapted, according to its position, to admit more or less air to the cylinder, a spring for opening the valve, the reverse or closing movement of the valve being effected by compressed air admitted from the connected reservoir, and a stop for limiting the closing movement of the valve, such stop being automatically varied according to the load of the car, substantially as set forth.

3. In a governor for air-brakes, a valve located in the line of communication between brake-cylinder and adjacent air-reservoir, such valve having graduated openings adapted to admit more or less air to the cylinder, according to the position of the valve, such valve being closed by air-pressure and opened by the action of the spring, and a variable stop for limiting the closing movement of the valve, such stop being automatically shifted in the direction of opening the valve by means of the depression of the car-body caused by the loading of the car, substantially as set forth.

4. In a governor for air-brakes, the combination, with reservoir, brake-cylinder, and valve C, substantially as indicated, of connected bell-crank levers D and E, located substantially as shown and supported directly or indirectly from the body of the car, the former lever engaging a stop connected with the car-trucks and the latter lever constituting a movable stop adapted to limit the closing movement of the valve, whereby the valve is held open with a maximum car-load and is more or less closed by reducing the load, substantially as set forth.

413,254. BRAKE FOR LOCOMOTIVES. THEODORE H. HABERKORN, Fort Wayne, Ind. Filed June 21, 1888. Renewed July 22, 1889. Serial No. 318,198. (No model.)



Claim.—1. In brake mechanism for locomotives, the combination, with a single cylinder for operating the brakes, of a lever attached to the piston, a single rod leading therefrom to the brakes on the tender, a rod leading forwardly from the lever, an equalizing-bar attached to the front end of said rod, and two rods attached to the equalizing-bar and connected to the brake mechanism of the driving-wheels, substantially as set forth.

2. The combination, with a cylinder located at or near one side of the engine, the piston-rod thereof being pivoted to the one end of a lateral lever, of connecting-rods F and E, pivoted, respectively, to the opposite end and midway of such lateral lever, the former rod leading rearward for operating the tender-brakes, the latter rod leading forward and connecting with an equalizing-bar at the center thereof, said equalizing-bar being operatively connected at either end with the respective brakes of the driving-wheels, substantially as set forth.

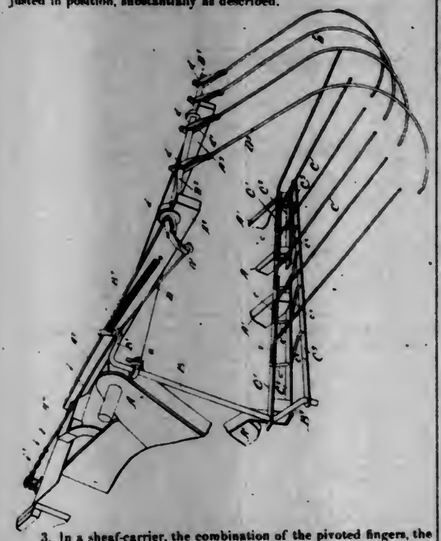
3. The combination, with depending levers J and J' of the bell-crank variety set in reverse order and pivoted together at the elbows thereof, the lower ends of these levers being connected with the brake-heads of the driving-wheels, the upper ends of levers J being pivoted to a fixed support, of mechanism, substantially as indicated, for operatively connecting the free end of levers J' with the piston-rod of a single cylinder for operating the brakes, substantially as set forth.

4. The combination, with yoke I, having depending legs and internal shelves i, of levers J and J' of the bell-crank variety and pivoted at the elbows, substantially as indicated, the levers J being pivoted to the yoke and the levers J', having lateral projections for engaging supporting-lodges, substantially as set forth.

413,255. SHEAF-CARRIER FOR HARVESTERS. MARCUS KANE, Chicago, Ill., assignor to the Warder, Bushnell & Glessner Company, same place. Filed July 6, 1889. Serial No. 316,737. (No model.)

Claim.—1. In a sheaf-carrier, the combination, with the binder-frame, of the upper depending fingers mounted on a rock-shaft, the lower fingers supported on vertical or approximately vertical pivots, a suitable link connecting said lower fingers together so that they are vibrated in unison, a double-crank shaft, and suitable connections between the upper crank on said crank-shaft and a crank on the before-mentioned rock-shaft, together with suitable connections between the lower crank on said crank-shaft and the before-mentioned link, substantially as described.

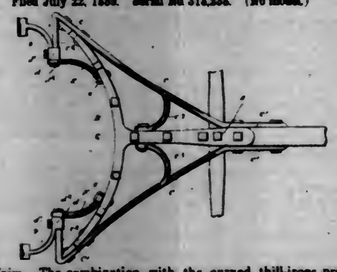
2. In a sheaf-carrier, the combination, with the binder-frame, of the upper depending fingers mounted on a rock-shaft, the lower fingers supported on vertical or approximately vertical pivots, a suitable link connecting said lower fingers together so that they are vibrated in unison, a double-crank shaft, and suitable connections between the upper crank on said crank-shaft and a crank on the before-mentioned rock-shaft, together with suitable connections between the lower crank on said crank-shaft and the before-mentioned link, a spring for turning said double-crank shaft and dumping the sheaf, and a treadle connected to said crank-shaft, by which the sheaf-carrier may be readjusted in position, substantially as described.



3. In a sheaf-carrier, the combination of the pivoted fingers, the spring which tends to swing said fingers about their pivots in the direction to dump the sheaf-carrier, together with the treadle and connections which act to readjust the pivoted fingers in position, the said connections being such that when the said treadle is down upon the seat-board the line of thrust upon it passes below the fulcrum on which it turns, substantially as described.

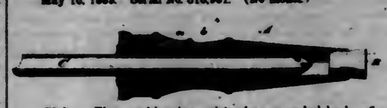
4. In a sheaf-carrier, the combination of the binder-frame, upper and lower sets of vibratable fingers, suitable connections between said sets of fingers, and a common lever, together with a spring, which tends to draw said lever in the direction to swing the two sets of vibratable teeth apart, whereby through the vibration of the lever in one direction and its automatic retraction by the spring the two sets of vibratable fingers are simultaneously operated, substantially as described.

413,256. WAGON-TONGUE. JAMES T. KETCHLEDGE, Tunkhannock, Pa. Filed July 22, 1889. Serial No. 318,236. (No model.)



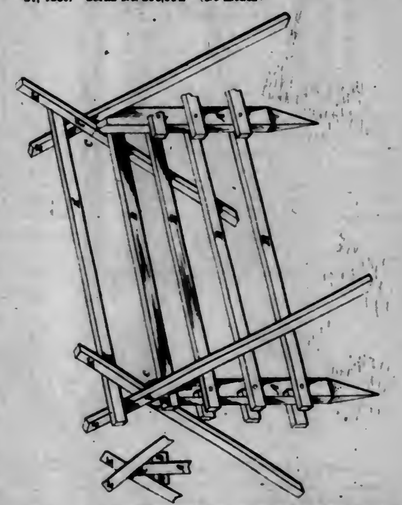
Claim.—The combination, with the curved thill-irons provided with sleeves, of the tongue, the cross-bar, the brace-rods secured to the tongue and the cross-bar and having their ends extending around the rear of the cross-bar and threaded, the curved stay-irons having perforated ends, each of said stay-irons having one of its ends bolted to the cross-bar and its other end receiving the threaded end of the brace-rod, and nuts for securing the stay-irons to the brace-rods, substantially as described.

418,257. BEER-FAUCET. HENRY KOLL, South Omaha, Nebr. Filed May 16, 1889. Serial No. 310,961. (No model.)



Claim.—The combination, with the extended body of a faucet, of a removable tapered plug independent of the inner end of said tapered portion, and a flexible elastic strip connected to said plug and extending longitudinally within the body of the faucet, and secured within an opening in the bore of the same by a removable pin, substantially as set forth.

413,258. FENCE. PETER LICHTNER, Landisburg, Pa. Filed Jan. 21, 1889. Serial No. 296,964. (No model.)



Claim.—A panel-and-rider fence, each panel having a single post at each end, said posts connected by stringers, the top of these posts being beveled, and to each post a pair of cross-stakes, both bearing at their juncture on the beveled top of the posts, and riders resting in the crotch of the cross-stakes, all substantially as described.

413,259. COMBINED SHEATHING AND LATH. THOMAS MASON, Topeka, Kans. Filed Dec. 21, 1888. Serial No. 294,300. (No model.)



Claim.—A combined sheathing and lath wherein the grooves for keying the mortar are cut in curved lines, substantially as shown and specified.

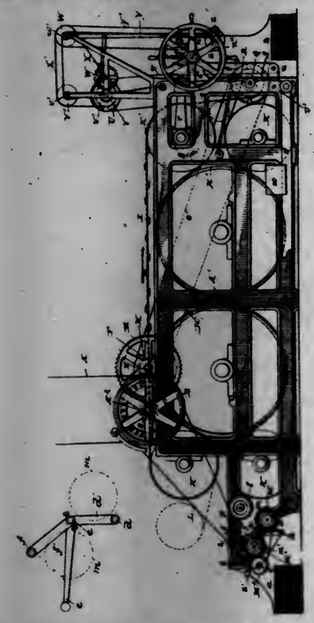
413,260. MACHINE FOR PRESSING CLOTH. GEORGE W. MILLER, Woonsocket, R. I. Filed Aug. 5, 1887. Serial No. 246,186. (No model.)

Claim.—1. In a cloth-pressing machine, the combination of the supporting-frame A' A', two pressing-cylinders arranged side by side, guide-rollers arranged at the ends of the machine outside of the said cylinders, continuous pressing-band supported by said rollers to encircle the cylinders except opposite the ends of the machine, a cloth-feed at one end of the machine opposite the uncovered part of one of the cylinders, and a cloth-receiver opposite the uncovered space of the other cylinder, substantially as described.

2. In a cloth-pressing machine, the combination of two pressing-cylinders arranged side by side, two guide-rollers arranged one above the other at the side of each cylinder and at the ends of the machine, one roller being adjustable, a continuous pressing-band supported by said rollers to encircle the cylinders except opposite the space between the adjacent guide-rollers, and means for adjusting the adjustable roller to change the tension upon the belt, substantially as described.

3. In a cloth-pressing machine, the combination of the frame A'

A', the pressing-cylinders H H', mounted side by side therein, the rollers K K' K K, also mounted in said frame near its opposite ends, and the endless pressing-band passing around said rollers and partially encircling the cylinders, it passing both over and below both cylinders, though not in contact therewith, in its passage between the rollers at the opposite ends of the machine, substantially as described.



4. In a cloth-pressing machine, the combination of a cylinder, an endless pressing-band, the guide-rollers supporting the band in a position partially encircling the cylinder, the adjustable bearings in which one of the rollers is mounted, the yielding pressure device to maintain the band under tension, and devices, substantially as described, whereby said pressure device is adjustably connected with said bearings, substantially as described.

5. In a cloth-pressing machine, the combination of a cylinder, an endless pressing-band, guide-rollers K K' K K, supporting the band, sliding bearings in which roller K' is mounted, screws *q*, connected with the sliding bearings, a transverse shaft *n*, and gear-connections, whereby said screws *q* may be simultaneously rotated, and yielding pressure-levers bearing against said screws to maintain tension on the band, substantially as described.

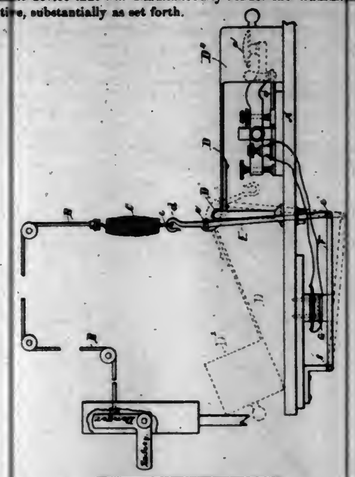
6. In a cloth-pressing machine, the combination of a cylinder, an endless pressing-band, guide-rollers supporting the band in a position partially encircling the cylinder, sliding bearings in which one of said rollers is mounted, screw-rods connected with the sliding bearings, a transverse shaft *n*, gears between said screw-rods and shaft, one such gear being fast to one screw-rod and the other loose on the other screw-rod, and a clutch member *y*, substantially as described.

7. In a cloth-pressing machine, the combination of a cylinder, an endless pressing-band, guide-rollers supporting the band in a position partially encircling the cylinder, sliding bearings in which one of the rollers is mounted, rods *q*, connected with said bearings and extending rearward therefrom, levers through which pressure is applied to said rods, and pivoted adjusting-bearings for said rods carried by the levers, substantially as described.

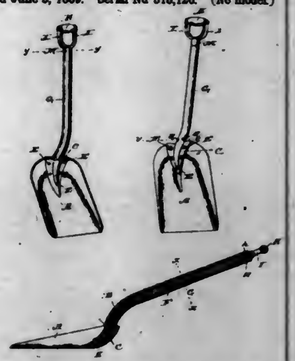
8. The combination of the regulator-shaft *c*, a handle for moving the same, two regulator-roll frames separately adjustable on said shaft and extending in different directions therefrom, and means for retaining said frames in their adjusted positions, substantially as described.

413,261. METHOD OF OPERATING RAILROAD-TRAIN ORDERS, &c. ALBERT M. MOSIER, Galion, Ohio. Filed July 3, 1889. Serial No. 316,475. (No model.)

Claim.—The method or system herein described of operating signals and transmitters for railway service, and consisting, essentially, in holding the safety-signal in position displayed by means of a suitable device that will simultaneously render the transmitter inoperative, substantially as set forth.



413,262. SHOVEL OR SCOOP. ROBERT T. PETTEBONE, Wyoming, Pa. Filed June 5, 1889. Serial No. 313,126. (No model.)



Claim.—1. The combination, with the blade of a shovel or scoop having the depression therein, of the back strap having the extended lower end removably secured within the said depression and formed into the tubular handle at the upper end, substantially as described.

2. The combination, with the blade of a shovel or scoop, of the back strap having the extended flanged lower end secured to the blade on the outside, the tubular-handle portion, and the front strap on the blade secured to the lower end of the tubular-handle portion, substantially as described.

3. The combination, with the blade of a shovel or scoop having the depression in the rear portion, of the back strap having the extended flanged lower end removably secured within said depression and having the tubular-handle portion integral therewith, and the front strap on the blade removably secured to the lower end of the tubular-handle portion, as set forth.

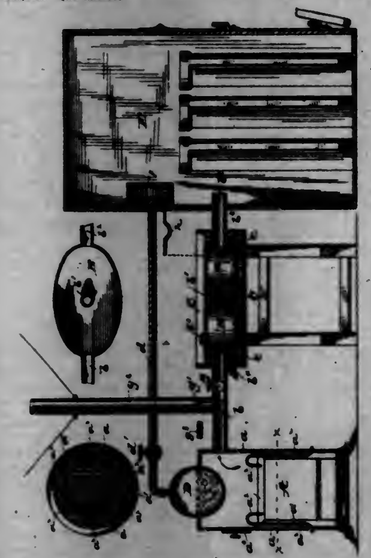
4. As an improved article of manufacture, a shovel-handle formed of sheet metal, having the edges brought together on the upper side, with the flanged lower end on the under side, substantially as described.

5. The combination, with the blade having the front strap thereon, of the back strap having the extended lower end, the sheet-metal tubular handle integral therewith, having the edges brought together on the upper side, the bolts uniting the lower corners of the tubular portion and front strap, and the bolts uniting the back strap and blade, substantially as described.

6. The combination, with the tubular handle formed of sheet metal and the blade and front strap, of the crossed bolts passing through the handle and uniting the same and front strap, substantially as described.

7. In a shovel, the combination, with the tubular handle or sheath, of the wooden core and the separate malleable-iron grip or handle secured thereon, and against which the upper end of the tubular portion abuts, substantially as described.

413,263. APPARATUS FOR HARDENING ARTIFICIAL STONE. GEORGE RICHARDSON, Washington, D. C. Filed Sept. 7, 1888. Serial No. 323,239. (No model.)



Claim.—1. In an apparatus for hardening artificial stone, the combination, with the indurating-chamber, of gas and steam generators having each a pipe-delivery into said indurating-chamber, a cooling-box located in said gas-pipe intermediate the gas-generator and indurating-chamber, and a perforated cooling-box in the indurating-chamber, into which the steam is delivered, substantially as and for the purposes described.

2. In an apparatus for hardening artificial stone, the combination, with the gas-generating furnace and indurating-chamber, of a flue leading from the furnace to the chamber, a box or enlargement located in said flue, through which the gas is caused to pass, and a tank containing cold water, in which said box or enlargement is immersed, whereby the gas is cooled in its direct passage to the indurating-chamber, substantially as and for the purposes described.

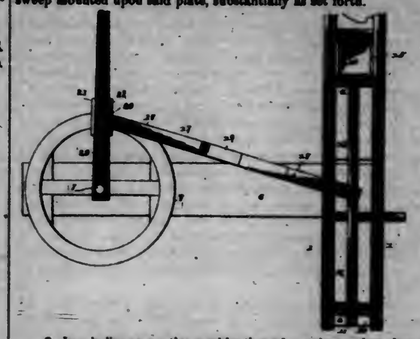
3. In an apparatus for hardening artificial stone, the combination, with a steam-generator and indurating-chamber, of a perforated cooling-box, into which the steam is delivered from the generator, said cooling-box located in the indurating-chamber, substantially as and for the purposes described.

4. In an apparatus for hardening artificial stone, the combination, with the indurating-chamber, of a carbonic-acid-gas-generating furnace having a lining of fire-brick and a series of goose-neck air-inlet pipes arranged in said lining, whereby the air will be drawn in near the bottom of said furnace and discharged in downward jets above the fuel, and a gas-pipe leading from the furnace to the indurating-chamber, substantially as and for the purposes described.

413,264. HAY-PRESS. GEORGE W. ROSEBERRY, Elmo, Tex. Filed July 25, 1889. Serial No. 318,619. (No model.)

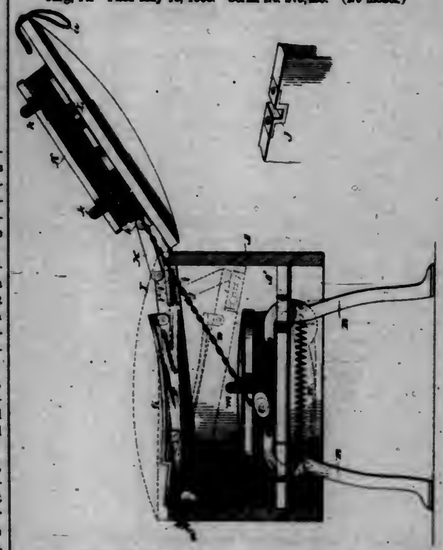
Claim.—1. In a baling-press, the combination of the frame, the baling-chamber at the front end of the same, the plunger, the toggle-links connecting said plunger with a cross-piece at the rear end of the frame, a base extending laterally from the frame, a horizontal crank mounted pivotally upon said base, the pitman connecting said crank with the connecting-point of the toggle-links, said pitman consisting of end pieces connected by a bridge-piece lying in a lower plane than the said end pieces, and an operating-sweep, substantially as set forth.

2. In a baling-press, the combination of the frame, the baling-chamber, the plunger, the toggle-links connecting the latter with a cross-piece at the rear end of the frame, a base extending laterally from the frame, a crank mounted horizontally upon said base, a bolt mounted rigidly in the outer end of said crank, a pitman connecting said bolt pivotally with the connecting-point of the toggle-links, a flanged plate mounted rigidly upon the upper end of said bolt, and a sweep mounted upon said plate, substantially as set forth.



3. In a baling press, the combination of a reciprocating plunger, toggle-links connecting said plunger with a cross-piece at the rear end of the press-frame, a horizontal crank mounted upon a laterally-extending base, a pitman connecting the outer end of said crank with the connecting-point of the toggle-links, a sweep mounted rigidly upon the upper end of the bolt, connecting said crank and pitman, a wheel or roller at the lower end of said bolt, and a circular track supporting said roller, substantially as and for the purpose set forth.

413,265. SHOE-BLACKING-KIT CASE. EDWIN D. SMITH, Pittsburg, Pa. Filed May 10, 1888. Serial No. 273,426. (No model.)



Claim.—1. The combination, in a blacking-kit, of a receptacle provided with a hinged top, legs hinged to the bottom of the receptacle and flexibly connected to the top, so as to open away from the bottom when the lid is raised, substantially as shown, and for the purpose set forth.

2. The combination, in a blacking-kit, of a receptacle having a hinged top, legs hinged to the bottom of the receptacle, springs connected to said legs beneath their pivots for folding said legs against the bottom, and flexible connections attached to the upper portion of the legs and to the hinged top for moving said legs away from the bottom when the top is raised, substantially as shown, and for the purpose set forth.

3. The combination, in a blacking-kit, of a receptacle having a hinged top, chains connected to said top and passed through pulleys to the inwardly-turned ends of the legs B, the legs being hinged to the under side of the bottom of the receptacle, one of the pair of legs being provided with pulleys, springs connected to said legs beneath

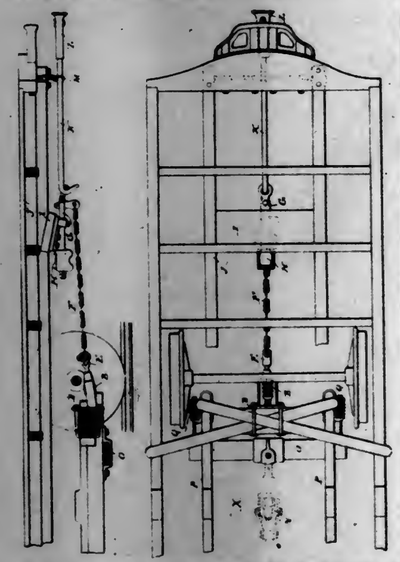
the bottom for closing the same, and a pivoted bar carrying a latch for holding the receptacle in a raised position, substantially as shown, and for the purpose set forth.

4. The combination, in a blacking-kit, consisting of a suitable receptacle having a hinged top, and folding legs hinged to the bottom of the receptacle, and flexible connections secured to the top and inner ends of the legs for moving said legs to or from the bottom of the receptacle, a pivoted bar F, connected by a link to the hinged top, and a spring-actuated latch for locking said bar and top in a raised position, substantially as shown, and for the purpose set forth.

5. In combination with a receptacle A, having a bottom A' secured above the lower edge thereof, said bottom having openings therein through which the upper ends of the legs pass, legs B B, hinged under said bottom and having their upper ends bent inwardly, springs E, for holding said legs against the under side of the bottom, a chain D, attached to the opposite legs of each pair, said chain passing through pulleys C C connected to the other legs and secured to the hinged top of the receptacle, a pivoted bar F, carrying a foot-rest, a link H, connected to said hinged bar and to the top of the receptacle, and a spring-actuated latch I, substantially as shown, and for the purpose set forth.

6. A combined shoe-blacking case and hassock consisting of a casing having a fixed bottom, a lid hinged to the top thereof, legs hinged to the bottom with their upper curved ends protruding through openings in said bottom, and chains secured at one end to the hinged lid and connected at their other ends to the upper ends of the legs, whereby the legs may be extended to a supporting position by the raising of the lid, substantially as described.

413,266. CAR DRAW-HEAD. JOHN STEPHENSON, New York, N.Y.
Filed Aug. 10, 1889. Serial No. 320,394. (No model.)

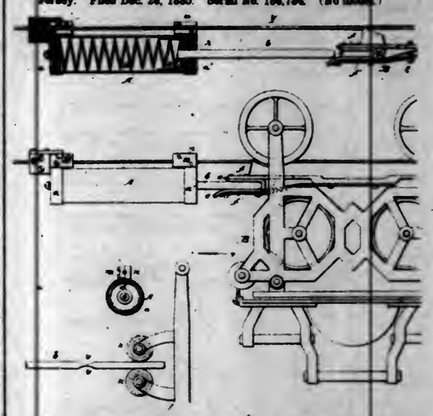


Claim.—1. A car draw-head apparatus with the head supported by a link or chain hanging on a transverse bar near the car end, whereby the buffer draw-head may have freedom of motion in any required direction, substantially as and for the purpose described.

2. A car draw-head apparatus having a draw-head with its draw-spring secured to the cross-rail of a car-truck, with its grip-carrier having freedom of motion in a central well of the truck and yieldingly connected with the frame to allow the cable when gripped to put the truck in motion before starting the car-body, substantially as and for the purpose described.

3. A car draw-head apparatus consisting of a buffer draw-head supported at one end of the car by a link or chain on a transverse bar, and connected by a stiff bar with a spring sliding bar, on which is a double-acting spring capable of being crushed by pull or push of the buffer draw-head, the spring sliding bar having chain-connection with a draw-spring attached to the car-truck, substantially as and for the purpose described.

413,267. BUFFER FOR STORE-SERVICE APPARATUS. JACOB F. TIERRELL and ARIUS B. TAYLOR, Boston, Mass., assignors, by mesne assignments, to the Lamson Consolidated Store Service Company, of New Jersey.
Filed Dec. 28, 1885. Serial No. 186,734. (No model.)



Claim.—1. In a store-service apparatus, the combination of a track, a car traveling thereon, a yielding stop carried by or adjacent to the track, and a clamp on the car provided with jaws arranged to grasp and move with their opposite faces in frictional contact with said stop, substantially as described.

2. The combination, with a track and a car-buffer having a longitudinally-yielding rod *b*, of a car provided with a clamp having parallel faces arranged to make contact with and move frictionally against the opposite sides of the rod in the direction of its length, substantially as set forth.

3. The combination, with the track of a store-service apparatus, of an air-cushion provided with a projecting rod and a car having a clamp with parallel jaws arranged to make frictional contact with the sides of the rod and to move thereon as the car approaches the point where it is to be arrested, substantially as described.

4. The combination, with the track and car of a store-service apparatus, of a frictional buffer consisting of a clamp having longitudinal parallel friction-faces extending in the line of the track and a rod or bar also extending in the line of the track and adapted to enter endwise between the frictional faces of the clamp, whereby to gradually increase the extent of frictional surface and resistance to the movement of the rod, substantially as described.

5. The combination, with the track and car of a store-service apparatus, of a rod *b*, supported in the line of the track, and a frictional clamp arranged to slide upon the rod in the direction of its length, and consisting of two parallel jaws, one fixed and the other yielding, and arranged to receive between them the end of the rod, substantially as described.

6. The combination, in a store-service apparatus, of a track and a car, an air-cylinder provided with a piston and projecting rod arranged adjacent to the track, and a spring-clamp arranged upon the car to receive the end of the rod and to slide upon the same with a frictional resistance, substantially as set forth.

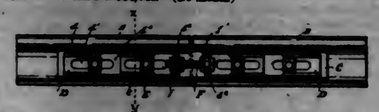
7. The combination, in a buffer for store-service apparatus, of an air-cushion, a yielding stop supported thereby, and a frictional clamp, one carried by the car and the other adjacent to the way, and arranged to operate substantially as set forth.

413,268. SCREW-PROPELLER. LEWIS N. TOWNE, New Brighton, N. Y.
Filed May 21, 1884. Serial No. 132,336. (Model.)



Claim.—A propeller-wheel having a blade or blades transversely leaned or extended back in a plane parallel with the axis of the hub, the said blade or blades being of such width that the fore and aft edges will extend at all parts between two parallel planes at right angles to the axis of the hub, substantially as specified.

413,269. NUT-LOCK. JAMES R. TYSON, Reading, Pa.
Filed June 13, 1888. Serial No. 314,702. (No model.)



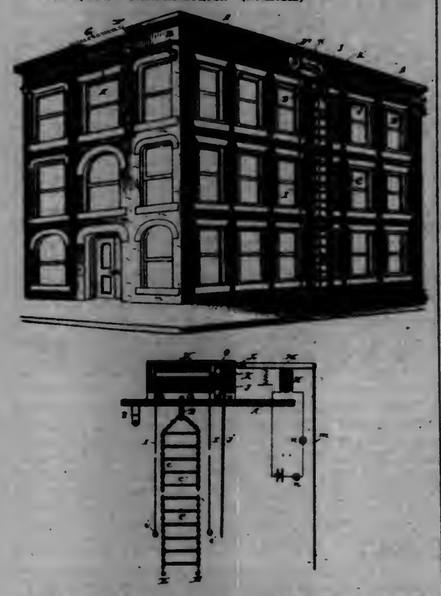
Claim.—1. The combination, with the fastening bolts and nuts, of the slotted wedge-bolts with ears d^3, and a bolt F, connecting said plates, all adapted to operate substantially as set forth.

2. The combination, with the fastening bolts and nuts, of the slotted plates provided with the flat surfaces d^4, flanges d, and ears d^3, and a bolt F, connecting said plates, all substantially as set forth.

3. The combination, with the fastening bolts and nuts, of the slotted wedge-plates provided with flat surfaces d^4, flanges d, and ears d^3, and a bolt F, connecting said plates, all substantially as set forth.

4. The combination, with the rails, fish-bar, and fastening bolts and nuts, of the slotted wedge-plates provided with flat surfaces d^4, flanges d, and ears d^3, and a bolt F, with nuts f and f' connecting said plates, all substantially as set forth.

413,270. FIRE-ESCAPE. ORRIN T. WILSON, Topeka, Kans.
Filed Dec. 24, 1888. Serial No. 294,540. (No model.)



Claim.—1. In a fire-escape, the combination, with a permanently-secured windlass or drum and a permanently-secured rail, of a ladder adapted to be wound upon the windlass or drum and having one end attached to the rail, substantially as described.

2. In a fire-escape, the combination, with a permanently-secured windlass or drum and a permanently-secured rail, of a ladder one end of which is permanently but freely secured to the rail and the other end of which is detachably secured to the windlass, the arrangement being such that the ladder is adapted to be wound upon the windlass, substantially as set forth.

3. In a fire-escape, the combination, with a permanently-secured windlass and a permanently-secured rail, of a ladder provided with a traveler permanently but movably secured to the rail, and cords permanently connected to the windlass adapted to be connected to the free ends of the ladder, substantially as described.

4. In a fire-escape, the combination, with a permanently-secured windlass and a permanently-secured rail, of a ladder supported upon the rail, cords connected to the windlass adapted to engage the free ends of the ladder, and a friction-pulley upon the windlass, whereby the ladder may be wound thereon, substantially as described.

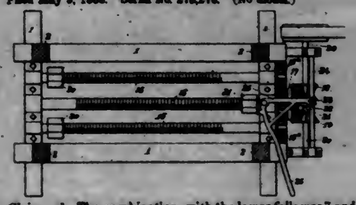
5. In a fire-escape, the combination, with a permanently-secured windlass, of the cords connected thereto, a ladder adapted to be connected to the cords, a friction-pulley connected with the windlass, a tension device also connected to the windlass, and a pawl and ratchet controlling the movement of the windlass, substantially as described.

6. In a fire-escape, the combination, with a windlass adapted to retain a ladder, of a tension device normally holding the windlass under strain, a pawl and ratchet holding in check the tension device, and connections for operating the pawl and ratchet to release the windlass, substantially as described.

7. In a fire-escape, the combination, with a permanently-secured rod, of a ladder permanently secured to the rod, but free to travel thereon, and a windlass adapted to hold the ladder when not in use, substantially as described.

8. In a fire-escape, the combination, with a permanently-secured rod, of a ladder one end of which is secured thereto, but free to travel thereon, and a permanently-secured windlass provided with cords to engage the ladder and store the same when not in use, substantially as described.

413,271. BALING-PRESS. CARLOS G. WILSON, Milledgeville, Ga.
Filed May 9, 1888. Serial No. 273,276. (No model.)



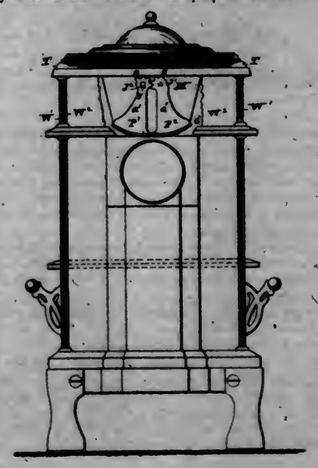
Claim.—1. The combination, with the lower follower 7 and cross-head 14, of the three screws 15 16 15, the nuts 30 31, traveling on said screws, and the paired toggle-bars carried by the said nuts and stepped at their opposite ends into the follower and cross-head, respectively.

2. The combination, with the lower follower 7, cross-head 14, screws 15 16 15, and nuts 30 31, of the toggle-bars 32 33, stepped into the follower and crossing or passing one another, as herein shown and described, to afford increased length of stroke.

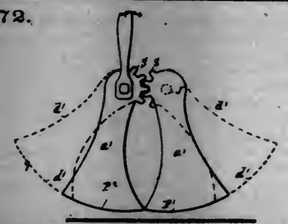
3. The combination of the press-box, upper and lower followers, cross-heads, tie-rods, and crossed toggle-bars operated by separate screws geared together so as to have simultaneous movement, substantially as described.

413,272. MAGAZINE-STOVE. GURDON G. WOLFE, Troy, N. Y., assignor to the Fuller & Warren Company, same place.
Filed Jan. 2, 1889. Serial No. 295,144. (No model.)

Claim.—The combination, with a magazine that is arranged within the combustion-chamber and above the fire-pot of the stove, of a magazine-bottom that is made in two parts, which are hung upon journals at the sides of the magazine, said journaled parts being connected by engaging geared sectors and arranged to be operated substantially in the manner as and for the purposes set forth.



413,272.

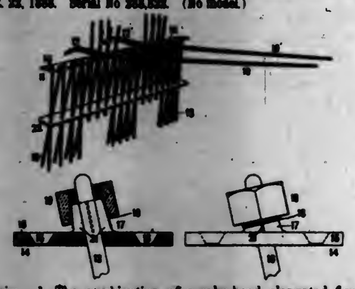


413,273. PLATFORM ROCKING-CHAIR. JOHN W. BROWN, Rock Falls, Ill. Filed Mar. 29, 1889. Serial No. 305,755. (No model.)



Claim.—In a platform rocking-chair, the combination of the rocker A, the plate D, attached thereto and provided with projection R and stud E, the platform B, the plate F, attached to said platform and provided with recess P and lugs M, N, and O, the pendant H, provided with the spring-supporting lugs K K and lug T, and with opening J, adapted to be loosely collared on stud E, springs L L, having respectively their upper ends inserted between the lugs M and N, their central portions curved outwardly parallel with said rocker, and their lower ends supported on said lugs K K, and the wires S and V, respectively passed over the outside of the springs L L and their extremities suitably fastened in the outer ends of the lugs O and M and K and T to hold said springs in their aforesaid position, substantially as shown, and for the purpose described.

413,274. WEEDER. WILLIAM A. BROWN, Lynn, Mass. Filed Oct. 22, 1888. Serial No. 288,322. (No model.)



Claim.—1. The combination of a rake-head, elongated fingers vertically adjustable therein, and a vertically-adjustable check-bar through which said fingers pass, substantially as described.

2. The combination of a rake-head, finger-holders thereon having split thimbles provided with external screw-threads, elongated fingers adjustable in said holders, and nuts on said thimbles for causing them to clamp the fingers.

3. The combination of a rake-head, finger-holders thereon, each comprising an attaching-plate and a conical split thimble, elongated fingers adjustable in said thimbles, and nuts on said thimbles, substantially as described.

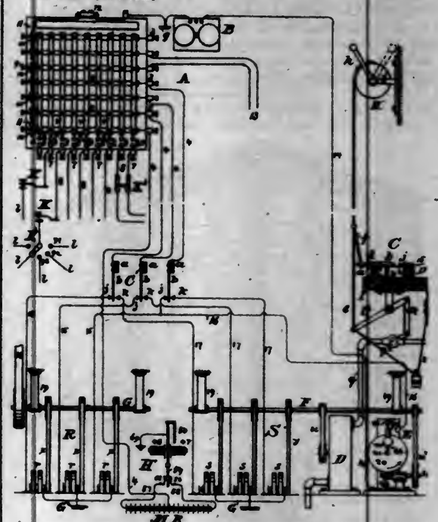
4. A finger-holder for a rake-head, consisting of an attaching-plate and a conical split thimble thereon provided with an external screw-thread for receiving a nut, substantially as described.

413,275. METHOD OF MAKING UMBRELLA-RUNNERS. FREDERICK A. ELLER, Tabard Works, County of Surrey, England. Filed May 31, 1888. Serial No. 274,471. (No model.) Patented in England May 28, 1887, No. 7,616; in France May 3, 1888, No. 190,364; in Belgium May 3, 1888, No. 81,695; in Germany May 4, 1888, No. 45,574, and in Austria-Hungary Feb. 4, 1889, No. 46,035 and No. 1,396.

Claim.—The herein-described mode of manufacturing umbrella runners and top notches, each in a single piece of metal, which consists in first turning down a portion of the length of metal tubing and in then upsetting the remainder of said tubing in dies, as and for the purpose specified.



413,276. CENTRAL-STATION CALLING APPARATUS. ISAIAH H. FARNHAM, Malden, Mass., assignor to the New England Telephone and Telegraph Company, of New York. Filed Apr. 20, 1889. Serial No. 307,946. (No model.)



Claim.—1. The combination, substantially as hereinbefore described, in a call apparatus for telephone-exchanges, of a series of magneto-electric generators operated by power, connecting-wires extending therefrom to the signal-sending appliances of a series of telephone-switch-board sections, each of the said wires being adapted to form part of a sub-station circuit for sending outgoing signals, a distributing switch-board placed in the circuit of said wires between the generators and the telephone switch-board, and means, as indicated, for testing the said generators and their connecting-wires, for the purposes specified.

2. In a call apparatus for telephone exchanges, a series of magneto-electric generators operated by power, connecting-wires extending therefrom to the signal-sending appliances of a series of telephone-switch-board sections, each of the said wires being adapted to form part of a sub-station circuit for sending outgoing signals, a distributing switch-board placed in the circuit of said wires between the generators and the telephone switch-board, whereby the connection of the generators with the switch-board sections may be varied at will, and a testing device for the said generator-circuit, comprising a series of test-keys located at the said switch-board, one in permanent connection with each generator-wire, and an electro-magnetic alarm-instrument connected on one side to earth and on the other with the common front contact of the said keys, substantially as and for the purposes specified.

3. In a call apparatus for central telephone-stations, a series of magneto-electric generators operated by steam or other power, connecting-wires extending therefrom to the signal-sending appliances of a series of telephone switch-board sections, each of the said wires being adapted to form part of a sub-station or trunk circuit for the purpose of sending outgoing signals, a series of equalizing resistances interposed in the generator-circuits—one for each—between the said generators and the said signal-sending appliances, and means for shunting or short-circuiting the said resistances, substantially as described, and for the purposes specified herein.

4. The combination, substantially as hereinbefore described, of a series of constantly-operating electric generators, circuit-connections therefor extending therefrom, a distributing switch-board receiving the outer ends of said circuit-connections, extension-wires leading from the said distributing switch-board to the signal-sending appliances of a series of telephone-switch-board sections, a series of equalizing resistance-coils interposed in the circuit of said extensions, one for each, and a shunt-circuit controlled by a manual circuit-closer for each resistance.

5. The combination, in a telephone-exchange, of two sets of magneto-generators for sending outgoing call-signals, one of the said series of generators being regularly operated by steam or other power, the other series being adapted to be actuated by a water or other motor under the control of the central station, an automatic circuit-changing switch interposed between the telephone switch-board and the two series of generators, and adapted, when operated, to disconnect one of the said series of generators from the said switch-board and to connect the other in lieu thereof, duplicate circuit-connections extending, respectively, from the two series of generators to the said automatic switch, and a single set of circuit-connections extending therefrom to the telephone-switch-board sections, and in circuit with one or the other of the series of generator-connections, according to the position of said automatic switch, a mechanical controlling device located in the central station acting upon the throttle of the water-motor, whereby the same can be started or stopped from the said station, and means, substantially as described, actuated by the said motor-controlling device, whereby the automatic switch may be simultaneously operated by the action of starting or stopping the motor, and the circuit-connections thereupon changed from the quiescent to the active generators.

6. In a central station of a telephone system, a regular series of magneto-generators for furnishing currents for sending outgoing signals, adapted for practically constant operation and actuated by steam or other power, a supplementary or substitute series of similar generators actuated by a water-motor or like local power and adapted to be brought into action during the temporary stoppage of the regular series, an automatic switch controlling the circuit-connections of both generators and adapted to connect the series at any given moment in operation with the switch-board, and to disconnect therefrom those which are quiescent, and means, substantially as described, comprising, as shown, a link-and-lever mechanism extending from a manually-operated lever in the operating-room to the valve or throttle of the water-motor and also to the said automatic switch, whereby the said motor may be thrown into and out of operation as required, and whereby the said automatic switch may simultaneously and without independent action be moved in correspondence therewith.

7. The combination, substantially as hereinbefore described, of two series of call-generators operated by independent sources of power, one of the said series being intended for regular operation and being actuated by power uncontrolled by the central station, and the other being adapted for use in case of the temporary stoppage of the first and being actuated by power—such as a water-motor—controlled by means of suitable mechanism at the central station, an automatic circuit-changing switch actuated also by the said controlling mechanism and adapted to transfer the switch-board generator-wires from one series of generators to the other when the substitute generators are started and stopped, and an alarm-signal comprising a bell or other electro-magnetic device, an electric circuit, and an intermittent circuit-closer therefor, the said alarm being adapted to be actuated only by the simultaneous and concurrent action of both series of generators, whereby the central-station operator may be notified whenever the water-motor is being unnecessarily employed.

8. The combination of two series of magneto-electric generators driven by independent sources of power, with an automatic electro-magnetic alarm adapted to indicate the concurrent operation of both series, the said alarm having its actuating-magnet included in circuit with a generator of one of the said series and deriving its actuating-current therefrom, and an intermittent and periodic circuit-closer and breaker included also in said alarm-circuit and operated by the driving mechanism of the other series, substantially as and for the purpose specified.

9. The combination of two series of magneto-electric generators driven by independent sources of power, with means for indicating at a given point that both series are working at the same time, said means comprising an electric circuit, an electro-magnetic alarm-instrument included therein, an intermittent vibratory circuit-closer operating at intervals to momentarily close the said circuit, said circuit-closer being actuated by the motor mechanism of one of the series of generators and one of the generators of the other series, the said generator being included in the said electric circuit with the circuit-closer and alarm, whereby attention may be called to the unnecessary simultaneous operation of both series by an alarm capable of being operated only when both series are at work, substantially as described.

10. The combination, with a regular series of power-driven magneto-generators, of a normally-open alarm-circuit including an electric bell and one of the said generators, an auxiliary or substitute series of generators driven by independent power and adapted for use when the first series are temporarily stopped, and an intermittent vibratory circuit-closer also included in the said normally-open circuit, actuated by the motor mechanism of the said substitute series of generators and adapted to close the alarm-circuit at intervals, whereby the simultaneous operation of both series of generators is automatically announced, as set forth.

11. The combination of an intermittent circuit-closer comprising the rotary disk 20 and the pin 24, carried thereon, the pendulum or rod 22, the spring-contact 26, supported thereby, and the insulated fixed contact-piece 27, the said wheel being arranged to rotate in such a direction that the pin will strike the pendulum away from said fixed contact, with an electric circuit and an alarm-instrument included therein, the said spring 26 and fixed contact 27 being, respectively, terminals of the said electric circuit, whereby a brief and intermittent and periodic signal may be given only when the rotary disk is in motion at the same time that an electro-motive force is connected with said circuit.

12. In a telephone central-office system, the combination, substantially as hereinbefore described, of a series of power-driven magneto-electric generators adapted for regular and constant use, a substitute series of generators driven by independent power under the control of the central station and adapted for use when the first series are from any reason at rest, for the purpose of maintaining at all times a supply of calling-currents, an automatic signal, substantially of the character indicated herein, comprising an electro-magnetic alarm, a normally-open electric circuit in which the same is included, and a circuit-closer actuated by the stoppage of the first series of generators for the purpose of calling attention to such stoppage, and an independent automatic alarm operated by the current of one of the generators of the first series flowing in an electric-bell circuit which is closed at intervals by the motor mechanism of the generators of the substitute series, whereby attention is called to the simultaneous operation of both series, substantially as described.

13. The combination, with two series of magneto-electric generators actuated by independent sources of power, of an electric alarm or signal adapted to become operative only when both series are working at the same time, the said alarm comprising an electric circuit, an electric signal-bell included therein, one of the generators of one of the series and a periodic circuit-breaker driven by the motor mechanism of the other series.

14. The combination, with two series of magneto-electric generators actuated independently by suitable power, of an electric signal or alarm adapted to indicate the simultaneous operation of both series and depending upon the concurrent action of a current developed by the generators of one series and the movement of the motor mechanism of the other series, the circuit of said signal being provided with an intermittent and periodic circuit-closer driven by the motor mechanism of one generator series and including one of the generators of the other series, substantially as described.

413,277. GATE FOR SWINGING BRIDGES. EDWARD GIRARD, Chicago, Ill. Filed Oct. 29, 1888. Serial No. 289,449. (No model.)

Claim.—1. The combination, with a swinging bridge and transverse cam-surfaces secured to the under surfaces thereof near the end, of a reciprocating bar C, having a rack D, said rack D, gear *d*, shaft E, bevel-gear A, spindles G G, and beveled gears *g g*, as set forth.

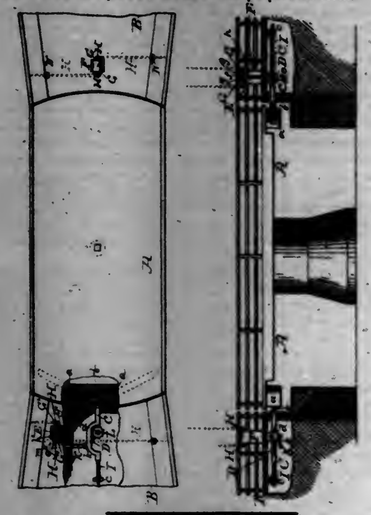
2. The combination, with a swinging bridge and cam-surfaces secured to the under side of said bridge near the ends thereof, of a longitudinally-reciprocating bar projecting from the abutting wall of the approaches of said bridge and parallel therewith, having an offset near its center of length, rack D on the inner side of said offset, gear *d*, shaft E, bevel-gear A, spindles G G, beveled gears *g g*, and gate-poles secured to and projecting from the ends of said spindles, as set forth.

3. The combination, with a swinging bridge and transverse cam-surfaces secured to the under side thereof near the ends, of a longitudinally-reciprocating bar C, having a rack D, said rack D, spring I, gear *d*, shaft E, bevel-gear A, spindles G G, beveled gear *g g*, and poles secured to and projecting from the outer ends of said spindles, as set forth.

4. The combination, with a swinging bridge and transverse cam-surfaces secured to the under side thereof near the end, of a longitudinally-reciprocating bar C, having an offset near its center of length, rack D on the inner side of said offset, spring I, surrounding said bar between said offset and the guide through which its rear end passes, shaft E, rocked by said bar, bevel-gears *g g*, meshing with gear A, and poles secured to the ends of said spindles, as set forth.

5. The combination, with a swinging bridge and cam-surfaces secured to the under side thereof near the ends, of a longitudinally-reciprocating bar C, having a rack D, said rack D, shaft E, gear *d* on

said shaft engaged by said rack, arm *k*, projecting from said shaft, arm *m*, shaft L, and connecting-rod K, connecting said arms, gear *h* on the upper end of shaft L, transverse spindles G G, beveled gears *g g*, meshing with gear A, and gate-poles secured to and projecting from the ends of said spindles, as and for the purpose set forth.



418,278. CONCRETE PAVEMENT. THOMAS F. HAGERTY, San Francisco, Cal. Filed Oct. 22, 1888. Serial No. 288,848. (No specimens.)

Claim.—1. The process of covering street and other surfaces with bituminous or concrete substances capable of being softened by heat in order to make pavements, floors, or roofs, consisting, first, in pressing the bituminous or concrete substance into blocks or slabs; secondly, laying these blocks or slabs upon the roadway or surface to be covered, so that their edges will be in juxtaposition, and, thirdly, in passing a heated iron or roller over the edges of the adjoining blocks or slabs, so as to unite their edges by heat, substantially as described.

2. The process of making pavements, roofs, and floors, consisting, first, in preparing a foundation of coarse rubble and a top coating of thin grout; secondly, coating the surface of the foundation with hot pitch-tar; thirdly, placing upon said pitch-coated foundation blocks or slabs of bituminous or concrete substances which are capable of being softened by heat; fourthly, uniting the edges of such bituminous or concrete blocks or slabs by means of heat, substantially as above described.

418,279. ELECTRIC REGULATOR. WILLIAM HOCHHAUSER, Brooklyn, N. Y. Filed Mar. 12, 1889. Serial No. 303,011. (No model.)

Claim.—1. The combination, with a regulating or controlling magnet having a movable core, of a pendulum-retractor, as and for the purpose described.

2. The combination, with a regulating or controlling magnet having a movable core, of a keeper or mass of iron near its free end, and a pendulum or bent lever retractor.

3. The combination, with the regulating or controlling magnet or magnets having movable cores, of a vertically and horizontally adjustable pendulum or bent lever retracting-weight.

4. The combination, with the regulating-magnets having movable cores, of a rocking contact-lever, a supplemental retracting-lever, and a vertically-adjustable weight suspended from the latter.

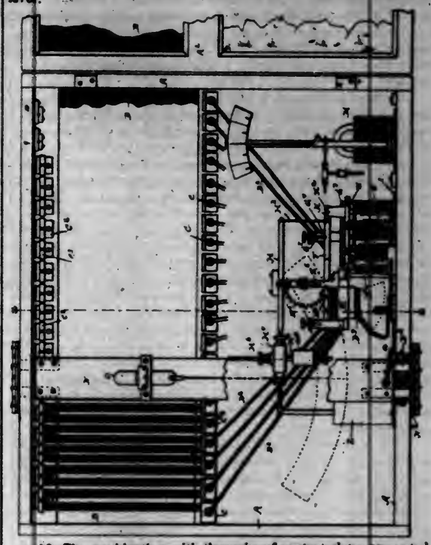
5. The combination, in an electric regulator, of the magnet or magnets having hollow spools, movable cores entering such coils from above, an armature-plate beneath the coils, and a frame or support above the coils, by which said coils are suspended in position to leave a ventilating air-space beneath them.

6. The combination, with the rocking contact-lever and its operating-magnet, of a supplemental retractor-lever having a fixed fulcrum, as and for the purpose described.

7. The combination, with the rocking contact-lever, of the supplemental guide-lever, as and for the purpose described.

8. In an electric regulator, a high-resistance regulator-magnet consisting of a gang of coils separated from one another by free air-spaces and having movable cores, all connected to a common regulating-lever, as and for the purpose described.

9. The combination, with the movable cores for the regulating or controlling magnets, of a sustaining yoke and a vertically-adjustable pin mounted on said yoke having a conical bearing on the regulator-lever.



10. The combination, with the series of contact-plates connected to a series of resistances, of a rocking contact-lever, derived-circuit magnet-cores adjustably suspended from said lever, and a supplemental retractor-lever, as and for the purpose described.

11. The combination, with the series of movable magnet-cores secured to a common support, of a conical suspension-bearing, as and for the purpose described.

12. The combination, with the movable magnet-cores, of the suspension-yoke and the vertically-adjustable supporting-pin passing through said yoke, as and for the purpose described.

13. The combination, with the series of contact-points, of the rocking contact-lever, a yoke carrying an adjustable pin or screw resting on said lever, and a series of magnet-cores sustained from said yoke.

14. The combination, with the series of regulating-magnet coils suspended above a common iron plate, of movable cores for said coils having their lower ends in proximity to said plate, and a support for said cores connected to a lever having a vertically-adjustable retracting-weight suspended from an arm of said lever opposite the cores, as and for the purpose described.

15. The combination, with the regulator-case, of the conducting bar or rod extending across the same and fastened to studs or rods projecting through the case from the under side of plates on the outside of the case, clamping devices secured to said plates, and a magnetized bar or plate pivoted over the face of the bar, as and for the purpose described.

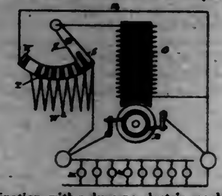
16. In an electric regulator, two sets of conducting blocks or electrodes secured to the interior of the casing parallel to one another, each having two contact-seats on the same side for variable-resistance rods or strips, in combination with the opposite spring-contact electrodes insulated from one another.

17. In an electric regulator, the combination, with a series of conducting angle-pieces secured to the inside of the case, of a second series of plate-rings, each perforated as described, and an intermediate set of carbon rods secured between the springs and angle-pieces.

18. In an electric regulator, the combination, with a series of carbon sticks or pencils, forming an electric resistance, of a series of blocks, each having two contact seats or sockets receiving pairs of the pencils at one end, and a second series of spring-plate sockets secured in pairs to a common conducting-support, each spring-socket of a pair receiving the ends of rods or pencils resting at their opposite ends in adjoining blocks.

418,280. SWITCH FOR DYNAMO-ELECTRIC MACHINES. WILLIAM HOCHHAUSER, Brooklyn, N. Y. Filed Mar. 12, 1889. Serial No. 303,013. (No model.)

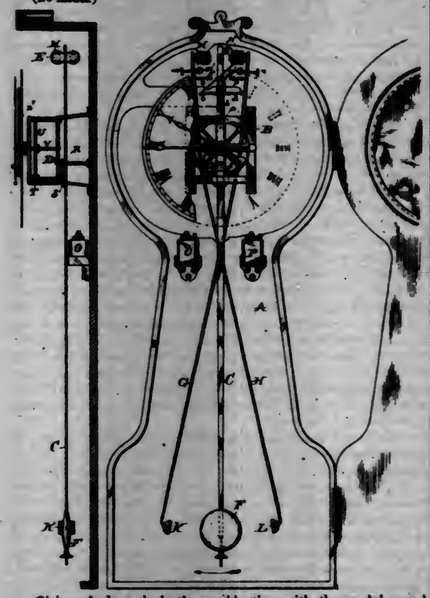
Claim.—1. The combination, with a dynamo-electric machine, of a switch connected to a field-magnet coil of said machine a shunt around said coil connected with a contact of a switch, an artificial resistance, and means controlled by said switch for introducing such resistance gradually into the circuit containing the coil immediately before the completion of the shunt, as and for the purpose described.



2. The combination, with a dynamo-electric machine, of a switch for throwing the same out of action, an artificial variable resistance connected to the circuit of the field-magnet, and means controlled by said switch for gradually varying the resistance to cut down the field magnetism before the switch stops the flow of current through the field-magnet coils, for the purpose described.

3. The combination, with a dynamo-electric machine, of a shunt around the field-magnet coil of the machine, a switch for completing said shunt, and an artificial resistance having its initial contact in position to be closed by the operation of said switch previously to the completion of the shunt.

418,281. ELECTRIC PENDULUM-DRIVEN CLOCK. MARCUS L. M. HUBBELL, Menlo Park, N. J. Filed Aug. 27, 1888. Serial No. 283,842. (No model.)



Claim.—1. In a clock, the combination, with the pendulum-rod hung or pivoted at a point below its upper end, of an armature on said pendulum-rod, electro-magnets between which said armature vibrates with the oscillations of the pendulum, a battery cell or cells or other source of electrical energy, and a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, substantially as hereinbefore described.

2. In a clock, the combination, with the pendulum-rod hung or pivoted at a point below its upper end, of an armature on said pendulum-rod, electro-magnets between which said armature vibrates with the oscillations of the pendulum, a battery cell or cells, a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, and a battery-controller or circuit-changer, also operated by the oscillations of the pendulum, which operates to alternately throw into and out of circuit first one battery and then another, substantially as hereinbefore described.

3. In a clock, the combination, with the pendulum-rod hung or pivoted at a point below its upper end, of an armature on said pendulum-rod located between the pivotal point and its upper end, electro-magnets between which said armature vibrates with the oscillations of the pendulum, a battery cell or cells or other source of electrical energy, and a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, substantially as hereinbefore described.

4. In a clock, the combination, with the pendulum-rod hung or pivoted at a point below its upper end, of an armature on said pendulum-rod located between the pivotal point and its upper end, electro-magnets between which said armature vibrates with the oscillations of the pendulum, a battery cell or cells, a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, and a battery-controller or circuit-changer, also operated by the oscillations of the pendulum, which operates to alternately throw into and out of circuit first one battery and then another, substantially as hereinbefore described.

5. In a clock, the combination, with the pendulum-rod hung or pivoted at a point below its upper end, of an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, a battery cell or cells or other source of electrical energy, and a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, substantially as hereinbefore described.

6. In a clock, the combination, with the pendulum-rod hung or pivoted at a point below its upper end, of an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, a battery cell or cells, a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, and a battery-controller or circuit-changer, also operated by the oscillations of the pendulum, which operates to alternately throw into and out of circuit first one battery and then another, substantially as hereinbefore described.

7. In a clock, the combination, with the pendulum-rod hung or pivoted at a point below its upper end, of an armature on said pendulum-rod located between the pivotal point at its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, levers having buffers on their lower ends and supporting said electro-magnets on their upper ends, a battery cell or cells or other source of electrical energy, and a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, substantially as hereinbefore described.

8. In a clock, the combination, with the pendulum-rod hung or pivoted at a point below its upper end, of an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro magnets between which said armature vibrates with the oscillations of the pendulum, levers having buffers on their lower ends and supporting said electro-magnets on their upper ends, a battery cell or cells, a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, and a battery-controller or circuit-changer, also operated by the oscillations of the pendulum, which operates to alternately throw into and out of circuit first one battery and then another, substantially as hereinbefore described.

9. In a clock, the combination, with the pendulum-rod hung or pivoted at a point below its upper end, of an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, levers G H, which cross each other below their fulcrums, and having buffers on their lower ends and supporting said electro-magnets on their upper ends, a battery cell or cells or other source of electrical energy, and a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, substantially as hereinbefore described.

10. In a clock, the combination, with the pendulum-rod hung or pivoted at a point below its upper end, of an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, levers G H, which cross each other below their fulcrums, and having buffers on their lower ends and supporting said electro-magnets on their upper ends, a battery cell or cells, a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, and a battery-controller or circuit-changer, also oper-

ated by the oscillations of the pendulum, which operates to alternately throw into and out of circuit first one battery and then another, substantially as hereinbefore described.

11. In a clock, the combination of the pendulum-rod C, hung or pivoted at a point D below its upper end on the same shaft with the escapement-pallet R, an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, levers G H, which cross each other below their fulcrums, and having buffers on their lower ends and supporting said electro-magnets on their upper ends, a battery cell or cells or other source of electrical energy, and a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, substantially as hereinbefore described.

12. In a clock, the combination of the pendulum-rod C, hung or pivoted at a point D below its upper end on the same shaft with the escapement-pallet R, an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, levers G H, which cross each other below their fulcrums, and having buffers on their lower ends and supporting said electro-magnets on their upper ends, a battery cell or cells; a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, and a battery-controller or circuit-changer, also operated by the oscillations of the pendulum, which operates to alternately throw into and out of circuit first one battery and then another, substantially as hereinbefore described.

13. In a clock, the combination of the pendulum-rod C, hung or pivoted at a point D below its upper end on the same shaft with the escapement-pallet R, an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, levers G H, which cross each other below their fulcrums, and having buffers on their lower ends and supporting said electro-magnets M N on their upper ends, adjusting-screws m n and springs o p, a battery cell or cells or other source of electrical energy, and a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, substantially as hereinbefore described.

14. In a clock, the combination of the pendulum-rod C, hung or pivoted at a point D below its upper end on the same shaft with the escapement-pallet R, an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, levers G H, which cross each other below their fulcrums, and having buffers on their lower ends and supporting said electro-magnets M N on their upper ends, adjusting-screws m n and springs o p, a battery cell or cells, a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, and a battery-controller or circuit-changer, also operated by the oscillations of the pendulum, which operates to alternately throw into and out of circuit first one battery and then another, substantially as hereinbefore described.

15. In a clock, the combination of the pendulum-rod C, hung or pivoted at a point D below its upper end on the same shaft with the escapement-pallet R, an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillation of the pendulum, levers G H, which cross each other below their fulcrums, and having buffers on their lower ends and supporting said electro-magnets M N on their upper ends, adjusting-screws m n and springs o p, a battery cell or cells or other source of electrical energy, and a circuit-changing device consisting of a spring-finger a, lever b, and contact-terminals c and d, which device is operated by the oscillations of the pendulum and itself operates to alternately magnetize and demagnetize the electro-magnets, substantially as hereinbefore described.

16. In a clock, the combination of the pendulum-rod C, hung or pivoted at a point D below its upper end on the same shaft with the escapement-pallet R, an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, levers G H, which cross each other below their fulcrums, and having buffers on their lower ends and supporting said electro-magnets M N on their upper ends, adjusting-screws m n and springs o p, a battery cell or cells, a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, and a battery-controller or circuit-changer consisting of a ring or rings made of metal and insulation, and a brush or contact on the metal and a brush or contact on the insulation, said brushes or contacts being connected with both the battery or batteries and the electro-magnets, substantially as hereinbefore described.

17. In a clock, the combination of the pendulum-rod C, hung or pivoted at a point D below its upper end on the same shaft with the escapement-pallet R, an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, levers G H, which cross each other below their fulcrums, and having buffers on their lower ends and supporting said electro-magnets M N on their upper ends, adjusting-screws m n and springs o p, a battery cell or cells, a circuit-changing device consisting of a spring-finger a, lever b, and contact-terminals c and d, which device is operated by the oscillations of the pendulum and itself operates to alternately magnetize and demagnetize the electro-magnets, and a battery-controller or circuit-changer consisting of a ring or rings made of metal and insulation, and a brush or contact on the metal and a brush or contact on the insulation, said brushes or contacts being connected with both the battery or batteries and the electro-magnets, which device operates to alternately throw into and out of circuit first one battery and then another, substantially as hereinbefore described.

18. In a clock, the combination of the pendulum-rod C, hung or pivoted at a point D below its upper end on the same shaft with the escapement-pallet R, an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, levers G H, which cross each other below their fulcrums, and having buffers on their lower ends and supporting said electro-magnets M N on their upper ends, adjusting-screws m n and springs o p, a battery cell or cells or other source of electrical energy, a circuit-changing device consisting of a spring-finger a, lever b, and contact-terminals c and d, which device is operated by the oscillations of the pendulum and itself operates to alternately magnetize and demagnetize the electro-magnets, an escapement R S, lantern-wheel T, wheel U, lantern-wheel X, pinion X', lantern-wheel Y, and pinion Z, substantially as hereinbefore described.

19. In a clock, the combination of the pendulum-rod C, hung or pivoted at a point D below its upper end on the same shaft with the escapement-pallet R, an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, levers G H, which cross each other below their fulcrums, and having buffers on their lower ends and supporting said electro-magnets M N on their upper ends, adjusting-screws m n and springs o p, a battery cell or cells, a circuit-changing device operated by the oscillations of the pendulum, which device operates to alternately magnetize and demagnetize the electro-magnets, a battery-controller or circuit-changer consisting of a ring or rings made of metal and insulation, and a brush or contact on the metal and a brush or contact on the insulation, said brushes or contacts being connected with both the battery or batteries and the electro-magnets, which device operates to alternately throw into and out of circuit first one battery and then another, an escapement R S, lantern-wheel T, wheel U, lantern-wheel X, pinion X', lantern-wheel Y, and pinion Z, substantially as hereinbefore described.

20. In a clock, the combination of the pendulum-rod C, hung or pivoted at a point D below its upper end on the same shaft with the escapement-pallet R, an armature on said pendulum-rod located between the pivotal point and its upper end, adjustable electro-magnets between which said armature vibrates with the oscillations of the pendulum, levers G H, which cross each other below their fulcrums, and having buffers on their lower ends and supporting said electro-magnets M N on their upper ends, adjusting-screws m n and springs o p, a battery cell or cells, a circuit-changing device consisting of a spring-finger a, lever b, and contact-terminals c and d, which device is operated by the oscillations of the pendulum and itself operates to alternately magnetize and demagnetize the electro-magnets, a battery-controller or circuit-changer consisting of a ring or rings made of metal and insulation and a brush or contact on the metal and a brush or contact on the insulation, said brushes or contacts being connected with both the battery or batteries and the electro-magnets, which device operates to alternately throw into and out of circuit first one battery and then another, an escapement R S, lantern-wheel T, wheel U, lantern-wheel X, pinion X', lantern-wheel Y, and pinion Z, substantially as hereinbefore described.

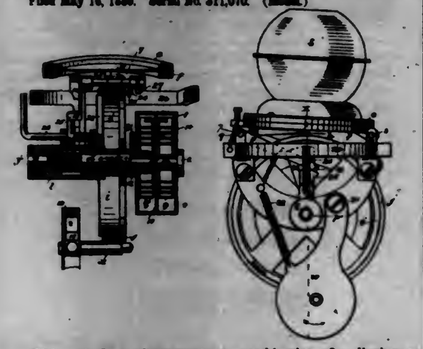
21. In a clock, the combination, with the pendulum-rod, of buffers between which the pendulum oscillates and against which the pendulum-bob strikes, substantially as hereinbefore described.

22. In a clock or other measuring apparatus, the combination, with the pendulum-rod hung or pivoted at a point below its upper end, of buffers between which the pendulum oscillates and against which the pendulum-bob strikes, substantially as hereinbefore described.

23. In a clock or other measuring apparatus, the combination of the pendulum-rod hung or pivoted at a point below its upper end of levers having buffers on their lower ends between which the pendulum oscillates and against which the pendulum-bob strikes, substantially as hereinbefore described.

24. In a clock or other measuring apparatus, the combination, with the pendulum-rod hung or pivoted at a point below its upper end, of levers which cross each other below their fulcrums, and having buffers on their lower ends between which the pendulum oscillates and against which the pendulum-bob strikes, substantially as hereinbefore described.

413,282. PHONOGRAPH. WILLIAM W. JACQUES, Newton, Mass. Filed May 16, 1888. Serial No. 311,070. (Model.)



Claim.—1. In a phonograph, the combination of a diaphragm supported in a hinged frame which is held by a spring in operative relation with the record-surface and an automatic chipping device operated by contact with the record-cylinder to stop the record-surface and withdraw the stylus therefrom when it has completely traversed the record contained thereon, substantially as described.

2. In a phonograph having a diaphragm pivoted at one side and a spring to hold its stylus in operative relation to the record-surface, the combination of a latch-lever adapted to engage with the phonograph-cylinder and stop the record-plate and to withdraw the stylus therefrom, an automatically-actuated arm to hold said lever in its raised position, and a cam-brake to withhold the said record-plate from progressive rotation while the motive spring of the apparatus is being wound up, substantially as described.

3. In combination with a phonograph provided with a spring-actuated cylindrical record-plate having a traversing motion parallel with its axis, a latch-lever pivoted at one side to stop the cylinder and raise the stylus therefrom when the stylus has completely traversed the record thereon and an automatically-operated retaining-arm pivoted at the other side of the cylinder to hold the stylus in its raised position while the said actuating-spring is being wound up, substantially as described.

4. In combination with the revolving record-plate of a phonograph, a regulator pivoted to a fixed portion thereof eccentrically to the axis of the record-plate and a spring to hold it in frictional contact therewith, substantially as described.

5. In combination with the record-plate of a phonograph, a motive spring consisting of two helices, one of which is attached to the journal of the record-plate and the other to a loose sleeve thereon, and an arm projecting from said sleeve adapted to act in opposition to the winding of the actuating-spring by its bearing upon a fixed portion of the apparatus, substantially as described.

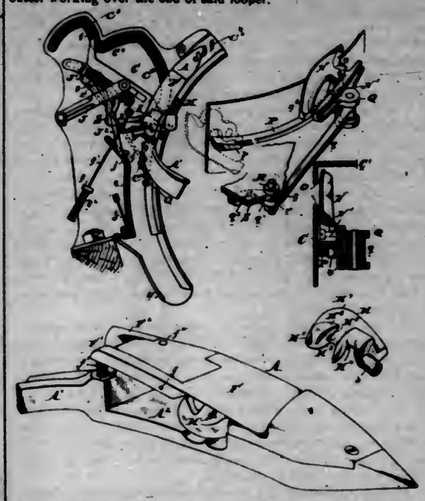
6. In a phonograph, an inflexible enduring record-plate, substantially such as described, having lines of undulations corresponding to a series of sound-waves impressed or cut thereon in contradistinction to a flexible perishable plate or foil indented or bent in lines of such undulations, or a plate of soft or waxy material in which they have been produced.

413,283. GRAIN-BINDER. ARTHUR M. JOHNSON, Norristown, Pa. Filed Dec. 26, 1888. Serial No. 294,231. (No model.)

Claim.—1. A looper consisting of a rotating head having two integral or rigid jaws, forming between them a notch, and in which the outer jaw has upon its outer surface and to one side a rearwardly-extending hook.

2. A looper consisting of a rotating head having two integral or rigid jaws, forming a notch between them, and in which the outer jaw has upon its outer surface and to one side a rearwardly-extending hook and a groove extending from the back of the hook toward the outer end and point of the jaw.

3. A looper consisting of a rotating head having two integral or rigid jaws, forming a notch between them, and in which the outer jaw has upon its outer surface and to one side a rearwardly-extending hook and a groove extending from the back of the hook toward the outer end and point of the jaw, in combination with a cord-holder and cord-cutter working over the end of said looper.



4. A looper consisting of a rotating head having two parallel notches H^0 H^1, parallel to the plane of rotation and opening in the same direction, one longitudinal groove H^2 at substantially right angles to the plane of rotation, in combination with a cord-holder, cord-cutter, and stripper working over the end of said looper, means to rotate the looper, a lock to lock the looper against rotation, and a needle-head carrying the looper, the movement of the needle-head and looper causing the cord-holder, cord-cutter, and stripper to pass over the end of the looper when locked.

5. A needle-head of a grain-binder, provided with a knot-tyer contained within and carried by it, and consisting of two rigid jaws, forming a notch between them, and in which the outer jaw has upon its outer surface, exterior to the notch and to one side, a rearwardly-extending hook.

6. A looper for a knot-tyer, consisting of two jaws rigidly connected to form a notch, the inner jaw being formed wide and the outer jaw formed narrow, but with a laterally-arranged and rearwardly-extending hook exterior to the notch and overhanging the surface of the inner jaw.

7. A looper-head for a cord-knotter, consisting of two integral or rigid jaws having an unobstructed notch or opening between them and located wholly to one side of the axis of rotation of the looper-head, and in which one of the jaws is provided on its outer surface and side, which is in the rear in rotating the looper-head upon making a loop, with a rearwardly-extending hook.

8. The combination of a movable needle-head carrying a cord-looper, a movable cord-holder, a separable connection between the needle-head and cord-holder for moving the cord-holder with the needle-head during a portion of its travel, a link pivoted to the cord-holder at its middle to allow it to oscillate, and cam devices acting upon the rear end of the cord-holder to move the cord-holder to or from the looper of the needle-head during each associated travel.

9. The combination of a movable needle-head carrying a cord-looper and having a notch J^4, a movable cord-holder, a separable connecting-arm J^3 between the needle-head and cord-holder for moving the cord-holder with the needle-head during a portion of its travel, and a cam *c*, acting on the arm J^3 to move it away from the needle-head to break said connection between the needle-head and cord-holder at a given point in the travel of said needle-head.

10. The combination of a movable needle-head carrying a cord-looper of a knot-tyer with a movable cord-holder, a hinge-arm carrying the cord-holder at its free end on a hinge-joint, a separable connection between the hinge-arm and needle-head whereby the former operates the latter, and cams to control the oscillation of the cord-holder upon the hinge-arm during its travel with the needle-head.

11. The combination of the cord-guide segment B, having cam-surface B', with cord-holder segment C, having cam-surface *c'* and de-

pression c, a rotating needle-head moving through said segments and having a cord-looper of a knot-tyer, and a pivoted jaw F, having the rear extension F', for coming in contact with the said cam-surfaces to open the jaw and guide the cord to the looper.

12. The combination of a rotating needle-arm, a stationary segment or frame through which the needle-head passes, a cord-gatherer movable in the path of the needle-arm, a link for holding said cord-gatherer during its travel, a separable link-connection between the needle-arm and the cord-gatherer whereby the movement of the needle-arm causes the cord-gatherer to move with it for a given distance of its travel, and a cam to control said link-connection to liberate the cord-gatherer from the needle-arm.

13. The combination of a movable needle arm and head, a movable carriage moved thereby, a pivoted cord-gatherer pivoted to said carriage, and a guide to hold said cord-gatherer in a position to hold the cords until it reaches the end of its movement and then allow it to tilt to liberate the cords.

14. The combination of a movable needle arm and head, a movable carriage moved thereby, a pivoted cord-gatherer pivoted to said carriage, a guide to hold said cord-gatherer in a position to hold the cords until it reaches the end of its movement, then allow it to tilt to liberate the cords, a movable cord-holder, also actuated by the needle-arm, and a lock actuated by the cord-holder-actuating devices to lock the gatherer in its tilted position until after the reverse movement of the cord-holder.

15. A rotary looper formed of a solid piece of metal having a notch opening to one side, and a hook located on the looper beyond the notch and extending to one side of the looper and away from the notch, leaving it unobstructed, in combination with a stripper working over said looper, passing toward and to the rear of the hook.

16. A rotary looper formed of a solid piece of metal having a notch opening to one side, and a hook located on the looper beyond the notch and extending to one side of the looper and away from the notch, leaving it unobstructed, in combination with a cutter and holder working over said head of the looper.

17. The combination of a movable needle-head carrying a looper, a movable cord-holder movable with said needle-head, and also movable to and from it, and in which the cord-holder passes through the needle-head and past the looper during a portion of their travel.

18. A looper consisting of a rotating head having a notch H^2 in the plane of rotation, a backwardly-extending hook H^4, and a transverse groove H^3, transverse to the plane of rotation in the head and back of the notch H^2 and hook H^4, substantially as and for the purpose specified.

413,284. SAFETY STEAM-GENERATOR. SAMUEL W. LUDLOW, Madisonville, assignor of one-third to John R. Brownell, Dayton, Ohio. Filed Feb. 16, 1889. Serial No. 300,116. (No model.)



Claim.—1. A steam-generator within a hermetically-sealed vessel exposed to direct heat and surrounded by a fluid in the hermetically-sealed vessel through which the heat is transmitted, substantially as described.

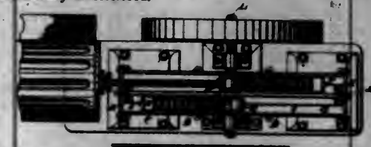
2. A steam-generator consisting of an outer vessel hermetically sealed and containing a heat-transmitting fluid, and an inner vessel containing a vaporizable fluid and surrounded by the fluid in the outer vessel, substantially as described.

3. A steam-generator consisting of an outer vessel hermetically sealed, having a series of fire-tubes extending through the body thereof, an inner vessel provided with flues, and a vaporizable fluid in which the inner vessel is enveloped, substantially as described.

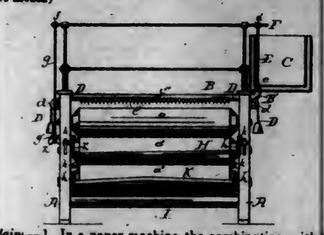
4. A steam-generator consisting of an outer vessel hermetically sealed and containing vaporizable heat-transmitting fluid, and an inner vessel for generating steam as a motor or other power enveloped by said fluid, substantially as described.

413,285. RACK-AND-PINION MECHANISM. PETER H. MACDONALD, Kerrville, Tex. Filed June 6, 1889. Serial No. 313,696. (No model.)

Claim.—The combination of a reciprocating rod, a yoke carrying a series of teeth and adapted to slide in a guideway, another yoke carrying a similar series of teeth and movable in a contiguous guideway, flexible connections between said yokes, whereby the movement of one reversely moves the other, and toothed wheels fixed upon a shaft and adapted to engage alternately the teeth in said yokes, substantially as described.



413,286. PAPER-WATERPROOFING MACHINE. FREDERICK W. MILLER and JOHN J. NEWMAN, Elkhart, Ind., assignors to the Globe Tissue Paper Company, same place. Filed Mar. 22, 1887. Serial No. 231,897. (No model.)

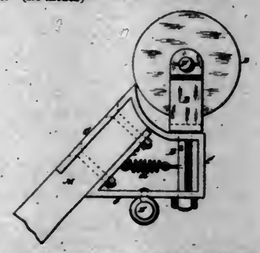


Claim.—1. In a paper-machine, the combination, with the means for applying waterproofing material to the web of paper, of the hot calender-rolls and doctors inclined toward one or both ends, as set forth.

2. In a paper-machine, the combination, with a reservoir, distributing-pipe, and needle-valves provided with wheels c'', of a weighted chain engaging with the said wheels, as set forth.

3. In a paper-machine, the combination, with a reservoir and distributing-pipe, of plug c, plunger E, arms c' and f, shaft F, and adjustment-rod g, as set forth.

413,287. CONTACT-TROLLEY FOR ELECTRIC-RAILWAY CARS. JAMES MITCHELL, Des Moines, Iowa. Filed June 21, 1889. Serial No. 315,053. (No model.)



Claim.—1. The combination, with the trolley arm or pole M, of a bearing for the trolley vertically swiveled on the end of said arm, so as to permit the trolley to turn in a substantially horizontal plane into different angular positions with reference to the arm or pole, as and for the purpose described.

2. The combination, with the trolley arm or pole M, of a rotating trolley carried by the same, and a bearing for said trolley mounted at the end of the arm on a vertical swivel beneath the trolley.

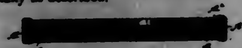
3. The combination, with a traveling electric contact mounted on a swiveled bearing, of a centering-spring, as and for the purpose described.

4. The combination, with a contact-trolley, of a fork-bearing having a spindle by which it is swiveled, and a centering-spring for bringing the trolley into parallel with the arm or support, as and for the purpose described.

5. The combination, with the contact-trolley, of the vertical fork B, having spindle B^3, the frame C, in which the spindle turns, a centering-spring e, and an arm or support M, to which the frame is attached.

413,288. SCHOOL-SLATE. JACOB R. MOYER, Bethlehem, Pa. Filed Apr. 10, 1889. Serial No. 306,660. (No model.)

Claim.—1. A slate-frame composed of side and end pieces, having intersecting grooves upon opposite faces, combined with a muffler seated and held in said grooves at the sides, ends, and corners of the frame, substantially as described.

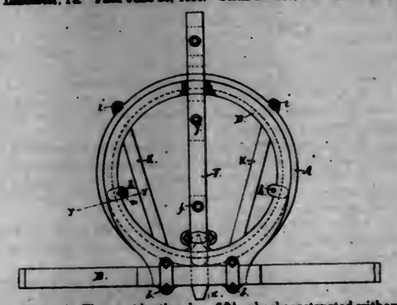


2. A slate-frame having grooves in its sides and end pieces, said grooves crossing each other at the corner, having recesses at said corners, combined with a muffler seated and held in said grooves in the sides and ends and at the corners and cemented in said recesses, substantially as described.

3. The combination of the slate-frame having grooves in its end and side pieces, the grooves intersecting each other at the corners, with a muffler in a single piece and embracing the ends and sides of the frame, with its edges seated and held in said grooves at the ends, sides, and corners and cemented in the grooves at the corners, whereby sewing of the muffler at said corners is avoided, substantially as shown and described.

4. A slate-frame provided around its outer edges with a groove and with undercut grooves on each face, a binding-wire in the edge groove, and a cover or muffler covering the outer edges of the frame, extending over the wire and groove, and having its edges secured in the undercut grooves in the faces of the frame, substantially as shown and described.

413,289. FIFTH-WHEEL FOR VEHICLES. HENRY HOLST, Jr., Lancaster, Pa. Filed June 20, 1888. Serial No. 316,094. (No model.)



Claim.—1. The combination, in a fifth-wheel constructed without a king-bolt or other pivot, of a lower recessed wheel-plate having the front part of the rim secured to the axle, and an upper wheel-plate rabbeted into the lower plate and having the front parts of the rim thereof secured to the head-block, substantially as specified.

2. The combination, in a fifth-wheel constructed without a king-bolt or other pivot, of a lower recessed wheel-plate having a head formed on the front thereof, by which it is secured to the axle, and an upper wheel-plate rabbeted into the lower and having a head which projects over the head of the lower plate and is connected with the head-block, substantially as specified.

3. In a fifth-wheel, the combination, with a lower recessed wheel-plate provided with a head a, secured to the axle, of an upper wheel-plate rabbeted into the lower and having a head c, which projects over the head a and is connected with the head-block, a perch-plate rigidly secured to the upper wheel-plate, and plates fastened to the perch-plate and hooking under the lower recessed wheel-plate, substantially as and for the purpose specified.

4. In a fifth-wheel, the combination, with a lower wheel-plate having the head thereof connected with the axle and an upper wheel-plate rabbeted into the lower plate and having the head thereof secured to the head-block, of draft-straps k, fastened to the lower wheel-plate and extending forward and secured to the axle, all arranged substantially as and for the purpose specified.

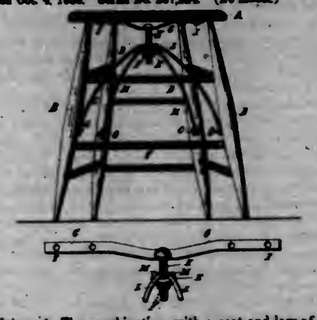
5. The combination, in a fifth-wheel constructed without a king-bolt or other pivot, of a lower plate secured to the axle, an upper plate rabbeted into the lower and connected with the head-block, ears A, formed on the upper plate, and hook-bolts I, passing through said ears and embracing the under face of the lower plate, a perch-plate rigidly secured to the upper plate, and plates fastened to the perch-plate and hooking under the lower plate, ears i, formed on the lower plate, and draft-straps k, bolted to said ears and extending to the axle and secured thereto, all constructed and operating substantially as and for the purpose specified.

413,290. PLOW-FENDER. JOHN C. FOX, Big Creek, Ga. Filed Apr. 23, 1889. Serial No. 308,203. (No model.)

Claim.—The combination, with a plow-beam, of a link adjustably attached to the beam, a second link pivotally attached near one end of the first-named link, and a fender-bar carrying at one end a fender and the other end adjustable to and from the beam on the free end of the last-mentioned link, substantially as specified.



413,291. CHAIR-BRACE. JAMES P. SARGENT, Brooklyn, N. Y. Filed Oct. 4, 1888. Serial No. 287,204. (No model.)



Claim.—1. The combination, with a seat and legs of a chair or stool, of an ordinary carriage-bolt, its nut, washer, and braces, substantially as described, attached to said seat and surrounding the neck of said bolt to hold the same in place, and wire braces attached by either end to said legs and by a half-turn in their middles surrounding the tine of said bolt within said nut and washer, substantially as and for the purpose set forth.

2. The combination, with a seat and legs of a chair or stool, of a common carriage-bolt, its nut and washer, two wire braces attached by their ends to the front and back rails of said seat and by a half-turn in their middles surrounding the neck of said bolt to hold the same in place, and two wire braces attached by their ends to said legs and by a half-turn in their middles surrounding the tine of said bolt within said nut and washer to hold said tine in place, and all so arranged that facility is afforded for straining said braces and holding the parts of said chairs and stools firmly in proper position, substantially as and for the purpose set forth.

413,292. ELECTRIC MEASURING-INSTRUMENT. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Apr. 26, 1887. Serial No. 236,269. (No model.)



Claim.—1. The combination, with an electric conductor carrying an electric current, of a mass of iron partially embracing said conductor and adapted to form through its whole range of movement from zero a partial magnetic circuit around the same and movable in the general longitudinal direction of the conductor to positions where it will gradually effect a change in the degree of closure of the magnetic field around the conductor, as and for the purpose described.

2. The conductor C, having its mass at one side modified or varied, as described, in combination with an armature adapted to partially close the magnetic circuit around said conductor, as and for the purpose set forth.

3. The combination, with an electric conductor, of a U-shaped armature or its equivalent, as described, mounted at the end of a pivoted arm and movable bodily in the general longitudinal direction of the conductor, as described, to positions where it may effect a

variable closure of the magnetic circuit around the conductor, as set forth.

4. The combination of a conductor and an armature which normally partially embraces and closes the magnetic circuit around the conductor, said conductor or armature, one or both, being movable with relation to one another in the general direction of the axis of the conductor, as and for the purpose described.

5. The combination, substantially as described, of an electric conductor and a U-shaped armature partially surrounding the conductor and mounted, as described, on the end of a pivoted arm so as to have a movement of translation bodily over the conductor in the general direction of the axis of the same.

6. The combination, with the electric conductor, of a mass of iron partly encircling the same constantly or through its whole range of movement, said conductor and mass of iron being movable bodily with relation to one another, as described, in the general direction of the conductor's longitudinal axis, but at a slight angle, so that the conductor may be gradually inclined more and more within the iron, as and for the purpose described.

7. The combination, with two coils or conductors placed one beside the other, but eccentrically, of the two armatures or magnet-closing pieces, one for each coil, mounted upon a movable support or its equivalent, as described, and adapted to move in the general plane of the coils or conductors.

8. The combination, with the two conductors C, of the two armatures partially encircling the same in the zero position and mounted upon a common support in proper manner to balance one another.

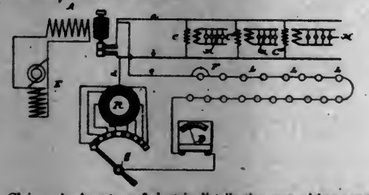
9. The combination, with the curved conductor C, of the index and connected armature forming an iron mass partially surrounding the conductor and mounted on an arm pivoted eccentrically to such curved conductor, said armature consisting of one or more pieces of iron which normally or in the zero position of the apparatus overlap upon the sides of the conductor, as and for the purpose described.

10. The combination of the armature and the conductor C, having its mass near the open side of the armature, or just in advance of the same, reduced or contracted, as and for the purpose described.

11. The conductor C, having on its outer side a web of varying depth, in combination with the armature whose magnetic circuit is closed across or around said web.

12. The combination, with an electro-responsive device, of an artificial resistance of carbon connected to the circuit of the same and so proportioned with relation to the normal current that its resistance shall be critical or subject to immediate and sudden change on a change in the flow of current, whereby the change of current actuating the electro-responsive device may be magnified, as and for the purpose described.

413,293. SYSTEM OF ELECTRICAL DISTRIBUTION. ELIHU THOMSON and EDWIN W. RICE, Jr., Lynn, Mass. Filed July 30, 1888. Serial No. 281,410. (No model.)



Claim.—1. A system of electric distribution comprising constant-potential mains having translating devices of any desired character in multiple between them, a series circuit of distribution connected across said mains and containing translating devices in series, and a current-regulator in said series circuit.

2. In a system of distribution of electric light comprising a series incandescent-lamp circuit connected across mains of constant potential, means connected with said series circuit for keeping the current on the same constant upon the extinguishment of series lamps, and transformers or compensators connected in multiple across the constant-potential mains, and having sub-circuits supplying translating devices in multiple.

3. The herein-described system of electric distribution, comprising alternating-current mains of constant potential, a series circuit containing translating devices—such as series lamps—means for keeping the current of said circuit constant, transformers or converters connected in multiple between said mains, and incandescent lamps or other translating devices supplied in multiple from said transformers.

4. In an alternating-current system of electric lighting, constant-potential mains having transformers or compensating coils connected in multiple between them, incandescent lamps supplied in multiple from sub-circuits connected to said transformers, a series circuit connected between said mains and containing incandescent series lamps, and a current-regulating device included in said series lamp circuit.

5. In a system of electric distribution, a source of alternating current supply, constant-potential mains connected therewith, transformers or compensators arranged in multiple between said mains and having a sub circuit or circuits connected with them for supplying translating devices in multiple, a series circuit of distribution, also connected between said mains, a variable reactive coil in said circuit, and a device responsive to variations in the current of said circuit for adjusting the reactive coil in the manner described to keep the current constant.

6. In an alternating-current system of distribution, alternating-current mains of constant potential, translating devices of any desired character supplied in multiple between said mains, a series circuit of distribution containing translating devices in series, a variable reactive coil in the series circuit, and devices responsive to the variations in the current on said circuit for adjusting the reaction of said coil.

413,294. CONDUIT FOR ELECTRIC RAILWAYS. ELIHU THOMSON, Lynn, Mass. Filed Mar. 6, 1889. Serial No. 301,912. (No model.)



Claim.—1. A railway slotted conduit having a continuous slot-closing brush or brushes the fibers or stems of which project transversely into the slot, as and for the purpose described.

2. A railway slotted conduit having a slot-closing brush or brushes projecting transversely into the slot from the side thereof and at a slight upward inclination.

3. The combination, with the slotted conduit, of a yielding slot-closer soaked with an oily material or water-repellent substance.

4. The combination, with the slotted conduit, of a springy slot-closer adapted to yield in a longitudinal direction or in the direction of travel of the vehicle.

5. The combination, with the conduit, of the fibrous or springy slot-closer clamped by a removable top piece of the conduit, as and for the purpose described.

6. The combination, with a slotted electric conduit, of an elastic or springy slot-closer clamped by a removable wear-plate at the edge of the slot, as and for the purpose described.

7. A slotted conduit having a groove at the edge of the slot holding a yielding or springy slot-closer.

8. The combination, with the inverted-V or trough shaped conductor, of the supporting-brackets A, having at their upper ends insulating-pieces in the groove or trough of the conductor and coated or enameled with an insulating material, as and for the purpose described.

413,295. OIL-CUP. MILTON S. CARELL, Quincy, Ill., assignor to the Consolidated Manufacturing Company, Washington, D. C. Filed Mar. 21, 1889. Serial No. 304,162. (No model.)



Claim.—1. The combination, with an oil-cup provided on its lower end with a guard formed with an inlet leading to the cup and an outlet leading therefrom, of a supply-pipe communicating with the inlet, a pipe located in the cup and communicating with the upper end of the outlet, a nozzle secured to and communicating with the lower end of such outlet, and two stop-cocks, one for the inlet and the other for the outlet, as and for the purpose set forth.

2. The herein-described oil-cup, the same comprising the body B and the guard G, having an exteriorly-threaded extension *g*, provided with a central perforation, and with an enlarged recess around the lower end of said perforation, in combination with the cock J, having an exteriorly-screw-threaded projection *j*, provided with a central perforation, and with an enlarged recess around the upper end of said perforation, and the glass tube S, its ends fitting in said recesses, and packing-nuts K, engaging said exterior screw-threads at their ends, and with the curved arm A, having threaded apertures near its ends engaging said projections above and below the glass tube, as and for the purpose described.

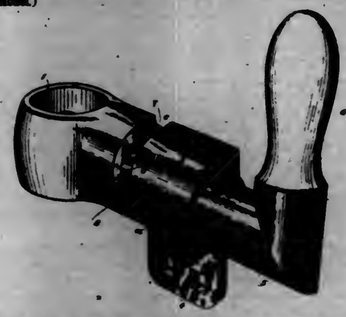
3. In an oil-cup, the guard G, having the passage *p* and the inlet *i*, the pipe P, screwed into the upper end of said passage, the drip-nozzle N, screwed into the lower end of said passage, and the pipe I, connected with said inlet, in combination with the stop-cock E, for controlling the flow of oil through said passage, and the stop-cock F, for controlling the flow of water through said inlet, substantially as described.

413,296. TIRE-TIGHTENER. OTIS W. CHRAT, Willow Springs, Mo., assignor of one-half to Henry H. Wathers and William H. Drew, same place. Filed June 18, 1889. Serial No. 314,711. (No model.)



Claim.—As an improvement in tire-tighteners, the combination, with the fellies having recesses B at their meeting ends, of the plates having right and left hand threaded perforations, said plates being provided with wings or flanges extending over and attached to the inner sides of the fellies, shoulders or offsets, and flanges extending from the ends of said offsets and constituting the meeting edges, and the right and left hand threaded bolt having a wrench-seat fitted between the said shoulders or offsets, substantially as and for the purpose set forth.

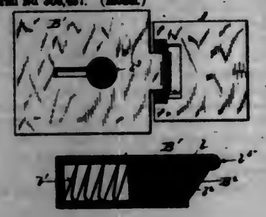
413,297. ELEVATOR-LOCK. HENRY I. COE, JAMES L. SHEDLEY, and WILLIAM A. CROSWELL, New York, N. Y., assignors to the Safety Hatch Door Company, of Illinois. Filed Nov. 17, 1888. Serial No. 291,088. (Model.)



Claim.—1. A lock for the operating cable or chain of an elevator, having housing 3, jaw 1, rigid on said housing and having an enlarged opening, and bolt 5, having heavy handle 6 and pin 7, the said housing having slot 8 extending approximately one-half way around the bolt, having a steep inclination from *a* to *b* and inclined at a less angle from *b* to *c*, substantially as and for the purposes set forth.

2. In combination with the bolt 5, having handle 6 and removable pin 7, the housing 3, having slot 8 for said pin, and shield or cover 9, fixed over said slot, substantially as and for the purposes set forth.

413,298. LATCH-HINGE. ERNEST R. DE KALB, Syracuse, N. Y. Filed Dec. 21, 1888. Renewed Oct. 3, 1888. Again renewed Apr. 8, 1889. Serial No. 306,627. (Model.)



Claim.—1. A latch-hinge consisting of one leaf or side having a pintle and a second leaf or side having a receptacle for the pintle, and a sliding latch for holding the pintle in said receptacle, or releasing it therefrom, substantially as described.

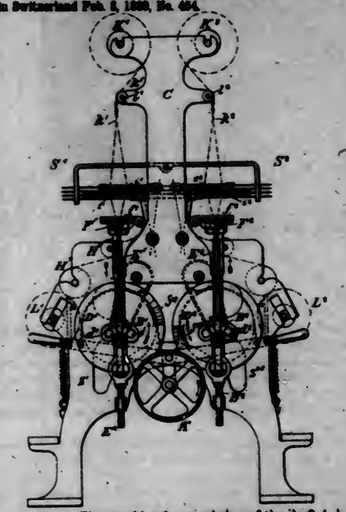
2. A latch-hinge consisting of a leaf or side having a pintle and a leaf or side having a receptacle for the pintle, and a spring-actuated sliding latch for closing over the pintle, as set forth.

3. A latch-hinge consisting of a leaf or side having a pintle and a leaf or side provided with a receptacle for said pintle, and a spring-actuated sliding latch for closing over said pintle when in the receptacle, and provided with means, substantially as described, for withdrawing said latch.

4. In a latch-hinge, the combination of the part B', having the socket for the pintle, and the sliding spring-latch portion B², with the leaf A and pintle *a*, having the lug or projection *a*².

5. The combination, with a latch-hinge having the spring-latch portion, of the lever for operating said latch portion, and a wire, rod, or cord extending to a knob or handle, substantially as and for the purpose set forth.

413,299. LOOM. JAMES F. HAGGENMACHER, Zurich, Switzerland. Filed Oct. 3, 1888. Serial No. 287,103. (No model.) Patented in England Aug. 3, 1888, No. 11,946; in Belgium Oct. 15, 1888, No. 83,300, and in Switzerland Feb. 3, 1889, No. 464.



Claim.—1. The combination consisting of the shaft A, bent levers W' W², toothed wheels A' and A², toothed wheels C' and C², and the shafts B' B², substantially as shown and described.

2. The combination consisting of the bent levers W' and W², shaft A, wheels A' A², driving-shafts B' and B², wheels C' C², brake-pulleys X' X², brake-band *c'* *c²*, catches V' V², and springs Z' Z², substantially as shown and described.

3. The combination, with bent levers W' W², shaft A, with wheels A' A², shafts B' B², wheels C' C², brake-pulleys X' X², brake-bands *c'* *c²*, catches V' V², and springs Z' Z², of the shedding mechanism, disks D' D², with crank-pins *d'* *d²*, and picking-cams S' S², lifting-rods E' E², lathes F' F², picking-arms *e'* *e²*, reeds *f'* and *f²* in the lathes F' and F², rollers H' and H², and beams L' L², substantially as shown and described.

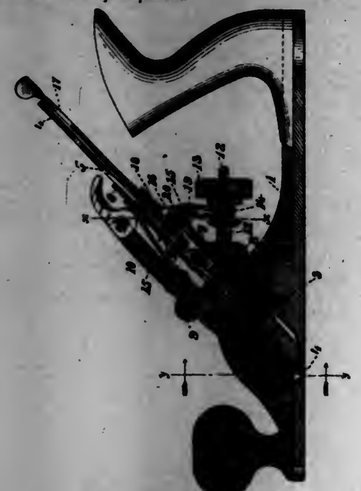
413,300. PIANO. GEORGE D. MOSHER, Birmingham, Conn., assignor to the Birmingham Piano Company, same place. Filed June 25, 1889. Serial No. 315,506. (No model.)

Claim.—1. In a piano of the character described, the combination, with the bit and the cap-plate, of the screw-operated lever, whose end engages the cap-plate, and the laterally-adjusting lever engaging and adapted to move the screw-operated lever and therethrough the bit, substantially as set forth.

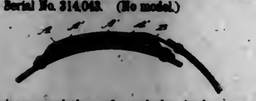
2. In a piano, the combination, with the bit and the perforated cap-plate thereon secured, of the yoked and screw-operated lever pivoted to the frog and movable longitudinally of its bearing and the pivoted laterally-adjusting lever arranged around and adapted to actuate the screw-operated lever, substantially as specified.

3. The combination, in a piano, with the stock and the frog of the slotted bit, of the cap-plate having the opening 11, means, as the wedge,

for securing the bit and plate to the frog, the lever 15, engaged and operated by the nut 13 and projecting into the opening 11 in the cap-plate, and the laterally-adjusting lever 17, fulcrumed to the frog and engaging the lever 15, whereby said lever 15 may be moved along its fulcrum, substantially as specified.



413,301. CLASP. TOWNSEND W. HOXON, St. Louis, Mo. Filed June 12, 1889. Serial No. 314,042. (No model.)



Claim.—1. A clasp consisting of a tabular body, segmental or crescent-shaped in longitudinal section, adapted for attachment to one end of a strap and formed with a transverse slot in its outer wall, and a tongue separate from said body and extending at right angles to the slot thereof and adapted to pass through the same into the body and be held by frictional contact with the walls thereof, substantially as described.

2. A clasp consisting of a tabular body, segmental or crescent-shaped in longitudinal section, the upper wall of which is slotted transversely, and a resilient tongue adapted to pass through either of said slots lengthwise of the body and adapted to bear against the upper and lower walls thereof, substantially as shown and described.

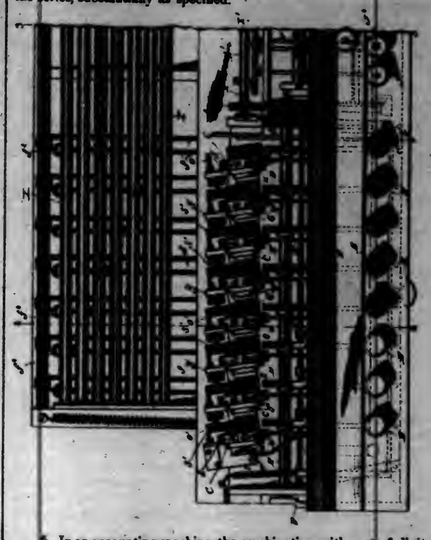
413,302. CALCULATING, RECORDING, AND NUMBERING MACHINE. HENRY C. O'NEILL, Louisville, Ky., assignor, by direct and mesne assignments, to the Standard Recorder Company, of New York. Filed July 13, 1888. Serial No. 279,994. (No model.)

Claim.—1. The combination, with a calculating-machine having digit-keys and gearing operated by said digit-keys to move the digit wheels or indicators, the said digit wheels or indicators, the notation-keys, and shifting devices effecting the engagement of said digit-wheels, of a numbering-machine and indicating and recording devices in shifting-connection with the gearing operated by said digit-keys, substantially as specified.

2. In an accounting-machine, the combination, with a series of digit wheels or indicators, gear-turning mechanism, and a series of digit-keys independently engaging said gear-turning mechanism, adapted to move any digit wheel or indicator of the series, of a series of notation-keys and shifting devices adapted to move any digit-wheel of said series into engagement with said mechanism, substantially as specified.

3. In an accounting-machine, the combination, with a series of digit-keys and a series of digit wheels or indicators, of gear-turning mechanism common to all of and independently engaged by each of said digit-keys and a set of notation shifting-keys governing the operation of the gear-turning mechanism upon the digit wheels or indicators, substantially as specified.

4. In an accounting-machine, the combination, with a series of notation shifting-keys and a corresponding series of digit wheels or indicators in connection therewith, of a set of digit-keys adapted separately to act in conjunction with any or all the notation keys of the series, substantially as specified.



5. In an accounting-machine, the combination, with a set of digit-keys, gearing operated thereby, and digit wheels or indicators normally disengaged from said gearing, of a series of notation-keys and shifting-connections whereby the digit wheels or indicators of any notation-column are brought into engagement with said gearing operated by said digit-keys, substantially as specified.

6. The combination, with a series of geared digit-wheels and the gear-turning mechanism and the digit-keys independently engaging the same, of the series of digit-wheels, their notation-keys, and shifting-connections, whereby any digit-wheel of the series is brought in engagement with said gear-turning mechanism by its notation-key for operation by any digit-key of the series, substantially as specified.

7. In an accounting-machine, the combination, with the digit-wheels, their gearing, the resetting-slide, and its pinion-shaft, of the series of digit-keys, the gear-turning mechanism operated by said digit-keys, the series of notation-keys, and the resetting-lever adapted to operate all of said notation-keys simultaneously to bring the digit-wheels in gear with the pinions of said pinion-shaft, substantially as specified.

8. A pivoted digit-wheel and a shifting-frame carrying said pivoted digit-wheel and provided with a returning spring and gear, in combination with digit-wheel-shifting mechanism, a notation-key adapted to effect the engagement of its wheel with the digit-wheel-setting mechanism, and digit-keys operating through said turning mechanism to actuate the digit-wheel when set, substantially as specified.

9. The combination, with the digit-gear-turning mechanism and its keys, of the digit-wheels having each a full and mutilated gear-wheel, the swinging frames of the digit-wheels, their returning-springs and notation-keys, and the resetting-slide and pinions thereon, substantially as specified.

10. The combination, with the digit-wheels and their swinging frames and returning-springs, of the digit-keys and gearing, and a rotary shaft parallel to the line of digit-wheels and carrying a series of pinions normally out of engagement with the gear of the digit-wheels, and notation-keys connected to said swinging frames, whereby the latter are brought into engagement with the pinions of said rotary shaft, substantially as specified.

11. The combination, with the digit-gear-turning mechanism and a rotary pinion-carrying shaft and the digit-keys, of the swinging digit-wheels having stop-pins and returning-springs, the notation-keys, the stop-fingers, a resetting-lever, and mechanism adapted to operate said pinion-carrying shaft and its pinions when the resetting-lever is pressed, substantially as specified.

12. The combination, with a series of digit-wheels and the notation-keys for bringing them to engagement position, of the digit-gear-turning mechanism, a pinion and the pinion-carrying shaft, an automatic stop normally engaging said pinion-carrying shaft, and the digit-keys, substantially as specified.

13. The combination, with the digit-gear-turning mechanism and the independent digit-keys having stop projections, of a main toothed wheel, a bail-lever common to all the digit-keys and having its arms pivoted to the arms of a supplementary bail-lever journaled or pivoted in the axial line of said wheel, an actuating-pawl connected to said bail-lever, a holding-pawl, a spring returning device connected to the keys and bail-lever, and a stop, substantially as set forth.

14. In an accounting-machine, the combination of a set of digit-keys, gear-turning mechanism common to all of said keys, a pawl, a bail lever, mechanism actuating said gear-turning mechanism, the locking-pawl for the gear-turning mechanism, the notation-keys, their levers, and the shifting-frames connected to said levers and carrying the digit-wheels, substantially as specified.

15. The combination, with adjustable digit-wheels and rack-indicators, of a set of digit-keys, their common gear-turning mechanism, the notation shifting devices, the pinion-shaft, and the means common to all said notation shifting devices for guarding the action of said digit-keys, substantially as specified.

16. The combination, with movable or shiftable digit wheels or indicators arranged in series and a corresponding series of notation-keys having shifting devices in connection with said digit wheels or indicators, of a single series of digit-keys and gear-turning mechanism common to all said digit-keys and normally disengaged from said digit wheels or indicators, but adapted to operate the same when engaged therewith by means of the notation-keys, substantially as specified.

413,303. FLOUR-SIFTER. GEORGE H. PAINE, Philadelphia, Pa. Filed July 11, 1889. Serial No. 317,202. (No model.)



Claim.—1. The combination of the scoop A, its horizontal screen B, the revolving agitator *c*, pivoted in the screen and provided with the horizontal arm c^4, the handle H, pivoted vertically in the brackets *a a* on the side of the scoop and having its horizontally-extended pivoted arm *e* linked to the arm c^4, whereby the partial rotation of the handle in the brackets is made to partially rotate the agitator *c*, substantially as described.

2. The combination of the scoop A, provided with the tapering or contracted downward extension below its screen, the horizontal screen B, the rotary agitator *c*, arranged to vibrate above the screen and provided with the vibrating arm c^4, extending horizontally below the screen in the path of the material sifted through the same, the handle H, pivoted vertically in brackets on the side of the scoop and having its pivoted arm *e* linked to arm c^4, whereby the tapering downward extension of the scoop incloses and prevents the scattering of the sifted material by said arms, substantially as described.

413,304. SHAFTS FOR ROAD-CARTS. NATHANIEL W. PARKER and FRANKLIN WILSON, Hamilton, N. Y. Filed Aug. 3, 1889. Serial No. 319,636. (No model.)



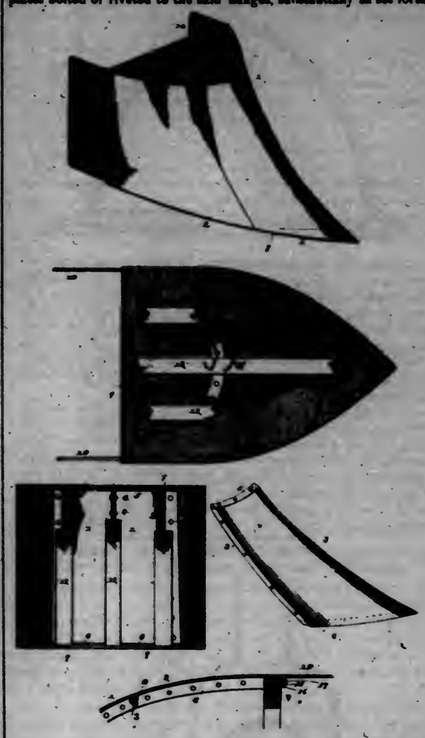
Claim.—1. The combination, with two sections of a vehicle pole or shaft arranged end to end, of a bracket attached to one section extending past the proximate ends and hinged to the other section, and a spring bearing on one shaft-section and on the bracket, substantially as described.

2. The combination, with the divided section of a vehicle-shaft, of a pair of brackets secured to one section and extending across the break, a leaf on one shaft-section pivoted to one bracket, and a leaf on the other section loosely connected to its bracket, substantially as described.

413,305. PILOT FOR LOCOMOTIVES. EDWIN G. PHILLIPS, Charleston, S. C., assignor of two-thirds to Samuel Weinhopf and Thomas P. Livingston, both of same place. Filed July 12, 1889. Serial No. 317,346. (No model.)

Claim.—1. A locomotive-pilot composed of a series of plates or sections provided at their meeting edges with flanges extending rearwardly to receive the connecting bolts or rivets, substantially as set forth.

2. A locomotive-pilot composed of the central and side plates or sections provided at their meeting edges with flanges to receive the connecting bolts or rivets and provided at their upper and lower horizontal edges with rearwardly-extending flanges, and top and bottom plates bolted or riveted to the said flanges, substantially as set forth.



3. In a locomotive-pilot, the combination of the central and side plates or sections provided with connecting-flanges at their meeting edges and horizontal flanges at their upper and lower edges, the top and bottom plates secured to said horizontal flanges, and the vertical rectangular frame secured between the rear ends of said top and bottom plates, substantially as set forth.

4. In a locomotive-pilot, the combination of the central and side sections having connecting-flanges at their meeting edges and provided with horizontal flanges at their upper and lower edges, the top and bottom plates secured to said horizontal flanges, the rectangular vertical frame secured between the rear ends of said top and bottom plates, the cross-braces in said horizontal frame, and the longitudinal braces connecting the upper side of said horizontal frame with the bottom plates of the pilot-body, substantially as and for the purpose set forth.

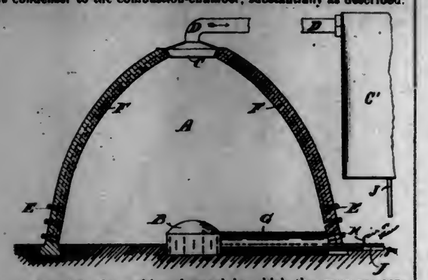
5. In a locomotive-pilot, the combination of the rectangular frame, the top and bottom plates secured to the same, the central and side plates or sections having connecting-flanges at their meeting edges, said side sections being extended in rear of the frame to form guards or fenders, the cross-braces in the rectangular frame, and the longitudinal braces connecting the latter with the bottom plates of the pilot, substantially as and for the purpose herein set forth.

6. The combination, with a locomotive-pilot constructed of plates or sections having flanges extending inwardly from their meeting edges and bolted together, of the rearwardly-extending guards or fenders, substantially as and for the purpose set for.

413,306. KILN FOR MAKING CHARCOAL. EDWARD W. RATHBUN, Deseronto, Ontario, Canada. Filed Mar. 22, 1887. Serial No. 231,940. (No model.) Patented in Canada Apr. 2, 1887, No. 26,265.

Claim.—1. In a kiln for making charcoal, in which the gases are conveyed from the kiln to a condenser and then returned to the combustion-chamber of the kiln, the combination of the walls provided with flues beginning near the bottom of the kiln and terminating near

the top thereof, a chamber C for receiving the gases from said flues and having a pipe leading to the condenser, the perforated combustion-chamber B, having passage G, and a pipe J, to convey gas from the condenser to the combustion-chamber, substantially as described.



2. In a kiln for making charcoal, in which the gases are conveyed from the kiln to a condenser and then returned to the combustion-chamber of the kiln, the combination of the walls provided with flues beginning near the bottom of the kiln and terminating near the top thereof, and provided with a series of valves near the lower ends, a chamber C for receiving the gases from said flues and having pipe D leading to the condenser, the perforated combustion-chamber B, having passage G, and a pipe J to convey gas from the condenser to the combustion-chamber, substantially as described.

3. In a kiln for making charcoal, in which the gases are conveyed to a condenser and then returned to the combustion-chamber of the kiln, the combination of the walls provided with flues beginning near the bottom of the kiln and terminating near the top thereof, a chamber C for receiving the gases from said flues and having a pipe D leading to the condenser, the perforated combustion-chamber B, having passage G, a pipe J, leading from the condenser to the combustion-chamber, and the pipe H, for the purpose set forth.

413,307. TWO-SEAL SEWER-GAS TRAP. CHARLES H. RENTZ, Baltimore, Md. Filed Jan. 22, 1889. Serial No. 297,217. (No model.)

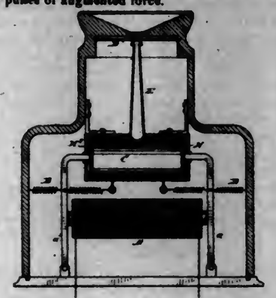


Claim.—1. A sewer-gas trap consisting of a chamber having an inlet-orifice at the top and an outlet-orifice at the bottom, a trap connected with the outlet-orifice having its outlet above the floor of the chamber, but below the main portion of the trap, and a buoyant and gravitating valve having sufficient weight to seat against the outlet-orifice when the chamber is full only to the level of the outlet of the trap and sufficient buoyancy to move from its seat when additional liquid enters the chamber, substantially as described.

2. In combination with a sewer-gas trap consisting of a chamber having an inlet-orifice at the top and an outlet-orifice at the bottom, and a trap connected with the outlet-orifice having its outlet above the floor of the chamber, but below the main portion of the trap, a buoyant and gravitating valve of more than double the diameter of the outlet-orifice upon which it is seated, whereby the valve, closing the outlet by its gravitation, is enabled to float when liquid is discharged into the chamber, whether the said outlet be empty or filled with liquid, substantially as described.

413,308. TELEPHONE-RECEIVER. CHARLES SELDEN, Baltimore, Md. Filed Jan. 6, 1888. Serial No. 259,190. (No model.)

Claim.—1. In a telephone-receiver, the combination, with an air-chamber having a movable or vibratory wall, of a magnet acting on the same, an air pipe or opening for said chamber having a reduced area, and a diaphragm placed opposite the opening for receiving the air puffs or pulses of augmented force.

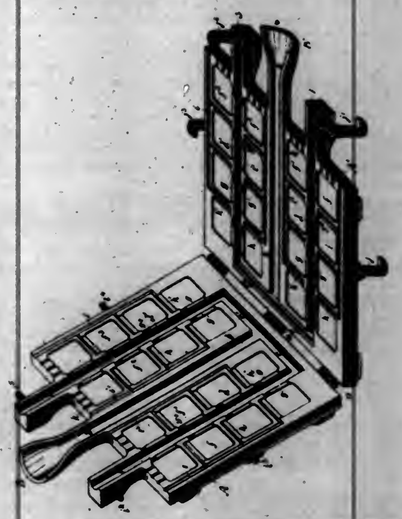


2. In a telephone-receiver, the combination of an air-chamber having two movable heads or walls, a magnet or magnets for acting on the same, an exit-pipe, and a diaphragm placed opposite the end of said pipe.

3. A telephone-receiver consisting, essentially, of an air-chamber having movable heads or walls opposite one another, an intermediate magnet acting with its opposite pole ends respectively upon said heads, and a pipe leading from said chamber and arranged to deliver air pulses or vibrations upon a sound-receiving surface or diaphragm.

4. The combination, in a telephone-receiver, of an air-chamber of variable capacity, a magnet or magnets acting on the same, a pipe or opening of reduced size, whereby augmented vibrations or pulses of air may be expelled through said pipe by the action of the magnet in reducing the capacity of the chamber, and a diaphragm or sound-receiving surface placed opposite said pipe or opening.

413,309. MOLD FOR CASTING THE PLATES OF STORAGE-BATTERIES. WALDRON SHAPLEIGH, Camden, assignor to the Electric Storage Battery Company, Gloucester City, N. J. Filed July 2, 1889. Serial No. 316,334. (No model.)



Claim.—The herein-described mold for casting plates for secondary batteries, provided with a sprue or feed merging with a central channel extending through the mold and communicating with channels *e* and *e'*, and the latter merging with risers *d'* and *f'*, matrices in communication with said risers through the channels *g* and *g'*, horizontal channels *h* and *h'* between said matrices and in communication with air-escape channels *i* and *i'*, and means for clamping the parts of the mold together, substantially as and for the purposes set forth.

413,310. MACHINE FOR MANUFACTURING COMPRESSED PILLS. CHARLES SHEET, Bridgeton, N. J., and HARRY K. MULFORD, Philadelphia, Pa.; said Sheet assignor to said Mulford. Filed Mar. 15, 1889. Serial No. 303,415. (No model.)



Claim.—1. In a machine for forming pills by compression, a vertical standard or frame-work, a horizontal bed supported upon said frame-work and embodying a bed-die, vertically-operating upper and lower plunger-dies, a driving-shaft in the upper part of the frame-work, a crank on said shaft which is connected with and reciprocates the upper plunger-die, a cam on said driving-shaft, a rock-shaft provided with a rocker oscillated by said cam, a stirrup-rocker connected to said rock-shaft, and a plunger-stirrup depending from said rocker, which actuates the lower plunger-die, substantially as set forth.

2. In a machine for forming pills by compression, a vertical standard or frame-work, a horizontal bed supported upon said frame-work and embodying a bed-die, vertically-operating upper and lower plunger-dies, a driving-shaft in the upper part of the frame-work, a crank on said shaft which is connected with and reciprocates the upper plunger-die, a cam on said driving-shaft, a rock-shaft provided with a rocker oscillated by said cam, a stirrup-rocker connected to said rock-shaft, a plunger-stirrup depending from said rocker, which actuates the lower plunger-die, a feeding-hopper adapted to travel upon the bed, and mechanism for occasioning both the travel and the shaking of the hopper, substantially as set forth.

3. In a machine for forming pills by compression, in combination, the vertical standard or frame-work, the upper plunger-die, the lower plunger-die, the bed embodying the bed-die, the main shaft, a crank thereon, a pitman connecting said crank and the upper plunger-die, a plunger-stirrup the lower end of which is attached to the lower plunger-die, a cam, and mechanism for supporting said plunger-stirrup and transmitting to it motion from said cam, substantially as set forth.

4. In a machine for forming pills by compression, in combination, the upper plunger-die, the lower plunger-die, the bed embodying the bed-die, the main shaft, a crank thereon, a pitman connecting said crank and the upper plunger-die, a cam, and a plunger-stirrup the lower end of which is attached to the lower plunger-die and the upper end of which is connected by intermediate adjusting devices to the cam, substantially as set forth.

5. In a machine for forming pills by compression, in combination, the upper plunger-die, the lower plunger-die, the bed embodying the bed-die, the main shaft, the crank thereon, a pitman connecting the crank and the upper plunger, a plunger-stirrup the lower end of which is attached to the lower plunger-die, a rock-shaft, a stirrup-rocker mounted thereon, to which the upper end of the plunger-stirrup is connected, a cam, a rocker mounted on said rock-shaft and oscillated by the cam, a hopper, and means for causing said hopper to travel backward and forward on the bed-plate and for shaking it when over the bed-die, substantially as set forth.

6. In a machine for forming pills by compression, in combination, the supporting standard or frame-work, the upper plunger-die, mechanism for supporting and occasioning the reciprocation of said die, the bed-plate embodying the bed-die, the plunger-stirrup formed with an upturned lower end, the lower plunger-die pivotally connected thereto, the stirrup-rocker on which the plunger-stirrup is hung, the rock-shaft to which said rocker is attached, the rock-shaft arm, and the cam, substantially as set forth.

7. In a machine for forming pills by compression, in combination, the supporting standard or frame-work, the upper plunger-die, mechanism for supporting and occasioning the reciprocation of said die, the bed-plate embodying the bed-die, the plunger-stirrup, the stirrup-foot which said plunger-stirrup encounters at the lowest point of its stroke, the lower plunger-die pivotally connected to the plunger-stirrup, the rocker provided with a segmental dovetailed slot, in which slot the stirrup is hung, the rock-shaft to which said rocker is attached, the rock-shaft arm, and the cam, substantially as set forth.

8. In a machine for forming pills by compression, the upper plunger-die, the lower plunger-die, a bed-plate embodying the bed-die, means for causing the reciprocation of the plunger-dies, a feeding-hopper, and means for causing said hopper to travel backward and forward on the bed-plate and for shaking it when over the bed-die, substantially as set forth.

9. In a machine for forming pills by compression, in combination, the upper and lower plunger-dies, a bed-plate embodying a bed-die, means for occasioning the reciprocation of the plunger-dies, a feeding-hopper, means for occasioning the travel of the said hopper relatively to the bed-die, a magazine for supplying said hopper, and means for imparting vibratory movement to the magazine, substantially as set forth.

10. In a machine for forming pills by compression, in combination, the upper plunger-die, the lower plunger-die, a bed-plate embodying a bed-die, mechanism for occasioning the reciprocation of the upper plunger-die, mechanism for reciprocating the lower plunger-die, part of which latter mechanism consists of the slotted stirrup-rocker, and the plunger-stirrup adjustably mounted in the slot of said stirrup-rocker, substantially as set forth.

11. In a machine for forming pills by compression, in combination, the vertical standard or frame-work, the upper plunger-die, the lower plunger-die, the bed embodying the bed-die, the main shaft, a crank thereon, a pitman connecting said crank and the upper plunger-die, a plunger-stirrup the lower end of which is attached to the lower plunger-die, mechanism for supporting said plunger-stirrup, a cam for actuating the plunger-stirrup, mechanism for transmitting motion from said cam to the plunger-stirrup, a feeding-hopper having a flat bottom surface through which an aperture is communication with the interior of the hopper opens, embodying also a pin-socket, the spring, the hopper-shaft, the lever-arm, the lateral pin, the rocker-arm, and the cam for actuating said rocker-arm, substantially as set forth.

12. In a machine for forming pills by compression, in combination, the upper and lower plunger-dies, a bed-plate embodying a bed-die, means for occasioning the reciprocation of the plunger-dies, a feeding-hopper, a cam having both a crest and corrugations, connective mechanism through which the crest occasions the retraction and the corrugations the shaking of the said hopper, and a spring for advancing said hopper, substantially as set forth.

13. In a machine for forming pills by compression, in combination, the upper and lower plunger-dies, a bed-plate embodying a bed-die, means for occasioning the reciprocation of the plunger-dies, a feeding-hopper, and a magazine adapted to discharge into the hopper and connected to a rocking or oscillating portion of the machine, substantially as set forth.

14. In a machine for forming pills by compression, in combination, the upper and lower plunger-dies, a bed-plate embodying a bed-die, means for occasioning the reciprocation of the plunger-dies, a feeding-hopper, a magazine adapted to discharge into the hopper, and a link connecting the said magazine to a moving part of the machine, substantially as set forth.

15. In a machine for forming pills by compression, in combination, the upper plunger-die, the lower plunger-die, means for occasioning the reciprocation of said plunger-dies, a feeding-hopper, means for occasioning the backward and forward movement of said hopper on a bed-plate, and a bed-plate embodying a bed-die, which bed-plate is, as to that part of its surface in contact with the feeding-hopper, formed of a single piece or surface of material, substantially as set forth.

16. In a machine for forming pills by compression, in combination, the upper and lower plunger-dies, a bed-plate embodying a bed-die, means for occasioning the reciprocation of said plunger-dies, the feeding-hopper, means for occasioning the backward and forward travel of the hopper, and the chute provided with a sieve-bottom, substantially as set forth.

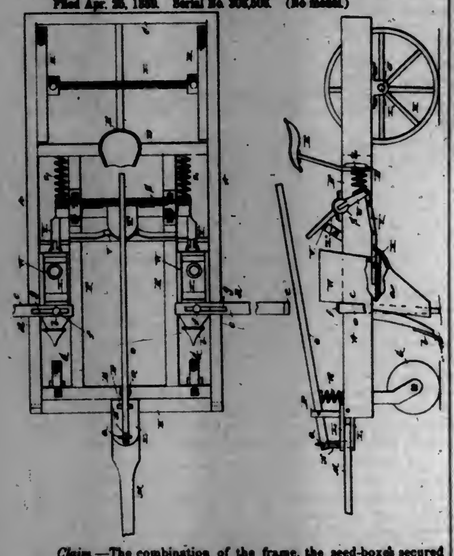
17. In a machine for forming pills by compression, in combination, the upper and lower plunger-dies, a bed-plate embodying a bed-die, means for occasioning the reciprocation of said plunger-dies, means for sweeping finished pills from the bed-plate, the sieve-bottomed chute, and devices for causing the jarring of said chute, substantially as set forth.

18. In a machine for forming pills by compression, in combination, the upper and lower dies, means for occasioning the reciprocation of the upper die, a train of devices, of which the plunger-stirrup forms a part, for occasioning the reciprocation of the lower plunger, the bed-plate, devices for sweeping the finished pills from the bed-plate, the

sieve-bottomed chute, and an arm connected to said chute and projecting into the path of the plunger-stirrup, substantially as set forth.

19. In a machine for forming pills by compression, in combination, the upper and lower dies, means for occasioning the reciprocation of the upper die, a train of devices, of which the plunger-stirrup forms a part, for occasioning the reciprocation of the lower plunger, the bed-plate, devices for sweeping the finished pills from the bed-plate, the sieve-bottomed chute, supporting-wires upon which said chute is mounted, and an arm connected to said chute and projecting into the path of the plunger-stirrup, substantially as set forth.

413,311. CORN-PLANTER. JAMES T. WILLIAMS, Caddo Mills, Tex. Filed Apr. 25, 1889. Serial No. 308,808. (No model.)



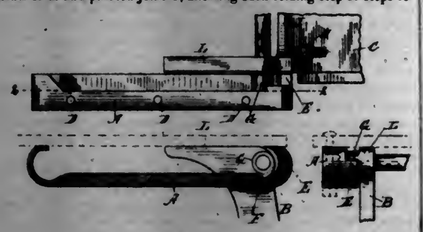
Claim.—The combination of the frame, the seed-boxes secured thereon, the horizontally-moving slides in the bottoms of the seed-boxes, the rock-shaft mounted transversely on the frame in rear of the seed-boxes and having depending crank-arms at its ends, the pitmen connecting said crank-arms with the slides, the treadle projecting upward from the center of the rock-shaft, the springs arranged in rear of the crank-arms between the same and a cross-bar of the frame, the stop arranged transversely on the frame in advance of the rock-shaft and in the path of the treadle, and the seat secured on the frame in rear of the rock-shaft and adjacent to the treadle, as set forth.

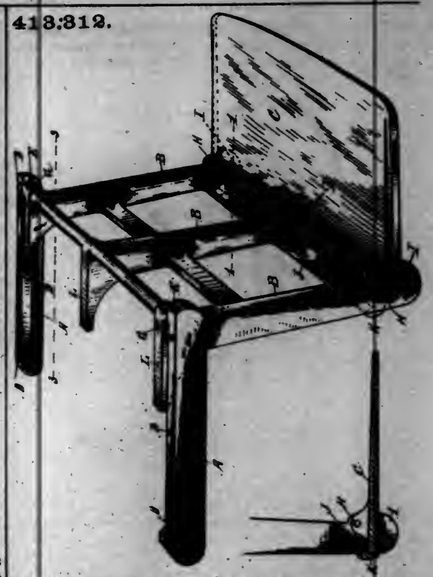
413,312. STEP FOR RAILWAY-CARS. ASBO B. ALLEN, Sanford, Fla. Filed Dec. 20, 1888. Serial No. 294,942. (No model.)

Claim.—1. In folding steps, the step-platform C, in combination with the supports I I in front of the pivot, and the bar J, arranged above the platforms back of the pivot, to also serve as a stop to the downward movement of the platforms, substantially as set forth.

2. In a folding step or steps, the combination of a pivoted joint with a stop E, shoulder F, and arms or supports L L L, as specifically described.

3. The combination, in a folding step or steps, of the two hinged joints H H and pivoted joint G, allowing such folding step or steps to





be folded and placed at the under side of any stationary step or steps, all substantially as set forth.

413,313. NON-CONDUCTING HAND-WHEEL FOR COCKS, &c. JOHN W. RISKER, Cincinnati, Ohio. Filed May 17, 1888. Serial No. 311,101. (No model.)

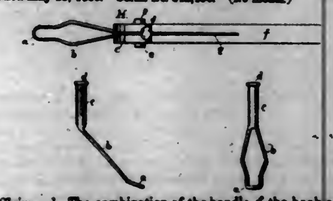


Claim.—1. A non-conducting hand-wheel for valves and steam-fittings, having on its under side a central circular aperture for the reception of the disk or flange-plate of the valve-stem, and having also a circular kerf or groove *f* above or within said aperture, combined with an independent ring *g*, inserted in said kerf or groove inside of said aperture, substantially as set forth.

2. The combination, with a valve-stem having a disk or flange-plate *c*, provided with the detents or projections *d*, of a non-conducting hand-wheel having on its under or inner side an aperture *e* for the reception of said disk or flange-plate, and a kerf or groove *f* above or within said aperture, and on its upper or outer side a recess or central aperture *a*, the washer *h* in said aperture *a*, the ring *g*, inserted in said kerf or groove, and the attaching-screw *i*, having its head within the upper or outer face of the hand-wheel.

3. The combination, with a valve-stem having a disk or flange-plate *c*, of a non-conducting hand-wheel having on its under side the aperture for the reception of said disk or flange-plate, and having also a circular groove or kerf *f* above or within said aperture or disk, and the metal ring *g*, independent of or separate from said disk or flange-plate and fitting in said groove or kerf.

413,314. BUTTON-HOOK. THEODORE R. BEERS, New York, N. Y. Filed May 25, 1889. Serial No. 312,156. (No model.)



Claim.—1. The combination of the handle *f*, the hook consisting of the part *c*, passing diagonally through the handle and at an angle therewith, and the part *a b*, bent at an angle to the part *c*

2. The combination of the split handle *f*, the rivet *e*, and the hook which consists of the part *c*, passing diagonally through the handle, and the parts *a b*, the part *b* being bent at an angle to part *c*, and part *a* bent at an angle to part *b*.

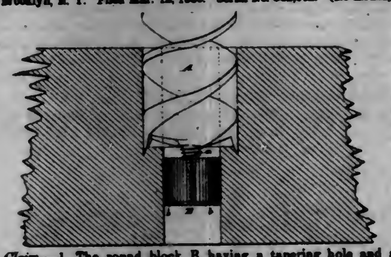
413,315. BUTTON FOR SLEEVES OR OTHER ARTICLES. MARIE DEHAYE, Paris, France. Filed Jan. 14, 1889. Serial No. 296,944. (No model.)



Claim.—1. The combination, in a button, of a flattened post having in it a transverse slot arranged wholly inward of the end thereof and extending in the direction of greatest width of the post, a pin arranged centrally and longitudinally within said post to turn therein, a button-head fast on one end of the said pin, and a cross-bar fast on said pin within the slot of the post and adapted to lie either within the said slot or crosswise of the post, the outer end of the post extending over said cross-bar, substantially as and for the purpose herein described.

2. The combination, in a button, of a flattened post having in it a transverse slot arranged wholly inward of the end thereof and extending in the direction of greatest width of the post, a pin arranged centrally and longitudinally within said post to turn therein, a cross-bar fast on said pin near one end thereof and within the said slot in the post, a button-head on the other end of said pin, having in it an arc-shaped opening, a projection on the post passing through said opening, and a spring secured upon one side of the button-head and provided with a projection adapted to engage with said projection on the post to hold the latter after it has been moved to either end of said opening, for the purpose of holding the cross-bar within the slot in the post or crosswise of the post, substantially as herein set forth.

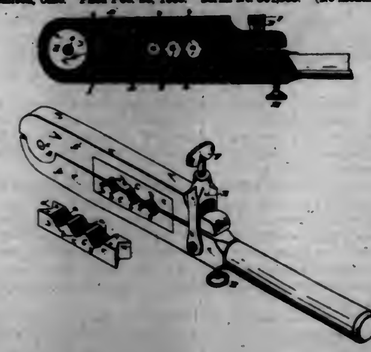
413,316. ATTACHMENT FOR AUGERS. WILLIAM J. M. DOBSON, Brooklyn, N. Y. Filed Mar. 12, 1889. Serial No. 302,962. (No model.)

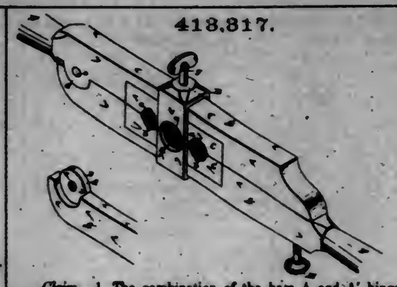


Claim.—1. The round block B, having a tapering hole and a slightly-tapered exterior adapted to match on a screw-auger of larger diameter and to serve therewith, as herein specified.

2. The combination of a screw-auger A *a*, for boring wood, and a round block B of less diameter, the latter being provided with a hole adapted to fit on the tapering screw-point and to be readily applied and removed, as herein specified.

413,317. DIE-STOCK. AUGUST ERTZBERG and LEVI L. DEWEESE, Canton, Ohio. Filed Feb. 26, 1889. Serial No. 301,895. (No model.)

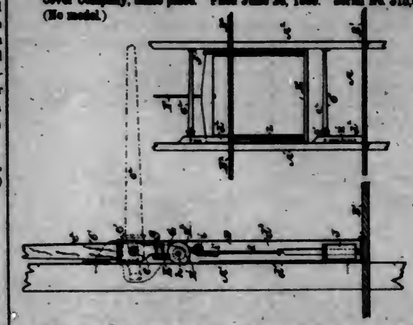




Claim.—1. The combination of the bars A and A', hinged together, the dies C, provided with the screw-threaded recesses *a*, the spring D, the clamp E, the set-screw K, and the set-screw *g*, substantially as and for the purpose set forth.

2. The combination of the bars A and A', the dies C, provided with the recesses *a*, the spring D, provided with the extensions or arms *c*, adapted to enter the recesses *f*, the set-screws E and *g*, and the clamp E, substantially as and for the purpose set forth.

413,318. ELEVATOR-HATCHWAY GUARD. DANIEL FRASER, New York, N. Y., assignor to the Excelsior Elevator Guard and Hatch Cover Company, same place. Filed June 26, 1889. Serial No. 315,092. (No model.)



Claim.—1. The combination, with a hoistway of an elevator, of a lever, a counterbalance-weight for the lever, a drum having a spiral surface, a flexible connection between the drum and the lever, a second drum united with the first and having a spiral surface reverse to the first-named spiral, and a flexible connection between the second drum and the counterbalance-weight, substantially as specified.

2. The combination, with a hoistway of an elevator, of a lever, a counterbalance-weight for the lever, a drum, a flexible connection between the drum and the lever, a second drum united with the first and having a spiral surface, and a strap sustaining the counterbalance-weight and having a series of blocks of different projections attached to its inner side, substantially as specified.

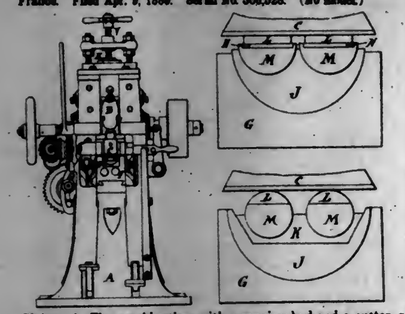
3. The combination, with a hoistway of an elevator, of a lever, a counterbalance-weight for the lever, a drum, a flexible connection between the drum and the lever, a second drum united with the first and having a spiral surface, a strap sustaining the counterbalance-weight and having a series of blocks of different projections attached to its inner side and its extremity doubled back and united to the main portion, substantially as specified.

4. The combination, with a hoistway of an elevator, of a lever, a counterbalance-weight for the lever, a drum, a flexible connection between the drum and the lever, a second drum united with the first, and a flexible connection between the second drum and the counterbalance-weight, the said drums being made in the form of reverse spirals, substantially as specified.

5. The combination, with a hoistway of an elevator, of a lever, a counterbalance-weight for the lever, a drum, a chain, cord, or strap connecting the drum with the lever, the chain, cord, or strap of the drum being connected to the lever at a point offset to one side of the longitudinal center of the lever, substantially as set forth.

6. The combination, with a hoistway of an elevator, of a lever, a counterbalance-weight having a flexible connection with the lever, a box-shaped casting containing the weight, a spring connected to the casting, a detent at the end of said spring to engage with and lock the lever, and a cam carried by the elevator-car for operating the spring, substantially as specified.

413,319. FILE-CUTTING MACHINE. ALFRED GOLDENBERG, Paris, France. Filed Apr. 9, 1889. Serial No. 306,528. (No model.)

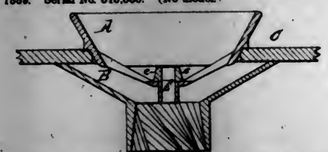


Claim.—1. The combination, with a moving bed and a cutter, of a holder for two or more files, and mechanism, substantially such as described, transversely oscillating said holder, substantially as specified.

2. The combination, with a moving bed and a cutter, of a block having a half-round groove, a fulcrum-block in said groove, and two or more file-holders in said fulcrum-block, the parts being so arranged that each file-holder has an independent oscillation, substantially as specified.

3. In a file-cutter, the combination, with a bed and a cutter, of a transversely-oscillating fulcrum-block and independently-oscillating file-holders on said block, substantially as specified.

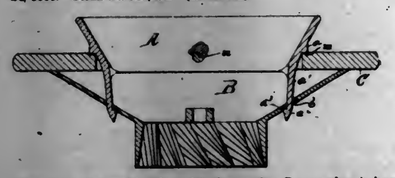
413,320. COFFEE-MILL. WILLIAM A. HAHCK, Freeport, Ill., assignor to the Warner Manufacturing Company, same place. Filed June 24, 1889. Serial No. 315,333. (No model.)



Claim.—1. In combination with the case-cover C, a hopper A, resting thereupon, and bearing-arms F F, projecting inward toward the center, and a grinding-shell B beneath said cover and having a diametrical bridge D, provided upon its central portion with shoulders *e e*, adapted to be engaged with the arms F F by rotating said hopper with reference to said shell, and thereby firmly clamp all of said parts together, as and for the purpose stated.

2. The combination of the casting A, bearing the arms F F, containing the depressions *f f*, the cover C, and the casting B, having the bridge D, provided with the shoulders *e e* upon the central portion E thereof, as and for the purpose stated.

413,321. COFFEE-MILL. WILLIAM A. HAHCK, Freeport, Ill., assignor to the Warner Manufacturing Company, same place. Filed June 24, 1889. Serial No. 315,334. (No model.)



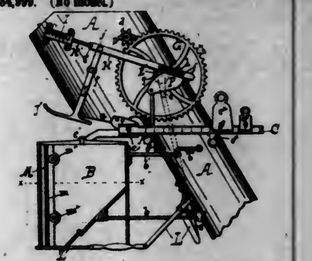
Claim.—1. In combination with the casting B, a casting A, bearing lugs *a*, adapted to be engaged with some portion of the casting B by springing the casting A slightly out of its original form and to hold said castings tightly together by means of the elastic force with which said casting A tends to resume its former shape, as and for the purpose stated.

2. The combination of the casting A, bearing the lugs *a'*, and the flange *a*, having the sharp rim *m*, in combination with the casting B, slotted at *b*, as and for the purpose stated.

3. The casting A, provided with lugs *a'* and points *n*, in combination with the casting B, slotted at *b*, as and for the purpose stated.

4. The combination of the casting A, having the lugs *a'*, flange *a*, sharp-rimmed at *m*, and points *n*, in combination with the casting B, slotted at *b*, as and for the purpose stated.

413,322. GRAIN-METER. STACY R. HART, Peoria, Ill., assignor to the Hart Weigher Company, same place. Filed Sept. 10, 1888. Serial No. 284,999. (No model.)



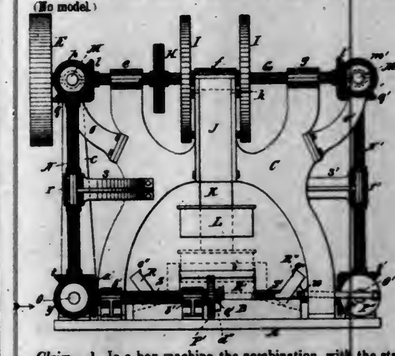
Claim.—1. In an automatic grain-weighing device, the combination of the vertically-movable hopper B, provided with the rigidly-attached stop b^3, the driven wheel G, arranged above said stop, the plate F, connected to and operated by said wheel, substantially as described, and provided with the arm K to engage with the stop b^3, and the valves L' J', controlled by the movements of said plate F, substantially as herein set forth.

2. The combination of the swinging hopper B, the stop b^3, rigidly attached thereto, the pendent lever K and its spring *k'*, the plate F, attached to the shaft E, the gear-wheels *g* G, fastened together, loosely mounted on the shaft E, and driven by the wheel *d* on the end of driving-shaft D, the bar H H', the spring I, the lever J, and the grain-valve J', substantially as described.

3. The combination of the swinging hopper B, the stop b^3, rigidly attached thereto, the pendent lever K and its spring *k'*, the plate F, attached to the shaft E, the gear-wheels *g* G, fastened together, loosely mounted on the shaft E, and driven by the gear-wheel *d* on the end of the driving-shaft D, and the crank *c*, pitman *c'*, bell-crank lever L, and hopper-valve L', substantially as described.

4. The combination of the swinging hopper B, the stop b^3, rigidly attached thereto, the pendent lever K and its spring *k'*, the plate F, attached to the shaft E, the gear-wheels *g* G, fastened together, loosely mounted on the shaft E, and driven by the gear-wheel *d* on the end of the driving-shaft D, the crank *c* on the end of the shaft E opposite to the plate F, and means for operating the two valves J' L' from the plate F and crank *c*, substantially as described.

413,323. BOX-MAKING MACHINE. TOBY HERRINGER and ROBERT SINGER, Dayton, Ohio. Filed Mar. 18, 1889. Serial No. 303,700. (No model.)



Claim.—1. In a box-machine, the combination, with the stationary bed-plate and a vertically-reciprocating clamping-platen above the same, of laterally-arranged sliding and swinging presser-blocks, and mechanism for actuating said clamping-platen and presser-blocks, substantially as described.

2. In a box-machine, the combination, with a stationary bed-plate and a vertically-reciprocating clamping-platen above the same, of laterally-arranged sliding and swinging presser-blocks provided with flanges on their upper inner edges and rounded swells on their lower inner edges adapted to be caught and engaged by grooves in the bed-platen while the blocks are being swung up, and mechanism for actuating said clamping-platen and presser-blocks, substantially as described.

3. In a box-machine, the combination, with a vertically-reciprocating clamping-platen, a bed-plate beneath the same, and sliding and swinging presser-blocks, of a pitman for each block, and mechanism for actuating said platen and pitman, substantially as described.

4. The combination and arrangement of the base A, beds B *i*, frame C, guide-housing J, with its slots *j*, platen L, with its plunger K and pins *k*, shaft G, with its cam-slotted disks I and pinions *l l'*, shafts M M', with pinions *m p m' p'*, shafts N N', with pinions *q t q' t'*, shafts O O', with pinions *u y u' y'* and disks P P'', shafts S S', with pinions *s' s''* and disks P' P''', pitmen Q Q' Q'' Q''', and presser-blocks R R' R'' R''', all substantially in the manner and for the purpose specified.

413,324. FOLDING TABLE. LORIN L. KNOWLTON, Madison, Wis. Filed Mar. 19, 1888. Serial No. 267,761. (No model.)

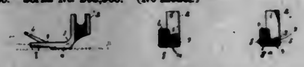


Claim.—1. In a folding table, the combination, with a table-top, of two pairs of cross-legs hinged thereto, the inner leg of each pair consisting of the parts B' *b*, the part *b* being hinged to the table-top and pivotally connected to the part B', thereby forming a joint at D, the round F, rod G, braces H H, and means for retaining the jointed legs in position, substantially as described, and for the purposes set forth.

2. In a folding table, the combination, with the rigid top A, legs B B, hinged thereto, and round F, of jointed legs crossing said legs B B and consisting of the parts B' B' *b b*, the parts *b b* being hinged to the top A and pivoted to the upper ends of the parts B' B', forming joints at D D, whereby all of the legs may be folded against the table-top, the parts *b b* projecting beyond the pivotal joints D D to such a distance as to engage with the said round F when the table is open, and having their projecting ends connected by the rod G and braces H H, substantially as described, and for the purposes set forth.

3. In a folding table, the combination, with the rigid top A, legs B B, hinged thereto, and round F, of jointed legs consisting of the parts B' B' *b b*, the parts *b b* being hinged to the top A and projecting beyond the pivotal joints D D to such a distance as to engage with said round F, and having their projecting ends connected by the rod G and braces H H, substantially as described, and for the purposes set forth.

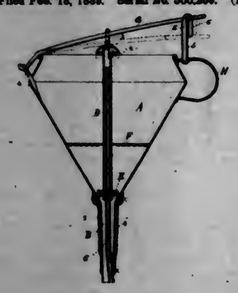
413,325. PRESSER-FOOT AND OVERLAY-GUIDE FOR SEWING-MACHINES. CHARLES F. LITTLEJOHN, Bridgeport, Conn. Filed Dec. 11, 1888. Serial No. 293,305. (No model.)



Claim.—1. A sewing-machine presser-foot having a bottom bearing-surface 4, and in front thereof an upwardly-turned arm 6, and an arm 7, having a shoulder 9, with a slot between said arms, said arm 7 carrying a flat horizontally-extending guide 8, projecting beneath the said upwardly-turned arm 6, but separated therefrom, and the bottom of said guide being above said bearing-surface 4.

2. A sewing-machine presser-foot having a bottom bearing-surface 4, and in front of said bearing-surface an upwardly-turned arm 6, and an arm 7, having a shoulder 9, with a slot 5 between said arms, said arm 7 being provided with a flat horizontally-extending guide 8, projecting laterally across the presser-foot from said arm 7, beneath said upwardly-turned arm 6, and having the upwardly-turned lip 8', the bottom of said guide being above said bearing-surface 4.

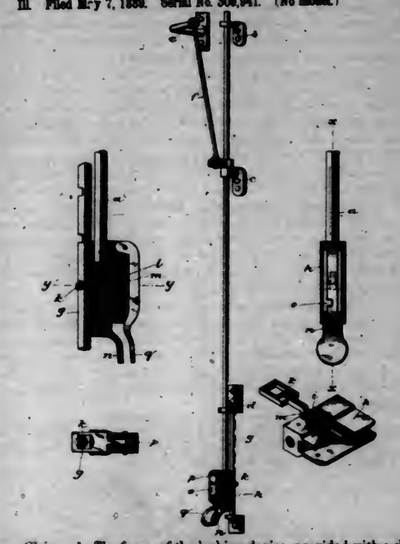
413,326. MEASURING-FUNNEL. QUIRICO MAGLIOLA, West Hoboken, N. J. Filed Feb. 18, 1889. Serial No. 300,209. (No model.)



Claim.—1. The combination, with the funnel and central air-tube, of a valve and tubular stem, and a spring-lever passing through an eye at the upper end of the tubular stem and into a stationary eye on the funnel, the moving end of the spring-lever being adjacent to the handle of the funnel, substantially as set forth.

2. The combination with the funnel, of the valve and tubular stem, a spring-lever connected to the upper end of the stem and received at one end into a stationary eye upon the funnel opposite to the handle, the tube 5 upon the handle of the funnel, and the wire hook passing through the same and adapted to receive and hold the spring-lever, substantially as set forth.

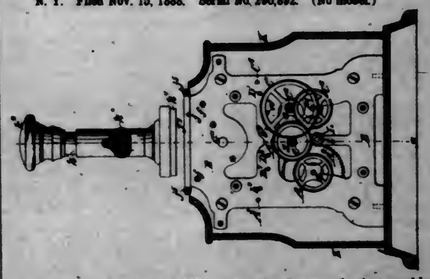
413,327. TRANSOM-LIFTER. LAURENCE MOHAT, Jr., Chicago, Ill. Filed May 7, 1889. Serial No. 309,941. (No model.)



Claim.—1. The frame of the locking device, provided with a slot for the latch of the same, said latch consisting of a loop which surrounds a fixed bar, in combination with a spring placed in the opening in said frame and normally pressing against the latch to hold the same in engagement with the bar, and a thumb-lever pivoted to the frame and adapted to be pressed against the anvil or bearing provided upon the latch to disengage the latch from the bar.

2. The locking device having the slotted frame, which frame is provided with a finger-piece *n*, in combination with the lever pivoted to the frame and provided with the thumb-piece *q* and the spring-clamp mounted in the frame and adapted to engage with notches at different positions thereon, said clamp being released on pressing upon the thumb-piece to force the lever against the lug *m* to compress the spring *l*, substantially as and for the purpose specified.

413,328. TIME-STAMP. REMEMBER H. ROGERS, Jr., New York, N. Y. Filed Nov. 15, 1888. Serial No. 290,692. (No model.)



Claim.—1. In a time-stamp, a series of indicator-wheels rotatable independently of each other, pivoted levers carrying pawls engaging said indicator-wheels, shafts carrying cams for acting on said levers, and pinions on said shafts, combined with a clock mechanism pro-

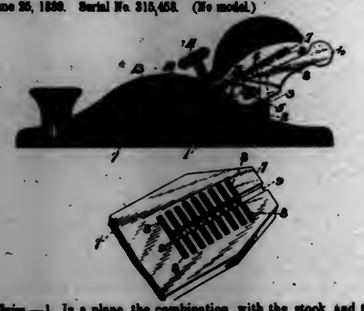
vided with pinions meshing directly with the pinions of the indicator mechanism, whereby motion is imparted to the shaft-carrying cams and thence through the levers carrying pawls to the indicator-wheels, as set forth.

2. In a time-stamp, the indicator-wheels A^4, B^4, C^{11}, and D^4, provided with ratchets fast at their sides and rotatable independently on a shaft, pawls engaging said ratchets, and pivoted levers connected to said pawls, shafts *a* and C^4, a ratchet-wheel A^3, and a snail-cam *b*, and gear A on shaft *a*, a snail-cam C^3, an S-cam C^5, and a gear C^2 on shaft C^4, the said ratchet-wheel and cams being arranged to act directly on the pivoted levers, combined with a clock mechanism the minute-shaft of which is provided with pinions A', C, C', and C^2, through the latter of which motion is imparted to shaft C^4, the said clock mechanism being arranged with its pinions A' and C in direct engagement with the pinions A and C', respectively, whereby motion is imparted to the shafts *a* and C^4, and thence to the indicator-wheels, substantially as and for the purpose described.

3. In a time-stamp, the indicator-wheels A^4, B^4, C^{11}, and D^4, provided with ratchets fast at their sides and rotatable independently on a shaft, pawls engaging said ratchets, and pivoted levers connected to said pawls, shafts *a* and C^4, a ratchet-wheel A^3, and a snail-cam *b*, and gear A on shaft *a*, a snail-cam C^3, an S-cam C^5, and a gear C^2 on shaft C^4, the said ratchet-wheel and cams being arranged to act directly on the pivoted levers, combined with a clock mechanism the minute-shaft of which is provided with pinions A' and C and C' C^2, through the latter of which motion is imparted to shaft C^4, the said clock mechanism being arranged with its pinions A' and C in direct engagement with the pinions A and C', respectively, whereby motion is imparted to the shafts *a* and C^4 and thence to the indicator-wheels, and the indicator-wheel G, with separate means for rotating the same, substantially as and for the purpose described.

4. The combination, with time mechanism, of time-indicator mechanism comprising a day indicator-wheel and an indicator-wheel for a. m. and p. m., a shaft deriving motion from the time mechanism, a snail-cam for transmitting motion to the day indicator-wheel, and an S-cam for transmitting motion to the a. m. and p. m. indicator-wheels, both said cams being mounted on said shaft, substantially as specified.

413,329. PLANE. Solon R. Rist, New Hartford, assignor to the Birmingham Plane Manufacturing Company, Birmingham, Conn. Filed June 25, 1889. Serial No. 315,453. (No model.)



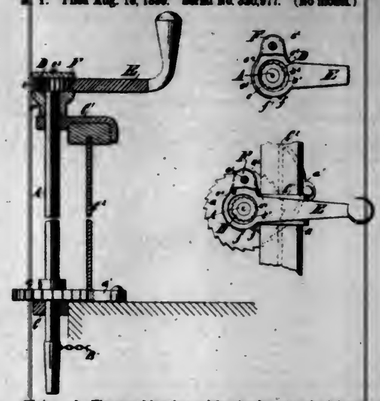
Claim.—1. In a plane, the combination, with the stock and the doubly-fulcrumed lever, of the cutting-bit having at its rear side the transversely-extended groove and the shallow longitudinal groove intersecting the transverse grooves at right angles, substantially as set forth.

2. In a plane, the combination, with the cutting-bit, the same having the transverse grooves and the longitudinal groove, whereby a bearing is afforded for its actuation longitudinally and laterally, of the lever having thereon the operating-teeth and two fulcrum-points, one for the operation of the bit longitudinally and the other for its adjustment laterally, substantially as specified.

3. In a plane, the combination, with the bit, the same having the transverse and longitudinal grooves in its rear side, of the divided post, upon which said bit rests, the toothed lever loosely pivoted on a pin within said divided post, and adapted, in addition to its movement upon said pin as a center, to have a movement longitudinally thereof, substantially as set forth.

4. In a plane, the combination, with the bit, having at its rear side the transverse grooves and the shallower longitudinal groove intersecting said transverse grooves at right angles, of the divided post having the beveled inward projections at its rear side, the lever provided with operating-teeth and having a countersunk pivot-hole, and the pin secured in said post and passing loosely through the hole in the lever, substantially as specified.

413,330. CAR-BRAKE. Edward T. Schoonmaker, New York, N. Y. Filed Aug. 16, 1889. Serial No. 320,977. (No model.)

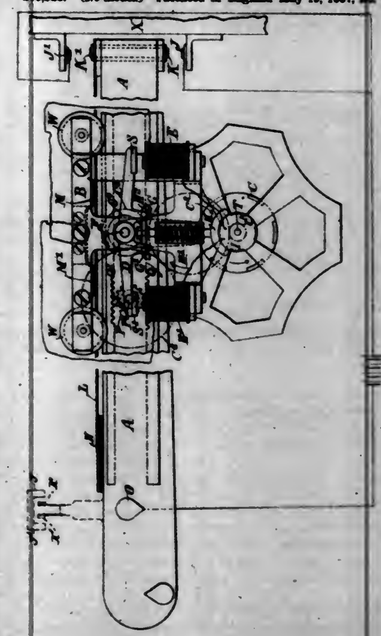


Claim.—1. The combination, with a brake, of a shaft having near its upper end a projection, a crank pivoted upon said projection so as to be capable of longitudinal movement toward and from said shaft, said crank and shaft, the one being provided with a ratchet and the other with a tooth for engaging the ratchet, substantially as specified.

2. The combination, with the shaft A, having mounted upon it the sleeve or hub e^4, of the crank E, pivoted upon said sleeve or hub so as to be capable of longitudinal movement toward and from the shaft, the ratchet-wheel D on said shaft, and the tooth e^2 upon the crank for engaging said ratchet-wheel, substantially as specified.

3. The combination, with the shaft A, provided with the sleeve or hub e^4, of the crank E, pivoted upon said sleeve or hub so as to be capable of longitudinal movement toward and from said shaft, the tooth e^2 on said crank, the ratchet-wheel D on the shaft, and a stop for preventing a too extended longitudinal movement of the crank, substantially as specified.

413,331. WEIGHING APPARATUS. William Shelbrooke, Bankwood, County of Worcester, England. Filed July 10, 1888. Serial No. 279,523. (No model.) Patented in England May 19, 1887, No. 7,336.



Claim.—In a weighing-machine, the combination of a rocking beam provided with electrical contact-pieces, racks on said beam, other and fixed electrical contact-pieces between which the first-named contact-pieces oscillate to make and break contact, a moving poise comprising a frame, an electrometer, a train of gearing for operating on said racks, reversing mechanism for causing a reverse movement of the poise and brake mechanism, and electrical conductors, in connection with the last-named contact-pieces, the electrometer, and a source of electricity, as and for the purpose set forth.

413,332. ROAD-CART. George F. Woodard and George H. Carroll, Sterling, Ill. Filed Aug. 8, 1888. Serial No. 280,160. (No model.)



Claim.—1. The combination of the thills C C, suitably supported at their rear ends by the axle A, the seat E, foot-board F, bar D, plate G, provided with ears G', clip J, provided with ears K, bolt M, spring L, bolt N, spring O, and rods P P, pivotally suspended from thills C, respectively, and pivotally attached at their lower ends, respectively, to spring O, substantially as shown, and for the purpose described.

2. The combination of the thills C C, bar D, axle A, wheels B, seat E, foot-board F, a centrally-located universal joint suspending the front end of said foot-board to said thills, spring L, spring O, and arms P P, pivotally attached at their upper ends to said thills and at their lower ends to said spring O, substantially as shown, and for the purpose described.

3. In a road-cart, the combination of the thills C, bar D, seat E, foot-board F, clip J, provided with ears K, spring L, pivotally attached at one end to said clip, plate G, pivotally attached to bar D and to the opposite end of spring L, and provided with ears G', substantially as shown, and for the purpose described.

413,333. DOOR-LOCK. Thomas J. Young, North Plainfield, N. J. Filed Mar. 16, 1889. Serial No. 303,616. (Model.)



Claim.—1. The combination, with the spindle-hub, latch, and case adapted to be inserted in the edge of the door, of the door-plates, a lock-case connected with one of the door-plates, and having a lateral opening in the lock-case for the reception of the latch-case, the knob-spindle passing through the door-plates, lock-case, latch-case, and hub, and a bolt within the lock-case and adapted to retain the latch when projected, substantially as set forth.

2. The lock-plate F, lock-case O, and cap-plate G', in combination with the vertically-moving bolt H, having a stop-plate 10, a spring for moving the bolt in one direction, and the hanging tumbler hook and stud upon the bolt, for retaining the bolt when projected against the action of the spring, substantially as set forth.

3. The latch-case A A' and latch B, adapted to be inserted in the edge of the door, and having the flanges or claws 2 on the latch that projects through the latch-case, in combination with the lock-case adapted to be inserted into the face of the door, and having a bolt and stop-plate passing behind the flange or claw of the latch when the bolt is projected, and the spindle-hub and spindle, substantially as set forth.

4. The combination, with the lock-case G G' and the door-plate F, to which the lock-case is connected, of a vertical bolt H, having a plate 10 sliding through an opening in the case, the helical spring 11 for moving the bolt toward the key-hole, the tumbler-hook I, pivoted at 12, and the stud 13 upon the bolt, with which the hook of the tumbler engages, and the latch-case and latch to be inserted through the edge of the door, the spindle-hub, and knob-spindle, substantially as set forth.

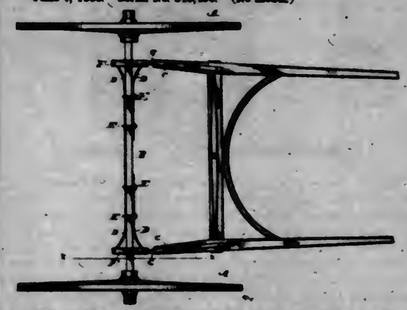
413,334. BUTTON-HOOK. Terrence B. Burns, New York, N. Y. Filed Feb. 16, 1889. Serial No. 300,169. (No model.)



Claim.—1. In a button-hook, the combination of the shank *a*, having a hook or loop *v*, and the slide *c*, substantially as described.

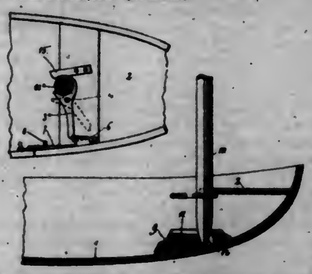
2. In a button-hook, the combination of the shank *a*, having the hook *b* deflected from the line of the shank, and the slide *c*, having the tongue *d* also deflected, as shown, and the flanges *f f'*, substantially as and for the purpose set forth.

413,335. THILL-COUPLING. John Cosnaver, Oxford, Ind. Filed June 7, 1889. Serial No. 313,466. (No model.)



Claim.—The combination, with a vehicle-axle, of front and back springs D secured thereto, frame-pieces E, to which the ends of the springs are fastened, and thills or a pole pivoted to the frame-pieces, substantially as set forth.

413,336. AUTOMATIC MAST-SUPPORT. John Cosen, Clayton, N. Y., assignor of one-half to Frank L. Hall, same place. Filed May 16, 1889. Serial No. 310,807. (No model.)



Claim.—1. The combination of a mast, a socket adapted to receive the lower end of the mast, a stationary deck or cross-bar above the socket, and an opening and closing clasp for engaging the mast above the socket and securing it to the deck or cross-bar.

2. The combination of a mast, a socket adapted to receive the lower end of the mast, a stationary deck or cross-piece above the socket, and an automatically-closing clasp or catch for engaging the mast above the socket and securing it to the deck or cross-piece.

3. The combination of a mast, a socket adapted to receive the foot of the mast, the supporter-piece, and the bifurcated pivoted lever-catch upon the supporter-piece adapted to engage the mast above the foot and secure the same.

4. The combination, in a mast-supporting device, of the mast, the socket adapted to receive the lower end of the mast, the supporting-piece above the socket having a recess adapted to receive the mast, a clasp for securing the mast in the recess, and a catch for securing the clasp en engagement with the mast.

5. The combination, in a mast-supporting device, of a mast, a socket adapted to receive the lower end of the mast, a stationary sup-

porter-piece above the socket, an automatically closing and an opening clasp for engaging the mast above the socket and securing it to the supporter-piece.

6. In a mast-supporting device, the combination of a mast, a socket adapted to receive the lower end of the mast, a supporter-piece above the socket, an automatically closing and an opening catch for engaging the mast above the socket and securing it to the supporter-piece, and a catch for securing the clasp in closed position.

7. The combination of a mast having a shoulder 14 thereon adjacent to its lower end, a socket having a projecting edge adapted to engage the shoulder on the mast from above, and a mast-supporter engaging the mast above the socket.

8. The combination of a mast, a socket having a deeper portion and opposed walls 11 extending therefrom, and an opening and closing mast-supporter above the socket, substantially as set forth.

413,337. DYNAMO-ELECTRIC MACHINE. RUDOLF EICKEMEYER, Yonkers, N. Y. Filed Feb. 8, 1889. Serial No. 299,171. (No model.)



Claim.—1. In a dynamo-electric machine, the combination of a rectangular frame having a top and bottom which serve as portions of an electro-magnet and ends which couple the top and bottom and serve as standards for an armature-shaft, a field-coil substantially rectangular in outline mounted within and parallel with the top and bottom of said frame, and concaved cheek-pieces which are bolted to the opposite edges of said frame at top and bottom, have a width substantially equal to the interior length of the coil, confine said coil in place, and afford between their concave faces and within the coil a cylindrical space for the reception of an armature of appropriate length and diameter, substantially as and for the purposes specified.

2. In a dynamo-electric machine, the combination of a rectangular frame having a top and a bottom which serve as portions of an electro-magnet, counterpart cheek-pieces bolted to the opposite edges of said top and bottom of the frame and concaved exactly midway of their length, a field-coil rectangular in outline within said frame and secured in position between and by said cheek-pieces and affording within said coil and between the concave faces of the cheek-pieces a cylindrical armature-space, and end plates which couple the top and bottom of the frames and are provided with seats for shaft-bearing, which are centrally located and in line with the axial line of said armature-space, substantially as and for the purposes described.

3. In a dynamo-electric machine, the combination of a rectangular frame having a top and a bottom which serve as portions of an electro-magnet, cheek-pieces composed of curved wrought-iron having cheek-extensions bolted thereto, and a field-coil substantially rectangular in outline within said frame, secured in position by and between said cheek-pieces, which are bolted to the edges of the top and bottom of the frame, said coil inclosing said cheek-extensions and affording within it and between the concaved cheek-pieces a cylindrical space for the reception of an armature, substantially as and for the purposes specified.

4. In a dynamo-electric machine, the combination of a rectangular frame having end plates to which are bolted a top and a bottom composed of wrought-iron bars which serve as parts of an electro-magnet, wrought-iron carved cheek-pieces provided with cheek-extensions bolted thereto, and a field-coil substantially rectangular in outline within and parallel with said frame, which surrounds said cheek-extension and is secured in position by and between said cheek-pieces, which are bolted to said top and bottom plates and afford between their concave faces and within the coil a cylindrical space for the reception of an armature, substantially as and for the purposes specified.

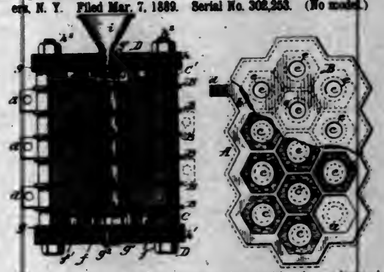
413,338. MAGNETIC GAGE FOR TESTING THE MAGNETIC CONDUCTIVITY OF METALS. RUDOLF EICKEMEYER, Yonkers, N. Y. Filed Feb. 23, 1889. Serial No. 300,812. (No model.)

Claim.—1. In a magnetic gage for testing the magnetic conductivity of metals, a central magnetic field, two or more contact-faces located within an external or outer magnetic field and adapted to receive pieces of metal to be tested, and a magnetic indicator which is normally uninfluenced by said central field in its normal condition, but will respond to changes or variations in said central field resulting from changes or variations in said outer field, as when any two of said contact-faces are temporarily connected by metal having more or less magnetic conductivity.



2. In a magnetic gage for testing the magnetic conductivity of metals, two open magnetic circuits, contact-faces in either or both circuits, adapted to receive pieces of metal to be tested, and a magnetic indicator which responds to variations in either or both of said circuits and discloses the extent to which either or both of them are closed, as by the application to said faces of metal to be tested, said indicator being influenced in its movements in proportion to the magnetic conductivity of metal thus applied.

413,339. SECONDARY BATTERY. RUDOLF EICKEMEYER, Yonkers, N. Y. Filed Mar. 7, 1889. Serial No. 302,253. (No model.)



Claim.—1. In a secondary battery, the combination, substantially as hereinbefore described, of a suitable clamp and two or more counterpart lead castings or foundations insulated from each other, and each provided with holes or recesses lined or coated with active material, which register with similarly lined or coated holes or recesses in the next adjacent casting or foundation and afford spaces or cells for the reception of the electrolyte.

2. In a secondary battery, the combination, substantially as hereinbefore described, of a suitable clamp, one or more pairs of elements, each composed in part of a foundation or support of metallic lead and in part of suitable porous active material applied thereto as a lining or coating, the coated surfaces serving as walls to a space for the reception of electrolyte, and plates which not only insulate said foundations or supports from each other, but also project into the space occupied by the electrolyte and obviate liability of short-circuiting, due to displaced active material, without obstructing the circuit through the electrolyte.

3. In a secondary battery, the combination, substantially as hereinbefore described, of two or more lead plates substantially counterparts in form and dimensions, each provided with holes or openings extending through from side to side and lined or coated with suitable porous active material, said plates piled one above another, the registering holes constituting in each instance a cell lined with said porous material for receiving electrolyte, interposed insulating-plates provided with holes registering with those in the lead plates, and a clamp for firmly binding the several plates together.

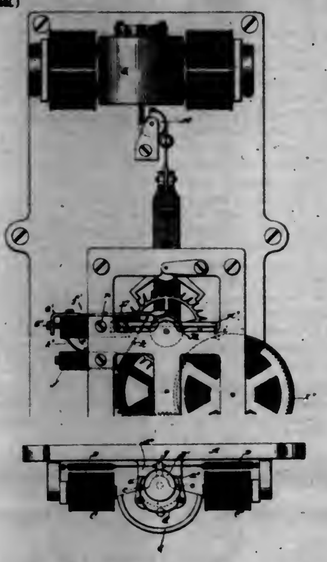
4. In a secondary battery, the combination, substantially as hereinbefore described, of two or more metallic lead plates or foundations, each having one or more holes which extend through from side to side and are lined or coated with suitable porous active material, said holes in each plate registering with corresponding holes in the other plates, interposed insulating-plates provided with holes which register with but are of less area than said lined holes, and a suitable clamp for tightly binding all of said plates in a pile and enabling the registering holes to serve as suitable receptacles for liquid electrolyte, and also enabling said insulating-plates to thoroughly protect the metallic lead in the foundation-plates from direct contact with the electrolyte, and still further to support the active material and prevent displaced portions thereof from making short-circuit contact with the adjacent lined or coated surfaces of other plates.

5. In a secondary battery, the combination, substantially as hereinbefore described, of two or more substantially counterpart piled lead plates, each provided with holes extending through from side to side, which register with corresponding holes in adjacent plates in the

pile and are lined or coated with suitable porous active material, said registering holes constituting cells or spaces for the reception of electrolyte, insulating-plates between said lead plates and provided with similarly registering holes, a clamp, and between the clamp and the lead plates at the top and bottom of the pile other plates provided with holes and channels which communicate with all of the electrolyte-spaces, whereby all of said cells or spaces may be readily charged with electrolyte and free vent afforded for the gases developed within the battery.

6. The combination, with a secondary battery having a tightly-inclosed cell or space for the electrolytic liquid and a feed-aperture, of an open stand-pipe which tightly fits said aperture and projects below the upper interior surface or wall of said space or cell, substantially as described, whereby the battery may be conveniently charged with electrolyte, the supply of the latter readily observed, a vent afforded for gases, hydrostatic pressure maintained in an interior air-space which receives the gases on leaving the electrolyte, and affording in said stand-pipe ample space in which the electrolyte may rise under rapidly-developed gaseous pressure, without liability of overflow.

413,340. ELECTRIC REGULATOR FOR PENDULUM CLOCKS. JAMES H. GIBBY, Brooklyn, N. Y. Filed Aug. 9, 1889. Serial No. 320,248. (No model.)



Claim.—1. In a clock, the combination, with the threaded spindle for adjusting the vibrating length of the pendulum and a ratchet-wheel secured thereto, of an oscillating armature, pawls carried thereby and adapted to engage with said ratchet on opposite sides of its axis, electro-magnets on opposite sides of said armature, and circuit-controlling mechanism adapted to energize one or the other of said magnets, as set forth.

2. The combination, with the two electro-magnets for varying the vibrating length of a clock-pendulum, of contacts included in the independent circuits of said magnets, two means for holding said contacts open—one a twenty-four-hour wheel, notched at a given point, the other two disks on the escapement-arbor with portions of their edges cut away, these parts being adjusted relatively to each other, in the manner herein described.

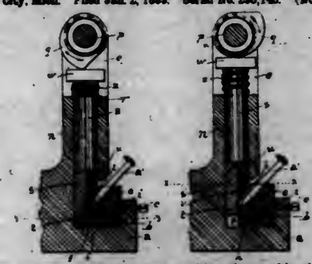
3. The combination, with the disk to the periphery of which the pendulum is connected by a flexible band, the threaded spindle for adjusting the disk and thereby varying the length of the pendulum, and a ratchet-wheel carried by said spindle, of an oscillating armature mounted concentrically with the spindle and ratchet, pawls carried thereby and adapted to engage with the ratchet on opposite sides of its center, electro-magnets on opposite sides of the armature, and circuit-controlling mechanism for energizing either of said magnets, as set forth.

4. The pendulum raising and lowering mechanism consisting of the combination of the adjusting-spindle and ratchet-wheel passing through the stud A', the armature with curved or circular face mounted concentrically with the spindle and ratchet, the spring-actuated pawls engaging with the ratchet, the equilibrium-springs secured to the armature, and the electro-magnets C and C', adapted to swing the armature in opposite directions, as set forth.

5. The current-controlling device for electro-magnetically-regulated pendulum clocks, consisting in the combination of a fixed conductor, two flexible or yielding contacts secured to a pivoted insulating-support, and two disks secured to the escapement-arbor under the yielding contacts, respectively, each disk being formed with a notch or depression in its edge so placed that one contact and notch will pass into and out of engagement before the others, whereby one or the other will be permitted to encounter the fixed conductor, according as the clock is fast or slow, as set forth.

6. The current-controlling device for electro-magnetically-regulated pendulum clocks, consisting in the combination of a fixed contact, two flexible or yielding contacts secured to a pivoted insulating-support, an arm extending from said support and resting upon the periphery of a twenty-four-hour wheel, whereby the yielding contacts are maintained out of engagement with the fixed contact, and two disks secured to the escapement-arbor under the yielding contacts, respectively, each disk and the twenty-four-hour wheel being formed with a notch or depression in its edge, these parts being adjusted so that the notch in the twenty-four-hour wheel and that in one of the disks on the escapement-arbor will register and permit the depression of the corresponding yielding contact when the clock is either fast or slow, as set forth.

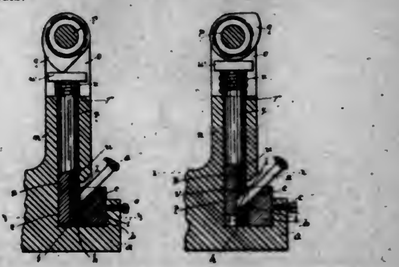
413,341. SPIKE-POINTING MACHINE. WILLIAM GOLDIE, West Bay City, Mich. Filed Jan. 2, 1889. Serial No. 295,143. (No model.)



Claim.—1. In a spike-pointing machine, the combination, with a reciprocating plunger provided on one end portion with one or more cutters, of an anvil-die having an inclined die-face for supporting the spike in a position oblique to the movement of the plunger, whereby the fiber of the rolled metal is divided obliquely in the direction of its length, substantially as set forth.

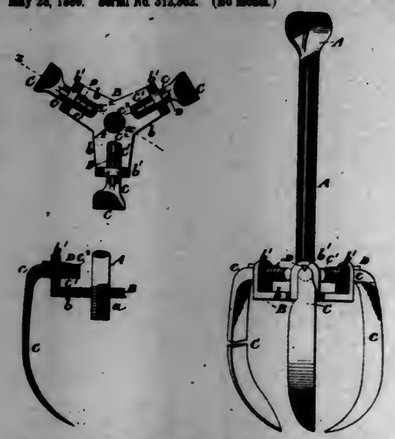
2. In a spike-pointing machine, the combination, with a reciprocating plunger provided on its lower portion with cutters, and having a gage-stop projecting below and in rear of the said cutters, with an anvil-die having an inclined face for supporting the spike with its end presented to the cutters and in a position oblique to the movement of the plunger, substantially as and for the purpose set forth.

413,342. METHOD OF POINTING SPIKES. WILLIAM GOLDIE, West Bay City, Mich. Original application filed Jan. 2, 1889, Serial No. 295,143. Divided and this application filed June 17, 1889. Serial No. 314,664. (No model.)



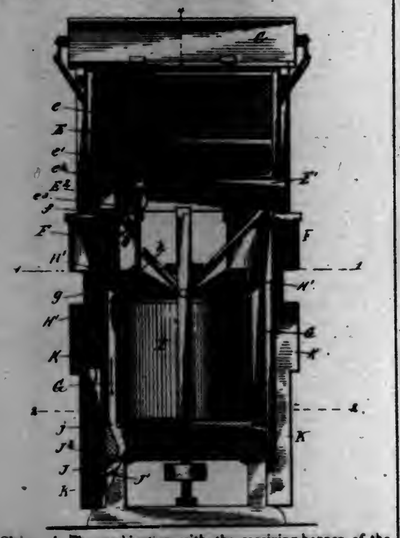
Claim.—The herein-described method of forming a cutting-edge on a spike-point, consisting, substantially, of swaging the point to produce front and rear compressing-surfaces, and then producing a sharp edge by shearing off the surplus metal obliquely across and in the direction of the length of the grain or fiber of the rolled iron, substantially as set forth.

413,343. POST-AUGER. GREEN B. HARRIS, Mooresville, Tex. Filed May 28, 1889. Serial No. 312,362. (No model.)



Claim.—A post-auger spider or blade-holder provided with a bored, threaded, and upturned flange *b'* on each of its arms, in combination with blades C, having on the ends of their arms c screws *c'*, a groove c^2 across each thread, and detachable wedges D, working in said grooves, as and for the purpose set forth.

413,344. APPARATUS FOR CLIPPING, SEPARATING, AND GRADING OATS, &c. WILLIAM W. INGRAHAM, Chicago, Ill. Filed Jan. 31, 1889. Serial No. 298,286. (No model.)



Claim.—1. The combination, with the receiving-hopper, of the section trunk or chute D, having inclined wall *d*, provided with one or more transverse strips or ledges d^2 to prevent the passage of the grain, substantially as and for the purposes specified.

2. The combination, with the shaker having screens *e* and *e'* and sieves e^2, of the boxes E^2 and E^3, having oppositely-inclined bottoms and adapted to deliver the grain from the different sieves at opposite sides of the apparatus, and the duplicate separating-trunks F and K, arranged on each side of the apparatus and adapted to successively receive the grain from the boxes E^2 and E^3, respectively, substantially as and for the purposes specified.

3. The combination, with the shaker and its screens, of the separating-trunks F, the direct conductors G and spouts H, opening into the bottom of each trunk, the drum I, with which said spouts H communicate, and the valves H', whereby the grain may be directed either into the direct conductors G or into the spouts H, substantially as and for the purposes specified.

4. The combination, with the main receiving-hopper and the suction trunk having its opening adjacent to the discharge-orifice thereof, of the shaker and its screens, the separating-trunks F, which receive the grain as it comes from the screens, the separating-trunks K, the drum I, conductors G and spouts H, and the valves H', substantially as and for the purposes specified.

413,345. GALVANIC-BATTERY COMPOUND. WILLIAM P. KOCKOERT, Brooklyn, assignor to the Kookogey Electric Company, New York, N. Y. Filed Dec. 14, 1886. Serial No. 221,585. (No specimens.)

Claim.—As an article of manufacture, a battery compound consisting of bisulphate of soda and trioxide of chromium, combined substantially in the proportions and manner described.

413,346. SEA-OILING CARTRIDGE. ARTHUR LOCKER, Tompkinsville, N. Y. Filed Dec. 13, 1883. Serial No. 298,436. (No model.)

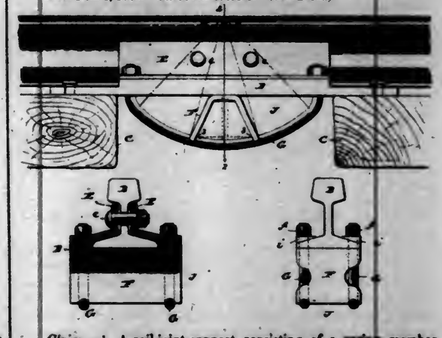


Claim.—1. The combination, with the oil-holding shell A, of the plug B to close the rear end of such shell, a powder-chamber within the oil-holding chamber, a fuse passing through the plug into the powder-chamber, a shell E around and inclosing the shell A, and a separate independent charge of explosive material within the shell E and between the same and the rear of the oil-holding cartridge, and by which such oil-holding cartridge is projected from the shell E and fire-arm, substantially as set forth.

2. The combination, with the oil-holding shell A, having an open rear end, of the plug B for closing such end, and having a hole through the same, a metallic powder-chamber C within the oil-holding shell, and having a tubular neck 2 passing into the hole in the plug B, and a fuse inserted into such tubular neck, and by which such cartridge is exploded, substantially as set forth.

3. The combination, with the oil-holding shell A and the plug B for closing its rear end, of the powder-chamber C, having a tubular neck 2, a plate 5, and tube 3 attached thereto and inserted into the tubular neck 2, and a fuse passing through the tube 3, substantially as set forth.

413,347. SPRING TRUSS-SUPPORT FOR RAIL-JOINTS. RICHARD LONG, Chicago, Ill.; James M. Johnson, administrator of said Richard Long, deceased, assignor to the Long Spring Truss Joint Company, same place. Filed Feb. 1, 1889. Serial No. 298,403. (No model.)



Claim.—1. A rail-joint support consisting of a spring member suspended below and from the bases of the rails at opposite sides of the meeting-point, and a second member interposed between the spring member and the rails at the meeting-point thereof, substantially as set forth.

2. The combination, with the ends of two meeting rails, of a truss consisting of a member suspended below and connected with the rails and having parts out of coincidence with the lines of strain, and a second member supported by the first beneath the ends of the rails, substantially as set forth.

3. The combination, with the rails, of a spring-truss consisting of two members, one of which is a spring member, and adjusting devices for regulating the tension of the spring member, substantially as set forth.

4. The combination, with the ends of meeting rails, of a truss consisting of two members, one a curved spring plate, bar, or bars, and the other a standard interposed between the said curved member and the rails, substantially as set forth.

5. The combination of the rails, adjustable curved spring-bars suspended below the rails, and intermediate standard of an inverted-V shape, substantially as described.

6. The combination of the rails, a truss consisting of a spring member suspended below the bases of the rails, and an intermediate standard, and side plates bolted to the rails, substantially as set forth.

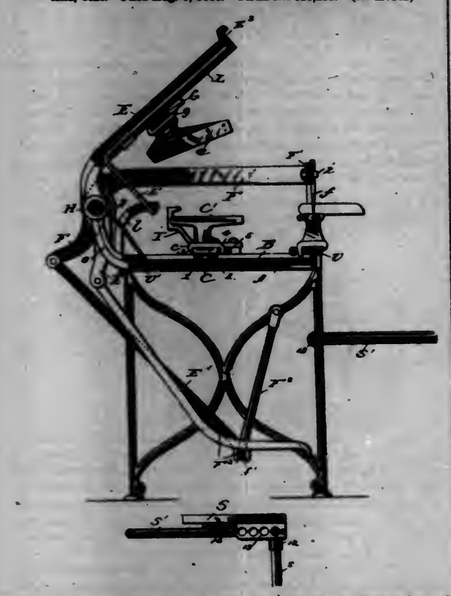
7. The combination of the rails and truss consisting of a curved spring member, and a standard having the form of an inverted V, substantially as set forth.

8. The combination of the rails, base-plate, and spring-truss, consisting of a spring member suspended below the base-plate, and a standard bearing upon the spring member and supporting the base-plate, substantially as set forth.

9. The spring-truss for rail-joints, consisting of curved steel rods suspended below the bases of and longitudinal to the rails, and a standard supported by the rods, substantially as set forth.

10. The combination of the rails, suspended curved rods, and an interposed standard resting at separated points upon the rods, substantially as set forth.

413,348. SLATE-DRESSING MACHINE. FRANCIS P. MARSH, Ashland, Ohio. Filed Aug. 9, 1888. Serial No. 280,982. (No model.)



Claim.—1. In combination, the supporting-frame, the punches and the knives, the supports therefor, each of said supports having a separate set of operating connections, the punch-support and its operating means being independently movable and arranged also to be engaged and moved by the knife mechanism, substantially as described.

2. In combination, the frame, the punches and knives with their movable supports, the treadle-frames for operating the support of the punches, comprising the suspending-links F^3, cross-bar *f'*, and frame F^2, and the treadle E, for operating the support of the knives, said treadle resting loosely on the cross-bar *f'*, whereby a simultaneous action of the knives and punches may be secured, or an independent action of the punches, substantially as described.

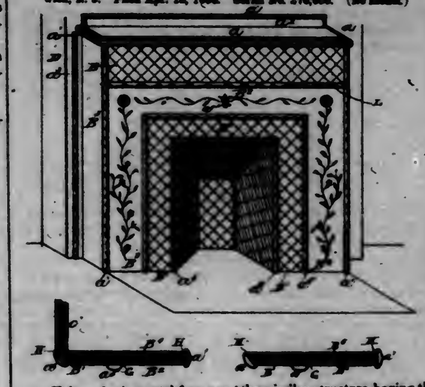
3. In combination, the supporting-frame, the punches and knives, the separate supports therefor, a treadle mechanism connected with the knives, support for operating it, a portion of said support engaging the punch-support, said punch-support also having a separate treadle mechanism, whereby it may be operated entirely independent of the knives, substantially as described.

4. In combination, the supporting-frame, the punches, the supporting-frame therefor pivotally secured to the frame, and having a cross-bar F' at its forward end for holding the punches, the knife-arm also pivotally supported and arranged to engage at its forward end with the cross-bar F', means for moving the knife-supporting arm, and separate means for operating the punches independently, substantially as described.

5. In combination, the knives and the supporting-arm therefor, the punches and their support, means for operating the knife-support, and an automatic locking-bolt for connecting the two supports as they move to work and release them as they assume normal position, and separate operating means for moving the punches independently of the knives, substantially as described.

6. In combination, the knives, the punches, the movable supports therefor, the means for operating each of the supports, the automatic lock consisting of the sliding bolt having an angular extension at its rear, and the perforated standard for moving said bolt, substantially as described.

418,349. DECORATIVE FRAME. RIVERIUS MARSH, New Brunswick, N. J. Filed Apr. 13, 1889. Serial No. 270,609. (No model.)

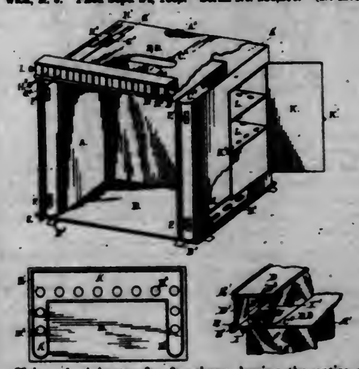


Claim.—1. A mantel-frame or other similar structure having the corners, edges, and faces thereof provided with grooves and combined with metal finishing-strips, substantially as herein set forth.

2. A mantel or other structure having sectional parts grooved, as described, in combination with metal finishing-strips for the edges and faces thereof, substantially as herein set forth.

3. A mantel having a pilaster constructed in sections, each grooved, as described, in combination with metal finishing-strips for covering the uniting edges of said pilasters, substantially as herein set forth.

418,350. VENTILATING-HEATER. RIVERIUS MARSH, New Brunswick, N. J. Filed Sept. 24, 1888. Serial No. 286,206. (No model.)



Claim.—1. A heater for fire-places, having the entire vertical body thereof formed of a single piece of sheet metal, so as to provide air-spaces at the sides, and having in the front of said air-spaces and at the bottom and top of the same openings F and F', substantially as herein set forth.

2. A heater for fire-places, having its entire vertical body formed of a single piece of sheet metal, bent up so as to provide air-spaces on the sides and rear of the combustion-chamber, substantially as herein set forth.

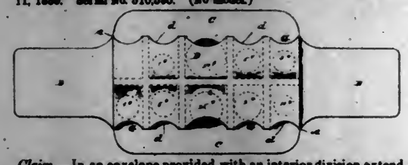
3. A heater for fire-places, having its entire vertical body formed of a single piece of sheet metal, so as to provide air-spaces at the side and rear, in combination with sheet-metal base and cap plates, substantially as herein set forth.

4. A heater for fire-places, having its entire vertical body formed of a single piece of sheet metal and provided with air-spaces on the sides and rear of the combustion-chamber, in combination with the metal base and top, substantially as herein set forth.

5. A heater having its body formed of single piece of metal bent so as to provide air-spaces on the sides and rear and having at the base air-openings into said spaces, and provided with suitable base and top plates, substantially as set forth.

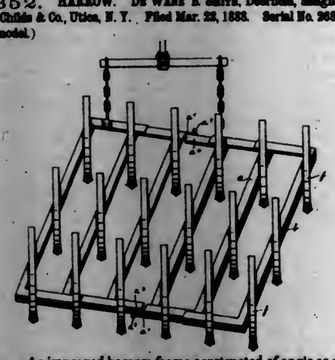
6. A heater having its body composed of a continuous piece of sheet metal, provided with air-spaces on the side and back, as set forth, and having air-openings into said spaces and air-escapes G' and H' from said spaces, in combination with a door K, whereby a ventilated oven is formed, substantially as described.

413,351. COIN-ENVELOPE. ARTHUR F. ROLFE, JOSEPH H. ROLFE, AMAL W. ROLFE, and CHARLES M. ROLFE, Penacook, N. H. Filed May 11, 1889. Serial No. 310,395. (No model.)



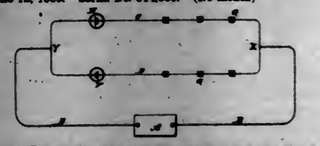
Claim.—In an envelope provided with an interior division extending from end to end and nearly to either side, the combination, with one side of said division and the adjacent side of the envelope, of interposing transverse divisions and a central longitudinal division formed of narrow strips of heavier material than that of which the envelope is composed, and securely gummed to one side of the envelope and said interior division, substantially for the purpose set forth.

413,352. HARROW. DE WARE B. SMITH, Deerfield, assignor to J. M. Childs & Co., Utica, N. Y. Filed Mar. 22, 1888. Serial No. 268,148. (No model.)



Claim.—An improved harrow-frame constructed of angle or channel iron sections and composed of the parallel main bars connected at their ends only by transverse bars, in combination with the angle-bars connecting the main bars to the end bars, the inner ends of the inner bars being lapped and bolted together to form the hinges of the parts of the frame, substantially as described.

413,353. METHOD OF OBTAINING DIRECT FROM ALTERNATING CURRENTS. NIKOLA TESLA, New York, N. Y., assignor of two-thirds to Alfred S. Brown, same place, and Charles F. Peck, Englewood, N. J. Filed June 12, 1889. Serial No. 314,069. (No model.)



Claim.—1. The method herein set forth of obtaining direct from alternating currents, which consists in developing or producing in one branch of a circuit from an alternating-current source an active resistance to the current impulses of one direction, whereby the said currents or waves of current will be diverted or directed through another branch.

2. The method of obtaining direct from alternating currents, which consists in dividing the path of an alternating current into branches, and developing in one of said branches, either permanently or periodically, an electrical force or active resistance counter to or opposing the currents or current-waves of one sign, and in the other branch a force counter to or opposing the currents or current-waves of opposite sign, as set forth.

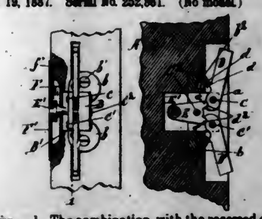
3. The method of obtaining direct from alternating currents, which consists in dividing the path of an alternating current into branches, establishing fields of force and leading the said branches through the said fields of force in such relation to the lines of force therein that the impulses of current of one direction will be opposed in one branch and those of opposite direction in the other, as set forth.

413,354. TAILOR'S GAS-IRON. DAVID A. UPHAM and THOMAS J. PAY, Worcester, Mass., assignors to the Worcester Gas Iron Company, Portland, Me. Filed Dec. 17, 1886. Serial No. 221,900. (No model.)



Claim.—In a tailor's gas or sad iron, the combination of the base and supply-pipe thereof with a burner consisting of the T *f* and hood *g*, said T extending forward and down from the inner end of said pipe, with its two branches projecting laterally therefrom, and provided with a longitudinal slot at the bottom and the hood made open at both ends, with suitable air-inlets at the top and sides, also with an opening to receive the T, and arranged longitudinally in the bottom of the iron over said T, substantially as set forth.

413,355. SASH-FASTENER. JAMES WATSON, Marinette, Wis. Filed Oct. 19, 1887. Serial No. 252,861. (No model.)



Claim.—1. The combination, with the recessed casing, of the sash-rail provided with a mortise, and the lock arranged within said mortise and consisting of a body portion having pivoted thereto the independent spring-controlled stop-arms extending, respectively, upward and downward, and the operating-lever pivoted to the body, engaging the stop-arms and provided with a knob or handle extending through a slot in the sash-rail and flush with the same, substantially as and for the purposes specified.

2. In a sash-lock, the combination, with the independent spring-controlled stop-arms pivoted at their inner ends, and each provided with a notch or indentation d^3, of the operating-lever E, provided with the toes *e* to engage the said notches, substantially as and for the purposes specified.

3. The combination, with the body B, having lugs *b* with recesses b^3, of the pivoted arms D D', and the springs *d*, arranged in said recesses and bearing against the said arms, substantially as and for the purposes specified.

413,356. SPRING-MOTOR. HENRY WHITTAL, Chicago, Ill. Filed Oct. 15, 1888. Serial No. 288,176. (No model.)

Claim.—1. In a spring-motor, the combination of the shaft G, wheels A and B, mounted on said shaft and having springs A^5, the springs being adapted to be wound all at one time by the turning of the shaft G, the wheel D, having projections d^2 and d^3, the trip E, and lock *c*, whereby each spring may be unwound alternately, substantially as shown and described, and for the purpose set forth.

2. In a spring-motor, the combination of a revolvable shaft having mounted thereon a plurality of springs, and having the wheels A and B, the pin-wheel D, having projections d^2 and d^3, the trip E and lock *c*, located between the springs, a gear-wheel on the shaft, and a revolving shaft having a shelf for displaying goods and provided with a gear operated through intermediate gears by the gear on the spring-shaft, substantially as shown and described.



3. In a spring-motor, the combination of the pin-wheel D, having projections d^2 and d^3, the trip E and lock *c*, the wheels A and B, and spring I, substantially as shown and described.

4. In a spring-motor, the combination, with the revolvable shaft G, journaled in the frame A', of the springs A^5, connected at one end to the frame, the wheels A and B, provided with the collar *g*, pawl *g'*, and the ratchet *a*, and friction-bearings a^2 a^3, and the gear-wheel C, substantially as shown and described, and for the purpose set forth.

5. In a spring-motor, the combination of the gear-wheel C, having the ratchet-wheel C' and pawl C^2, with the revolvable shaft G, adapted through intermediate gearing to revolve shaft H, substantially as shown and described.

6. In a spring-motor, the revolvable shaft H, journaled at top and bottom in the frame A' in boxes having anti-friction bearings, the lower end of the shaft resting on a ball in a groove at the bottom of cup or box *k*, whereby the ball travels in a circle with the revolution of shaft H, in combination, through intermediate gears, with a revolvable shaft having a plurality of operating-springs, whereby the shaft H may be revolved continuously, substantially as shown and described, and for the purpose set forth.

413,357. HOLDBACK FOR VEHICLES. HORACE BRIDGES, Chicago, Ill. Filed Aug. 14, 1889. Serial No. 320,664. (No model.)



Claim.—1. The combination of a chambered case having an opening 4 into the chamber and the flanges at the opposite ends of the said opening, and a catch having a head adapted to pass through the said opening into the case and engage with the inner faces of the said flanges at the opposite ends of the opening, substantially as set forth.

2. The combination of a chambered case having an opening 4 into the chamber and the flanges at the opposite ends of the said opening, a spring-actuated lever mounted within the said chamber, and a catch having a head adapted to pass through the said opening into the case and to bear against the inner faces of the said flanges at the opposite ends of the opening, in contact with which it is held by the said lever, substantially as set forth.

3. The combination of a chambered case having the opening 4 into the chamber and the flanges at the opposite ends of the said opening, a spring-actuated lever mounted within the chamber, and a catch having a head adapted to enter the chamber through the said opening and having at its rear end a hook 12 and at the other end a bearing-face, the said hook and bearing-face being arranged to engage with the outer or inner faces of the said flanges, substantially as set forth.

4. The combination of a case having a closed chamber 3 with an opening 4 therein and flanges at the opposite ends of the said opening, a spring-actuated lever mounted in the said chamber, and a catch having a head adapted to enter the said chamber through the said opening and to engage at its opposite ends with the said flanges and provided with the shoulder 16 and the raised portion 13, with its outer face flush with the outer faces of the flanges, substantially as set forth.

5. The combination of the chambered case having the opening 4 and flanges 9 and 10, the spring-actuated lever 8 with an outer curved surface, and the catch having the hook 1 and the head 2, the latter having the curved rear face 14 and provided with the hook 12 at one end and the flat bearing-face 11 at the other end, substantially as set forth.

6. The combination of the chambered case consisting of the plates detachably secured together and the catch which engages with the said case, substantially as set forth.

7. The combination of the chambered case consisting of two plates, one provided with lugs and the other with key-hole-shaped openings, whereby they are detachably united, and the catch having a head adapted to enter the chamber in the said case, substantially as set forth.

8. In a holdback, the chambered case 5, adapted to be secured to a carriage-thill consisting of two plates, one provided with studs 15 and the other with key-hole-shaped openings 18, whereby the plates are adapted to be detachably secured together, the enlarged portion of the said openings 18 registering with the screw-holes 17, through which the screws attaching the case to the thill pass, substantially as set forth.

413,358. METHOD OF BURNING CLAY FOR BALLAST, &c. WILLIAM BUTLER and HENRY G. BUTLER, Kenosha, Wis., assignors to the Davy Clay Ballast Company, of Illinois. Filed Apr. 1, 1889. Serial No. 305,908. (No model.)



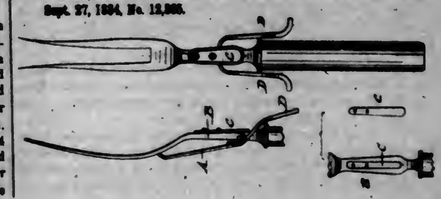
Claim.—1. In burning clay to produce ballast and the like by forming a trench and burning adjacent to it, in the open air, material taken therefrom, the method of facilitating the burning, which consists in forming a spoil-bank *r* adjacent to the trench and constructing the pile of fuel and clay to be burned on the side of the spoil-bank adjacent to the trench, substantially as and for the purpose set forth.

2. In burning clay to produce ballast and the like by forming a trench and burning adjacent to it, in the open air, material taken therefrom, the method of facilitating the burning, which consists in forming a spoil-bank *r* adjacent to the trench, constructing the pile of fuel and clay to be burned on the side of the spoil-bank adjacent to the trench, and securing the burning of any insufficiently-burned material in the pile by removing it therefrom, imposing near the base of the pile fuel and burning material from the breast of the pile, and applying thereon such insufficiently-burned material, substantially as described.

3. In burning clay to produce ballast and the like by forming a trench and burning adjacent to it, in the open air, material taken therefrom, the method of facilitating the burning, which consists in forming a spoil-bank *r* adjacent to the trench, constructing the pile of fuel and clay to be burned on the side of the spoil-bank adjacent to the trench, forming on the top of the pile a shoulder *p*, spreading burning substance from the rear of the shoulder upon the breast of the pile, and covering the rear of the shoulder from which the said burning substance is taken, substantially as and for the purpose set forth.

4. In burning clay to produce ballast and the like by forming a trench and burning adjacent to it, in the open air, material taken therefrom, the method of facilitating the burning, which consists in forming a spoil-bank *r* adjacent to the trench, constructing the pile of fuel and clay to be burned on the side of the spoil-bank adjacent to the trench, forming on the top of the pile a shoulder *p*, spreading at intervals burning substance from the shoulder upon the breast of the pile, and banking material from the spoil-bank against the said shoulder when the said burning substance is removed therefrom, substantially as and for the purpose set forth.

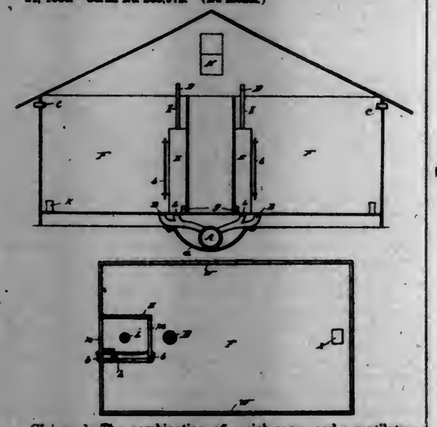
413,359. FORK-GUARD. ALFRED UNPLAT, Sheffield, County of York, England, assignor to Hermann Boker & Co., New York, N. Y. Filed June 21, 1889. Serial No. 315,097. (No model.) Patented in England Sept. 27, 1884, No. 12,866.



Claim.—1. A carving-fork comprising a fork proper, a shank, and a handle attached to the shank, said shank having a slot extending therethrough from the upper to the lower edge thereof, a guard provided with a heel pivoted to said shank within said slot, said heel extending through the slot and projecting beyond the lower face of the shank, and a plate-spring attached at its front end to the under side of said shank and extending backward, covering said slot, its rear end resting in contact with the projecting heel of the guard, substantially as described.

2. A carving-fork comprising a fork proper, a shank, and a handle attached to the shank, said shank having a slot extending therethrough from the upper to the lower edge thereof, a guard provided with a heel pivoted to said shank within said slot, said heel extending through the slot and projecting beyond the lower face of the shank, and a plate-spring attached at its front end to the under side of said shank and extending backward, covering said slot, its rear end resting in contact with the projecting heel of the guard, and a fork-rest integral with said guard and straddling said shank, substantially as described.

413,860. HOSPITAL FOR PATIENTS WITH INFECTIOUS OR CONTAGIOUS DISEASES. MILES L. DAVIS, Lancaster, Pa. Filed Sept. 21, 1888. Serial No. 285,972. (No model.)



Claim.—1. The combination of a sick-room and a ventilating-vestibule connecting it with the exit therefrom, substantially as specified.

2. The combination of a sick-room, a vestibule connecting said room and the exit therefrom, an air-supply flue, and an eduction-flue, by which a current of air is produced through the vestibule, substantially as and for the purpose specified.

3. The combination, in a hospital, of an air-loft provided with windows or openings N, vestibules located between the rooms of the wards and the corridors, flues connecting the loft with said vestibules, and eduction-flues leading therefrom, substantially as and for the purpose specified.

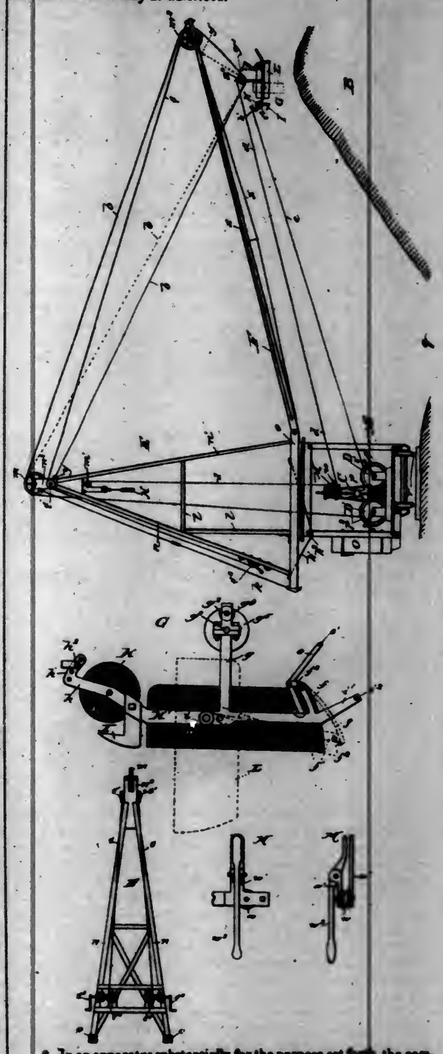
4. The combination, with a sick-room, of a ventilating-vestibule provided with two doors, one communicating with the sick-room and the other with the corridor, and a spring connecting said doors, substantially as and for the purpose specified.

5. The combination, with a sick-room, of a ventilating-vestibule connecting the room with the exit therefrom, and a disinfecting receptacle located in the vestibule, wherein disease-germs may be removed from all vessels taken from the rooms, substantially as specified.

6. The combination, with a sick-room, of a ventilating-vestibule provided with two doors, one communicating with the sick-room and the other with the corridor, a spring connecting said doors, an air-supply flue and an eduction-flue, by which a current of air is produced through the vestibule, and a cut-off or damper connected with the air-supply flue, all constructed and operating substantially as and for the purpose specified.

413,861. FEEDING APPARATUS FOR USE IN BURNING CLAY TO MAKE BALLAST, &c. WILLIAM DAVY and HERBERT G. BUTLER, Kenosha, Wis., assignors to the Davy Clay Ballast Company, of Illinois. Filed Apr. 1, 1889. Serial No. 305,804. (No model.)

Claim.—1. In an apparatus substantially for the purpose set forth, the combination, with its support A, of means for supporting therefrom a scoop and the cables for controlling it, comprising a mast B, having hinged to it a boom F, and formed of parallel beams a on the support A and converging pairs of mutually-converging beams n and n', secured together near their upper ends and strengthened with light frame-work l, secured between the beams n and n' and to the beams a, substantially as described.



2. In an apparatus substantially for the purpose set forth, the combination, with a car A, forming its support, of, means for supporting therefrom a scoop and the cables for controlling it, comprising a mast B, strengthened with light frame-work l, and having hinged to it a boom F and transom-rods E', secured at their extremities to the beams a of the mast toward the opposite ends of the said beams, and passing between their fastened extremities around the beams l² of the car-frame, substantially as described.

3. In an apparatus substantially for the purpose set forth, the combination of a boom on a suitable support, a cable b, connected with the said boom and with suitable winding mechanism D', a combined scoop or scraper and dirt-loosening device hung on the cable b, and a cable c, connecting the said device with suitable winding mechanism D, substantially as described.

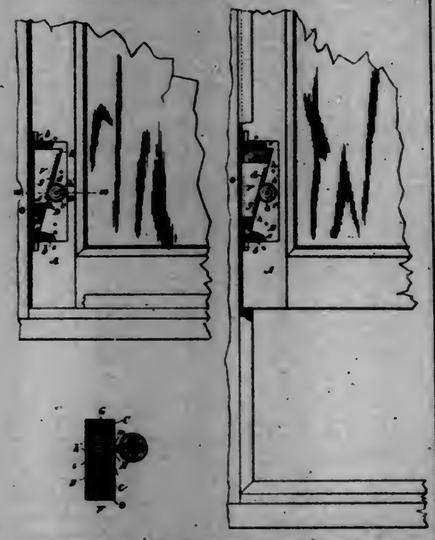
4. In an apparatus substantially for the purpose set forth, the combination of a boom on a suitable support, a cable b, connected with the said boom and with suitable winding mechanism D'; a combined scoop or scraper and dirt-loosening device G, hung on the cable b and having a cradle H, carrying colters K, plowing mechanism I, and a pivotally-supported scraper L, and a cable c, connecting the device G with suitable winding mechanism D, substantially as described.

5. In an apparatus substantially for the purpose set forth, the combination of a car A, carrying winding mechanism D D' and an engine for actuating it, a mast E, supported on the car and having connected with it a boom F, a cable b, connected with the boom and mast and with the winding mechanism D', a combined scoop or scraper and dirt-loosening device G, hung on the cable b and having a cradle H, carrying colters K, plowing mechanism I, and a pivotally-supported scraper L, suitable supporting means c on the cradle for the scraper, a weighted cable d, secured at one end to the said means c and fastened at its opposite end to the mast, and a cable c, connecting the device G with the winding mechanism D, substantially as described.

6. In an apparatus substantially for the purpose set forth, the combination of a car A, carrying winding mechanism D D' and an engine for actuating it, a mast E, supported on the car and having hinged to it a boom F, a cable b, connected with the boom and mast and with the winding mechanism D', a combined scoop or scraper and dirt-loosening device G, hung on the cable b and having a cradle H, carrying colters K, plowing mechanism I, and a pivotally-supported scraper L, suitable supporting means c on the cradle for the scraper, a clutch M, a weighted cable d, secured at one end to the said means c, passed thence through the clutch M, and fastened at its opposite end to the mast, and a cable c, connecting the device G with the winding mechanism D, substantially as described.

7. In an apparatus substantially for the purpose set forth, the combination of a car A, carrying winding mechanism D D' and an engine for actuating it, a mast E, supported on the car and having hinged to it a boom F, a cable b, connected with the boom and mast and with the winding mechanism D', a combined scoop or scraper and dirt-loosening device G, hung on the cable b and having a cradle H, provided with a hinged back f and carrying colters K, plowing mechanism I, and a pivotally-supported scraper L, linked to the hinged back, suitable supporting means c on the cradle for the scraper, and a cable c, connecting the device G with the winding mechanism D, substantially as described.

413,862. SASH-HOLDER. WILLIAM L. DEMPSEY, Warsaw, Mo. Filed Apr. 1, 1889. Serial No. 305,793. (No model.)



Claim.—1. In a sash-lock, the combination of a wedge, a pinion for actuating the same, and a separate facing arranged to be forced out by said wedge, in the manner and for the purpose described.

2. In a sash-lock, the combination of a wedge, a pinion for actuating the same, a key fitting said pinion, a separate facing arranged to be forced out by said wedge, and guides for said facing, substantially as described.

413,863. DYNAMO-ELECTRIC MACHINE. RUDOLF EICKEMEYER, Yonkers, N. Y. Filed Feb. 2, 1889. Serial No. 298,643. (No model.)



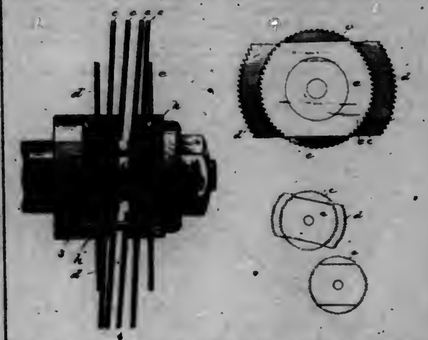
Claim.—1. In a dynamo-electric machine, the combination, substantially as hereinbefore described, of an armature having a core of magnetic metal, cheek-pieces which are connected at their bases in magnetic circuit and correspond in length with the length of the armature, and a field-coil which directly polarizes the armature, is partially inclosed at its lower side by the cheek-pieces at their bases, and has its upper side and its ends wholly exposed to the open air, whereby a completed magnetic circuit is afforded through the cheek-pieces and the armature and the field-coils freely exposed to cooling influences.

2. In a dynamo-electric machine, the combination, substantially as hereinbefore described, of an armature containing magnetic metal, cheek-pieces connected at their bases in magnetic circuit, and a field-coil which directly polarizes the armature, incloses portions of the cheek-pieces, and is itself uninclosed, except at its lower side, where it is located between the bases of said cheek-pieces.

3. In a dynamo-electric machine, the combination of a bed-plate having standards to support the bearings of the armature-shaft, a pair of concaved cheek-pieces bolted upon said bed-plate, and a field-coil located between said cheek-pieces and inclosing portions thereof and affording a space within said coil and between the cheeks for the reception of an armature.

4. In a dynamo-electric machine, the combination, substantially as hereinbefore described, of a pair of cheek-pieces connected in magnetic circuit at their bases and concaved at their ends to afford between them a space for the reception of an armature, and a field-coil interposed between said cheek-pieces, partially inclosing portions thereof, and also longitudinally surrounding the armature-space.

413,864. TENONING-CUTTER. WILLIAM R. FOX, Grand Rapids, Mich. Filed Oct. 9, 1888. Serial No. 287,669. (No model.)



Claim.—1. In a cutter-head for tenoning-machines, a vertical saw for cutting the shoulder, having opposite portions of its periphery cut away and a saw or saws arranged in rear of said vertical saw, substantially as described.

2. A cutter-head for tenoning-machines, consisting of a vertical saw for cutting the shoulder, said saw having opposite portions of its periphery cut away, and a series of inclined saws, said saws being adjustable in relation to each other to increase or diminish the width of cut, substantially as described.

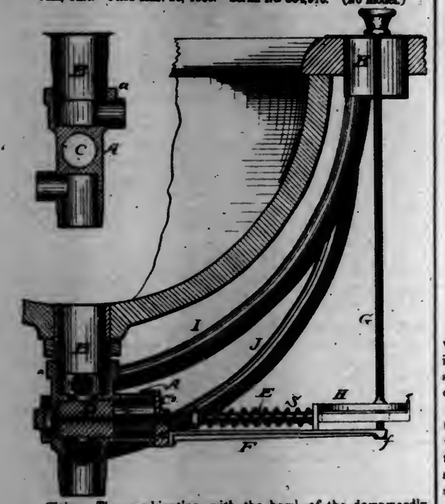
3. A cutting-head for tenoning-machines, consisting of a vertical saw having opposite portions of its periphery cut away, inclined saws arranged in fixed relation thereto, and a second set of inclined saws, with means for adjusting the same, substantially as described.

4. A cutting-head for tenoning-machines, consisting of a vertical saw having opposite portions of its periphery removed, inclined saws in rear of the same, and a second vertical saw of greater diameter

than the inclined saws and having opposite portions of its periphery cut away, substantially as described.

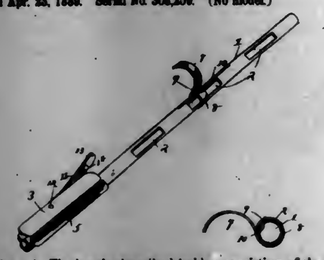
5. A cutting-head for tenoning-machines, consisting of a vertical saw *e*, two inclined saws or sets of saws *c*, adjustable in relation to the other, and a second vertical saw *d*, of greater diameter than the inclined saws, the saw *e* being connected with one set of adjustable inclined saws and the saw *d* with the other set of inclined adjustable saws, substantially as described.

413,365. BASIN WASTE AND STOP. HENRY J. GILCHER, Ashtabula, Ohio. Filed Mar. 26, 1889. Serial No. 304,916. (No model.)



Claim.—The combination, with the bowl, of the downwardly-extending valve-case A, attached to the bottom of the bowl by the neck B, a transverse horizontal valve-chamber C, made integral with said case, the plug-valve D, playing in said chamber C, the cap C^2, closing said chamber C and having valve-rod E projecting through it, and provided with retracting-spring S and connected with the cam-wheel H, attached to vertical rod G, supported by the arm F, extending from said cap C^2, and the case A, also provided with overflow-pipes I and J, all constructed to operate substantially as specified.

413,366. PEN OR PENCIL HOLDER. JOHN P. HAMLIP, Salem, Va. Filed Apr. 23, 1889. Serial No. 308,259. (No model.)



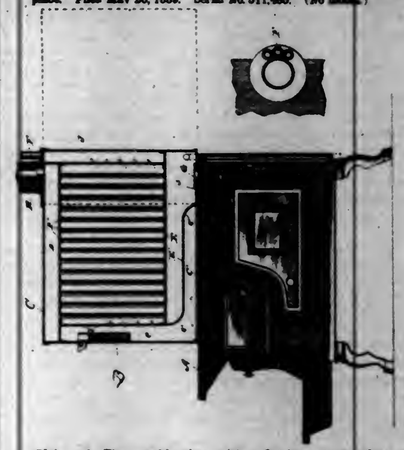
Claim.—1. The herein-described holder, consisting of the shaft 1 and the angular portions or surfaces 3 4 5 6, arranged to form a trapezium, substantially as specified.

2. The combination, with the herein-described hollow pencil-shaft 1, having the trapezium-shaped lower grasping end, slotted, as at 6, and provided with the lever 11, pivoted, as at 12, having the rear portion 13, the interposed spring 14, and the bent grooved forward end 16, substantially as specified.

3. The shaft 1, having the series of slots 2 and the trapezium-shaped lower end slotted, as at 6, in combination with the lever 11, pivoted, as at 12, and having the interposed spring 14, substantially as specified.

4. The shaft or holder made trapezium in form in cross-section, having the surfaces 3, 4, and 5, the surfaces 3 and 5 being acutely arranged to each other and the surface 4 being slightly oblique to the surface 5, as set forth.

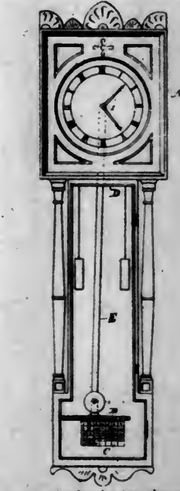
413,367. AIR-WARMING ATTACHMENT FOR STOVES. FREDERICK J. HILEY, Chicago, Ill., assignor of one-half to Harry W. Treat, same place. Filed May 20, 1889. Serial No. 311,485. (No model.)



Claim.—1. The combination, with a flat-top stove, of an air-warming attachment therefor, having a heating-chamber formed by inclosing-walls pivotally mounted upon the stove-top and covering substantially the whole thereof, and having suitable air inlet and outlet openings and smoke-passages, substantially as described.

2. The combination, with a flat-top stove, of an air-warming attachment therefor, having a heating-chamber formed by inclosing-walls pivotally mounted upon the stove-top, and a heat-deflecting hood to direct the radiated heat into the chamber and in conjunction with said chamber covering the whole of the stove-top, substantially as described.

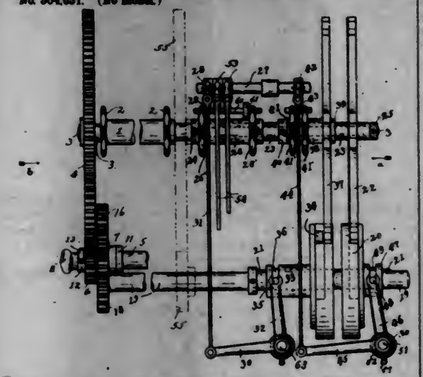
413,368. CALENDAR. JOHN H. HOBBS, Westerly, R. I. Filed Dec. 13, 1888. Serial No. 293,526. (No model.)



Claim.—1. A calendar having the representation of a clock or other suitable design printed thereon, with the connecting or swinging strip E, the slit D, the fastening-eyelets 1 and 2, the movable or swinging day-table B, fastened to the strip E and over the date-table C, the said table C, and the monthly table F, substantially as specified.

2. A calendar showing the clock or other suitable design, the swinging strip E, having its upper end secured by an eyelet, the slit D, the movable day-table B, secured to the strip E at its lower end by an eyelet and hanging over the date-table C, the said table C, and the monthly table F under the said design, substantially as specified.

413,369. LOOM. GEORGE F. HOTCHKISS, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed Mar. 26, 1889. Serial No. 304,631. (No model.)

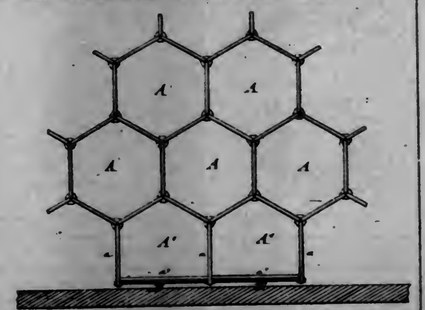


Claim.—1. In a loom, the combination, with the harness-pattern mechanism, of the repeating box-pattern mechanism driven from the harness-pattern mechanism, and consisting of the main and auxiliary star-wheels, sleeves, and pattern-barrels, pin-wheels, pin-wheel-operating levers, lever-retracting springs, connecting-links, and indicator-levers, substantially as and for the purpose stated.

2. In a loom, the main and auxiliary box-pattern indicators, star-wheels, star-wheel sleeves and pattern-barrels, pin-wheels, pin-wheel-operating levers, pin-wheel-lever-retracting springs, connecting-links, and indicator-levers, so arranged that indications on the main and auxiliary box-pattern indicators reciprocally control the times of action of the opposite pin-wheels upon their respective star-wheels, in combination with the pin-wheel shaft, its gear, the reverse gears of the harness-pattern mechanism, and shaft, substantially as described, and for the purpose set forth.

3. In a loom, the main and auxiliary box-pattern indicators, star-wheels, star-wheel sleeves and pattern-barrels, pin-wheels, pin-wheel-operating levers, pin-wheel-lever-retracting springs, connecting-links, and indicator-levers arranged so that indications on the main and auxiliary box-pattern indicators reciprocally control the times of action of the opposite pin-wheels upon their respective star-wheels, in combination with the pin-wheel shaft, the harness-pattern shaft, and intermediate connections for actuating the pin-wheel shaft from the harness-pattern shaft, substantially as set forth.

413,370. GRAIN OR MALT BIN. GOTTFRIED KROGER, New York, N. Y. Filed Jan. 30, 1889. Serial No. 298,051. (No model.)

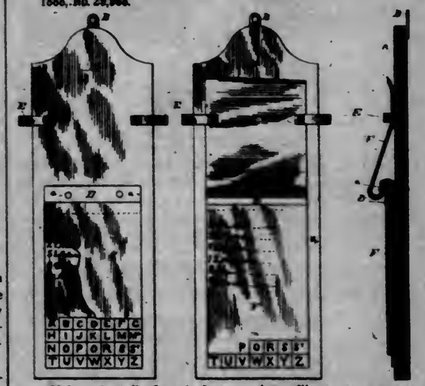


Claim.—1. The combination, in a grain and malt bin, of the side walls of the same, said side walls having dovetailed recesses at both sides near the ends, upright supporting-posts, each of which is set into the recesses of two adjoining side walls, and tie-bolts connecting said posts, substantially as set forth.

2. In a grain and malt bin, the combination of the side walls of the bin having dovetailed recesses at both sides near the ends, upright posts set into said recesses, a boot screw-bolt connecting two of said posts, and a second tie-bolt having an eye for connecting the boot bolt with the third post, substantially as set forth.

3. The combination, in a grain and malt bin, of bins located next to the main walls of the building, said bins having side walls with dovetailed recesses at both sides and ends, end walls set into said recesses, upright posts secured to the recessed ends of the side walls outside of the end walls, and tie-rods connecting the post at one corner of the bin with the posts at the opposite corner, substantially as set forth.

413,371. TELEPHONE-ADDRESS INDEX AND ADVERTISING DEVICE. JOHN F. O'BRIEN, Quebec, Quebec, Canada. Filed Oct. 31, 1888. Serial No. 289,603. (No model.) Patented in Canada Oct. 10, 1888, No. 29,968.

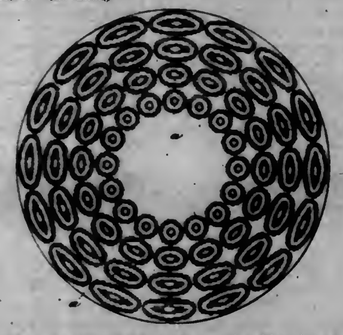


Claim.—1. A list for telephone-service or like purpose, composed of separately-indexed leaves removably secured to a support and having a spring-holder to receive and hold said leaves when opened for reference, substantially as described.

2. The combination of the board A, the alphabetical index-book C, secured thereto briefwise, and the springs E, to hold up the leaves of said index when making a reference, substantially as set forth.

3. The combination, with the board A, having springs E, of the index-book C, secured briefwise thereto, said book having a stub-back D and leaves F, alphabetically arranged and attached removably to said back, substantially as set forth.

413,372. ART OF MAKING SHEET METAL ARTICLES. ARCHIBALD W. PAULL, Wheeling, W. Va. Filed Mar. 29, 1889. Serial No. 305,247. (No model.)



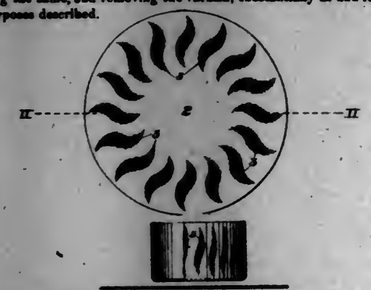
Claim.—An improvement in the art of making sheet-metal articles, which consists in embossing sheet metal and drawing the embossed portion within suitable dies, whereby a sheet-metal article having on its surface a pattern modified by drawing action of the dies is formed, substantially as and for the purposes described.

413,373. ART OF DRAWING SHEET METAL. ARCHIBALD W. PAULL, Wheeling, W. Va. Filed Apr. 1, 1889. Serial No. 305,607. (No model.)

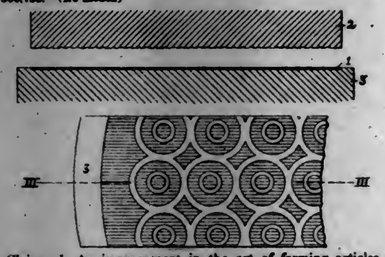
Claim.—1. In the art of drawing sheet metal, the improvement which consists in forming a pattern by applying adhesive material to the sheet metal, drawing the same, and removing the adhesive material, substantially as and for the purposes described.

2. In the art of drawing sheet metal, the improvement which consists in forming a pattern by applying varnish to the sheet metal,

drawing the same, and removing the varnish, substantially as and for the purposes described.



413,374. ART OF FORMING SHEET-METAL ARTICLES. ARCHIBALD W. PAHL, Wheeling, W. Va. Filed Apr. 10, 1889. Serial No. 306,753. (No model.)



Claim.—1. An improvement in the art of forming articles of sheet metal, which consists in impressing a preliminary pattern on the metal sheet by reduction of the substance of the metal on the lines of the pattern between suitable compressing-surfaces, and then drawing the metal so compressed between suitable dies, whereby is formed an article of drawn metal having a compressed surface pattern modified in configuration and appearance by the drawing action of the dies, substantially as described.

2. An improvement in the art of forming articles of sheet metal, which consists in subjecting a sheet-metal blank to compression between a forming surface or die having a pattern formed thereon and a second surface or die having a substantially smooth face, whereby a compressed and reduced pattern on one side only of the sheet is formed, and then drawing the patterned portion of the blank within suitable dies, whereby a sheet-metal article having on its surface a pattern modified by drawing action of the dies is formed, substantially as described.

413,375. BUCKLE. GEORGE L. SMITH, Newark, N. J. Filed May 17, 1889. Serial No. 311,123. (No model.)



Claim.—In a buckle, the combination, with the curved or arched side bars *a a*, of the cross-bar *c* at the lower end of the buckle, a cross-bar *b* at the upper end, an intermediate cross-bar *d*, provided with a forwardly-projecting tongue *e*, and a loop *f*, projecting backwardly from the upper end of the buckle, all substantially as shown.

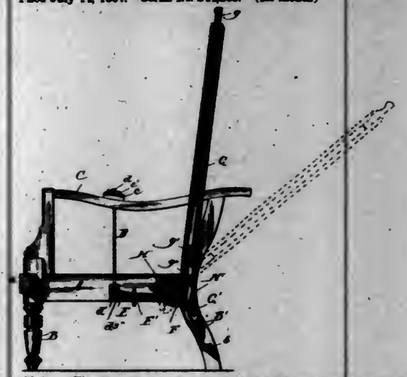
413,376. METHOD OF LINING DENTAL PLATES WITH GOLD. ELI Y. STARR, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Mar. 1, 1887. Serial No. 229,394. (No model.)





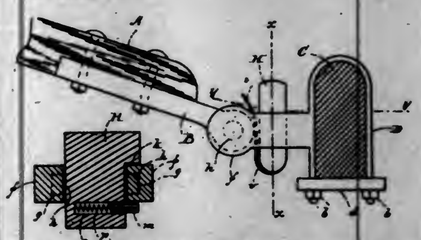
Claim.—The improvement in the art of lining rubber dental plates, which consists in applying a compound foil to the rubber prior to vulcanization and in uniting it thereto by converting the silver into a sulphide during the vulcanizing process, substantially as described.

413,377. RECLINING-CHAIR. WILLIAM S. TOTHILL, Chicago, Ill. Filed July 14, 1887. Serial No. 244,205. (No model.)



Claim.—The bar D, arm or lever E, rod E', and ratchets F, in combination with a pivoted chair-back having a cross-bar G near its lower end and springs H, substantially as and for the purposes specified.

413,378. THILL-COUPLING. SAMUEL H. TYSON and [illegible] TYSON, West Boylston, Mass. Filed May 20, 1889. Serial No. 312,556. (No model.)



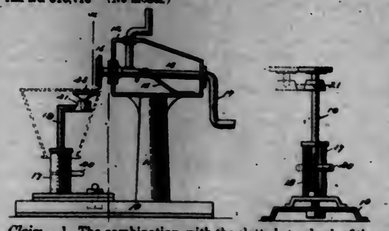
Claim.—The combination of an axle-clip provided with arms having inclined sockets, a thill provided with trunnions adapted to rest in said sockets, a projection on the axle between said arms, a removable block inserted between said arms and between said block and the thill, and a spring on said block bearing against said thill, said block being provided with a lateral shoulder and a spring-pin for engaging the upper and lower edges of said arm.

413,379. THILL-COUPLING. THOMAS A. WATROUS, [illegible], N. Y. Filed June 19, 1889. Serial No. 314,629. (No model.)

Claim.—As an improvement in thill-couplings, the combination, with the clip having the bearing-arms, the thill-iron pivoted between the bearing-arms, the clip-plate provided on its upper side with the shoulders J J, between which the axle rests, and having its front end extended and provided with the rib L, of the cushion resting on the extended end of the clip-plate and against the rib L, and the cap secured over the cushion and provided at its side edges with depending flanges fitting over the bearing-arms, and provided at their ends, in their inner sides, with recesses adapted to engage the ends of the pivotal pin of the thill-iron, as specified.



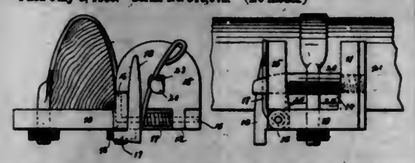
413,380. ATTACHMENT FOR TINNERS' DOUBLE-SEAMING MACHINES. PETER W. ALLEN, Pueblo, Colo. Filed May 14, 1889. Serial No. 310,716. (No model.)



Claim.—1. The combination, with the slotted standard, of the anvil-holding rod 19, having an arm projecting at right angles to its upper end, provided with a vertical socket 21, and a pin 20, projecting at right angles from the rod below its horizontal arm and forming a stop and handle, substantially as set forth.

2. The combination, with the pressure-foot or seaming-roller of a double-seaming machine, of a tubular standard having a slotted side, an angled anvil-rod held to turn in said standard, a socket formed upon the horizontal member of the rod, an anvil-block held to turn in said socket, and a pin inserted in the vertical member of the rod, projecting through the slot in the standard, substantially as shown and described, and for the purpose specified.

413,381. THILL-COUPLING. THOMAS L. BARR, Plymouth, Ohio. Filed July 9, 1889. Serial No. 316,972. (No model.)



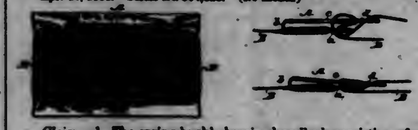
Claim.—1. As an improved article of manufacture, a thill-coupling comprising a horizontal body having a fixed vertical ear, provided with a coupling-pin, an ear hinged to swing in a vertical plane and apertured to receive the coupling-pin, and a locking device for the projecting end of the coupling-pin, substantially as described.

2. As an improved article of manufacture, a thill-coupling comprising a horizontal body having a vertical ear integral with one longitudinal side and an apertured ear hinged to the opposite side, a coupling-pin secured at one end to the fixed ear and adapted to pass through the aperture of the hinged ear, and a locking-spring engaging the projecting end of the said pin, substantially as shown and described.

3. As an improved article of manufacture, a thill-coupling comprising a horizontal body, a vertical ear integral with one longitudinal side edge at the front, an opposed hinged ear, a pin secured to the fixed ear and passing through and beyond the hinged ear and provided with a notch in the projecting end, a spring provided with an arm capable of entering the notch in the pin, and a stop limiting the movements of the hinged ear, substantially as shown and described.

4. In a thill-coupling, the combination, with a horizontal body provided with a vertical ear integral with one longitudinal side, opposed spaced lugs integral with the opposite side, and a transverse stop-bar upon the upper face of the horizontal body, of an ear parallel with the fixed ear of the body hinged to the lugs of the said body, a pin secured to the fixed ear at one end and passed through the hinged ear at the opposite end, and provided with a notch in the projecting end, a spring coiled around the pintle of the hinged ear, having an upwardly forwardly-extending arm capable of entering the notch of the pin, and a stop extending downwardly below the outer face of the hinged ear and provided with a rearwardly-projecting horizontal arm, all combined for operation substantially as and for the purpose specified.

413,382. BUCKLE. CHARLES W. BARRETT, Alameda, Cal. Filed Apr. 17, 1889. Serial No. 307,622. (No model.)

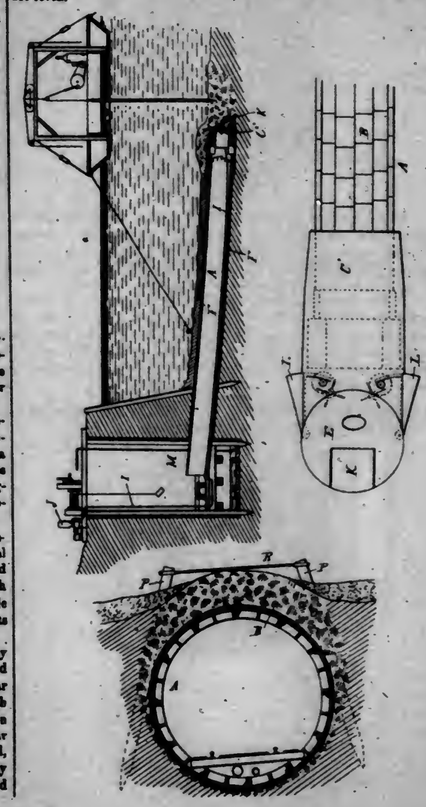


Claim.—1. The spring-buckle herein described, consisting of an oblong plate of elastic sheet metal folded on itself into substantially parallel position to form a bent spring slotted transversely at the bend *b* and having two transverse slot *c d* in the upper section and a single transverse slot *a* in the lower section, substantially as described.

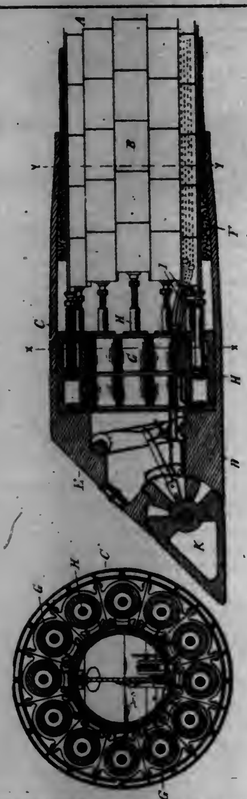
2. The spring-buckle herein described, consisting of an oblong plate of elastic sheet metal folded on itself into substantially parallel position to form a bent spring and slotted transversely both at the bend *b* and at the two ends at *a* and *c d*, in combination with a flexible tape or strap having one end permanently connected to the buckle through slots *a* and *b* and the other end laced through slots *a c d* and then through slots *a* and *d*, substantially as shown and described.

413,383. METHOD OF CONSTRUCTING TUNNELS. LUTHER BEECHER, Detroit, Mich. Filed Jan. 31, 1889. Serial No. 298,183. (No model.)

Claim.—1. The herein-described improvement in the art of subaqueous tunnel construction, which consists in slidingly operating the tunneling-ram on the construction end of the tunnel-casing, and displacing the earth upward and extending the tunnel-casing step by step as the tunneling advances, and loosening or preparing the ground in advance of the ram by mechanical means removed from the ram, as set forth.



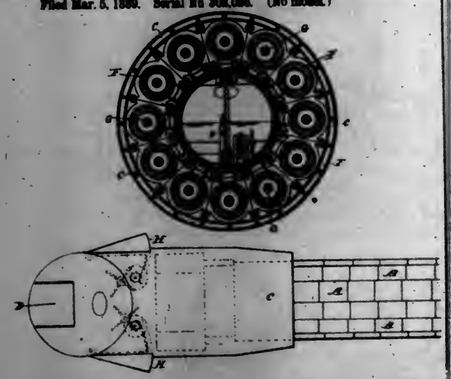
413,383.



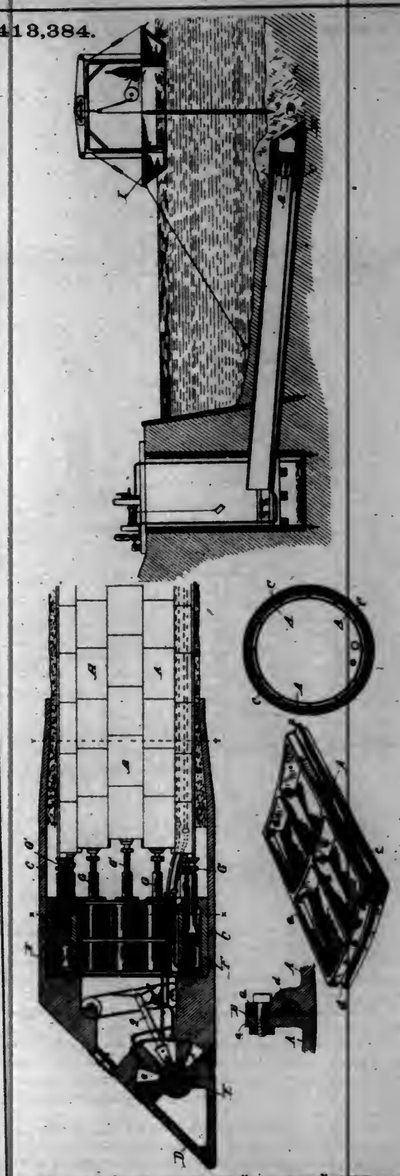
2. The herein-described improvement in the art of subaqueous tunnel construction, which consists in slidingly operating the tunneling-ram on the construction end of the tunnel-casing, and in compressing in a tapering space between the ram and the casing an outer covering in the advancing movement of the ram, as set forth.

3. The herein-described improvement in the art of subaqueous tunnel construction, which consists in extending the casing step by step within the tunneling-ram moving over said casing and compressing suitable packing in a tapering space between the casing and the ram and into the joints of the casing by the advancing movement of the ram, as set forth.

413,384. TUNNELING-RAM. LUTHER BRECHER, Detroit, Mich. Filed Mar. 5, 1889. Serial No. 302,026. (No model.)



413,384.



Claim.—1. In subaqueous tunneling, a tunneling-ram provided with a wedge-shaped bulk-head adapted to displace the ground upwardly, having a hinged point or nose and forming a water-tight compartment slidingly operating on the head of the tunnel-casing, substantially as described.

2. In subaqueous tunneling, a tunneling-ram provided with a solid bulk-head constructed in the form of a wedge, adapted to displace the ground upwardly when pushed through it, and with a movable point or nose for steering it, said tunneling-ram being adapted to slidingly operate on the head of the tunnel-casing, and forming a water-tight compartment for extending the tunnel-casing within said tunneling-ram, substantially as described.

3. In subaqueous tunneling, a tunneling-ram provided at its front end with a solid bulk-head, having its front face rearwardly inclined from the bottom to the top and having a hinged point or nose and laterally-extensible wings, substantially as described.

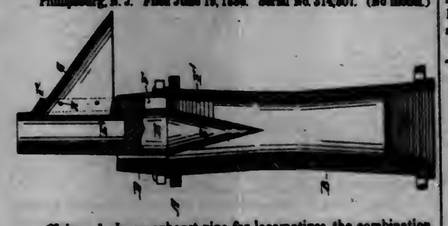
4. The combination, with the casing and tunneling-ram slidingly secured thereon and formed with tapered rear end, of the plastic packing applied between the tunneling-ram and casing to form a water-tight joint, substantially as described.

5. In subaqueous tunneling, the combination, with the casing, of a tunneling-ram provided with a tapering rear end and a plastic packing applied in the annular space between said tapering rear end and the casing of the tunnel, said tunneling-ram forming a water-tight compartment on the head of the casing and provided with means for advancing it to permit of extending the casing within the tunneling-ram, substantially as described.

6. In subaqueous tunneling, the combination, with a casing constructed of rectangular segmental cast-iron plates smooth on the outside and interiorly flanged on their edges for securing said plates together by bolts, of the tunneling-ram provided with a tapering rear end smooth on the inside and slidingly engaging with the end of the tunnel-casing by means of plastic packing adapted to form a permanent covering on the outside of the tunnel-casing, substantially as described.

7. In subaqueous tunneling, the combination of a tunnel-casing consisting of rectangular segmental iron plates adapted to be interiorly bolted together with intervening gaskets by means of interior flanges provided with corresponding tongues and grooves, a tunneling-ram provided with a solid bulk-head wedge-shaped at its outer face and with a tapering rear end sliding on the head of the casing, with a water-tight joint formed of a plastic material adapted to form a permanent covering on the outside of the tunnel-casing, and a series of hydraulic rams grouped around the inner wall of said tunneling-ram and adapted to operate with their pistons against the inner ends of the plates of the casing to force the same in place and advance the tunneling-ram, substantially as described.

413,385. EXHAUST-PIPE FOR LOCOMOTIVES. JOHN S. ROSSLOW, Phillipsburg, N. J. Filed June 19, 1889. Serial No. 314,807. (No model.)



Claim.—1. In an exhaust-pipe for locomotives, the combination, with a pipe set on the bed-plate, of a nozzle secured to the upper end of said pipe, a post held centrally in the said nozzle and provided with a solid cone-shaped lower end and a recessed upper end, and a hood leading into said recess from the smoke-box, substantially as shown and described.

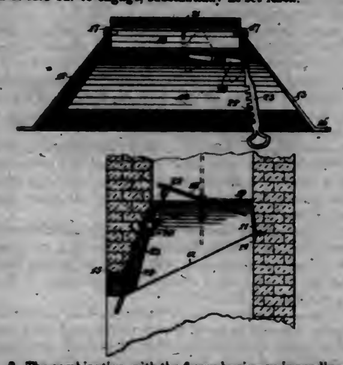
2. In an exhaust-pipe for locomotives, the combination, with the pipe B, provided with the transverse partition C, of the nozzle D, secured to the upper end of the said pipe B, the central post E, held in the said nozzle D and provided with a cone-shaped end E', and the hood G, secured to one side of the said central post E and leading into the recess E² of the said post, substantially as shown and described.

3. In an exhaust-pipe for locomotives, the combination, with the pipe B, provided with the transverse partition C, of the nozzle D, secured to the upper end of the said pipe B, the central post E, held in the said nozzle D and provided with a cone-shaped end E', the hood G, secured on one side of the said central post E and leading into the recess E² of the said post, and the offset F, connecting the central post with the said nozzle, substantially as shown and described.

4. In an exhaust-pipe for locomotives, the combination, with the pipe B, provided with the transverse partition C, of the nozzle D, secured to the upper end of the said pipe B, the central post E, held in the said nozzle D and provided with a cone-shaped end E', the hood G, secured on one side of the said central post E and leading into the recess E² of the said post, and the offset F, connecting the central post with the said nozzle, the said offset F being provided with a wedge-shaped end F' in line with the said partition C, substantially as shown and described.

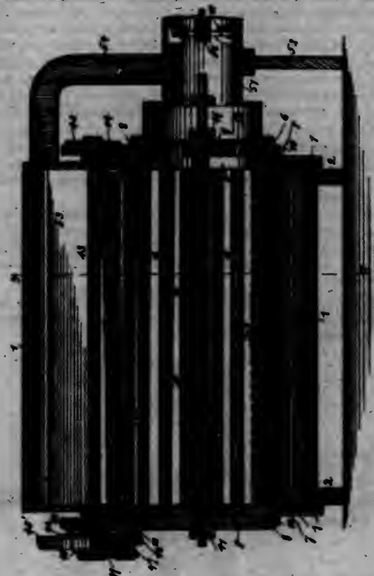
413,386. FIRE-PLACE DAMPER. EDWARD G. BURROWS, Orange, N. J., assignor to Hattie Leah Burrows, same place. Filed June 15, 1889. Serial No. 314,293. (No model.)

Claim.—1. The combination, with a frame, of the vertically-swinging damper pivoted thereto, a transverse lever 20, pivoted between its ends to the inner side of the front wall of the frame, a link connecting one end of said lever with the damper, the notched bar pivoted at its upper end to the opposite end of said lever and extending downward therefrom along the inner side of the front wall of the frame, below the lower edge thereof, and the stud or pin 24 for the teeth of said bar to engage, substantially as set forth.



2. The combination, with the frame having an inwardly-extending flange 19 projecting from its inner wall and from the inner portions of the upper edges of its side walls, of the damper 18, pivoted between its ends on the upper edges of the sides of the frame in front of said flange, with its inner half extending thereunder when the damper is in its horizontal position, the lever 20, pivoted to the front wall of the frame, a link 21, pivotally connected with the upwardly-swinging edge of the damper, the lever 20, pivotally connected to said link, the toothed bar depending from the opposite end of said lever, and a stud or pin for said bar to engage, substantially as set forth.

413,387. CARPET-BEATING MACHINE. ALEXANDER B. COLLIER, New York, N. Y. Filed Jan. 16, 1889. Serial No. 296,478. (No model.)



Claim.—1. In a carpet-beating machine, a rotary carpet-supporting frame, with means for securing the carpet thereto, in combination with rotary shafts having flexible beater-arms and brushes mounted on the same shaft, the brushes projecting radially therefrom alternately with the beater-arms, substantially as shown and described.

2. In a carpet-beating machine, a rotary shaft having flexible beater-arms and brushes, the beater-arms projecting radially from the

shaft alternately with the brushes, substantially as shown and described.

3. In a carpet-beating machine, a rotary carpet-supporting frame, with means for securing a carpet thereto, in combination with brushes located adjacent to the rotary frame and rotary shafts having flexible beater-arms and brushes mounted on the same shaft, the beater-arms projecting radially from the shaft alternately with the brushes, substantially as shown and described.

4. A carpet-beating machine consisting of a casing, a rotary carpet-supporting frame located in the casing, with a fastening device for detachably securing one end of a carpet thereto, a number of rotary beaters and a number of brushes adjacent to the rotary frame, a suction device for drawing off dust from the casing, and a driving mechanism for operating the rotary frame, the rotary beaters, and the suction device, substantially as described.

5. In a carpet-beating machine, a rotary carpet-supporting frame having its sides formed of longitudinal rods, and having a bar to clamp the end of a carpet, in combination with rotary shafts with flexible beater-arms located adjacent to the periphery of the rotary frame, substantially as described.

6. In a carpet-beating machine, a rotary carpet-supporting frame having its sides formed of longitudinal rods, and having a bar to clamp the end of a carpet, in combination with rotary shafts with flexible beater-arms and brushes located adjacent to the periphery of the rotary frame, substantially as described.

7. In a carpet-beating machine, a rotary carpet-supporting frame having its sides formed of longitudinal rods, and having a bar to clamp the end of a carpet, in combination with rotary shafts with flexible beater-arms and adjustable brushes, with means for holding them in adjusted position located adjacent to the periphery of the rotary frame, substantially as described.

8. In a carpet-beating machine, a rotary carpet-supporting frame having its sides formed of longitudinal rods, with their outer faces covered with a yielding material, substantially as described.

9. In a carpet-beating machine, a rotary shaft provided with beater-arms and detachable brushes, substantially as described.

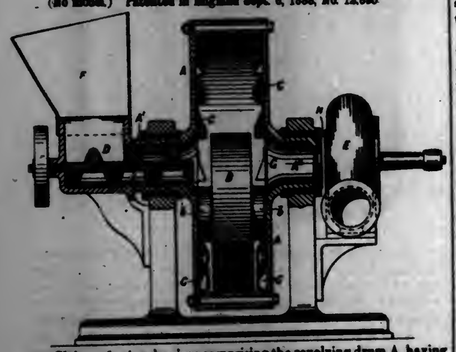
10. In a carpet-beating machine, a rotary carpet-supporting frame 3, having its sides formed with the longitudinal rods 4, with their outer face having a strip 21 of yielding material, and the longitudinal rods 11 at one side of the frame 3, with a yielding covering 12, a clamping-bar 13, located between the rods 11, having a yielding covering 14 and mounted on arms 15, with bolt-holes 18, pivoted to casing 1, having sockets 19, and spring-actuated bolts 16, substantially as described.

11. In a carpet-beating machine, a rotary carpet-supporting frame 3, having heads 5 and 6 with shouldered projecting ends 8, in combination with disks 42, held in frictional contact with projections 8 and mounted on a shaft 43, having a pulley 45, with endless belt 45', connected with and driven by a suitable power, substantially as described.

12. In a carpet-beating machine, a rotary shaft 25, having longitudinal grooves 29, in combination with rings 27, having lugs 28, engaging grooves 29, and outwardly-projecting lugs 30, with flexible beater-arms 26, secured in lugs 30 by bolts 31 and nuts 32, substantially as described.

13. In a carpet-beating machine, a rotary shaft 25, having longitudinal grooves 29, in combination with rings 27, having lugs 28 engaging grooves 29, and lugs 30, with flexible beater-arms 26, and brushes 26', secured in lugs 30 by bolts 31 and nuts 32, substantially as described.

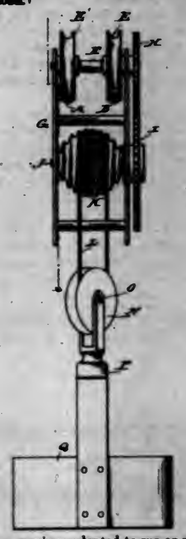
418,388. PULVERIZING-MACHINE. William H. Coward, Bath, County of Somerset, England. Filed Nov. 20, 1888. Serial No. 292,173. (No model.) Patented in England Sept. 6, 1888, No. 12,895.



Claim.—1. A pulverizer comprising the revolving drum A, having hollow trunnions and provided with a series of wedge-shaped cups disposed around its inner faces, the edge runner B narrower than the drum and provided with bosses *b* for steadying it in the said drum, a fan or blower connected to one of the trunnions of the drum, and a screw conveyer in the other trunnion of the drum, substantially as herein shown and described.

2. A pulverizer comprising the revolving drum A, having hollow trunnions A' A^2 and provided with the wedge-shaped cups C around its inner faces, the edge runner B, provided with the bosses *b*, the screw conveyer D in the trunnion A', the exhaust-fan E, connected to the trunnion A^2, and the gauze diaphragm G across the trunnion A^2, substantially as herein shown and described.

418,389. CARRIAGE ADAPTED TO RUN ON WIRE CABLES. William Y. Crenshaw, Danville, Pa. Filed Jan. 12, 1889. Serial No. 296,128. (No model.)



Claim.—1. In a carriage adapted to run on wire cables, a double conical and spirally-grooved drum, and a cord for supporting a basket, substantially as described.

2. In a carriage adapted to run on wire cables, the combination, with a compensating-drum, of an endless rope wound on the said drum and supporting the basket, substantially as shown and described.

3. In a carriage adapted to run on wire cables, the combination, with a spirally-grooved compensating-drum, of an endless rope wound on the said drum and a basket supported on the said endless rope, substantially as shown and described.

4. In a carriage adapted to run on wire cables, the combination, with the pulley traveling on the cable, of a spirally-grooved compensating-drum rotated from said pulley, an endless rope wound upon the said drum, and a basket supported on the said endless rope, substantially as shown and described.

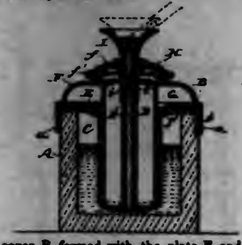
5. The combination, with a wire cable stretched between two elevated points, of a pulley traveling on the said cable, a frame supported on the said pulley, a spirally-grooved compensating-drum mounted to turn in the said frame and geared with the said pulley, an endless rope wound upon the said drum, and a basket supported on the said endless rope, substantially as shown and described.

6. The combination, with a wire cable stretched between two elevated points, of a pulley traveling on the said cable, a frame supported on the said pulley, a spirally-grooved compensating-drum mounted to turn in the said frame and geared with the said pulley, an endless rope wound upon the said drum, a basket supported on the said endless rope, and means for moving the said frame forward and backward on the said cable, substantially as shown and described.

418,390. INKSTAND. Ebby Davis, Kane, Pa. Filed Mar. 23, 1889. Serial No. 304,272. (No model.)

Claim.—1. An inkstand provided with a cover, combined with a tube fitted in the cover, a float placed in the tube, a dip-funnel fitted in the float, and a check placed in the passage of the float, substantially as and for the purposes described.

2. The cover B, formed with a plate E and surrounding flange *b*, the plate E being formed with a tube C, which projects down into the ink-well, substantially as described.



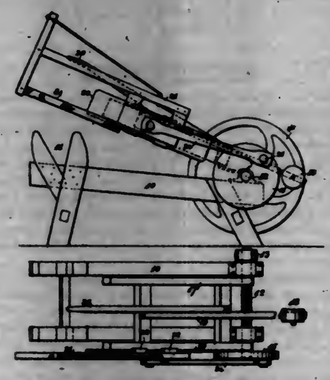
3. The cover B, formed with the plate E and dome F, having opening *f*, the said dome and plate forming a space G, substantially as and for the purposes set forth.

4. The cover B, formed with the plate E, having tube C, and the dome F, having opening *f*, which coincides with the tube C, substantially as described.

5. The cover B, formed with the surrounding flange *b*, plate E, having tube C, and the dome F, having opening *f*, which coincides with the tube C, substantially as shown and described.

6. The cover B, formed with plate E, having tube C, and dome F, having opening *f*, in combination with the supplemental cover H, float D, tube D', and dip-funnel I, substantially as described.

418,391. SAWING-MACHINE. John De Graff, Dunkerton, assignor to F. H. Page, Key, Iowa. Filed Apr. 12, 1888. Serial No. 306,976. (No model.)



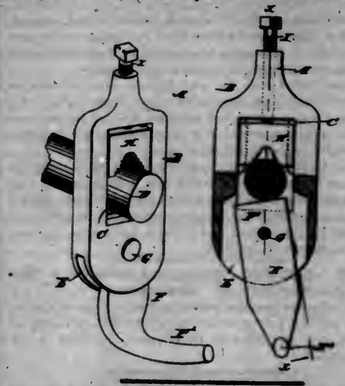
Claim.—The combination, with the back and driving-shaft 12 and the crank-wheel 15, of the vertically-swinging counterbalanced frame 17, mounted loosely on said shaft, the guide-plate 20, attached to one side of said frame, the saw-carrying frame 21, operated by a pitman and sliding on the guide-plate, and the handle 30, which is rigidly attached to the frame 17 and projects forward parallel to the saw-frame, so that it may be conveniently grasped by the operator standing in front of the back, and the saw-carrying frame depressed and raised, as required.

418,392. LATHE-DOG. George J. Brauer, Danville, N. Y., assignor to himself and Edward C. Schwingel, same place. Filed July 23, 1888. Serial No. 313,631. (No model.)

Claim.—1. A lathe-dog comprising a body part having an aperture adapted to receive the work, and a tail or elbow pivoted on the said body and adapted to engage the work, substantially as herein shown and described.

2. A lathe-dog comprising a body part having an aperture adapted to receive the work, a tail or elbow pivoted on the said body and adapted to engage the work, and a set-screw and die adapted to engage the work opposite the said tail, substantially as shown and described.

3. In a lathe-dog, the combination, with the body part having an aperture and a slot, of a tail pivoted in the said body part and extending through the said slot into the said aperture to engage the work, a die held to slide in the said aperture, and a set-screw for adjusting the said die, substantially as shown and described.

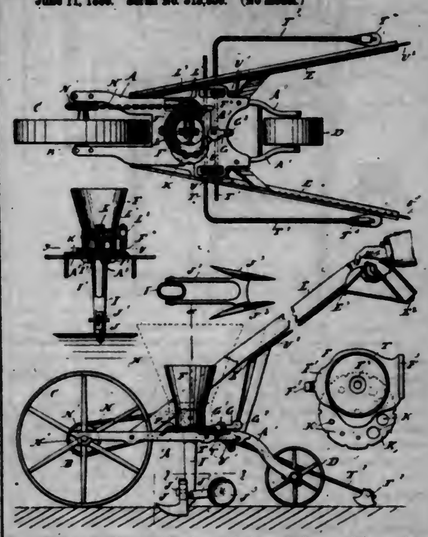


418,393. METHOD OF HANGING TOBACCO. Pleasant B. Farmer, Laurel Grove, Va. Filed Sept. 4, 1889. Serial No. 322,692. (No model.)



Claim.—The improved method of securing depending tobacco bundles to their supporting-sticks, which consists in securing the binding-cord to the stick, passing it thence around a bundle arranged at one side of the stick, twisting the cord between the bundle and the stick, extending it thence across the stick, passing it around a bundle on the opposite side of the stick, twisting it between said bundle and stick, carrying it thence across the stick, and so on, substantially as set forth.

418,394. DRILL. William H. Gibbons, Madison, Ohio. Filed June 11, 1889. Serial No. 313,820. (No model.)



Claim.—1. The combination, with the main frame, of the marker-rods T and T', mounted to turn in the said frame, the arms T², projecting rearward from the said rods T and T', the V-shaped markers held on the said arms, the arms U and U', secured in the said rods,

and the ropes U^2 and U^3, fastened to the said rod-arms and extending along the handles of the said frame; substantially as shown and described.

2. The combination, with the spout I, of the V-shaped runner J, held vertically adjustable on the front of the said spout, and the covering plow or disks J^2, held on an arm pivoted on the said spout and extending rearward, substantially as shown and described.

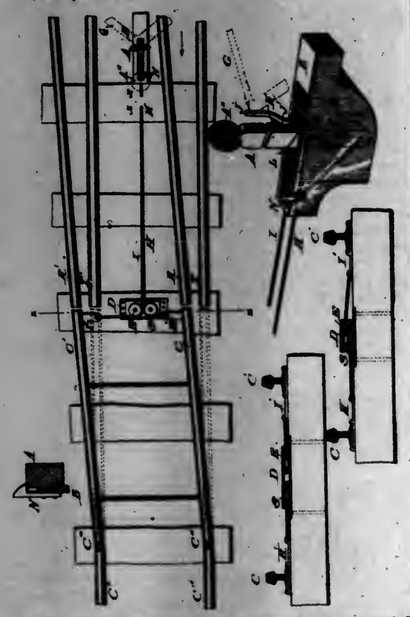
3. The combination, with the main frame A, provided with the top plate A^2, of the hopper F, provided with a flange having a lug passing into an aperture on the said top plate, and an eccentric cam pivoted on the said top plate and adapted to lock the said hopper in place, substantially as shown and described.

4. The combination, with the main frame A, provided with the top plate A^2, of the hopper F, provided with a flange having a lug fitting into an aperture in the said top plate, an eccentric cam pivoted on the said top plate and adapted to engage an edge on the said flange to lock the said hopper in place, and a handle held on the said cam, substantially as shown and described.

413,395. HAIR-TONIC. CLEMENS GROOS, Riverside, N. J. Filed July 17, 1889. Serial No. 317,766. (No specimens.)

Claim.—The herein-described hair-tonic or composition of matter to be used for making hair grow on the human skin, consisting of water, alcohol, and the pollen of pine-blossom, combined in the proportions specified.

413,396. AUTOMATIC SAFETY-SWITCH FOR RAILWAYS. JOHN L. HARVEY, Philadelphia, Pa. Filed Jan. 30, 1889. Serial No. 298,095. (No model.)

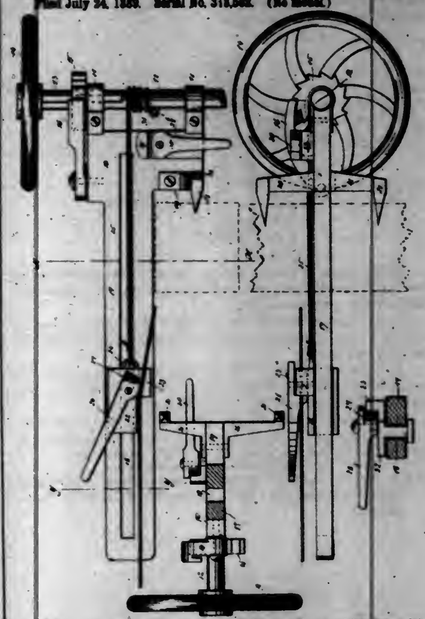


Claim.—1. The combination, with switch-rails C C' and track T T', of pivoted lever A, cables H I, passing over pulleys S E and secured, respectively, to lugs H' I' of the shifting ends of the switch-rails and at their other ends to the lever A, one above and the other below the pivoted point A' of the latter, substantially as described.

2. The combination, with switch-rails C C' and track T T', of pivoted lever A, cables H I, passing over pulleys S E and secured, respectively, to lugs H' I' of the shifting ends of the switch-rails and at their other ends to the lever A, one above the other below the pivoted point A' of the latter, and rod J, with its spring K and bar L to sustain the lever in an upright position, substantially as described.

3. The combination, with switch-rails C C' and track T T', of pivoted lever A, cables H I, passing over pulleys S E and secured, respectively, to lugs H' I' of the shifting ends of the switch-rails and at their other ends to the lever A, one above and the other below the pivotal point A' of the latter, and spring-catch N to hold the lever down when the switch is closed, substantially as described.

413,397. WIRE-STRETCHER. THOMAS P. HICKMAN, Bowie, Tex. Filed July 24, 1889. Serial No. 318,562. (No model.)



Claim.—1. In a wire stretcher or tightener, the combination, with a body provided with a slotted arm projected from one side edge, a bearing surface or shoulder at the forward side, and a shaft journaled in the rear end of the body, of a block held to slide in the slot of the arm, a rope, chain, or cord connecting the said block with the shaft, a lever provided with a cam-face pivoted upon the sliding block adapted for contact with a post projected from the same, and a second lever provided with a semicircular face pivoted upon the body portion and capable of contact with a post projected upward from the said body, all combined for operation substantially as shown and described.

2. The combination, with a body, an arm projected from the forward side of the said body, provided with a longitudinal slot extending transversely in the body, a shaft journaled at the rear side edge of the body, provided with a longitudinal groove, a ratchet-wheel held to slide upon and turn with the shaft, and a pawl adapted for contact with the said wheel, of a block held to slide in the groove of the body-arm, provided with an upwardly-extending post at one end, a lever fulcrumed upon said block, having a cam-surface adapted for contact with the post, a second lever pivoted upon the body, provided with a semicircular face adapted for contact with a post fast to the body, hooks projected at a right angle from the upper and lower faces of the body and forwardly in the direction of the longitudinal axis of the body-arm, and a rope or chain connection between the sliding block and the shaft, substantially as shown and described.

3. In a wire stretcher or tightener, the combination, with a body, an arm projected from the forward side edge of the body near one side of the center and provided with a longitudinal slot extending into the body, a shaft journaled upon the rear side edge of the body, a ratchet-wheel held to slide upon and turn with the shaft, and a pawl pivoted upon the body capable of contact with the ratchet-wheel, of a block held to slide in the slot of the arm and provided with an upwardly-extending side post, a lever fulcrumed upon the said block, having a cam-face adapted for contact with the contiguous face of the post, a post projected upward from the body, a lever fulcrumed upon the body in front of the said post, having a semicircular face adapted for contact with the post, a rope, cord, or chain connecting the sliding block and the shaft, bracket-arms projected at a right angle from the upper and the lower surface of the body near the left-hand forward corner, which bracket-arms are made to terminate in essentially wedge-shaped extremities extending at a right angle to the body of the bracket-arms inwardly and parallel with the longitudinal axis of the slotted body-arm, all combined for operation substantially as shown and described.

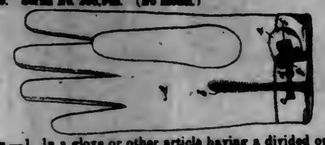
413,398. WATCH-CASE PENDANT. CHRISTIAN L. HOSMER, Kearney, Nebr. Filed Mar. 12, 1889. Serial No. 302,956. (No model.)



Claim.—1. The combination, with the pendant A, of the hollow bosses B B', provided with notched fillets *b*, and the bow C, having cylindrical ends *d* and lugs *e*, adapted to enter the notches of the fillets, substantially as specified.

2. The combination, with the pendant A, of the hollow bosses B B', provided with the fillets *b*, having notches *c c'*, and the bow C, provided with the cylindrical ends having lugs *e*, adapted to enter the notches *c d*, substantially as specified.

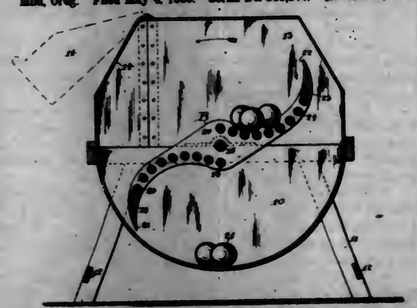
413,399. GLOVE-FASTENER. GEORGE W. JACKMAN, Littleton, N. H., assignor to himself and Ira Parker & Co., same place. Filed Feb. 7, 1889. Serial No. 299,043. (No model.)



Claim.—1. In a glove or other article having a divided opening and closing portion to be fastened, the combination, with such article, of a cord secured at its one end to the article on one side of said opening, and a flap thumb-piece secured to the article on the opposite side of such opening, provided with a holder adapted to produce friction on the cord, said cord being passed through a guide or hole in the article on the opposite side of the opening to that on which the cord is attached, and afterward passed at its free end over and under or through the friction-holder attached to the flap thumb-piece, whereby, upon drawing on the free end of the cord, the glove or article is closed and held closed at its opening, and upon lifting the thumb-piece the cord is slackened or relieved of pressure to admit of the opening of the article, essentially as described.

2. In a glove or other article having a divided opening and closing portion to be fastened, the combination, with such article, of the fastening-cord *g*, secured at its one end, as at *c*, to the article on one side of its opening, the eyelet or hole *d* on the opposite side of said opening, the flap thumb-piece *e*, and a cord-holding friction device attached to said thumb-piece, substantially as specified.

413,400. WASHING-MACHINE. JOSEPH LACHANCE, East Portland, Oreg. Filed May 4, 1889. Serial No. 309,577. (No model.)



Claim.—1. The combination, with the casing or body, of a rotary rubber journaled therein and having rigid oppositely-curved end portions, the concavities formed by said curved portions forming the open clothes-receiving spaces in the working-faces of the rubber, substantially as set forth.

2. In a washing-machine, the rubber consisting in the rigid spaced side pieces B, having curved recesses in their opposite faces at opposite sides, and the transverse series of rods 24, connecting the side pieces and conforming to the curvature of the recesses therein, substantially as set forth.

3. In a washing-machine, the combination, with the body and a rubber held to revolve in said body, comprising two spaced side pieces oppositely curved at their extremities, slats corresponding to the contour of the side pieces uniting the same at their ends, and a series of rods or bars, also connecting the side pieces, arranged in semicircular form at each side of the center of said side pieces, the two series of rods being eccentric, of a series of balls adapted to be carried by the said barred surfaces of the rubber, substantially as shown and described.

4. In a washing-machine, the combination, with a semi-cylindrical body, an axle or shaft journaled in the same, a rubber centrally secured to the said shaft, comprising side pieces oppositely curved at their extremities, slats uniting the said side pieces at the ends and corresponding to the contour of said ends, and a series of rods or bars arranged in a semicircle at each side of the shaft, the arc of the said series corresponding to the curve of the side pieces, whereby a space is obtained between the inner rods or bars and the axle, of a series of balls adapted to be carried by the curved surfaces of the rubber, and means, substantially as shown and described, for rotating the axle or shaft.

413,401. BELT-SUPPORT. LOUIS SANDERS, Brooklyn, N. Y., assignor, by mesne assignments, to Miss Sanders, same place. Filed July 10, 1889. Serial No. 317,079. (No model.)



Claim.—1. The herein-described belt-support, consisting of the two spring-tongues 10 and 11, having curved lower ends, the tongue 10 being provided with the teeth 13, and the downwardly-projecting stop-arm 12, provided with the bent shank 14 and head 15 and secured to the tongue 11, as specified.

2. In a belt-support, the combination, with the spring-tongues 10 and 11, the tongue 10 being provided with teeth 13, and the stop plate or arm 12, having the bent shank 14 and head 15, of the strap 16, secured to the head 15 of the stop-arm 12, and provided with the hook 17 at its lower end, substantially as herein shown and described.

413,402. NUT-LOCK. JEREMIAH G. LEEP, Red House Shoals, W. Va. Filed May 3, 1889. Serial No. 309,400. (No model.)



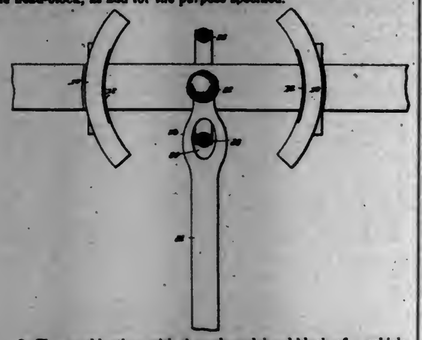
Claim.—The nut having the V-shaped recess E, the recess C, and the thin flexible intervening wall or partition F, and the dog G, pivoted in said recess C and arranged with its free beveled end adjacent to said partition, whereby the latter may be forced against the dog to hold it engaged with the bolt, as shown and described.

413,403. VEHICLE RUNNING-GEAR. WADE H. LOWE, Crumpti, La., assignor to himself and Miles I. Persinger, same place. Filed Apr. 20, 1889. Serial No. 308,008. (No model.)

Claim.—1. The combination, with the front axle and head-block, having registering concavities in the centers of their adjacent faces, and a tongue-iron provided with a ball within said socket, of upper and lower segmental plates at the opposite sides of the sockets and clipped to the axle and head-block, substantially as set forth.

2. The combination, with the axle and head-block of a vehicle, having vertically-aligning sockets produced in their opposed faces, of a vehicle-tongue provided with a ball at the inner end seated in the sockets of the axle and head-block, a U-bar swiveled to the axle and passing upward at front and rear of the said axle and head-block, the forward member of the U-bar also passing through the tongue, and

means, substantially as shown and described, for locking the U-bar to the head-block, as and for the purpose specified.



3. The combination, with the axle and head-block of a vehicle, having vertically-aligning sockets produced in their opposed faces, and a vehicle-tongue provided with a ball at its inner end seated in said sockets, and a longitudinal opening in advance of a ball, of a U-bar pivoted beneath the axle, the members of which extend vertically upward beyond the head-block, the forward member of the U-bar passing through an opening in the tongue, a tie-plate connecting the members of the U-bar above the head-block, and jam-nuts screwed upon the said members in contact with said plate, substantially as shown and described.

4. The combination, with the axle and head-block of a vehicle, provided with sockets in their opposed faces and a tongue terminating in a ball, which ball is seated in said sockets, of a segmental plate secured at each side of the center, respectively, of the opposed faces of the axle and head-block, constituting a fifth-wheel, the contacting faces of which fifth-wheel sections are flattened, the under sections being provided with a flange upon the inner face, all combined for operation substantially as shown and described.

5. In a vehicle, the combination, with the axle and head-block, of a segmental bar provided with a flattened upper face and a vertical flange integral with its inner edge, secured to the axle, one at each side of the center, and a second segmental bar secured to the under face of the head-block at each side of the center, having a flattened under surface adapted to contact with and slide upon the equivalent surface of the axle-bars, substantially as shown and described, whereby a fifth-wheel is formed of light, durable, and simple construction, as set forth.

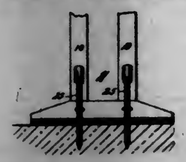
6. A tongue-iron 21, having a ball at its inner end, and a slot 24 just in advance of the ball and in rear of the portion to which the tongue is to be secured, substantially as set forth.

418,404. DRAG-SAW. RICHARD Y. MACBETH and LOUIS GOURDIN, Monk's Corner, S. C. Filed Nov. 30, 1888. Serial No. 292,206. (No model.)

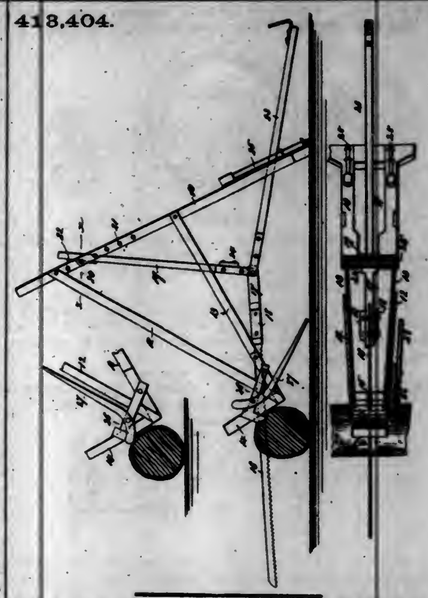
Claim.—1. The combination, with the saw-frame and the saw, of a vertically-swinging log-dog pivoted to the front end thereof, and a rearward-extending releasing-lever pivoted near its front end to the side of the said dog near the front end thereof, whereby when the long arm of the lever is thrown up its short arm will bear down on the log and force the dog upward, substantially as set forth.

2. The combination, with an essentially-triangular frame, a weighted pendulum adjustably pivoted in the frame, and a weighted saw pivoted to said pendulum-rod, of a log-dog pivoted to the frame, and a releasing-lever having a convex engaging-surface pivoted to said dog, substantially as shown and described.

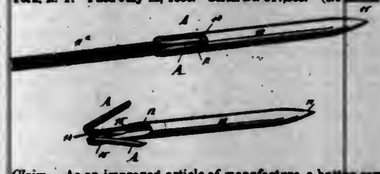
3. The combination, with the frame of a drag-saw, of a log-dog pivoted at the forward end of the frame, a releasing-lever pivoted upon the said dog, having a convex engaging-surface, and locking-pins held to slide upon the rear of the frame at the base, all combined for operation substantially as shown and described.



418,404.



418,405. BUTTON-SEWING NEEDLE. ADOLF HAEDE, New York, N. Y. Filed July 12, 1888. Serial No. 317,203. (No model.)



Claim.—As an improved article of manufacture, a button-sewing needle having a longitudinally-reduced butt 12, slotted, as at 14, and forming the two members 15, said members being bent back upon themselves toward the point of the needle to form the hook-like extremities A A, substantially as set forth.

418,406. CHECK-ROW CORN PLANTER AND MARKER. FRANKLIN L. MESSNER, Aurelia, Iowa. Filed Apr. 6, 1889. Serial No. 306,263. (No model.)

Claim.—1. In a check-row corn-planter, the combination, with the main frame, of a laterally-extending marker-arm held to rotate in said frame and adapted to support wire-reel and means for rotating said marker-arm, substantially as shown and described.

2. The combination, with the main frame, revolving disks secured in the ends of said frame, and detents for holding said disks from turning, of a reciprocating marker-arm journaled in said disks, adapted to receive and support a reel on its extended free end, and means for operating the disk, substantially as shown and described.

3. The combination, with the main frame, the revolving disks mounted thereon, and detents for holding said disks from turning, of a marking-bar journaled in said disks, the extended end thereof adapted to receive and support a wire-reel, and means for revolving the marker-bar, substantially as shown and described.

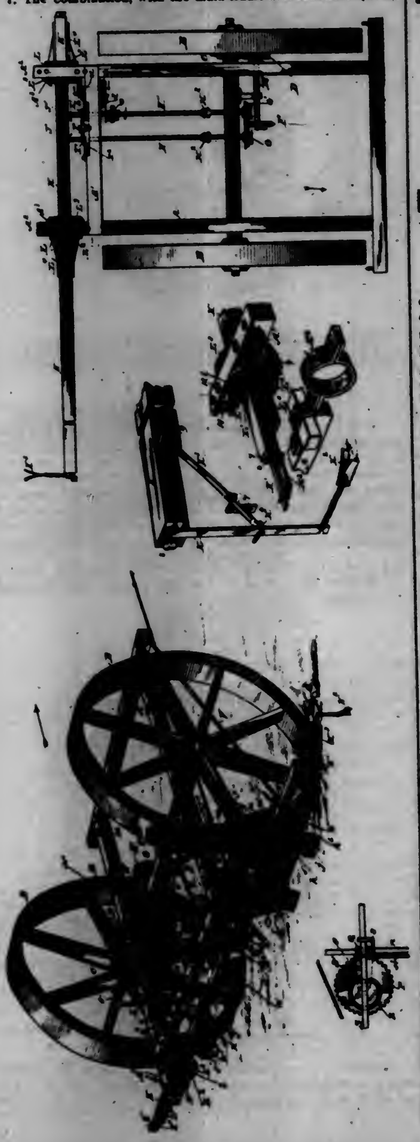
4. The combination, with the main frame, the revolving disks provided with gear-teeth mounted thereon, and detents for holding said disks from turning, of a marking-bar journaled in said disks, the extended end thereof adapted to receive and support a wire-reel, said gear-surfaces of the revolving disks adapted to engage and operate wire-shifting devices, and means for operating the said disks, substantially as described.

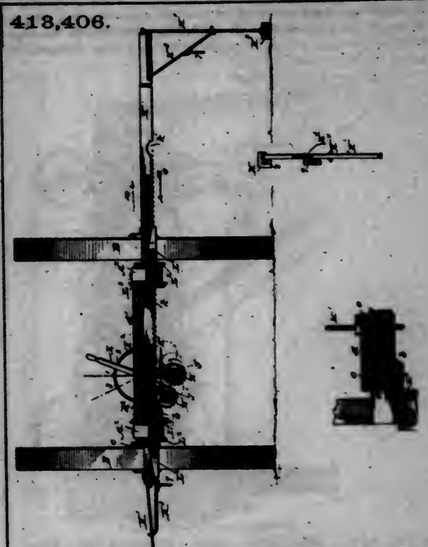
5. The combination, with the main frame and the drive-wheels, of a reciprocating marker-bar held to slide in the rear end of said frame, shafts mounted at one end to the frame, the rear ends journaled in movable bearings, cog-gears mounted on the said rear ends adapted to alternately engage the marking-bar, a shifting-lever for

adjusting said shafts and gears into said alternate positions, and intermediate gearing devices between said shafts and one of the drive-wheels, whereby said shafts are operated, substantially as and for the purpose shown and described.

6. The combination, with the main frame, the drive-wheels, and bearings provided at the ends of said frames, having outwardly-extending open sockets, of a reciprocating marker-bar held to slide in said bearings, said bar provided with hinged marker-arms at its outer end, said arms adapted to fall into position by gravity and to be raised out of operative position by engagement with the said extending sockets, and intermediate gearing devices, substantially as shown and described, between the marker-bar and one of the drive-wheels for operating said bar, substantially as and for the purpose set forth.

7. The combination, with the main frame and the drive-wheels,





of a reciprocating marker-bar K, provided with marking devices at each end, said bar held to slide transversely in the rear ends A^1 A^2 of said frame, said bar provided with a cog-rack *k* on its under face, longitudinal shafts H H', journaled at their front ends in the frame, gear-wheels J J', secured upon their rear ends, a shifting-lever I, pivoted upon the main frame, provided with depending diverging arms I' I', forming bearings for the rear ends of said shafts H H', said lever adapted to alternately swing the gears into engagement with the rack *k* on the marking-bar K, and the intermediate gear devices between said shafts H H' and one of the drive-wheels, whereby said shafts are operated, substantially as shown and described.

8. The combination, with the main frame and bearings formed in the rear ends thereof, provided with outwardly-extended socket projections, of a marker-bar held to slide in said bearings transversely across the frame, marker-arms hinged to the outer ends of said bar and carrying markers at their lower ends, and swinging arms hinged at one end to the lower side of the marker-bar, their outer ends engaging the hinged marker-arms, said swinging arms adapted to rise and elevate the marker-arms when they engage the projecting socket portions of the bearings during the operation of sliding said bar from one side to the other and adapted to fall by gravity when released from contact with said projections, substantially as shown and described.

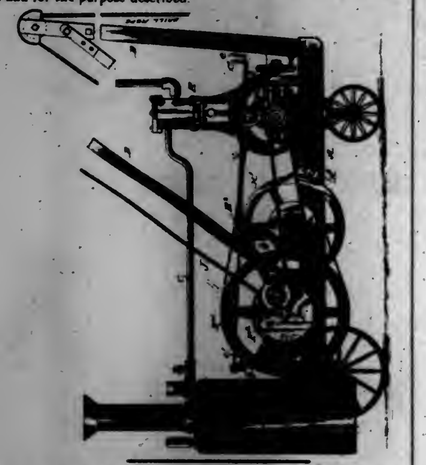
9. The combination, with the main frame A, the drive-wheels B, the longitudinal shafts H H', provided with articulated joints H^3, journaled at one end in the frame A, provided with cog-wheels J J' at their rear ends, a shifting-lever I, pivoted on the main frame, provided with depending diverging arms I,' forming bearings for the rear ends of the shafts H H', and intermediate gearing devices between said shafts and one of the drive-wheels, as shown, and the bar K, provided with marking devices at each end, held to slide transversely in the rear end of the frame A, said bar provided with a rack *k* on its under side, recesses $k' k^2$, disposed one at each end of the rack portion, said bar adapted to be alternately engaged by the cog-wheels J J', said wheels adapted to engage with either of said recesses $k' k^2$ when the bar is slid to its limit in either direction, substantially as and for the purpose described.

10. The combination, with the main frame provided at its rear end with bearings A^3, of a marker-bar K, held to slide transversely in said bearings, arms K', hinged on each end of said bar, lifting-arms K^2, hinged to the under side of the ends of said bar, said arms K^2 engaging the arms K' and adapted to elevate the same when raised up, a swinging latch 7, secured to the arms K^2, and studs 8 on the ends of the bar K, adapted to engage said latch to hold said arms K' K^2 in elevated position, substantially as and for the purpose described.

418,407. WELL-DRILLING MACHINE. JOHN W. MILLER, Newton Falls, Ohio, assignor of two-sevenths to ERNEST A. DAVIS, same place. Filed June 21, 1889. Serial No. 315,128. (No model.)

Claim.—The combination, in a drilling-machine, with the winding-drum and the revolving operating-shaft carrying an eccentric pul-

ley caught in a bight or loop of the rope, of a pulley placed in a bight or loop of the rope between the operating-pulley and the winding-drum, the two pulleys being arranged in the same plane, substantially as and for the purpose described.



418,408. HORSESHOE. ERSKEW A. MUSSER and JOHN S. ROWELL, Beaver Dam, Wis. Filed June 27, 1889. Serial No. 315,833. (No model.)



Claim.—1. The improved horseshoe herein described, consisting of upper and lower sections, with elastic cushions between and rivets connecting the two sections, the rivets being stopped short of the upper surface of the upper section to permit the lower section to rise toward the upper section without bringing the rivets in contact with the horse's hoof, substantially as shown and described.

2. The improved horseshoe herein described, comprising upper and lower sections A and C, a cushion arranged between said sections, and connecting-rivets passing loosely through countersunk openings in such sections and having their upper ends below the upper surface of the upper section to permit vertical play, whereby the rear portion of sections A and C may move vertically independent of each other, the toe-piece D, and rivets E^3, tightly riveted through openings in front ends of said sections and ends of toe-piece, forming a non-elastic hinged toe, substantially as set forth.

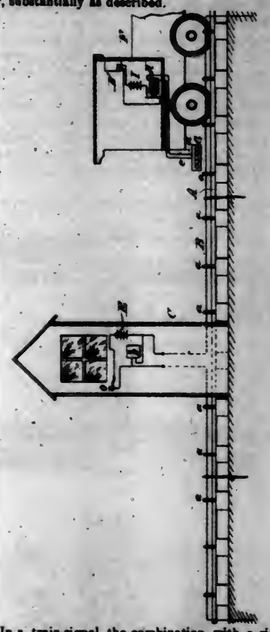
3. In an elastic horseshoe, the combination, with a solid toe-piece, of upper and lower sections with cushion between, and rivets movably connecting them together over cushion, and rivets firmly holding them together upon the solid toe-piece, substantially as described.

418,409. RAILWAY TRAIN-SIGNAL. DANIEL S. MCELROY, New York, N. Y. Filed Feb. 26, 1889. Serial No. 301,429. (No model.)

Claim.—1. In a train-signal, the combination of a plate M, provided with windows A and arms *m*, spring-actuated mechanism for rotating the said plate, the magnet J, the lever N, provided with the stud *o*, adapted to engage the arms *m*, and the spring *p* for retracting the said lever N, substantially as specified.

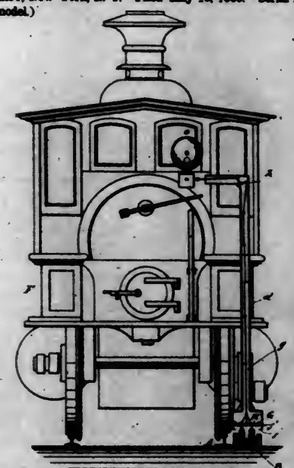
2. In a railway train-signaling system, the combination, with a signal-box D', provided with an opening *e*, of a lamp *f*, arranged opposite the opening *e*, the plate M, provided with windows A and arms *m*, the magnet J, the lever N, provided with the stud *o*, and the spring *p*, for retracting the said lever N, substantially as specified.

3. In a train-signal, the combination, with the plate M, provided with the windows A and arms *m*, spring-actuated mechanism for rotating said plate, and an electro-magnetic releaser for releasing the said plate, of an electric generator, a transmitting-key, a conductor arranged parallel with the track, a series of induction-coils carried by the locomotive, a relay connected with the induction-coils, and a local circuit controlled by the relay and connected with the magnetic releaser, substantially as described.



4. In a train-signal, the combination, with a signal-box D', provided with an opening *e*, a lamp *f*, arranged opposite the opening *e*, the plate M, provided with the windows A and arms *m*, and means for rotating and releasing said plate, of an electric generator, a transmitting-key, a conductor arranged parallel with the track, induction-coils carried by the locomotive, a relay connected with the induction-coils, and a local circuit controlled by the relay and connected with the releasing mechanism, substantially as herein shown and described.

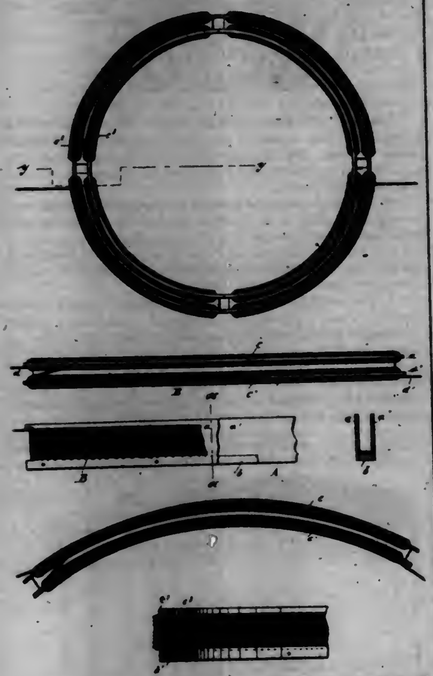
418,410. ELECTRO-MAGNETIC RAILWAY-SIGNAL. DANIEL S. MCELROY, New York, N. Y. Filed May 16, 1889. Serial No. 310,962. (No model.)



Claim.—1. In an electro-magnetic railway-signal, the combination of a series of electro-magnets arranged parallel with the track, an alarm device carried by the locomotive, a chain connected to the alarm device, and an armature connected to and supported by the chain within the influence of the magnets, substantially as described.

2. In an electro-magnetic railway-signal, the combination, with a locomotive and a series of elongated electro-magnets arranged parallel with the track, of the alarm *c*, carried by the locomotive, the tube *d*, secured to the locomotive and provided at its lower end with the box G, having stops *f f'*, the bell-crank A in the upper end of the tube and connected to the alarm, the chain *g*, connected to the bell-crank, and the armature H within the box G and connected to the lower end of the said chain, substantially as herein shown and described.

418,411. ELECTRO-MAGNET. DANIEL S. MCELROY, New York, N. Y. Filed May 16, 1889. Serial No. 310,963. (No model.)



Claim.—1. An electro-magnet consisting of a yoke provided with side extensions, and coils wound on the said side extensions, the ends of the yoke and side extensions projecting beyond the coils, whereby provision is made for connecting a series of magnets together, substantially as described.

2. An electro-magnet consisting of a curved yoke provided with side extensions, and coils wound on said extensions, the ends of the yoke and side extensions projecting beyond the coils, substantially as and for the purpose set forth.

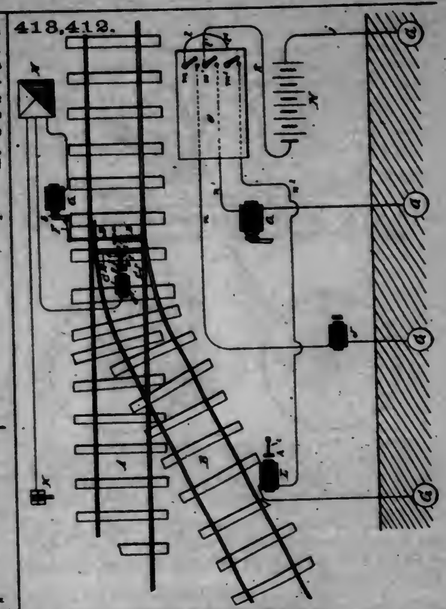
3. A circular magnet consisting of a series of sections, each formed of an annular yoke having extensions, and coils wound on the said extensions, substantially as specified.

4. A circular magnet consisting of a series of sections, each formed of a curved yoke having side extensions, and coils wound on the side extensions, the ends of the yoke and side extensions projecting beyond the coils, and the several sections being united, substantially as described.

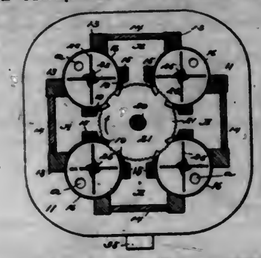
418,412. ELECTRICALLY-OPERATED RAILWAY-SWITCH. DANIEL S. MCELROY, New York, N. Y. Filed June 4, 1889. Serial No. 313,048. (No model.)

Claim.—The combination, with movable switch-rails, of a shifting-bar connecting the same, a spring and electro-magnet for alternately shifting the bar in opposite directions, an additional bar connecting each rails and provided with apertures, a spring-actuated bolt for locking the latter bar, an armature firmly and directly secured to the said locking-bar, and a separate and independent magnet directly controlling such armature, substantially as herein shown and described.

418,412.



418,418. COTTON-SEED LIFTER. EDWARD J. O'BRIEN, Texarkana, Ark. Filed Apr. 3, 1889. Serial No. 305,857. (No model.)



Claim.—1. The combination, with two or more cotton-seed-receiving chambers, of a vertical shaft, saws carried thereby, agitators arranged within the cotton-seed-receiving chambers, and means for driving the agitators, substantially as described.

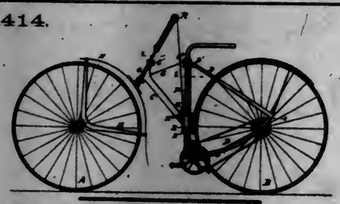
2. In a cotton-seed lister, the combination, with a structure including lint-chambers A and chambers arranged to receive cotton-seed, of a central saw-carrying shaft, saws carried by the shaft and arranged to enter the cotton-seed-receiving chambers, a trough arranged beneath the cotton-seed-receiving chambers, an endless belt provided with wings which enter said trough, and a means for driving the belt, as and for the purpose stated.

3. In a cotton-seed lister, the combination, with a structure containing chambers A, and other chambers adapted to receive cotton-seed, of shafts mounted within the cotton-seed-receiving chambers, blades or arms carried by said shafts, a central shaft, a series of saws carried thereby, a trough arranged beneath the cotton-seed chambers, communication being established between the trough and the chambers, an endless carrier-belt, wings carried by said belt and arranged to enter the trough, a delivery-spout, and driving mechanism, substantially as described.

418,414. BICYCLE. THOMAS O'BRIEN, New York, N. Y. Filed June 10, 1889. Serial No. 313,724. (No model.)

Claim.—In a bicycle or other velocipede, the combination, with the wheels A B, forks M M, mud-guard N, and steering-standard O, of the spine C C and neck G', made in one piece, standard F, ring K, split sleeve E, bolt E', and nuts E^2 E^3, slotted piece H, bolt H', and stop-pin H^2, forks D D, brace G, and split ring G^2, substantially as specified.

418,414.



418,415. BICYCLE. THOMAS O'BRIEN, New York, N. Y. Filed Aug. 20, 1889. Serial No. 321,431. (No model.)

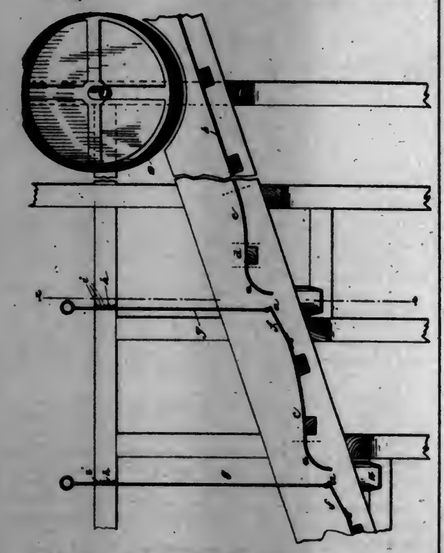


Claim.—1. The combination, in a bicycle, with wheels A B, of the backbone or spine C C', the split clamping-sleeve H, formed to receive the dovetail E', the strengthening-piece E, the dovetail E', the forks D D, forged to the clamping-sleeve H, and the fast ring K as a stop, substantially as specified.

2. The combination, in a bicycle, with the wheels A B, of the tube C', which is received within the clamping-sleeve H, the forks D D, the bolt F', the nuts F' F², the dovetail E', and curved spine C, substantially as specified.

3. The combination, in a bicycle, with the wheel A B and connecting-frame, of the forks M, made of or in one piece, to which the mud-guard N is secured, substantially as specified.

418,416. COAL-SEPARATOR. THOMAS H. PHILLIPS and JOHN R. EVANS, Wilkes-Barré, Pa. Filed Feb. 12, 1889. Serial No. 299,585. (No model.)



Claim.—1. A chute for coal-separators, having its bottom formed in sections each having reverse curves, the convex portion being at the lower end, and provided with an opening adjacent to the said convex portion, substantially as described.

2. A chute for coal-separators, having its bottom formed in sections each having reverse curves, the convex portion being at the lower end, and provided with an opening adjacent to the said convex portion and with an adjustable apron hinged below the plane of the convex portion and partially closing the said opening, substantially as herein shown and described.

3. A chute for coal-separators, having its bottom *b* formed with the concave curve *c* and the convex curve *e*, and provided with the opening *a*, in combination with the apron *f*, the rod *g*, connected to the apron, and means for locking the rod in position, substantially as herein shown and described.

418,417. DOUGH MIXER AND KNEADER. DUDLEY G. STONE, Hegansport, Mich. Filed Apr. 6, 1889. Serial No. 306,166. (No model.)

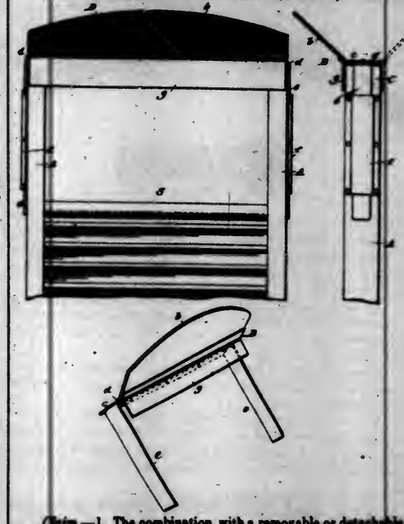


Claim.—1. In a dough mixer and kneader, the combination, with a supporting-frame, of a swivel secured in the frame, and the lever 30, loosely and removably connected to the swivel and provided with the mixer 25 and the kneader 26, projecting from opposite sides thereof, substantially as described.

2. In a dough mixer and kneader, the combination, with the supporting frame 10 12, of the table 20, mounted to turn on the said frame, and the lever 30, having one end connected to the frame by a swiveled connection and provided with the mixer 25 and kneader 26, the said mixer and kneader projecting from opposite sides of the lever, substantially as herein shown and described.

3. The combination, with a revoluble table, of hooks carried thereby, a mixing-pan arranged to be engaged by said hooks, a frame 12, a block 13, mounted on vertical trunnions and supported by the frame, a block 15, mounted on horizontal trunnions which ride in apertures formed in the block 13, a lever 30, a combined mixer and kneader carried thereby, and a projection 32 formed thereon, said projection being arranged to enter an aperture formed in the block 15, substantially as described.

418,418. WASH-BOARD. DUDLEY G. STONE, Hegansport, Mich. Filed July 22, 1889. Serial No. 318,260. (No model.)



Claim.—1. The combination, with a removable or detachable and reversible wash-board protector, substantially as described, and having an inclined upper shield and supporting side legs, of sockets adapted to be carried by said board and constructed to receive said legs down within or through them, as set forth.

2. As a new article of manufacture, the within-described wash-board protector, consisting of the inclined shield *b*, base-piece *c*, downwardly-projecting flange *g*, and attached cross-strip *d*, having its ends bent down and forming legs *e e*, for attachment of the protector to the wash-board, as set forth.

418,419. BOOT OR SHOE HEEL. CARL A. STRASSER, Baltimore, Md., assignor of one-half to Joseph Schreuder, same place. Filed June 26, 1888. Serial No. 315,572. (No model.)



Claim.—1. The improvement in revolving heels herein described, comprising the metallic frame formed of an upper section having a central opening, a lower section having a central opening in register with that of the upper section, and provided at the lower end of such opening with a circular recess *b*, and the axle-section having a head *d* fitting in the recess *b*, having a portion *d'* fitting in the central openings of the upper and lower sections, and provided at its upper end with a threaded or screw portion projected above the upper section and adapted to enter the sole or heel lifts, substantially as set forth.

2. In a heel, substantially as described, the combination of the upper section, the lower section, the axle-section extended up through the lower section into the upper section, and the laterally-operating screw by which to secure such axle-section to the upper section, substantially as set forth.

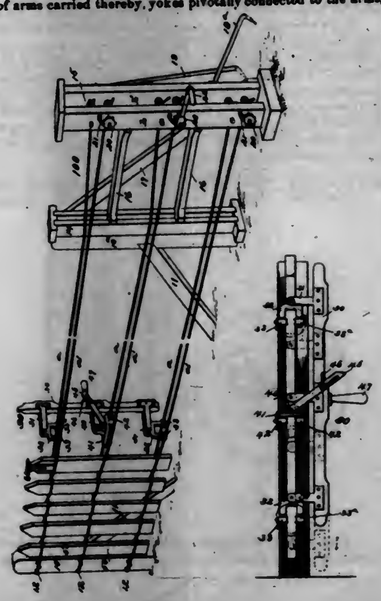
3. An improved heel, substantially as described, consisting of the fixed upper section and an axle-section secured rigidly to such upper section and provided above the same with a screw portion to enter the sole or heel lifts, and the lower section suspended and journaled on the axle-section, substantially as set forth.

4. In a heel, substantially as described, the combination of the lower section, the upper section having a depending tubular portion resting on the lower section, the axle-section fitting in said sections, and the lateral screw turning through the tubular portion of the upper section and extending into the axle-section, substantially as set forth.

5. The improvement in heels, substantially as herein described and shown, consisting of the upper section having a central opening and a depending tubular portion, the lower section having a central opening and provided at the lower end thereof with a circular recess, the axle portion having a head *d* fitted in such recess, an axle portion fitting in the openings of the upper and lower sections and provided at its upper end with a threaded portion projected above the upper section, and the lateral connecting-screw turned through the tubular portion of the upper section and into the axle-section, substantially as set forth.

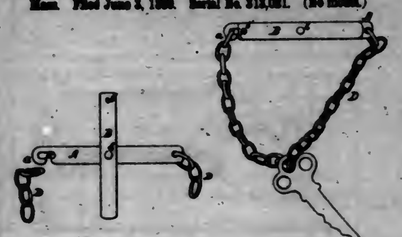
418,420. FENCE-MACHINE. HENRY M. TREMOFF and CHARLES O. TREMOFF, Pleasantville, assignors of one-third to Joseph P. Strickler, Pickerington, Ohio. Filed Aug. 6, 1888. Serial No. 319,913. (No model.)

Claim.—1. In a fence-building machine, the combination, with a strip, of arms carried thereby, yokes pivotally connected to the arms, sheaves carried by the yoke-arms, intermediate arms, a plate pivotally connected thereto, sheaves carried by the plate, and a catch arranged in connection with the plate, substantially as described.



2. In a fence-building machine, a wire-twisting machine consisting, essentially, of a strip 30, arms 31, carried thereby, yokes 32, pivotally supported by the arms, sheaves 33, carried by the yoke-arms, arms 40, a plate 41, pivotally connected thereto, sheaves 42, carried by the plate, a slotted catch 45, pivoted to the plate, and a keeper 46 on the strip and engaging the said slot, substantially as described.

418,421. KEY-HOLDER. CHARLES E. VAN HORNAN, Waltham, Mass. Filed June 3, 1889. Serial No. 313,021. (No model.)

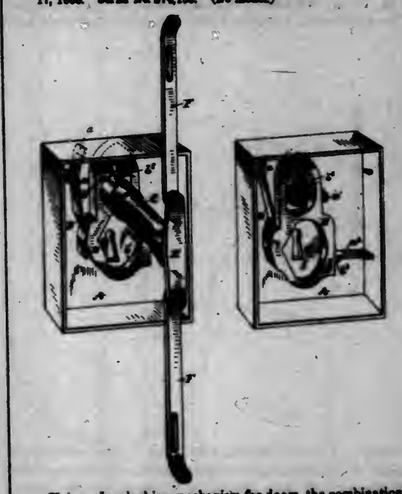


Claim.—1. In a key-holder device, the link or bar A, having in one end an eye to which the key-chain is attached, and having at its other end a hook or slot *d'* for receiving the free end of the chain, combined with the locking-bar B, adapted to close the chain-receiving slot, and a chain D, permanently attached to one end of said bar B, substantially as and for the purpose set forth.

2. In a key-holder device, the link or bar A, having a chain D permanently attached to one of its ends, and having at its other end a device for receiving the other end of said chain, combined with the safety-bar B, arranged upon the bar A, so that the said bar B may be moved crosswise to the bar A substantially as and for the purpose set forth.

3. In a key-holder device, the chain-bar A and chain D, attached to its ends, combined with the movable locking-bar B, connected to the said bar A and adapted to serve as a locking device for the chain D relative to the bar A, and as a means for preventing the keys from dropping off the chain while placing or removing the keys thereon, substantially as and for the purpose set forth.

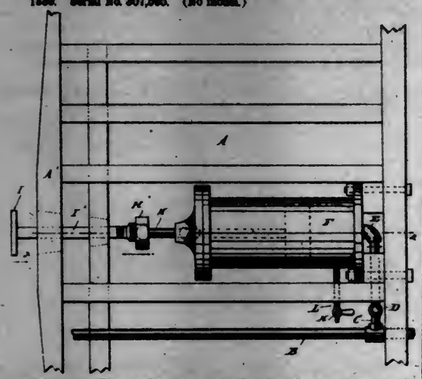
418,422. LATCH. WILLIAM A. WALKER, Racine, Wis. Filed May 17, 1888. Serial No. 274,135. (No model.)



Claim.—In a locking mechanism for doors, the combination, with two sliding bars, of a spindle provided with T-shaped arms engaging said bars, said spindle being circular in cross-section and provided with angular recesses, of a single locking-plate provided with shoulders for engaging the recesses in said spindle, said plate having also an aperture provided with bearing-faces to receive a key to actuate the same, and a projection *b'*, a spring bearing against one side of

said plate, and projections d' d^2 upon the opposite side of the plate, substantially as described.

413,423. CAR-BUFFER. FRANK S. WAY, Mount Vernon, Ill., assignor to himself and George R. Leonard, same place. Filed Apr. 17, 1889. Serial No. 307,665. (No model.)

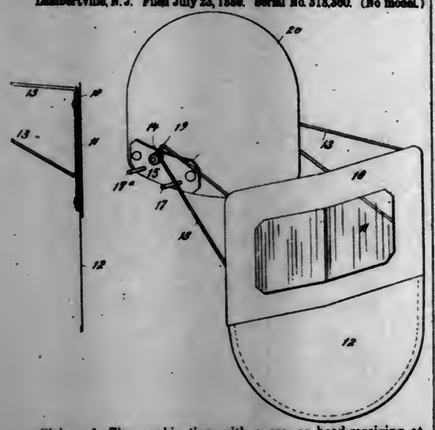


Claim.—1. The combination, with the air-cylinder, having an air-outlet pipe L N near its inner end, and the reciprocating piston and buffer, of the air-supply and pressure pipe B, its branch pipe C connecting with the inner end of cylinder, and the stop-cock D, applied to said branch pipe, as shown and described, whereby air-supply may be cut off from the cylinder and pressure in rear of the piston relieved, when required for the purpose of relieving pressure between buffers, for uncoupling, as specified.

2. The combination, with cylinder F, and the piston and buffer, of the air-outlet and stop-cock K, attached to the front end of said cylinder, and the air-supply pipe B C, connected with the other end of the same, as shown and described, whereby a vacuum may be formed in front of the piston, as and for the purpose specified.

3. The combination of the buffer and piston G with the air-cylinder F, having the lengthwise groove O located in its inner side and near its inner end, as shown and described, whereby the pressure in rear of piston is automatically relieved when the latter is near the inner limit of its stroke, as specified.

413,424. FIREMAN'S OR STOKER'S SHIELD. NIKOLAUS WEBER, Lambertville, N. J. Filed July 23, 1889. Serial No. 318,360. (No model.)

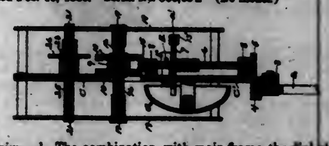


Claim.—1. The combination, with a cap or head-receiving attachment, of a frame having a transparent panel, and brackets carried by the frame and pivotally connected to the cap or head-receiving attachment, substantially as described.

2. The combination, with a cap provided with plates having studs 15 and projections 17 and 17^a, of a frame having a transparent panel, and brackets connected to the frame and mounted upon the studs 15, substantially as described.

3. The combination, with a cap provided with the plates 16, having studs 15 and projections 17 and 17^a, of a frame 10, a transparent panel 11, carried thereby, a flap 12, secured to the lower edge of the frame, and brackets 13, also secured to the frame and formed with eyes through which the studs 15 pass, substantially as described.

413,425. BILLIARD-REGISTER. OLIVER G. WILSON, Franklin, Ky. Filed Feb. 15, 1889. Serial No. 300,054. (No model.)



Claim.—1. The combination, with main frame, the dial-plates arranged at each side thereof, transverse shafts journaled in said frame, projected in opposite directions, extended through said dial-plates, and provided with indicator-hands, and cog-gears 10 10, mounted on the inner ends of said shaft, of the operating-shaft 2, provided with a gear 4, an intermediate shaft provided with a gear at its lower end engaging the gear 4, and a gear at its upper end engaging the gears 10 10, all arranged substantially as and for the purpose described.

2. In a billiard-register, the combination, with the main frame, a dial-plate mounted thereon, a transverse shaft journaled in said frame and extended through said dial-plate, and provided at its outer end with an indicator-hand adapted to traverse said dial and a gear-wheel 10 at its inner end, and the operating-shaft 2, provided with a gear 4 at its upper end, of the intermediate shaft 6, journaled in the frame, provided with a gear at its lower end engaging the gear 4, a gear at its upper end engaging the gear 10, a toothed disk mounted thereon, and a spring-actuated lever hinged at one end and engaging said disk at its forward end, substantially as and for the purpose specified.

3. In a billard-register, the combination, with the main frame, a gong, and a dial-plate mounted thereon, said dial-plate provided with a points-indicator scale, and a supplemental or game-register scale thereon, a transverse shaft 16, journaled in said frame and extended through said dial-plate, and provided at its outer end with an indicator-hand adapted to traverse said dial over the points-scale, a gear 10 at its inner end, provided with a projecting tooth 22, and the operating-shaft provided with a gear 4 at its upper end, of the intermediate shaft 6, journaled in the frame, provided with a gear at its lower end engaging the gear 4, a gear at its upper end engaging the gear 10, a toothed disk mounted thereon, a spring-actuated gong-lever hinged at its rear end and engaging the toothed disk at its forward end, and a transverse shaft 25, mounted over the shaft 16 in said frame and extended through the dial-plate, and provided with an indicator-hand traversing the game-register scale, and a toothed wheel mounted on its inner end adapted to be engaged by the tooth 22 on gear 10, substantially as and for the purpose hereinbefore described.

4. In a billiard-register essentially as described, the combination, with main frame and the dials mounted thereon, the transverse indicator-shafts, the main shaft 2, provided with an operating-knob at its lower end, a cog-gear 4 at its upper end, and the intermediate gear mechanism connecting said shaft with the indicator-shafts, of a spring-pawl secured to the main frame and engaging the gear 4, and a releasing-pawl hinged at one end, its opposite end adapted to be swung in rear of the spring-pawl and release same from engagement with the gear 4, substantially as and for the purpose described.

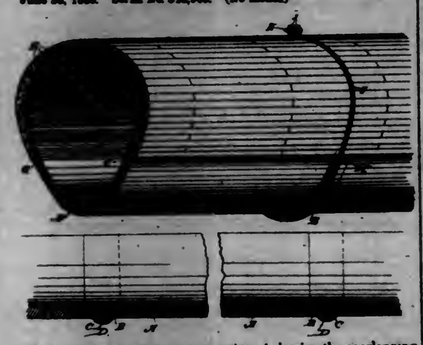
413,426. SKIRT-PROTECTING GARMENT. ELIZABETH R. WOOD, Topeka, Kans. Filed Feb. 19, 1889. Serial No. 300,484. (No model.)



Claim.—1. The combination, with the water-proof garment A, of the disk B, secured to the garment near the bottom thereof and provided with the openings *a*, the loops *c*, secured to the disk, the cross-straps d d', secured to the center of the disk and passing through the said loops, and provided with the rings *f* at their free ends, and the waistband *g*, passing through the said rings, substantially as described.

2. As an improved article of manufacture, the water-proof garment A, provided with the slitted disk B, having openings *a*, with puckering-strings *b*, the loops *c*, secured to the disk, and the cross-straps d d', secured to the center of the disk and passing through the said loops, and provided with the rings *f* at their free ends to receive a waistband, as set forth.

413,427. SEWER. HENRY ANDERSON, San Francisco, Cal. Filed June 26, 1889. Serial No. 315,505. (No model.)



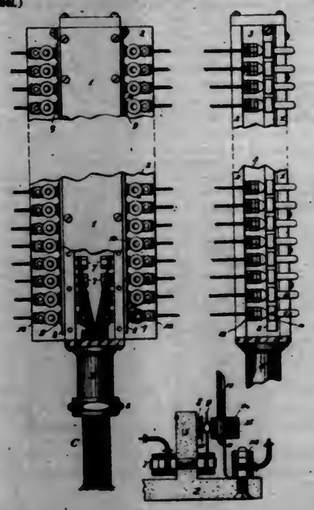
Claim.—1. The bottom sewer portions A, having the overlapping joints B, with the connecting portions C and D, substantially as herein described.

2. The sewer having the bottom formed of metallic sections united by joints, as shown, and the upper part formed of staves, brick-work, or concrete, in combination with the uniting or securing bands I, having the lower ends attached to the sections A, and a means for drawing them tight around the upper portion of the sewer, substantially as described.

413,428. PROCESS OF TREATING PYRITES CINDERS FOR THE MANUFACTURE OF PAINT. CHARLES ARNOUX, Bridgeport, Conn. Filed Mar. 13, 1889. Serial No. 303,120. (No specimens.)

Claim.—The process, as above described, of manufacturing metallic paint from pyrites cinders by treating the same with a combination of carbonate of lime and salt, in proportions as given above, in an oxidizing dull-red heat.

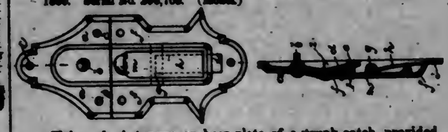
413,429. CABLE TERMINAL HEAD AND PROTECTOR. ELIAS B. BAKER, New Haven, Conn. Filed May 23, 1889. Serial No. 311,773. (No model.)



Claim.—1. The improved connecting device consisting of the box-shaped terminal head having the bolts 7 passing through its sides and connected inside to the respective cable wires and on the outside having the spring-plates 9 fixed by one end thereto, a metal earth-bar facing the free ends of the row of spring-plates, and separately-removable interposed slips of non-conducting material, substantially as described.

2. The improved connecting device comprising, in a single structure, the box-shaped terminal head composed of front 1, sides 3, and widened back 2, binding-posts extending through the sides 3 and forming the terminals of the cable wires, local circuit binding-posts on the widened back provided with spring-blades 13, adapted when free to make contact with the cable terminals, and interposed removable safety-fuses mounted on the said spring-blades and forming the circuit between the cable and terminals and the spring-blades attached to the local circuit binding-posts.

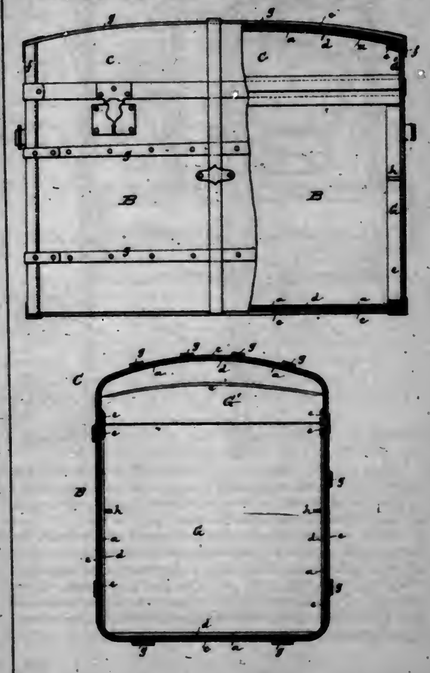
413,480. TRUNK-CATCH. GEORGE M. BALLARD and SAMUEL MASON, Newark, N. J.; said Mason assignor to said Ballard. Filed Jan. 18, 1889. Serial No. 296,702. (Model.)



Claim.—1. A tongue or hasp-plate of a trunk-catch, provided with an independent pin of malleable metal, one end of said pin being firmly secured in said hasp by casting the body of the hasp around said end, the other end being adapted to serve as a rivet to secure said hasp to the trunk, as described, and for the purposes set forth.

2. In a trunk-catch, the combination, with the case-body thereof, of a cross-bar within said body at its upper end and made integral therewith, a seat or support at the lower end of said body, a spring one end of which rests on said cross-bar and the other end on said seat, a catch provided with an inwardly-projecting portion and held in position by said spring, and a socket in said body and above said catch adapted to receive and guide a tongue to said catch, and a socketed tongue, all said parts being arranged as described, and for the purposes set forth.

413,481. TRUNK. HENRY H. B. BERTH and PAUL M. B. BERTH, Paris, France. Filed June 14, 1889. Serial No. 314,195. (No model.)



Claim.—1. The combination, with the body B, of the cover C, provided with the flanges *g* and *h*, and the bolts *i* and *j*, substantially as described.

2. The combination, with the body B, of the cover C, provided with the flanges *g* and *h*, the bolts *i* and *j*, and the lock *k*, substantially as described.

Claim.—1. As an improved article of manufacture, a trunk or similar receptacle having its sides and bottom formed in one piece from material consisting of narrow strips of wood united at their edges and covered with paper or the like, said strips being bent to form the bottom and sides of the trunk, as set forth.

2. As an improved article of manufacture, a trunk or similar receptacle having its sides, top, and bottom formed of a material consisting of narrow strips of wood with beveled edges united edge to edge and covered on both faces with paper, and strong sheet material cemented or glued to the wood, the fiber of the wood extending around the trunk, as set forth.

413,482. PURIFYING BRINES, WATER, &c. JOSEPH A. BRADBURN, EDWARD H. TRENT, and JOHN D. PERROCK, Syracuse, N. Y. Filed June 27, 1888. Serial No. 278,241. (No specimens.)

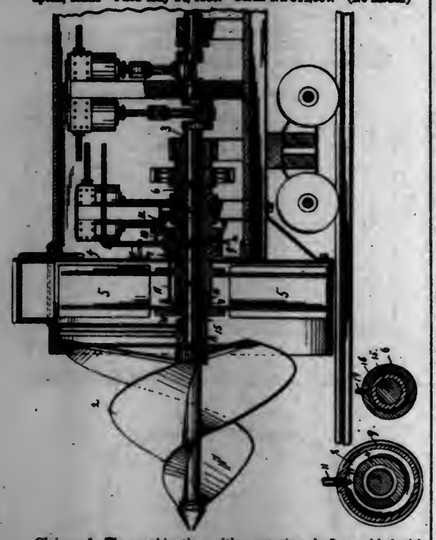
Claim.—1. The process for the purification of liquids consisting of the following steps, to wit: first, the commingling of sulphide of barium with the liquid; second, the passing of an excess of free carbonic-acid gas through the liquid; third, the decanting of the liquid so treated.

2. The process for the purification of liquid consisting of the following steps, to wit: first, the commingling of sulphide of barium with the liquid; second, the decanting of the liquid to recover the sulphide of barium; third, the passing of an excess of free carbonic-acid gas through the decanted liquid.

3. The process for the purification of liquids consisting of the following steps, to wit: first, the commingling of sulphide of barium with the liquid; second, the passing of an excess of free carbonic-acid gas through the liquid; third, the mixing of a soluble carbonate with the liquid to remove the calcium, magnesium, or barium present as chlorides.

4. The process for the purification of liquid consisting of the following steps, to wit: first, the commingling of sulphide of barium with the liquid; second, the decanting to recover the sulphate of barium; third, the passing of an excess of free carbonic-acid gas through the liquid; fourth, the mixing of a soluble carbonate with the liquid to remove the calcium and magnesium or barium present as chlorides.

413,483. ROTARY SNOW-PLOW. EDWARD P. CALDWELL, Minneapolis, Minn. Filed May 24, 1889. Serial No. 311,967. (No model.)



Claim.—1. The combination, with a rotating shaft provided with a suitable cutter, of a hollow shaft arranged upon said cutter-shaft, a fan upon said hollow shaft, and a steam-pipe connecting with the space between said hollow shaft and said cutter-shaft.

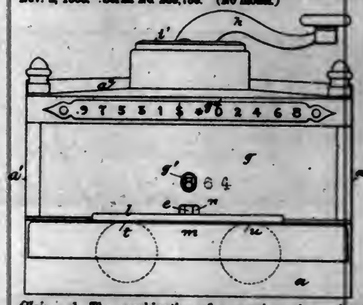
2. The combination, with the cutter-shaft 3, of the hollow fan-shaft arranged upon said cutter-shaft, and the steam-pipe connected with the interior of said hollow shaft at the forward portion thereof.

3. The combination, with the cutter-shaft 3, provided with the bushing 15, of the hollow fan-shaft 6, provided with the grooves 16 on its interior surface over said bushing, and the steam-pipe connecting said grooves, substantially as described.

4. The combination, with the cutter-shaft provided upon its exterior with the circular groove 8, of the stationary ring 9, covering said groove, the steam-pipe 11, connecting with said groove through said ring, and the steam-pipe 17, connecting said groove with the interior of said fan-shaft, substantially as described.

5. The combination, with the cutter-shaft 3, of the hollow fan-shaft mounted upon said cutter-shaft, and the bearing arranged in front of said fan-shaft and supporting said cutter-shaft and provided with a steam-pipe connecting with the space between said bearing and said cutter-shaft, substantially as described.

413,484. MACHINE FOR PUNCHING CHECKS. ANDREW CAMPBELL, Brooklyn, N. Y., assignor to William D. Elger, same place. Filed Nov. 2, 1888. Serial No. 289,786. (No model.)



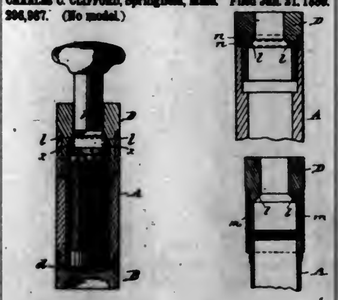
Claim.—1. The combination of a punch-carrier and selecting-lever connected together, the notched dies in the carrier, a notched slide-bar provided with a grooved crown-piece, the groove in which is engaged by a branch on the selecting-lever, and an intermediate lever or part engaging the notch in said slide-bar, and also the notch in the punch at the cutting or punching point, substantially as set forth.

2. The combination, with a punch-carrier, of the notched punches therein, each provided with a supporting-pin, a fixed punch-supporting shelf on which said pins rest, said shelf having a guide-slot for said pins arranged at the punching or cutting point, and intermediate lever or part which engages the notch in the punch that stands at the punching-point, and a retracting spring under said intermediate part or lever, substantially as set forth.

3. The combination, with the selecting-lever, the punch-carrier, and the die-platform, all connected and adapted to move together, of the notched punches carried by said carrier and each provided with a supporting-pin, the punch-supporting shelf on which said pins rest, said shelf provided with a guide-slot at the punching-point for the passage of the pin on the punch, the notched guide-bar provided with a grooved crown-piece, an intermediate lever or part the end of which engages the notch in said bar and also the notch in the punch at the punching-point, the retracting-spring under said lever, and the dies, a branch on the selecting-lever engaging the groove in the crown-piece of said slide-bar, and all operating substantially as set forth.

4. In a check-punch, the feeding mechanism consisting of the yoke *v* and its springs *w*, the guide-wheel *u*, mounted on said yoke, the feed-wheel *t*, its shaft *s*, which has a bearing in said yoke, the ratchet-wheel *r* on shaft *s*, the elbow-lever *o*, the pawl *q* thereon, engaging said ratchet-wheel, and the lever operating said elbow-lever, in combination with the rocking frame which bears on yoke *v*, the lever *w'*, which bears on said frame, and the depressing-button and rod, all arranged to operate substantially as set forth.

413,485. IMPLEMENT FOR LOADING AND RELOADING SHELLS. CHARLES C. CLIFFORD, Springfield, Mass. Filed Jan. 21, 1889. Serial No. 296,967. (No model.)



Claim.—1. The combination of a punch-carrier and selecting-lever connected together, the notched dies in the carrier, a notched slide-bar provided with a grooved crown-piece, the groove in which is engaged by a branch on the selecting-lever, and an intermediate lever or part engaging the notch in said slide-bar, and also the notch in the punch at the cutting or punching point, substantially as set forth.

2. The combination, with a punch-carrier, of the notched punches therein, each provided with a supporting-pin, a fixed punch-supporting shelf on which said pins rest, said shelf having a guide-slot for said pins arranged at the punching or cutting point, and intermediate lever or part which engages the notch in the punch that stands at the punching-point, and a retracting spring under said intermediate part or lever, substantially as set forth.

3. The combination, with the selecting-lever, the punch-carrier, and the die-platform, all connected and adapted to move together, of the notched punches carried by said carrier and each provided with a supporting-pin, the punch-supporting shelf on which said pins rest, said shelf provided with a guide-slot at the punching-point for the passage of the pin on the punch, the notched guide-bar provided with a grooved crown-piece, an intermediate lever or part the end of which engages the notch in said bar and also the notch in the punch at the punching-point, the retracting-spring under said lever, and the dies, a branch on the selecting-lever engaging the groove in the crown-piece of said slide-bar, and all operating substantially as set forth.

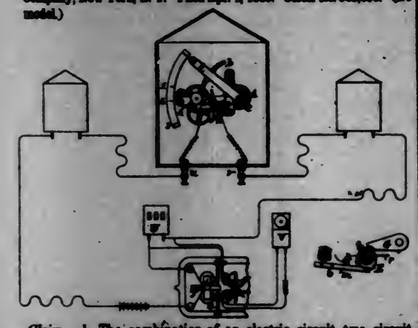
4. In a check-punch, the feeding mechanism consisting of the yoke *v* and its springs *w*, the guide-wheel *u*, mounted on said yoke, the feed-wheel *t*, its shaft *s*, which has a bearing in said yoke, the ratchet-wheel *r* on shaft *s*, the elbow-lever *o*, the pawl *q* thereon, engaging said ratchet-wheel, and the lever operating said elbow-lever, in combination with the rocking frame which bears on yoke *v*, the lever *w'*, which bears on said frame, and the depressing-button and rod, all arranged to operate substantially as set forth.

Claim.—1. In a cartridge-shell-crimping implement, in combination, the chambered cylinder for receiving and holding the shell therein, the removable crimping-head consisting of a block adapted to fit and freely move longitudinally in the end of said chambered cylinder, provided with a funnel-shaped aperture opening to one end thereof, the largest transverse area of which aperture is as great as the transverse area of said cylinder-chamber, said aperture terminating in an opening of less diameter than that of said cylinder-chamber, leading to the other end of said block, and the cylindrical crimping-stick adapted to be reciprocated through said reduced opening and within said crimping-head and cylinder-chamber and to lap the inwardly-deflected end portion of the shell in a return-bend upon the inner wall of said shell, substantially as described.

2. In a cartridge-shell-crimping implement, in combination, the chambered cylinder for receiving and holding the shell therein, the removable crimping-head consisting of a block adapted to fit and freely move longitudinally in the end of said chambered cylinder, provided with a funnel-shaped apertured opening to one end thereof, the largest transverse area of which aperture is as great as the transverse area of said cylinder-chamber, said aperture terminating in an opening of less diameter than that of said cylinder-chamber, leading to the other end of said block, means, substantially as described, whereby the said crimping-head may be adjusted longitudinally in and relatively to said cylinder, and the cylindrical crimping-stick adapted to be reciprocated through said reduced opening and within said crimping-head and cylinder-chamber and to lap the inwardly-deflected end portion of the shell in a return-bend upon the inner wall of said shell, substantially as described.

3. A shell-loading implement comprising the chambered cylinder A, the shell-retaining head fitting on and closing one end of said cylinder, the removable crimping-head consisting of a block adapted to fit and freely move longitudinally in the other end of said cylinder, provided with a funnel-shaped aperture the largest transverse area of which is as great as the transverse area of said cylinder-chamber, said aperture terminating in an opening leading to the other end of said block, of less diameter than that of said cylinder-chamber, and the crimping-stick adapted to be reciprocated through said reduced opening and within said crimping-head and cylinder-chamber and to lap the inwardly-deflected end portion of the shell in a return-bend upon the inner wall of the shell, substantially as described.

413,486. ELECTRIC SIGNALING APPARATUS. WILLIAM R. DUNCAN, Boston, Mass., assignor to The Gamewell Fire-Alarm Telegraph Company, New York, N. Y. Filed Apr. 1, 1889. Serial No. 305,690. (No model.)



Claim.—1. The combination of an electric circuit, two circuit-breakers operated successively at the transmitting-station, a shunt device for bringing one of said circuit-breakers into the circuit, the other circuit-breaker being normally in the circuit, clock-work at the receiving-station controlled by a magnet in the circuit, a short or local circuit at the receiving-station, and a circuit-closer *t'* for completing said local circuit, rotated by the action of said magnet and clock-work, substantially as and for the purposes set forth.

2. The combination of an electric circuit, three circuit-breakers operated successively at the transmitting-station, two shunt devices for bringing two of said circuit-breakers into the circuit, the other circuit-breaker being normally in the circuit, automatic mechanism at the receiving-station controlled by a magnet in the circuit, a visual indicator normally out out of said circuit, and a local circuit at the receiving-station, a circuit-closer *t'* in a shunt around said indicator, and a circuit-closer *t'* in said local circuit, said circuit-closers being operated by the action of said magnet and mechanism, substantially as and for the purposes set forth.

3. The combination of an electric circuit, two circuit-breakers operated successively at the transmitting-station, a shunt device for bringing one of said circuit-breakers into the circuit, the other circuit-breaker being normally in the circuit, automatic mechanism at the receiving-station controlled by a magnet in said circuit, a visual indicator normally out out of said circuit, and a circuit-closer *t'* for bringing said indicator into the circuit, said circuit-closer being in a shunt around the indicator and rotated by the action of said magnet and automatic mechanism, substantially as and for the purposes specified.

4. The combination of an electric circuit, two circuit-breakers, one normally in said circuit and the other in a shunt-circuit, two wheels to revolve together, each provided with one or more projections to operate said circuit-breakers, automatic mechanism for causing revolution of said wheels, a lever for closing the shunt-circuit, and a lever and a gear-segment on a spring or motor-shaft for causing action of said mechanism and for swinging said device for closing the shunt-circuit, substantially as described.

5. The combination of an electric circuit, three circuit-breakers, one normally in said circuit and each of the other circuit-breakers in a shunt-circuit, three wheels to revolve together, each provided with one or more projections to operate said circuit-breakers, automatic mechanism for causing revolution of said wheels, two independent levers for closing the shunt-circuits, and a lever and a gear-segment on a spring or motor-shaft for causing action of said mechanism and for swinging the levers for closing the shunt-circuits, substantially as and for the purposes set forth.

6. The combination of a wheel *n'*, provided with a notch *n'*, automatic mechanism for rotating said wheel, an electro-magnet for releasing said mechanism, an armature-lever and arm O thereof, a lever M, provided with a projection to enter said notch, an arm N, pivoted to the lever and providing a pawl, a wheel provided with ratchet-teeth for engagement with said pawl, and a circuit-closer on the shaft of said ratchet-wheel, substantially as described, and for the purposes set forth.

413,487. PROCESS OF PRODUCING FIRE-PROOF COVERINGS FOR WALLS AND CEILINGS. CARL F. W. DÖRINGER, Leipsic, Germany. Filed Nov. 27, 1888. Serial No. 292,012. (No specimens.)

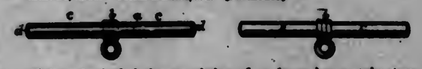
Claim.—1. The improved process of producing a fire-proof covering for ceilings and walls, which consists in steeping laths in chloride of calcium and water-glass and then covering them with a plaster-retaining mixture, substantially as specified.

2. The improved process of producing a fire-proof covering for ceilings and walls, which consists in steeping laths in chloride of calcium and water-glass, then coating them with water-glass, baryta, and zinc powder, and finally covering them with sand, substantially as specified.

413,488. PROCESS OF MANUFACTURING BATTERY-ZINCS. FRANK P. ROGERS, San Francisco, Cal. Filed May 8, 1889. Serial No. 310,178. (No specimens.)

Claim.—The improvement in the process of manufacturing battery-zincs, consisting in pulverizing the zinc, applying thereto diluted sulphuric acid and mixing mercury therewith, and afterward compressing the mixture, without heat, into bars or forms, substantially as herein described.

413,489. CHAIN-BAR. JOSEPH H. FARRELL, Providence, R. I. Filed Mar. 30, 1889. Serial No. 304,981. (No model.)



Claim.—1. A chain-bar consisting of an inner bar or tube, two tubular sleeves, each having one end closed, placed over the ends of the inner bar or tube, and a swivel placed on the inner bar or tube between the ends of the tubular sleeves, as described.

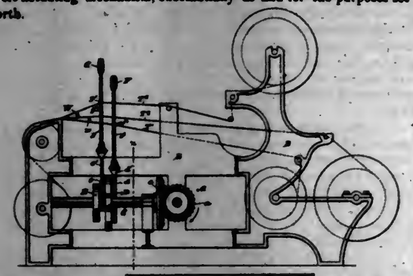
2. A chain-bar consisting of an inner bar or tube of inferior metal, a swivel of precious metal, and two tubular sleeves made of precious metal, each having one end closed, placed over the inner bar or tube and abutting against the swivel-piece, as a new article of manufacture.

413,440. LOOM FOR WEAVING PILE FABRICS. ALEXANDER F. FIRTH, Brighouse, County of York, England. Filed May 20, 1889. Serial No. 311,602. (No model.)

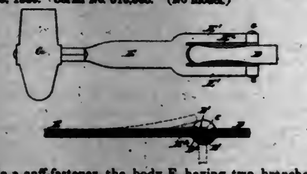
Claim.—1. In a loom for weaving pile fabrics, the heald F, having the wires with eyes *f'*, mechanism for actuating said heald, the heald G, having wires with eyes *f f²*, and mechanism for actuating said heald, in combination with a lay, wire-actuating mechanism, and weft-actuating mechanism, substantially as and for the purposes set forth.

2. In a loom for weaving pile fabrics, the heald F, having wires with eyes *f'*, cam D, provided with two rising and two falling grades, connections between said heald and said cam, the heald G, having wires with eyes *f f²*, the cam E, and connections between said heald and said cam, in combination with a lay, wire-actuating mechanism, and

weft-actuating mechanism, substantially as and for the purposes set forth.

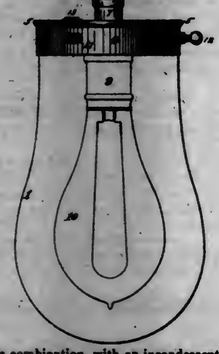


418,441. CUFF-FASTENER. HENRY C. FRANK, New York, N. Y. Filed July 3, 1889. Serial No. 316,005. (No model.)



Claim.—In a cuff-fastener, the body E, having two branches E' E, formed with eyes, and an intermediate branch E^3, formed of the same metal, adapted to serve as a spring, in combination with the pin *e*, hook D, having the cam-surfaces D' D^2, and a suitable clasp G, adapted to serve in engaging the cuff with the sleeve, substantially as herein specified.

418,442. INCANDESCENT LAMP. EMIL F. GEISSER, New York, N. Y., assignor to the E. P. Gleason Manufacturing Company, same place. Filed May 29, 1889. Serial No. 312,696. (No model.)



Claim.—1. The combination, with an incandescent lamp, of the globe 1, having inclined bayonet grooves 2, a metallic cap having the cylindrical portion 4, indentations 11, and the internal recess 5, with the packing ring or gasket 6, both said recess and ring or gasket being of larger diameter than said cylindrical portion of the cover, substantially as described.

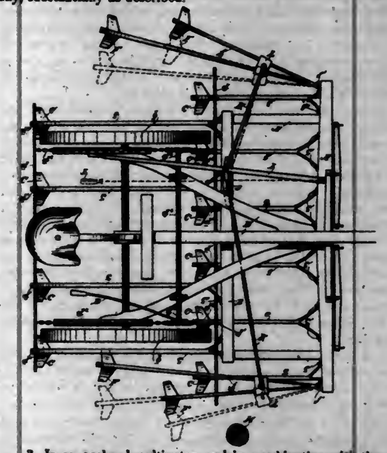
2. The combination of the metal cover or cap 4, having internal recess 5, indentations 11, and clamping-screw 12, nipple 7, nut 8, and incandescent lamp 10, with the outer inclosing-globe having the bayonet-slots 2, substantially as described.

3. The combination of the metal cover or cap 4, having indentations 11 and clamping-screw 12, and carrying the incandescent lamp 10, with the outer inclosing-globe having the indented or corrugated bayonet-slots 2, substantially as described.

418,448. ORCHARD-CULTIVATOR. LESLIE A. GREEN, San José, Cal., assignor of one-half to F. Plank, same place. Filed June 10, 1889. Serial No. 313,705. (No model.)

Claim.—1. In an orchard-cultivator, the main frame carrying the series of main teeth or lags, in combination with the laterally-swinging teeth F on each side of said main frame, a hand-lever, and connections from the hand-lever to the swinging teeth, whereby the latter may be laterally and vertically moved, substantially as described.

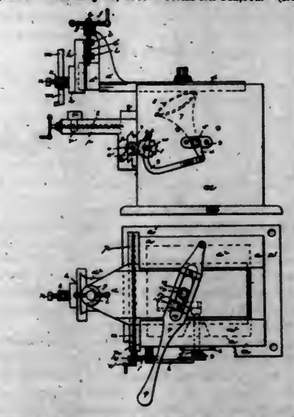
2. In an orchard-cultivator, the main frame and the main teeth carried thereby, in combination with the independent side teeth F, the standards or shanks *f* thereof, a pivotal connection between the forward ends of said standards or shanks and the frame, whereby said teeth may have a vertical and lateral movement, the pivoted lever I, and the connecting-rods K, whereby the said teeth are moved laterally, substantially as described.



3. In an orchard-cultivator, and in combination with the main frame having a series of main teeth, the pivotally-connected side teeth F on each side of said frame, the lever I and connecting-rods K, for effecting their lateral movement, and the lifting-rod, chains, eccentrics, rock-shaft, and lever for effecting their vertical movement, substantially as described.

4. An orchard-cultivator consisting of the wheeled frame, the frame A, supported from said wheeled frame by means of chains, pivotally-connected gravity teeth or lags carried by said last-named frame and in front of and behind the wheels, the pivotally-connected and swinging side teeth or lags F, the lever I and the connecting-rods K, for effecting the lateral movement of said side teeth or lags, and the lifting-rods, chains, eccentrics, rock-shaft, and lever for giving a vertical movement to all of the teeth or lags, substantially as described.

418,444. HAND PLANING-MACHINE. JACOB HANCHETT, Newark, N. J. Filed May 28, 1889. Serial No. 312,392. (No model.)



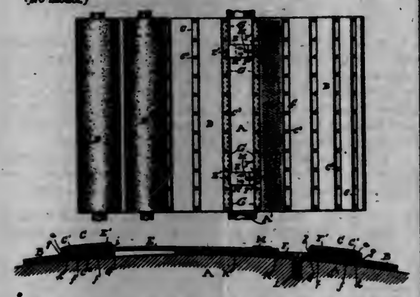
Claim.—1. The improved hand-planer herein described, combining therein a cutting mechanism, a supporting-carriage, and an automatic feed operated by the cutting mechanism, as set forth.

2. In a hand-planer, an automatic feed consisting of an operative lever in contact with the cutting mechanism and secured to a rocker-shaft, and a connecting-lever secured to said shaft and pivotally connected to one end of a reciprocating rod, the other end of said rod being pivoted to a pawl engaging a gear-wheel adapted to mesh into a gear-wheel on the feed-screw rod, as described, and for the purpose set forth.

3. In a hand-planer, a cutter-operating mechanism consisting of a slotted lever pivoted to said frame, a stud secured to the top of the sliding frame of the cutting mechanism, and a loose sleeve or collar on said stud and adapted and arranged to reciprocate in the slot in said lever, as described, and for the purpose set forth.

4. In a hand-planer, a cutter-operating mechanism consisting of a lever having an elongated slot, blocks adjustably secured in said slot, a stud secured to the top of the sliding frame of the cutting mechanism, and a loose sleeve or collar on said stud and adapted and arranged to reciprocate between said blocks in said slot, as described, and for the purpose set forth.

418,445. MECHANISM FOR ATTACHING SHEETS OF CARD-CLOTHING TOGETHER AND TO THE GRINDING-CYLINDER. WILLIAM HARRIS, Auburn, Mass. Filed May 20, 1889. Serial No. 311,468. (No model.)



Claim.—1. The combination, with a series of clamping-pieces C C^2, provided with holding-jaws *e g* and clamping-wings *f* A, respectively, of a series of sheets of card-clothing B, the sheets of card-clothing and clamping-pieces being arranged alternately and parallel to each other and held securely in such relative positions by screws C^2, substantially as and for the purposes described.

2. The combination of tightening-straps E and F, with their respective clamping-pieces C and C^2, substantially as and for the purposes set forth.

3. Clamp C, having one side provided with jaws *e g* and the other side provided with recesses, in combination with straps E F, strap E being provided with slots H, and perforated for attachment to its clamp, and strap F being provided with the series of holes I K, and perforations for attachment to its clamp and to the cylinder, substantially as described.

418,446. ROLLER-BEARING. REUBEN W. HENRY, San Francisco, Cal. Filed Mar. 25, 1889. Serial No. 304,642. (No model.)



Claim.—1. In a roller-bearing, the combination, with a series of bearing-rollers bearing on the central journal and the casing, and a series of separating-rollers keeping the bearing-rollers separate from each other, of a ring having a groove at its longitudinal center in one of its sides and recesses at its ends in its other side, and bearing in the groove or recesses in its outer side on journals of the bearing-rollers and in the groove or recesses in its inner side on journals of the separating-rollers, all substantially as set forth.

2. In a roller-bearing, the combination, with the central journal and the casing, of the series of rollers B, bearing on said journal and casing and having journals B^3, the series of rollers C, keeping the rollers B separate from each other and having journals C^3 and C^4, the ring E, having the groove *e* and the recesses *e'*, and the ring or rings F, bearing at their peripheries on the journals C^4, substantially as shown and described, and for the purposes set forth.

3. In a roller-bearing, the combination, with the central journal and the casing, of the series of bearing-rollers B, having journals B^3 and B^4, the series of separating-rollers C, bearing only on the journals B^3 and having journals C^3 and C^4, the ring E, having the groove *e* and the recesses *e'* and bearing in said groove and recesses on the journals B^3 and C^3, and the ring or rings F, bearing at their peripheries on the journals C^4, substantially as shown and described, and for the purposes set forth.

4. In a roller-bearing, the combination, with a series of bearing-rollers bearing on the central journal and the casing, and a series of separating-rollers keeping the bearing-rollers separate from each other, of a ring having a groove at its longitudinal center in one of its sides and recesses at its ends in its other side, and bearing in the groove or recesses in its outer side on journals of the bearing-rollers, and in the groove or recesses in its inner side on journals of the separating-rollers, and a ring bearing at its inner side or in a groove therein on journals of the bearing-rollers, all substantially as set forth.

5. In a roller-bearing, the combination, with the central journal and the casing, of the series of rollers B, bearing on said journal and casing and having journals B^3, the series of rollers C, keeping the rollers B separate from each other and having journals C^3 and C^4, the ring E, having the groove *e* and the recesses *e'*, and the ring or rings F, bearing at their peripheries on the journals C^4, substantially as shown and described, and for the purposes set forth.

6. In a roller-bearing, the combination, with the central journal and the casing, of the series of bearing-rollers B, having journals B^3 and B^4, the series of separating-rollers C, bearing only on the journals B^3 and having journals C^3 and C^4, the ring E, having the groove *e* and the recesses *e'* and bearing in said groove and recesses on the journals B^3 and C^3, and the ring or rings F, bearing at their peripheries on the journals C^4, substantially as shown and described, and for the purposes set forth.

7. In a roller-bearing, the combination, with a series of bearing-rollers bearing on the central journal and the casing, and a series of separating-rollers keeping the bearing-rollers separate from each other, of a ring having a groove at its longitudinal center in one of its sides and recesses at its ends in its other side, and bearing in the groove or recesses in its outer side on journals of the bearing-rollers and in the groove or recesses in its inner side on journals of the separating-rollers, and a ring bearing at its inner side or in a groove therein on journals of the bearing-rollers, all substantially as set forth.

8. In a roller-bearing, the combination, with the central journal and the casing, of the series of rollers B, bearing on said journal and casing and having journals B^3, the series of rollers C, keeping the rollers B separate from each other and having journals C^3, the ring E, having the groove *e* and the recesses *e'* and bearing in said groove and recesses on the journals B^3 and C^3, and the ring or rings G, bearing at their inner sides on the journals B^4, substantially as shown and described, and for the purposes set forth.

9. In a roller-bearing, the combination, with the central journal and the casing, of the series of bearing-rollers B, having journals B^3, B^3, and B^4, the series of separating-rollers C, bearing only on the journals B^3 and having journals C^3, the ring E, having the groove *e* and the recesses *e'* and bearing in said groove and recesses on the journals B^3 and C^3, and the ring or rings G, bearing at their inner sides on the journals B^4, substantially as shown and described, and for the purposes set forth.

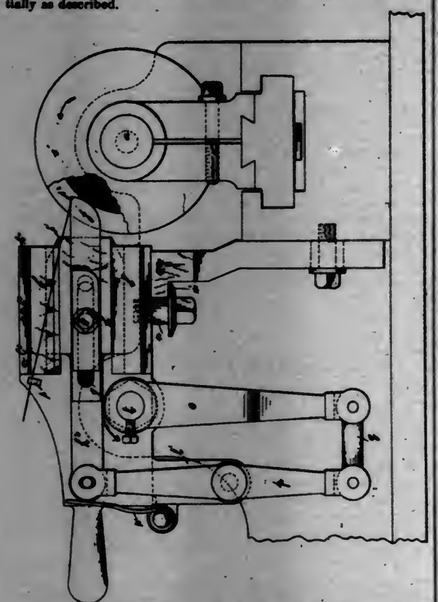
10. In a roller-bearing, the combination, with a series of bearing-rollers bearing on the central journal and the casing, and a series of separating-rollers keeping the bearing-rollers separate from each other, of a ring having a groove at its longitudinal center in one of its sides and recesses at its ends in its other side, and bearing in the groove or recesses in its outer side on journals of the bearing-rollers and in the groove or recesses in its inner side on journals of the separating-rollers, a ring or rings bearing at their peripheries on journals of the latter rollers, and a ring or rings bearing at their inner sides on journals of the bearing-rollers, all substantially as set forth.

11. In a roller-bearing, the combination, with the central journal and the casing, of the series of rollers B, bearing on said journal and casing and having journals B^3 and B^4, the series of rollers C, keeping the rollers B separate from each other and having journals C^3 and C^4, the ring E, having the groove *e* and the recesses *e'*, the ring or rings F, bearing at their peripheries on the journals C^4, and the ring or rings G, bearing at their inner sides on the journals B^4, substantially as shown and described, and for the purposes set forth.

12. In a roller-bearing, the combination, with the central journal and the casing, of the series of bearing-rollers B, having journals B^3, B^3, and B^4, the series of separating-rollers C, bearing only on the journals B^3 and having journals C^3 and C^4, the ring E, having the groove *e* and the recesses *e'* and bearing in said groove and recesses on the journals B^3 and C^3, the ring or rings F, bearing at their peripheries on the journals C^4, and the ring or rings G, bearing at their inner sides on the journals B^4, all substantially as shown and described.

418,447. MACHINE FOR WINDING THREAD ON SPOOLS. CHAS. HILL, Newark, N. J. Filed Aug. 3, 1889. Serial No. 319,674. (No model.)

Claim.—1. In a thread-winding machine, in combination, the spool-holder, the thread-guide, guideways supporting said thread-guide, wherein the same may move back from the spool in substantially a rectilinear course, and mechanism whereby the thread-guide is moved back on such guideways at the end of the traverse, substantially as described.



2. In a thread-winding machine, in combination, the spool-holder, the thread-guide, guideways whereby said thread-guide is supported and wherein it may move back from the spool in a substantially rectilinear course, the shaft *b*, mechanism controlled by the traverse-changer, whereby said shaft is rotated, and mechanism connecting said shaft with the thread-guide, whereby the thread-guide is caused to respond with a substantially rectilinear movement for each partial rotation of the shaft, substantially as described.

3. In a thread-winding machine, in combination, the spool-holder, the thread-guide, the carriage upon which the thread-guide is mounted, the traversing-shaft and the block mounted thereon provided with guideways wherein the carriage moves, and the rest whereby the rotation of said block is stayed, substantially as described.

4. In a thread-winding machine, in combination, the spool-holder, the thread-guide, the carriage upon which the thread-guide is mounted, the guideways whereby the carriage is compelled to move in substantially a rectilinear course, the spring whereby said carriage is impelled forward, and mechanism whereby the carriage is moved backward for each traverse of the thread-guide, substantially as described.

5. In a thread-winding machine, in combination, the spool-holder, the thread-guide, the carriage, adjustable connections between the thread-guide and the carriage, whereby the position of the thread-guide may be adjusted to suit various diameters of spools, the guideways whereby the carriage is held to move in a substantially rectilinear course, and mechanism whereby the carriage is moved backward intermittently to accommodate the accumulation of the thread upon the spools, substantially as described.

418,448. GAME APPARATUS. WILLIAM L. HOWER, Manhattan, Kans. Filed June 10, 1889. Serial No. 313,766. (No model.)

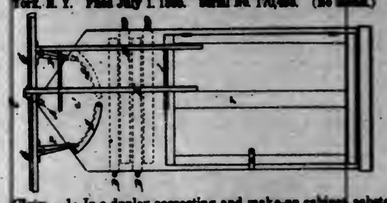


Claim.—1. As a game implement, a throwing-disk A, having series of concentrically-arranged openings *b b*, marked with various game-values, all substantially as set forth.

2. The combination of a throwing-disk, having concentrically-arranged openings of various game-values, with a rotating spear C, arranged substantially as and for the purpose specified.

3. The combination of the throwing-disk A, having concentrically-arranged openings of various game-values, spear C, base-stakes D, and station-pins B, for the purpose specified.

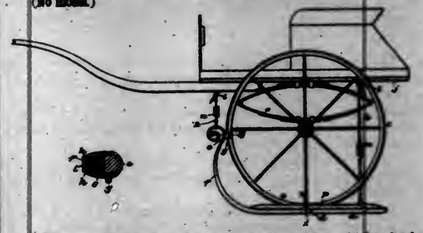
418,449. COMPOSITOR'S CABINET. LOUIS K. JOHNSON and ARBUCKLE A. LOW, Brooklyn, assignors to The Alden Type Machine Company, New York, N. Y. Filed July 1, 1889. Serial No. 170,493. (No model.)



Claim.—1. In a duplex correcting and make-up cabinet, substantially such as described, for compositors' use, the two galleys G G, hinged together and arranged back to back upon the top of the cabinet and adapted to be used either independently as separate inclined galleys or together as a common horizontal table, as and for the purpose described, in combination with means, substantially as described, for sustaining the said galleys in either position, as set forth.

2. The two galleys pivotally connected at their edges, in combination with the pawl-braces and segmental racks arranged and operating substantially in the manner and for the purpose described.

418,450. RUNNER ATTACHMENT FOR VEHICLE-WHEELS. MOSES A. LINDER, Fullman, Ill. Filed Apr. 15, 1889. Serial No. 307,256. (No model.)



Claim.—1. The improved runner attachment for vehicle-wheels, consisting of a runner having the channel-way and binding-screw in the upper side, the clip and binding-screw on the goose-neck, and the tension-chains at the front and rear of the runner, respectively, and adapted to connect with the bed-frame of the wheel, and said channel-way and clip adapted to secure the wheel-rim, substantially as described.

2. The improved runner attachment for vehicle-wheels, consisting of a runner having the channel-way and binding-screw in the upper side, the clip and binding-screw on the goose-neck, and the tension-chains at the front and rear, respectively, said chains having tension-adjusting devices and adapted to connect with the bed-frame of the vehicle, and said channel-way and clip adapted to receive and secure the wheel-rim, substantially as described.

3. The combination, with the wheels of a vehicle, of a runner attachment to each wheel, consisting of a runner having the channel-way and binding-screw in the upper side, the clip and binding-screw on the goose-neck, and the tension-chains at the front and rear of the runner, respectively, said chains adapted to connect with the bed-frame of the vehicle, and said channel-way and clip adapted to receive and secure the wheel-rim, substantially as described.

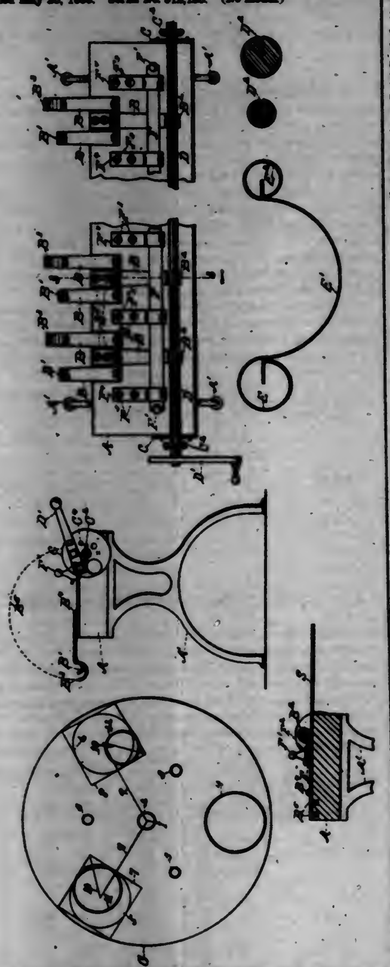
4. The combination, with the wheels of a vehicle, of a runner attachment to each wheel, consisting of a runner having the channel-way and binding-screw in the upper side, the clip and binding-screw on the goose-neck, and the tension-chains at the front and rear of the runner, respectively, said chains having tension-adjusting devices and adapted to connect with the bed-frame of the vehicle, and said channel-way and clip adapted to receive and secure the wheel-rim, substantially as described.

5. The combination, in a runner attachment for vehicle-wheels, of the runner *a*, the channel-bar *p*, attached to the upper side of the runner, and the binding-screw *d* in the side of the channel-bar, substantially as described.

6. The improvement in the construction of a runner attachment for vehicle-wheels, consisting of the runner *a*, having the goose-neck *f*,

the separately-constructed channel-bar *p*, attached to the upper side of the runner, and the clip *e*, attached to the goose-neck, said channel-bar and clip being adapted to receive the wheel-rim by rolling it along the channel, and having binding-screws in the sides, and all combined substantially as described.

418,451. SHEET-METAL-BENDING MACHINE. WILLIAM H. LOSE, Cohoes, N. Y., assignor of one-half to Stephen V. Lewis, same place. Filed May 25, 1889. Serial No. 312,126. (No model.)



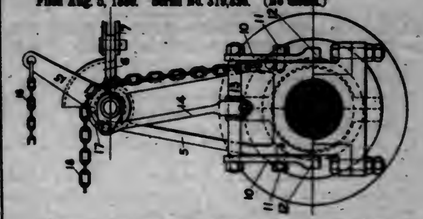
Claim.—1. In a sheet-metal-bending machine, a rotary mandrel provided with a longitudinal slot and means for communicating thereto a rotary movement, in combination with a supporting-bench, a series of former-clamps hinged to the bench, and means for holding such clamps to the mandrel, consisting of bar F and bar-clamps F', secured to the bench, all substantially as described.

2. In a sheet-metal-bending machine, a rotary mandrel provided with a longitudinal slot and means for communicating thereto a rotary movement, in combination with a supporting-bench, former-clamps differing in size and individually hinged to the bench, and means for holding to the mandrel such of said clamps as may be desired, while the others are swung back from the mandrel, consisting of the bar F and bar-clamps F, secured to the bench, substantially as described.

3. In a sheet-metal-bending machine, an adjustable mandrel-support consisting of a metallic plate having a central aperture, a plurality of pin-holes equidistant from the central aperture and from each other, and a plurality of different-sized mandrel-holes, the sides of which nearest the central aperture are equidistant therefrom, two supporting-pins adapted to enter such pin-holes, and a thumb-screw adapted to enter such central aperture and secure the plate upon such pins, in combination with the mandrel and a bed plate, substantially as described.

4. In a sheet-metal-bending machine, an adjustable mandrel-support consisting of a metallic plate having a central aperture, a plurality of pin-holes equidistant from the central aperture and from each other, and a plurality of different-sized mandrel-holes severally in contact with two similar sides of imaginary inclosing-squares, one of which sides is nearest the central aperture and equal to the diameter of the largest mandrel-hole, the several inclosing-squares inclosing and described about imaginary circles of the same diameter as the largest mandrel-hole, which circles are equidistant from the central aperture and from each other, one side of each square being at right angles to the radial line drawn from the center of the plate to the center of the larger circle about which the square is described, in combination with a thumb-screw, supporting-pins, and a mandrel, substantially as described.

418,452. CAR-BRAKE. ALBERT P. MASSEY, Watertown, N. Y. Filed Aug. 5, 1889. Serial No. 319,838. (No model.)

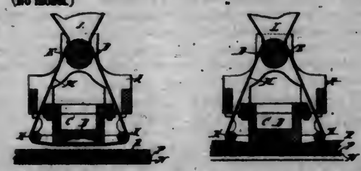


Claim.—1. In a car-brake, a sleeve on the axle with a projecting arm connected to the car-frame so that it cannot revolve, a pulley with a frictional face turning loosely on said sleeve, and a friction-disk clamped to the axle, in combination with said axle, and suitable means for pressing said pulley in contact with said disk, substantially as set forth.

2. In a car-brake, a chain barrel or pulley having a frictional face formed of a large number of wires, and turning freely on a sleeve which is restrained from turning with the axle, in combination with a friction-disk clamped to said axle, and suitable means for pressing said pulley in contact with said disk, substantially as set forth.

3. In a car-brake, the combination of bell-crank 15, rod 14, and levers 10 with pulley 8, sleeve 4, disk 2, and axle 1, substantially as set forth.

418,453. DIAPHRAGM-DIE FOR PLASTIC MOLDING. JAMES H. MITCHELL, Philadelphia, Pa. Filed Dec. 10, 1888. Serial No. 293,226. (No model.)



Claim.—1. The combination, with a reciprocating cutting and molding die and means for operating the same, of a movable elastic expelling diaphragm located between the face of the die and the material to be cut and molded and a flat unbroken support for said material, substantially as shown and described.

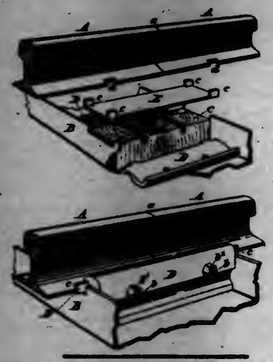
2. The combination, with a cutting and molding die, of a movable elastic expelling-diaphragm passing over the face of the die and a flat unbroken table or support beneath the face of the die, substantially as shown and described.

418,454. RAIL-JOINT PLATE. ISAAC S. MCCORMAN, Bergen Point, N. J., assignor to the Standard Metal Tie and Construction Company, of New Jersey. Filed Jan. 7, 1889. Serial No. 295,611. (No model.)

Claim.—1. The combination, with rails A A, metal tie B, block C, and clamps D D, of a flat rectangular rail-joint plate E, provided with vertical corner-lugs, substantially as and for the purpose described.

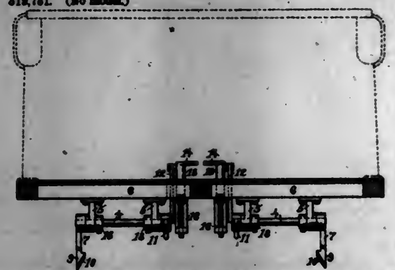
2. The combination, with rails A A, tie B, and clamps D D, of a rail-joint plate provided with vertical corner-lugs, substantially as herein shown and described, the distance between said lugs along a

side of the said plate being greater than the width of a clamp, as set forth.



418,455. SWITCH-OPERATING DEVICE FOR STREET-CARS.

DANIEL J. MCGREER, Providence, R. I. Filed Aug. 5, 1889. Serial No. 319,781. (No model.)



Claim.—1. In a device for operating the switches of street-railways, the combination, with the platform of a car, of a shaft supported in suitable bearings below the platform, an arm secured to the outer end of said shaft, ending in a pointed wedge-shaped arm constructed to enter between the rail and the switch-tongue, the other end of the said shaft being connected with a foot-treadle held in the raised position by a spring, as described.

2. The combination, with arm 7, having the curved wedge-arm 8, the shaft 4, and the hangers 5, of the foot-treadle 14, the spring 17, the lever 11, and connecting-rod 12, as described.

3. In combination with the platform of a car, one or more switch-operating devices, consisting of the tube 13, pin 15, spring 17, the stirrup 16, connecting-rod 12, lever 11, shaft 4, hangers 5, and the arm 7, having the wedge-arm 8, bent at or nearly at right angle, as and for the purpose described.

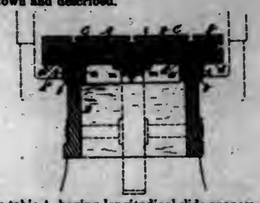
418,456. SATCHEL-LATCH. LOUIS OSWALD, Newark, N. J. Filed Mar. 5, 1889. Serial No. 301,945. (Model.)



Claim.—The combination, with a chambered and slotted plate adapted to be secured to the frame of a satchel, of a plate superposed and sliding upon said first-mentioned plate and provided with an inwardly-projecting boss and tang, which pass through and work in the slot in said plate first named, said tang being also adapted to pass through the satchel-frame and to engage with a catch therein to hold the satchel in a closed position, and a spring arranged to engage with the opposite sides of a projection, as described, whereby said tang is held into and out of holding engagement with said catch, said parts being arranged with relation to one another and operating substantially as and for the purposes set forth.

418,457. METAL-PLANING MACHINE. HENRY C. PRAIN, Worcester, Mass. Filed July 6, 1889. Serial No. 316,766. (No model.)

Claim.—1. The within-described table for metal-planing machines, having its slide-runners or tracks made hollow, with longitudinal chambers above the guiding-surfaces and embraced between two webs that join the tracks and main plate, and provided with openings at the ends and with passages from the chamber to the bearing-surfaces, substantially as shown and described.

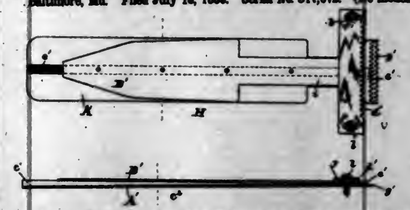


2. The table A, having longitudinal slide-runners or tracks *a*, constructed with chambers C and two webs *d* between the track-surfaces and platen-surface or table-top, with porously-plugged passages *i* from said chambers to the guide-surfaces, the openings *e* into said chambers, provided with screw-stoppers E, and the rack T, connecting central webs *t t*, substantially as shown and described.

3. In a metal-planing machine, the table having slide-runners or tracks that are hollow, with longitudinal chambers C therein above the guiding-surfaces, provided with openings at the ends and with passages from said chambers to the sliding surfaces containing plugs of porous substance, in combination with the supporting-bed B, having guideways *b b*, on which said table is supported to have reciprocative sliding action, substantially as set forth.

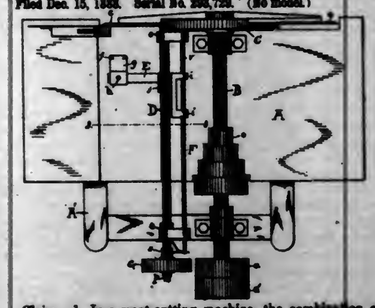
4. The combination, with the supporting-frame B, having the guideways *b*, of the table having hollow tracks fitted to said guideways, the two side webs *d d* of said tracks projecting and overhanging the edges of the guideways at *d' d'*, substantially as and for the purpose set forth.

418,458. PAPER-BAG-TUBE CUTTER. FREDERICK B. PORTER, Baltimore, Md. Filed July 16, 1889. Serial No. 317,672. (No model.)



Claim.—The mandrel or former for paper-bag tubes, consisting of a lower and an upper plate A' B', united along their longitudinal centers and having between them tuck-grooves *c*' for the bellows fold, and each plate provided at its extremity with a serrated cutting-edge *g d*, the said edge *g* of the lower plate projecting beyond the edge *d* of the upper one, in combination with a knife J, fixed above the mandrel, and having its cutting-edge *d*' back from and so as to expose the said serrated edge *d* of the upper plate, for the purpose set forth.

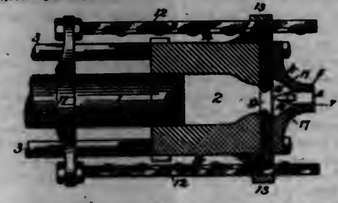
418,459. MEAT-CUTTER. ROBERT B. PURPERHY, Baltimore, Md. Filed Dec. 15, 1888. Serial No. 293,723. (No model.)



Claim.—1. In a meat-cutting machine, the combination of the cutters, the table-top A, the feed-screw D, extending across the table-top, a rod F, parallel with the feed-screw, a slide-arm E, having at one end pivot-eyes which fit loosely and slide on the said rod, and having at the other end a head device to hold the meat, and provided intermediate of its ends with a half-nut or threaded part *j*, which fits on the feed-screw, for the purpose set forth.

2. In a meat-cutting machine, the combination of the cutters, the feed-screw D, a pulley G, loose on the feed-screw shaft and movable longitudinally, a clutch device to engage the pulley and feed-screw shaft, a rod F, parallel with the feed-screw, movable endwise and connected with the said pulley G and having a stop-shoulder *v*, a slide-arm E, pivoted loosely and so as to slide on the said rod and provided with a half-nut or threaded part *j*, which fits on the feed-screw, and a head device to hold the meat, for the purpose set forth.

418,460. APPARATUS FOR MANUFACTURING PLUMBERS' TRAPS. ALEXANDER B. ROBEY, Pittsburg, Pa., assignor of one-half to Thomas J. McNight, New York, N. Y. Filed Sept. 21, 1888. Serial No. 286,000. (No model.)



Claim.—1. In a lead-trap press, the combination, with the lead-cylinder having a contracted throat, of a transversely-movable valve-bar 8, having a central aperture 9, substantially coinciding with the throat-opening, and a die beyond said valve-bar, provided with a core 6, having its inner end wedge-shaped and provided with supporting-wings 16 between the valve-bar and die-orifice.

2. In a lead-trap press, the combination of the lead-cylinder having a contracted throat, a die opposite and having a core 6, whose inner end is wedge-shaped and provided with supporting-wings 16, and a removable valve-bar 8, having a central aperture 9, substantially coinciding with the throat-opening, said valve being located between the throat of the cylinder and the wedge-shaped core, and having its line of movement at right angles to the supporting-wings of the core, substantially as described.

3. In a lead-trap press, the combination of the lead-cylinder having a contracted throat, a movable valve-bar having a central aperture coinciding with said throat-opening, a core opposite the throat beyond the valve-bar, and having supporting-wings in a line transverse to the line of movement of the valve-bar, and a die having the two convergent faces 17 opposite the inner portion of the core.

4. In a lead-trap press, the combination, with the lead-cylinder, a movable plunger therein, the die, and a transversely-movable differentiating valve, of the controlling mechanism interposed between the said plunger and valve for communicating a transverse movement to the valve from the onward movement of the plunger, substantially as described.

5. In a lead-pipe press, the combination, with the lead-cylinder and die, of a transversely-movable differentiating valve and pattern-bars in contact with the ends of the valve and moved by the plunger of said cylinder, said pattern-bars having removable pattern-faces, substantially as described.

6. The combination of the cylinder 2 and its die, plunger 1, pattern-bars 12, fixed thereto, guides 13, removable undulating faces 14, and movable valve 8, adapted to be shifted by the undulations of said faces 14, substantially as described.

418,461. COAL-CART. JOSEPH R. SAGLE, Baltimore, Md. Filed Sept. 7, 1889. Serial No. 323,200. (No model.)



Claim.—1. The combination of the two reach-bars C, having their front and rear ends parallel and at the center curved or bent in toward each other, and also arched upward, two hanger-bars G, attached to the center of said reach-bars and hanging down between them, a plate N, resting on said hangers, a hopper-box D, and a lift-screw P, attached to the hopper-box and passing down through the plate.

2. The combination of the reach-bars C, two hanger-bars G, attached to the center of said reach-bars and hanging down between them, a plate N, resting on said hangers, an internally-screw-threaded pinion *r*, resting on said plate, a worm engaging the said pinion and mounted on a crank-shaft *s*', a hopper-box, and a lift-screw attached to the hopper-box and passing through said pinion.

418,462. REPAIRING DEVICE FOR BOTTLE-STOPPERS. JONAS J. SANDS, Morton, Wis. Filed May 13, 1889. Serial No. 310,895. (No model.)

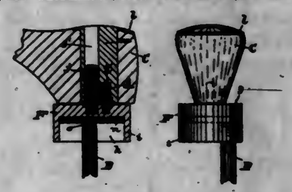


Claim.—1. The combination, with the walls of a vessel-orifice having an internal groove, and which is smaller inside of than outside of the groove, and with a stopper in the orifice, of a flexible metal holding-bar engaged at its ends with said groove, and a supporting-plate separate from the holding-bar and inserted beneath said holding-bar, said plate being larger than that part of the orifice inside of the groove, substantially as described.

2. The combination, with the walls of a vessel-orifice having an internal groove, and which is smaller inside than outside of the groove, and with a stopper in the orifice, of a flexible metal holding-bar engaged at its ends with the groove, and a supporting-plate of annular form separate from the holding-bar and inserted beneath said holding-bar, said plate being larger in diameter than that part of the orifice inside of the groove, substantially as described.

3. The combination, with the walls of a vessel-orifice having an internal groove, and which is smaller inside than outside of the groove, and with a stopper in the orifice, of a flexible holding-bar engaged at its ends with said groove and having a central aperture, and an annular supporting-plate separate from the holding-bar and inserted beneath said holding-bar, said supporting-plate being larger in diameter than that part of the orifice inside of the groove, substantially as described.

418,463. HEEL-SLUGGING MACHINE. HERMANN SCHENCK, Baltimore, Md. Filed Mar. 28, 1889. Serial No. 304,919. (No model.)



Claim.—1. In a heel-slugging machine, the combination, with the last-jack having a metal back *g* and screw-threaded studs *j k*, secured thereto, of the last C, provided with a metallic heel-plate *l* and block *m*, the vertical sockets *j' k'*, for the reception of the studs, whereby the last is held upon the jack, as described.

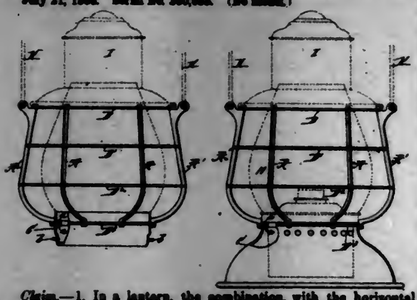
2. In a heel-slugging machine, the combination of the last-jack having a rim *i*, cavity *h*, and cushion *n*, which rests on the top of the post B, the studs *j k*, extending vertically from the top of the jack, and the last C, having vertical sockets *j' k'*, fitting over the said studs, whereby the last is held upon the jack, substantially as shown and described.

3. A last-jack for use with heel-slugging machines, consisting of a metal back *g*, provided with suitable means for attachment to the ankle part of a last and having projecting from the said back a rim *i*, forming a cavity *h*, and a cushion *n* in the said cavity.

4. A heel-slugging machine consisting of a jack having studs on its upper face portion and provided with a downwardly-projecting rim *i*, the walls of which form a cavity *h*, and a cushion located in said cavity, in combination with the ankle portion of a last having openings to receive said studs, and the post B, having its upper end inserted in said cavity, so as to bear against the cushion, whereby it can be moved freely on the cushion during the operation of slugging the top lift of the heel, substantially as specified.

5. In a heel-slugging machine, the combination, with the jack, made in the form of a shoe-heel and having a solid upper face portion *g* and a surrounding downwardly-projecting rim forming an interior opening or cavity *h*, of a cushion in said opening which bears against the under part of the face portion, said face portion being provided with vertical pins *j k*, and the last having the sockets *j' k'*, as shown and described, and for the purposes set forth.

418,464. LANTERN. FREEMAN D. STRAW, Brooklyn, N. Y. Filed July 21, 1888. Serial No. 280,693. (No model.)

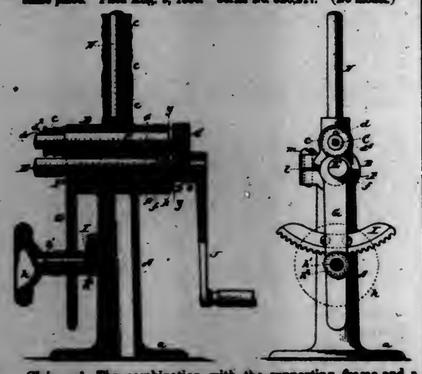


Claim.—1. In a lantern, the combination, with the horizontal frame-ring B², secured to the upright guards, substantially as explained, of a body-hoop secured upon said frame-ring, substantially as and for the purposes set forth.

2. In a lantern, the combination, with the flat metal horizontal frame-ring notched upon and secured to the upright guards, of the body-hoop bent or buckled upon said flat metal ring, substantially as shown and described.

3. In a lantern, the combination, with the flat metal horizontal frame-ring secured upon the upright guards, of the body-hoop bent or buckled upon said flat metal ring and extended down to form the base or foot of the frame, substantially as shown and described.

418,465. MACHINE FOR ENLARGING FINGER-RINGS. CLARK A. STEPHENS, Buffalo, N. Y., assignor of one-half to William W. Oliver, same place. Filed Aug. 9, 1888. Serial No. 280,517. (No model.)



Claim.—1. The combination, with the supporting-frame and a roller-shaft journaled in said frame, of a rotary bearing arranged in said frame and a ring-supporting shaft journaled eccentrically in said bearing, substantially as set forth.

2. The combination, with the supporting-frame and a roller-shaft journaled in said frame and provided with a detachable roller, of a rotary bearing arranged in said frame parallel with the roller-shaft and a ring-supporting shaft journaled eccentrically in said bearing, substantially as set forth.

3. The combination, with the supporting-frame and a roller-shaft journaled in said frame, of a rotary bearing arranged in said frame parallel with the roller-shaft, a ring-supporting shaft journaled eccentrically in said bearing, and an arm or lever secured to said bearing, whereby the ring-supporting shaft is adjusted toward and from the roller-shaft, substantially as set forth.

4. The combination, with the supporting-frame and a roller-shaft journaled in said frame, of a roller detachably secured to one end of said shaft, a rotary bearing arranged in said frame parallel with the roller-shaft, a ring-supporting shaft journaled eccentrically in said bearing and having one of its ends arranged below the roller, and an arm secured to the bearing, whereby the ring-supporting shaft is adjusted toward and from the roller, substantially as set forth.

5. The combination, with the stationary frame, the roller-shaft and its roller, and the ring-supporting shaft, of the rotary bearing in which the ring-supporting shaft is eccentrically journaled, an arm secured to said bearing, a shaft and pinion mounted in said arm, and a gear-segment in which said pinion meshes, and which is secured to the stationary frame, substantially as set forth.

6. The combination, with the supporting-frame and a roller-shaft journaled in said frame, provided at one end with a detachable roller and its opposite end with a gear-wheel, of a rotary bearing arranged in said frame parallel with the roller-shaft, a ring-supporting shaft journaled eccentrically in said bearing, a gear-wheel secured to said ring-supporting shaft and meshing with the gear-wheel on the roller-shaft, and a hand-crank secured to one of said shafts, substantially as set forth.

7. The combination, with the supporting-frame, the ring-supporting shaft, and the roller-shaft, of a detachable roller and an automatic locking-bolt, whereby the roller is attached to its shaft, substantially as set forth.

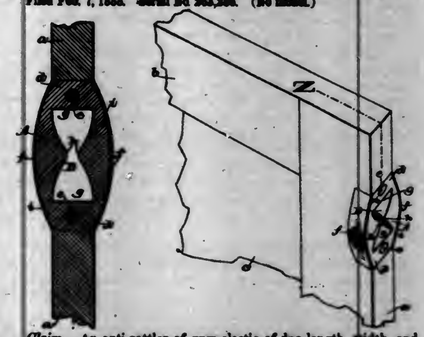
8. The combination, with the roller-shaft provided with a spring-bolt arranged in a radial opening formed in said shaft, of a detachable roller mounted loosely on said shaft and provided with a notch, in which the head of the spring-bolt engages, substantially as set forth.

9. The combination, with the roller-shaft having a radial opening formed near one of its ends, of a spring-bolt seated in said opening and having its head beveled in the longitudinal direction of the shaft and a detachable roller mounted on said shaft and provided with a notch or recess, in which the head of the bolt engages, substantially as set forth.

10. The combination, with the stationary frame and the rotary bearing arranged therein, of a shaft journaled in said bearing and a detachable washer secured to the end of the bearing and projecting into a groove in the ring-supporting shaft, substantially as set forth.

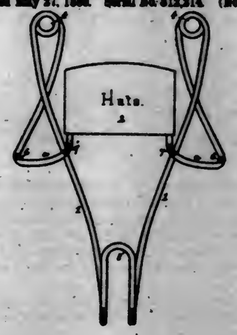
11. The combination, with the stationary frame and the rotary bearing arranged therein and provided at one end with a stop bearing against one side of the stationary frame, of a detachable washer secured to the opposite end of the bearing and bearing against the opposite side of the frame and a shaft journaled in said bearing, substantially as set forth.

418,466. SASH-HOLDER. FRANK W. TUCKER, Winthrop, Mass. Filed Feb. 7, 1888. Serial No. 263,266. (No model.)

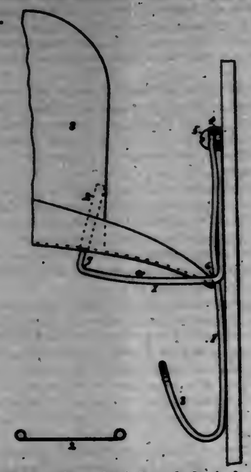


Claim.—An anti-rattler of gum-elastic of due length, width, and thickness to be inserted in the stile of the sash and formed with the swelled edges and having an interior opening therethrough, widened at its ends and narrowed at its middle by inward projections arranged to abut together when the sides are forced inward, substantially as specified.

418,467. HAT AND COAT HOOK. CHARLES L. WEBBER, Neenah, Wis. Filed May 27, 1889. Serial No. 312,314. (No model.)



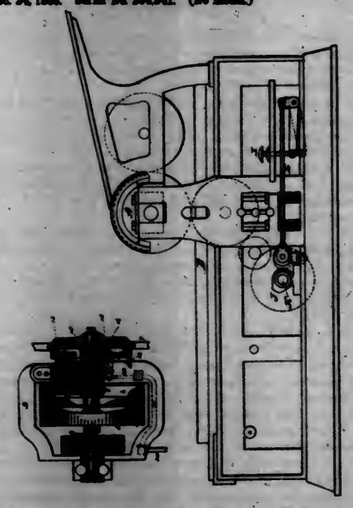
418,467.



Claim.—1. A hat and coat hook formed of a single piece of wire, the wire being doubled to form the rounded top of the clothes-hook 3, the two branches of the wire extending upward, eyes formed therein for receiving screws for securing the device to a suitable support, the loops *a a* below said eyes, the bends 6 and 7 therein, and the plate 2, connecting the ends of the wire and forming a support between which and the body of the device a hat may be held by its rim, substantially as described.

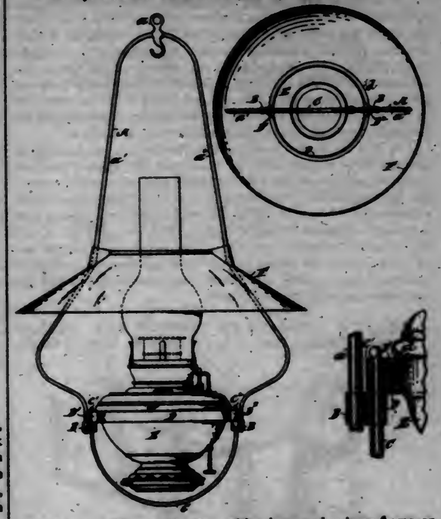
2. A combined hat and coat hook consisting of a single piece of wire having the eyes 4 4, the loops *a a* below said eyes, the bends 6 and 7 therein, the extremities of the wire extending upward from said bends 7 and toward the body of the device and being connected one to the other, and the clothes-hook 3, depending from the eyes 4 4 and below the loops *a a*, substantially as described and shown.

418,468. PRINTING-MACHINE. STEPHEN WHITTIER, Birmingham, Conn., assignor to the Whitlock Machine Company, same place. Filed Dec. 24, 1888. Serial No. 294,541. (No model.)



Claim.—The combination of the impression cylinder and reciprocating bed of a printing-press, a back-up mechanism substantially such as described, a cam on a revolving shaft at a position corresponding to a predetermined point at which it is desired to stop the back-up of the cylinder, and a connection from said back-up mechanism, substantially such as described, to a point in the path of the said cam, substantially as and for the purpose described.

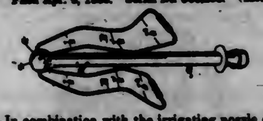
418,469. HANGING LAMP. GEORGE W. WOODWARD, Brooklyn, assignor to the Ansonia Brass and Copper Company, New York, N. Y. Filed Sept. 15, 1888. Serial No. 285,026. (No model.)



Claim.—1. The combination, with a lamp and a lamp frame or harp, of one set of legs extending from the lamp frame or harp, another set of legs extending from the lamp-frost and resting upon the legs of the lamp frame or harp, pins extending from one set of legs, and sockets formed in the other set of legs for the reception of the pins, the pins being approximately of the length of the sockets formed for their reception, substantially as specified.

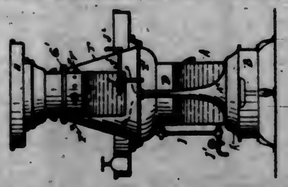
2. The combination, with a lamp frame or harp having side portions provided with clips, of a hand-piece secure to said clips and extending from beneath the lamp-bowl above the clips to form pins or projections, substantially as specified.

418,470. SPECULUM-IRRIGATOR. ELLIOTT H. WOOLSEY, Oakland, Cal. Filed Apr. 6, 1889. Serial No. 306,282. (Model.)



Claim.—In combination with the irrigating nozzle or tip, an expansion-frame composed of spring-wires secured at one end to the end of the nozzle or tip and having their other ends free, said wires having divergent portions *b*, for expanding the walls of the passage, convergent portions *b'*, serving as holds to keep the instrument in place, and divergent outer ends *b²*, for limiting the insertion of the instrument and holding the orifice or mouth of the passage open, substantially as described.

418,471. HOT-WATER URN. CHARLES SIEBERMANN, New York, N. Y. Filed Nov. 1, 1888. Serial No. 289,730. (No model.)



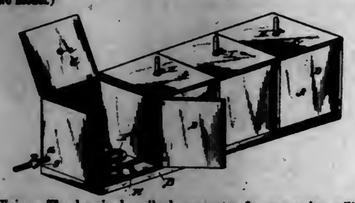
Claim.—1. In a hot-water urn, the combination, with a cylindrical vessel having an inverted-funnel-shaped bottom, of a tube extending upward from said bottom through the top of said vessel and serving as a flue for the products of combustion from a burner below said funnel-shaped bottom, an additional vessel supported above the upper end of the flue that extends upward from the inverted-funnel-shaped bottom of the lower vessel, whereby the products of combustion lav-

ing the top of the flue strike against the bottom of the upper vessel and heat the water in said upper vessel, said upper and lower vessels being connected, substantially as set forth.

2. In a hot-water urn, the combination, with a vessel having an inverted-funnel-shaped bottom, a tube extending upward and through the top of said vessel and forming a flue for the products of combustion from a burner below the inverted-funnel-shaped bottom, an apertured plate on said vessel, through the aperture of which plate the above-mentioned tube or flue passes, a tapering jacket resting on said plate, a vessel supported within said jacket and above the upper end of the tube or flue, and a valved pipe establishing communication between the upper and lower vessels, substantially as set forth.

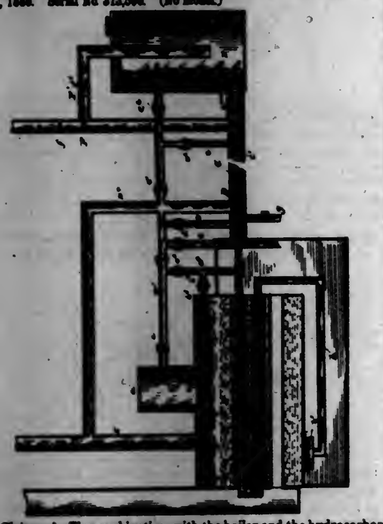
3. In a hot-water urn, the combination, with a vessel having an inverted-funnel-shaped bottom, of a tube extending upward from said funnel-shaped bottom through the top of said vessel and forming a flue for the products of combustion from a burner below the inverted-funnel-shaped bottom, an additional vessel supported above the first-mentioned vessel and having its bottom above the upper end of said flue, whereby the products of combustion passing from the upper end of the flue strike the bottom of said vessel and heat the contents of said vessel, and a valved tube establishing communication with the two vessels, substantially as set forth.

418,472. APPARATUS FOR PRESERVING MILK. JOHN T. APPLEMAN, Knoxville, Tenn. Filed Feb. 15, 1889. Serial No. 299,974. (No model.)



Claim.—The herein-described apparatus for preserving milk by heating, the same consisting of a series of boxes, each adapted to contain a milk-can, having hinged tightly-fitting doors and covers and provided near the bottom with a horizontal coil of pipe adapted to support the can, and having a packed aperture in the hinged cover for the insertion of a thermometer or indicator, the several coils or supports of pipe (one for each box) communicating with one another to permit a flow of steam through the entire series, substantially as and for the purpose shown and set forth.

418,473. APPARATUS FOR BURNING HYDROCARBON OIL. WILLIAM S. RAGON and SAMUEL I. HOLMBERG, Tiffin, Ohio. Filed June 8, 1889. Serial No. 313,560. (No model.)



Claim.—1. The combination, with the boiler and the hydrocarbon tank or holder, of the series of steam-pipes connecting with the said tank or holder and vaporizing the hydrocarbon, an oil-pipe passing through a flue or flues of the boiler, and a steam-jacket surrounding the exposed portion of said oil-pipe, said steam-pipes having valved branch connections with the oil-pipe and the steam-jacket, substantially as specified.

2. The combination, with the boiler and oil or hydrocarbon holder, of the steam-pipes, the oil-pipes, and the steam-jacket including the exposed portion of said oil-pipe, one of said steam-pipes connecting with said jacket, said oil-pipe passing through the boiler flue or flues and under the boiler and having a burner connected thereto, substantially as set forth.

3. The combination, with the tubular boiler, and an oil tank or holder, of a steam-pipe connecting the steam-space of said boiler with said tank, an oil-pipe leading from the tank through the tubes of the boiler to the combustion-chamber, a steam-jacket surrounding the exposed portion of said oil-pipe, and a burner located under the boiler in the combustion-chamber and communicating with the oil-pipe, substantially as set forth.

4. The combination, with the boiler and oil or hydrocarbon holder, of the steam-pipes and oil-pipe, one of said steam-pipes connecting with and entering said oil-pipe and terminating or provided in the latter with a jet pipe or nozzle, said oil-pipe passing through a flue or flues of the boiler and under the boiler and having a burner connected thereto, and a steam-pipe connecting with the steam-chamber of the boiler and having a valved-pipe connection with the pipe leading from the live-steam chamber of the boiler to the oil-pipe, substantially as set forth.

5. The combination, with the boiler and oil-tank, of the series of steam-pipes, the oil-pipe, and the steam-jacket surrounding the exposed portion of said oil-pipe, said steam-pipes connecting with said jacket and the oil-pipe, one of said steam-pipes leading from the said jacket into and depending in said tank, the steam-pipe connecting the steam-chamber of the boiler with said holder, and a valved steam-pipe connecting with said steam-pipe and the oil-pipe, substantially as set forth.

418,474. COMBINED PLATE HOLDER AND RECEIVER. CLYDE C. BALLOU, Brooklyn, N. Y. Filed Mar. 30, 1889. Serial No. 305,263. (No model.)



Claim.—1. The combination, with a holder, of a detachable receiver secured thereto, a sliding frame for transferring the plates, and an automatically-operating recorder indirectly connected with the latter, substantially as set forth.

2. A plate or film holder constructed with a containing-frame, a sliding frame, and a rotating shaft indirectly connected with said sliding frame for the purpose of moving the same and releasing the plates from said containing-frame, substantially as set forth.

3. A plate or film holder constructed with a containing-frame, a sliding frame, a rotating shaft indirectly secured to the latter, and a recorder connected with said shaft, substantially as and for the purpose set forth.

4. The combination, with a holder, of a receiver removably secured thereto, a rotating shaft extending through said holder and having attached thereto a sliding frame for releasing the plates, and a recorder secured to the holder and connected with said shaft for automatically recording the number of plates transferred from said holder to the receiver.

5. In a plate or film holder, the combination of a containing-frame, a sliding frame moving thereon, sliding pins E, connected with said sliding frame, and rotating rod F, connected with said pins for imparting a reciprocating motion to said sliding frame, substantially as and for the purposes set forth.

6. In a plate or film holder, the combination, with the frames A B D, of the pins E, rod F, and keys G, all arranged and constructed to operate in the manner and for the purposes set forth.

7. In a plate or film holder, the combination, with a containing-frame, of a sliding frame, a rotating rod connected with the latter, a ratchet and pawl connected with said rod, and a recording-dial connected with said ratchet, substantially as and for the purposes set forth.

8. In a plate or film holder, the combination, with the frames A B D, of the rod F, indirectly connected with frame D for moving it laterally, and a recorder consisting of plates P Q, ratchet P', shaft P'', pawl S', and pointer R, substantially as and for the purposes set forth.

9. A plate or film holder constructed with a containing-frame, a sliding frame, frame J, and a spring for holding the front plate in position within the sliding frame and against the frame J, substantially as and for the purposes set forth.

10. In a plate or film holder, the combination, with a containing-frame, of a sliding frame, a rotating rod connected with said latter frame, and a turning and locking device H, for moving the rod and sliding frame and locking them in position, substantially as and for the purposes set forth.

11. A plate or film holder constructed with the frames A B D, frame J, carrying slide J'', and spring M, for excluding light when the said slide is withdrawn, substantially as and for the purposes set forth.

12. A plate or film holder constructed with frame A, frame B, provided with slots B', frame D, provided with slots D' D'', pins E, fitting in said slots B' D' D'', keys G, and rod F, connected with said pins, substantially as and for the purposes set forth.

13. In a plate or film holder, the combination, with frame A and sliding frame D, of the rod F, indirectly connected with said sliding frame, turning and locking device A, connected with said rod, and automatic recorder, connected also with said rod, substantially as set forth.

14. A plate or film holder constructed with frame A, frame B, sliding frame D, and frame J, carrying the slide J'', and constructed with flanges J', serving as rests for the plates or films and as guides for said slide, substantially as and for the purposes set forth.

15. In a plate or film holder, the combination of frames A, B, D, and J, the latter being provided with a grooved removable piece or strip L and a spring M, all arranged substantially as set forth.

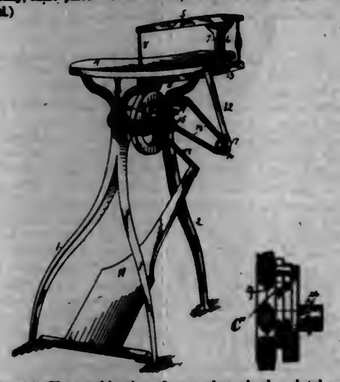
16. In a plate or film holder, the combination, with frames A, B, D, and J, of a plate or plates contained within the holder and bearing against flanges formed on frame J, a spring V, for holding them in position, and a receiver removably secured to the holder, substantially as and for the purposes set forth.

17. In a combined holder and receiver, the receiver constructed with the frames W J and slides X N', substantially as set forth.

18. A receiver constructed with frames W J, slides X N', and having springs W' W'', secured to inner side of frame W, substantially as set forth.

19. The combination, with a holder having slide J'', provided with cap J''' and slotted hinge J''', of a receiver having slide X, provided with a cap Y, slotted hinge Y'', and catch Z, substantially as set forth.

418,475. MECHANISM FOR OPERATING SCROLL-SAWS, &c. WILLIAM F BARNES, Rockford, Ill., assignor to the W. F. & John Barnes Company, same place. Filed Jan. 11, 1889. Serial No. 296,057. (No model.)



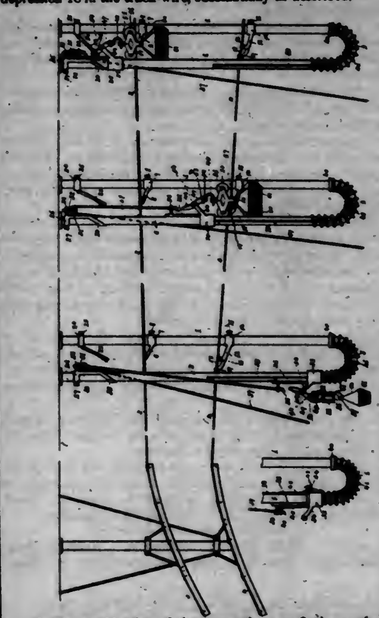
Claim.—1. The combination of a sprocket-wheel, a clutch mechanism carried by said wheel, a perforated belt engaging the sprockets of the wheel, mechanism for imparting motion to the belt intermediate its ends, and a take-up for the belt, substantially as set forth.

2. The combination of a sprocket-wheel, a clutch mechanism carried by said wheel, a perforated belt engaging the sprocket of the wheel, a foot-treadle for imparting motion to the belt, and a spring-actuated oscillating take-up arm engaging the belt intermediate its ends, substantially as set forth.

418,476. STORE-SERVICE APPARATUS. SAMUEL W. BABB, Mansfield, Ohio. Filed Apr. 4, 1889. Serial No. 305,948. (No model.)

Claim.—1. The combination of the supporting-arm 1, the track-wire 4, and the arm 13, secured to the supporting-arm and having fingers 16 and 17 of different heights for maintaining a depression 18 in the track-wire, substantially as described.

2. The combination of the supporting-arm 1, track-wire 4, and the arm 13, having the adjustable collar 14 and set-screw 15, and formed with fingers 16 and 17 of different height for maintaining a depression 18 in the track-wire, substantially as described.



3. The combination of the supporting-arm 2, the carrier-elevator having lever 47 provided with projection 48, and the tilting forked bar 23, hinged to the arm, substantially as described.

4. The combination of the supporting-arm 2, the carrier-elevator having lever 47, provided with projection 48, the adjustable collar 24, having set-screw 25, and the tilting forked bar 23, hinged to the collar, substantially as described

5. The combination of the supporting-arm 2, the sleeve 26, secured thereto, having projecting lug 28, longitudinal channel 29, and beveled portion 30, providing a flaring opening leading to the channel, and the pulley 31, having swiveled support 32 on the lug, substantially as described.

6. The combination of the supporting-arm 2, the carrier-elevator 33 free to slide thereon, having a projecting arm 34 and an upwardly-extending stem 35, formed with a lug 36, the lever 47, and the hook 49, substantially as described.

7. The combination of the cylindrical support, having the longitudinal strip 39 extending upward to a point above the lower track-wire, the carrier-elevator 33, having a longitudinal notch 38, means for elevating the carrier-elevator, and means for turning the latter above the strip, substantially as described.

8. The combination of the U-shaped support having arms 1 and 2 and bend 5 between the arms, the collar 40 on one arm, and the cushioning-spring 41, coiled around the bend, substantially as described.

9. The combination of the supporting-arms 1 and 2, having the bend 5, the flange 40, the cushioning-spring 41, the longitudinal guide-strip 39, and the carrier-elevator 33, having a longitudinal notch 38, substantially as described.

10. The combination of the supporting-arm 2, the cushioning-spring 41, the longitudinal strip 39, having teeth 42, the carrier-elevator 33, having a longitudinal notch 38, and the pawl 43, hinged to the carrier-elevator, having a ring 44, provided with an upwardly-extending stem 45, having a lug 46, substantially as described.

11. The combination of the supporting-arm 2, the cushioning-spring 41, the longitudinal strip 39, having teeth 42, the carrier-elevator 33, having a longitudinal notch 38, and an upwardly-extending arm 35, formed with a lug 36, and the pawl 43, hinged to the carrier-elevator, having a ring 44, provided with an upwardly-extending stem 45, formed with a lug 46, substantially as described.

12. The combination of the supporting-arms 1 and 2, having the bend 5, the flange 40, the cushioning-spring 41, the longitudinal strip

39, having teeth 42, the carrier-elevator 33, having a longitudinal notch 38, and an upwardly-extending stem 35, formed with a lug 36, and the pawl 43, hinged to the carrier-elevator having a ring 44, provided with an upwardly-extending stem 45, formed with a lug 46, substantially as described.

13. The combination of a carrier-frame 55, having grooved wheels 56, pendent hook 57, and cheek-plates 58, the block connected with the cheek-plates, and the carrier-elevator having a hook, substantially as described.

14. The combination of the carrier-elevator 33, having a projecting arm 34, the lever 47, pivoted to the arm formed with a projection 48, and the hook, substantially as described.

15. The combination of the carrier-elevator 33, having a projecting arm 34, the lever 47, and the hook 49, formed with curved prongs 50, having rearwardly-projecting teeth 51, and the cross-bar 52, having an eye 53, by which it is pivoted to the lower end of the lever, substantially as described.

16. The combination of the carrier-elevator 33, having a projecting arm 34, the lever 47, pivoted to the arm formed with a projection 48, and the tilting hinged forked arm 23, substantially as described.

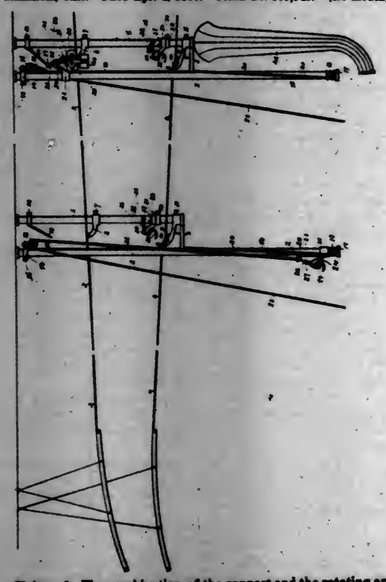
17. The combination of the carrier-elevator 33, having an upwardly-extending stem 35, and the sleeve 26, having the longitudinal channel 29, and beveled portion 30, providing a flaring opening leading to the channel, substantially as described.

18. The combination of the carrier-elevator 33, having an upwardly-extending stem 35 and projecting arm 34, the lever 47, pivoted to the arm, the sleeve 26, having the longitudinal channel 29 and beveled portion 30, and the tilting hinged forked arm 23, substantially as described.

19. The combination of the carrier-frame 55, having grooved wheels 56, pendent hook 57 and cheek-plates 58, and the T-block 63, having knife-edges 64, substantially as described.

20. The combination of the carrier-frame 55, the T-block 63, having knife-edges 64, the carrier-elevator 33, having projecting arm 34, the lever 47, and the hook 49, having curved prongs 50, formed with rearwardly-projecting teeth 51, substantially as described.

418,477. STORE-SERVICE APPARATUS. SAMUEL W. BARR, Mansfield, Ohio. Filed Apr. 4, 1889. Serial No. 305,949. (No model.)



Claim.—1. The combination of the support and the rotating arm carrying the arresting and releasing hook, substantially as described.

2. The combination of the rigid support 1, having lug 36, the arm 32, carrying the arresting and releasing hook, the rod 35, connecting the hook with the lug, and the spring 37, connected at one end with the support and at the other end with the arm, substantially as described.

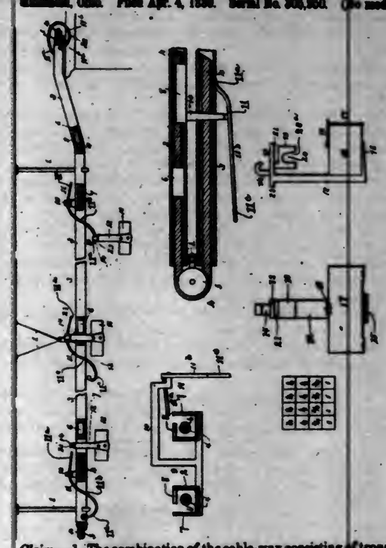
3. The combination of the rigid support 1, having lug 36, the arm 32, carrying the arresting and releasing hook 33, having pivoted jaw 34, the rod 35, connecting the jaw with the lug, and the spring 37, connected at one end with the support and at the other end with the arm, substantially as described.

4. The combination of the support 1, having lug 36 and the adjustable collar 29, with the arm carrying the arresting and releasing hook, substantially as described.

5. The combination of the support 1 with the arm carrying the arresting and releasing hook and the carrier-receiving trough or chute 42, substantially as described.

6. The combination of the support 1 and the return-track wire having a depression 10 with the carrier arresting and releasing device and the carrier-receiving trough or chute 42, substantially as described.

418,478. STORE-SERVICE APPARATUS. SAMUEL W. BARR, Mansfield, Ohio. Filed Apr. 4, 1889. Serial No. 305,950. (No model.)



Claim.—1. The combination of the cable-way consisting of troughs 2 and 3, having side openings 7 for the entrance and exit of the carrier-block, the bracket 9, secured to the bottom of the way and extending upward between the troughs, having an arm 10 projecting over a trough, and a switch-bar 11, secured to the arm for removing the carrier-block for the cable, formed with a downwardly and inwardly curved inner end 11^a, and with a downwardly-curved outer end 11^b, having a retaining-hook 11^c, substantially as described.

2. The combination of the cable-way consisting of troughs 2 and 3, rectangular in cross-section, having side openings 7, the cable 4, having plain thimbles 6, a carrier having pendent rectangular block 19 and hook 14, the bracket 9, secured to the bottom of the way and extending upward between the troughs, having an arm 10, projecting over a trough, and a switch-bar 11, secured to the arm for removing the carrier-block from the cable, substantially as described.

3. The combination of the cable-way consisting of troughs 2 and 3, rectangular in cross-section, having side openings 7, the cable 4, having plain thimbles 6, a carrier having pendent rectangular block 19 and hook 14, the bracket 9, secured to the bottom of the way and extending upward between the troughs, having an arm 10, projecting over a trough, and a switch-bar 11, secured to the arm, for removing the carrier-block from the cable, formed with a downwardly and inwardly curved inner end 11^a, and with a downwardly-curved outer end 11^b, having a retaining-hook 11^c, substantially as described.

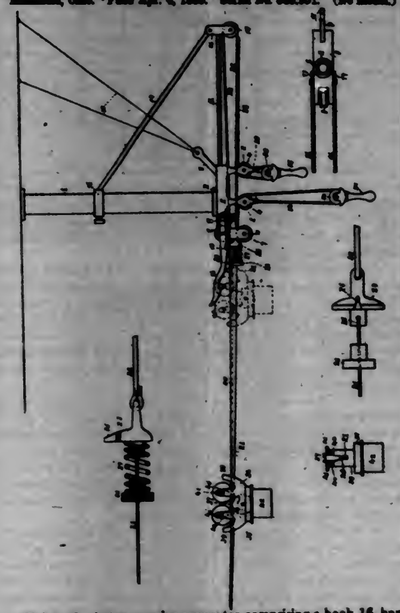
4. The carrier constructed with a frame 12, the overhanging arm 13, and the rectangular block 19, depending from the arm, having a cable-opening 20, substantially as described.

5. The carrier constructed with a frame 12, the overhanging arm 13, and the rectangular block 19, depending from the arm, having a cable-opening 20, formed with widened portion 20^a at one side, substantially as described.

6. The carrier constructed with a frame 12, the upper horizontal overhanging arm 13, the rectangular block 19, depending from the arm, having a cable-opening 20, the lower horizontal arm 15, and the cash-box 16, substantially as described.

7. The carrier constructed with a frame 12, the upper horizontal overhanging arm 13, the rectangular block 19, depending from the arm, having a cable-opening 20, the lower horizontal arm 15, and the cash-box 16, having hinged front 17 and spring-catch 18, substantially as described.

418,479. STORE-SERVICE APPARATUS. SAMUEL W. BARR, Mansfield, Ohio. Filed Apr. 4, 1889. Serial No. 305,951. (No model.)



Claim.—1. A store-service apparatus comprising a hook 16, having a carrier-catch 18 and a bumper-recess 19, two track-wires, connection between the track-wires, and a bumper-head secured to a track-wire, and with which the hook engages, substantially as described.

2. The combination of the upper track-wire 20, the lower track-wire 21, the connection 22 between the track-wires, and the bumper-head 23, having bumper 26 and coil-spring 27, substantially as described.

3. A store-service apparatus comprising a hook 16, having a carrier-catch 18 and a bumper-recess 19, two track-wires, connection between the track-wires, and bumper-head secured to the track-wire, having a notch 25 for the passage of the other track-wire, substantially as described.

4. The combination of the upper track-wire 20, the lower track-wire 21, the connection 22 between the track-wires, and the bumper-head 23, formed with a notch 25 for the passage of the upper wire, bumper 26, and coil-spring 27, substantially as described.

5. A store-service apparatus comprising a hook 16, having a carrier-catch 18 and a bumper-recess 19, two track-wires, connection between the track-wires, a bumper-head 23, secured to a track-wire, having bumper 26 and coil-spring 27, substantially as described.

6. The combination of the upper track-wire 20, the lower track-wire 21, the strap 22, connected to the upper track-wire, the bumper-head 23, by which the strap is connected to the lower track-wire, the bumper 26, sliding on the lower track-wire, and the coil-spring 27, connecting the bumper-head and bumper, substantially as described.

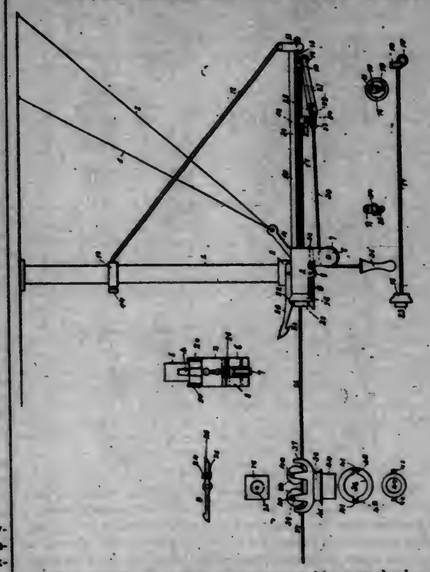
7. A store-service apparatus comprising a pair of hooks 16, having carrier-catches 18 and bumper-recesses 19, two track-wires, connection between the track-wires, a bumper-head secured to a track-wire, and a carrier comprising a frame 36, having side arms 40, provided with side projections 41, and bumper ends 39, substantially as described.

8. An apparatus comprising the upper track-wire 20, the lower track-wire 21, the strap connected to the track-wires, the block 2, having side pieces 3 and hangers 4, the hooks 16, having catches 18 and recesses 19, the bumper-head 23, the bumper 26, the coil-spring 27, and the carrier 36, having bumper ends 39 and side projections 41, substantially as described.

9. An apparatus comprising the block 2, having side pieces 3 and hangers 4, the rearwardly-projecting rod 11, the bracket 12, the pulleys 5, 6, and 7, the bracket-pulley 13, the upper track-wire 20, the lower track-wire 21, the connecting-strap 22, the pull-cords 28 and 32, and the bumper-head 23, substantially as described.

10. An apparatus comprising the block 2, having side pieces 3 and hangers 4, the rearwardly-projecting rod 11, the bracket 12, the pulleys 5, 6, and 7, the bracket-pulley 13, the track-wires 20 and 21, the connecting-strap 22, the pull-cords 28 and 32, the bumper-head 23, and the handles 31 and 34, having pulleys 30 and 33, respectively, substantially as described.

418,480. STORE-SERVICE APPARATUS. SAMUEL W. BARR, Mansfield, Ohio. Filed Apr. 4, 1889. Serial No. 305,952. (No model.)



Claim.—1. A store-service apparatus comprising a track-wire, a propelling-block slidable on the wire, having a rod supported on the wire, a catch-lever for retaining the block, and a spring for advancing the block, substantially as described.

2. A store-service apparatus comprising a track-wire, a propelling-block slidable on the wire, having a rod, a loop or link slidable on the wire and supporting the rod, a catch-lever for retaining the block, and a spring for advancing the block, substantially as described.

3. A store-service apparatus comprising a track-wire, a propelling-block slidable on the wire, having a rod supported on the wire, a catch-lever for retaining the block, a finger for tripping the lever, and a spring for advancing the block, substantially as described.

4. A store-service apparatus comprising a track-wire, a propelling-block slidable on the wire, having a rod supported on the wire, a catch-lever for retaining the block, a trip-finger slidable on the rod for tripping the lever, and a spring for advancing the block, substantially as described.

5. A store-service apparatus comprising a track-wire, a propelling-block slidable on the wire, having a rod supported on the wire, a catch-lever for retaining the block, a finger for tripping the lever, a propelling-spring connected to the rod, and an operating-cord connected to the spring, substantially as described.

6. A store-service apparatus comprising a track-wire, a propelling-block slidable on the wire, having a rod, a loop or link slidable on the wire and supporting the rod, a catch-lever for retaining the block, a trip-finger slidable on the rod for tripping the lever, a propelling-spring connected to the rod, and an operating-cord connected to the finger and to the spring, substantially as described.

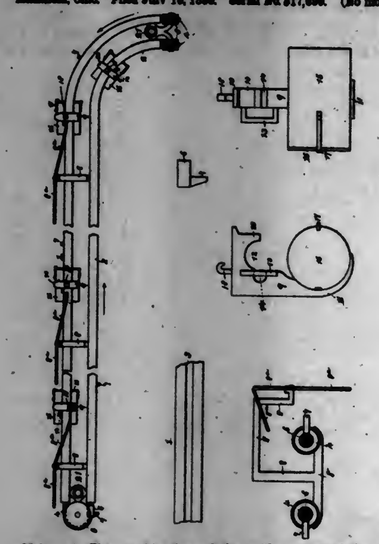
7. A store-service apparatus comprising the supporting-block, the track-wire, the propelling-block having a rod, the loop or link slidable on the wire and supporting the rod, the operating-cord, and the spring-connection between the rod and the operating-cord, substantially as described.

8. A store-service apparatus comprising a supporting-block, a rod extending rearwardly from the block, a cross-bar on the end of the rod, a track-wire passed through the block and secured to the

cross-bar, a propelling-block slidable on the wire, having a rod slidable in the supporting-block and supported on the wire, a catch-lever, a trip-finger, and a spring, substantially as described.

9. A store-service apparatus comprising the supporting-block, the track-wire, the propelling-block having a rod, the loop or link, the spring, the operating-cord, the catch-lever, the trip-finger, and the hooks having catches 21 and recesses 22, substantially as described.

418,481. STORE-SERVICE APPARATUS. SAMUEL W. BARR, Mansfield, Ohio. Filed July 16, 1889. Serial No. 317,690. (No model.)



Claim.—1. The combination of the cable-way consisting of a pair of tubes 1 and 2, having continuous narrow openings or slits 3 in the sides thereof, a cable 4, provided with thimbles 6, having horizontal sprockets or projections 7 working through the openings or slits, and a carrier having a frame 9, provided with an overhanging arm 10, formed with a semicircular opening 12, conforming to the tubes to adapt the carrier to slide on the latter, substantially as described.

2. The combination of the cable-way consisting of a pair of tubes 1 and 2, having continuous narrow openings or slits 3 in the sides thereof, a cable 4, provided with thimbles 6, having horizontal sprockets or projections 7 working through the openings or slits, and a carrier formed with a frame 9, an overhanging arm 10, having semicircular opening 12, a groove or recess 14, and a loop or bar 13 in front of the groove or recess, substantially as described.

3. A carrier constructed with a frame 9, overhanging arm 10, opening 12, groove or recess 14, and loop or bar 13, substantially as described.

418,482. CULTIVATOR FOR BRICK-YARDS. ANDREW J. BATH, Summerdewt, Kans. Filed Mar. 25, 1889. Serial No. 304,613. (No model.)

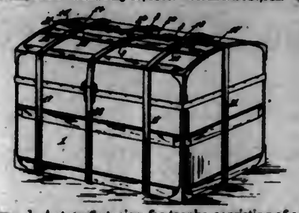


Claim.—1. In a cultivator, the combination of a frame, standards secured to the frame, elongated points on said standards, and convex mold-boards secured to the standards above the points 6, by means of the clamps 8, substantially as described, and for the purpose set forth.

2. In a cultivator, the combination of the frame 1, cutting-wheels 11 12, uprights 19, journaled to the wheels, said uprights being provided with slots 20, and clamps 21, engaging in the slots 20, substantially as described, and for the purpose set forth.

3. In a cultivator, the combination of the frame 1, re-enforcing strap 2, cutting-wheels 11, 12, and 13, uprights 19, provided with slots 20, clamps 21, and notches 22 in the re-enforcing strap 2, in which the clamps rest, substantially as described, and for the purpose set forth.

418,488. STRAP-FASTENING FOR TRUNKS. WILLIAM W. BATE, Knoxville, Tenn. Filed July 15, 1889. Serial No. 317,512. (No model.)



Claim.—1. A strap-fastening for trunks, consisting of a cruciform top connection having an attached card-holder or name-plate and a buckle on the end of each of its four arms, the three parallel lateral straps 17 17 and 23 buckled to the cruciform top connection, and the longitudinal bottom straps 21 buckled to the lateral straps, substantially as shown and described.

2. In a strap-fastening, the combination of a cruciform top connection having one or more longitudinal extensions composed of straps 13 and 14, having cross-straps near the buckle end, of a bottom connection consisting of a ring having straps looped therein in four directions, said straps passed through their buckles and then connected to the buckles of the top connection, and straps looped through the side bars of the buckles on the longitudinal straps of the bottom connection, substantially as described.

3. In a strap-fastening, the combination, with a cruciform top connection composed of a four-branched attachment having buckles on each branch, of a four-branched bottom connection composed of four long straps looped through or otherwise connected with a central ring 19ª, and separate straps mounted with the side bars 25 of buckles 22 and their ends passed through their buckles and connected thereto and then attached to the buckles of the extensions of the cruciform attachment, substantially as described.

4. In a strap-fastening, the combination, with a cruciform connection consisting of two straps crossed centrally and united and having buckles at the four ends, of a card-holder mounted upon the same and connected permanently to three of the straps, said card-holder being composed of two plates or strips united at or near their edges upon the three sides connected to the straps, and having slots in the free ends of said plates engaging a fastening upon the fourth strap, substantially as described.

5. In a strap-fastening, the combination, with a cruciform top connection, of extensions 13 and 14, each having a strap 15, provided with buckles at both ends, a bottom connection composed of straps 19, connected with a central ring, and having buckles 22, provided with side bars 25, straps 17, connected with said side bars and having buckles 26, and central straps 23 connected with said ring at right angles to the longitudinal straps, substantially as described.

418,484. GAS-INCANDESCENT. HAROLD J. BELL, Gloucester City, N. J., assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Dec. 19, 1888. Serial No. 294,039. (No model.)



Claim.—1. A gas-incandescent comprising an incombustible filamentous core and a covering of combustible fibrous material surrounding said core and saturated with a solution of the salts of the rarer metals which produce earthy oxides, substantially as described.

2. In a gas-incandescent, the combination, with a platinum wire, of textile material braided on said wire and saturated in a solution of the salts of the rarer metals which produce earthy oxides, substantially as described.

3. The combination, with a gas-burner, of supports placed adjacent to the burner and a cord or braid of fibrous material surrounding a core of refractory metal, substantially as described.

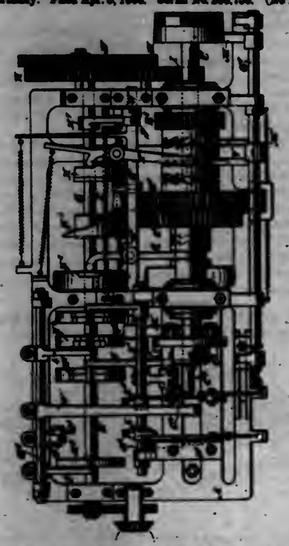
418,485. WHIRL FOR SPINNING-SPINDLES. JOHN BIRKENHEAD, Mansfield, Mass. Filed Jan. 19, 1889. Serial No. 296,897. (No model.)



Claim.—1. A whirl for spinning-spindles, having its band-groove formed of two concave concentric surfaces and two concentric and inclined surfaces, the latter surfaces being arranged between the former and joining each other in the middle of the groove, the junction of said inclined surfaces being nearer to the axis of the whirl than any other portion of said groove, substantially as shown and set forth.

2. A whirl for spinning-spindles, having its band-groove formed of two concentric concave surfaces and two concentric convex surfaces, the junction of the latter with each other being in the middle of the groove and nearer to the axis of the whirl than any other portion of the said groove, substantially as shown and set forth.

418,486. WOOD-SCREW MACHINE. MARTIN BRUSSY, Schwelm, Prussia, Germany. Filed Apr. 6, 1889. Serial No. 306,700. (No model.)



Claim.—1. In a screw-cutting machine, the combination of a sleeve B, a spindle C, having a flanged socket C^3, and adapted to turn with and slide in the sleeve, a screw driver or holder C^4, the sliding rod G', having a fork engaging the flanged socket, and the shaft G, having cam-disks H' and H' for moving the rod lengthwise, substantially as described.

2. The combination of the sleeve B, the spindle C, having a screw driver or holder C^4, the cam-shaft G, having a cam-disk H^3, the driving-shaft E, the change-wheels, the three chains of intermediate gearing between the sleeve and driving-shaft, the clutch on the driving-shaft, the clutch-lever Q, actuated by the cam-disk, the double clutch on the sleeve, the cam H, and the lever P, substantially as described.

3. The combination of the sleeve B, the spindle C, turning with and adapted to slide in the sleeve, the driving-shaft E, the three chains of intermediate gearing between the sleeve and driving-shaft, the clutch on the driving-shaft, the double clutch on the sleeve, the levers Q and P, and cam-disks H^3 and A, substantially as described.

4. The combination of the sleeve B, the spindle C, turning with and sliding in the sleeve and having the grooved disk C', the screw driver or holder C^4, the lengthwise-movable shaft G^2, the spring T, the lever M on the shaft engaging the grooved disk, the double clutch on the sleeve, the slide V for disengaging the clutch, and the lever M' on the shaft for operating the slide, substantially as described.

5. The combination of the sleeve B, having the gear Z, the spindle C, turning with and adapted to slide lengthwise in the sleeve and having a screw driver or holder C^4, the driving-shaft E, having the gear Z, the intermediate gear Z^{xx}, a clutch on the driving-shaft to engage and disengage its gear Z, the change-wheels, the shaft G, the double clutch on the sleeve, the gears Z^2 Z^3 Z^{xx}, the gears Z^4 Z^5, the levers Q and P, and the cam-disks H^3 and H, substantially as described.

6. The combination, with the rising and falling grippers, of the pivoted levers or arms L^2 L^4, the slide L^7, the rock-shaft G', having the lever L engaging the slide and provided with the lever 3, the cam-disk H^5 for actuating the latter, the pivoted lever or arm L^4, the lever L^3, extending from the rock-shaft, and the rods l^2 P, which actuate the said pivoted levers or arms, substantially as described.

7. The combination, with the sleeve B, having the gear Z, and spindle C, having a screw driver or holder C^4, of the driving-shaft E, having the gear Z, the intermediate gear Z^{xx}, the clutch on the driving-shaft, the clutch-operating lever Q, and the rotary cam-disk H^3, for slowly rotating the spindle and engaging the screw driver or holder with the head of the screw to be cut, substantially as described.

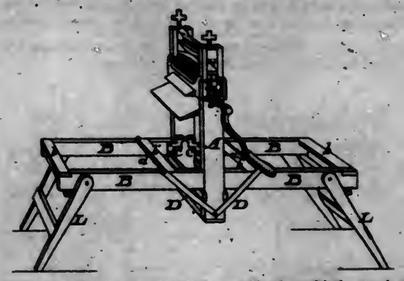
418,487. THILL-COUPLING. GEORGE I. BLAKEMAN and FRED. S. BLAKEMAN, Port Allegany, Pa. Filed Mar. 26, 1889. Serial No. 304,782. (No model.)



Claim.—1. The combination of the box adapted to receive the thill-iron and having the lateral studs H on its sides, the anti-rattler fitting snugly in the box, and the spring-keeper extending across the top of the box and having its ends bent downward and provided with perforations adapted to engage the studs H on the sides of the same, as set forth.

2. The improved thill-coupling comprising the box having the notch C in its front side to receive the thill-iron and having vertical grooves in its side wall to receive the lugs at the end of the thill-iron, the anti-rattler fitting snugly in the box above the thill-iron and having its lower side cut away to fit over the rounded end of the thill-iron, the studs H on the sides of the box, and the spring-keeper extending over the box and having its ends bent down and provided with perforations engaging said studs, as specified.

418,488. LAUNDRY-BENCH. FREDERICK W. BROOKS, Cleveland, Ohio, assignor to the Fearless Wringer and Manufacturing Company, same place. Filed Dec. 31, 1888. Serial No. 295,101. (No model.)



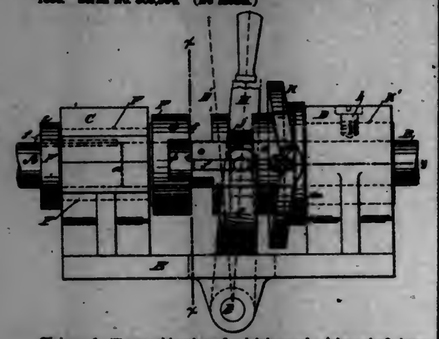
Claim.—In a laundry-bench, the combination, with the standards A A, *of* side rails B B, hinged to said standards by slotted hinges C C, and provided with the notches *d*, the brace-irons D D, pivoted to lower end *of* standards and adapted to lie in notches in the rails B B, for supporting the middle of the bench, and to be turned up for allowing the bench to be folded, substantially in the manner and for the purpose set forth.

418,489. WRINGER. FREDERICK W. BROOKS, Cleveland, Ohio, assignor to the Fearless Wringer and Manufacturing Company, same place. Filed Mar. 11, 1889. Serial No. 302,917. (No model.)



Claim.—The combination, with spring B and journals of the rollers of a wringer, of the spreading device consisting of plate *c*, pin C, cam-ring G, having handle *g*, and sleeve H, provided with a cam-surface on its lower end constructed and applied to operate substantially as described, and for the purpose specified.

418,490. CLUTCH. JOHN BROWN, Plainfield, N. J. Filed Mar. 16, 1889. Serial No. 303,504. (No model.)

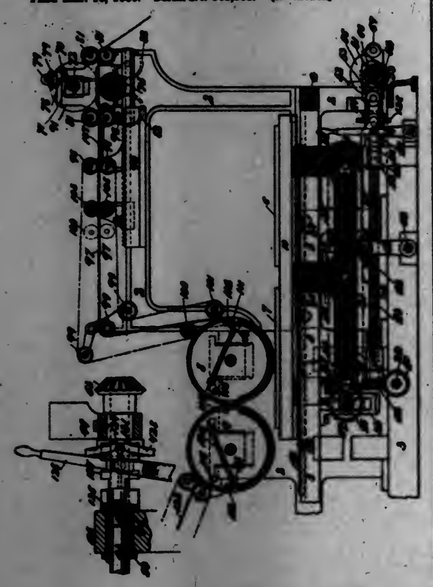


Claim.—1. The combination of a driving and a driven shaft, interlocking clutch-disks, the one rotatable and the other rotatable and longitudinally movable upon the respective shafts, a stationary cam concentric with the axis of the clutch, the face whereof is presented in a direction opposite to that of the release movement of the movable disk, said cam provided with a prominent portion and a depression M, and said movable disk provided with a projection, as the stud L, rotative in a path opposite and adjacent the cam, capable of entrance into the said depression, whereby the clutch is released at a given point.

2. The combination of a driving and a driven shaft, interlocking clutch-disks capable of engagement at a single point of rotation, one of said disks being rotatable and the other rotatable and longitudinally movable upon the respective shafts, a projection, as the stud L, upon the movable disk, a stationary cam concentric with the axis of the clutch, having a prominent portion and a depressed portion opposite said projection, said stationary cam being rotatively adjustable, for the purpose specified.

3. The combination, with the driving and driven shafts, and interlocking clutch-disks arranged substantially as specified, the longitudinally-movable member of which bears a projection, of a stationary cam opposite said projection, concentric with the axis of the clutch, having a prominent portion and a depressed portion, and provided with a shank or bushing entering the adjacent shaft-bearing, and a locking device, such as the set-screw *k*, for the purpose specified.

418,491. PRINTING-MACHINE. JOHN BROWN, Plainfield, N. J. Filed Mar. 16, 1889. Serial No. 303,503. (No model.)



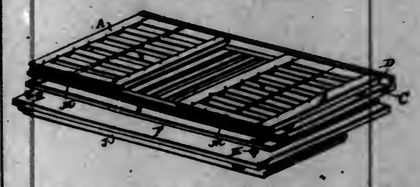
Claim.—1. In a printing-machine, the combination of a type-bed reciprocative in its plane of impression, an impression-cylinder co-operative therewith having continuous rotation, a gripper mechanism for receiving the head of a sheet at each second rotation of the cylinder, a rotary cutter adjustable at variable distances from the impression-cylinder, conveying-belts for conducting the sheets from the cutter to the grippers of the impression-cylinder, mechanism, substantially as described, for imparting to the rotary cutter a single revolution for each two revolutions of the impression-cylinder, and driving and driven shafts of said mechanism having a clutch that is releasable at a single point of rotation of the driven shaft and of the cutter.

2. The combination, in a printing-machine, of a type-bed reciprocative in its plane of impression, an impression-cylinder or cylinders co-operative therewith having continuous rotation, means and elevating mechanism, substantially as described, for elevating said cylinder or cylinders, a rotary cutter adjustable at variable distances from the cylinder-grippers, mechanism for driving said cutter and said cutter at half the rotative speed of the impression cylinder or cylinders, a driving and driven shaft of said driving mechanism connective by a clutch that is releasable at a single point of rotation of the driven shaft, corresponding with which point of rotation the cylinder-elevating cams are at an intermediate position and the rotary cutter is at an inactive position.

3. The combination of a printing mechanism having a rotary impression cylinder or cylinders, and grippers thereon for seizing the paper, a rotary paper cutting and feeding mechanism, and a clutch, substantially as described, for connecting or releasing the said cutting and feeding mechanism and the said printing mechanism at a single point of relation and at the inactive period in the motion of the cutting mechanism.

4. The combination, in a printing-machine, of a type-bed bearing the form or forms reciprocative in its plane of impression, an impression cylinder or cylinders having continuous direction of rotation, mechanism whereby the cylinders are advanced or retracted toward or from the type-bed, a rotary paper cutting and feeding mechanism adjustable in its action with definite relation to the printing mechanism, and a clutch for connecting or releasing the cutting and feeding mechanism and the cylinder advancing and retracting mechanism with the cylinder and type-bed-driving mechanism at a single point of relation, as specified.

418,492. FOLDING CRATE. WILLIAM BEEBE, Wallabout, N. Y. Filed July 17, 1889. Serial No. 317,767. (No model.)



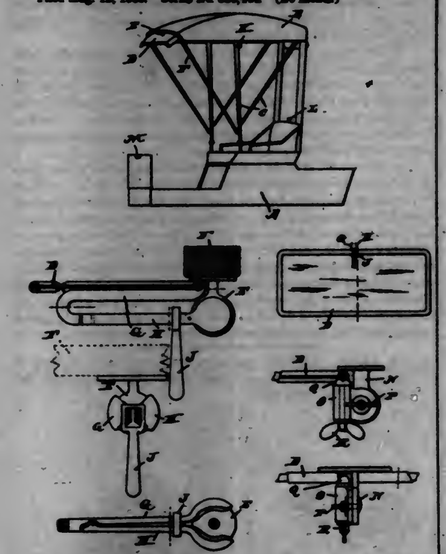
Claim.—1. As an improved article of manufacture, the herein-described folding shipping box or crate, consisting of the bottom piece, the cleat or guard secured thereto, forming an abutment for the lower edge of the front piece and a guard for the end pieces when the box is collapsed, the end pieces hinged to said bottom piece by inwardly-opening hinges, the back piece connected to said bottom by outwardly-opening hinges, the top piece connected to said back piece by inwardly-opening hinges, the front piece connected to said top piece by outwardly-opening hinges, the hooks secured to the end pieces and engaging screw-eyes in the top piece, and the side bolts for locking the front, back, and end parts together when the box is put together or closed, substantially as set forth.

2. As an improved article of manufacture, the herein-described folding shipping box or crate, consisting of the bottom piece, the cleat or guard secured thereto and provided near opposite ends with bolt-holes, the end pieces hinged to said bottom piece by inwardly-opening hinges, and the slats or solid panel thereof being provided with bolt-holes or recesses, the back piece connected to said bottom by outwardly-opening hinges and having the end slats or opposite ends of the panel thereof provided with bolt-holes, the top piece connected to said back piece by inwardly-opening hinges, the front piece connected to said top piece by outwardly-opening hinges and having the end slats or opposite ends of the panel thereof provided with bolt-holes, the hooks secured to the end pieces and engaging screw-eyes in the top piece, and the notted side bolts, substantially as set forth.

3. As an improved article of manufacture, the herein-described folding shipping box or crate, having its sides formed of vertical slats or solid panels and horizontal connecting-pieces, said vertical slats having beveled ends terminating in shoulders, and the horizontal connecting-pieces having registering inclines and shoulders, substantially as set forth.

4. In a folding shipping box or crate, the combination of the end pieces having angular notches upon their inner corners, said end pieces consisting of vertical slats or solid panels having opposite beveled ends terminating in shoulders and horizontal connecting-pieces having registering inclines and shoulders, the bottom piece having its slats or solid panel and connecting-pieces constructed similarly to the end pieces, the rear connecting-piece thereof, however, being further provided with a lateral extension, the back piece having angular notches upon its corners and consisting of the upper connecting-piece provided with beveled and shouldered inner face, slats or solid panel having opposite beveled ends terminating in shoulders, and lower connecting-piece having beveled inner face terminating in a reduced extended portion, the lower ends of the vertical slats or solid panel of said back piece adapted to rest upon the rearward extension of the bottom piece, the top piece, and the front piece having angular notches upon its inner corners, the slats or solid panel and connecting-pieces thereof constructed similarly to the end pieces, substantially as set forth.

418,493. VEHICLE-FENDER. REMAN CRAWFIS, Greenon, Ohio. Filed Aug. 13, 1888. Serial No. 282,444. (No model.)



Claim.—1. In a vehicle-fender, the combination, substantially as set forth, of a rectangular fender, a pivot-clamp attached thereto at one of its edges, and a pivot fixed to the front edge of the vehicle-top and adapted to be separably engaged by said pivot-clamp.

2. In a vehicle-fender, the combination, substantially as set forth, of a rectangular fender, a pivot-clamp attached to each fender at the center of length thereof at one edge, and a pivot fixed to the front edge of the vehicle-top and adapted to be separably engaged by said pivot-clamp.

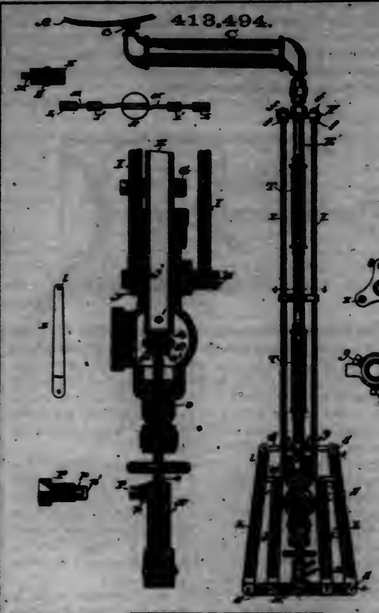
3. In a vehicle-fender, the combination, substantially as set forth, of a fender having one water-proof face and one ornamental face, a pivot attached to the front of the top of the vehicle, and a pivot-clamp attached to one edge of each fender and adapted to engage said pivot in such manner as to be capable of universal motion thereon, so that said fender can be adjusted to angles with either of its faces upwardly.

4. In a vehicle-fender, the combination, substantially as set forth, of a pivot attached to the vehicle-top, a similar pivot attached to the vehicle-dash, a rectangular fender, and a pivot-clamp attached to one edge of each fender and adapted to engage either of said pivots when either side of said fender is presented upwardly.

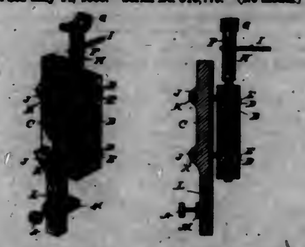
418,494. STEAM-TRAP. JOHN CORNELL, Brooklyn, N. Y. Filed Jan. 12, 1889. Serial No. 296,161. (No model.)

Claim.—The combination, with the apparatus A and steam-tube E, of the horizontal tubular chamber C, of considerably greater diameter than the steam-tube and than the discharge-opening into it from the said apparatus, substantially as specified.

418,494.



418,495. TIRE-TIGHTENER. CHARLES O. DAVIDSON, Carrington, Dak. Filed May 14, 1889. Serial No. 310,773. (No model.)



Claim.—1. A device for use in tightening tires, comprising two members adapted to be clamped around a spoke, one of said members being provided with a longitudinal groove, a clamp embracing said member and the spoke and carrying a set-screw adapted to engage the said groove, and a jack-screw mounted in the other member and adapted to bear on the felly, as set forth.

2. A device for use in tightening tires, comprising the members B C, adapted to be clamped around a spoke, the member B being provided on its outer side with the transverse grooves D and the member C having the tubular offsets J, the bolts having their shoulders engaging the grooves D, the pins K, inserted through the ends of the bolts, and the offsets J, and the jack-screw mounted in the member B and adapted to bear against the felly, as set forth.

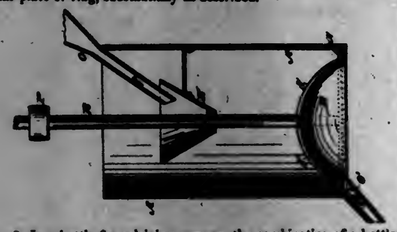
3. A tire-tightener comprising two members, one of said members having a longitudinal groove in its outer side at its lower end, a U-shaped clamp, a set-screw mounted in said clamp and engaging the said groove, bolts connecting the members, and a jack-screw mounted in one of the members, as set forth.

4. A tire-tightening device comprising two members adapted to be clamped around a spoke, a jack-screw carried by the members to engage the felly, and the clamp embracing the spoke and engaged with the members, and the swinging bolts to connect the members together, as set forth.

418,496. KETTLE FOR CALCINING GYPSUM. LEWIS C. DAVIDSON, Grand Rapids, Mich. Filed June 26, 1889. Serial No. 315,191. (No model.)

Claim.—1. In a kettle for calcining gypsum, the combination of the kettle-bottom having a circular portion horizontal, or nearly so,

and a central upper inclined portion rising from said horizontal portion, an annular plate or ring adapted to revolve within the kettle and in close contact to the inner horizontal surface of the kettle-bottom, arms within the kettle connecting said annular plate with the central shaft, a central shaft, and suitable mechanism for revolving said annular plate or ring, substantially as described.

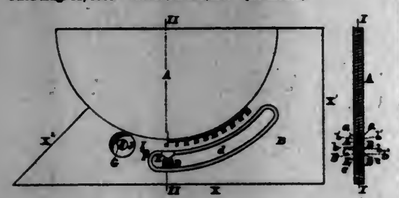


2. In a kettle for calcining gypsum, the combination of a kettle-bottom having an upwardly-inclined under surface, a plate or ring adapted to travel near the inner periphery of the kettle and in close proximity to the bottom of the kettle, arms connecting said annular ring or plate to the central shaft, said arms adapted to travel in close proximity to the inclined portion of the kettle-bottom, and a shaft adapted to support said arms and annular plate or ring and convey motion to the same, substantially as described.

3. In a kettle for calcining gypsum, the combination of the kettle-bottom having an upwardly-inclined under side, an annular plate or ring adapted to travel near the inner periphery of the kettle and in close proximity to the kettle-bottom, arms connecting the annular plate or ring to the central shaft, a central shaft adapted to support the arms and ring, suitable mechanism for giving a rotary motion to said shaft, an outlet for the escape of the calcined material at or near the bottom of said kettle, and an inlet near the top.

4. In a kettle for calcining gypsum, the combination of the inclined bottom, the annular plate or ring, the arms constructed as above described, a central shaft supporting the arms, the inlet spout or pipe, and a hopper, through which the central shaft passes, having a discharge near the central portion, substantially as described.

418,497. PROTRACTOR. CLARENCE E. DE PUY, Jackson, Mich.
Filed Aug. 23, 1888. Serial No. 283,497. (No model.)



Claim.—1. A protractor consisting of a frame with a part of a semicircular depression on one edge, a corresponding semicircular ruler turning in said depression, a projecting tongue from one piece entering a corresponding slot in the other, and V-shaped grooves on edge of one of semicircular parts, one on each side of said tongue, fitting over corresponding V-shaped elevations on edge of other semicircular part, for purposes substantially as set forth.

2. A protractor consisting of a frame with a part of a semicircular depression on one edge, a corresponding semicircular ruler turning in said depression, projecting tongue and V-shaped grooves on semicircular edge of one piece fitting corresponding slot and V-shaped elevations on semicircular edge of the other, and a thumb-nut and washer with V-shaped channel placed in a slot cut through side of protractor, so that said nut and washer are entirely contained between the two surfaces of sides of protractor, and being for the purpose of clamping the semicircular ruler, substantially as set forth.

3. A protractor consisting of a frame with a part of a semicircular depression on one edge, a corresponding semicircular ruler turning in said depression, a projecting tongue and V-shaped grooves on edge of one piece fitting corresponding slot and V-shaped elevations on the other and arranged to be clamped with a thumb-nut and V-shaped washer, and a segment of a circle of some thin metal placed in same slot that receives the before-described projecting tongue, and which is also clamped to said tongue by the before-described thumb-nut and V-shaped washer, said segment having on one end a tangent screw and thumb-nut, by means of which accurate adjustments of semicircular ruler can be made in the manner hereinbefore described.

418,498. HARROW. ANDREW DOWNWARD, Utica, N. Y., assignor to the Eureka Mower Company, same place. Filed May 20, 1889. Serial No. 311,262. (No model.)



Claim.—1. In combination with the frame-bar and tooth, a block interposed between said parts and rigidly confined on the frame-bar, a shoe embracing said frame-bar, tooth, and block, and a set-screw connected to the shoe and clamping therein the aforesaid parts, as set forth.

2. In combination with the curved spring-tooth, a block interlocked with the edges of said tooth, the frame-bar interlocked with the said block at the edges at right angles to the edges of the tooth, a shoe embracing said parts, and a set-screw connected to the shoe and clamping therein the aforesaid frame-bar, tooth, and intervening block, substantially as set forth.

3. The combination of a harrow-frame having draft-bars channeled longitudinally in their under sides, shoes encompassing said bars, teeth inserted with their attaching-shanks in the shoes beneath the aforesaid bars, blocks interposed between the bars and tooth-shanks and seated in the channels of the said bars, and set-screws connected to the shoes and clamping therein the aforesaid encompassed parts, substantially as set forth and shown.

4. The combination of a harrow-frame having draft-bars channeled longitudinally in their under sides, a shoe formed in one piece with passages extending transversely through it and with a screw-threaded eye through its top, one of the channeled draft-bars extending through one of the passages of the shoe, a tooth having its attaching-shank extending through the other of the aforesaid passages, a block seated in the channel of the draft-bar and interposed between said bar and tooth-shank and formed with downward projections at opposite edges of the tooth-shank, and a set-screw inserted in the screw-threaded eye of the shoe and clamping in said shoe the parts encompassed therein, substantially as described and shown.

418,499. HARROW. ANDREW DOWNWARD, Utica, N. Y., assignor to the Eureka Mower Company, same place. Filed May 20, 1889. Serial No. 311,263. (No model.)



Claim.—1. In a harrow or cultivator, an attachment for the transversely-flat spring-tooth, comprising a shoe formed with a slot through it, the tooth having its shank inserted in said slot, and a tightener inserted in the shoe at the edge of the tooth-shank to crowd the said shank laterally with its opposite edge against the adjacent side of the slot, substantially as set forth.

2. In a harrow or cultivator, an attachment for the transversely-flat spring-tooth, comprising a shoe formed with a slot through it and with a screw-threaded eye horizontally through the side of the shoe intersecting the slot, the tooth having its shank inserted in said slot, and a set-screw in the aforesaid screw-threaded eye engaging the edge of the tooth-shank, as set forth and shown.

3. In a harrow or cultivator, a spring-tooth attachment comprising a shoe having a slot extending through it and one side of said slot formed wedge-shaped, a tightener in the opposite side of the shoe, and the tooth having its shank inserted in the slot of the shoe and crowded into the wedge-shaped side of the slot by the aforesaid tightener.

4. The combination, with the frame, of a spring-tooth-retaining shoe provided with a bolt-hole vertically through its central portion and terminating in the cavity of the shoe, and a bolt passing through said hole and frame and fastening the shoe to the frame, as set forth.

5. The combination, with the frame, of a spring-tooth-retaining shoe provided with a bolt-hole vertically through the central portion of its top plate and terminating in the cavity of the shoe, and with a recess in the under side of said plate, and a bolt passing through the aforesaid hole and frame and having its head seated in the recess of the shoe, and a nut on the opposite end of the bolt, substantially as described and shown.

6. In combination with the frame, a shoe secured to said frame and having a slot extending through it, and one side of said slot formed wedge-shaped, and the opposite side of the shoe formed with a laterally-outward-projecting tubular boss screw-threaded internally, the tooth having its shank inserted into the slot of the shoe, and a set-screw in the tubular boss engaging the edge of the tooth-shank, substantially as described and shown.

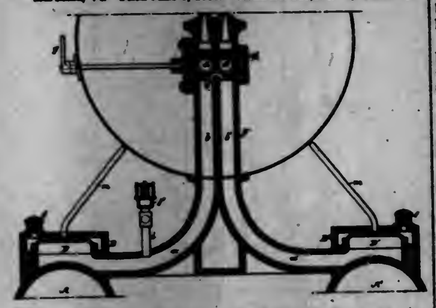
7. In combination with the frame, a tooth-retaining shoe provided with a bolt-hole through its top plate, an aperture in its bottom plate for the passage of the head of the bolt, and a bolt passing through the top plate of the shoe and through the frame and having its head inside of the shoe, and a nut on the upper end of the bolt, substantially as described and shown.

8. In combination with the longitudinally-channeled bar A, the shoe B, having the slot *a*, extending through it and formed with the tenon *b*, and seated thereby in the channel of the bar A, and the bolt *c*, passing vertically through the tenon of the shoe and through the aforesaid bar and having its head inside of the shoe, as set forth and shown.

9. In combination with the longitudinally-channeled bar A, provided with bolt-holes, the shoe B, formed with the slot *a* for the reception of the tooth, and with the tenon *b*, recess *b'* in the under side of said tenon, a bolt-hole vertically through the tenon, the aperture *d* in the bottom plate of the shoe, and the bolt *c*, passing through the bolt-holes of the aforesaid tenon and channeled bar and having its head seated in the recess *b'*, substantially as described and shown.

10. The combination of the longitudinally-channeled draft-bar A, disposed with its channel downward, the saddle *c*, seated on top of the bar A and having downward flanges embracing the sides of said bar and upward flanges transverse of the bar, the cross-bar A', seated on the saddle between the upward flanges thereof, the shoe B, formed with the slot *a* and with the tenon *b*, seated in the channel of the bar A, and with the screw-threaded tubular boss *f* on its side, the tooth D, inserted into the slot *a*, the set-screw *g*, inserted into the boss *f*, and the bolt *c*, passing vertically through the top plate of the shoe and through the bar A, saddle *c*, and bar A', and having its head inside of the shoe, and a nut on its upper end, substantially as described and shown.

418,500. BRAKE FOR LOCOMOTIVES. HENRY D. DUNBAR, North Hartland, Vt. Filed June 6, 1889. Serial No. 313,271. (No model.)



Claim.—1. The combination of the cylinders, valve-chests, and exhaust-passages of the engine, a valve for closing said exhaust-passages, and a pipe providing a communication between the exhaust-passages and the boiler, whereby steam may be admitted to the exhaust-passages for the purpose of making an emergency stop, substantially as specified.

2. The combination of the cylinders, valve-chests, and exhaust-passages of the engine, a valve for closing said exhaust-passages, and pipes independent of the main steam-supply for permitting the introduction of steam into the valve-chests, substantially as specified.

3. The combination of the cylinders, valve-chests, and exhaust-passages of the engine, and the valve for closing said exhaust-passages, said valve having a by-pass, whereby when it is closed to cut off the escape of steam from the passages it provides a communication from one passage to the other, substantially as specified.

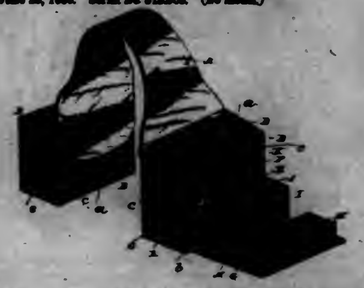
4. The combination of the cylinders, valve-chests, and exhaust-passages of the engine, the valve for closing said exhaust-passages, supplementary steam-pipes—one communicating with the exhaust-passage and the other communicating with the valve-chests—and a compound valve for controlling the flow of steam into said supplementary steam-pipes, substantially as specified.

5. The combination of the valve-box, its steam-inlet pipe, and the outlet-pipes with a single valve having a steam-inlet port communicating with valve-box and opposite ports for governing the flow of steam through the outlet-pipes, substantially as specified.

6. The combination of the cylinders, steam-chests, and exhaust-passages, and a valve for closing the latter, the supplementary steam-pipes and their valve-box, the valve in the latter, a lever for operating the valve in the exhaust-passage, and an operating-arm on the valve of the valve-box, said lever and arm occupying such position as to be operated simultaneously, substantially as specified.

7. The combination of the cylinders, valve-chests, and exhaust-passages of the engine with a pipe *i*, communicating with said exhaust-passages and with the boiler, a valve for cutting off the communication with the boiler, a pressure-gage, and a branch pipe whereby said gage is put in communication with the pipe *i* and the exhaust-passages, substantially as specified.

418,501. SADDLE-BAGS. JOHN D. BOZEE, Aberdeen, Miss. Filed June 28, 1889. Serial No. 315,305. (No model.)



Claim.—1. In a saddle-bag, the combination of the open front compartment C, the swinging side G, hinged thereto, the box I, hinged to said swinging side, and connections between the box and the swinging side, and the box and the compartment C, whereby when the said swinging side is drawn outward and downward the box will be swung out from the compartment C, as set forth.

2. The combination of the compartment C, the swinging side G, hinged thereto, the box I, hinged to the said swinging side, and the links connecting said box with the compartment C, as set forth.

3. The combination of the compartment C, the swinging side G, hinged thereto and provided with the compartment H, the box I, having the ledge M, hinged to said swinging side, and the links connecting said box with the compartment C, as set forth.

4. The improved saddle-bag consisting of the compartment C, having the internal partitions E, the swinging side G, hinged to said compartment and provided with the compartment H, and the box I, having the internal partitions J, all arranged substantially as specified.

5. The improved saddle-bag consisting of the open front compartment C, attached rigidly to the ends of the saddle-strap and having the internal partitions E, and the swinging side G, closing the outer side of the compartment C, and provided with a box I, adapted to rest on top of the partitions E when the hinged side is closed, as set forth.

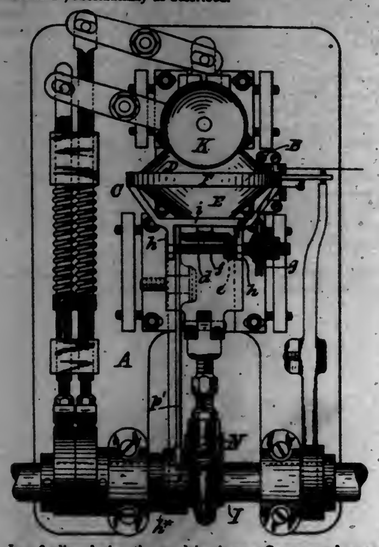
418,502. FEEDING DEVICE FOR BUTTON-MAKING MACHINES. ROBERT L. ELLERY, Taunton, Mass., assignor of one-half to Francis E. Fuller, same place. Filed Nov. 10, 1888. Serial No. 289,482. (No model.)

Claim.—1. In a button-making machine, the combination, substantially as described, of the driving-shaft, the fixed plate *f'*, the plate *f*, adapted to slide bodily back and forth on said fixed plate *f'*, the feed-lever *r*, pivoted to said sliding plate *f*, and an intermediate lever driven by said shaft and operating to drive said lever *r* and said sliding plate *f* back and forth on said fixed plate *f'*, said intermediate lever imparting four distinct motions to said feed-lever.

2. In a feeding device, the combination of the feed-lever *r*, pivotally mounted on the sliding plate *f*, the lever *m'*, engaging said feed-lever *r*, and the connecting-rod *p'*, operated by the shaft I and imparting reciprocating motion to said lever *m'*, whereby said feed-lever *r* has its operative end first raised from or lowered into the runway *p* by the action of said lever *m'*, said feed-lever *r* being then carried bodily with the sliding plate *f* backward or forward by the continued action of said lever *m'* thereon, substantially as described.

3. In a button-making machine, the combination of the following elements: the driving-shaft, the button-blank-feeding lever, a device connecting said feeding-lever to said driving-shaft, the plate *a''* pro-

vided with the runway *p* for the reception and passage of the button-blanks, and the spring *F*, normally closing said runway, but adapted to be pushed aside by the advancing button-blank to allow the passage of the same, substantially as described.



4. In a feeding device, the revolving hopper C, composed, essentially, of two hollow truncated cones or dish-shaped parts D E, adjustably connected together, the bases of said truncated cones being toward each other and having a space between them, substantially as set forth.

5. In a button-making machine, a feed mechanism composed, essentially, of the following elements: a revolving hopper, a plate adjacent thereto provided with a groove or runway for the reception of the button-blanks from said revolving hopper, a four-motion traveling feed-lever provided with points adapted to push the button-blanks forward, another lever engaging and operating said feed-lever, and a connecting-rod connecting said second-named lever with the driving-shaft.

413,508. APPARATUS FOR THE CULTIVATION OF OYSTERS.

LEE FALKNER, London, England. Filed May 23, 1889. Serial No. 311,843. (No model.)

Claim.—1. An artificial bed for the culture of oysters in sea-water, comprising a series of tables having inclined top surfaces extending downward in opposite directions, a series of gutters, one between each pair of tables, and spat-collecting walls rising upward from the opposite sides of each table, substantially as described.

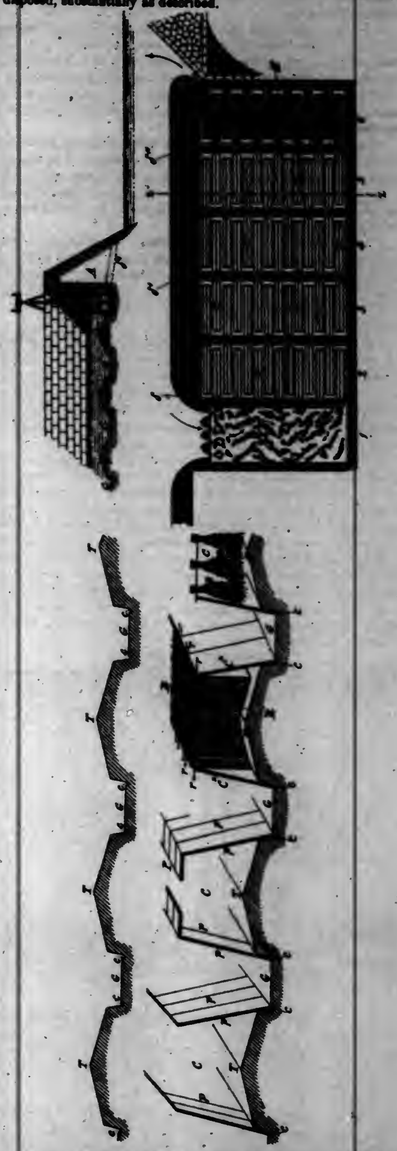
2. An artificial bed for the culture of oysters in sea-water, comprising gutters alternating with tables having top surfaces inclining downward in opposite directions, and provided at their bases with grooves or channels and spat-collecting walls resting at their lower edges in the grooves or channels and rising above the highest portions of the tables, substantially as described.

3. An artificial bed for the culture of oysters in sea-water, comprising gutters alternating with tables, each having inclined top surfaces and a groove or channel at each side of its base, and spat-collecting walls arranged in the grooves or channels resting against the sides of the tables and rising above the highest portion of the latter, substantially as described.

4. An artificial bed for the culture of oysters in sea-water, comprising mud-receiving gutters alternating with tables, each having its top surface inclined downward in opposite directions from the center, and two spat-collecting walls rising, respectively, from the opposite sides of each table for holding the spat thereupon, substantially as described.

5. An artificial bed for the culture of oysters in sea-water, comprising gutters alternating with tables, each having its top surface inclined downwardly in opposite directions from the center, and two spat-collecting walls rising, respectively, from the gutters at opposite sides of each table, and each wall consisting of a series of plates arranged one beside the other to form a continuous wall rising above the highest portions of the table, substantially as described.

6. An artificial bed for the culture of oysters in sea-water, comprising a series of inclined tables, alternating gutters, spat-collecting walls rising from each table, and a fattening-hive composed of a series of superposed trays with intervening spaces in which the oysters are disposed, substantially as described.



7. An artificial bed for the culture of oysters in sea-water, comprising a series of ponds having inclined tables with side gutters, spat-collecting walls rising above each table, and one pond containing a fattening-hive composed of superposed trays having interlocking rims and feet, and intervening spaces in which the oysters are disposed, substantially as described.

8. An artificial oyster-bed comprising a series of ponds each containing a table T, having inclined surfaces, a mud-receiving gutter G between each pair of tables, the spat-collecting walls rising above the tables, the stagnation-pond X, the fattening-hive H, composed of a

cellular structure in one of the ponds, and sluices for connecting the several ponds with the sea, substantially as described.

413,504. ANNUNCIATOR.

FRANK S. FISHER, Detroit, Mich. Filed June 6, 1888. Serial No. 313,242. (No model.)



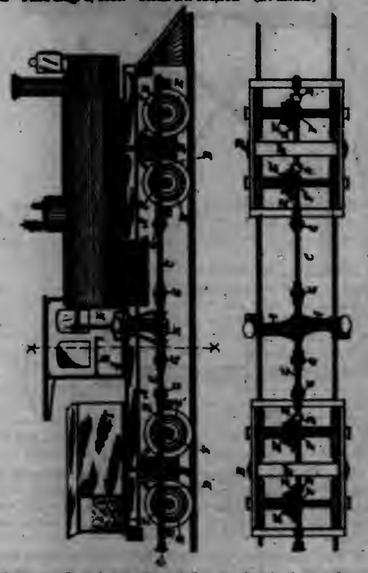
Claim.—1. The combination, in an annunciator, of an electro-magnet and an axially-oscillatory armature carrying a needle and extending beneath and bodily raised by the two poles of the electro-magnet, substantially as described.

2. In an annunciator, the combination, with an electro-magnet having a core B, carrying the pole-pieces D and F, and having the detent H formed on its end, of the armature shaft K, extending beneath both the pole-pieces, bodily lifted thereby, and carrying on one end the needle L and on the other end the counterweighted frame I, having thereon a ratchet-tooth, substantially as shown and described.

3. The combination, in an annunciator, of a face-plate, an electro-magnet comprising a detent, a diamagnetic plate extending below the magnet and having a slot, and an axially-oscillatory armature journaled in the face-plate and diamagnetic plate, carrying a needle at one end and a toothed frame at the other end, and extending beneath and bodily raised by the two poles of the magnet, substantially as described.

413,505. TRAMWAY-LOCOMOTIVE.

GEORGE D. GILBERT, Corry, Pa. Filed Aug. 6, 1889. Serial No. 320,208. (No model.)



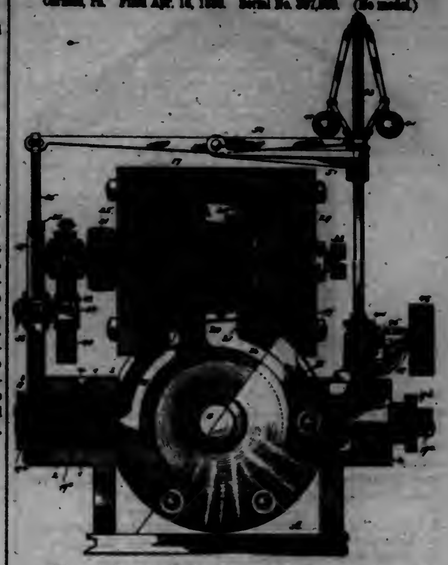
Claim.—1. In a locomotive of the type herein shown, the combination, with the axles *b* and the skew-gears E thereon, the propelling-shaft C, crossing said axles at right angles, and the skew-pinions D thereon, meshing with the said skew-gears E, of the double-journaled boxes F, embracing the said axles and shaft, substantially as shown.

2. In a locomotive of the type herein shown, the combination, with the side truck-frames B', carrying journaled boxes b^3 and b^4, of the middle cross-bars B^3 and B^4, journaled in said boxes b^3 b^4, and the end cross-bars B^5 B^5, hinged at each end to the said side frames B', substantially as shown.

3. In a locomotive of the type herein shown, the combination of a boiler, a cab back of said boiler and over the firing-door of the fire-box of said boiler, a fuel-box back of said cab, a longitudinal centrally-located driving-shaft below said boiler, cab, and fire-box, and two engines acting on said shaft, which are cut at right angles to each other, with the said shaft at the apex of said angle, and placed mainly below the floor of said cab and back of the fire-box of said boiler.

413,506. OSCILLATING STEAM-ENGINE.

WILLIAM A. GRAHAM, Carlisle, Pa. Filed Apr. 16, 1888. Serial No. 307,008. (No model.)



Claim.—1. In an oscillating steam-engine, the combination, with an oscillating cylinder and valve-chest, the said parts having communicating ducts, whereby steam is admitted to and exhausted from the opposite ends of the cylinder, of a tapering valve fitted to the walls of the valve-chest, said valve having ports therein for directing the passage of steam, a steam-balancing chamber between the valve and its seat, a stationary device, and sliding connections between the stationary device and valve, whereby the throw of the latter is regulated by the oscillation of the cylinder, substantially as set forth.

2. In an oscillating steam-engine, the combination, with an oscillating cylinder mounted on hollow trunnions, and a valve-chest integral with the cylinder, the said parts having communicating ducts, whereby steam is admitted to and exhausted from the opposite ends of the cylinder, and also ducts leading from the latter into the trunnions for the live and exhaust steam, of a tapering valve fitted to the walls of the valve-chest, said valve having ports therein for directing the passage of steam, a steam-balancing chamber between the valve and its seat, a stationary device, and sliding connections between the stationary device and valve, whereby the throw of the latter is regulated by the oscillation of the cylinder, substantially as set forth.

3. In an oscillating steam-engine, the combination, with an oscillating cylinder, a valve-chest, and valve, of reciprocating stem and means for connecting said stem loosely with the valve, whereby motion of the valve and engine is regulated, substantially as set forth.

4. In an oscillating steam-engine, the combination, with an oscillating steam-cylinder, a valve-chest, and valve, of a slotted standard, a reciprocating stem, a slide-block, said block and the valve having sliding jointed connection with each other, and means for automatically raising and lowering the stem, whereby the throw of the valve and the motion of the engine are regulated, substantially as set forth.

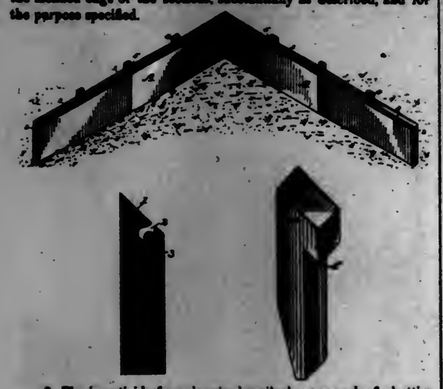
5. In an oscillating steam-engine, the combination, with a frame, pillow-blocks, an oscillating cylinder supported on said blocks, a valve-chest, valve, piston, piston-rod, fly-wheel, rotary drive-shaft, and pulleys, of a standard secured to the frame, a slide-block and reciprocating stem, said block having sliding connection with the valve, a governor for operating the stem, and a belt for operating the governor from the drive-shaft, substantially as set forth.

413,507. COMBINED FENCE AND INSECT-DESTROYER.

CHAS. B. HALSTEAD, Humboldt, Kans. Filed Apr. 6, 1889. Serial No. 306,346. (No model.)

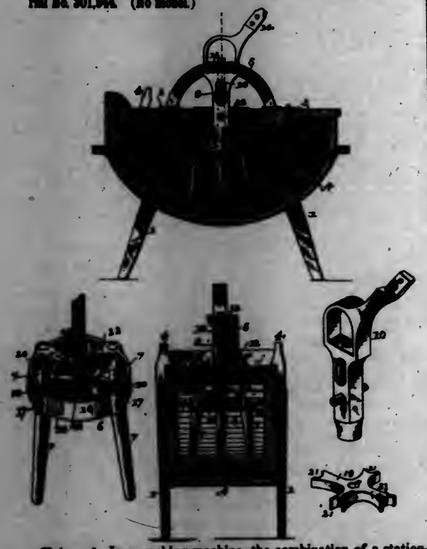
Claim.—1. The insecticide-fence herein described, composed of sections of single narrow boards having their upper edge formed at an incline, and a groove in said inclined edge made larger at the bottom than at the opening, to receive and contain an insecticide, and fastening-pins formed with projecting heads having lips formed to fit over

the inclined edge of the sections, substantially as described, and for the purpose specified.



2. The insecticide-fence herein described, composed of abutting sections of single narrow boards having their upper edges formed at an incline, a groove in said inclined edge, cents or countersinks in the end faces of the sections, a saturable material arranged in each section, with the ends projecting beyond the ends of the sections and arranged and secured in the end counterssinks thereof, and posts having heads projecting on and over the inclined edges of the sections, substantially as described, and for the purpose specified.

418,508. WASHING-MACHINE. Joseph Hahn, Morgansville, assignor of one-half to Levi Bear, Bryett, Md. Filed Mar. 5, 1889. Serial No. 301,944. (No model.)

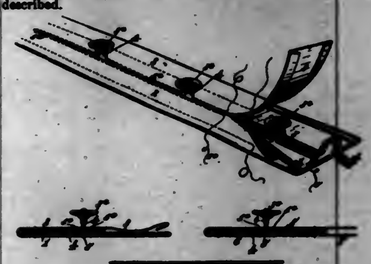


Claim.—1. In a washing-machine, the combination of a stationary tub, a standard journaled thereon, a shaft in the standard, and a rotary and oscillatory agitator on the shaft, substantially as described.

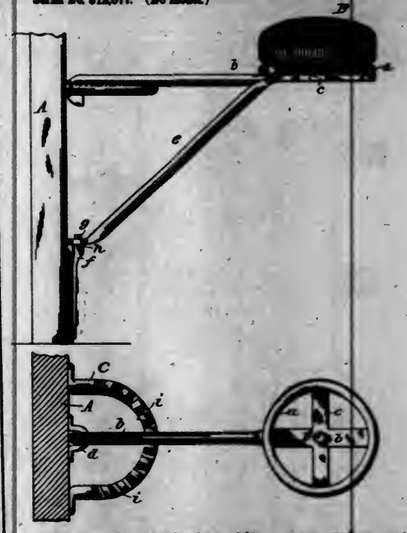
2. In a washing-machine, the combination of the tub, a vibratory standard journaled thereon, a shaft mounted in the standard carrying at its lower end an agitator and at its upper end a bevel-gear, and a stationary rack-plate secured to the tub and engaging the said bevel-gear, whereby when the standard is operated a rotary and oscillatory motion will be imparted to the agitator, substantially as described.

418,509. BUTTON-STRIP. Joseph H. Haviland and Truman A. Mitchell, Woodport, N. Y. Filed July 5, 1889. Serial No. 316,575. (No model.)

Claim.—A button-strip comprising a base-strip having one edge folded over and stitched along its longitudinal edge at or near the center of the strip, a continuous tape having one longitudinal edge underlying the longitudinal edge of the folded part of the strip and provided with a series of loops each passing through the eyes of a button, and a strip stitched to the base-strip and having a longitudinal edge overlying the other longitudinal edge of the looped tape and stitched thereto and to the base-strip, said loops of the tape projecting between the adjacent longitudinal edges of the strips, substantially as described.



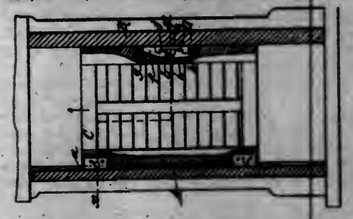
418,510. TABLE, DESK, OR STORE-COUNTER SEAT. John A. Heard and George S. Mitchell, New Albany, Miss. Filed May 25, 1889. Serial No. 312,077. (No model.)



Claim.—1. The combination, with a support, such as a store-counter, of the pivoted arms *c b*, a seat supported thereby, and an independent supporting-brace C, secured to said support and extending below the arm *b* as a guide and support for said arm, substantially as set forth.

2. The combination, with a support A, such as a store-counter, of the pivoted arms *b c*, a stool supported thereby, and an independent supporting-bracket below said arm *b*, having a series of notches in its upper edge, substantially as described.

418,511. HOLDER FOR SASHES OR BLINDS. Wallace S. Holland, Pasadena, Cal. Filed Mar. 7, 1889. Serial No. 302,501. (No model.)



Claim.—In a sliding blind, the combination, with a groove having one end elevated and a spring located therein, of a bar provided with rollers engaging said spring, whereby the friction will be lessened when the blind is elevated, substantially as shown and described.

418,512. ELECTRIC SWITCH. Robert G. Hull, Baltimore, Md. Filed July 9, 1889. Serial No. 316,988. (No model.)



Claim.—1. The combination of a contact-lever, resistances traversed thereby, a beam connected with the lever, a handle-bar, and a sliding connection between the said beam and handle-bar, as and for the purpose described.

2. The combination, with a contact-lever, of resistances traversed thereby, a beam connected to the said lever, a handle-bar crossing the said beam, an axle common to the said beam and handle-bar at their point of intersection, and devices tending to change the position of the said axle in relation to the said beam and handle, and thus to move the point of intersection, as and for the purposes described.

3. The combination, with a contact-lever, of resistances traversed thereby, a beam connected to the said lever, a handle-bar crossing the said beam, an axle common to the beam and handle-bar at their point of intersection, devices tending to change the position of the said axle in relation to the said beam and handle-bar, and thus to move the point of intersection, and a retarding device whereby such a change is governed, as and for the purposes described.

4. The combination of a pivoted contact-lever, a source of electricity, the said contact-lever being in circuit through the said source with the armature and field-magnet coils of an electrical motor, an electrical motor, resistances traversed by the contact-lever, and which are in circuit with the armature-coils of the motor, a contact-arc, also traversed by the contact-lever, in circuit with the field-magnet coils of the motor, a beam connected with the contact-lever, a handle-bar crossing the said beam, an axle common to the beam and handle-bar at their point of intersection, springs mounted on the handle-bar tending to change the position of the said axle in relation to the said beam and handle-bar, and thus to move the point of their intersection, and a retarding device, whereby such a change is governed, as and for the purposes described.

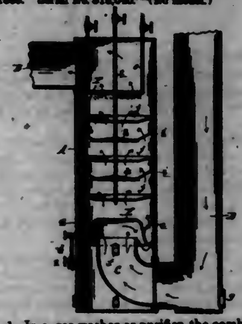
5. The combination of a pivoted contact-lever, resistances traversed thereby, a beam having a longitudinal slot mounted on the pivot of said lever, a pivoted handle-bar having a longitudinal slot, an axle received by the slots of the beam and handle-bar, springs whereby the axle is changed in its relation to the handle-bar and beam and the contact-lever moved, a ratchet transmitting motion to an escape-wheel, and an escape, whereby the movement of the contact-lever is retarded, as and for the purposes described.

6. The combination of a pivoted contact-lever, resistances traversed thereby, a beam having a longitudinal slot mounted on the pivot of the said lever, a pivoted handle-bar having a longitudinal slot, an axle received by the slots of the beam and handle-bar, springs whereby the axle is changed in its relation to the handle-bar and beam and the contact-lever moved, and a retarding device, whereby the movement of the contact-lever in one direction is governed, as and for the purposes described.

418,513. PROCESS OF CARBURIZING IRON. Philip J. Ibbs, U. S. Navy. Filed Jan. 3, 1889. Serial No. 295,807. (No specimens.)

Claim.—The hereinbefore-described process of carburizing iron, consisting in subjecting the iron to a mixture of graphite, then applying to the iron, in a muffle closed to the atmospheric air, a hydrocarbon vapor, and finally applying steam, substantially as described.

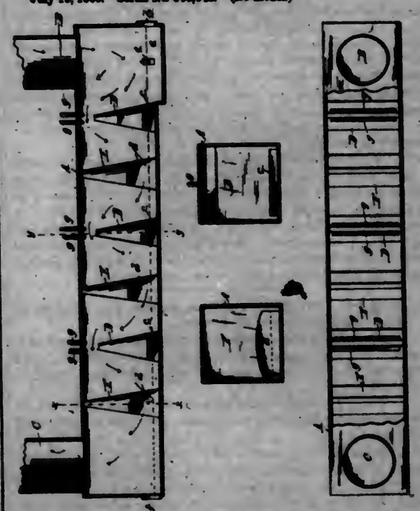
418,514. GAS-WASHER. Charles W. Jarell, Shelby, Ala. Filed July 19, 1889. Serial No. 318,040. (No model.)



Claim.—1. In a gas washer or purifier, the combination, with the upright vessel A, having at or near its top an outlet for the washed or purified gas, and at or near its bottom with a curved inlet or supply pipe extending upwardly within said vessel, of an inverted-cup-shaped deflector supported above the inner end of said pipe, and the pipe *c*, extending downwardly within the vessel and terminating slightly above the deflector, substantially as shown, and for the purpose described.

2. In a gas washer or purifier, the combination, with the upright vessel A, having gas inlet and outlet pipes and provided with the inverted-cup-shaped deflector, of the circular inclined water-shelves *h h*, arranged centrally within the vessel, the surrounding inclined side shelves *j*, alternating therewith, and the spray-pipes located above said shelves within the vessel A, substantially as shown and described.

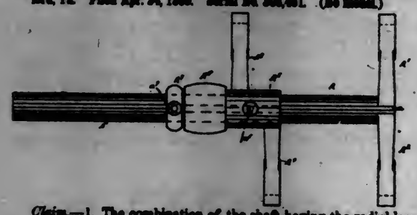
418,515. GAS-WASHER. Charles W. Jarell, Shelby, Ala. Filed July 19, 1889. Serial No. 318,041. (No model.)



Claim.—The shell or casing A, having the double inclined bridge-

walls D, formed with the openings *c*, and the double inclined division-walls alternating with said bridge-walls and having the enlarged spaces *d*, in combination with spray-pipes so arranged as to cast a spray against the sides of the bridge-walls, substantially as described.

418,516. MICROMETER-CALIPERS. CHARLES P. JESSOP, Bradford, Pa. Filed Apr. 24, 1889. Serial No. 308,681. (No model.)

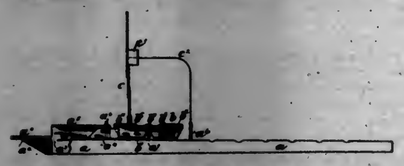


Claim.—1. The combination of the shaft having the radial legs, the adjustable sleeve having radial legs, the setting-ring, the thimble having screw-threads meshing with screw-threads on the sleeve and ring, and means for holding the parts in place, for the purpose set forth.

2. The combination of a shaft having a longitudinal groove and sliding blocks and radial legs, a sleeve having radial legs, a screw-threaded projection, and a set-screw engaging with one of the blocks in said groove, a setting-ring having a screw-threaded end, and a set-screw engaging with the other block in the groove, and a thimble having interior screw-threads engaging with the screw-threads upon the sleeve and ring, substantially as described.

3. In a caliper, the combination of the shaft having radial arms, the adjustable sleeve having radial arms and the external screw-threads, the setting-ring having external screw-threads coarser than the threads on the adjustable sleeve, and a set-screw, and the thimble secured to the sleeve and ring by screw-threads corresponding to the screw-threads on said sleeve and ring, substantially as described.

418,517. MECHANICAL TOY. FREDERICK JEWELL, Peckham, County of Surrey, England. Filed Nov. 17, 1888. Serial No. 291,108. (No model.)



Claim.—1. In a mechanical toy, the combination, with a whistle, clarionet, or other similar wind musical instrument having an air-duct, of one or more dancing or moving figures or objects and a suitable motor or motors for the figures, having an independent air-duct, said air-ducts being adapted to receive a supply of air together or separately, whereby the figures or objects are adapted to move in time to the music, or said figures or objects may receive an accelerated movement from the air-current passing through the independent duct of the motor independently of the air-current of the instrument, substantially as set forth.

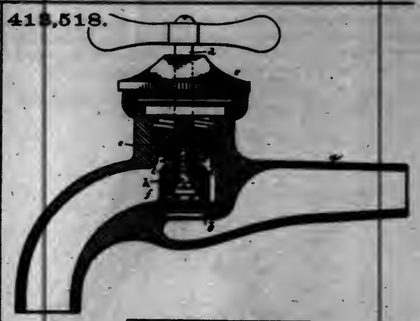
2. In a mechanical toy, the combination, with a whistle, clarionet, or other wind musical instrument, of one or more dancing or moving figures or objects, a suitable motor or motors driven by means of an air current or currents, whereby said figures or objects may be set in motion, and a flexible air reservoir or container for supplying the necessary air to both the motor or motors and said wind instrument, said reservoir when compressed causing the figures or objects to move in time to the music, substantially as shown and described.

418,518. FAUCET. JOHN B. JONES, Brooklyn, N. Y. Filed Jan. 28, 1889. Serial No. 297,514. (No model.)

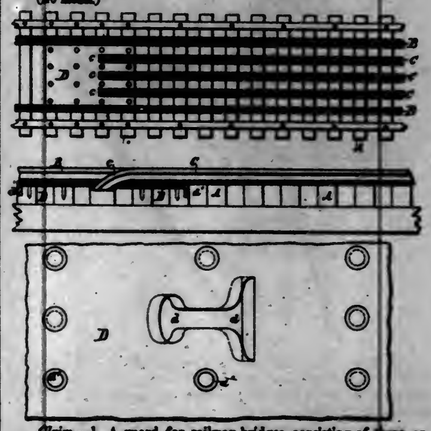
Claim.—1. A faucet composed of a shell *a*, having a septum *b*, a bonnet *c*, and a valve-spindle *d*, and a hollow compressible valve sprung over the end of the spindle and swiveled thereto, substantially as described.

2. The compressible valve *f*, swiveled to the spindle through the intervention of the flanged thimble *g*, cap *i*, and screw *h*, substantially as described.

3. The hollow compressible valve having a solid bottom and an opening in its top, combined with a valve-spindle, a flanged thimble, over which the valve is stretched, a superposed cap, and a screw connecting the valve, thimble, and cap to the spindle, substantially as described.



418,519. GUARD FOR RAILWAY-BRIDGES. OSWALD F. JORDAN, St. Thomas, Ontario, Canada. Filed July 11, 1888. Serial No. 317,103. (No model.)



Claim.—1. A guard for railway-bridges, consisting of three or more guard-rails placed equidistant from the main-track rails and from each other, said guard-rails extending parallel with each other and with the main track throughout their length, substantially as described.

2. A guard for railway-bridges, consisting of a series of guard-rails extending parallel with the track-rails, the ends of said guard-rails sloped downward so as to terminate at or below the surface of the ties, substantially as described.

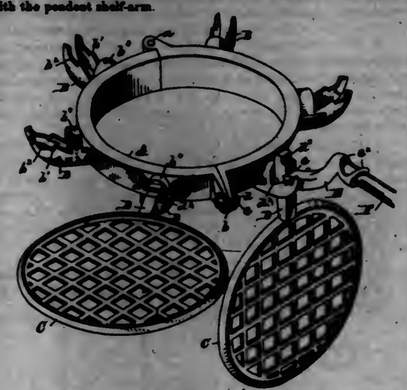
3. A guard for railway-bridges, consisting of a series of guard-rails placed equidistant from the main-track rails and from each other, said guard-rails extending parallel with each other and with the main-track rails, and having their ends curved downward and held in position by an iron plate fastened to the ties, substantially as described.

4. In a guard for railway-bridges, an iron plate for holding the ends of the guard-rails in position, said plate bolted or otherwise fastened to the ties and having the ends of the rails passed through the same, substantially as described.

418,520. STOVE-PIPE SHELF. WILLIAM H. JULIAN, Springfield, Ohio, assignor to the D. O. Myers Manufacturing Company, same place. Filed Jan. 10, 1889. Serial No. 296,093. (No model.)

Claim.—1. The combination, with an annulus or ring constructed of parts joined together so as to be opened and placed around a stove-pipe and provided with securing devices, and one or more jaws, each composed of two members reduced in thickness toward their outer ends and notched in their upper sides, and a bridge or arch extending from one member to the other at their inner ends, of one or more shelves, each having an arm notched at its inner end to fit the under side of said arch, and having lateral pins to fit said notches, the pins being arranged to rest upon the members of the jaws when the inner end of the arm is disengaged to support the shelves in a pendent position.

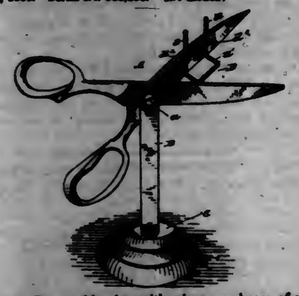
2. The combination, with an annulus adapted to be fitted upon a stove-pipe and one or more jaws extending therefrom, of one or more shelves, each having an arm with lateral projections supporting it in a pendent position within a jaw, and a socket-arm having lateral projections supporting it upon the jaw, and engaging at its inner end with the pendent shelf-arm.



3. The combination, with an annulus adapted to be fitted upon a stove-pipe and one or more jaws extending therefrom, each composed of two members having notches in their upper edges, of one or more shelves, each having an arm provided with lateral pins which support the arm within a jaw, a notch in the outer face of the arm, and one or more socket-arms, each having a bar fitted in its socket, and lateral pins at its inner end, which rest in said notches, while its inner extremity engages the notch in the pendent arm.

4. In an improved attachment for stoves, an annulus adapted to be fitted upon a stove-pipe and jaws cast integrally therewith, each jaw being composed of two members connected at their inner ends on the upper sides by an arch or bridge tapered toward their outer ends, and each provided with two notches in their upper edges.

418,521. SHEARS. WILLIAM A. KENNY, Meriden, Conn. Filed Mar. 29, 1889. Serial No. 305,203. (No model.)



Claim.—1. The combination, with scissors or shears, of a support connected thereto at their pivotal point, whereby the same may be secured to a table or bench, substantially as described.

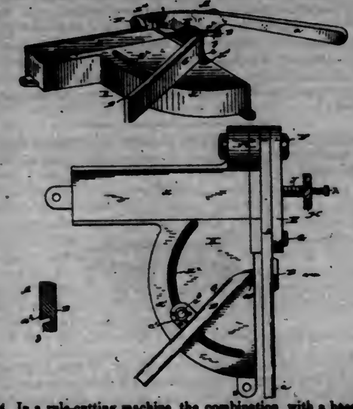
2. In combination with scissors one blade of which is provided with holes, a gage consisting of screw-threaded arms bent and connected at one end, and set-nuts for holding said arms in position, substantially as described.

418,522. MACHINE FOR CUTTING AND MITERING PRINTERS' RULES. WILLIAM A. KENNY and RICHARD ATWATER, Meriden, Conn., assignors to the Kenny Press Company, same place. Filed May 14, 1888. Serial No. 310,703. (No model.)

Claim.—1. In a rule-mitering machine, a base having a lever pivoted thereto, said lever being provided with a cutting-edge on one side parallel with the longitudinal axis thereof, and a leg extending under the lever nearly to the vertical plane of the cutting-edge, said leg having a beveled face, substantially as described.

2. In a rule-mitering machine, a base having a lever pivoted thereto and a swinging rule-gage, said lever being provided with a cutting-edge on one side parallel with the longitudinal axis thereof, and a leg extending under the lever and having a beveled face, substantially as described.

3. In a rule cutting and mitering machine, the combination, with a base having a rule-bed and a swinging rule-gage, of a lever pivoted to said base and having two cutting-edges opposite the ends of the said bed and gage, substantially as described.



4. In a rule-cutting machine, the combination, with a base having a cutting-lever pivoted thereto, of the brace E, connecting the end of the lever-fulcrum with a portion of the base distant from said fulcrum, said brace being parallel to the lever when down, substantially as described.

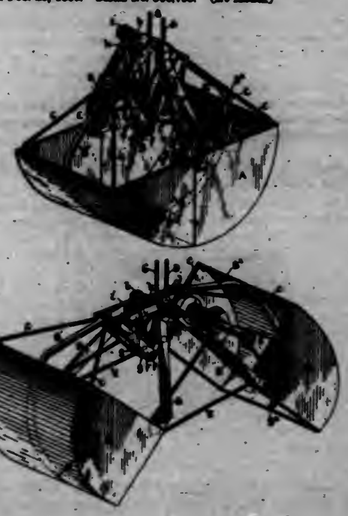
5. In a rule-cutting machine, the combination, with the base, of the gage H, having a screw-threaded rod J, entering a tapped hole in the base, and the screw A, passing through gage H, substantially as described.

418,523. CAM. JAMES G. KIRBY, Louisville, Ky. Filed July 26, 1889. Serial No. 319,022. (No model.)



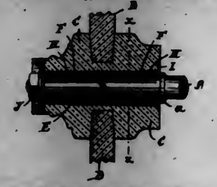
Claim.—A cam having a shoe or shoes removably fitted to rest upon its body as a wearing-surface therefor, and collars recessed to receive the edges of the said shoes and rigidly yet removably bound to the body, substantially as shown and described.

418,524. HOISTING-BUCKET. LOREN G. LANE, Pawtucket, R. I. Filed Feb. 23, 1889. Serial No. 300,795. (No model.)



Claim.—In a hoisting-bucket composed of two parts pivoted or hinged together, and having a windlass shaft and drum mounted upon one of the halves of the bucket, the combination, with toggle-levers for opening the two parts of the bucket, of arms extending upwardly from each of the sections of the bucket and pivoted together, the arm secured to that half of the bucket which carries the windlass shaft and drum extending beyond the pivot-point and connected at its outer end with the joint of said toggle-levers, substantially as described.

413,525. ANTI-FRICTION BEARING FOR VEHICLE-WHEELS. HOSEA W. LIBBEY, Boston, Mass. Filed Mar. 5, 1889. Serial No. 301,842. (No model.)

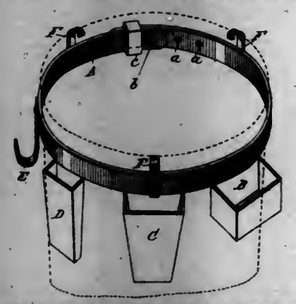


Claim.—1. In an anti-friction bearing for vehicles, a sleeve having longitudinal ribs on its peripheral face and slots between said ribs, in combination with friction-rollers and covers or plates, substantially as shown and described.

2. In anti-friction bearing for vehicles, the combination of a sleeve the internal diameter of which is slightly larger than the spindle and having longitudinal ribs on its peripheral face, slots between said ribs, a recess around each slot, plates fitting said recesses, and friction-rollers of a diameter to just fit in the slots and between the plates and spindle, substantially as set forth.

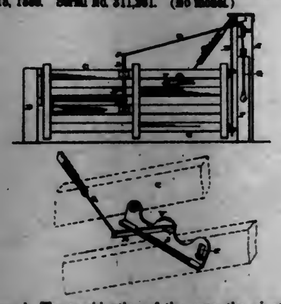
3. In an anti-friction bearing for vehicles, the sleeve E, having longitudinal ribs *c*, slots F, and a recess around each slot, in combination with the plates H and friction-rollers F, substantially as set forth.

413,526. ATTACHMENT FOR SCRUBBING-BUCKETS. ABRAHAM J. LOSER, Lebanon, Pa. Filed Mar. 22, 1889. Serial No. 304,373. (No model.)



Claim.—A bucket provided with an adjustable hoop having supporting hooks and receptacles attached thereto, said parts being combined substantially as described.

413,527. GATE. CHARLES B. LITTLE, Mount Carroll, Ill. Filed May 18, 1888. Serial No. 311,961. (No model.)

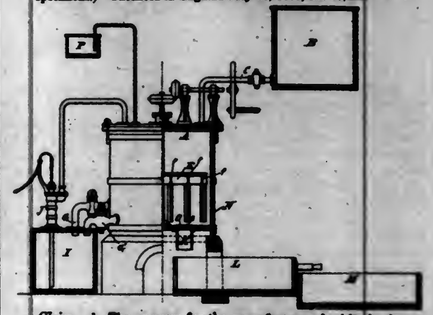


Claim.—1. The combination of the gate, the pivotal rod upon which the gate is hung, the casting secured to the gate and provided with teeth, the lever pivoted to the casting and engaging said teeth with its free end, and a brace rod or wire having its lower end connected to the opposite end of the lever and its upper end connected to the rod upon which the gate is hung, substantially as described.

2. The combination of the gate with the casting S, diagonally secured to two of the parts of the gate and provide with a slot at one end, through which a clamping-bolt is passed, a lever pivoted to the casting, the rod upon which the gate is hung, and a rod, wire, or brace connected to the lever and the said pivotal rod, whereby the sag in the gate can be taken up, substantially as set forth.

3. The combination of the gate and the casting S, (which is diagonally secured thereto and provided with a slot at its center and a series of teeth arranged upon a circle,) with the lever R, pivoted in the slot so as to have endwise movement, and having its upper end hooked so as to engage with the teeth, the pivotal rod or bolt upon which the gate is hung, and the brace rod or wire Q, connecting one end of the lever and the pivotal rod, substantially as specified.

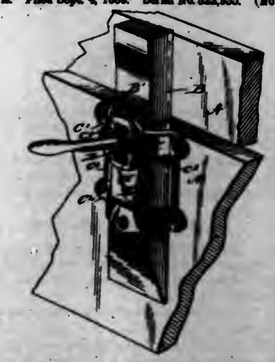
413,528. WHITE LEAD. RALPH W. R. MAC IVOR, London, County of Middlesex, England. Filed Aug. 14, 1888. Serial No. 282,695. (No specimens.) Patented in England July 12, 1888, No. 10,698.



Claim.—1. The process for the manufacture of white lead, consisting in the treatment of monoxide of lead with acetate of ammonia, whereby hydrate of lead is formed and the conversion of this into basic carbonate of lead by the subsequent injection of carbonic acid, substantially as herein described.

2. The process for the manufacture of white lead, consisting in submitting monoxide of lead to agitation with a solution of acetate of ammonia in a close vessel, and afterward, when the monoxide has been converted into hydrate, passing streams of carbonic-acid gas through the contents of the vessel.

413,529. WAGON-BODY FASTENER. TABER G. MANDT, Stoughton, Wis. Filed Sept. 4, 1889. Serial No. 322,935. (No model.)



Claim.—1. In a wagon-top fastener, the combination, with the depending strip, of the case adapted to receive said strip, the spring in said case, and the cam-lever for forcing the spring against the strip to secure the same, substantially as described.

2. In a wagon-top fastener, the combination, with the strip having the depression therein, of the case having the spring, and the cam-lever for causing the spring to engage the depression and secure the strip in the case, substantially as described.

3. In a wagon-top fastener, the combination, with the strip, of

the case to receive the same, consisting of the staples, the cam-lever pivoted in one of the staples, and the spring having one end secured and the other end free and turned up or beveled slightly, substantially as and for the purpose described.

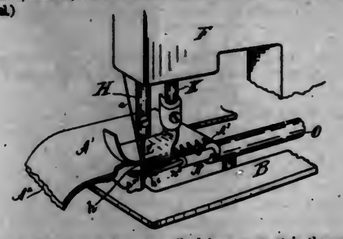
413,530. WAGON-SEAT FASTENER. TABER G. MANDT, Stoughton, Wis. Filed Sept. 6, 1889. Serial No. 323,180. (No model.)



Claim.—1. The herein-described seat-fastener, comprising the following elements: a keeper having inwardly-projecting ears forming a groove, and outwardly-projecting lip, a cam-lever having a beveled flange, and a casing having a downwardly-projecting rectangular finger, substantially as shown.

2. The herein-described seat-fastener, comprising the following elements: a keeper having ears forming a groove and lip with a flat upper surface, and a curved and beveled under side, a cam-lever having a flange beveled, substantially as shown, and a segmental casing having a finger adapted to register with the rectangular groove of the keeper, all constructed and combined to co-operate, substantially as and for the purpose set forth.

413,531. METHOD OF OVERSEAMING FABRICS. JOSEPH M. MERROW, Merrow, Conn. Filed Oct. 12, 1887. Serial No. 252,153. (No model.)



Claim.—The hereinbefore-described improvement in the art of forming a seam or finish on fabrics, which consists in passing the thread through the material near the edge thereof, grasping the thread beneath the material and drawing a loop to or beyond the edge, then grasping the thread upon the upper side of the material and drawing a loop therefrom to or beyond the edge and through the preceding loop, passing the thread again through the material, grasping said thread beneath the material and drawing a loop through the second loop, and repeating the process, substantially as described.

413,532. CORN-SHELLER. GEORGE F. MERRIMAN, Tatamy, Pa. Filed Mar. 14, 1889. Serial No. 303,149. (No model.)



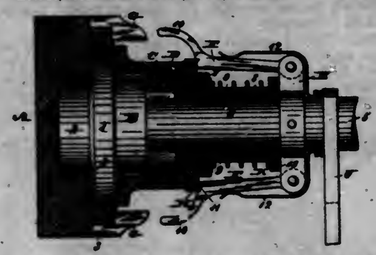
Claim.—1. In a corn-sheller, the combination of a shelling-cylinder, a casing for the same provided with a longitudinal shelling-breast in one side of its upper portion, heads closing the opposite ends of the casing, the rear head being provided with a cob-discharge aperture in its upper corner at or just above the rear end of the shelling-breast, and a straight slide between the end of the casing and its rear head and obliquely and adjustably extending across said opening, whereby the size of the same can be increased or diminished, substantially as described.

2. In a corn-sheller, the combination of the frame, the vibratory shoe in the lower portion of the same, a cross-bar at the front end of the frame, a vertical bell-crank lever mounted at its elbow on said cross-bar and having its upper arm pivoted to the front end of said shoe, a transverse driving-shaft mounted at the front end of the frame, an eccentric on said shaft, and a pitman extending down from the eccentric and loosely connected to the opposite arm of said lever, for the purpose set forth.

3. In a corn-sheller, the combination of a casing for the shelling-cylinder, having a longitudinal shelling-breast in one side of its upper portion, a head closing the rear end of the casing, having a cob-discharge opening in an upper corner at the end of said breast, a pair of vertical side pieces rigidly secured to said head on each side of and extending above and below the opening therein, a downwardly and inwardly inclined bottom rigidly secured to the lower edges of said side pieces and leaving a discharge-opening between its lower edge and the face of said head, and an outwardly-inclined open guide-bottom at its upper edge secured to the head beneath said opening and at the lower edge secured to the upper edge of said bottom board, as and for the purpose set forth.

4. In a corn-sheller, the shelling device, in combination with a vibratory shoe beneath the same consisting of side pieces, a pair of guide-bottoms carried by the side pieces beneath the shelling device and centrally and downwardly inclined and overlapping at their inner ends, the side pieces being extended downwardly at their rear ends, a downwardly and centrally inclined bottom secured to the lower edges of said extended sides, an open conduit carried by the shoe at the lower edge of said bottom, a riddle directly above said bottom and beneath the discharge-edge of said pair of guide-bottoms, and a vertical screen secured to the front edges of the said extended sides and extending from one edge of said conduit to and just in front of said discharge-edge, as and for the purpose set forth.

413,533. APPARATUS FOR MAKING PAPER BOXES. JULIUS MOSS, Philadelphia, Pa., assignor to Wolf Brothers, same place. Filed Nov. 30, 1888. Serial No. 291,260. (No model.)



Claim.—1. A die and a plunger, in combination with a stripper movably connected with the rod of said plunger and a spring bearing against said stripper, and a cup or holder surrounding the plunger, substantially as described.

2. A die and a plunger, in combination with a cup or holder and a stripper therein, said holder and stripper being movably connected with the rod of the plunger, and arms pivoted to said rod and adapted to engage with the holder, thus advancing said holder with the plunger, substantially as described.

3. In an apparatus for making paper boxes, the plunger-rod B, the cup or holder C, and the stripper D between said holder and plunger, movably connected with said rod, in combination with the spring K, bearing against said holder and stripper, and the cross-head E, against which said stripper is stopped, whereby the spring is compressed, substantially as described.

4. In an apparatus for making paper boxes, a die, a plunger, and holder, in combination with arms pivoted to the rod of the plunger, a shoulder on the holder with which said arms abut, and deflectors on the bed or die, the ends of the arms being set out so as to engage with the deflectors, and thus form throw-offs, whereby the arms are disconnected from the holder.

5. A die and a plunger, in combination with a holder and an inclosed stripper surrounding said plunger, said holder having connected with it a screw which passes through a slot in the neck of the stripper and enters a recess in the plunger-rod, substantially as described.

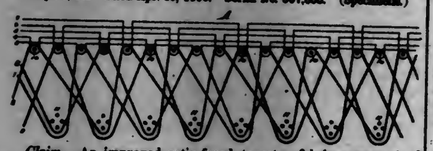
6. A die and plunger, in combination with a stripper, which is movably connected with the plunger-rod, the outer edge of the die being rounded or beveled, whereby the front end of the stripper forms a shear with the wall of the die, substantially as described.

7. A die and a plunger, in combination with a cup-shaped holder,

a spring bearing against the neck of said stripper and the end of the holder, a cross-head connected with the rod or stem of the plunger, a stationary arm against which the neck of the stripper abuts, and a screw, which is connected with the holder, passes through the slot in the stripper and enters a recess in said rod or stem, substantially as described.

8. A die, a plunger having the recess 6 and provided with the cross-bar E and arms F, the latter connected to said cross-bar, the stripper D, with slots 9 and stop 13, the cup C, with screw 7, the spring K, and the stationary arm J, said parts being combined substantially as described.

413,534. SATIN-FACED FABRIC. REINARD B. MORRELL, Philadelphia, Pa. Filed Apr. 19, 1889. Serial No. 307,833. (Specimens.)



Claim.—An improved satin-faced tapestry fabric composed of face warp threads, backing-warp threads, fine pick threads, and backing-weft threads, the face-warp threads being floated to form a satin surface, and bound by the fine pick threads, and the backing-weft threads being bound to the fine pick threads by the backing-warps, said backing-weft threads giving body and substance to the backing, substantially as set forth.

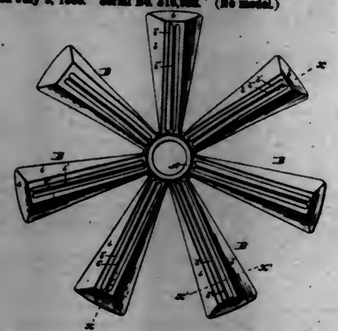
413,535. MIXTURE FOR REFINING COPPER AND ITS ALLOYS. GEORGE G. MULLER, Los Angeles, Cal. Filed Aug. 6, 1888. Serial No. 319,889. (No specimens.)

Claim.—The mixture of silica, fluor-spar, carbonate of potash, and tungstate of sodium, in substantially the proportions set forth, to be used to cleanse, refine, and improve copper and its alloys.

413,536. METHOD OF REFINING COPPER AND ITS ALLOYS. GEORGE G. MULLER, Los Angeles, Cal. Filed Oct. 3, 1888. Serial No. 326,841. (Specimens.)

Claim.—The improvement in the process of treating copper and its alloys which consists in adding to the metal a mixture of silica, fluor-spar, carbonate of potash, and tungstate of sodium, in about the proportions set forth, commingling them by melting, skimming off the dross, and then proceeding in the usual manner, as set forth.

413,537. CHURN-DASHER. JACOB W. MCCLURE, Memphis, Tenn. Filed July 9, 1889. Serial No. 316,982. (No model.)

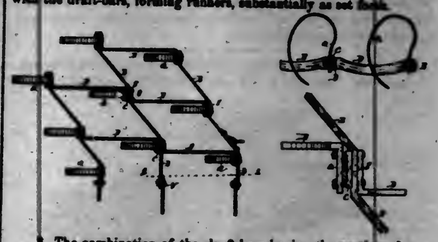


Claim.—As an improved article of manufacture, a churn-dasher constructed as follows: a hub A, having formed integral with it the radial arms B, which increase in size toward their outer ends, these radial arms being provided with radial slots *b'* and downwardly and outwardly extending flanges *b*, and radial rods *b''*, extending the entire length of the slots *b'*, as and for the purposes herein set forth.

413,538. HARROW-FRAME. JAMES MCMAHON, Kalamazoo, Mich., assignor to D. C. & H. C. Reed & Co., same place. Filed Dec. 17, 1888. Serial No. 293,259. (No model.)

Claim.—1. A harrow consisting of a series of draft-bars bearing teeth or shares and a series of cross-bars attached at the ends to said draft-bars and bowed downward, forming runners to support the draft-bars and constituting part of the frame to hold the draft-bars, substantially as set forth.

2. A harrow-frame comprising the draft-bars having share-seats and a series of cross-bars bowed downward between their attachment with the draft-bars, forming runners, substantially as set forth.

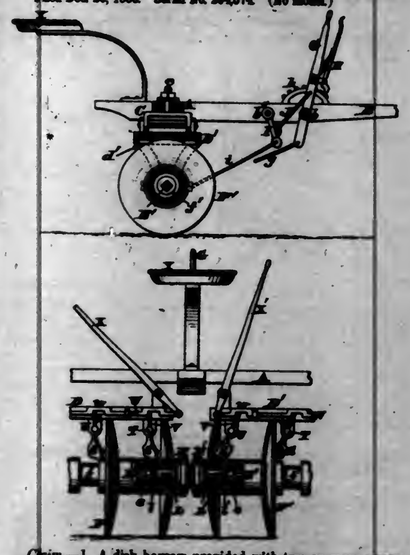


3. The combination of the draft-bars having the portions forming share-seats, the cross-bars having the angled clamping ends, said cross-bars being bowed downward between the draft-bars, teeth or shares, and bolts clamping the teeth or shares, the draft-bars, and the angled ends of the cross-bars together, substantially as set forth.

4. The combination of draft-bars, the downwardly-bowed cross-bars having the angled clamping ends, the seat-blocks, the shares, and bolts clamping the draft-bars, the ends of the cross-bars, the shares, and seat-blocks together, substantially as set forth.

5. A metal harrow-frame comprising the oblique vertically-edgewise draft-bars having the seat portions, the vertically-edgewise cross-bars bowed downward between the draft-bars and having the angled clamping ends, and the clamping-bolts, substantially as set forth.

413,539. DISK HARROW. WILLIAM H. NAUMAN, Dayton, Ohio. Filed Dec. 26, 1888. Serial No. 294,574. (No model.)



Claim.—1. A disk harrow provided with two or more gangs of disks swiveled to a main frame or beam, having their opposite ends attached to a lever in the manner described, whereby a single motion of the lever forces one end of each gang backward and the other end forward, in the manner and for the purpose described.

2. A disk harrow provided with two or more gangs of disks swiveled to a main frame or beam, having their opposite ends attached to a lock-lever in the manner described, whereby by a single motion of the lever one end of each gang will be forced back and the other forward and locked at any desired angle to the line of draft, in the manner and for the purpose described.

3. In a disk harrow provided with several gangs of disks or pulverizers, a lock-lever attached to the tongue and arranged to operate the disk-gangs by rods attached to their opposite ends to throw and lock them at any desired angle to the line of draft, in the manner and for the purpose described.

4. In a disk harrow having several gangs of disks arranged as described, the combination of the main lever G, attached to one end of each gang, the counter-lever I, attached to the other end of each gang, and connecting link J, in the manner and for the purpose specified.

5. A disk harrow of the class specified provided with a pair of anti-friction heads revolving independently of the gangs, applied to the abutting ends of the disk-gangs, substantially as and for the purpose described.

6. A disk harrow of the class specified provided with a pair of anti-friction heads revolving independently of the gangs, applied to the abutting ends of the disk-gangs, said heads being united by a tie, substantially as and for the purpose described.

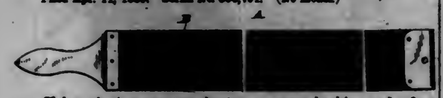
7. In a disk harrow having one or more pairs of disk-gangs with abutting ends, the revolving anti-friction heads M M', provided with laterally-extending lugs fitting into bushings L L', with the longitudinal slots *o o'*, and chambers O O', substantially as described.

8. In a disk harrow having one or more pairs of disk-gangs whose ends abut, revolving anti-friction heads whose inner ends or stems are provided with laterally-extending annular ribs revolving in interior annular chambers or grooves within the bushing, substantially as and for the purpose described.

9. In a disk harrow, disk scrapers swiveled in rock-shafts suspended from the frame, whereby they may be adjusted to the concave faces of the disks, substantially as and for the purpose described.

10. In a disk harrow, disk-scrapers swiveled in rock-shafts T, in combination with the levers V, and sliding bar W, whereby said scrapers may be thrown into or out of contact with the disks, substantially as and for the purpose described.

413,540. RAZOR-STROP. WESLEY I. NEBOLA, New York, N. Y. Filed Apr. 11, 1889. Serial No. 306,791. (No model.)



Claim.—1. A razor-strop having a canvas backing and a face composed of rubber having fine emery mixed therewith, said rubber face being grooved in diagonal lines from the center toward each side, substantially as described.

2. A razor-strop having its face formed with diagonal grooves extending from the center of the strop to each side, substantially as described.

413,541. SUSPENDER-END. WILBUR F. OSBORNE, Ansonia, Conn. Filed July 3, 1889. Serial No. 316,456. (No model.)



Claim.—As an improved article of manufacture, the flat suspender-end herein described and shown, consisting of the flattened textile core, the flat rectangular tubular braid inclosing said core and composed of a strong but inferior textile material for the requisite strength, and the flat rectangular tubular braid of superior material inclosing the flat braid containing the core, as set forth.

413,542. MACHINE FOR PITCHING BARRELS. EDWARD J. OTT, Norwalk, Ohio. Filed Oct. 23, 1888. Serial No. 288,987. (No model.)

Claim.—1. The combination, in a machine for rolling kegs, of the rollers E, the shaft N, means, substantially as specified, to rotate the said shaft and rollers, the pinion S, feathered to the shaft N and vertically movable thereon, the yoke B', connected to the pinion, and the reciprocating frame V, having the rack-bars arranged in different planes and adapted to alternately engage the pinion, said frame having the push-bar or standard, for the purpose set forth, substantially as described.

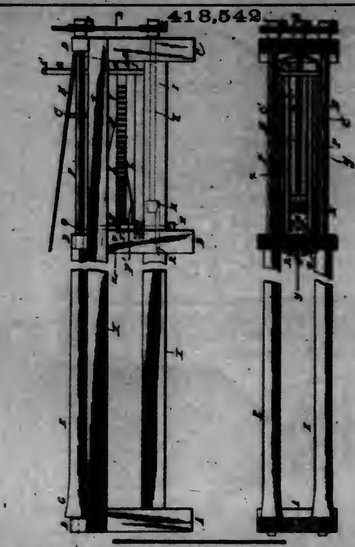
2. The combination, with the rollers E, of the pivoted yoke B', the reciprocating frame V, having the rack-bars in different planes, the revolving shaft N, the pinion feathered to and vertically movable on said shaft and adapted to alternately engage the rack-bars, the cord connecting the said pinion to the pivoted yoke, and the cam on the frame V to depress the said pinions, substantially as described.

3. In a machine for rolling kegs, the combination of the rollers, the yoke, and the traveling frame having the push rod or standard, substantially as described.

4. In a machine for rolling kegs, the combination of the rollers E, having the enlarged, swelled, or flared outer ends G, the yoke, and the traveling frame having the push-rod or standard, substantially as described.

5. In a machine for rolling kegs, the combination, with the continuously-revolving rollers and shaft N, of the traveling frame having the push-bar or standard, the pivoted yoke, and the pinion feathered on the shaft, adapted to operate the traveling frame, and the connections between said pinion and said yoke, substantially as described.

413,542.



413,543. WRINGER. LEWIS C. PARKER, Cincinnati, Ohio, assignor to the Peerless Wringer and Manufacturing Company, same place. Filed Mar. 13, 1889. Serial No. 303,182. (No model.)



Claim.—In a wringer, the combination, with the posts A A, of circular grooved guides B B and a curved apron C, having the notches *c c* at the corners, and arranged to operate substantially as and for the purpose specified.

413,544. RECEPTACLE FOR RETAILING NAILS. JOHN G. PEACH, ELBRIDGE I. DYE, and ISAAC DYE, Salem, Mo. Filed Apr. 11, 1889. Serial No. 306,784. (No model.)



Claim.—1. The receptacle for retailing nails, having an inclined bottom, a discharge-orifice in the front wall at the lower part of the bottom, and a drop-gate 7, having tines 9 and adapted to close the discharge-orifice, substantially as set forth.

2. The receptacle for retailing nails, having an inclined bottom 4 6, a discharge-orifice 5, a forked drop-gate 7, and an inclined cover 13, all constructed and arranged substantially as set forth.

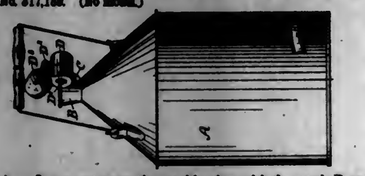
413,545. RIBBON-REEL. WILLIAM G. PEACOCK and JAMES W. CROMAN, Tiptonville, Tenn. Filed July 15, 1889. Serial No. 317,601. (No model.)

Claim.—In a ribbon-reel, the spring-clamp consisting of a strand of wire whose ends have their bearings in central orifices on either side of the bolt, the wire strand in continuation on either side of the bolt being projected outwardly to near its periphery where formed into coiled springs, and from thence projected near the center of the bolt and across the wire, and again bent at right angles near the periphery

of the bolt with which it is aligned, substantially as and for the purpose set forth.

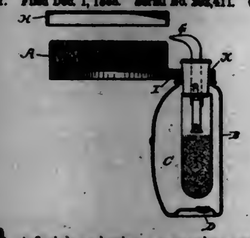


418,546. CAN-STOPPER. HENRY PEARL, Mount Vernon, assignor of one-half to Leopold Weil, New York, N. Y. Filed July 11, 1889. Serial No. 317,169. (No model.)



Claim.—In a can-stopper, the combination, with the nozzle B, provided with the arm C, carrying the barrel D, of the spring-actuated barrel D', journaled on the barrel D and provided with the stopper D^2, and the actuating-spring carried by said barrels, substantially as described.

418,547. MAGNESIUM FLASH-LAMP. HENRY G. PIFFARD, New York, N. Y. Filed Dec. 1, 1888. Serial No. 292,411. (No model.)



Claim.—1. A flash-lamp having a magnesium-receptacle, a bulb within which said receptacle is located, and which serves as a hand-grasp, an air-induction tube extending to the interior of said bulb, an ejector-tube leading therefrom, and a flat alcohol-lamp attached to the neck of said bulb, substantially as described.

2. A flash-lamp having a magnesium-receptacle located within a bulb which serves as a hand-grasp, an air-induction tube extending into said receptacle, an ejector-tube extending therefrom, a flat alcohol-lamp detachably secured to the neck of said bulb, the nozzle of said ejector being deflected at an angle to said receptacle and parallel to the surface of the lamp, substantially as described.

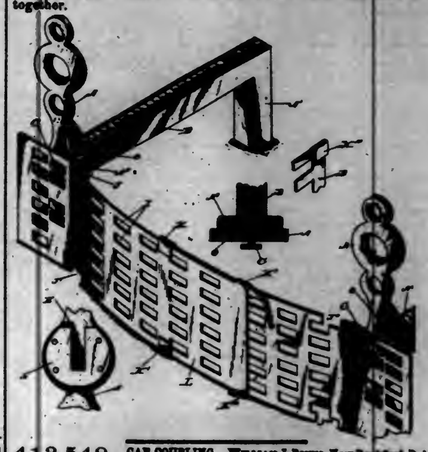
3. As a new article of manufacture, a magnesium flash-lamp having a magnesium-receptacle, a bulb to which said receptacle is attached, and which serves as a hand-grasp, an air-induction tube extending into said receptacle, an ejector-tube leading therefrom, and a flat alcohol-lamp attached to the neck of the bulb, as and for the purpose described.

418,548. FIRE-FENDER AND ANDIRON. GEORGE W. PITTS, Oxford, Ala., assignor of one-half to William J. Pearce. Filed Oct. 5, 1888. Serial No. 287,393. (No model.)

Claim.—1. The combination, with a pair of andirons, of a fender detachably secured to the front face thereof, and provided with registering apertures of less width than the spaces between them, and each sliding horizontally in suitable supports upon the other, whereby slightly adjusting the sheets may simultaneously close all the apertures.

2. The combination, with the corrugated andirons, of a fender consisting of two overlapped perforated sheets removably fixed to the andirons, respectively, and each guided by supports upon the other, whereby slight movement of the andirons themselves toward or from each other may close the apertures.

3. The combination, with a pair of andirons, of the overlapped perforated sheets D D', each provided with hooks engaging the edges of the other, and having notches in said edges at normally-unequal distances from said hooks, respectively, whereby the hooks may be successively engaged with the corresponding edges in putting the parts together.



418,549. CAR-COUPLING. WILLIAM J. POSTO, New Rockford, Dak. Filed July 11, 1889. Serial No. 317,112. (No model.)

Claim.—1. The draw-head B, having slots *b* and *b'*, the bolt C, and plate *c*, connected to it, and the spring F behind the bolt, whereby the pin is held up by means mostly outside the mouth of the draw-head.

2. The combination, with the draw-head having its upper pin-hole provided with lateral opposite extensions, of the sliding plate *c*, to uphold the pin, the pin having lateral opposite fins to fit in said extensions, and the coupling-link, which, when in the draw-head, is horizontally held by the said pins which bear on its opposite side bars, substantially as specified.

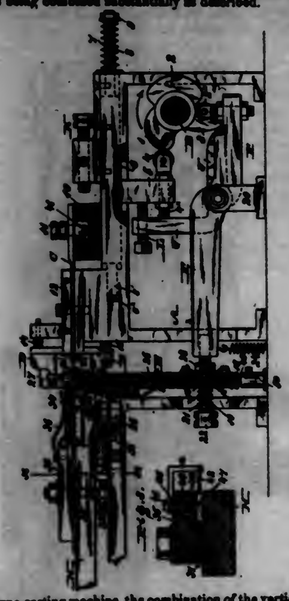
3. The combination, with the draw-head having the slots *b b'* and provided with an upper pin-hole having opposite lateral extensions, the bolt C, the spring F in rear of said bolt, and the sliding plate *c*, attached to the bolt, of the coupling-link and the pin D, having opposite lateral fins *d*, substantially as specified.

418,550. TYPE-CASTING MACHINE. HERMANN PUSS, Philadelphia, Pa. Filed Dec. 28, 1888. Serial No. 295,111. (No model.)

Claim.—1. In a type-casting machine, a frame with a slide working therein, said slide having a depending arm, a rotary shaft with cam, a head on said slide, a plunger secured to said head, a bed in which said plunger works, a mold with casting-chamber, and a vertical slide forming one side of said casting-chamber opposite the plunger, said parts being combined substantially as described.

2. A frame, a slide working in said frame and having an end rod and a depending arm, returning-spring on said rod, and a rotary shaft with a cam adapted to engage said arm, said parts being combined substantially as described.

3. A frame, a slide working in said frame and having a depending arm with a roller, a rotary shaft with a cam adapted to engage said roller, a plunger adjustably secured to said slide, a bed in which said plunger works, a mold with a casting-chamber, a vertical slide adapted when raised to form one wall of the chamber and when lowered to have its top level with the bottom or floor of the casting-chamber, said parts being combined substantially as described.



4. In a type-casting machine, the combination of the vertical slide, the lever for operating the same, the universal joint between the lever and slide, the spring carried by a rod on the end of the lever and bearing against the universal joint, and the spring for restoring the said lever, substantially in the manner and for the purpose described.

5. In a type-casting machine, a slide with an adjustable plunger, a bed in which said plunger works, a mold with charging-chamber, a vertical slide forming the side of the chamber opposite the plunger, a receiving-table on the level of the charging-chamber, the said plunger working in the bed and through the charging-chamber, said parts being combined substantially as described.

6. In a type-casting machine, a slide with an adjustable plunger secured thereon and having a downwardly-projecting arm, a pivoted lever with an adjustable pin or stud adapted to engage said arm, and a rotary shaft with a cam adapted to engage said lever, said parts being combined substantially as described.

7. In a type-casting machine, the combination, with the plunger and means for operating the same, of the lever for engaging said plunger, and a cam for operating said lever, substantially in the manner and for the purpose described.

8. In a type-casting machine, a mold having a discharge-passage leading therefrom, in combination with a screw at one side of the mold, having its point projecting therein, and a guide-plate at the opposite side of said mold, substantially as and for the purpose described.

9. In a type-casting machine, the herein-described means for breaking the jet, consisting of blocks having inclined faces arranged in opposite or reverse directions, substantially as described.

10. In a type-casting machine, a mold and a discharging-table, in combination with a slide having a flat top, which when the slide is in normal position is coincident with the bottom of the casting-chamber of said mold and top of said table, and when moved forms one side of said casting-chamber, substantially as described.

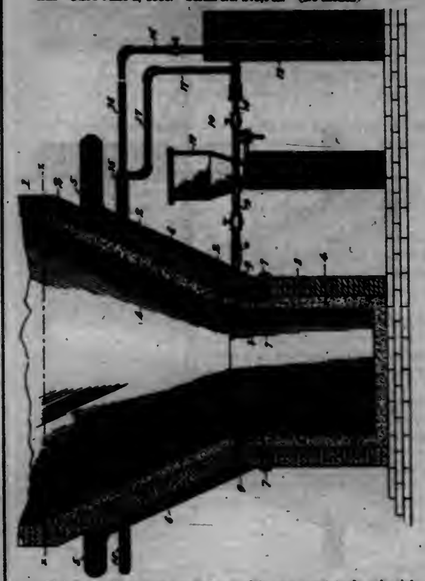
11. In a type-casting machine, the combination of the table H, a plunger, the separating-plate 37, the block 35 with recess 44, the block 43, secured in said recess and having the rib 47, substantially as and for the purpose set forth.

12. In a type-casting machine, the combination of the slide carrying a plunger, the cam for operating said slide, the spring for returning the slide, the stop for limiting and adjusting the movement of the slide, the lever for engaging the slide to prevent sticking of the same, and the cam for operating said lever, substantially as and for the purpose described.

13. In a type-casting machine, a slide with head having a wedge-shaped nut secured thereto, and a plunger secured to said nut by a screw, said parts combined substantially as described.

14. In a type-casting machine, the slide having the head rising therefrom and the arm depending therefrom, the plunger connected to said head, and the cam and lever, with means, substantially as described, to operate the same against the depending arm of the slide, substantially in the manner and for the purpose described.

418,551. APPARATUS FOR SMELTING ORES. NATHANIEL A. PRATT, Atlanta, Ga., assignor to the Pratt Steel Company, Birmingham, Ala. Filed June 2, 1888. Serial No. 275,942. (No model.)



Claim.—1. In an apparatus for smelting ores and dephosphorizing and otherwise purifying and refining the molten metal, the combination, with a blast-furnace provided with a basic lining for its bosh and crucible, of an apparatus for feeding finely-comminuted basic flux into the lower part of the bosh at or near the zone of fusion, substantially as described.

2. In an apparatus for smelting ores and dephosphorizing and otherwise purifying and refining the molten metal, the combination, with a blast-furnace provided with a basic lining for its bosh and crucible, of a series of flux-feeders arranged around said furnace for feeding finely-comminuted basic flux thereto and having their nozzles entering the lower part of the bosh a short distance above the tuyeres, substantially as described.

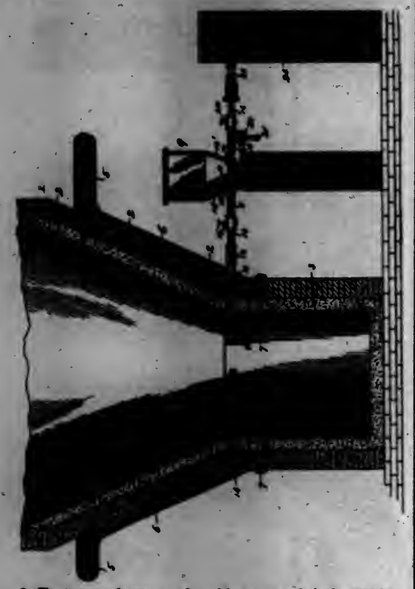
3. In an apparatus for smelting ores and dephosphorizing and otherwise purifying and refining the molten metal, the combination of a blast-furnace provided with a basic lining for its bosh and crucible, and with flux-nozzles around the lower part of its bosh, with feeders arranged to register with said nozzles and provided with movable couplings for connecting them therewith, substantially as described.

4. In an apparatus for smelting ores and dephosphorizing and otherwise purifying and refining the molten metal, the combination of a blast-furnace provided with a basic lining for its bosh and crucible, and with flux-nozzles arranged around the lower part of its bosh, with feeders or injectors arranged to register with said nozzles and provided with delivery-pipes and movable couplings for connecting them with said nozzles, and a compressed-air-supplying reservoir for forcing said flux through said nozzles, substantially as described.

418,552. PROCESS OF SMELTING IRON ORES. NATHANIEL A. PRATT, Atlanta, Ga., assignor to the Pratt Steel Company, Birmingham, Ala. Filed June 2, 1888. Serial No. 275,943. (No specimens.)

Claim.—1. The improved process of smelting ores and dephosphorizing and otherwise purifying and refining metal in a single blast-furnace, which consists in smelting the ore in the presence of a basic lining, in shielding the ore and molten metal from contact with silicious or other acids, and in introducing finely-comminuted basic flux at or near the zone of fusion and into direct contact with the globules or small bodies of molten metal while being smelted, substantially as described.

2. The improved process of smelting ores and dephosphorizing and otherwise purifying and refining metal in a single blast-furnace, which consists in smelting the ore in the presence of a basic lining, in shielding the ore and molten metal from contact with siliceous or other acids, and in introducing finely-comminuted basic flux at or near the zone of fusion and into direct contact with the globules or small bodies of molten metal while being smelted, substantially as described.



3. The improved process of smelting ores and dephosphorizing and otherwise purifying and refining metal in a single blast-furnace, which consists in smelting the ore in the presence of a basic lining and at the lowest temperature compatible with fusion, and in introducing finely-comminuted basic flux at or near the zone of fusion and into direct contact with the globules or small bodies of metal while being smelted, substantially as described.

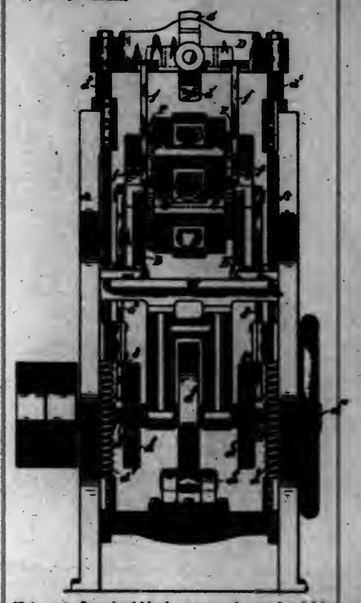
4. The improved process of smelting ores and dephosphorizing and otherwise purifying and refining metal in a single blast-furnace, which consists in smelting the ore in the presence of a basic lining and at the lowest temperature compatible with fusion, and in shielding or guarding the ore and metal from contact with siliceous or other acids, and in introducing finely-comminuted basic flux at or near the zone of fusion and into direct contact with the globules or small bodies of molten metal while being smelted, substantially as described.

5. The improved process of smelting ores and dephosphorizing and otherwise purifying and refining metal in a single blast-furnace, which consists in smelting the ore in the presence of a basic lining and in introducing the blast at the zone of fusion, and in introducing finely-comminuted basic flux at or near the zone of fusion above said blast and into direct contact with the globules or small bodies of molten metal while being smelted, substantially as described.

6. The improved process of smelting ores and dephosphorizing and otherwise purifying and refining metal in a single blast-furnace, which consists in smelting the ore in the presence of a basic lining, in shielding or guarding the ore and metal from siliceous and other acids, in introducing the oxidizing-blast at the zone of fusion, and in introducing finely-comminuted basic flux at or near the zone of fusion above said blast and into direct contact with the globules or small bodies of molten metal while being smelted, substantially as described.

7. The improved process of smelting ores and dephosphorizing and otherwise purifying and refining metal in a single blast-furnace, which consists in smelting the ore in the presence of a basic lining and at the lowest temperature compatible with fusion, in omitting the admixture of flux with the ore and fuel at the top of the stack, in shielding or guarding the ore and metal from siliceous and other acids, in introducing the oxidizing-blast at the zone of fusion, and in introducing finely-comminuted basic flux at the zone of fusion at or above said blast and into direct contact with the globules or small bodies of molten metal while being smelted, substantially as described.

418,558. HEEL FORMING AND LOADING MACHINE. FREDERICK F. RAYMOND, 24, Newton, Mass. Filed Mar. 8, 1888. Serial No. 266,577. (No model.)



Claim.—1. In a heel-blank compressing and pricking machine, the combination of a solid die-block C, having a die-cavity with an enlarged mouth and perforations or holes in its bottom, through which the awls are adapted to be driven, a support for the die-block, a heel-former, and means, as set forth, for operating the same—such as a cam—and suitable connecting mechanism, substantially as described, whereby it is moved toward the cavity of the die and then held stationary, and a gang or group of awls movable to enter the holes of the die-block while the heel-blank is held compressed in the cavity thereof by the former, as and for the purposes described.

2. In a heel-blank compressing and pricking machine, the combination of a solid die-block C, having a die-cavity with an enlarged opening and a bottom having holes or perforations through which the awls are driven, a holder for the die-block, as set forth, a heel-former, a cross-head carrying said former, a cam of the construction set forth for imparting to said cross-head a movement toward the die-block and then holding it stationary for a period of time, a head carrying a block supporting a gang or group of awls upon the side of the die-block opposite that upon which the heel-former is located, and an actuating apparatus connected with the cross-head supporting the heel-seat former, and the cross-head supporting the awl-carrying block, constructed to provide the cross-heads with movements in relation to each other and to the die-block, as specified, and for the purpose described.

3. The combination of the die-block carrier C, the dies C', carried thereby, the cross-head E, the awl-block e, and the awls d', supported thereby, the shaft d^3, the cams d^3 and e^2, connected with the cross-head E and adapted to impart motion to the cross-head and to the awls, as specified, substantially as described.

4. The combination of the rotary die-carrier C, having the cavity c^2, the dies C', supported thereby, the former or compressor d^7, controlled as to the time of its operation by a cam, and said cam, the cross-head E, arranged in the cavity c^2 of the die-carrier, the awl-block e, and awls d', carried thereby, and one or more cams for governing the time of movement of said cross-head E relatively to that of the heel-seat former or compressor d^7, substantially as described.

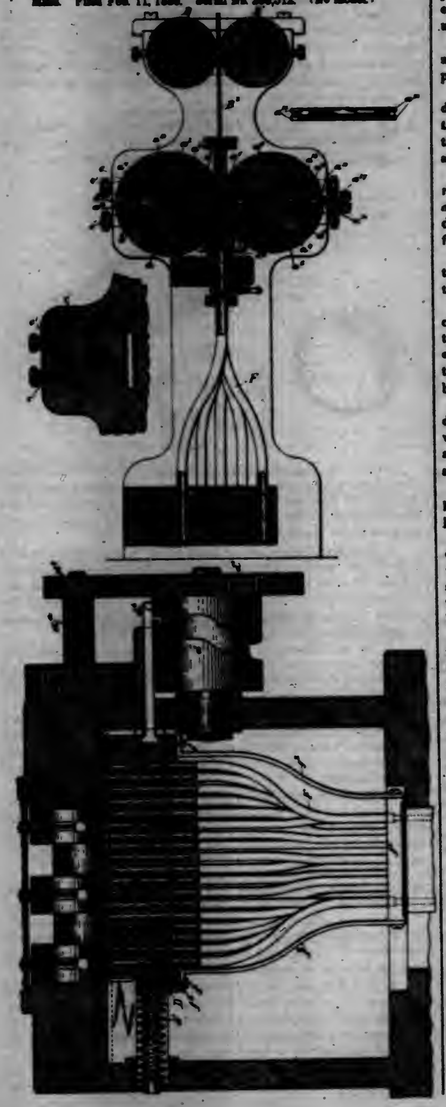
5. The combination of the die-carrier C, having the interior cavity c^2, and the trunnions c, with the brackets B and the dies C', supported by said carrier, substantially as described.

6. The combination of a pressure-block or former d^7, means for imparting to it alternate movements of reciprocation and rest—such as a cam—a reciprocating gang of awls arranged opposite the pressure-block or former to co-operate therewith upon the same heel, and a heel-blank carrier having a number of heel-blank holders, and means for providing it with a progressive movement in one direction to bring each holder in successive order to a position between the pressure-block or former and the awls, substantially as described.

7. The combination of the cross-head D, the former or pressure-block d^7, the lower cross-head d^5, the connecting-rod d^6, the cam d^3, with the cross-head E, the cams e^2, the connecting-rod e^3, and the gang or group of awls d', and the rotary carrier C, the heel-holder C', supported thereby, the ratchet-wheels F, the pawls f, and the slide-rod f', connecting them with the head D, substantially as described.

8. The combination of a reciprocating pressure-block or former, a reciprocating gang of awls, a heel-blank carrier, and automatic mechanism, substantially as described, to provide the carrier with a progressive movement in one direction to carry heel-blanks in successive order to a position between the pressure-plate or former and the awls, substantially as described.

413,554. NAIL-MACHINE. FREDERICK F. RAYMOND, 24, Newton, Mass. Filed Feb. 11, 1889. Serial No. 299,512. (No model.)



Claim.—1. In a nail making and distributing machine, the combination of nail-making devices of the character specified with a horizontally-movable nail-receiving block having its nail-receiving holes brought into close proximity with the said nail-severing devices, whereby the nails are caused to be directly delivered from the nail-severing devices into the holes of the nail-receiver, as and for the purposes described.

2. The combination of one or more sets of rotary nail pointing and severing rolls arranged upon the same line with a nail-receiving block having a progressive or reciprocating movement upon a line at right angles to the rotation of the dies, and having a section or sections of the block extended between the lower sections of the die rolls or supports, whereby the nail-receiving hole or holes of said block are brought into close proximity to the severing devices, substantially as described.

3. The combination of a pair of rolls, two or more sets of nail-pointing dies carried by said rolls, and the nail-severing device for each set of dies, whereby each revolution of the rolls forms two or more nails, as and for the purposes described.

4. The combination of a pair of rolls and two or more sets of nail-pointing dies mounted thereon, whereby each rotation of the roll points two or more nails, as and for the purposes described.

5. The combination of the rolls a a^3, the two sets of pointing-dies a^3, carried by the roll a, two sets of pointing-dies a^4, carried by the roll a^3, and the feeding devices actuated to feed the wire between the operation of each set of dies a^3 a^4, as and for the purposes described.

6. The combination of the rolls a a^3, two sections a^3 of dies carried by the roll a, the two sections a^4 of the dies carried by the roll a^3, the feed-rolls B B', and the gears b b', and intermediate operating devices connecting the gear b' with a ratchet-wheel upon one of the feed-roll shafts, substantially as described.

7. The combination of a roll a, the sections a^3 of two dies mounted thereon, with the roll a^3, and the two sections a^4 of a die mounted thereon, and a severing device for each die, substantially as described.

8. The combination of the roll a, the two sections a^3 of two dies carried thereby, the roll a^3, the two sections a^4 of two dies carried thereby, and a rod or bar carried by the said roll a^3, having a cutting-edge at each end and movable in the said roll by means of the projections thereon, and a cam with which the projections are successively brought in contact, substantially as described.

9. The combination of the roll a, having two sections a^3 of two dies mounted thereon, and the pressers or sections of the severing devices a^5 a^7, the roll a^3 and the two sections a^4 of dies mounted thereon, and the severing devices a^6 a^8, one for each die, substantially as described.

10. The combination of the nail-receiving block D and the imperforate transversely-movable hole-covering plate E, as and for the purposes described.

11. The combination of the nail-receiving block D, having a series of holes formed therein, the hole-covering plate E, and actuating devices of the character specified automatically opening and closing the same, whereby the plate is moved to uncover the holes at the end of the movement of the nail-receiving block and to close the same at the beginning of said movement, substantially as described.

12. The combination of the movable nail-receiving block D, the imperforate hole-covering plate E, the rod e^9, supported by the block D and movable relatively to it and connected with the slide-plate by one or more rock-levers, and said rock-levers, substantially as described.

13. The combination of the movable nail-receiving block D, the imperforate hole-covering plate E, the rod e^9, supported by the block D and movable relatively to it, and connected with the slide-plate by one or more rock-levers, and said rock-levers, and a spring e^{10}, substantially as described.

14. The combination of the movable nail-receiving block D, the imperforate hole-covering plate E, the rod e^9, supported by the block D and movable relatively to it, and connected with the slide-plate by one or more rock-levers, said rock-levers, a spring e^{10}, and an adjustable stop e^9, substantially as described.

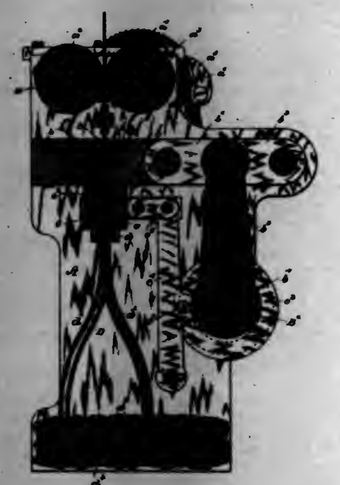
15. The combination of the nail-receiving block D, having a step-by-step movement imparted to it, devices for feeding one or more nails thereto, and a distributer attached to said block to be movable therewith, substantially as described.

16. The combination of devices for making and delivering nails to a nail-receiving block, said nail-receiving block having a step-by-step movement imparted to it in one direction, a distributer attached to or carried by said nail-receiving block, and a nail-carrier G, substantially as described.

413,555. NAIL MAKING AND DISTRIBUTING MACHINE. FREDERICK F. RAYMOND, 24, Newton, Mass. Filed Feb. 11, 1889. Serial No. 299,513. (No model.)

Claim.—1. The combination, in a nail making and distributing

machine, of the swaging-dies B B' a wire-feeding mechanism for feeding wire thereto, the cut-off block C, having one or more nail-receiving holes *c*, arranged to operate in relation to the dies B B' as specified, all substantially as described.



2. The combination of the swaging-dies B B', wire-feeding mechanism, the nail-receiving and cut-off block C, and the nail-distributer D, substantially as described.

3. The combination of the swaging-dies B B', the wire-feeding mechanism, the nail-receiving and cut-off block C, the nail-distributer D, and the nail-carrier d^3, substantially as described.

4. The combination of a gang or group of sections B of swaging-dies, the gang or group of sections B' of swaging-dies, mechanism for simultaneously operating the same, a wire-feeding mechanism for feeding a group of wires, one to each pair of swaging-dies, a nail-receiving and cut-off block C, having the holes *c*, and mechanism for imparting to it horizontal movement relatively to the dies and while they are in their lowest position, substantially as described.

5. The combination of a gang of swaging-dies B B' and mechanism for simultaneously operating the same, wire-feeding mechanism for simultaneously feeding a gang of wires to the swaging-dies, the nail-receiving and cut-off block C, having holes *c*, and the distributer D, substantially as described.

6. The combination of a gang of sections B of swaging-dies mounted upon a common support *b*, the gang of sections B' of swaging-dies mounted upon the support b^2, and a crank b^4 and connecting mechanism for operating said dies simultaneously, substantially as described.

7. The combination of the sections B of swaging-dies and their support *b*, the sections B' of swaging-dies and their supports b', the shaft B^2, the crank b^4 and operating mechanism to operate said swaging-dies, a cam c^2 upon the said shaft B^2, the nail-receiving and cut-off block C, and mechanism connecting the cam with the block, whereby upon the end of the swaging movement of the dies the cut-off block is caused to be operated to sever the gang of nails while the wires are held by the swaging-dies, substantially as described.

8. The combination, in a nail-making machine, of two series or groups of swaging-dies B B', adapted for simultaneous operation upon a group or gang of nail blanks or wires, substantially as described.

9. The combination of the gangs or groups of swaging-dies B B', adapted for conjoint operation upon a series of nail rods, bars, or wires, with an intermittent rod, bar, or wire feeding mechanism for simultaneously feeding a series of nail-forming rods, wires, or bars to the swaging-dies, substantially as described.

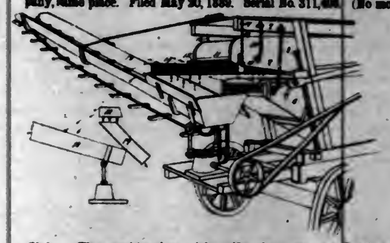
10. The combination of the swaging-dies B B' with the distributer D, substantially as described.

11. The combination of the swaging-dies B B', the distributer D, and nail-carrier d^3, substantially as described.

12. The combination of the swaging-dies B B' and the cut-off block C, substantially as described.

13. The combination of the swaging-dies B B', cut-off C, and distributer D, substantially as described.

413,556. SHUCK-CORN SHELLER. WILLIAM H. REEDER, St. Louis, Mo., assignor to the Kingsland & Douglas Manufacturing Company, same place. Filed May 20, 1889. Serial No. 311,498. (No model.)



Claim.—The combination, with a vibrating separator 9, of a series of curved fingers 14, a shaft 15, carried at the rear of said vibrating separator, from which shaft said fingers extend, arms 16, rigidly secured to said shaft and pivotally affixed to a stationary part of the machine, and side boards 12 and 13, extending from said vibrating separator, for the purpose described.

413,557. CARRIER FOR PNEUMATIC TRANSIT APPARATUS. GEORGE RENFORD, JOHN G. RENFORD, and MARTIN O. RENFORD, Philadelphia, Pa. Filed Jan. 16, 1889. Serial No. 296,471. (No model.)



Claim.—1. The combination of the body of the carrier, consisting of a cylinder open at one end, with an eccentrically-pivoted head swinging over the open end of said body to close the same, and having a retaining-catch for engaging with a rib or projection on said carrier, substantially as specified.

2. The combination of the body of the carrier, consisting of a strip of sheet metal bent into cylindrical form and retained by a longitudinal rod, with a cap for closing the open end of the cylinder, said cap being secured or hung to the longitudinal retaining-rod of the cylinder, so that the latter serves as the axis on which the cap swings in opening and closing the carrier, substantially as specified.

3. The combination of the body of the carrier, open at one end, with the swinging cap having a segmental flange engaging with a rib at the end of the carrier-body and serving to retain the cap in the closed position, substantially as specified.

4. The combination of the sheet-metal disk of the carrier-head, the threaded studs projecting from said disk, the bumper-block, and the screws or bolts adapted to the threaded studs and serving to confine said bumper-block to the sheet-metal disk of the head, substantially as specified.

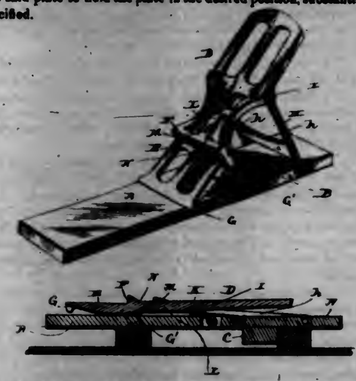
5. The combination of the body of the carrier, open at one end, with the pivoted head free to swing laterally, so as to open and close the end of the carrier, and a spring-catch radially guided on said head and engaging with a shoulder or rib on the body of the carrier, substantially as specified.

413,558. FOOT-BRACE FOR ROW-BOATS. WILLIAM H. REED, Addison, N. Y. Filed Oct. 27, 1883. Serial No. 290,267. (No model.)

Claim.—1. The foot-rest D, having a convex under side, whereby its toe may be elevated by depressing its heel, in combination with the base-board A, and the brace H, pivoted to said base-board and to said foot-rest near its toe, substantially as specified.

2. In a foot-rest, the combination, with the base-board, of the foot-plate, the swinging link connecting the foot-plate near its front end with the base-board, and the limiting arm or loop pivoted to the base-board and sliding at its free end on a longitudinal bar of the foot-rest, substantially as described.

3. In a foot-rest, the combination, with the base-board, of the foot-plate connected to the base-board by the swinging link H, the depending guiding-ears on the foot-plate engaging opposite edges of the base-board, and the limiting arm or loop M, pivoted to the base-board, sliding at its free looped end on a central longitudinal bar L of the foot-plate and adapted to engage or bear against a shoulder N on the said plate to hold the plate in the desired position, substantially as specified.

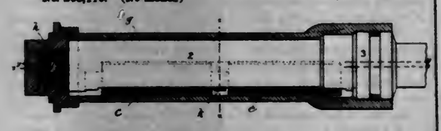


4. In a foot-rest, the combination, with a suitable base-board, of the foot-plate provided with a heel-plate bearing on the said base-board and elevated above the same at its free or rear end, and the link H, connecting the front end of the foot-plate to the base-board, substantially as specified.

5. In a foot-rest, the combination, with a suitable base-board, of the foot-plate provided with a heel-plate having its under side curved or rounded upwardly toward its free or rear end, the depending guiding-ears on the heel-plate, the swinging link connecting the front end of the foot-plate to the base-board, and the limiting arm or loop pivoted to the base-board and sliding at its free end on a longitudinal bar on the foot-plate and adapted to engage a shoulder N at one end of the said bar, substantially as specified.

6. In a foot-rest, the combination of the base-board provided on its under side with a depending pin or cleat to engage a suitable socket or rib, and the foot-plate loosely connected to the base-board, substantially as specified.

413,559. CARRIAGE-AXLE. ELISHA F. ROBBINS, Cambridge, assignor to Thomas J. Clyn, Boston, Mass. Filed Dec. 10, 1888. Serial No. 293,116. (No model.)



Claim.—1. An axle-spindle composed of the end sections 3 4 and the intermediate section 2, offset from or eccentric to the end sections, and provided with the anti-friction roller *c*, which projects from the section 2, as described, combined with a box which is concentric with the end sections 3 4 and bears on the section 2 and roller *c* at diametrically-opposite points, as set forth.

2. The combination of the axle-spindle composed of end sections 3 4, the former having a beveled shoulder, and the intermediate section offset from or eccentric to the end sections and having a longitudinal recess, the anti-friction roller in said recess, and the box which is concentric with the end sections and provided with an inner beveled shoulder, substantially as set forth.

3. An axle-spindle having a longitudinal recess, a roller *c* in said recess, and a segmental slide fitted in the periphery of the spindle and arranged to retain the roller in its recess, as set forth.

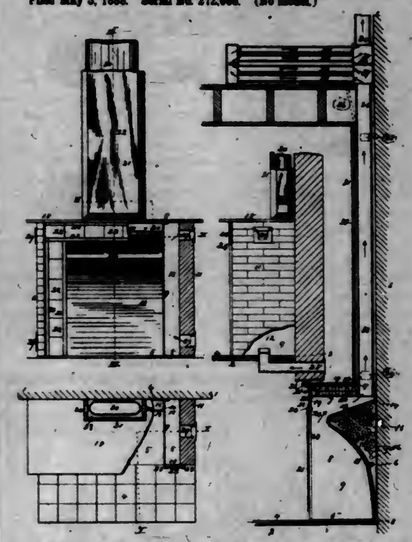
413,560. BRAKE-SHOE. GEORGE B. ROSS, Buffalo, N. Y. Filed Apr. 13, 1889. Serial No. 307,161. (No model.)

Claim.—1. A brake-shoe having those portions of its face which operate on the wheel-tread or come in contact with the rail provided with a recess extending the whole length of the shoe and having inwardly-projecting portions, the points c^3 of which project from opposite sides of and slightly past the center of the groove c^4, substantially as and for the purposes described.

2. A brake-shoe having the side *c* provided with a series of openings c^5, to reduce the wearing-surface on that side of the shoe, so as to compensate for the wearing of the edge b^5 of the wheel by the action of frogs and switches, substantially as described.



413,561. FIRE-PLACE. LEWIS M. RESSEGUE, Spring Park, Minn. Filed May 3, 1888. Serial No. 272,993. (No model.)



Claim.—1. A fire-place comprising the imperforate fire-sheet 13, bent substantially as shown, having the chamber 15, the side sheets 9, having the holes 16 in the chamber portions, and the crown-sheet 7.

2. A fire-place comprising the imperforate fire-sheet 13, bent substantially as shown, having the chamber 15, the side sheets 9, having the outturned edges 10 and the holes 16 in the chamber portions, the side walls 11, forming the side chambers 12, and the crown-sheet 7.

3. A fire-place comprising the imperforate fire-sheet 13, bent substantially as shown, having the chamber 15, the crown-sheet 7, the horizontal sheet 17, the front sheet 19, forming the chamber 20 in connection with the crown-sheet and the horizontal sheet, and the side sheets 9, having the holes 16 into the chamber 15 and holes 21 into the chamber 20.

4. A fire-place comprising the imperforate fire-sheet 13, bent substantially as shown, having the chamber 15, the crown-sheet 7, the horizontal sheet 17, the front sheet 19, forming a chamber 20 in connection with the crown-sheet and the horizontal sheet, the side sheets 9, having the outturned edges 10, the holes 16 into the chamber 15, and the holes 21 into the chamber 20, and the side walls 11, forming the side chambers 12.

5. A fire-place comprising the fire-sheet 13, having a chamber 15, the crown-sheet 7, the horizontal sheet 17, the front sheet 19, forming the chamber 20 in connection with the crown-sheet and the horizontal sheet, the side sheets 9, having the outturned edges 10 and the holes 16 and 21, and side walls 11, forming the side chambers, the side chambers having induction and eduction openings, substantially as described.

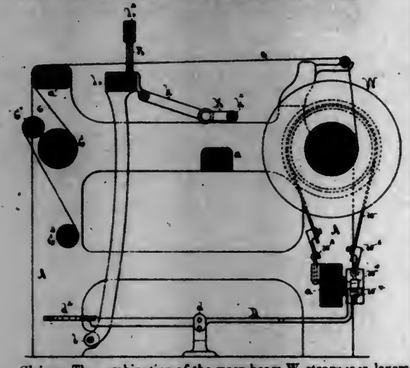
6. A fire-place having air-spaces at the sides separated from the fire-space by sheets 9, and having openings for entrance and exit of air, and chambers 15 and 20 at the rear and top of the fire-space,

respectively, communicating with the side spaces through apertures in the side sheets 9.

413,562. PRODUCTION OF AZO COLORING-MATTER. ALFRED SARASIN, Zurich, assignor to L. Durand & Huguenin, Basle, Switzerland. Filed June 28, 1888. Renewed Sept. 20, 1889. Serial No. 324,501. (Specimens.) Patented in France Sept. 6, 1886, No. 178,364, and in England Nov. 5, 1886, No. 14,263.

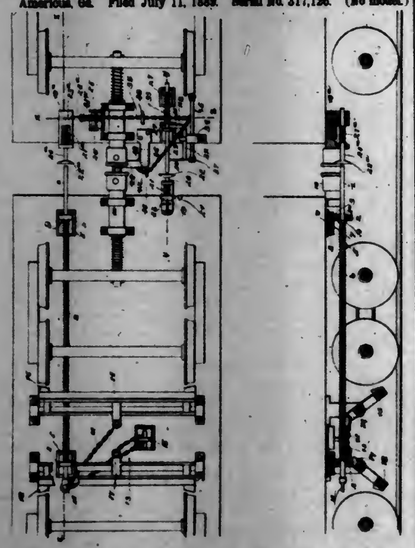
Claim.—The herein-described process of obtaining coloring-matter by the reaction of a salt of the nitroso derivates of the tertiary amines, more especially nitroso-dimethylaniline upon a bioxynaphthaline whose boiling-point is about 196° centigrade, in the presence of heat and a suitable solvent, as set forth.

413,563. LOOM. CHESS A. SAWYER and MOSES M. LANUS, Lowell, Mass. Filed Mar. 25, 1889. Serial No. 304,698. (No model.)



Claim.—The combination of the warp-beam W, straps $w w$, levers w^3 w^4, pivoted lever D, having its bifurcated end engaging with the two latter levers and having the foot-pedal or end d^2, extending through underneath the loom to the other side of the breast-beam, substantially as described.

413,564. AUTOMATIC CAR-BRAKE. JOHN H. SCARBOROUGH, Americus, Ga. Filed July 11, 1889. Serial No. 317,126. (No model.)



Claim.—1. In an automatic car-brake, the combination, with the longitudinally-sliding brake-operating rod, of the rings or bearings for said rod, having upwardly-extending stems provided with blocks or plates at their upper ends, the boxes or casings having dovetailed recesses for the accommodation of said blocks or plates, and the pins or bolts to retain the said plates detachably in their respective boxes, substantially as set forth.

2. In an automatic car-brake, the combination, with the rings or bearings secured detachably to the under side of the car-body, of the longitudinally-sliding brake-setting rod mounted in said detachable bearings, the spring arranged to force the said rod automatically in a forward direction, and the chains connecting the rear end of said rod with the brake-levers, substantially as set forth.

3. In an automatic car-brake, the combination, with the brake-setting rod mounted to slide longitudinally under the front end of the car, of a buffer mounted to slide longitudinally under the rear end of the adjacent car and a transverse pin or key arranged detachably at the inner end of the stem of said buffer to prevent it from sliding in an inward direction, substantially as set forth.

4. In an automatic car-brake, the combination of the brake-setting rod mounted to slide longitudinally under the front end of the car, a buffer arranged to slide longitudinally under the rear end of the adjacent car and adapted to engage the brake-setting rod when the cars come together while traveling in a forward direction, and mechanism to prevent the brake-setting rod being operated when the cars come together while traveling in a rearward direction, substantially as set forth.

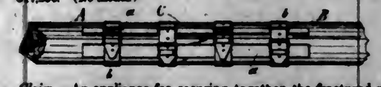
5. In an automatic car-brake, the combination of a longitudinally-sliding frame arranged under the rear end of the car and having an outwardly-extended rod and a laterally-extending arm, a spring-buffer arranged under the front end of the adjacent car, a longitudinally-sliding rod mounted pivotally upon the laterally-extending rod of the longitudinally-sliding frame and extending inwardly to within a short distance of the rim of the adjacent car-wheel, and chains connecting the said longitudinally-sliding rod with mechanism for throwing the brake-setting mechanism out of gear by the tightening of said chains, caused by contact of the longitudinally-sliding rod with the car-wheel when traveling in a rearward direction, substantially as set forth.

6. In an automatic car-brake, the combination of a frame arranged to slide longitudinally in bearings mounted detachably under the rear end of the car, a spring to force the said frame in an outward direction, a buffer arranged under the front end of the adjacent car, a longitudinally-sliding rod mounted in a vertically-slotted casing and extending to within a short distance of the rim of the adjacent car-wheel, the front end of said rod being mounted pivotally upon an arm extending laterally from the sliding frame, springs arranged in the vertically-slotted casing above and below the said sliding rod, and chains connecting the said longitudinally-sliding rod with mechanism for throwing the brake-setting mechanism out of gear when the cars are traveling in a rearward direction, substantially as herein described, and for the purpose set forth.

7. In an automatic car-brake, the combination of the longitudinally-sliding frame arranged under the rear end of the car, the longitudinally-sliding rod connected pivotally to an arm extending laterally from said frame, said rod extending inwardly to within a short distance of the rim of the adjacent car-wheel, springs to support the said rod normally in an approximately-horizontal position, a longitudinally-sliding buffer arranged under the rear end of the car on the opposite end of the draw-head, a transversely-sliding pin or key arranged in rear of said longitudinally-sliding buffer, a spring to hold the said key in position, a chain passing through suitable guide-eyes and connecting the said pin or key with the longitudinally-sliding rod, the brake-setting rod mounted to slide longitudinally under the front end of the adjacent car and adapted to engage the longitudinally-sliding buffer, and a buffer arranged under the front end of said adjacent car and adapted to engage the longitudinally-sliding frame, substantially as set forth.

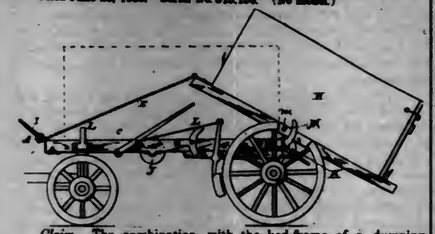
8. In an automatic car-brake, a bracket attached to the car adjacent to the draw-head, an arm hinged to said bracket and having a block extending laterally in front of the draw-head, a spring to hold the said arm and block normally in a raised position, and mechanism adapted to be operated automatically by the movement of the car in a rearward direction for the purpose of lowering the said arm against the tension of the spring, so as to interpose the block extending laterally from the said arm between the draw-heads of the adjacent cars, which are thus prevented from coming together sufficiently close to operate the brake-setting mechanism, all combined and operating substantially as and for the purpose set forth.

413,565. DEVICE FOR SECURING BROKEN CARRIAGE-POLES, &c. BRUNO SCHEURE, Berlin, Germany. Filed July 11, 1889. Serial No. 317,256. (No model.)



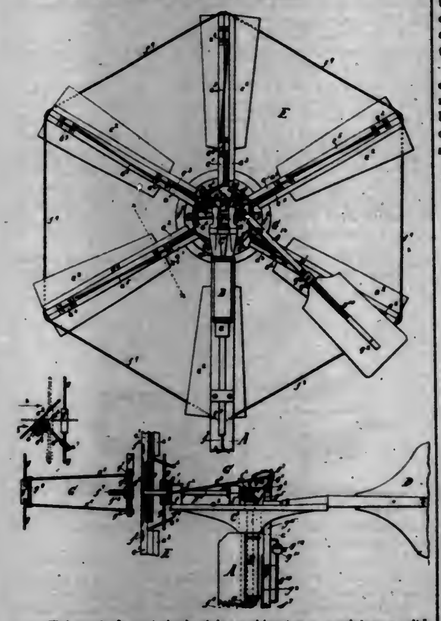
Claim.—An appliance for securing together the fractured parts of carriage-poles, whiffletrees, and the like, consisting of two or more metal bars *a*, having spikes *c* on one side and connected together by straps provided with buckles *b*, said straps being fixed to one of the bars and passing through loops *d*, formed on the other bars, substantially as herein described.

413,566. DUMPING WAGON. BERNARD SCHROEDE, Cincinnati, Ohio. Filed June 22, 1889. Serial No. 315,168. (No model.)



Claim.—The combination, with the bed-frame of a dumping wagon having the guard-arms L and the rear curved arms M secured to its side rails, the anti-friction wheels J K, turning with transverse shafts journaled in bearings secured to the side rails and with the upper parts of their peripheries about flush with the upper sides of said rails, and the shaft A, journaled in bearings secured to the front of the wagon-body, of the sliding box having lateral studs *m* and the eye-plates F, secured at the front of the box at equal distances from the sides of the body, and the rearward converging chains E, of equal length, secured at their rear ends to said eye-plates and with their front ends secured to the shaft A at equal distances from the center thereof, substantially as specified.

413,567. WINDMILL. REMUND B. SELLARD, Ogden, Iowa. Filed Feb. 25, 1889. Serial No. 301,099. (No model.)



Claim.—1. In a wind-wheel, in combination, a revolving non-sliding hub *c*, having rigid radial arms *c'*, feathering-blades c^3, attached to arms c^4 and set facewise against said arms *c'* c^3, with about one half of the width of said blades on one side and the other half on the other side of the longitudinal center of the arms c^3, hinges c^5, connecting said blades to the said arms, diagonal torsional springs c^6, fastened by one of their ends to the arms *c'* and by their other ends to the arms c^4, angular arms c^7, attached to the arms c^4, and sliding hub g', having operating-rods g, whereby the whole surfaces of the blades are at all times presented to the wind and the angle of the set of the blades can be automatically changed or regulated, and when in their normal position the blades have a square support and bearing against both of the arms *c'* c^4, and when moved out of said position are still stayed by the arms c^4, and in the event of one of the springs becoming broken the remaining ones remain operative, substantially as described.

2. In a wind-wheel, in combination, a hub *c*, having one set of rigid radial arms *c'*, another set c^4, hinged to the first set, so as to present with said arms *c'* a broad even bearing-surface, a series of feathering-blades rigidly attached about centrally of their width to the hinged set of arms, and diagonal torsional springs c^6, attached by one of their ends to the arms *c'* and by their other ends to the arms c^4, whereby the blades are afforded a broad bearing-support from both arms when in their normal position and are stayed by the arms c^4 when they are moved out of their normal positions, and at the same time are free to change their angle when the force of the wind becomes too great, substantially as described.

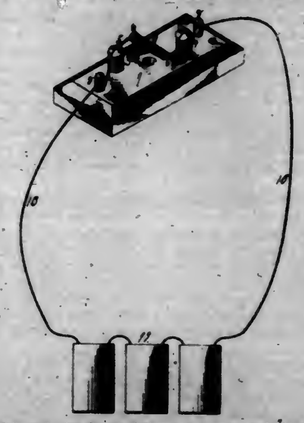
3. In a wind-wheel, in combination, hub *c*, having rigid radial arms *c'*, the undivided feathering-blades c^3, fastened by hinges c^5 and diagonal torsional springs c^6 to arms c^4 and having arms c^7, the sliding hub g', having radial rods *g*, the sliding collar g^3, connecting-rods g^5, arms g^4, bar g^7, shaft g^8, arm g^9, set oblique with respect to the vertical plane of the shaft B, and steering-vane D and carrying-vane g^6, substantially as described.

4. The connecting-rods g^5, arms g^4 g^9, sliding collar g^3, swinging bar g^7, and vane g^6, having bar g^{12}, which is attached to bracket-bar g^8, said vane being arranged obliquely on that side of the frame of the windmill where the pressure of the wind has a tendency to cause said vane to oppose or counteract the twisting force caused by the resistance of the machinery driven by the wind-wheel, in combination with the vane D and the wind-wheel E, having sails acted upon by collar g^3, substantially as described.

5. The combination of the looped weight-guide g^{10} and adjustable weight g^{11}, vane g^6, having bar g^{12} and bracket-bar c^8 and arranged obliquely on that side of the frame of the windmill where the pressure of the wind has a tendency to cause said vane to oppose or counteract the twisting force caused by the resistance of the machinery driven by the wind-wheel, said vane being connected by rods to the sliding collar which acts upon the blades of the wind-wheel, substantially as and for the purpose described.

6. The combination, with the arms g^4 g^9, bracket-bar g^8, bar g^{12}, oblique vane g^6, connecting-rods g^5, sliding collar g^3, and described connections with the blades of the wind-wheel, of the shaft g^8, swinging bar g^7, quadrant g^{13}, attached to both the shaft g^8 and bar g^7, and the connecting chain and rod f^7, substantially as and for the purpose described.

413,568. THERMOSTATIC ALARM. CHARLES H. SHAFFER, Rockford, Ill. Filed May 24, 1889. Serial No. 311,904. (No model.)



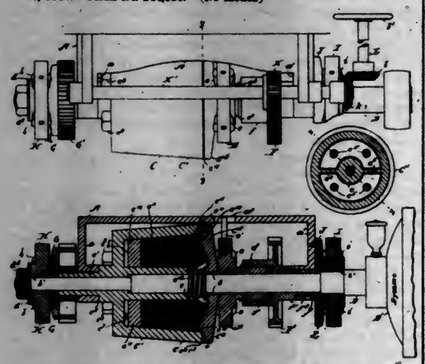
Claim.—1. An electrical thermostat composed of a base, circuit-wires connected to said base, and a detachable link of fusible alloy connecting the circuit-wires, substantially as set forth.

2. An electrical thermostat composed of a base, spring-arms secured to said base, and a link of fusible alloy connecting said arms, the said link being provided with seats for the reception of the spring-arms, and held detachably in place by the arms, substantially as set forth.

3. An electrical thermostat composed of a base, spring-arms secured to said base, a link of fusible alloy connecting the inner ends of

the arms, and the outer ends connected to binding-posts, the link being held in close electrical contact with the arms by the spring-tension of the arms, substantially as set forth.

413,569. POWER-TRANSMITTING CLUTCH. WILLIAM F. SHERMAN, Lowell, Mass., assignor, by mesne assignments, to the Sherman Electric Storage Equipment Company, of New Hampshire. Filed July 14, 1887. Serial No. 244,330. (No model.)



Claim.—1. A clutch having a female part provided with a somewhat elastic packing and with an annular beveled open end and a male part provided with an annular flange adapted to enter and fit said open end when said clutch is fully coupled, and provided also with an annular bevel around said flange to fit the beveled end of said female part, said packing being arranged at a distance from the open end of said female part less than the depth of said flange, in order that a partial coupling of said clutch may bring said packing and said male part in contact with each other, as and for the purpose specified.

2. A clutch having a female part provided with a packing of alternate concentric layers of leather and rubber surrounding each other and with an annular beveled open end and a male part provided with an annular flange adapted to enter and fit said open end when said clutch is fully coupled, and provided also with an annular bevel around said flange to fit the beveled end of said female part, said packing being arranged at a distance from the open end of said female part less than the depth of said flange, in order that a partial coupling of said clutch may bring said packing and said male part in contact with each other, as and for the purpose specified.

3. A clutch having a female part provided with radial partitions and with a packing of somewhat elastic material and with an annular beveled open end and a male part provided with an annular flange adapted to enter and fit said open end when said clutch is fully coupled, and provided also with an annular bevel around said flange to fit the beveled end of said female part, said packing being arranged at a distance from the open end of said female part less than the depth of said flange, in order that a partial coupling of said clutch may bring said packing and said male part in contact with each other without turning said packing in said female part, as and for the purpose specified.

4. The combination of a clutch having a female part provided with a closed end and with an annular beveled open end, and having a male part provided with an annular flange adapted to enter and fit said open end when said clutch is fully coupled, and provided also with an annular bevel around said flange to fit the beveled end of said female part, a packing arranged within said female part, plates arranged within said female part, between the closed end thereof and said packing, and adjusting-screws turning in said closed end and forcing said plates against said packing, as and for the purpose specified.

5. The combination of the frame the clutch, having a female part provided with a hub journaled in said frame, another hub journaled in said frame and provided with an internal screw-thread, a shaft turning in said hubs concentrically therewith, said clutch having a male part sliding on said shaft and rotating therewith, a non-friction wheel loose on said shaft and provided with anti-friction rolls which rest against the outer face of said male part, and provided also with an externally-threaded hub adapted to enter and engage said internally-threaded hub, whereby turning said internally-threaded hub in one direction will cause said clutch to be coupled and turning the same in the other direction will allow said clutch to be uncoupled, as and for the purpose specified.

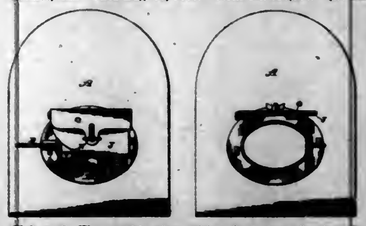
6. The combination of the frame, the clutch having a female part provided with a hub journaled in said frame, another hub journaled in said frame and provided with an internal screw-thread, a shaft turning in said hubs concentrically therewith, said clutch having a male part sliding on said shaft and rotating therewith, a non-friction wheel loose on said shaft and provided with anti-friction rolls which rest against the outer face of said male part, and provided also with an externally-threaded hub adapted to enter and engage said internally-threaded hub, a gear secured to said internally-threaded hub, another shaft provided with a gear which engages said first-named gear, and provided also with a bevel-gear, and a vertical spindle or shaft provided at one end with a hand-wheel and at the other end with a bevel-gear, which engages said first-named bevel-gear, as and for the purpose specified.

7. The combination of the frame, the clutch having a female part provided with a hub journaled in said frame, another hub journaled in said frame and provided with an internal screw-thread, a shaft turning in said hubs concentrically therewith, said clutch having a male part sliding on said shaft and rotating therewith, a non-friction wheel loose on said shaft and provided with anti-friction rolls which rest against the outer face of said male part, and provided also with an externally-threaded hub adapted to enter and engage said internally-threaded hub, another non-friction wheel provided with anti-friction rolls, a circular plate secured to the hub of said female part outside of said frame and bearing against said last-named anti-friction rolls, and a third non-friction wheel secured to said shaft and provided with anti-friction rolls which bear against the outside of said frame at the opposite side of said frame from said circular plate to prevent an endwise movement and pressure of the shaft and to diminish the friction on said shaft, as and for the purpose specified.

8. The combination of the car provided with wheels and axles, bevel-gears secured to said axles, a shaft arranged at right angles to said axles and provided with bevel-gears which engage said first-named bevel-gears, and provided also with a spur-gear, a clutch, a spring to open said clutch, a wheel sliding on said shaft, but not turning therewith, and having an externally-threaded hub, an internally-threaded hub which engages said externally-threaded hub, and a spur-gear secured to the driven counterpart of said clutch and engaging said first-named spur-gear, as and for the purpose specified.

9. The combination of the car provided with wheels and axles, bevel-gears secured to said axles, a shaft arranged at right angles to said axles and provided with bevel-gears which engage said first-named bevel-gears, and provided also with a spur-gear, a clutch, a spring to open said clutch, a wheel sliding on said shaft, but not turning therewith, and having an externally-threaded hub, a gear having an internally-threaded hub which engages said externally-threaded hub, a counter-shaft, a pinion fast on said counter-shaft and engaging said last-named gear, a bevel-gear fast on said counter-shaft, a vertical spindle, a bevel-gear fast thereon and engaging the bevel-gear on said counter-shaft and a hand wheel secured on said spindle, and a spur-gear secured to the driven counterpart of said clutch and engaging said first-named spur-gear, as and for the purpose specified.

413,570. SHADE FOR FURNACE-DOORS. CHARLES H. SHUTTS, Elkhart, Ind. Filed Aug. 10, 1889. Serial No. 320,357. (No model.)



Claim.—1. The combination, with a furnace or fire-box door, of an automatically-acting shade, which is raised by the opening of the door, substantially as shown.

2. The combination of the door, with a shade which is rounded away at its outer lower corner, so that when the door is opened the shade is automatically raised thereby, substantially as described.

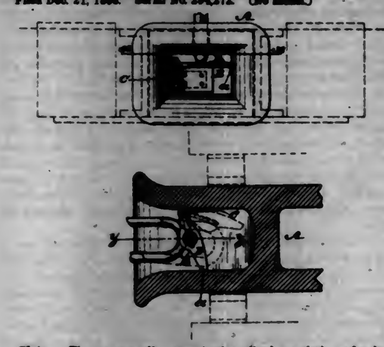
3. The combination of the door, the automatically-acting shade, and the adjusting-plate attached to the shade, substantially as set forth.

4. The combination of the furnace-door, the shade, the shade-hangers, the horizontal plate placed upon the hangers, and the adjusting-plate attached to the shade, substantially as specified.

5. The combination of the shade, the shade-hangers, a spring applied to the under side of the shade, and a locking device, substantially as shown.

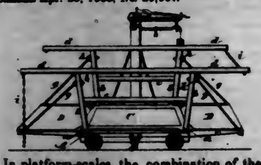
6. The combination of a furnace-door, a pivoted piece connected thereto, and the automatically-acting shade, substantially as described.

413,571. CAR-COUPLING. JOSEPH J. SLEEPER, Camden, N. J. Filed Dec. 21, 1888. Serial No. 294,372. (No model.)



Claim.—The car-coupling herein described, consisting of a draw-head, a swinging plate journaled within the same and having a flange adapted to sustain the coupling-pin, and extending, as at *a*, so as to come in contact with the opposite wall of the draw-head, and a spring bearing against said swinging plate, said parts being combined substantially as described.

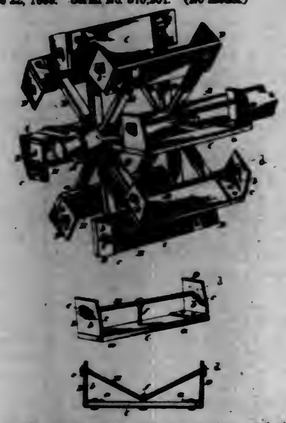
413,572. PLATFORM-SCALES. JAMES P. STEEDMAN and THOMAS PARTRIDGE, Hamilton, Ontario, Canada, and ANDREW TURNBULL, New Britain, Conn., assignors to the E. & C. Gurney Company, (Limited,) Ontario, Canada. Filed Apr. 19, 1888. Serial No. 271,193. (No model.) Patented in Canada Apr. 25, 1888, No. 29,007.



Claim.—1. In platform-scales, the combination of the platform C, extensions D D, upright posts *b b*, and rails *d d*, substantially as and for the purpose specified.

2. In platform-scales, the combination of the platform C, extensions D D, upright posts *b*, rails *d*, braces *c*, brace-rods *g*, and chains *i*, substantially as and for the purpose specified.

413,573. PROPELLER-WHEEL. PETER ST. JOHN, Milton, Vt. Filed June 22, 1889. Serial No. 315,201. (No model.)

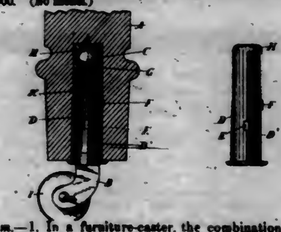


Claim.—1. The combination, with the buckets and the flanges secured thereto, as shown, of the brace-rods connecting each pair of flanges and having provision for longitudinal adjustment, substantially as and for the purpose specified.

2. In a paddle-wheel, the combination, with the buckets, of the flanges attached thereto near the outer ends thereof and having their acting portions extending at right angles to the buckets, the brace-rods connecting each pair of flanges, and the eyebolts secured to the buckets between the flanges and supporting the rod, substantially as shown and described.

3. In a paddle-wheel, a bucket having flanges at each end, with their acting surfaces extending at right angles to the length of the bucket, combined with a brace-rod E, having its ends passed through the opposite flanges and one end provided with a nut, the said rod being inclined in opposite directions from the center, and an eyebolt embracing the rod near the center and secured in the bucket, as and for the purpose specified.

413,574. FURNITURE-CASTER. ALBERT STRONGMAN and RUDOLPH VIETOR, Grand Rapids, Mich. Filed Feb. 19, 1889. Serial No. 300,500. (No model.)



Claim.—1. In a furniture-caster, the combination of a vertical stem having an enlarged end at the top, a bushing in two parts having their edges adapted to rock upon each other, substantially as described, provided with a rib adapted for engaging the side of the socket inclosing the bushing, and a shoulder adapted for engaging said enlargement of the stem, substantially as and for the purposes described.

2. In a furniture-caster, in combination with a vertical stem having an enlarged top, a bushing in two parts D and D', the part D having the cap H and the notch arranged substantially as described, and the part D' having the leg E and having its edges inclined away upon either side of E, substantially as described, and the rib F, arranged between the leg E and cap H, substantially as and for the purposes described.

413,575. CHECK-PUNCH. FRIEND W. SMITH, Jr., and SAMUEL S. WILLIAMSON, Bridgeport, Conn. Filed Oct. 30, 1888. Serial No. 289,219. (No model.)



Claim.—1. The combination of the rotary spindle, the plate D rigid therewith, the tray E, pivoted beneath and to said plate, feed-rolls H H', journaled in said tray and plate, respectively, one above the other, springs adapted to keep said tray and plate together and render the downward movement of the tray resilient, ratchet-wheels rigid with the inner sides of the wheels H, pawl-carrier J, resting on the plate D and having terminal pawls 7 projecting into operative engagement with said wheels, lever K, pivoted to the plate D and having its extremities pivoted, respectively, to the carrier J and link L, the operating-lever pivoted within said spindle and having its heel end engaging with the link L, the dies secured upon the bed of the punch, the resiliently-acting punches mounted within the head, and the guide-plate provided with slots which identify the punches, substantially as set forth.

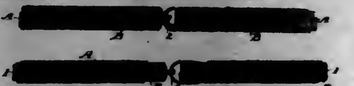
2. The combination of the feed-rolls journaled in pairs, one above the other, the ratchet-wheels rigid on the inner sides of the lower rolls, the carrier having terminal pawls engaging said ratchet-wheels, the reciprocatory link, the bell-crank lever pivoted at its ends to said carrier and link, respectively, and the operating-lever connected at its heel end to said link, substantially as and for the purposes set forth.

3. In combination, the spindle C, the plate D, rigidly secured thereto and having ears F, the tray E, pivoted to said plate between

said ears, the springs 2, normally maintaining the said tray in its upper position, the feed-rolls H H', journaled, respectively, in plate D and tray E, and the lever I, for depressing said tray, as set forth.

4. In combination, the plate D, having ears F, the tray E, normally maintained in its upper position and having pins 4, the lever I, having fins 5, the pivot-pin at 3, connecting said tray, plate, and lever, and the feed-rolls carried by said tray and plate, the fins 5 being arranged to engage pins 4, whereby the tray may be depressed against the action of its spring-support to separate the feed-rolls by downward pressure on said lever, as set forth.

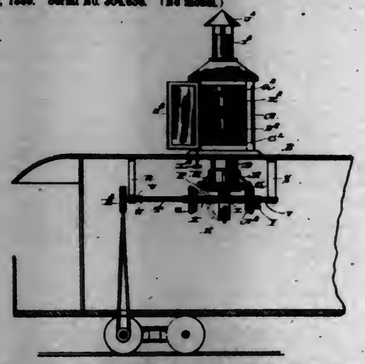
413,576. MACHINE-BELTING. GARY B. SMITH, Kansas City, Mo. Filed Apr. 6, 1889. Serial No. 306,170. (No model.)



Claim.—1. As an improved article of manufacture, the herein-described metallic belting, consisting of an inner helical-coiled wire and an outer helical-coiled wire wrapped on the inner coil, substantially as described.

2. The belting herein described, consisting of a core of flexible material, a helical-coiled wire on the core, and an outer layer of coiled wire over the inner coil, substantially as described.

413,577. SIGNAL-LANTERN. GEORGE W. SMITH, Union City, Ind., assignor of one-half to James B. Hendricks, same place. Filed Mar. 28, 1889. Serial No. 304,636. (No model.)



Claim.—1. In a signal-lantern, the combination of the lantern-frame, a revolving cylindrical casing extending through the base of the same, a lamp arranged in the said cylindrical casing, and a shell attached to the upper end of the latter and having one or more spirals therein for the emission of light, substantially as set forth.

2. In a signal-lantern, the combination of the lantern-frame, the cylindrical casing extending through the base of the same and having a beveled gear-wheel attached to its lower end, a shaft arranged transversely below said casing, a sleeve mounted adjustably upon said shaft and having pinions adapted to alternately engage the beveled wheel upon the lower end of the revolving casing, mechanism for transmitting motion to the said shaft, the lamp mounted in the cylindrical casing, and a shell supported upon the latter and having spirals therein for the emission of light, substantially as set forth.

3. In a signal-lantern, the combination of a vertical revolving casing carrying a lamp, and a shell having spirals therein for the emission of light, hangers or brackets arranged adjacent to said revolving casing, a shaft mounted in the said hangers and composed of two parts or sections connected by a universal joint, a sleeve mounted adjustably upon the said shaft and provided with pinions facing in opposite directions and adapted to alternately engage the bevel gear-wheel upon the lower end of the vertically-revolving casing, and mechanism for operating the said shaft, substantially as set forth.

4. In a signal-lantern, the combination of a vertical revolving casing carrying a lamp, and a shell having spirals therein for the emission of light, a cap at the lower end of said casing having a central downwardly-extending spindle, and a hinged bracket having a step or bearing for the said spindle, substantially as and for the purpose set forth.

5. In a signal-lantern, the combination of a vertical revolving casing having a lamp, and a shell surrounding the latter and having spirals therein for the emission of light, a cap at the lower end of said casing having a downwardly-extending spindle, a hinged bracket having a step or bearing for said spindle, a transversely-arranged shaft composed of two parts or sections jointed universally and having an adjustable sleeve provided with pinions adapted to alternately engage a beveled gear-wheel upon the lower end of the revolving casing, and mechanism for operating or transmitting motion to the said shaft, substantially as and for the purpose set forth.

6. In a signal-lantern, the combination, with a revolving casing carrying a shell having spirals therein for the emission of light, and having at its lower end an interior annular flange, of a lamp the sides of which are provided with spring-catches having their lower ends extended inwardly through slots formed in a flange which extends downwardly from the bottom of said lamp and connected by means of a cord or chain, whereby the said spring-catches may be simultaneously operated to release the lamp from the casing, substantially as set forth.

7. The combination of the lantern-frame, the revolving casing having an interior annular flange at its lower end and provided with a shell having spirals therein for the emission of light attached to its upper end, a lamp provided with spring-catches to retain it in the said revolving shell, and a cord connecting the inner ends of said spring-catches, a cap at the lower end of the revolving casing having a downwardly-extending spindle, a hinged bracket having a step or bearing for the said spindle, and mechanism for operating the said revolving casing in either direction, substantially as and for the purpose set forth.

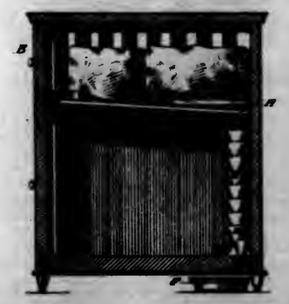
8. A signal-lantern having a revolving shell surrounding the light, and having spirals therein for the emission of light, in combination with reflecting-shutters hinged to diagonally-opposite corners of the lantern-frame, substantially as and for the purpose set forth.

9. The combination of the lantern-frame, the revolving casing carrying the lamp, and the shell having spirals therein for the emission of light, a cap attached to the upper end of said shell and having an upwardly-extending escape-tube, and a tube extending upwardly from the top of the lantern-case and affording a bearing for the said escape-tube, substantially as and for the purpose set forth.

10. The combination of the lantern-frame, the revolving casing extending through the base of the same and having at its lower end a cap provided with a spindle which is stepped or journaled in a hinged bracket, a lamp arranged within the revolving casing, a shell attached to the upper end of the latter and having spirals therein for the emission of light, a cap mounted upon the upper end of said shell and having an upwardly-extending escape-tube, a tube extending upwardly from the top of the lantern-frame and affording a bearing for the said escape-tube, and mechanism for operating the revolving casing and its attachments in either direction, substantially as and for the purpose set forth.

11. In a signal-lantern, the combination, with a lantern-frame, of a revolving casing extending downwardly through the base of the same, suitable mechanism for supporting and operating said revolving casing, a lamp arranged detachably within said revolving casing, a shell attached to the upper end of the latter and having spirals therein for the emission of light, and reflecting-shutters hinged at diagonally-opposite corners of the lantern-frame and provided with operating-rods extending downwardly through the base and provided with handles, by means of which they may be adjusted and manipulated, substantially as and for the purpose set forth.

413,578. REFRIGERATOR. ROBERT P. STEEL, Philadelphia, Pa. Filed Apr. 11, 1887. Serial No. 234,382. (No model.)



Claim.—1. In a refrigerator, an ice box or chamber in its upper portion, an inclined tray below said ice-chamber forming a drip-passage between the same and provided with an opening at its lowest end, and a refrigerator-chamber with a spiral drip-trough, having the upper end of the stem inserted in said opening in the tray and its lower end inserted in an opening in the refrigerator-chamber floor, said parts being combined substantially as and for the purpose set forth.

2. A refrigerator having an ice chamber or box, a tray, and a drip-trough of spiral form with a central stem with prolonged ends, the upper end being inserted in the tray and the lower end thereof in the floor, said trough being also provided with a foot which rests on the said floor, said parts being combined substantially as described.

413,579. BANJO-THIMBLE. SAMUEL S. STEWART, Philadelphia, Pa. Filed June 10, 1889. Serial No. 313,701. (No model.)



Claim.—1. A banjo-thimble having a removable striking-piece or finger, substantially as described.

2. A banjo-thimble consisting of a ring having a socket and a separate striking-piece, the latter being adapted to be fitted in said socket, and thus connected with the ring, substantially as described.

413,580. NUT-LOCK. FREDERICK J. TALBOT, Rasmoor Park, Sheffield, County of York, England. Filed July 23, 1888. Serial No. 280,764. (No model.) Patented in England Aug. 15, 1887, No. 11,131, and in Victoria July 23, 1888, No. 6,022.



Claim.—1. A lock-nut consisting of a nut having a saw-cut or slit through a portion of one side thereof, forming an angular tongue which is turned inward on an imaginary axis forming a triangle with said cut and the upper edge of said tongue, whereby the latter gradually encroaches upon the bore of the nut and will impinge the threads of the bolt in a downward as well as in an inward direction, substantially as shown and described.

2. A lock-nut consisting of a nut having a saw-cut or slit through a portion of one side thereof, said slit extending from the outer face or end of the nut diagonally across and into its bore and forming a triangular tongue, said tongue being forced inward encroaching upon the bore of the nut, whereby the threads on said tongue are adapted to impinge the threads of the bolt in a longitudinal as well as an inward or transverse direction to said bolt, and the encroachment of the threads of such tongue gradually increasing from the lower or inner end of the slit upward or outward toward the upper or outer face of the nut, and also from the lower toward the upper end of the said slit, substantially as and for the purposes set forth.

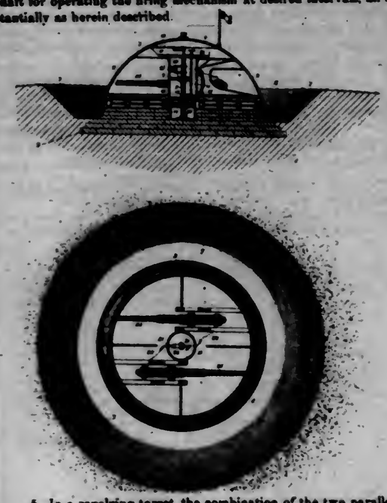
413,581. REVOLVING-TOWER FORTIFICATION. THEODORE R. TIRBY, Washington, D. C. Filed June 4, 1889. Serial No. 312,989. (No model.)

Claim.—1. A revolving-tower fortification provided with guns pointing in opposite directions and arranged side to side in parallel position on opposite sides of the central well or axis of the tower, causing said guns to mutually counterbalance each other and to be brought successively and alternately to a determined line of fire, all as herein explained.

2. In a revolving-tower fortification, the combination of guns mounted in parallel position side to side on opposite sides of the central well or axis of the tower and pointing in opposite directions, and the sighting-platform and its accessories, as shown and described, supported on a central theft and adjustable in position at the will of the operator.

3. In a revolving turret or other support, the combination of a central well-hole, the parallel oppositely-pointed guns mounted on either side thereof, electrical firing mechanism upon the guns, and suitable electrical supply and fixed contact-brush adapted to close the circuit with the firing mechanism, located on the fixed portion, whereby the guns are fired automatically and in succession.

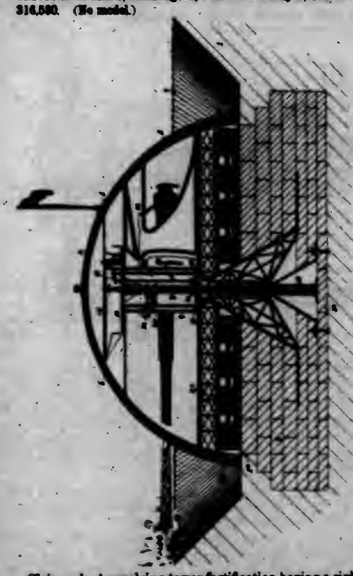
4. In a revolving tower, the combination of a central well-hole, oppositely-pointed guns mounted in parallel position side to side on each side of the well-hole, firing mechanism on the guns, a shaft fixed relatively to the rotation of the turret, and means carried by said shaft for operating the firing mechanism at desired intervals, all substantially as herein described.



5. In a revolving turret, the combination of the two parallel oppositely-pointed guns located side to side at equal distances from the center, suitable firing mechanism upon the guns, and a fixed mechanism adapted to fire the guns successively as each reaches a predetermined position, all substantially as herein set forth.

6. The combination, in a revolving turret, of a number of guns mounted side to side, pointed in opposite directions, and having suitable firing mechanism, a central shaft carrying means for operating the firing mechanism, and a sighting-platform, said shaft and platform being adjustable at will.

413,582. SIGHTING-PLATFORM FOR REVOLVING TURRETS. THEODORE R. TIRBY, Washington, D. C. Filed July 5, 1889. Serial No. 316,560. (No model.)



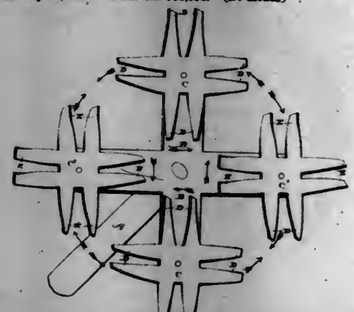
Claim.—1. A revolving-tower fortification having a sighting-platform mounted upon an independent foundation, with lateral supporting-

stays out of contact with the tower-well, so as to prevent the transmission of shocks from the revolving tower or fortification to the said sighting-platform, substantially as herein described.

2. The combination of the sighting-platform 11, vertical shaft 9, supporting said platform, supporting-socket 10, and a revolving-tower fortification surrounding the supporting-shaft 9 without direct contact therewith or with its lateral supporting-stays, as and for the purposes set forth.

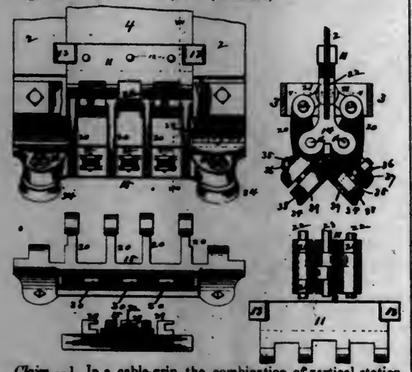
3. In a revolving-tower fortification, the combination of the sighting-platform 11, rotating shaft 9, supporting said platform, a suitable bearing 10, affording lateral support to the rotating shaft 9 without direct contact with the revolving tower, and a shaft 14, pinion 15, and cogged rim 16 upon the fixed frame 17, for effecting the rotation of the shaft 9 and sighting-platform 11, as explained.

413,583. CHURN-DASHER. ANDREW D. VAN BIBBER, Zoin, W. Va. Filed May 13, 1889. Serial No. 310,562. (No model.)



Claim.—In a reciprocating dasher, the combination, with the operating-rod provided with four radial arms, of four propeller-wheels provided with twisted blades journaled thereon at their outer ends, the blades of each pair inclined in opposite directions and extending outward near to the periphery of its adjacent propeller and approximately to the junction of the arms, whereby the said wheels are revolved in opposite directions and cause opposing currents at their inner and outer peripheries, substantially as shown and described.

413,584. CABLE-GRIP. JACOB VOLK, St. Louis, Mo., assignor to the Volk Cable Crossing Grip and Car Brake Company, Chicago, Ill. Filed Aug. 3, 1889. Serial No. 319,630. (No model.)



Claim.—1. In a cable-grip, the combination of vertical stationary plates, cross-heads secured to the lower ends of the plates, jaws pivoted to the cross-heads, a connecting-link 24, pivoted to the jaws between the cross-heads, a movable plate, a lever for operating the movable plate, and toggles connecting the jaws to the movable plate, substantially as and for the purpose set forth.

2. In a cable-grip, the combination of movable jaws and mechanism for moving the jaws, said jaws having interlocking projections 27, substantially as and for the purpose set forth.

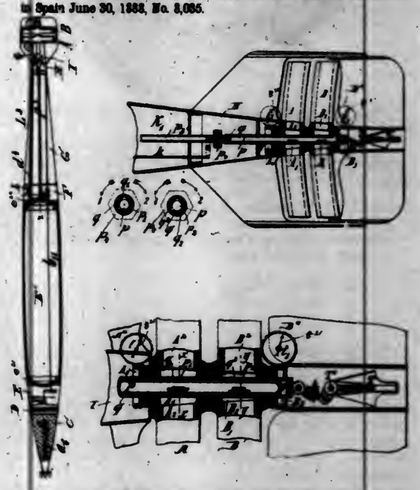
3. In a cable-grip, the combination of the jaws, mechanism for operating the jaws, and anti-friction rollers secured in pairs to the ends of the jaws, said rollers having stems with elongated journal-bearings to allow the rollers to adjust themselves to the position of the jaws, substantially as and for the purpose set forth.

4. In a cable-grip, the combination of the jaws, mechanism for operating the jaws, and the anti-friction rollers 34, having stems 35, with non-circular portions 37, threaded portions on one side of the non-circular portions, and journals on the other side of the non-circular portions, substantially as and for the purpose set forth.

5. In a cable-grip, the combination of the jaws, mechanism for operating the jaws, and anti-friction rollers 34, having elongated journals and inclined bearing-surfaces 39, substantially as and for the purpose set forth.

6. In a cable-grip, the combination of the jaws and dies 28, said dies having ears 29, with enlarged slots to receive retaining-pins smaller in diameter than the width of the slots to permit the jaws to be set out as the dies become worn, substantially as set forth.

413,585. AUTO-MOBILE TORPEDO. ADOLF G. VON B. DE PIROTSA, Vienna, Austria-Hungary. Filed Nov. 15, 1888. Serial No. 290,966. (No model.) Patented in Germany Feb. 24, 1888, No. 49,126; in France Feb. 24, 1888, No. 183,945; in Belgium Mar. 12, 1888, No. 81,003; in England Mar. 20, 1888, No. 4,297; in Italy Mar. 31, 1888, XXII, 23,195, XLV, 431; in Portugal May 17, 1888, No. 1,344; in Norway May 28, 1888, No. 304; in Austria-Hungary June 26, 1888, No. 8,008 and No. 21,102, and in Spain June 30, 1888, No. 8,085.



Claim.—1. In a torpedo, the combination of a non-rotary supply-pipe for conveying the motive power under pressure, having outlet-ports, with a screw-propeller provided with outlet-ducts through its blades and formed with a hollow hub which is journaled upon said supply-pipe at said ports and communicates with said ducts, substantially as described.

2. In a torpedo, the combination, with the compressed-air reservoir, the supply-pipe *p*, having two separate rows of side discharge-ports and conveying the motive fluid under pressure, and the tubular propeller-shaft *q*, having two corresponding rows of side discharge-ports, of two independent screw-propellers having their blades curved in opposite directions, and curved channels terminating in openings in the line of said curves and communicating with the said side ports in both the said pipes, substantially as described, for the purpose specified.

3. In a torpedo, the combination, with the compressed-air reservoir, the supply-pipe *p*, having two separate rows of side discharge-ports and conveying the motive fluid under pressure, and the tubular propeller-shaft *q*, having two corresponding rows of side discharge-ports, of two independent screw-propellers having their blades curved in opposite directions, and curved channels terminating in openings in the lines of said curves and having chambered hubs, into the chambers whereof the ports of both pipes open, and into which chambers the said curved channels open, whereby the said propeller-chambers serve as auxiliary reservoirs for the motive fluid which operates the propellers.

4. In a torpedo, the combination of a supply-pipe for conveying the motive fluid under pressure and provided with delivery-ports, a tubular shaft upon said pipe, having means for being moved longitudinally upon the same and having ports of greater longitudinal area than those of the supply-pipe and registering therewith, a screw-propeller journaled upon said shaft and having hollow blades communicating with said ports, and an immersing-rudder controlled by the longitudinal motion of said shaft, substantially as described.

5. The combination, with the screw-propellers A and B, the blades whereof are curved in reverse directions, said propellers having chambered hubs and an open passage formed in the blades thereof, of a tubular shaft connected with a source of motive fluid under pressure, on which shaft said propellers are loosely mounted, provided with delivery-ports registering with the propeller-hubs, and a tubular valve revolvable in the propeller-shaft and provided with ports adapted to register with the shaft-ports, whereby the area of the shaft-ports may be adjusted, substantially as and for the purposes specified.

6. The combination, with the screw-propellers A and B, the blades whereof are curved in reverse directions, said propellers having chambered hubs and an open passage formed in said blades, of a tubular shaft connected with a source of motive fluid under pressure, on which shaft said propellers are loosely mounted, provided with ports arranged in different longitudinal planes and registering with the propeller-hubs, and a tubular valve arranged within the propeller-shaft and having ports of greater area than the shaft-ports, arranged in the same longitudinal plane and adapted to register with the shaft-ports, whereby the relative area of the shaft-ports may be varied to vary the relative speed of the propellers, substantially as and for the purposes specified.

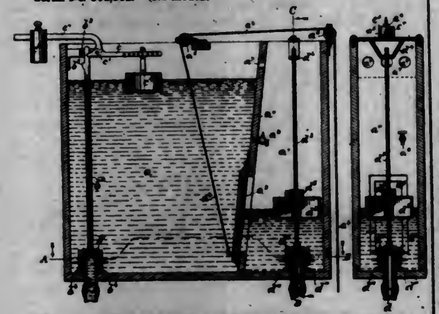
7. In a torpedo, the combination, with the propeller or propellers and the horizontal or immersing rudder, of a tubular propeller-shaft having an endwise motion in its bearings, said shaft being connected with and controlling the immersing-rudder, substantially as and for the purposes specified.

8. The combination, with the pipe *p*, closed at one end and connected at the other with a source of motive fluid under pressure, said pipe being revoluble and provided with ports p' p^2, arranged in the same longitudinal plane, of the tubular shaft *q*, mounted on pipe *p* and provided with ports q' q^2, arranged in different longitudinal planes, said ports being of less area than and adapted to register with the ports p' p^2, and reaction-propellers A B, loosely mounted on shaft *q*, substantially as and for the purposes specified.

9. The combination, with the pipe *p*, closed at one end and connected at the other with a source of motive fluid under pressure, said pipe being revoluble and provided with ports p' p^2, arranged in the same longitudinal plane, of the tubular shaft *q*, mounted and movable longitudinally on pipe *p*, said shaft being provided with ports q' q^2, arranged in different longitudinal planes and of less transverse area and of greater longitudinal area than the ports p' p^2 of pipe *p*, reaction-propellers A B, loosely mounted on shaft *q*, and a horizontal or immersion rudder controlled by said shaft, substantially as and for the purposes specified.

10. In a torpedo, the combination, with the compressed-air reservoir and the supply-pipe conveying the motive fluid under pressure, of two independent screw-propellers mounted loosely upon the same shaft, revolving in opposite directions and provided with worms upon their hubs, a registering device for each propeller having gearing engaged by said worms, and means, substantially such as described, for regulating the volume of air admitted to the propellers and the relative speed thereof, whereby the deviating or diverting action or effect of one propeller in relation to the other is ascertained and counteracted or compensated.

413,586. SUPPLY-TANK FOR WATER-CLOSETS OR OTHER RECEPTACLES. DARIUS WELLINGTON, Boston, Mass. Filed Feb. 27, 1889. Serial No. 301,302. (No model.)

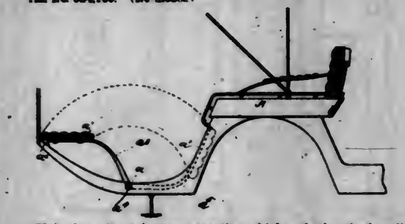


Claim.—1. The combination of the tank *a*, having the water-inlet pipe *b* and water-outlet pipe *d*, the automatically-operated inlet-valve *b'* to the inlet-pipe, the automatically-operated valve *d'* to the outlet-pipe, the partition a'', dividing the tank into two chambers between the inlet and outlet pipes, a valve a^2, hinged to the partition, and a cord or chain a^4, connected with the partition-valve and disconnected from the outlet and inlet valves for operating said partition-valve independently of movement of the said outlet and inlet valves, substantially as described.

2. The combination, with the tank *a*, having the inlet and outlet pipes *b* *d*, and an automatically-operated outlet-valve for the outlet-pipe, of a cup-valve *b'* for the inlet-pipe, having a vertical rigid rod b'', the lever *c*, pivoted intermediate its ends in the tank and loosely attached by a joint to the upper end of and positively raising and lowering said rigid valve-rod, a float c^3 on one end of the lever and a weight c^3 on the other end of the lever, a partition a'', dividing the tank into compartments, and a valve a^2, hinged to said partition, and a cord a^4, for opening said valve against the pressure of the water, substantially as shown and described.

3. In a supply-tank for water-closets or other receptacles, the chamber *a*, having the inlet pipe *b* and valve *b'*, held against its seat by means of the weight c^3, float c^4, and lever c^2, the chamber a', having the discharge-pipe *d* and valve *d'*, operated by the float d^4, and collar d^3, adjustable on rod d^4, and the valve a^2, operated by the cord or chain a^4, all combined to operate substantially as set forth and described.

413,587. VEHICLE. HARLAN P. WELLS and JABEZ STOFFORD, Jr., Amesbury, Mass. Filed Nov. 24, 1888. Renewed Sept. 17, 1889. Serial No. 324,169. (No model.)



Claim.—1. As an improvement in vehicles, the herein-described portable seat, which consists of the seat *a'*, with the arms a^3, provided with the slots *a*, constructed and adapted substantially as described, for the purposes set forth.

2. In vehicles of the class herein named, the portable seat *a'*, having the slotted arms a^3, in combination with the raised rib a^2 and bolts a^4, constructed and arranged in the manner herein described, for the purposes set forth.

413,588. HORSE-DETACHER. GEORGE W. WIGGINS, Edison, Ga. Filed June 14, 1889. Serial No. 314,316. (No model.)



Claim.—1. In an animal-releasing device, the combination, with the whiffletree, of the box secured to the end of the same, the hook pivoted in said box and engaged by the trace, and the removable pin inserted through the box and the hook, as set forth.

2. In an animal-releasing device, the combination, with the whiffletree, of the box provided with a lateral screw adapted to enter the end of the whiffletree, the hook pivoted in the box, engaged by the trace, and having an L-shaped portion O, and the removable pin inserted transversely through the box and the hook, as set forth.

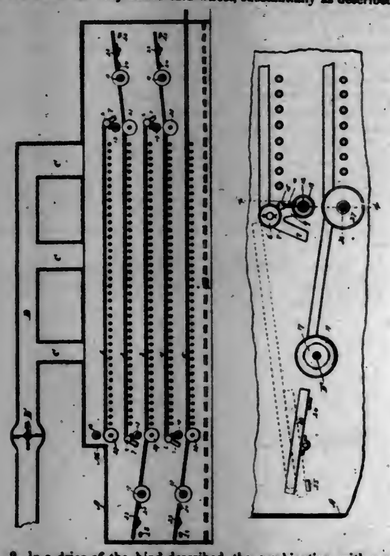
3. The releasing device consisting of the ring A, secured to the harness and supporting the shaft, the hook H on the shaft, engaged by a ring on the holdback, the pivoted hook at the end of the whiffletree, engaging the trace, and the removable pin securing said hook, as set forth.

4. In an animal-releasing device, the ring or yoke A, having the buckle-frame B on one side and the concave supporting-plate C in its bottom, as set forth.

413,589. FRUIT-DRIER. ELI WHITE, Mount Morris, assignor to the Excelsior Steam Evaporator Company, Perry, N. Y. Filed Oct. 16, 1888. Serial No. 288,260. (No model.)

Claim.—1. In a drier in which the material is placed on trays,

the combination, with a series of suitable ways arranged in different planes, of a positively-rotated wheel located between said ways beyond the end of the upper one and a support beyond the wheel for sustaining the end of the tray above said wheel, substantially as described.



2. In a drier of the kind described, the combination, with a series of ways arranged in different planes, of a rotating wheel located between said ways beyond the end of the upper one and a tilting support beyond the wheel for sustaining the end of the tray above said wheel, substantially as described.

3. In a drier of the kind described, the combination, with a series of ways arranged in different planes, of a rotating wheel located between said ways beyond the end of the upper one, a support beyond the wheel, and mechanism, substantially as described, for moving the trays in succeeding planes in opposite directions, as set forth.

4. In a drier of the kind described, the combination, with the series of ways arranged in different planes having inclines at opposite ends alternately, of a rotating wheel located near each of said inclines between the ways and beyond the ends of the upper one and a support for the end of the tray beyond said wheel, substantially as described.

5. In a drier, the combination, with a series of ways arranged in different planes, of a series of trays adapted to travel thereon, a pair of rollers at alternately opposite ends of each way, between which the trays are grasped and moved, one at least of said rollers being driven, and supports beyond the ends of the ways for permitting the transfer of the trays from one way to another, substantially as described.

6. In a drier, the combination, with a series of ways arranged in different planes, of a rotating shaft having spring-pressed gripping-disks thereon arranged beyond and below one end of each of the ways, said disks arranged to engage on one side their centers with the trays, so as to drive them, substantially as described.

7. In a drier, the combination, with a series of ways arranged in different planes, of a rotating shaft having spring-pressed gripping-disks thereon arranged beyond and below one end of each of the ways and supports for the tray ends beyond said shaft, substantially as described.

8. In a drier, the combination, with a series of ways arranged in different planes, of a rotating shaft having a supporting surface or wheel and spring-pressed gripping-disks thereon beyond and below one end of each of the ways, substantially as described.

9. In a drier, and as a means for moving the trays, the shaft having a supporting wheel or surface and spring-pressed gripping-disks connected so as to rotate with said shaft and arranged to support and move the trays, substantially as described.

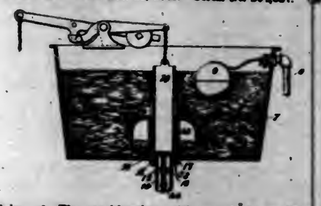
10. In a drier, the combination, with two ways, the castings at the end having the inclines 7 thereon, the driving-roller for the next succeeding way arranged beneath, and the spring-pressed co-operating roller supported from said casting, substantially as described.

11. The combination, with the shaft having the supporting-wheel thereon provided with laterally-projecting teeth, of a disk having recesses for the teeth movable longitudinally on the shaft and a spring for moving said disk toward the wheel, substantially as described.

12. The combination, with the shaft having the supporting wheel or surface thereon, of disks located on opposite sides said supporting-surface movable on the shaft, interlocking projections and recesses for causing the simultaneous movement of the disks and wheel, and springs for pressing the disks toward the supporting-surface, substantially as described.

13. The combination, with the shaft having the supporting wheel or surface thereon, of the disks located on opposite sides the supporting-surface and movable longitudinally on the shaft, interlocking projections and recesses for causing the simultaneous movement of the disks and wheel, collars secured to the shaft, and springs between the collars and disks, substantially as described.

413,590. TANK FOR SANITARY BASINS. PATRICK J. WHITE, St. Louis, Mo. Filed Dec. 19, 1888. Serial No. 294,027. (No model.)



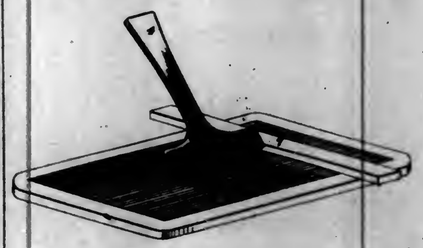
Claim.—1. The combination, with a tank for sanitary basins, of a float governing the discharge thereof, an overflow-tube 10, to which said float is secured, a split ring 20, soldered to the float, and an open ring 21, for securing said float to said overflow-pipe at any point along the same.

2. The combination, with a tank for sanitary basins, of an overflow-tube 10, a valve at the lower end of said tube controlling the discharge from said tank, and an adjustable inverted cup 19, secured to said overflow-tube above said valve.

3. The combination, with a tank for sanitary basins of the character described, of the overflow-tube 10, the valve carried at the lower end thereof, the inverted cup 19, secured to said tube above said valve, the cylinder 23 in said cup making an air-tight joint with the same, the split ring 20, secured to the upper part of said cup, an open ring 21, embracing said split ring 20, a set-screw 22, for drawing the ends of said open ring 21 together and securing the float to said tube 10 at any point along the same, and a guide-rod 13 for said valve, substantially as set forth.

4. The combination, with a tank for sanitary basins, of an overflow-tube, a valve at the lower end of said tube controlling the discharge from said tank, an inverted cup 19, completely submerged in the water in said tank, governing said valve and fixed to said overflow-tube near the lower end thereof above the valve, thereby permitting the discharge to take place from the tank only when the float and valve are raised by extraneous force, a cylinder 23 in said cup embracing the overflow-tube and making an air-tight joint with said overflow-tube and cup, for the purpose described.

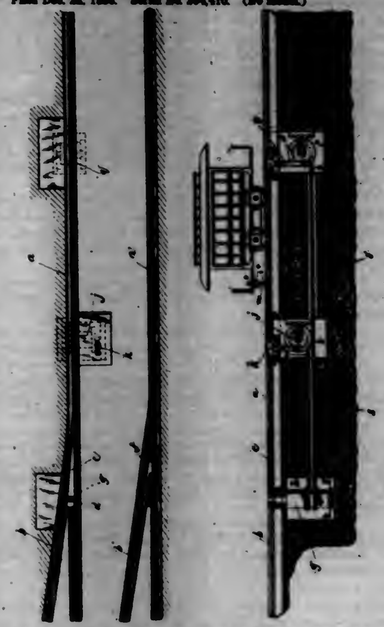
413,591. RULING DEVICE FOR SLATES, &c. ALBERT G. W. WILL, St. Louis, Mo. Filed May 4, 1889. Serial No. 309,582. (No model.)



Claim.—1. A hand ruling device for slates, consisting of a handle carrying one or more series of elastic cutting-points arranged at suitable distances apart for abrading the surface of the slate.

2. A hand ruling device for slates, consisting of a handle 4, an elastic metallic plate 5 carried thereby, and one or more series of curved teeth or cutting-points 6, cut or stamped therein and arranged at suitable distances apart, for abrading the surface of the slate.

413,592. STREET-RAILWAY SWITCH. JOHN H. WILLIAMS, Boston, assignor of two-thirds to Benjamin F. Barnard, Wakefield, Mass. Filed Dec. 22, 1888. Serial No. 294,410. (No model.)



Claim.—1. The combination, with a track and a movable switch, of a drum or shaft connected with said switch, a switch-opening drum having an operating-rod arranged between the main-track rails for operation by an attachment on a car, a switch-closing drum located farther from the switch than the said opening-drum and having an operating-rod arranged to be acted on by a car-wheel on the main track, and flexible connections between said switch opening and closing drums and the switch drum or shaft, as set forth.

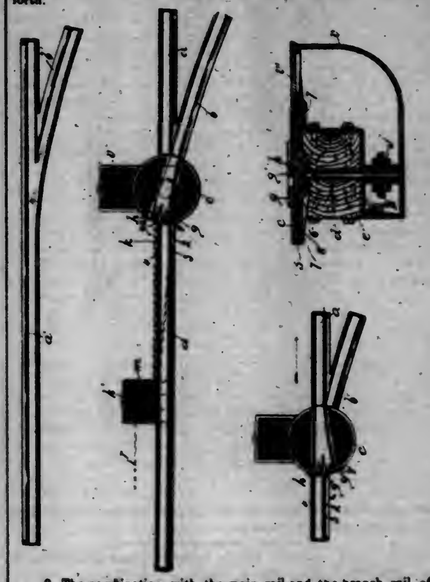
2. The combination, with a track and a movable switch, of a series of vaults *h i p* below the track, pipes or conduits connecting said vaults, a vertical drum *g*, journaled in the vault *h* and secured to the switch, horizontal drums *j o*, journaled, respectively, in the vaults *i p*, an operating device for the drum *j*, arranged between the tracks, an operating device for the drum *o*, arranged with its upper end in one of the track-rails, and cables or chains *n r*, connecting the drum *g* with the drums *j o*, respectively, all arranged and operating substantially as set forth.

3. The combination, with the switch rail and track, of a drum *g*, located below and attached to the switch-rail, drums *j o*, located at different distances from the switch and provided, respectively, with operating-rods *k q*, which are arranged to project alternately above the track, one being arranged to be operated by an attachment on the car and the other by a car-wheel, and cables *n r*, connecting the drum *g* with the drums *j o*, respectively, said cables being tightly drawn between said drums, whereby when one operating-rod is depressed the other is raised, and vice versa.

4. The combination, with the switch rail and track, of a drum *g*, located below and attached to the switch-rail, drums *j o*, located at different distances from the switch and provided, respectively, with operating-rods *k q*, which are arranged to project alternately above the track, one being arranged to be operated by an attachment on the car and the other by a car-wheel, and cables *n r*, connecting the drum *g* with the drums *j o*, respectively, and vaults *h i p* and pipes *s s'*, constituting a water-excluding casing for said drums and cables, as set forth.

413,593. STREET-RAILWAY SWITCH. JOHN H. WILLIAMS, Boston, assignor of two-thirds to Benjamin F. Barnard, Wakefield, Mass. Filed Feb. 11, 1889. Serial No. 299,269. (No model.)

Claim.—1. The combination, substantially as set forth, with the fixed track-rails *a b*, of a fixed supporting-plate located at the point of divergence of the rail *b* from the main rail *a*, the vertical shaft *d*, passing through said plate and engaged below the latter with a flexible cord or chain, whereby said shaft may be rotated by power communicated from a distant point, and a circular table attached to the upper end of said shaft and arranged concentrically thereon, said table having suitable track-sections co-operating with the rails *a b*, as set forth.



2. The combination, with the main rail and the branch rail, of the circular table or rotary switch having the curved tread-section *g* and the pointed section *g'*, relatively arranged substantially as shown.

3. The combination, with the main rail and the branch rail, of the circular table or rotary switch having the curved tread-section *g* and the pointed section *g'* and the guard-section *h*, relatively arranged substantially as shown.

4. The combination, with the main rail and the branch rail, of the centrally-pivoted table or rotary switch having stops *s s'*, as set forth.

413,594. RAILWAY-SWITCH. JOHN H. WILLIAMS, Boston, assignor of two-thirds to B. F. Barnard, Wakefield, Mass. Filed July 13, 1888. Serial No. 317,455. (No model.)

Claim.—1. A circular switch-table provided with two sets or series of tread-sections, one section of each set or series being adapted to operate alternately as a tread-section and as a guard-flange section, as set forth.

2. A circular switch-table having two tread-sections arranged at an obtuse angle with each other and two tapered or wedge-shaped sections, each adapted to act alternately as a tread and as a guard-flange section, as set forth.

3. The combination of a main rail *a'*, a branch rail *b'*, a frog *c'*, having the tread-section 2 and the combined tread and guard section 3, and a circular switch-table having the tread-sections 4 5 and the combined tread and guard sections 6 7, as set forth.

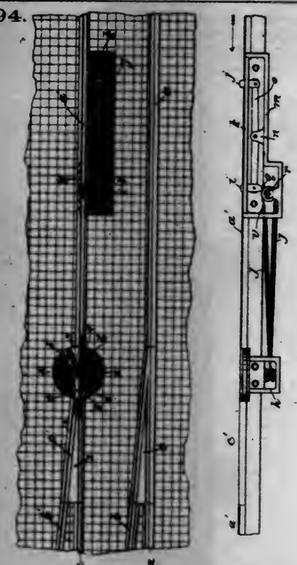
4. The rotary switch-table having the tread-sections and the combined tread and guard sections, the vertical shaft attached to said table, and means for rocking or reversely rotating said shaft and table, all combined substantially as set forth.

5. The switch-table having the tread-sections and the combined tread and guard sections, the shaft *f*, attached to said table, a shaft *s*, located at a distant point, an endless cable connecting said shafts, a pivoted lever *o*, connected at one end with a disk on the shaft *s*, and means, substantially as described, for oscillating said lever *o*, all combined substantially as set forth.

6. The rotary balanced switch-table, combined with the shaft at-

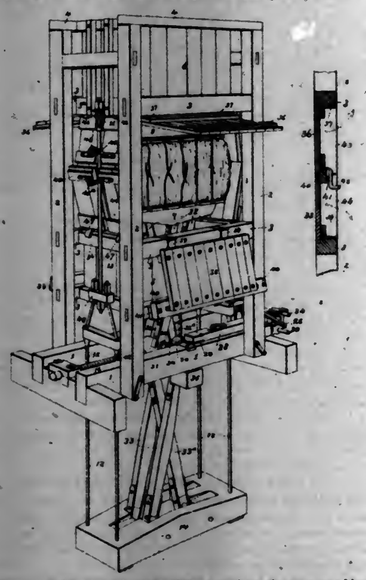


413,594.



tached to said table and electrically-operated mechanism to partially rotate said shaft back and forth.

413,595. BALING-PRESS. CARLOS G. WILSON, Milledgeville, Ga. Filed May 9, 1888. Serial No. 273,275. (No model.)



Claim.—1. The combination of the press-box, the upper and lower followers, a beam carrying the upper follower, the cross-head beneath the press-box, rods connecting said beam with said cross-head, a right-and-left screw, the nuts 30 and 31, the upper paired links 32 and single link 32^a, crossed at their upper ends, and the lower paired links 33 and single link 33^a, crossed at their lower ends, substantially as described.

2. The combination of the press-box consisting of upper portion 6, having vertical slots in the ends thereof, the lower portion 5, and a central portion having upper and lower side doors, the upper follower 8, having a supporting-beam 9, formed with contracted necks working in the vertical slots, the lower follower 7, the cross-head 14 beneath the press-box, toggle mechanism between the lower follower and the cross-head, and the rods connecting the said beam with the said cross-head, the beam being hinged to one rod, so as to move in a horizontal plane, substantially as described.

3. The press-box having a central part provided with rabbeted side and end frames, the side doors 36 and 38, having double hinges 37 and 39, respectively, and fitting in the side frames, the end doors 43 and 44, having double hinges 46 and 47, respectively, and fitting in the end frames, and suitable fastenings for the doors, substantially as described.

4. The combination of the press-box, followers working therein, the doors 38 and 44, connected to the frame by double hinges 39 and 47, adapting said doors to engage with the frame of the press when closed and to drop into vertical position out of the way when open, and suitable fastenings for the doors, as herein explained.

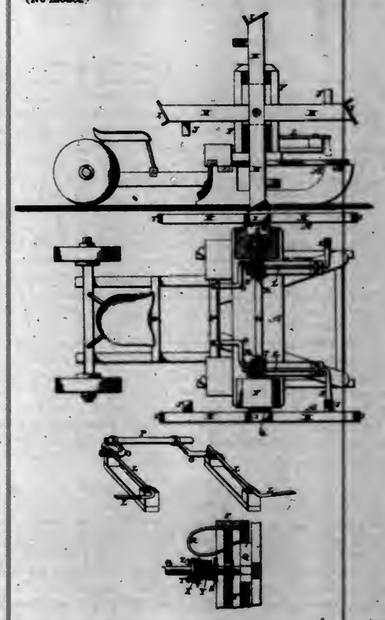
5. The end doors 43 44, made in separate parts connected by yokes 45 45^a, permitting said doors to pass the tie-rods in opening, as explained.

6. The combination of the side doors 36 38 and end doors 43 44 with the clamp-bars 42 to fasten said doors together, as explained.

7. The combination of the side doors 36 38, fitting one over the other, the inclined keepers 41 on the outer doors, and the clamp-bars 42, bent at right angles and engaging with the inclined keepers to force and retain the doors in their closed position, as explained.

8. The combination of the side doors 36 38, shutting one over the other, the end doors 43 44, shutting one over the other, the battens 40 and 49 on the side and end doors, respectively, and the clamp-bars 42, bearing laterally against the end-door battens and engaging over keepers on the side-door battens, substantially as and for the purposes set forth.

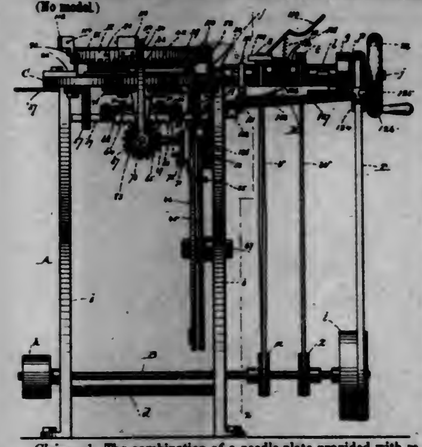
413,596. CORN-PLANTER. WILLIAM WOODLING and REASON L. WOODLING, Logansport, Ind. Filed Aug. 10, 1889. Serial No. 320,392. (No model.)



Claim.—1. The combination of the frame A, the guides F, mounted thereon, the boxes Q and rollers placed inside of the guides, the shaft G, which passes through the boxes and rollers, the springs for retaining the boxes to position, and the arms for causing the shaft to revolve, substantially as described.

2. The combination of the guides, the boxes and rollers placed inside of the guides, the shaft G, provided with the flanges S, the set-screws T, springs Y, and the washers V, substantially as set forth.

413,597. CIRCULAR-KNITTING MACHINE. JOSEPH A. BURLESON, Lake Village, N. H., assignor, by mesne assignments, to himself and George D. Barton, Boston, Mass. Filed Jan. 10, 1889. Serial No. 296,912. (No model.)



Claim.—1. The combination of a needle-plate provided with radial needle-slots and with an arc-shaped slot in its body, the needles, a curved bar, as 32, disposed in said arc-shaped slot and provided with a slot through which the heels of a portion of the needles pass, and means for raising and lowering said curved bar.

2. The combination of a needle-plate provided with radial needle-slots and with an arc-shaped slot in its body, the needles, a curved bar, as 32, disposed in said arc-shaped slot and provided with a slot through which the heels of a portion of the needles pass and with dependent rods, as 33, and a horizontally-adjustable frame, as 35, disposed below said curved bar and provided with cam-surfaces, as 34, for engaging said rods.

3. The combination of a needle-plate provided with radial needle-slots and with an arc-shaped slot in its body, the needles, a curved bar, as 32, disposed in said arc-shaped slot and provided with a slot through which the heels of a portion of the needles pass and with dependent rods, as 33, a horizontally-adjustable frame, as 35, disposed below said curved bar and provided with cam-surfaces, as 34, for engaging said rods, and springs for depressing said bar when released from said cam-surfaces.

4. The combination of the needle-plate, the needles, two curved rack-bars 42, disposed around the needle-plate and provided with horizontal slots 43, a horizontal sliding rack-bar 59, disposed below each of said curved rack-bars, two spring-pawls pivoted to each of the rack-bars 59, pinions 67 in engagement with rack-bars 59, means for oscillating said pinions, and means for disengaging said pawls from said curved rack-bars.

5. The combination of the needle-bed, the needles, the cam-plate, a main shaft provided with two fixed pulleys, an auxiliary shaft provided with means for driving the cam-plate, two loose pulleys on said auxiliary shaft, crossed and straight belts connecting the fixed and loose pulleys, a longitudinally-movable sleeve splined to the auxiliary shaft between said loose pulleys, spring-cushioned pins in said sleeve for entering holes in said loose pulleys, a pivoted bell-crank lever, one arm of which engages a flanged groove in said sleeve, a curved lever hinged to the opposite end of said bell-crank lever, and bunters on said cam-plate for engaging said curved lever.

6. The combination of the needle-bed, the needles, the cam-plate, a main shaft provided with two fixed pulleys, an auxiliary shaft provided with means for driving the cam-plate, two loose pulleys on said auxiliary shaft, crossed and straight belts connecting the fixed and loose pulleys, a longitudinally-movable sleeve splined to the auxiliary shaft between said loose pulleys, spring-cushioned pins in said sleeve for entering holes in said loose pulleys, a pivoted bell-crank lever, one arm of which engages a flanged groove in said sleeve, a curved lever hinged to the opposite end of said bell-crank lever, bunters on said cam-plate for engaging said curved lever, a horizontal lever pivoted to the frame of the machine at right angles to said curved lever and provided with a slot engaged thereby, and means for raising and lowering said horizontal lever.

7. The combination of a cam-plate provided with radial chambers 94, a sliding ring, as 85, disposed on said cam-plate and provided with diagonal slots 96, a pivoted bar, as 122, for actuating said ring, a lever or stop, as 110, against which said pivoted bar abuts to move the ring in the rotation of the cam-plate, and horizontal pins disposed in the chambers of the cam-plate and provided with vertical studs engaging the slots of the sliding ring.

8. The combination of the needle-plate, the needles, curved rack-bars outside the needle-plate provided with slots for raising the heels of a number of the needles, straight rack-bars bearing actuating-pawls for moving said curved bars, vertical levers, pinions on the journals of said levers for actuating said straight rack-bars, and a cam-plate provided with pins for tripping said levers and alternately moving said curved rack-bars.

9. The combination of a curved bar, as 32, provided with a needle-slot, a horizontally-movable frame provided with projections having inclined sides, rods secured to said bar and resting on said stud, and springs for forcing said rods downward when the frame is revolved.

10. The combination of a ratchet-wheel, as 46, provided on one face with cam-plates and tracks, operative devices therefor, a pivoted bar provided with a stud working in said tracks, curved rack-bars having needle-slots, straight rack-bars provided with actuating-pawls engaging said curved bars, pinions for operating said straight rack-bars, means for actuating said pinions, bars connected to said pivoted bar, and provided with laterally-projecting arms having studs for engaging said pawls to release them from said curved rack-bars.

11. The combination of a belt-shipper for shipping the main driving-belt, a ratchet-wheel, a pallet for driving said ratchet-wheel, mechanism for operating said pallet, a cam-plate provided with a cam for actuating said mechanism, a bar pivoted to said belt-shipper and projecting over said ratchet-wheel, said bar being provided with a notch, a hook for engaging said notch, a stud on said ratchet-wheel for engaging said bar at a determined point in the revolution of said wheel to release said bar from said hook, and a spring for sliding said bar when released to operate the belt-shipper.

12. The combination of the needle-plate, the needles, curved rack-bars 42, provided with slots 43, for receiving the heels of a number of the needles, straight rack-bars 59, spring-actuated pawls 61 and 62, supported on said straight rack-bars and adapted to engage said curved rack-bars, shaft 73, provided with pinions 67, engaging said straight rack-bars, vertical levers 83, rigidly connected with said pinions, a rotary cam-plate provided with radial chambers 94, a sliding ring 85, disposed on said cam-plate and provided with diagonal slots 96, a pivoted bar 122, for actuating said rings, a lever or stop 110, against which said pivoted bar abuts to move the ring in the rotation of the cam-plate, and horizontal pins disposed in the chambers of the cam-plate and adapted to engage said vertical levers, said pinions being provided with vertical studs engaging the diagonal slots of the sliding ring.

13. The combination of the ratchet-wheel 46, having the concentric tracks 76 77 78 and the cam-plates 74, 79, 80, 81, and 82, disposed at intervals in said tracks, a pivoted bar provided with a stud traveling in said tracks, and a widening and narrowing mechanism controlled by said pivoted bar.

14. The combination of the needle-plate, the needles, the curved rack-bars 42, provided with slots 43, the straight rack-bars 59, provided with pawls 61 and 62, the springs 64, the pinions 67, for operating said straight rack-bars, means for actuating said pinions, the pivoted bar 66, having the stud 72, the bars 68, provided with arms 69, having pin 70, for engaging said pawls, the ratchet-wheel 46, having tracks in which said stud travels, and cam-plates disposed at intervals in said tracks, a pallet for moving said ratchet-wheel, and means for actuating said pallet.

15. The combination of the needle-bed, the needles, the cam-plate a shaft provided with means for driving the cam-plate, two loose pulleys on said shaft, means for driving said pulleys in opposite directions, a longitudinally-movable sleeve splined to said shaft between said pulleys, a pivoted bell-crank lever, one arm of which engages a flanged groove in said sleeve, a curved lever hinged to the opposite end of said bell-crank lever and projecting over the cam-plate when depressed, and bunters on the cam-plate for engaging said hinged lever and moving the sleeve to secure said pulleys, whereby a reciprocating motion may be imparted to the cam-plate.

16. The combination of the needle-plate, the needles, a horizontal rotary cam-plate provided with a cam-track for actuating the needles, a slotted curved bar in said needle-plate, means for depressing said bar and throwing a determinate number of needles out of action, two sliding curved rack-bars disposed around said needle-plate and provided with needle-slots, straight rack-bars having pawls for actuating said curved bars, pivoted levers having pinions on the pivots thereof for actuating said straight bars, a sliding ring on said cam-plate, a pivoted lever for actuating said ring, a stop for engaging said pivoted lever, pins in said cam-plate provided with vertical studs working in slots in said ring, whereby the pins are projected when the rings move, and adjunctive mechanism for imparting a reciprocating motion to said cam-plate.

413,598. BREECH-LOADING ORDNANCE. GEORGE CROVER, Southington, Conn. Filed June 6, 1889. Serial No. 313,202. (No model.)



Claim.—The combination of a cannon, a breech-pin inserted in the breech thereof and provided with a recess in its under side, a weighted cam-lever pivoted in a slot in the breech of the cannon and adapted to automatically engage the said recess in the breech-pin and prevent the withdrawal of the latter, substantially as and for the purposes set forth.

413,599. RUBBER ERASER. GEORGE DEAN, Grand Rapids, Mich. Filed July 29, 1889. Serial No. 319,005. (No model.)



Claim.—1. An eraser consisting of a core or stiffener and a band or tube of rubber or other erasive material having flexible ends projecting beyond the core or stiffener substantially parallel therewith and providing inner and outer yielding edges, substantially as described.

2. An eraser consisting of a band or tube of rubber or other erasive material having flexible ends, and a core or stiffener movable therein, the said ends projecting beyond the core or stiffener substantially parallel therewith and providing inner and outer yielding edges, substantially as described.

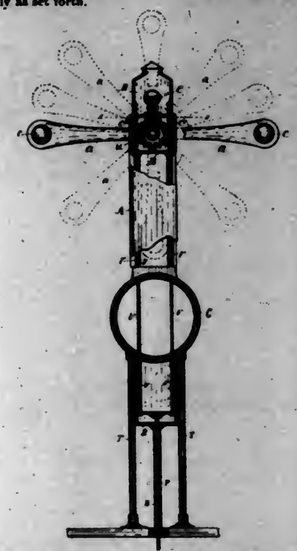
3. An eraser consisting of a core or stiffener and an endless band or tube of rubber or other erasive material held in place by contraction on the core or stiffener, having flexible ends projecting beyond the core or stiffener, substantially parallel therewith and providing inner and outer yielding edges, substantially as described.

4. An eraser having recesses in its ends, providing inner and outer yielding edges, substantially as described.

413,600. RAILWAY-STATION SIGNAL. BUKNER F. FREELAND, Vinton, Ind. Filed Dec. 28, 1888. Serial No. 294,544. (No model.)

Claim.—1. The combination of a suitable support having a wing on each of the two opposite sides, and two signal-arms, each having an independent axle, said axles having bearing in said support on a like plane, and the arms, axles, and wings being so arranged that both arms will be visible at the same time or invisible at the same time, substantially as set forth.

2. The combination of a suitable support, independent shafts having bearings in said support, the outer end of each shaft having attached thereto a gear-wheel and a signal-arm, and a vertically-playing rod provided with racks to mesh with the gears, one on one side of one gear and the other on the other side of the other gear, substantially as set forth.

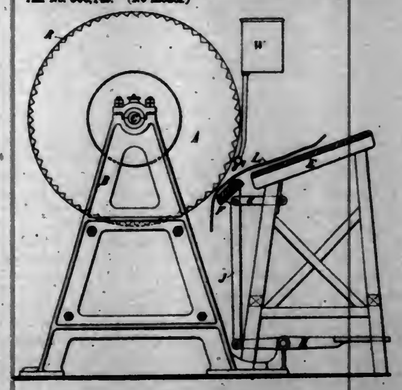


3. The combination of a support having hollow upright standards, a chamber supported by said standards, two independent shafts having bearings in said chamber, the gear and arm on the outer end of each shaft, a vertically-playing rod having the branches passed up through the two, diagonally opposite of said standards, and the racks terminating the end of said branches and meshing on a side of each gear opposite to each other, substantially as set forth.

4. The combination of the support or tower, consisting of the lower corner standards, the hollow rod opening beneath the base-support or ground, the chamber above said rod and into which chamber it enters, the dial-case, the hollow standards above said case, a chamber supported by said latter-named rods, the signal-arm shafts having the gears in said chamber, the vertically-playing rod within the lower hollow rod, the branch rods extending from the lower chamber up through the dial-case and the upper hollow rods, said branches terminating within the upper chamber in the rack-gears, substantially as set forth.

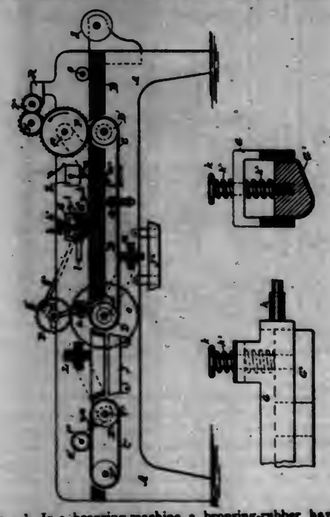
5. The combination of a support, a light-house supported thereby, the two signal-arms having each an independent axis and adapted to swing toward and from each other, as stated, and a light at the free end of each arm, substantially as set forth.

413,601. APPARATUS FOR TREATING HIDES. HERMANN R. FREUDENBERG, Weinheim, Baden, Germany. Filed Feb. 16, 1889. Serial No. 300,149. (No model.)



Claim.—The herein-described machine for flesking and softening untanned skins, and comprising a rotary grinding-stone with grooves on its periphery diverging from the center toward the edges thereof, a supporting-surface for the skins, and a water-supply pipe to direct a current of water onto the skins under treatment, all substantially as described.

413,602. BROWSING-MACHINE. WILLIAM P. H. GILDEMEISTER, Cleveland, Ohio. Filed June 8, 1889. Serial No. 313,652. (No model.)



Claim.—1. In a browsing-machine, a browsing-rubber having a combined reciprocating and oscillating motion, substantially as and for the purposes set forth.

2. In a browsing-machine, the rubber having a reciprocating movement and lifting at each stroke, substantially as described.

3. In a browsing-machine, the combination of a rubber having a combined reciprocating and oscillating movement, an endless apron for feeding the work, and a sifting-box for applying the bronze-powder, substantially as described.

4. The combination, in a bronzing-machine, of a traveling apron for carrying the work, a sifting-box for applying the bronze-powder, a browsing-rubber having a combined reciprocating and oscillating movement, whereby it is caused to lift from the work at each stroke, and a brush for cleaning off the loose powder from the work, substantially as described.

5. In a bronzing-machine, the combination of an endless apron for feeding the work, a sifting-box for applying the bronze-powder, a browsing-rubber having a reciprocating movement and lifting from the work at each stroke, a brush for cleaning the work, and a brush for cleaning said apron, substantially as described.

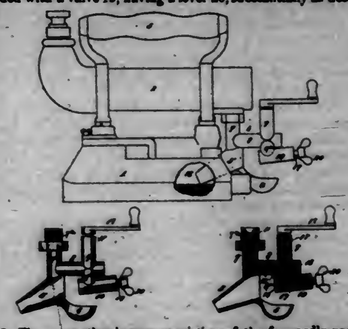
6. In a bronzing-machine, the combination of the endless apron, feed-rollers, and guide-fingers for feeding the work and retaining it in position, a sifting-box for applying bronze-powder, a reciprocating rubber for bronzing the work, a brush for cleaning the work, and a secondary apron and feed-rollers for forcing the work to feed past the cleaning-brush and discharging the finished work, substantially as described.

7. The bronzing-rubber made in sections with diagonal overlapping ends, each section removably secured to the carrier to permit the removal of one or more sections, substantially as described.

413,603. SELF-GENERATING BURNER FOR SAD-IRONS. GUSTAVUS HEINDL, St. Louis, Mo., assignor to the National Self-Heating Sad-Iron Company, same place. Filed Oct. 3, 1888. Serial No. 287,060. (No model.)

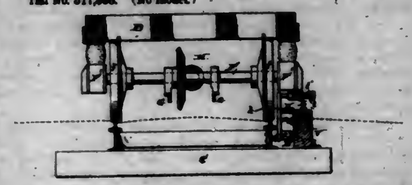
Claim.—1. The generating-burner consisting of the forwardly-projecting commingling-tube 5, the supply-arm 7, extending upwardly therefrom, having a passage 11, the conducting-body 8, extending outwardly from the juncture of the tube and arm in a horizontal direction, having a passage 12, the main valve-arm 9, extending upwardly from the body, the short neck 9ª, extending downwardly from the body, having a passage 13, and the jet-valve head 10, depending from the neck, having a jet-orifice 14, substantially as described.

2. The generating-burner consisting of the forwardly-projecting commingling-tube 5, the supply-arm 7, extending upwardly therefrom, having a passage 11, the conducting-body 8, extending outwardly from the juncture of the tube and arm in a horizontal direction, having a passage 12, the main valve-arm 9, extending upwardly from the body, having a screw-valve 17, provided with a lever 18, the short neck 9ª, extending downwardly from the body, having a passage 13, and the jet-valve head 10, depending from the neck, having a jet-orifice 14, and provided with a valve 19, having a lever 20, substantially as described.



3. The generating-burner consisting of the forwardly-projecting commingling-tube 5, having a drip-cup 6, extending outwardly therefrom, the supply-arm 7, extending upwardly from the tube, having a passage 11, the conducting-body 8, extending outwardly from the juncture of the tube and arm in a horizontal direction, having a passage 12, the main valve-arm 9, extending upwardly from the body, having a screw-valve 17, provided with a lever 18, the short neck 9ª, extending downwardly from the body, having a passage 13, and the jet-valve head 10, depending from the neck, having a jet-orifice 14, and provided with a valve 19, having a lever 20, substantially as described.

413,604. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor, by mesne assignments, to the Thomson-Houston Electric Company, Boston, Mass. Original application filed Jan. 14, 1889. Serial No. 296,262. Divided and this application filed July 13, 1889. Serial No. 317,208. (No model.)



Claim.—1. In an electric railway, the combination of a traveling vehicle, a stationary source of electric supply, a bared working-conductor extending along the path of the vehicle, and a current-collector device of less width than the diameter of the wheel and supported immediately outside of the wheel of the vehicle and upon the axle-box.

2. In an electric railway, the combination of a stationary source of electric supply, bared working-conductors extending along the path of the vehicle, an electrically-propelled vehicle, and depending collectors to receive electricity from said bared conductors supported by the axle-box of the vehicle, and suitable guides for said collectors to admit of lateral motion, substantially as and for the purpose specified.

3. In an electric railway, the combination of a stationary source of electric supply, bared working-conductors extending along the path of the vehicle running upon said railway, an electrically-propelled vehicle, and two independent depending collectors to receive electricity from said bared conductors supported in line of travel of the vehicle, and each carried by a different axle-box and arranged substantially in a vertical plane through the respective axles.

4. In an electric railway, the combination of a stationary source of electric supply, bared working-conductors extending along the path of the vehicle running upon said railway, an electrically-propelled vehicle, two independent depending and laterally-movable collectors to receive electricity from said bared conductors supported in line of travel of the vehicle, and each carried by a different axle-box and arranged substantially in a vertical plane through the respective axles.

5. The combination of the track-rails of a railway with an electric slotted conduit arranged upon the outside of the track and close

to or adjacent to one rail thereof, and positive and negative bared conductors contained within said conduit and consisting of longitudinal bars, having vertical or substantially vertical faces exposed to a vertical plane extending through the slot, a traveling vehicle, and laterally-movable current-collecting device arranged outside of the wheel-base of the vehicle and depending into the conduit for making connection with the conductors.

6. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, an insulated working-conductor contained within said conduit, a traveling vehicle, and a laterally-movable current-collecting device arranged outside of the wheel-base of said vehicle and depending into the conduit for making connection with the working-conductors.

7. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, an insulated working-conductor contained within said conduit, a traveling vehicle, and a current-collecting device arranged outside of the wheel-base of said vehicle in line with the wheel-axle and depending into the conduit for making connections with the working-conductor.

8. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, and positive and negative insulated working-conductor contained within said conduit, a traveling vehicle, and two narrow independent current-collectors carried thereby and arranged upon the outside of the wheel-base one in advance of the other and depending into the conduit for making connection with the working-conductors.

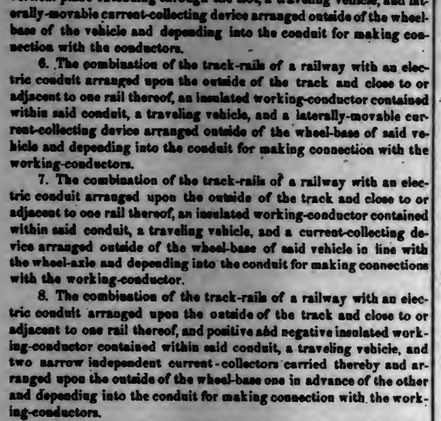
9. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, and positive and negative insulated working-conductors contained within said conduit, a traveling vehicle, and two independently adjustable or movable current-collectors carried thereby and arranged upon the outside of the wheel-base one in advance of the other and depending into the conduit for making connection with the working-conductors.

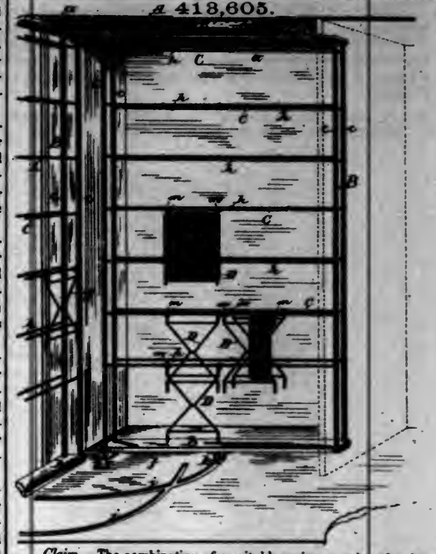
10. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, and positive and negative insulated working-conductors contained within said conduit, a traveling vehicle having a car-body supported on springs, and two current-collectors carried thereby independently of the car-body and arranged upon the outside of the wheel-base one in advance of the other and depending into the conduit for making connection with the working-conductors.

11. The combination of a railway-track with a slotted conduit arranged upon the outside thereof and a bared conductor contained within said conduit and exposing its contact-surface from the side, a traveling vehicle, and a depending current-collecting device adapted to make contact with the conductor and carried by the vehicle with provision for lateral movement.

12. The combination of a railway, a slotted conduit arranged outside of the track, a bared working-conductor supported within said conductor and insulated therefrom, and tie-rods connecting the upper part of the conduit to the track, whereby it is maintained in relative fixed position with respect to the rail.

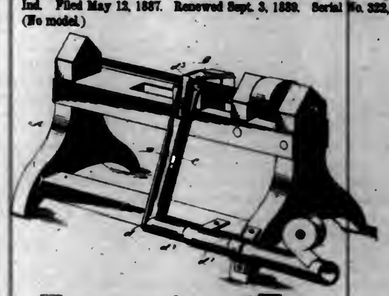
413,605. RACK FOR EXHIBITING LACES. CASPAR H. KROSSER, Milwaukee, Wis. Filed May 17, 1888. Serial No. 202,410. (No model.)

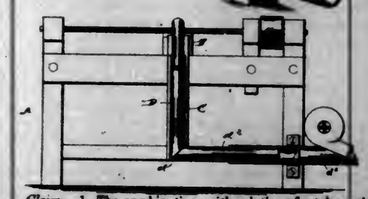




Claim.—The combination of a suitable casing, a series of swinging frames arranged within the casing, a series of transverse rods connected to each frame, a series of stops arranged on each of the rods, and a series of rails provided with hooks for engagement with said rods between the stops thereon, substantially as set forth.

413,606. LATHE DUST-TRAP. JOHN J. METFORD, Indianapolis, Ind. Filed May 12, 1887. Renewed Sept. 3, 1889. Serial No. 322,852. (No model.)





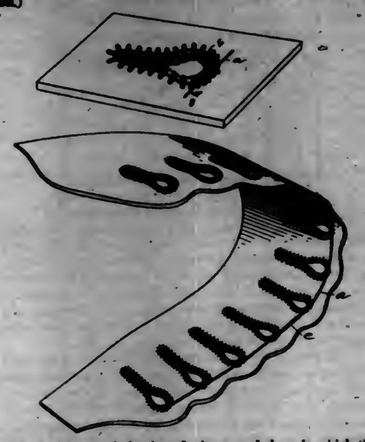
Claim.—1. The combination, with a lathe, of a telescoping dust-collecting pipe having one section secured to the carriage of the lathe and the other section secured to a fixed support, substantially as set forth.

2. The combination, with a lathe, of the pipe D, having the enlarged section d', the section d^3, telescoping therein, and the hood d^2, and the sliding frame C, secured to the carriage of the lathe and supporting the section d^3, substantially as described.

3. The combination, with a lathe, of the pipe D, having a telescoping joint and a hood d^2 arranged over the cutting-tools, the frame C, supporting one end of the pipe and secured to the lathe-carriage, and means for causing a section in said pipe, substantially as described.

4. The combination, with the movable carriage of a lathe, of a telescoping dust-conveying pipe connected to said carriage and controlled thereby, and means for causing a section in said pipe, substantially as set forth.

413,607. BUTTON-HOLE PIECE FOR BOOTS OR SHOES. ROBERT H. PERLEY, Lynn, Mass. Filed May 20, 1889. Serial No. 278,314. (No model.)



Claim.—1. A button-hole piece for boots and shoes in which the ends of the button-hole stitches are at the eye or draw end of the button-hole, substantially as described.

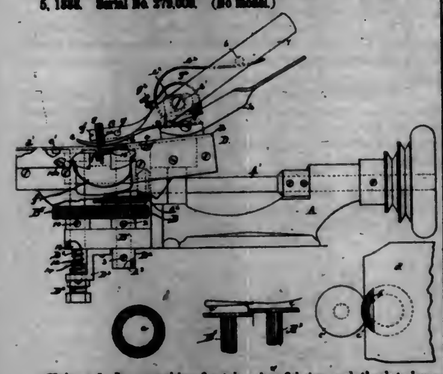
2. A button-hole piece for boots and shoes in which the ends of the button-hole stitches are at the eye or draw end of the button-hole and overlap, substantially as described.

3. A button-hole piece for boots and shoes in which the ends of the button-hole stitches are at the eye or draw end of the button-hole and are combined with a stay-cord the ends of which are also at the eye or draw end of the button-hole and are laid from the said end of one button-hole to that of another, substantially as described.

4. A button-hole piece for boots and shoes in which the ends of the button-hole stitches are at the eye or draw end of the button-hole and are combined with a stay-cord also overlapping at the eye or draw end of the button-hole, substantially as described.

5. A button-hole piece for boots and shoes in which the button-hole stitches are at the eye or draw end of the button-holes and are combined with a stay-cord the ends of which are also at the eye or draw end of the button-hole and are laid from said draw end of one to that of another and are tied down by a line of stitches, substantially as described.

418,608. MACHINE FOR TRIMMING FABRICS. WILLIAM F. BRAENDLER and CHARLES RUSSELL, New York, N. Y., assignors to the Manufacturer's Special Machine Company, Danbury, Conn. Filed July 5, 1888. Serial No. 279,008. (No model.)



Claim.—1. In a machine for trimming fabrics, a cloth-plate having a slot 4 extended through the same for a part of its width, combined with two rotating shear-cutters having overlapping edges, and bearings below the said cloth-plate for the shafts carrying the said cutters, substantially as described.

2. In a machine for trimming fabrics, two rotating cutters, one of which has a feeding-face, and means to rotate them, combined with a slotted cloth-plate to support the fabric above the said cutters, one portion of the cloth-plate being inclined with relation to the face or upper side of one of the cutters, whereby a portion of the face of one of the cutters is enabled to come against and feed the fabric, and with a presser to operate substantially as described.

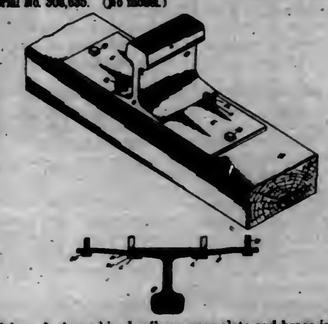
3. In a machine for trimming fabrics, two rotating cutters, one of which has a feeding-face, means to rotate them, and a spring to press the two cutters together, combined with a slotted cloth-plate to support the fabric above the said cutters, one portion of the cloth-plate being inclined with relation to the face or upper side of one of the cutters, whereby a portion of the face of one of the cutters is enabled to come against and feed the fabric, substantially as described.

4. In a machine for trimming fabrics, two rotating cutters, one of which has a feeding-face, means to rotate them, and the presser-foot e and roller g, combined with a cloth-plate to support the fabric above the said cutters, one portion of the slotted cloth-plate being inclined with relation to the face or upper side of one of the cutters, whereby a portion of the face of one of the cutters is enabled to come against and feed the fabric, substantially as described.

5. In a machine for trimming fabrics, two rotating cutters, one of which has a feeding-face, means to rotate them, and the presser-foot e and roller g, and guide 22, combined with a slotted cloth-plate to support the fabric above the said cutters, one portion of the cloth-plate being inclined with relation to the face or upper side of one of the cutters, whereby a portion of the face of one of the cutters is enabled to come against and feed the fabric, substantially as described.

6. In a machine for trimming fabrics, two rotating cutters, one of which has a feeding-face, means to rotate them, and the roller g, its arm 18, spring g^3, and adjusting-screw g^4, combined with a slotted cloth-plate to support the fabric above the said cutters, one portion of the cloth-plate being inclined with relation to the face or upper side of one of the cutters, whereby a portion of the face of one of the cutters is enabled to come against and feed the fabric, substantially as described.

413,609. RAILWAY WEAR-PLATE AND BRACE. LOUIS BLAKESTOCK, Jersey City, N. J., assignor of two-thirds to John A. Bensel, New York, N. Y., and Charles D. Haley, Newark, N. J. Filed Apr. 26, 1888. Serial No. 308,635. (No model.)



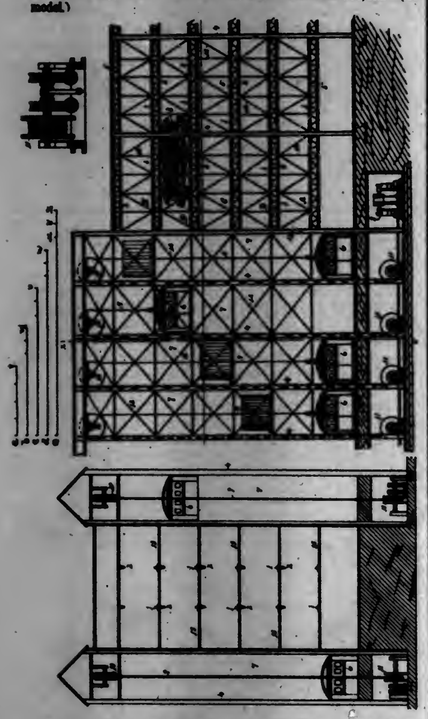
Claim.—1. A combined railway wear-plate and brace interposed between the rail and tie, and consisting of a plate provided upon its face with brace-shoulders or ribs receiving the rail between them and engaging the edges thereof for holding the rail against lateral movement, the plate formed with rail-spike openings offset from the line of contact of the rail-base with the shoulders, so that lateral contact between the rail and spikes is prevented, whereby cutting away of the spikes is avoided, substantially as hereinbefore set forth.

2. The combination, with a railway-rail and a tie, of a combined wear-plate and rail-brace consisting of a plate interposed between the rail and tie and formed with spike-openings, and provided upon its face with two extended parallel shoulders or ribs forming a seat for the rail-base and receiving the entire side-thrust of the rail, the rail-spikes passing through said openings into the tie and engaging with their head-flanges the rail-base, and fasteners for holding the plate to the tie, whereby the spikes are wholly relieved of the lateral hammering and rubbing of the rails and the rail is prevented from cutting into the tie, substantially as hereinbefore set forth.

3. The combination, with the rail 2 and the tie 15, of the plate 6, placed between the rail and tie and bolted to the latter, and provided with the two parallel shoulders or ribs 7 7, engaging the edges of the rail-base and receiving the entire side-thrust of the rail, the spike-openings 11 11, offset from the shoulders 7 7, and the rail-spikes 12 12, taking through openings 11 11 and engaging the rail-base with their heads, so as not to receive the side-thrust of the rail, but to

prevent the same from rising, substantially as and for the purpose set forth.

418,610. ELEVATED-RAILWAY SYSTEM. ELIAS M. BOYNTON, West Newbury, Mass. Filed Nov. 21, 1888. Serial No. 291,462. (No model.)



Claim.—1. In a railway system, a series of tracks at different levels, one above the other, said levels terminating at points successively nearer to the beginning, each level being adapted for the passage of through trains in both directions and provided beyond the end of the next shorter level with stations and passenger-platforms, in combination with series of elevators placed at suitable distances apart and leading to all the levels, and platforms at each level, affording convenient access to the cars.

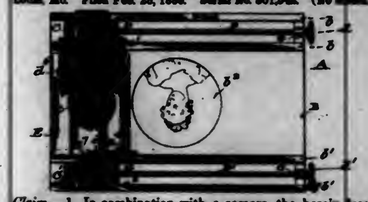
2. In a railway system, a double series of horizontal passenger conveyances and guides or tracks therefor arranged vertically, one above the other, each pair of tracks upon the same level being adapted for the passage of conveyances in both directions at the same time, and said tracks terminating at different points or stations, combined with a corresponding series of vertical guides or ways and passenger conveyances therefor, adapted to run from a common level each to one of said horizontal conveyances, and actuating mechanism for said vertical conveyances, substantially as set forth.

3. In a railway system, a double series of horizontal passenger conveyances and guides or tracks therefor arranged vertically, one above the other, each track consisting of a single bottom rail and a top support, each pair of tracks upon the same level being adapted for the passage of conveyances in both directions at the same time, and said tracks terminating at different points or stations, combined with a corresponding series of vertical guides or ways and passenger conveyances therefor, adapted to run from a common level each to one of said horizontal conveyances, and actuating mechanism for said vertical conveyances, substantially as set forth.

4. In a railway system, a double series of tracks arranged vertically, one above the other, and terminating at points successively nearer to the beginning, the lower track being the longer, and station-platforms for each track beyond the terminus of the next higher track, substantially as set forth.

5. In a railway system, a double series of tracks arranged vertically, one above the other, each track consisting of a single bottom rail and a top support terminating at points successively nearer to the beginning, the lower track being the longer, and station-platforms for each track beyond the terminus of the next higher track, substantially as set forth.

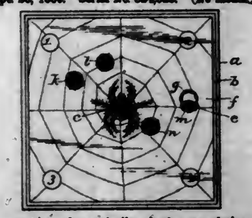
418,611. PHOTOGRAPHIC VIGNETTER. AARON W. CLARK, St. Louis, Mo. Filed Feb. 28, 1889. Serial No. 301,542. (No model.)



Claim.—1. In combination with a camera, the herein-described photographic vignetter, the same consisting of the two masks and their support, said support having an opening opposite the lens, said masks being independently adjustable vertically and laterally upon said support, and one of said masks consisting of a transparent plate having an opaque vignetter arranged centrally thereupon, and the other of said masks being opaque and having a serrated edge, substantially as and for the purpose set forth.

2. The combination of the two masks and their support, said support having an opening b^3, said masks being independently adjustable laterally upon said support, and one of said masks consisting of a transparent plate having an opaque vignetter, and the other of said masks being opaque and having a serrated edge, substantially as described.

418,612. TOY OR PUZZLE. CHARLES M. CRANDALL, Waverly, N.Y. Filed Sept. 20, 1889. Serial No. 324,523. (No model.)



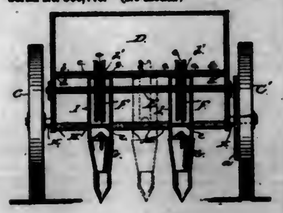
Claim.—1. A puzzle or similar device consisting of an inclosure containing two or more bodies of different specific gravity movable therein, one of which is arranged to come in contact with and shift the other and to deposit it at various points upon the surface it travels over, substantially as described.

2. In a puzzle or similar device, an inclosure containing two or more movable bodies, one of said bodies being less responsive to variations in the level of the inclosure than the other, whereby the more active body is made to shift the other from place to place, in the manner and for the purpose described.

3. In a puzzle or similar device, an inclosure having a body of quicksilver arranged to traverse its floor, in combination with pieces of felt placed loosely upon the floor and adapted to be moved by said quicksilver, for the purpose substantially as described.

4. An inclosure closed upon all sides and having a transparent cover, a floor containing a depression, a body of quicksilver located upon the floor and adapted to enter the depression, and one or more lighter bodies of non-metallic substance adapted to be shifted by the quicksilver, as set forth.

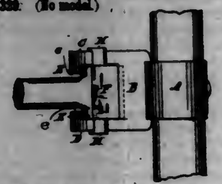
418,613. SEEDER AND PLANTER. JOHN S. DAVIS, Montgomery, Ala., assignor of one-half to Daniel S. Troy, same place. Filed May 6, 1889. Serial No. 309,776. (No model.)



Claim.—1. In seed-planters, a seed-box having its bottom formed of the removable plates *b* and the removable slotted plates *c*, a horizontal shaft, laterally-adjustable seed-disks thereon, and having their upper portions extending through the slotted plates, brushes operating against the peripheries of the disks, and the laterally-adjustable hoppers and drills, substantially as described.

2. An improved seeding-machine comprising the main axle having the fixed and loose bearing-wheels and carrying the gear-wheel *c*, the seed-box having its bottom formed of the adjustable and removable plates *b* and *c*, a laterally-extending shaft having seed-disks adjustable thereon, said disks having peripheral seed-receptacles, brushes operating against the peripheries of the disks, a gear on the shaft, and idle gearing between said gear and the gear *c*, laterally-adjustable hoppers and drills, with spacing-thimbles or sleeves between them, a roller at the rear of the machine, and a connection between the roller and drills, whereby the depth of the latter is regulated, substantially as described.

418,614. THILL-COUPLING. GEORGE W. DICKEY, Cincinnati, Ohio, assignor of one-half to John Galster, same place. Filed Mar. 7, 1889. Serial No. 302,339. (No model.)

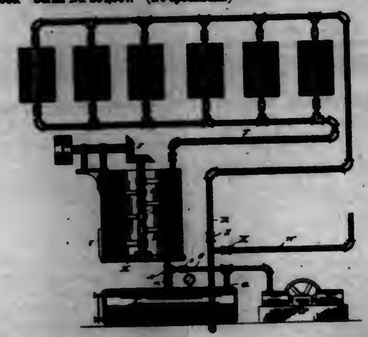


Claim.—In a thill-coupling, the combination, with the yoke B, attached to the clip A, provided with the inwardly-standing flanges E, and the vertical shoulders *e*, extending up from said flanges, having its inner surfaces between its joints recessed for the reception of the thill-head, and provided with the engaging-slots I, inclining slightly downward and forward and enlarged and rounded at their bottoms, of the thill-head F, cut away at G and provided with the flattened journals or bearings H to engage in the slots I, substantially as specified.

418,615. RATING. WILHELM DIETERLE, Feuerbach, near Stuttgart, Germany, assignor to I. Hauff, same place. Filed Nov. 14, 1888. Serial No. 290,785. (Specimens.)

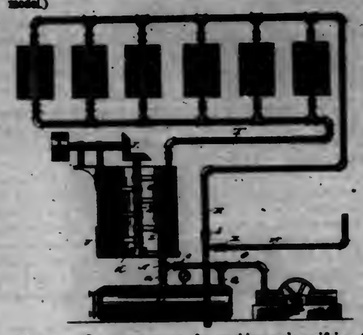
Claim.—The process herein described of neutralizing the lime contained in hides and swelling the same, which consists in treating the same with an aqueous solution of cresotinic acid, substantially as set forth.

418,616. PROCESS OF PURIFYING SALT RECOVERED FROM SPENT SOAP-LYES. ALBERT DOMMER and OTTO C. HAGEMANN, London, England, assignors to James S. Kirk & Co., Chicago, Ill. Filed Dec. 21, 1888. Serial No. 294,307. (No specimens.)



Claim.—The herein-described process of purifying salt recovered from spent soap-lye during concentration or the manufacture of crude glycerine therefrom, which consists in subjecting a convenient quantity of the salt to a series of washings with separate charges of a saturated aqueous solution of salt, said charges containing decreasing quantities of glycerine in solution, the first of said charges being drawn off with its dissolved glycerine and a fresh charge of a saturated solution of salt free of glycerine added to the series in lieu thereof for each quantity of salt treated, said fresh charge being used for final treatment, whereby each quantity of salt subjected to repeated washings and the separate charges of the solution are utilized repeatedly.

418,617. APPARATUS FOR TREATING SOAP-LYES. ALBERT DOMMER and OTTO C. HAGEMANN, London, England, assignors to James S. Kirk & Co., Chicago, Ill. Filed Dec. 21, 1888. Serial No. 294,308. (No model.)



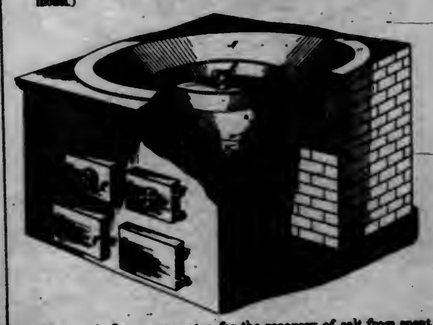
Claim.—1. In an apparatus for washing and purifying the salt recovered from spent soap-lye, the combination of a cylinder to contain said salt, a series of tanks to contain an aqueous solution of salt and communicating with said cylinder, an exhaust chamber or vessel connected to said cylinder, and a pump connected with said exhaust-chamber, substantially as and for the purpose described.

2. In an apparatus for washing and purifying the salt recovered from spent soap-lye, the combination of a cylinder to contain the salt under treatment, having mechanical mixers mounted therein, a series of tanks communicating by suitable pipes and valves with said cylinder, an exhaust-chamber connected with the salt-cylinder, and a pump connected with said chamber whereby liquids contained in the cylinder may be drawn off and the salt dried, substantially as described.

3. In an apparatus for washing and purifying the salt recovered from spent soap-lye, the combination of a cylinder to contain the salt undergoing treatment, said cylinder having a perforate bottom, a series of tanks communicating with the cylinder, an exhaust-chamber connected with the cylinder, and an air-pump connected with said exhaust-chamber, substantially as described, and for the purpose set forth.

4. In an apparatus for washing and purifying salt recovered from spent soap-lye, the combination of a cylinder to contain said salt, a series of tanks to contain an aqueous solution of salt and communicating with said cylinder, an exhaust chamber or vessel connected to said cylinder, a pump connected with said exhaust-chamber, and a pipe to conduct the liquor from said exhaust-chamber to a storage-tank or other suitable receptacle, substantially as described.

418,618. APPARATUS FOR TREATING SOAP-LYES. ALBERT DOMMER and OTTO C. HAGEMANN, London, England, assignors to James S. Kirk & Co., Chicago, Ill. Filed Dec. 21, 1888. Serial No. 294,309. (No model.)



Claim.—1. In an apparatus for the recovery of salt from spent lye, the combination of an open vessel to contain the lye and a heating means exterior to said vessel and adapted to heat the same and an inner and smaller deposit-vessel having an imperforate peripheral wall and bottom located within the first to receive and retain the salt or other solid deposit, substantially as described.

2. In an apparatus for the recovery of salt from spent lye, comprising in combination an outer vessel to contain the lye and means

for applying heat thereto and an inner vessel smaller than and supported within the first for the reception of the salt or other deposit, said outer vessel being provided with a pocket, substantially as and for the purpose set forth.

3. In an apparatus for the recovery of salt from spent soap-lye, the combination, with an outer vessel to contain the lye and means for heating the same, of an inner vessel wherein to collect the salt or other deposit, said inner vessel having a central pipe, substantially as described.

413,619. PROCESS OF RECOVERING GLYCERINE FROM SPENT SOAP-LYES. ALBERT DOBEREK and OTTO C. HAGENAHN, London, England, assignors to James S. Kirk & Co., Chicago, Ill. Filed Mar. 9, 1889. Serial No. 302,644. (No specimens.)

Claim.—1. In the process of treating spent soap-lye for the purpose of obtaining glycerine and other products therefrom, the improvement which consists in first treating the lye with lime or other oxides to precipitate insoluble soaps, removing the precipitate thus formed, next neutrafizing the lye with acid to precipitate albuminous bodies, then adding soluble metallic salts to decompose any remaining soapy matters, next adding metallic oxides to completely remove fatty bodies, then removing the precipitates, and finally concentrating the clear liquor, as set forth.

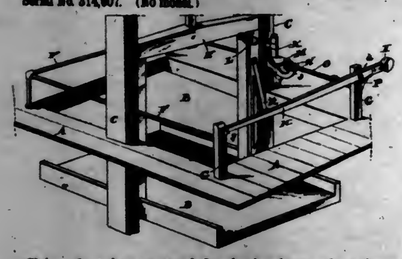
2. In the process of treating spent soap-lye for the purpose of obtaining glycerine and other products therefrom, the improvement which consists in first treating the lye with lime or other oxides to precipitate soaps, removing the precipitate thus formed, next neutralizing the lye with acid to precipitate albuminous bodies, then adding a mixture of metallic oxides and soluble metallic salts to completely remove soapy and fatty bodies, next removing the precipitates thus formed, and finally concentrating the clear liquor, as set forth.

3. In the process of treating spent soap lye for the purpose of obtaining glycerine and other products therefrom, the improvement which consists in first neutralizing the lye with acid to precipitate albuminous bodies, then adding soluble metallic salts to decompose the soapy matters, next adding metallic oxides to completely remove fatty bodies, then removing the precipitates, and finally concentrating the clear liquor, as set forth.

4. In the process of treating spent soap-lye for the purpose of obtaining glycerine and other products therefrom, the improvement which consists in first neutralizing the lye with acid to precipitate albuminous bodies, then adding a mixture of metallic oxides and soluble metallic salts to completely precipitate the soapy and fatty bodies, next removing the precipitate thus formed, and finally concentrating the clear liquor, as set forth

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413,620. ELEVATOR-HATCHWAY GATE. CHARLES S. ROOCK, Cincinnati, Ohio, assignor to Morse, Williams & Co. Filed June 17, 1889. Serial No. 314,607. (No model.)



Claim.—1. A bar or guard for the hatchway of an elevator, pivoted to a support to normally assume an upright position, in combination with an arm pivoted to said support at a distance from the pivot-point of the bar and normally pressing upon said bar to force it into and hold it into a lowered or closed position, and mechanism controlling said arm projecting into the path of the elevator and operated thereby to remove the pressure of said arm and allow the bar or guard to assume its normal upright position when the hatchway is closed by the elevator.

2. A bar or guard for the hatchway of an elevator, pivoted to a support to normally assume an upright position, in combination with an arm pivoted to said support at a distance from the pivot-point of the bar and normally pressing upon said bar to force it into and hold it in a lower or closed position, a spring to force said arm against the bar, and mechanism controlling said arm projecting into the path of the elevator and operated thereby to remove the pressure of said arm and allow the bar or guard to assume its normal upright position when the hatchway is closed by the elevator.

3. A bar or guard for the hatchway of an elevator-shaft, pivoted to a support and normally assuming a vertical position, in combination with a rod journaled in said support, having a locking-arm adapted to press upon said bar to close it and lock it in a closed position, mechanism to rotate said rod and its arm, projecting into the path of the elevator, and a cam carried by the elevator-cage to operate said projecting mechanism and unlock the bar.

4. A bar or guard for the hatchway of an elevator, pivoted to a support to normally assume an upright position, in combination with an arm pivoted to said support at a distance from the pivot-point of the bar and normally pressing upon said bar to force it into and hold it in a lowered or closed position, and mechanism controlling said arm projecting into the path of the elevator, the elevator-cage, and a cam projection carried thereby to operate said projecting mechanism to remove the pressure of said arm and allow the bar or guard to assume its normal upright position when the hatchway is closed by the elevator.

5. A bar or guard for the hatchway of an elevator-shaft, pivoted to a support to normally assume an upright position, in combination with a crank-arm journaled in said support and adapted to press upon said bar to force it into and hold it in a lowered or closed position, an extension positively connected with said crank-arm, a spring to normally force said crank-arm against the bar, and mechanism controlled by the elevator adapted to operate said extension of the crank-arm against the action of the spring to release the guard and allow it to rise or open.

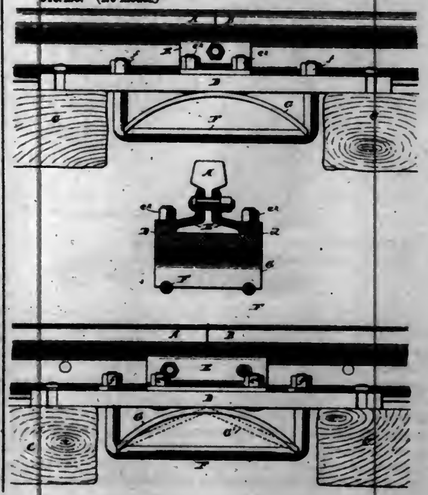
6. A bar or guard for the hatchway of an elevator-shaft, pivoted to a support and normally assuming a vertical position, in combination with a rod journaled in said support, having a locking-arm adapted to press upon said bar to close it and lock it in a closed position, mechanism to rotate said rod and its arm, projecting into the path of the elevator, a cam carried by the elevator-cage to operate said projecting mechanism and unlock the bar, and a spring carried by said rod to force its arm upon the bar and close and relock it after the elevator has passed the hatchway.

7. A bar or guard for the hatchway of an elevator-shaft, pivoted to a support to normally assume an upright position, in combination with a crank-arm journaled in said support and adapted to press upon said bar to force it into and hold it in a lowered or closed position, an extension connected with said crank-arm, a spring to normally force said crank against the bar, a pinion carried by said extension, a projection in the path of the elevator, a rack connected with said projection and gearing with the pinion, and a cam device carried by the elevator adapted to push said projection to operate the crank-arm and permit the bar or guard to rise and assume its normal or opened position.

413,621. HOOF-PACKING. NEWTON R. GLAISTER, Boston, Mass. Filed Aug. 29, 1889. Serial No. 322,356. (No specimens.)

Claim.—The herein-described composition of matter to be used as a packing or stuffing in, under, or about horses' feet, consisting of peat moss, vaseline, and carbolic acid, substantially in the proportions specified.

413,622. RAIL-JOINT. JAMES M. JOHNSON, Chicago, Ill., administrator of Richard Long, deceased. Filed May 11, 1889. Serial No. 310,453. (No model.)



Claim.—1. In a rail-joint support, a spring-truss arranged to support the ends of the rails, adjustable for regulating the tension of the truss, substantially as described.

2. In a rail-joint support, a spring-truss consisting of a spring member and a longitudinal tension member for said spring, substantially as described.

3. In a rail-joint support, a truss consisting of a spring member arranged to support the rails at their point of junction, and a supporting frame for the spring member affording abutments united by a longitudinal member for the ends of the said spring member, substantially as described.

4. A rail-joint support consisting of a spring member supporting the rails at their point of junction, and a frame or supporting member, said supporting member being adjustable for regulating the tension of the spring member, substantially as described.

5. In a rail-joint support, a truss consisting of an arched spring member and a supporting member, said supporting member being adjustable for regulating the tension of the arched member upon the rails, substantially as described.

6. In a rail-joint support, a truss consisting of an arched member arranged directly under the point of junction of the rails, and a frame or supporting member suspended below the rails, forming abutments for the ends of the arched member, substantially as described.

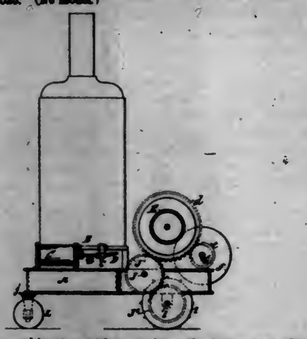
7. In a rail-joint support, a truss consisting of an arched plate of spring material, a yoke or U-bolt piece supporting said arched member, and adjusting-nuts for said yoke-piece, substantially as described.

8. In a rail-joint support, the combination, with the rails of a channeled base-piece, a truss consisting of a spring member bearing against the base-piece, and a yoke or frame supporting the spring member and connected to the base-piece, substantially as described.

9. In a rail-joint support, the combination, with the rails, of a channeled base-piece, angle-plates secured to said base-piece and to the rails, and a truss consisting of an arched member, the center of the arched member being connected to the base-plate adjacent to the junction of the rails, and the ends of the arched member being connected to be supported by the base-plate, substantially as described.

10. In a rail-joint support, the combination, with the rails of the channeled base-plate, the angle-plates having a central bolt passing through recesses in the adjacent webs of the rails and secured to the base-plate, and a truss for supporting the base-plate at or near the point of junction of the rails, substantially as described.

413,623. HOISTING-MACHINE. FRANKLIN DE F. LOOMIS, Brooklyn, N. Y., assignor to Thomas F. Krajewski and James L. Cochrane, same place, and Alfonso Pemart, Havana, Cuba. Filed Dec. 10, 1887. Serial No. 257,523. (No model.)

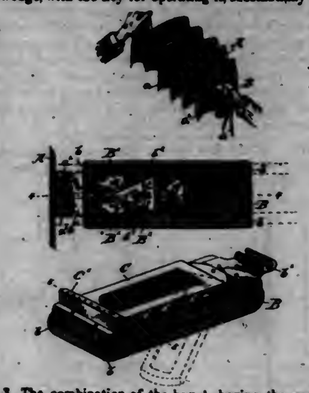


Claim.—The combination, with an engine and a frame upon which said engine is mounted, of an axle journaled in said frame, a driving-wheel rigidly mounted on said axle, a wheel loosely mounted on said axle, a crank-shaft having a pitman-connection with the engine, a gear-wheel on the crank-shaft, a gear-wheel on the axle, and an intermediate shaft having an endwise-movable gear-wheel thereon, substantially as specified.

413,624. MAIL-BAG LOCK. JOHN P. MANN, Indianapolis, Ind., assignor of two-thirds to Bruce Carr and Harvey M. La Follette, same place. Filed Mar. 14, 1889. Serial No. 303,223. (No model.)

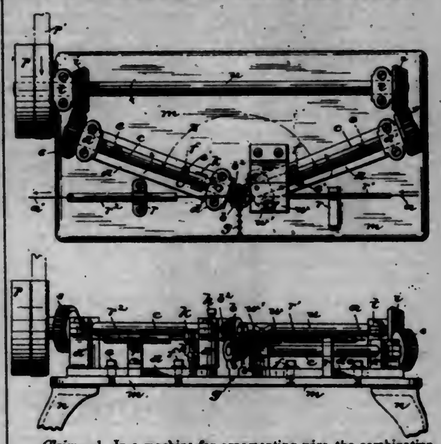
Claim.—1. In a bag-lock, the combination of the casing, two pivoted dogs therein with their faces arranged adjacent to the tie-cord, a sliding wedge arranged between said dogs, and a cam mounted to bear against a portion of said wedge for operating it, substantially as set forth.

2. In a bag-lock, the combination of the casing B, the dogs B', pivoted therein, the sliding wedge B^2, and the cam B^3, arranged behind said wedge, with the key for operating it, substantially as set forth.



3. The combination of the bag A, having the cord *a* interlaced through its top, the casing B, hinged to said bag, the free ends of said cord passing through apertures therein, the pivoted dogs B', with their faces adjacent to said cord, the sliding wedge B^2, arranged between said dogs, and the cam-lock B^3 behind said wedge, all substantially as set forth.

413,625. MACHINE FOR ORNAMENTING WIRE. SAMUEL MOORE, Providence, R. I., assignor of one-half to Charles D. Reynolds, same place. Filed Mar. 16, 1889. Serial No. 303,538. (No model.)



Claim.—1. In a machine for ornamenting wire, the combination of two engraved rolls mounted on shafts arranged in different planes and forming an obtuse angle with each other and mechanism for revolving the rolls, substantially as hereinbefore described, and for the purpose set forth.

2. In a machine for ornamenting wire, the combination of two simultaneously-driven engraved rolls *b*, mounted one above the other in different parallel planes, the axes of the rolls crossing each other and forming obtuse angles, and guides for maintaining the wire in position during its passage through said rolls, substantially as shown, and hereinbefore described.

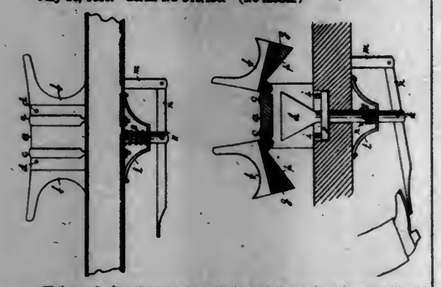
3. In a machine for ornamenting wire, the combination of two simultaneously-driven obliquely-arranged engraved rolls *b*, mounted one above the other in different but parallel planes and having the axes of the rolls cross each other, means for changing the angular relation of the rolls, and guides for maintaining the wire in position during its passage through the rolls, substantially as shown and described.

4. In a machine for ornamenting wire, the combination of two simultaneously-driven obliquely-arranged engraved rolls *b*, mounted one above the other in different planes and having crossed axes revolving in the same direction, and a guided wire simultaneously acted

upon by both rolls, which at the same time impress the pattern spirally into the wire's surface, thereby automatically revolving the wire and feeding it ahead, substantially as hereinbefore described.

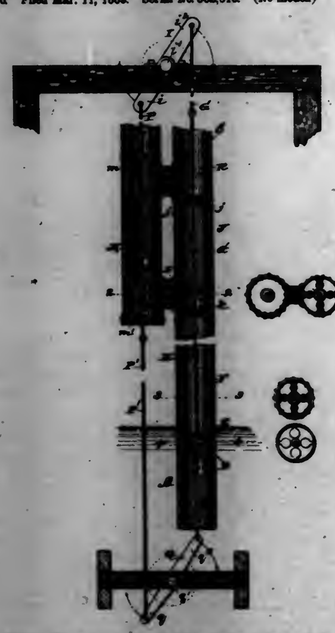
5. In a machine for ornamenting wire, the combination, with a laterally-adjustable frame and the lower engraved roll mounted and revolving therein, of an oppositely-located and laterally-adjustable frame, a vertically-adjustable driven shaft mounted therein, an engraved roll secured to the shaft and forming a crossed axis with the lower roll, and guides for maintaining the wire in position between the rolls, substantially as hereinbefore described.

413,626. CLEAT FOR BOATS. HIRAM B. NICKERSON, New Bedford, assignor to George W. Eldridge, Vineyard Haven, Mass. Filed July 20, 1889. Serial No. 318,156. (No model.)



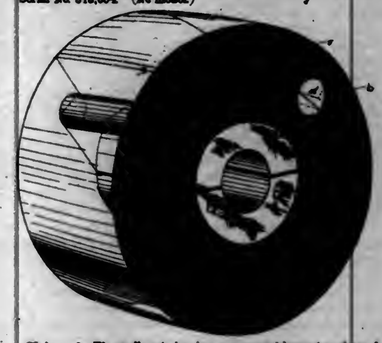
Claim.—A cleat for boats, consisting of the body *a*, having hinged to it the wings *b*, provided with inclined surfaces *p*, and having holes *g*, and the standard *k*, having pins *i* to engage with the holes *g*, and having the head *h*, with inclined sides adapted to bear against the inclined surfaces of the wings, and provided with a spring to retain the pins *i* in engagement with the holes *g*, and means whereby the pins *i* and head *h* are caused to release and throw out the wings in order to cast loose the line made fast to the cleat, substantially as shown and described.

413,627. WATER-HOIST. ALEXANDER HIEDRINGHAM, St. Louis, Mo. Filed Mar. 11, 1889. Serial No. 302,810. (No model.)



Claim.—The combination, with the lower cylinder A, the tube H, vertically above the said cylinder and separated therefrom by the valve E, the reservoir-partition J, vertically above said tube and separated therefrom by the valved partition K, the upper cylinder M, connected to the reservoir by the valved tube L above the partition K, and the tube S, vertically above the reservoir, separated therefrom by a partition, and communicating with the cylinder M through a valved tube, of the two pistons, the double-armed pivoted levers, and the connections from the arms of said levers to the pistons and piston-rods, substantially as specified.

413,628. PULLEY. GEORGE PHILLIPS, Mishawaka, Ind., assignor to the Dodge Manufacturing Company, same place. Filed June 10, 1889. Serial No. 313,654. (No model.)



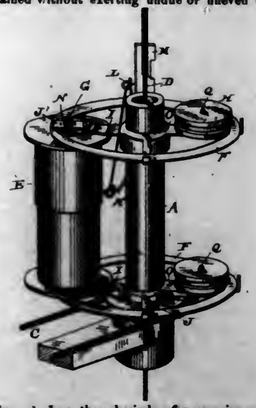
Claim.—1. The pulley A, having a removable wedge-shaped gap-section *c* on one side, provided with interlocking shoulders and keys *d*, whereby said section may be securely retained in place.

2. A pulley A, having cut from one side a double wedge-shaped section with interlocking shoulders, combined with wedge-shaped keys *d*, to retain said section in place and force the same toward the center to clamp the pulley on the shaft.

3. A pulley A, having a removable gap-section, whereof the narrowest part equals the diameter of the center or shaft-bore, said section and pulley being provided with interlocking portions adapted to receive wedge-keys to force said pulley and section together and clamp the same upon the shaft, substantially as set forth.

413,629. MACHINE FOR COVERING WIRE. WILLIAM A. PHILLIPS, Schenectady, N. Y., assignor to the Edison Machine Works, same place. Filed Apr. 10, 1889. Serial No. 306,695. (No model.)

Brief.—The object of the invention is to enable a high speed to be maintained without exerting undue or uneven tension upon the thread.



Claim.—1. In a thread-winder for covering wire, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, and a guide for said supply-bobbin in its revolution around said spindle additional to and independent of the revolving means, substantially as set forth.

2. In a thread-winder for covering wire, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, and a ring-guide for said supply-bobbin in its revolution around said spindle, substantially as set forth.

3. In a thread-winder for covering wire, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, and a guide for said supply-bobbin in its revolution around said spindle free to rotate, the axis of said bobbin being in contact with said guide, substantially as set forth.

4. In a thread-winder for covering wire, the combination of a central spindle, a carrier adapted to carry each end of a supply-bobbin, said carrier being rotated by said central spindle, and a guide-ring loosely supported on each of said carriers, the axis of said bobbin being in contact with the inner periphery of said guide-ring, substantially as set forth.

5. In a thread-winder for covering wire, the combination of a central spindle, arms carried by said spindle adapted to carry a supply-bobbin, a guide-ring loosely supported on each of said arms, the axis of the bobbin in contact with said arms and the inner periphery of said rings, and means on one of said arms for retaining said axis in contact with said ring, substantially as set forth.

6. In a thread-winder for covering wire, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, a guide-ring for said bobbin in its revolution around said spindle, free to rotate, and means for centering said guide-ring with relation to said spindle, substantially as set forth.

7. In a thread-winder for covering wire, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, an independent guide for said supply-bobbin in its revolution around said spindle, an arm, and a counter-weight carried by said arm, located diametrically opposite said bobbin and revolving with it around said central spindle, substantially as set forth.

8. In a thread-winder for covering wire, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, an independent guide for said supply-bobbin in its revolution around said spindle, and a counter-weight for each end of the supply-bobbin revolving with said bobbin, substantially as set forth.

9. In a thread-winding machine, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, a guide-ring for each end of the spindle of the supply-bobbin, a supporting-arm for each guide-ring rotating with said central spindle, a bearing for each end of the spindle of the supply-bobbin, being formed by the supporting-arm and the inner periphery of the guide-ring, substantially as set forth.

10. In a thread-winding machine, the combination of a central spindle, means adapted to revolve a supply-bobbin around said spindle, a guide-ring for the upper end of the spindle of said supply-bobbin, an arm for supporting said guide-ring, means for centering the same, and means for preventing the same from leaving its supporting-arm, substantially as set forth.

11. In a thread-winder for covering wire, the combination of a central spindle, a supply-bobbin and counter-weight, carriers for said bobbin and counter-weight arranged about said spindle diametrically opposite to each other, a guide-ring, free to rotate, for said supply-bobbin, said ring being centered by the axis of the supply-bobbin at one point and the counter-weight at a point diametrically opposite, substantially as set forth.

12. In a thread-winder for covering wire, the combination of a central spindle, a supply-bobbin, a counter-weight for each end of the supply-bobbin, carriers for said bobbin and counter-weights, each of said counterweights being situated diametrically opposite one end of the bobbin, and a guide-ring for each end of the supply-bobbin, free to rotate, said rings being centered by the axis of the supply-bobbin at one point and the counter-weight at a point diametrically opposite, substantially as set forth.

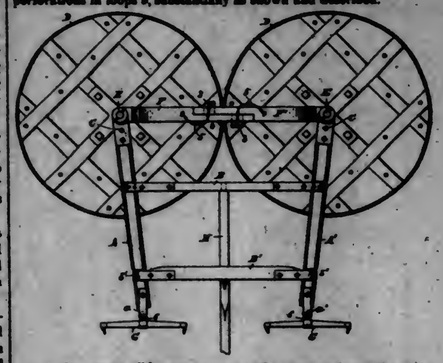
13. In a thread-winder for covering wire, the combination of a central spindle, a supply-bobbin and counter-weight arranged about said spindle diametrically opposite each other, carriers for said supply-bobbin and counter-weight, and a guide-ring for said supply-bobbin, free to be rotated by the axis of the bobbin, said counter-weight comprising a roller in contact with said ring and free to be rotated by it, substantially as set forth.

413,630. ROTARY HARROW. GEORGE P. PRESTON, Lawrenceburg, Ky., assignor of one-third to Thomas J. Pell, same place. Filed June 17, 1889. Serial No. 314,282. (No model.)

Claim.—1. In a convertible rotatory harrow, the combination of the cross-pieces having eyes or loops on their ends with rotatory draft-bars passing through said loops, and means for securing said bars against rotation, as set forth.

2. In a convertible rotary harrow, the combination of cross-bars B B', having loops *b b'* at their ends, rotatory draft-bars A A', passing through said loops and having bearings C rigidly attached to their rear ends, circular frames or wheels D, having axial pins E adapted to fit in said bearings C, and detachable cross bar F F' for retaining the parts in position, as set forth.

3. In a convertible harrow, the combination of the cross-bars B B', rotatory draft-bars A A', wheels D, and detachable cross-bar F F', with pins 2, adapted to engage with the perforations in lugs 3 or with perforations in loops *b*, substantially as shown and described.



4. In a convertible rotary harrow, the combination of the cross-bars B B', rotatory draft-bars A A', and wheels D, rotating on axles E, with the singletrees G, attached to head *a a'* by means of single pin 6, whereby the singletree is always horizontal, substantially as shown and described.

413,631. STRAM-BRAKE. TREAT T. PRESSER, Lake Side, Ill., assignor, by mesne assignments, to himself, Allen A. Griffith, Jr., and Frank Sayre Osborne. Filed Mar. 5, 1889. Serial No. 302,020. (No model.)



Claim.—1. In the piston-head of a fluid-motor, the combination of a valve placed in said piston-head in a hole therein of larger diameter than said valve, a stem on said valve moving freely in a hole extending from said first-named hole to the face of said piston-head, said valve-stem having therein ways extending from the face thereof to a groove in front of the valve thereon, and a spring holding said valve against the seat thereof, all substantially as described.

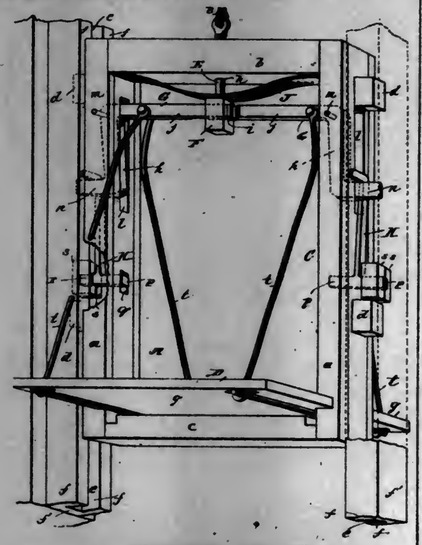
2. In the piston-head of a fluid-motor, the combination of valve F, stem G, having holes I therein and groove H thereon, valve-seat *d*, and spring J, whereby, when the pressure of said fluid against said valve and stem actuates said spring, such fluid may pass through said piston-head, all substantially as described.

413,632. SAFETY DEVICE FOR ELEVATORS. BENAIAH REID, Westfield, Mass., assignor of one-third to James Noble, Jr., same place. Filed July 1, 1889. Serial No. 316,147. (No model.)

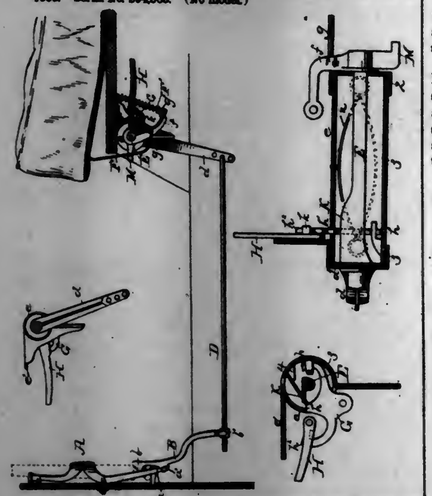
Claim.—1. The combination, with the vertical ways of the elevator-hoistway and separable friction engaging blocks normally movable freely therein, of the elevator consisting of two parts, one a frame and the other the elevator car or platform, adapted for vertical movement on said frame, angular levers G G, pivotally mounted on said frame, and by their inner members each connected to and upwardly held by the hoisting-cable and having their other members of wedge form, levers H, having a supporting engagement with said frame and adapted to be engaged by the wedge-formed members of said angular levers, and provided with the angular members *r* of cam form, disposed between said separable friction engaging blocks, suspension means for supporting the car or platform from said levers G, and the spring applied to react on said levers G, substantially as described.

2. The combination, with the vertical ways of the elevator-hoistway and the separable friction engaging blocks normally freely movable therein, of the elevator consisting of two parts, one the frame C, comprising the vertical uprights *a a*, having guiding-tongues *d d* and slots *q q* therein, and the cross-beam *b*, and the other part comprising the floor or platform vertically movable in said frame C, the spindle E, vertically movable through said cross-beam *b*, to the upper end of which the hoisting-cable is attached, the levers G G, pivotally supported on said frame C, and by their upper arms each connected to said spindle and having their lower arms *n* of wedge form, suspension means between said levers and said platform, the levers H, adapted to be engaged by said wedge-shaped arms *n*, having transverse stem-

bers *p p* engaging said slots, and also having the transverse members *r r* of cam form disposed between said friction engaging blocks, and the spring J, substantially as described.



413,683. WHIP-SOCKET. GEORGE H. SPAULDING, Lake View, assignor of one-half to William J. Lukens, Cook County, Ill. Filed Dec. 26, 1888. Serial No. 294,583. (No model.)



Claim.—1. The combination, with a whip-socket having its lower end above the platform, upon which the whip rests open and having the legs *a a* extending parallel downward therefrom and connected at their lower ends by a transverse bar, of the lever B, having barbs projecting laterally and inward from either side of its upper end and fulcrumed on said transverse bar, so that when properly oscillated its upper end passes into said open lower end of the whip-socket and bites or embraces the whip, and the rod D, pivotally connected to the lower extremity of said lever and extending horizontally backward a suitable distance, as and for the purpose set forth.

2. A whip-socket constructed as described, in combination with lever B, fulcrumed in the lower end of said socket and oscillating through the lower open end of said socket, so as to lock the whip therein, a rod D, arms *d*, spindle E, case *c*, in which said spindle is journaled, arm *f*, having a stud *g* projecting therefrom in a direction parallel with said spindle, and spring F, which is secured transversely to the upper surface of a vehicle-seat, arising therefrom as it approaches the forward edge thereof, then pursuing a downward course in front of said seat, and having its lower end hooked and pressed upward against said stud *g*.

3. A whip-socket constructed as described, in combination with lever B, fulcrumed so that its upper end oscillates through lower end of said socket and locks the whip therein, rod D, spindle E, arm *d*, projecting from one end of spindle and to the end of which the rear end of said rod is pivotally connected, case *c*, in which said spindle is journaled, L-arm *f*, spring *g'*, stud *g*, projecting from said arm *f*, and spring F, the hooked lower end of which presses upward against said stud *g*, as and for the purpose set forth.

4. A whip-socket constructed as described, in combination with lever B, the upper end of which, when properly oscillated, locks the whip in the socket, rod D, arm *d*, spindle E, having a shelf projecting laterally therefrom, case *c*, in which said spindle is journaled, and tumbler G, substantially as and for the purpose set forth.

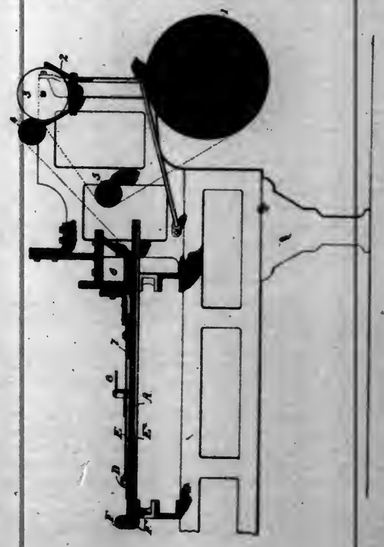
5. A whip-socket constructed as described, in combination with lever B, the upper end of which, when properly oscillated, locks the whip in said socket, rod D, arm *d*, spindle E, having a shelf projecting laterally therefrom, case *c*, spring within said case in which said spindle is journaled, the laterally-oscillating tumbler G, having spurs *h'* and h^2, and lever H, as and for the purpose described.

6. A whip-socket constructed as described, in combination with lever B, the upper end of which, when properly oscillated, locks the whip in the socket, rod D, arm *d*, spindle E, having a shelf projecting laterally therefrom, case *c*, in which said spindle is journaled, having a front semicircular plate of suitable width, which plate has an Γ projecting therefrom and a spring for keeping it in position, transversely-oscillating tumbler G, having spurs *h*, *h'*, and h^2, and lever H, having lug *k* projecting therefrom, substantially as and for the purpose set forth.

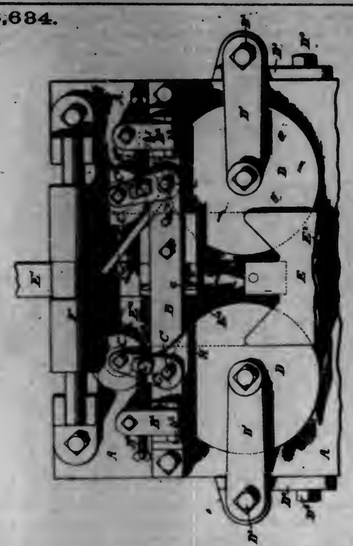
413,684. PAPER-BAG MACHINERY. CHARLES R. STILWELL, Philadelphia, Pa., assignor to the Union Paper Bag Machine Company, same place. Filed July 5, 1889. Serial No. 316,543. (No model.)

Claim.—1. In a paper-bag machine, the double-flanged aligning-wheels C, in combination with pivoted supports, adjusting-screws B^4, and pivoted screw-blocks B^2, substantially as and for the purpose specified.

2. In a paper-bag machine, the combination, with former-plates E E^2, of aligning-wheels D, arranged to engage the inwardly-tucked sides of a tube, double-flanged aligning-wheels C, arranged to rest against the upper edges of the tube with their flanges embracing the same, a pivoted support for the double-flanged aligning-wheels, an adjusting-screw B^4, and a pivoted support B^2 for said screw, substantially as and for the purpose specified.



413,684.



3. In a paper-bag machine, the combination, with former-plates E E^2, of aligning-wheels D, arranged to engage the inwardly-tucked sides of a tube, double-flanged aligning-wheels C, arranged to rest against the upper edges of the tube with their flanges embracing the same, a pivoted support for the double-flanged aligning-wheels, an adjusting-screw B^4, a pivoted support B^2 for said screw, a plate *c'*, having a ridge *c* to keep the pasted edge of the paper out of contact with the lower ply while the tube is being aligned by the wheels D C, and presser-rolls F F', situated in advance of the aligning-wheels, substantially as and for the purpose specified.

4. In a paper-bag machine, the combination, with former-plates E E^2, of aligning-wheels D, arranged to engage the inwardly-tucked sides of a tube, double-flanged aligning-wheels C, arranged to rest against the upper edges of the tube with their flanges embracing the same, a pivoted support for the double-flanged aligning-wheels, an adjusting-screw B^4, a pivoted support B^2 for said screw, a plate *c'*, having a ridge *c* to keep the pasted edge of the paper out of contact with the lower ply while the tube is being aligned by the wheels D C, a finger H, arranged to hold the upper lip of the tube in approximately correct position while it is passing over ridge *c*, and presser-rolls F F', situated in advance of the aligning-wheels, substantially as and for the purpose specified.

5. In a paper-bag machine, aligning-rolls D, adapted to pass between the folded sides of the tube, in combination with supporting-arms D' and arms D^3, screws D^4, securing arms D' and D^3 together, and pivots D^4, securing arms D^3 to the frame, substantially as and for the purpose specified.

413,685. CARRIER. JOHN I. TAPLIN, Circleville, assignor to Joseph A. Jeffrey, Columbus, Ohio. Filed Oct. 20, 1888. Serial No. 288,689. (No model.)

Claim.—1. In a carrier, the combination of two parallel lines of chain, carrier-bars between the chains, articulating and extensible couplers connecting the carrier-bars and the chain, and carriers mounted on the bars, substantially as set forth.

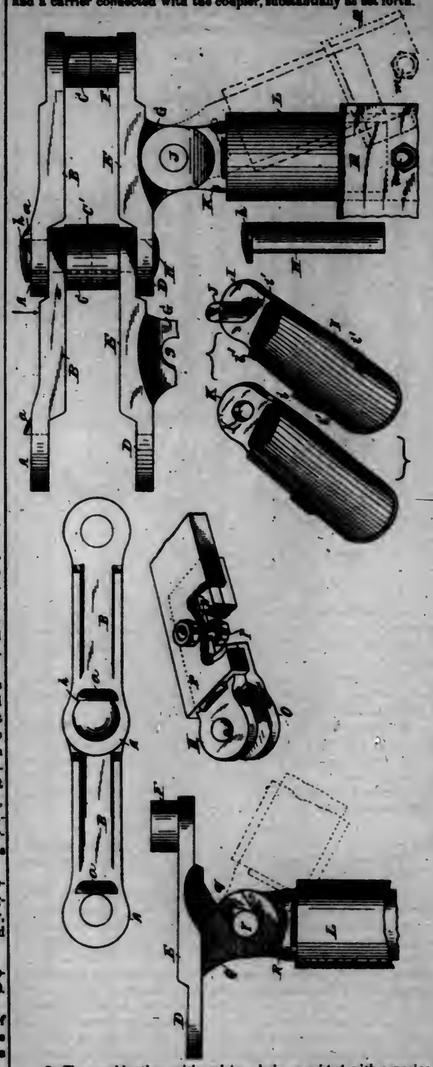
2. In a carrier, the combination of two parallel lines of chain, carrier-bars, and articulating extensible and rotatory couplers connecting the carrier-bars with the chain, substantially as set forth.

3. In a carrier, the combination of two parallel lines of chain, carrier-bars, and extensible couplers pivoted to the chains, substantially as set forth.

4. In a carrier, the combination of two parallel lines of chain, carrier-bars between the chain, and couplers pivoted at their ends to the chain and loosely connected at their opposite ends to the carrier, substantially as set forth.

5. The combination, with a drive-chain provided with a projection adapted to support a carrier, of a coupler pivoted to the projection and a carrier mounted upon and loosely connected with the coupler, substantially as set forth.

6. The combination, with a drive-chain provided with a projection adapted to support a carrier, of a two-part coupler overlapping opposite sides of the projection and connected therewith by a pivot, and a carrier connected with the coupler, substantially as set forth.



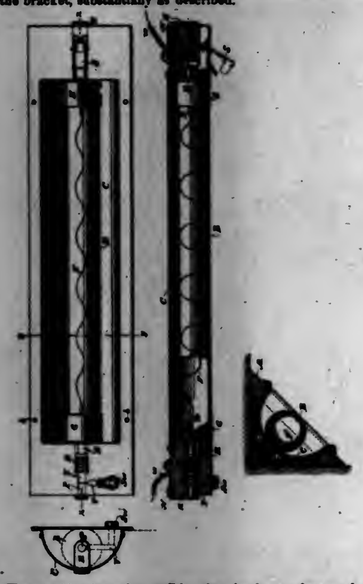
7. The combination, with a drive-chain provided with a projection adapted to support a carrier, of a coupler pivoted to the projection and a carrier provided with an opening to receive and surround the coupler, substantially as set forth.

8. The combination, with a drive-chain provided with a projection adapted to support a carrier, of a two-part coupler connected with the projection and a tubular carrier-bar mounted upon the two-part coupler, substantially as set forth.

413,686. ELECTRIC LAMP. JEAN T. VAN GEMERT, New York, N. Y., assignor to the Van Gestel Electric Street Car Company, same place. Filed Aug. 17, 1888. Serial No. 283,002. (No model.)

Claim.—1. A wall-bracket for an incandescent lamp, consisting of an oblong sustaining-frame having a depression or groove, in combination with a tubular incandescent lamp held in place in said groove, substantially as described.

2. A wall-bracket for an incandescent lamp, consisting of an oblong support or frame having spring-contacts for making electrical contact with the poles of the lamp, the whole being located below the face of the bracket, substantially as described.



3. The combination of a wall-bracket having a depressed or grooved space for holding an incandescent lamp with spring-seated contacts and a catch for holding the lamp in place, substantially as described.

4. In an incandescent-lamp fixture, the combination of a tubular lamp located in an oblong depression with spring-seated contacts and a retaining-catch, substantially as described.

5. The combination of a tubular lamp with a grooved bracket, composing a reflector and electrical connections, as described.

6. The combination of the following elements: the grooved reflecting-brackets C, the tubular lamp B, having trunnions E E, the spring-seats H H, pin T, switch Sw, and retaining-catch S, substantially as described.

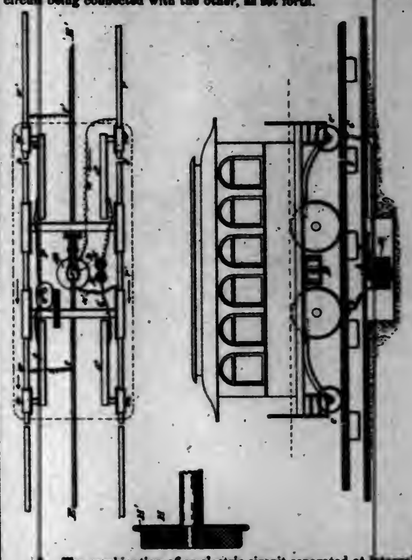
418,687. ELECTRIC-RAILWAY SYSTEM. MALONE WHEELER, Washington, D. C., assignor of one-half to Samuel R. Wheatley, same place. Filed July 22, 1889. Serial No. 318,261. (No model.)

Claim.—1. The combination of an electric circuit separated at intervals, magnets placed at the points of separation, the armatures of the magnets normally closing the circuit, a car provided with a source of electricity and a motor, and two lines of conductors consisting of sections insulated from one another, the magnets and the source of electricity on the car being connected with one line, the motor and the main circuit being connected with the other, as set forth.

2. The combination of an electric circuit separated at intervals, track-rails insulated from one another, magnets placed at the points of separation of the circuit and connected with one line of rails, the armatures of the magnets normally closing the circuit, a car carrying a source of electricity connected with the line of rails to which the magnets are connected and a motor connected with the other line of rails, the main circuit being connected with the latter line of rails on each side of each point of separation, as set forth.

3. The combination of a closed conduit with an electric circuit placed therein and separated at intervals, magnets placed at the points of separation, the armatures of the magnets normally closing the circuit, a car provided with a source of electricity and a motor, and two lines of conductors consisting of sections insulated from one another, the magnets and the source of electricity on the car being connected with one line, the motor and the main circuit being connected with the other, as set forth.

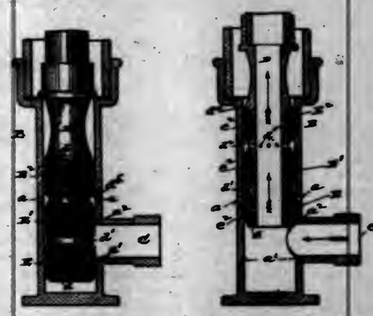
4. The combination of a closed conduit with an electric circuit consisting of an insulated main conductor separated at intervals, magnets placed at the points of separation, the armatures of the magnets normally closing the circuit, a car provided with a source of electricity and a motor, and two lines of conductors consisting of sections insulated from one another, the magnets and the source of electricity on the car being connected with one line, the motor and the main circuit being connected with the other, as set forth.



5. The combination of an electric circuit separated at intervals, magnets placed at the points of separation, the armatures of the magnets normally closing the circuit, a car provided with a source of electricity and a motor, and two lines of conductors consisting of sections insulated from one another, the magnets being connected with the sections of one line of conductors on opposite sides of the points of insulation, and the source of electricity on the car connected with the same line, the motor connected with the other line and the main circuit connected on each side of each point of separation with the sections of the latter line on opposite sides of the points of insulation, as set forth.

413,688. HYDRANT-VALVE. PETER WEITZ, St. Louis, Mo. Filed May 20, 1889. Serial No. 311,490. (No model.)

Brief.—The annular packing which admits water behind it has an internal annular groove, whereby it is rendered weaker upon a circumferential line.

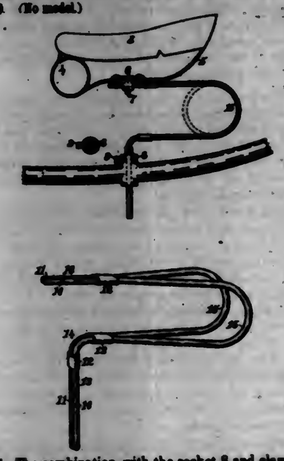


Claim.—1. The combination of the valve-chamber having the inlet C and the waste-openings *a*, the shouldered tubular valve-stem, and the flexible grooved bands E E' E², substantially as described.

2. The combination of the valve-chamber having the inlet C, the shouldered tubular valve-stem, and the grooved flexible bands, substantially as described.

3. The combination, in a valve, of the valve-chamber, the valve-stem, and the flexible bands E E', said stem being shouldered, and said bands fitting loosely between the stem and chamber-shell and being grooved, substantially as described.

418,639. VELOCIPEDE. JOHN S. BENT, Swanzey, Mass., assignor of one-half to William P. Mason, same place. Filed Aug. 6, 1889. Serial No. 319,759. (No model.)



Claim.—1. The combination, with the socket S and clamp-screw 9, and the clamp-piece 6, having the clamp-screw 7, of the rods 10 and 11, bent at or nearly at right angle at 14, extending rearward to form the spring-loop 15, ending in the horizontal ends 16, adapted for entering the clamp-piece 6, as described.

2. The combination, with the socket S, of the adjustable saddle-support consisting of the rods 10 and 11, united by the bands 12, and bent so as to form the rearwardly-extending bifurcated spring-loop 15, the vertical end 13 and the horizontal end 16, constructed to be adjustably secured and form a yielding spring-support for the saddle of a velocipede, as described.

REISSUES.

11,086. PROCESS OF AND APPARATUS FOR THE MANUFACTURE OF GAS. DUDLEY LOOMIS, Hartford, Conn. Filed Sept. 10, 1888. Serial No. 323,562. Original No. 404,207, dated May 28, 1889.

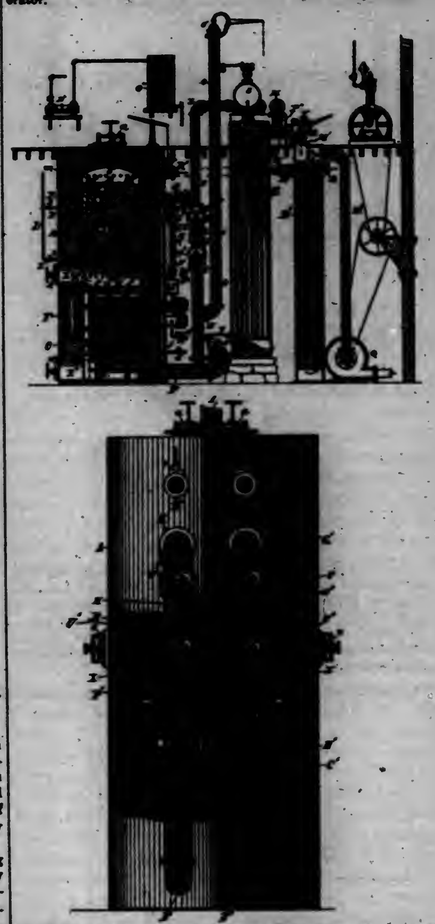
Claim.—1. The process of manufacturing gas which consists in heating a body of fuel to incandescence by drafts of air drawn downward into the fuel and by drawing off the gaseous products by an exhauster, whereby the fuel may be better fed, inspected, and arranged in the generator during the operation of heating up, then shutting off the air-draft and decomposing steam in contact with the fuel, thereby producing water-gas.

2. The process of manufacturing gas which consists in heating a body of fuel to incandescence by downward drafts of air, and by means of the resulting gaseous products heating a superheating-chamber and drawing off the products by an exhauster, whereby the furnace may be charged and cleaned during the operation of the exhauster, then shutting off the air-drafts and superheating steam by passage through the superheating-chamber and decomposing it by passage through the incandescent fuel, thereby producing water-gas.

3. The process of producing fixed combustible gas which consists in forming a bed of incandescent fuel in a generating-chamber, supplying fresh fuel at suitable intervals to the top of said bed of fuel, admitting atmospheric air to the generating-chamber above the fuel and drawing or exhausting it downward into said fuel, drawing or exhausting the oily and tarry vapors and products of combustion down into and through the incandescent fuel, and drawing or exhausting the resulting fixed gaseous products out of the generating-chamber at or near its bottom, as described.

4. In combination with a gas-generating cupola or furnace, an air-supply pipe or opening connecting with the top above the fuel, means for controlling the supply of air through such pipe or opening, and an outlet for gaseous products leading from the bottom, and an exhauster connecting with such outlet-pipe for drawing off gaseous products from the bottom of the generator, as described.

5. In combination with the gas-generating furnace, a tubular air-heater and gas-cooler having an air-inlet and pipe connecting it with the top of the generator, an exhaust-pipe for gaseous products leading from the bottom of the generator and connecting with the tubes of the heater, and a connected exhauster for drawing off the gaseous products through the tubes and drawing air through the chamber around the tubes and down into the fuel, whereby the gas is cooled by the circulating air and the latter is heated as it flows to the generator.



6. In a cupola gas-generating furnace, the fuel-chamber arranged above and the superheating and fixing chamber below, in combination with the valved take-off pipe F, leading from the superheating-chamber, outlet-pipe G, leading from the fuel-chamber, valved pipe H, connecting pipe G with pipe F, and escape-pipe O, having a closing cap or valve leading from pipe H, for the purpose described.

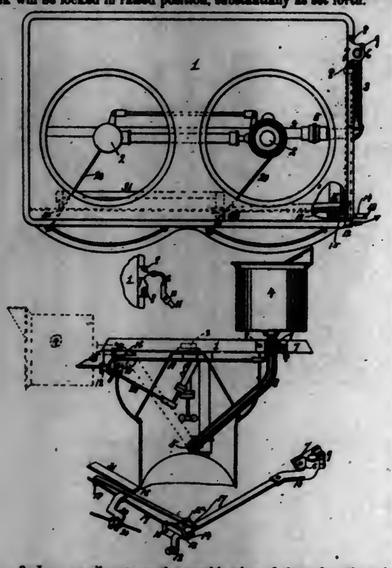
7. In a cupola gas-generating furnace, the two fuel-chambers and the two superheating and fixing chambers, in combination with valved pipes F F', pipes G G', connecting-pipes H H', having valves *h h'*, cross-pipe *g*, connecting the pipes H H' between the valves, and pipe J, leading from pipe *g* to the seal-box, as and for the purpose described.

11,087. GASOLINE-STOVE ATTACHMENT. CHARLES A. STOCKSTROM, St. Louis, Mo., assignor of one-half to Louis Stockstrom, same place. Filed Aug. 10, 1889. Serial No. 320,422. Original No. 360,634, dated Oct. 2, 1883.

Claim.—1. In a vapor-stove, a lay-down tank, in combination with stationary burner having a valve and valve-stem and a locking device mechanically connected with said stem and adjustable in the path of the tank-pipe to lock the tank in raised position, substantially as set forth.

2. In a vapor-stove, a supply-pipe for the burner and a lay-down

tank and pipe pivoted on the supply-pipe, in combination with a burner, a valve and valve-stem therefor, and a locking device connected with the said valve-stem and constructed to be adjusted in the path of the tank-pipe, whereby when the burner-valve is open the tank will be locked in raised position, substantially as set forth.



3. In a gasoline-stove, the combination of the valve, the valve-lever, oil-tank, swinging supply-pipe to which the tank is connected, the clamp having hinged part for holding the supply-pipe in an upright or using position, and connection between said hinged part of the clamp and the valve-lever, whereby the valve is turned and closed when the clamp is opened to lower the tank, substantially as and for the purpose set forth.

4. In a gasoline-stove, the combination of the valve, the valve-lever, oil-tank, swinging supply-pipe to which the tank is connected, the clamp for holding the supply-pipe in its upright or normal position, having lever 11, and mechanism connecting said levers, whereby the valve is turned and closed and the clamp opened by the outward movement of the clamp-lever to release the supply-pipe, substantially as and for the purpose set forth.

5. In a gasoline-stove, the combination of a valve, valve-lever, oil-tank, swinging supply-pipe to which the oil-tank is connected, the clamp for holding the supply-pipe in an upright position, lever 11, secured to said clamp, and means for operating the valve-lever connected to the clamp-lever, consisting of a bar 16, provided with the angled end 18, and the sliding bar 31, having arm 30, substantially as and for the purpose set forth.

6. In a gasoline-stove, the combination of the valve, valve-lever, swinging supply-pipe, oil-tank connected to the pipe, the clamp having fixed part 7 and moving part 6 for holding the pipe in its upright position, lever 11, secured to the moving part of the clamp, and means forming a connection between the clamp-lever and the valve-lever, substantially as and for the purpose set forth.

7. In a gasoline-stove attachment, in combination with the valve, valve-lever, swinging supply-pipe, tank secured to the pipe, means for holding the pipe in an upright position, consisting of a clamp comprising a fixed part 7, secured to the frame of the stove, and a moving part 6, pivoted to the fixed part, a lever connected to the moving part of the clamp, and a bar 16, connected to the clamp-lever having an angled end 18, and a bar 31, having an arm 30, substantially as and for the purpose set forth.

8. The combination, with a gasoline-stove having a pivoted supply-pipe provided with a tank, of the clamp secured to the stove, having a fixed part 7 and a hinged part 6, provided with an arm 10, and lever 11, substantially as described.

9. The combination, with a gasoline-stove having a pivoted supply-pipe provided with a tank, of the bracket 15, secured to the stove, formed with an arm 13, for supporting the supply-pipe when in lowered position, and a clamp having fixed part 7, moving part 6, for holding the pipe in normal position, and a lever 11, substantially as described.

10. The combination, with a gasoline-stove having a pivoted supply-pipe provided with a tank, a valve having a lever by which it is turned, a sliding bar 31, having an arm 30 engaging the valve-lever, and a rod 19, on which the bar slides, of the clamp having a lever, and a bar 16, connected with the clamp-lever, having an angled end 18, adapted to slide on the bar for engaging the arm of the bar when the clamp-lever is moved outwardly, substantially as described.

NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

WHERRY *v.* HECK.

Decided October 14, 1889.

1. INTERFERENCE BETWEEN TWO APPLICATIONS—BURDEN OF PROOF—RULE 116.

Where one party to an interference filed his application in March, 1887, and the other in February, 1887, and the former asserted that he communicated the invention to the latter, and that he (the latter) simply embodied as a constructer and mechanic the ideas conceived by the former and described by him to the latter, and that even if the latter were an original inventor he (the former) was the first to conceive of the subject-matter in interference, and was using due diligence in reducing the invention to practice, while the latter was making the complete machine, it was *Held* that the burden of proof was upon the former to establish one of those propositions under Rule 116, and that the burden is discharged by establishing a fair preponderance of legal evidence in behalf of him upon whom the burden rests.

2. SAME—WHAT PROOF SUFFICIENT TO PROVE ORIGINALITY OF INVENTION.

Where the senior party to an interference directly and unqualifiedly contradicts the claim of the junior party that he communicated the invention to the senior party and that he employed the senior party to make a model to embody the ideas which he (the junior) communicated, the issue must be found against the junior party in spite of his own testimony to the opposite effect, unless there is other testimony in the case corroborative of his contention and sufficient to turn the scale.

3. SAME—EMPLOYER AND EMPLOYÉ.

The relation of employer and employé cannot be established where it appears that one party received no pay whatever for his services, and that it was not pretended there was any promise of payment on the part of the other or expectation of payment on the part of the former, although it appears that there were frequent interchanges of courtesies between the parties and "in this interchange of courtesies that honors were easy."

4. SAME—WHAT IS SUFFICIENT PROOF OF CONCEPTION OF INVENTION BY ORAL DISCLOSURE.

The descriptive language used should be such as to disclose the invention as a drawing would disclose it. The description, on its face, as detailed by the witness, must show not only that the applicant had a conception of the desirability of doing the thing, but also a conception of a way of doing it, and a way of doing it so definitely thought out that the listener, if skilled in the art, could produce the invention from the description, at least in a rude form of embodiment.

5. SAME—PROPERTY IN PATENTS.

Property in patents ought not to be created as against a rival applicant first to reduce to practice and first in the Office upon mere verbal testimony indefinite in its character unaided by the production of memoranda, drawings, or models under circumstances which in themselves tend to indicate its intrinsic improbability.

APPEAL from Examiners-in-Chief.

FARE-BOXES.

Application of John R. Wherry filed March 2, 1887, No. 229,407. Application of Louis F. Heck filed February 5, 1887, No. 226,626.

Messrs. Knight Brothers for Wherry.
Mr. Henry A. Seymour for Heck.

MITCHELL, *Commissioner:*

The issue in controversy is defined as follows:

The combination, with a case having a fare-inlet, of a removable fare-receptacle, and locking mechanism adapted to close both the fare-inlet and the removable fare-receptacle by the removal of the latter from the case.

It is alleged in the preliminary statement of Heck that he made drawings of the invention in interference and explained them to others about October 11, 1886; that he began a model showing the invention on or about October 16, 1886, and that he embodied it in a full-sized machine, which was completed on or about January 22, 1887. The proofs offered on the part of Heck in support of the allegations of his preliminary statement establish the fact that as early as October 11, 1886, a drawing like the drawing known in the case as "Exhibit A" was produced by Heck and was at that time seen by his wife and a Miss Frances Schales; that this drawing, or one similar to it, was exhibited in September or October to a Mr. Schmuck; that for some time Heck worked upon a rough model intended to illustrate the features shown in "Exhibit A," but that he discarded some of the special features shown in that exhibit and produced a model showing the device constructed as described in his application, and showed it in an incomplete condition to Mr. Schmuck in December, 1886; that he completed this model on the 22d day of January, 1887, and that the device embodying the ideas described in the patent was begun on or about October 16, 1886, and finished in January, 1887, as already stated, and constituted in all respects a complete working machine.

Wherry's case, as against Heck, depends upon the sufficiency of his proof in support of one or both of two propositions: *First*, that he communicated the invention to Heck, who simply embodied as a constructor and mechanic the ideas conceived by Wherry and described by him to Heck, and, *second*, that even if Heck were an original inventor Wherry was the first to conceive of the subject-matter in interference and was using due diligence in reducing his conception to practice while Heck was making the complete machine.

The burden of proof is upon Wherry to establish one of these propositions. Rule 116 provides that the parties shall be presumed to have made the invention in the chronological order in which they filed their completed applications, and that the burden of proof will rest upon the party who shall seek to establish a different state of facts. While this is the case, however, the rule which governs the amount or weight

of evidence required to discharge the burden is very different from that which is required in order to overcome the presumption arising out of the actual granting of a previous patent. In the latter case, as has been repeatedly held, the proof should be sufficient to warrant setting aside a patent, if the Office had appropriate jurisdiction for that purpose, while in a case like the one under consideration the burden is discharged by establishing a fair preponderance of legal evidence in behalf of him upon whom the burden rests.

The first question, then, is, has Wherry succeeded in showing by a fair preponderance of lawful evidence that the invention wrought out by Heck was communicated to him by Wherry? It is agreed that the machine as produced by Heck departed in important particulars from the conception which Wherry claims to have communicated; but what Wherry insists upon is that he told Heck how to embody the subject-matter in interference in the form shown or suggested by "Exhibit A," and that therefore he is to be regarded as having communicated the broad conception of the invention which constitutes the subject-matter in controversy. There is no doubt that about the 1st of October, 1886, a conference did take place between Wherry and Heck with reference to improving the fare-box previously patented to Wherry; but Heck testifies that it was simply with reference to improving upon the previous fare-box without any definite suggestions whatever as to the nature of the improvement to be made and without any expectation whatever that he was to become an employé of Wherry.

With reference to the issue in controversy Heck testifies in reply to questions as follows:

Q. 14. Now, with regard to this invention, in what particular did John R. Wherry refer you to an improvement, and in what respect did he suggest an improvement thereon? A. In regard to the key in the case he suggested no idea.

Q. 15. Did he suggest to you at that time or subsequently the issue in controversy? A. He suggested no idea to me in regard to that.

Q. 16. After, as you have stated in your answer above, that you saw that you could not make an improvement upon the key, and after your conversation with Wherry, what did you do then? State all the facts. A. I made up my mind to study on some different way, as I said that I could not make any improvement upon the box of Mr. Wherry; I put my mind to work to construct some kind of a combination by which the same object could be reached in a different way.

Although Wherry claims that he employed Heck to make a model to embody the ideas which he communicated, Heck in the most explicit manner contradicts this statement.

The following also is a portion of Heck's testimony:

Q. 46. Did Wherry, at any time, suggest to you any ideas, either original or of change or alteration to your idea, as conceived and embodied in the drawings last above referred to? A. No, sir.

Q. 47. Then I understand you to say that the idea involved in the drawings last above referred to and embodied in your application for a patent are your own original ideas and invention? A. They are.

Q. 48. Did Wherry ever employ you, in any manner, shape, or form, to work for him in regard to the idea in issue? A. No, sir.

Q. 49. Did he ever pay you anything of any kind or character for work done in the matter above referred to? A. No, sir.

Q. 50. Did he ever give you any instructions, or tell you in what manner to work, in regard to the idea in issue? A. No, sir.

Q. 51. Has Wherry had any part, parcel, or participation in the invention upon which you have applied for a patent? A. No, sir.

Q. 52. Is, or is not, that your sole original invention for which you have applied for a patent, or not? A. It is.

Q. 53. Mr. Wherry says "that when he first talked to you about his invention he employed you, he explained to you the issue in controversy, and requested you to work upon the invention under his instructions." I ask you if that is true? A. No, sir.

Q. 54. He says, in answer to question No. 53 in his deposition, "that you were an employé of his to make the model." Is that true? A. No, sir.

Q. 55. He says "that you made the model, but did not deliver it to him." How about this? A. I made no model for him, and consequently had none to deliver to him.

Q. 56. Mr. Wherry says "that he also furnished you with some rough sketches and a model from which to work." Is that true? A. No, sir.

Thus Heck, without evasion, but directly and unqualifiedly, contradicts the claim of Wherry in this regard, and it is therefore quite clear that the burden of proof being upon Wherry, the issue must be found against him, in spite of his own testimony to the opposite effect, unless there is other testimony in the case corroborative of Wherry's contention and sufficient to turn the scale. This view seems to be entertained by counsel for Wherry, who say that the conflict of evidence between Heck and Wherry is direct, and that therefore it is necessary to look beyond the statements of the parties to the surrounding facts to determine which of the contradictory assertions is probably correct.

The testimony of Mrs. Wherry would be of no importance in determining the question, even if it were held admissible. Although she testifies to the conversation between Wherry and Heck, about which there is no dispute, and which took place about the 1st of October, 1886, she expressly states that she did not hear enough of the conversation to tell what it was, and that she cannot state what the interference is or what the subject-matter is in dispute. No other witness pretends to say what was said between Heck and Wherry.

But it is claimed that it is proven that Wherry had the conception prior to the conversation with Heck, and that the presumption is that he communicated it during this conversation, and that out of such communication the efforts of Heck originated. The theory presented is that Heck was employed as a competent workman by Wherry to embody in a working form the invention which Wherry had previously made and communicated by description to other persons. But the evidence wholly fails to prove that Heck stood in the relation of an employé to Wherry. He received no pay whatever for his services, nor is it pretended that there was any promise of payment on the part of Wherry or expectation of payment on the part of Heck. Wherry, however, claims that there were frequent interchanges of courtesies between himself and Heck, and "in this interchange of courtesies that honors were easy." The relation of employer and employé cannot be established by such proof as this with sufficient certainty to authorize the inference based upon such relationship that there was a communication to the employé of the ideas of the so-called employer. Nevertheless, it is insisted that Wherry had the idea of the subject-matter in interference, and that, inasmuch as he had it, the presumption is that he communicated it, and that this presumption is sufficient to discharge the obligation resting upon him to meet the requirements imposed by assuming the burden of proof.

This brings us to inquiry second: Is it satisfactorily shown that the subject-matter in interference was conceived of by Wherry about the 1st of March, 1885? The recognized evidence of conception consists of proof of a model or a drawing, or a written or verbal disclosure. It is agreed in the case that Wherry explained the idea involved in the issue to Charles Pickles, of St. Louis, Mo., in January, 1887; that from such description Pickles made drawings, which drawings were completed on the 22d day of January, 1887; but this date is too late to be of any assistance to Wherry. No model or drawing is produced which was made prior to that time, nor any written description whatever. Wherry's whole case seems to depend upon an alleged oral disclosure of the invention to one Rottaken about March 4, 1885, and to a Mr. Crawford, in August, 1885.

In the nature of the case this kind of testimony is ordinarily entitled to but little weight. A drawing which is perpetuated, and which discloses with sufficient certainty the invention, leaves nothing to verbal testimony, excepting the establishment of the date when it was made; hence, like a model, it is rightly looked upon as affording such evidence of the existence of the conception at the time when it is shown to have been made as will lay the foundation of a claim to priority. (*Loom Co.* v. *Higgins*, 105 U. S., 580.) On the other hand, nothing is easier than for a mind friendly to an inventor to so combine the processes of memory and imagination as to really believe that a former conversation, which related to the general subject out of which an invention ultimately grew, contained a definite description of the invention itself.

In my opinion, no inventor whose rights stand upon drawings or models, which speak for themselves in the case, and who is first in the Patent Office with his application, should have his title to a patent overborne by the claims of a rival applicant who bases his title wholly upon mere verbal disclosures, unless the testimony setting forth those verbal disclosures is so clear and explicit that the trier himself shall be able to gather from the language employed in the description that the invention was present in the mind of the person describing it. The descriptive language used should be such as to disclose the invention as a drawing would disclose it. It is not enough for the witness to say "on such a day the applicant described his invention to me," nor is it enough if the proofs simply show that the applicant had a conception of the desirability of doing the thing which was ultimately accomplished. The description, on its face, as detailed by the witness, must show not only that the applicant had a conception of the desirability of doing the thing, but also a conception of a way of doing it and a way of doing it so definitely thought out that the listener, if skilled in the art, could produce the invention from the description, at least in a rude form of embodiment. It is the trier who is to determine whether the disclosure revealed the mental conception of the invention, and unless the evidence is sufficient to satisfy the trier that the disclosure was adapted to produce upon the mind of the listener an effect similar to the inspection of a drawing or a model he would be unwarranted in finding that such disclosure indicated the presence of the invention in the mind of the applicant. Thus in the present case Wherry testifies that he had a conception of the issue in interference about March 1, 1885, and that about the same date he explained it to Mr. Rottaken. To hold that this is evidence of a disclosure to Rottaken is simply to make Wherry the judge in his own case in the place of the tribunal having jurisdiction. So, too, Rottaken testifies that Wherry explained the issue to him a number of times, and that he mentioned it first about March 1, 1885; but no attempt is made by him to state the language employed in giving the description and no means whatever are afforded to enable the trier to determine whether the conclusion of the witness, that the description did disclose the issue in interference, is a correct one or not.

Mr. Crawford does, indeed, undertake to say what it was that Wherry explained to him. He says:

A device by which, in inserting the sack, the valve would cause to be opened, and by withdrawing the same it would again be closed or locked.

In reply to the question whether this mechanism did or did not close both the fare-inlet and the bag or money-receptacle on the withdrawal of the latter he answers:

Yes; that is the manner in which he explained it to me—that it would accomplish that.

Again, he says Wherry explained to him—

a device by which, on inserting the sack, it would unlock the valves, and by the withdrawal of the same it would cause both sack and box to be locked.

Both these alleged descriptions indicate disclosure of the result to be accomplished, but they throw no light whatever upon the mechanism by which it was to be accomplished. There is nothing here to enable the trier to say what the device was or whether it was a practical device at all, or whether, in fact, it would accomplish the result which Mr. Crawford speaks of in his answer to question 10, already quoted. I know of no law by which such testimony can be received, in a case involving a complicated structure, as evidence of the existence in a mental form of the invention in controversy. I think it has accorded to it all the weight to which it is entitled if it is treated as indicating that the applicant had a conception of the desirability of doing the thing spoken of by the witness, without any definitely-outlined conception of a mechanical combination of parts which would accomplish the result.

The views here presented are not novel, but have often found expression in the decisions of courts and of Commissioners.

Judge Lowell, in the case of *Woodman* v. *Stimpson*, (3 Fish., 98,) in speaking of the time of conception of an invention, says:

It means not only when he [the inventor] conceived that such a thing would be a desirable thing to do, but when he [the inventor] had conceived the idea of how to do it substantially as he has done it. (P. 103.)

To the same effect is the statement of Commissioner Butterworth in the case of *Voelker* v. *Gray* v. *Edison* v. *Bell*, (C. D., 1885, at page 19,) where he says:

There is not unfrequently a disposition on the part of an applicant to confound a strong desire in the mind to produce certain results by some means of which he has but a vague and indefinite conception with an intelligent conception of a machine adapted to accomplish those results. It is in such cases that the desire coupled with the imperfect conception of a device ripens and matures in the light of subsequent knowledge. That of which the law takes notice is not the maturing, but the matured conception, which can materialise in an operative device.

In *Davidson* v. *Lewis*, (1 MacA. Pat. Cases, 599, 601, 1858,) the question involved being which one of the parties was the first and original inventor, the court said:

It must be borne in mind that it is not so much he who made and perfected the first machine or instrument as he who may appear from the evidence to have been the first who conceived the idea, and so described it by words or drawings as to have been sufficient to enable a skilful workman to bring it into useful practical operation, for such a person shall be said to have made the first claim, and will be protected against the claim of any subsequent inventor who may have been first in adapting a ma-

chine or instrument to the invention, provided such first discoverer has been using due diligence in effecting the same end, and that, although he may have been unsuccessful in some of his experiments, if by following them up he at length succeeds. Such being the well-established rule of patent law, I will proceed to consider the evidence.

In *Philadelphia & Trenton R. R. Co.* v. *Stimpson* (14 Peters, 448, 1840) it is clearly intimated that the verbal disclosure must be a detailed description of the invention. One of the questions in this case was as to the admissibility of evidence of certain parties as to certain declarations and statements of the plaintiff relating to his invention prior to the date of his patent, in reply to the evidence of the defendants showing use by other persons of the same contrivance. The court in admitting the testimony said (at p. 462):

The invention itself is an intellectual process or operation, and, like all other expressions of thought, can in many cases scarcely be made known except by speech. The invention may be consummated and perfect, and may be susceptible of complete description in words a month or even years before it can be embodied in any visible form. * * *

His [the patentee's] conversations and declarations stating that he had made an invention and describing its details and explaining its operation are properly to be deemed an assertion of his right at that time as an inventor, to the extent of the facts and details which he then makes known.

In *Stephens et al.* v. *Salisbury* (1 MacA. Pat. Cases, 379, 1855) the court said:

The proof of the invention and time, it is true, consisted of the appellee's own verbal declaration; but it was made to several of the witnesses, accompanied with the effort and desire that permission should be given and an opportunity afforded him of having the same tried on railroad-cars over which they were supposed to have control, and to persons who thought the description full and clear enough to enable them to make the application, which was actually done in the year 1853. (P. 386.)

Such being the law as to the character of the disclosure and the nature of the proof of it, it follows that no sufficient evidence of mental invention is made on behalf of Wherry prior to October 11, 1886, when Heck showed "Exhibit A" to Wherry.

It is to be remembered that Wherry and Rottaken were mutually interested in the manufacture of fare-boxes, and that they were mutually interested in certain inventions relating to fare-boxes, for which patents have been granted. One of these patents was applied for January 12, 1886, more than nine months after Wherry claims to have conceived the invention in controversy, while the other one was applied for October 28, 1886, more than eighteen months after the date of such alleged conception. It is admitted and unquestionable that the combination covered by the issue in controversy is for an improvement on the fare-boxes covered by these two patents, and it is almost inconceivable that it should not have been included in one of these patents or in a contemporaneously-pending application if it had been conceived of and talked over between Wherry and Rottaken as a definitely invented and feasible machine.

I look upon the actions of Wherry, concurred in by Rottaken, in applying for patents upon fare-boxes which omitted all reference to the invention in interference, one of them nine months after the alleged disclosure of this conception and the other eighteen months afterward, as having a bearing of some importance upon the controversy and as confirming my conclusion that it would be an unwarrantable thing for me to infer that Wherry had a definite conception of the issue in interference as early as March 1, 1885, in the absence of any drawing or model or written description or verbal disclosure in detail upon which to base such inference.

In my opinion, property in patents ought not to be created, as against a rival applicant first to reduce to practice and first in the Office, upon mere verbal testimony, indefinite in its character, unaided by the production of memoranda, drawings, or models under circumstances which in themselves tend to indicate its intrinsic improbability.

Priority of invention is awarded to Heck, and the decision appealed from is therefore reversed.

EX PARTE FOWLER AND FOWLER.

Decided October 14, 1889.

1. PETITION TO INSPECT THE ABANDONED CASES IN THE PATENT OFFICE—RULE 179.

Where petitioners requested that an order be issued permitting them to inspect the abandoned cases in the Patent Office in order to protect their client from unnecessary expense and suit for alleged infringement of certain Letters Patent, &c., *Held* that the petition must be denied, although if the petitioners shall make request for certified copies of one or more abandoned applications, accompanied by a reasonable suggestion of their necessity for purposes of evidence, the request will be granted under authority conferred upon the Commissioner by Rule 179.

2. SAME.

The case of *The United States ex rel. Anthony Pollok* v. *Hall, Commissioner of Patents*, (48 O. G., 1263,) distinguished from the case at bar. The question before the court in the case cited was whether a copy of a certain specified abandoned application which had been asked for should be furnished by the Commissioner, and it is believed that the court did not intend to decide or to lay down a doctrine which would involve the logical necessity of deciding that a petition like the present should be granted.

3. DISTINCTION BETWEEN CONSTRUCTIVE ABANDONMENT OF AN APPLICATION AND CONSTRUCTIVE ABANDONMENT OF AN INVENTION.

A broad distinction is to be recognised between constructive abandonment of an application and constructive abandonment of an invention. The former may exist, and frequently does exist, without involving the latter.

4. INVENTIONS REPRESENTED IN THE ABANDONED APPLICATIONS OF THE PATENT OFFICE NOT CONCEDED TO BE THE PROPERTY OF THE PUBLIC—REVISED STATUTES, SECTION 4894.

It is not to be conceded that the inventions represented in the abandoned applications of the Patent Office are the property of the public. Until the invention has been two years in public use or on sale the inventor has lost no part of his inchoate property in his invention, either through failure to complete his application or to prosecute his completed application within the period of two years prescribed by the Revised Statutes, section 4894.

IN THE matter of the petition of Messrs. Fowler and Fowler to inspect abandoned applications.

MITCHELL, *Commissioner:*

This petition sets forth that the petitioners are doing business as attorneys at law in patent cases; that the Hydraulic Brick Machine Company, of St. Louis, Mo., has been threatened with suit for alleged infringement of Letters Patent No. 379,429, of March 13, 1888, for improvements in building blocks or bricks; that said company has instructed them to obtain all possible information relative to the rights of the aforesaid parties in the matter; that petitioners are desirous of protecting their client from said suit, and have reason to believe and do believe that the subject-matter of the aforesaid patent was old and well known at the time the application therefor was filed; that the owners of said patent have attempted to broaden the terms of their claim by construing it so as to include bricks manufactured by the company aforesaid, which are substantially different from the building-block covered by the said Letters Patent; that petitioners have reason to believe and do believe that an application for a patent was filed in the United States Patent Office and abandoned for the same kind of a building block or brick manufactured by the said Hydraulic Building Brick Machine Company, and that they are fully satisfied in their own minds that the owners of the patent aforesaid have no rights whatever in the matter as alleged by them.

The prayer of the petition is in the following language:

Your petitioners therefore respectfully request that an order be issued permitting them to inspect the abandoned cases in the United States Patent Office in order to protect their aforesaid client from unnecessary expense and suit to the great injury of its business, and in order that substantial justice may be done to all parties and all facts adduced which may be just and proper to this end.

The petitioners aver that they base their request upon the recent decision in the case of *The United States ex rel. Anthony Pollok* v. *Hall, Commissioner of Patents*, (48 O. G., 1263,) and they contend that—

by this decision the petitioners have full right to inspect the abandoned applications of the United States Patent Office, as prayed for in their petition.

They aver that while it is true that in the case before the court a copy of a certain specified application was asked for, and that the decision of the court, to some extent, was confined to the case as it was before it, nevertheless the decision is much broader and is emphatic, and clearly defines the policy of the court.

The petitioners are quite right that in the case cited the question before the court was whether a copy of a certain specified application which had been asked for should be furnished by the Commissioner. I think they are wrong, however, in believing that the court intended either to decide or to lay down a doctrine which would involve the logical necessity of deciding that the present petition should be granted. On the contrary, the language of the court seems clearly to imply, first, that a request shall be made for a specific abandoned application, and, second, that the request shall be made under "reasonable conditions." The court, referring to the objection of the Commissioner that he does not see how the matter is to become evidence, says:

Now, the court is of opinion that he is not placed in his position for any such purpose, and that it is sufficient that a reasonable suggestion of necessity for the use of a document for evidence be made, in order to set in motion his duty to furnish the copy. He is not there to sit as a judge in the controverted cause. If the suggestion be made by a reasonable person and under reasonable conditions, that suggestion should be conclusive upon him so far as the efficacy of the paper for the purposes of evidence is to be an element in the application for a copy for the purposes of evidence under the clause of the statute which has been read.

Again the court says, referring to section 4894 of the statute:

The statute expressly says that after it [the application] has lain in the Office the period provided by law—viz., two years—as an unperfected application, it shall be considered as abandoned, unless there be good cause of delay shown, which is not in this case.

But the right of an applicant to have his case reinstated upon good cause shown is involved in the question now before the Commissioner. The experience of the Office renders it morally certain that some of the applications which I am requested to subject to the examination of the petitioners have become abandoned for reasons clearly unavoidable within the statute, and it is equally certain that as to some at least of such applications petitions will be filed in due season for their reinstatement. When they are reinstated, their position in the Office will be precisely the same as if the two years' limitation had not run against them. That such applications will be entitled to an examination conducted in secrecy will undoubtedly be conceded, and it is equally clear that if meanwhile they shall have been subjected to public inspection it will not have been through the fault of the applicants.

Again, it is the experience of the Office that new applications are filed for inventions covered by previous applications that have lapsed by failure to prosecute for two years. In such cases the inventor is entitled to a patent, unless the invention has been in public use for more than two years prior to the later application. (*Lindsay* v. *Stein*, 10 Fed. Rep., 907.)

A broad distinction is to be recognized between constructive abandonment of an application and constructive abandonment of an invention. The former may exist, and frequently does exist, without involving the latter. Of the former Walker speaks as follows, (Walker on Patents, sec. 146):

Constructive abandonment of an application occurs whenever two years intervene between the filing of an application and its being made complete enough to entitle it to examination, according to the rules of the Patent Office; and such an abandonment also occurs if the applicant allows two years to pass without regularly prosecuting his application after any particular action is taken thereon by the Patent Office, and notified to him, provided, in either case, the Commissioner of Patents is not convinced that the delay was unavoidable. If he is so convinced, he may condone the delay by granting a patent, and if he grants a patent his decision on the point is conclusive.

The author, however, in the next section considers when constructive abandonment of the invention will be worked through the constructive abandonment of an application, or, rather, when a second application will not avail to obtain a patent:

Section 147. Constructive abandonment of an application will work constructive abandonment of the invention covered thereby where the abandonment of the application arose from either of the causes stated in the first paragraph of the last preceding section, if no new application is filed soon enough to independently avoid the statute relevant to public use or sale more than two years before application for a patent. * * *

But in every case where a new application is made within two years after the invention was first in public use or on sale a patent, if granted on that new application, will not be unfavorably affected by the fact that a former application was made and was constructively abandoned.

It is not to be conceded, therefore, that the inventions represented in the abandoned applications of the Patent Office are the property of the public. Until the invention has been two years in public use or on sale the inventor has lost no part of his inchoate property in his invention, either through failure to complete his application or to prosecute his completed application within the period of two years prescribed by section 4894 of the statute. His invention is still his own; the public has no right to it whatever, and he may either file a new application or satisfy the Commissioner, if he can, that the abandonment of his first application was unavoidable, and in either case his patent when obtained is just as valid as if it had been obtained upon his original application.

It follows that to grant the present petition would be to uncover to the scrutiny of the public many inventions which are still the property of the applicants, and which will ultimately mature into patents protecting such property. I am unable to see why, with reference to them, the applicants are not entitled to the same condition of secrecy which attaches to ap-

plications at other stages of prosecution and examination, and I am especially unable to understand how, after a judgment by the Commissioner that the delay to prosecute was unavoidable, any sufficient reason can be given for a course of conduct which could only be justified if the applicant were held responsible for his delay.

There are other considerations which it seems to me ought to be of weight in determining whether the policy of the Patent Office should be reversed and strangers to the inventors be permitted "to inspect the abandoned cases in the United States Patent Office." Among them is the danger of the fraudulent appropriation of the inventions of others; but as in this case I have no doubt the petition is made in good faith, I do not deem it necessary to dwell upon that consideration.

It is unnecessary for me to add that if the petitioners shall make request for certified copies of one or more abandoned applications, accompanied by a reasonable suggestion of their necessity for purposes of evidence, the request will be granted under authority conferred upon the Commissioner by Rule 179; but inasmuch as I do not understand the court to have intended in the case cited to say or imply that such a request as the one under consideration ought to be granted, I must deny the petition.

EX PARTE EVERITT.

Decided September 30, 1889.

WHAT IS SUFFICIENT CROSS-REFERENCE UNDER RULE 43.

A cross-reference which refers by serial numbers only to applications which may never mature into patents is not sufficient and not in compliance with Rule 43. Cross-references must be of such nature that they will impart a more or less definite conception of their scope. It cannot be assumed that all applications will mature into patents, nor can it be permissible that they shall refer for purposes of construction or interpretation to instruments to which the public has no access.

ON PETITION.

AUTOMATIC DATING OR STAMPING AND DELIVERY OF TICKETS.

Application of Percival Everitt, No. 222,632, filed December 27, 1886.

Messrs. J. J. Halsted & Son for the applicant.

MITCHELL, *Commissioner:*

In this case the examiner required that reference be made in the specification to certain other pending applications of the applicant. This requirement was sustained by Commissioner Hall, who on the 8th of March, 1889, denied a petition asking relief from the examiner's requirement. Thereafter applicant filed an amendment in the following language:

I do not herein claim anything claimed in my applications having the serial numbers 226,420 and 278,504, respectively.

The examiner held that this cross-reference did not constitute a compliance with Rule 43. Thereupon a further petition was taken to the Commissioner.

Whether or not cross-references should be required has already been decided by the former Commissioner. Whether the cross-reference filed is sufficient is the only question which remains to be considered. A moment's reflection will show that the cross-reference now under consideration is not sufficient, since it refers to applications which may never mature into patents. In order that the meaning and scope of cross-references may be ascertained when they are required at all, they must be of such nature that they will impart a more or less definite conception of their scope. It certainly cannot be assumed that all applications will mature into patents, nor can it be permissible that they shall refer for purposes of construction or interpretation to instruments to which the public has no access.

The petition is denied.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 49—No. 5. TUESDAY, OCTOBER 29, 1889. PRICE—$5 per year.

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Weekly Report of Business in Examining Divisions.

(ORDER NO. 583.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 24, 1889.

Beginning with the first number of the OFFICIAL GAZETTE published in November, which will bear date November 5, 1889, the condition of business in the various Examining Divisions of this Office will be published each week.

(Signed) C. E. MITCHELL,
Commissioner.

Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1887, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 820 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Vol. 7. Appendix No. 7, July 1, 1887, to June 30, 1888. One volume, 68 pages. In paper covers, $1.50.

Women Inventors.

The Patent Office has published and has for sale a volume, containing a list of women inventors to whom patents have been granted by the United States from 1790 to July 1, 1888. 44 pages. Paper covers, 50 cts.

Issue of October 29, 1889.

Patents	538	No. 413,640 to No. 414,177, inclusive.
Designs	20	No. 19,376 to No. 19,395, inclusive.
Trade-Marks	17	No. 17,143 to No. 17,159, inclusive.
Labels	3	No. 6,045 to No. 6,047, inclusive.
Reissues	None.	
Total issue	578	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nebraska	4	
Arizona Territory			Nevada		
Arkansas	1		New Hampshire	5	
California	14		New Jersey	26	1
Colorado	1		New Mexico Terr'ty		
Connecticut	18	1	New York	137	2
Dakota Territory	3		North Carolina	1	
Delaware			Ohio	40	4
District of Columbia	1		Oregon		
Florida	3		Pennsylvania	55	1
Georgia	6	1	Rhode Island	3	
Idaho Territory			South Carolina	3	
Illinois	39	1	Tennessee	1	
Indian Territory			Texas	3	1
Indiana	8		Utah Territory	2	
Iowa	11		Vermont	1	
Kansas	6		Virginia	3	
Kentucky	1		Washington Terr'ty		
Louisiana			West Virginia	1	
Maine	4		Wisconsin	12	
Maryland	3		Wyoming Territory		
Massachusetts	58	2	United States Army		
Michigan	23		United States Navy		
Minnesota	6				
Mississippi	1		Total to citizens of the United States	519	14
Missouri	15				
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			France	1	4
Australia			Germany	8	
Austria-Hungary	1		Luxemburg		
Belgium	1		Mexico		
Bermuda			New South Wales		
Brazil			Norway	1	
Canada	12		Russia		
Chili			Scotland	1	
Costa Rica			Spain		
Cuba			Switzerland	1	
Curaçoa			Victoria		
Denmark					
England	13	2	Total to citizens of foreign countries	39	6
Finland					

DESIGNS.

19,376 to 19,378, inclusive.—BRACELET.—*Edward P. Beach*, Newark, N. J. Applications filed September 25, 1889. Serial Nos. 325,078 to 325,080, inclusive. Term of patents 3½ years.

19,379.—RULE.—*Frederick Benzinger*, New York, N. Y., and *Hans Edgar Grabau*, Hoboken, N. J. Application filed September 26, 1889. Serial No. 325,219. Term of patent 7 years.

19,380.—FONT OF PRINTING-TYPE.—*William F. Capitain*, Chicago, Ill., assignor to *Marder, Luse & Co.*, same place. Application filed October 5, 1889. Serial No. 326,129. Term of patent 7 years.

19,381.—HOSE-WAGON BODY.—*Harlan P. Colby*, Grand Rapids, Mich. Application filed September 9, 1889. Serial No. 323,456. Term of patent 7 years.

19,382 to 19,390, inclusive.—OIL-CLOTH.—*Charles T. Meyer* and *Victor E. Meyer*, Bergen, N. J., assignors to *Edward C. Sampson*, New York, N. Y. Applications filed October 1, 1889. Serial Nos. 325,719 to 325,727, inclusive. Term of patents 3½ years.

19,391.—RUG.—*Julius Pegel*, Philadelphia, Pa., assignor to *John Bromley & Sons*, same place. Application filed October 7, 1889. Serial No. 326,286. Term of patent 3½ years.

19,392.—RUG.—*Adolph Petzold*, Philadelphia, Pa., assignor to *John Bromley & Sons*, same place. Application filed October 7, 1889. Serial No. 326,282. Term of patent 3½ years.

19,393.—RUG.—*Adolph Petzold*, Philadelphia, Pa., assignor to *John Bromley & Sons*, same place. Application filed August 19, 1889. Serial No. 321,179. Term of patent 3½ years.

19,394.—COOKING-STOVE.—*Charles F. Walther*, Buffalo, N. Y., assignor to *Sherman S. Jewett & Co.*, same place. Application filed October 3, 1889. Serial No. 325,926. Term of patent 14 years.

19,395.—LAMP OR GAS SHADE.—*Joseph Webb*, Beaver, Pa. Application filed September 28, 1889. Serial No. 325,450. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

17,143.—BELTS FOR MACHINERY AND HOSE FOR CONDUCTING WATER. *Boston Woven Hose Company*, Boston, Mass. Application filed August 26, 1889. Used since August 1, 1889.
"The words 'BOSTON EXTRA.'"

17,144.—CHAMPAGNE-WINE.—*Chs. Arnould & Heidelberger*, Rheims, France. Application filed August 8, 1888. Used since 1856.
"A shield of arms and the words 'DE ST. MARCEAUX & Co.'"

17,145.—CHAMPAGNE-WINE.—*Chs. Arnould & Heidelberger*, Rheims, France. Application filed August 8, 1888. Used since May 27, 1882.
"The words 'ST. MARCEAUX SEC.'"

17,146.—CHEWING-GUM.—*Charles T. Heisel*, Cleveland, Ohio. Application filed August 28, 1889. Used since August 19, 1889.
"The word 'MALTO.'"

17,147.—FERTILIZERS.—*Lister's Agricultural Chemical Works*. Newark, N. J., Baltimore, Md., and Rochester, Utica, and New York, N. Y. Application filed September 11, 1889. Used since August 1, 1889.
"The words 'HOME STRETCH, SWIFT & SURE' and the representation of a race-horse and his rider."

17,148.—MEDICINE FOR THROAT TROUBLES AND FOR COLDS, COUGHS, CHILLS, &c.—*Frank Mellersh*, New York, N. Y. Application filed September 3, 1889. Used since July, 1887.
"The words 'BRONCHIA-LYNE TONICON.'"

17,149.—BLACK-LEAD.—*William George Nizey*, London, England. Application filed May 29, 1889. Used since December 1, 1847.
"The word 'NIZEY.'"

17,150.—TOILET SOAP.—*Joseph Simon*, Paris, France. Application filed June 11, 1888. Used since 1876.
"The words 'CRÈME SIMON.'"

17,151.—RICE-POWDER FOR TOILET USE.—*Joseph Simon*, Paris, France. Application filed June 11, 1888. Used since 1876.
"The words 'POUDRE SIMON.'"

17,152.—COAL-OIL LAMPS, LANTERNS, AND LAMP-CHIMNEYS.—*Standard Lighting Company*, Cleveland, Ohio. Application filed July 19, 1889. Used since May 1, 1885.
"The words 'GLOBE INCANDESCENT.'"

17,153.—LINIMENT FOR EXTERNAL APPLICATION.—*George P. H. Taylor*, Stillwater, N. Y. Application filed September 9, 1889. Used since August, 1889.
"The word 'HAKKALINE.'"

17,154.—KITCHEN AND HOUSEHOLD ARTICLES OF SHEET-STEEL.—*The Bronson Supply Company*, Cleveland, Ohio. Application filed July 12, 1889. Used since January 1, 1889.
"The words 'NEVER BREAK.'"

17,155.—CINCHONA-CORDIAL, BLOOD-SPECIFIC, LIVER-PILLS, AND OINTMENT.—*Herbert B. Ewbank*, Atlanta, Ga. Application filed March 30, 1889. Used since March, 1884.
"The word 'TOPAZ.'"

17,156.—WEARING-PLATES FOR BOOTS AND SHOES.—*The Hartford Heel Plate Company*, Hartford, Conn. Application filed September 14, 1887. Used since July, 1887.
"The letter 'K.'"

17,157.—FLY-PAPER.—*Jacob A. Mattler*, Kenton, Ohio. Application filed August 24, 1889. Used since August, 1889.
"The word 'BUCKEYE.'"

17,158.—PAINTS AND COLORS.—*J. B. Orr & Co.*, (*Limited*,) Charlton, county of Kent, and London, England. Application filed August 12, 1889. Used since August 14, 1889.
"The representation of two oars crossed placed over the letter 'O,' inclosing the letters 'S P C,' and the words 'CHARLTON WHITE.'"

17,159.—LINIMENT, BLOOD-PURIFIER, AND CHILL-TONIC.—*X I X Medicine Co.*, Gatesville, Tex. Application filed July 5, 1889. Used since November 15, 1886.
"The representation of an eye and letters 'X' arranged in connection therewith to phonetically read 'X I X.'"

LABELS.

6,045.—Title: "HOG CHOLERA REMEDY."—*Robert Blackburn* and *Claude Weeds Blackburn*, Chicago, Ill. Application filed October 5, 1889.

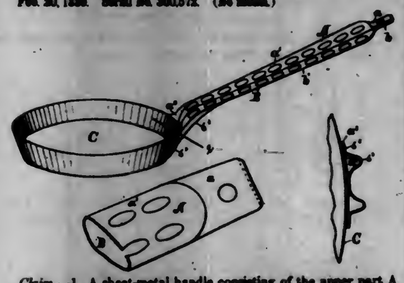
6,046.—Title: "VON LAER'S SPARKLING ACID PHOSPHATE CARBONATED."—*James P. W. von Laer*, Boston, Mass. Application filed October 4, 1889.

6,047.—Title: "MELTED ROCK CANDY." (For a sirup.)—*Albert H. Stillwell*, Philadelphia, Pa. Application filed September 30, 1889.

PATENTS

GRANTED OCTOBER 29, 1889.

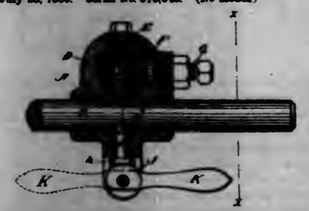
413,640. SHEET-METAL HANDLE. HENRY W. AVERY, Cleveland, Ohio, assignor to the Avery Stamping Company, same place. Filed Feb. 20, 1889. Serial No. 300,572. (No model.)



Claim.—1. A sheet-metal handle consisting of the upper part A, having a flat outer end, a longitudinally-bent body, and an inner end bent transversely at an angle to said body, said inner end having the flange a^3, combined with the lower part B, having a flat outer end, a longitudinally-bent body, and an inner end bent transversely at an angle to said body, said two parts being fastened together at their outer and inner ends, respectively, substantially as and for the purpose specified.

2. A sheet-metal handle formed from a single piece of sheet metal, consisting of a straight central portion having at one side thereof a part A, having a longitudinally-bent body and an end bent transversely at an angle to said body and having at the other side a part B, having a longitudinally-bent body and an end bent transversely at an angle thereto, said piece of metal being bent transversely in its flat middle portion to bring the two parts A and B together, substantially as and for the purpose specified.

413,641. ECCENTRIC-HOOK FOR STEAM-ENGINES. SEWARD R. RABBITT, Allegheny, and ALFRED RANDOLPH, Pittsburg, assignors to said Rabbitt and the Robinson-Rea Manufacturing Company, Pittsburg, Pa. Filed July 25, 1888. Serial No. 318,640. (No model.)



Claim.—1. In combination with the eccentric-rod and rocker-arm or valve-slide of a steam-engine, a block having a cavity to receive the rocker-arm pin and means of attaching it thereto, a bore for receiving the eccentric-rod, and a bolt and cam for rigidly connecting or disconnecting at pleasure the eccentric-rod and rocker-arm or slide-valve, substantially as described.

2. The combination, as an eccentric-rod hook, of a block A, having a cavity for the pin of the rocker-arm or slide-valve and means for attaching it thereto, a bore for the eccentric-rod, and a cam J and cam-bolt H, operated by said cam, and a handle K for operating the cam, substantially as described.

3. The combination, as an eccentric-rod hook, of a block A and means of attaching the same to the rocker-arm or slide-valve of a steam-engine, such block having a bore to receive the eccentric-rod, with a cam-bolt entering said bore, and a cam having a weighted handle, constructed and arranged substantially as described.

4. The combination of the eccentric-rod and rocker-arm or valve-slide of a steam-engine, a block A, having means of attachment to such rocker-arm or valve-slide, a bore to receive the eccentric-rod, a bevel-pointed cam-bolt entering said bore, and a cam to operate said bolt, substantially as and for the purposes described.

413,642. COMBINED PULVERIZER AND CULTIVATOR. GEORGE W. RAMSEY, Lower Lake, Cal. Filed Feb. 7, 1889. Serial No. 299,082. (No model.)



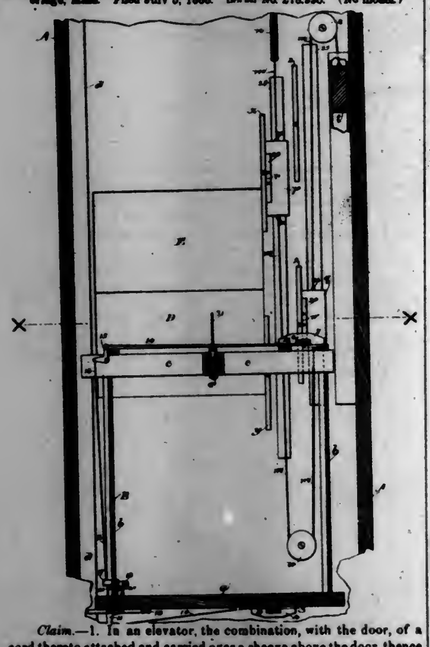
Claim.—1. The combination of the roller-frame, the forward-extending bars D, the lever Y, fulcrumed on a support on said bars, the pulverizer-frame having its rear side hinged to the roller-frame and having its front side connected to lever Y, the cultivator-frame having its front side hinged to the front side of the pulverizer-frame, and the hand-lever attached to the cultivator-frame, whereby the frame may be inclined to any desired angle, substantially as described.

2. The combination, with the roller-frame, of the forward extending beams B, secured thereto, the drive-wheel supporting the front ends of said beams, the pulverizer-frame hinged to the front side of the roller-frame, the draft-links connecting the front side of said pulverizer-frame to the bars B, the lever to raise and lower the pulverizer-frame, the cultivator-frame having its front sides hinged to the front side of the pulverizer-frame and provided with the forward-

extending pulverizer-teeth, and the lever attached to the cultivator-frame and adapted to incline the same, substantially as described.

3. The combination of the main frame, the tilting cultivator-frame, the vertically-adjustable pulverizer-frame, the operating-levers, and the roller, all combined and arranged substantially as herein set forth.

413,643. ELEVATOR-HATCHWAY. NELSON BOCKWITH, Cambridge, Mass. Filed July 5, 1888. Serial No. 278,995. (No model.)



Claim.—1. In an elevator, the combination, with the door, of a cord thereto attached and carried over a sheave above the door, thence around a lower sheave, thence over an upper sheave, and having a suitable weight attached to its pendent end to counterpoise the door, two catch-blocks secured to said cord and provided with suitable catches, one of said blocks being arranged to open and the other to close the door when actuated, two catch-bars arranged upon the cage with springs to force them into contact with said catch-blocks, and cams duly positioned to disengage said bars, all substantially as specified.

2. In an elevator, the combination, with the door, of the cord *m*, sheaves *n*, *u*, and *s*, the weight *t*, the catches *v w*, connected with said cord, the cams *x*, *y*, *z*, and 2, duly arranged to coact with said catches, and the catch-bars 3 and 6, provided with the actuating-springs, all substantially as specified.

3. The combination, with the leaf D and the means for raising and lowering it, consisting of cord *m*, the sheaves *n u s*, the weight *t*, catches *v w*, the cams *x y z* 2, and the bars 3 6, with their engaging-springs, of the door E, the cord *f*, its supporting-sheaves, the arm 19, and the weight A, substantially as specified.

4. In an elevator-hatchway-operating device, the catch-blocks formed with a recess or mortise, catch-piece 20, having a projection 21, and springs 23, arranged between said projection and the end wall of said mortise, to cushion the force exerted upon said blocks, substantially as specified.

5. In an elevator, the combination, with the cage, the door, and the catch-blocks and catch-bars, of studs 12 17, arranged in the floor of the cage, respectively connected with said bars, whereby either bar may at will be held inoperative, substantially as specified.

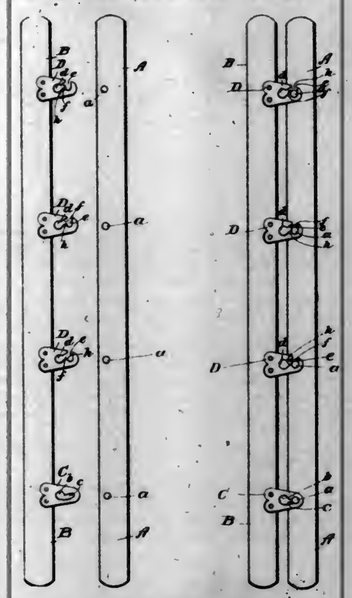
6. The combination, with studs 12 17, connected to actuate the catch-bars and formed with a seat or recess 27, of a catch or detent 26, wherewith said seat may at will be engaged, substantially as specified.

413,644. WATCH-PROTECTOR. THOMAS BENFIELD, Newark, N. J., SAMUEL AUFHAMMER, New York, N. Y., and ALEXANDER MILNE, Newark, N. J.; said Benfield and Aufhammer assignors to said Milne. Filed May 21, 1889. Serial No. 311,831. (Model.)

Claim.—As a new article of manufacture, a watch-protector adapted to contain or hold a watch and constructed of sheet-iron in two sections B B, the latter being provided with the projections *b*, and joined together by means of a coiled-spring hinge, consisting of the pintle *c*, and spring *d*, protected by the leather or other material *l*, allowing said protector to be opened and the watch consulted without removing said watch from the protector, the inner surfaces of said sections B being covered with plush or other fabric, and the outer surfaces with japan, paint, or other like substance, substantially as set forth.



413,645. CORSET-CLASP. WILLIAM F. BROOKS, Bridgeport, Conn. Filed June 21, 1889. Serial No. 315,061. (No model.)



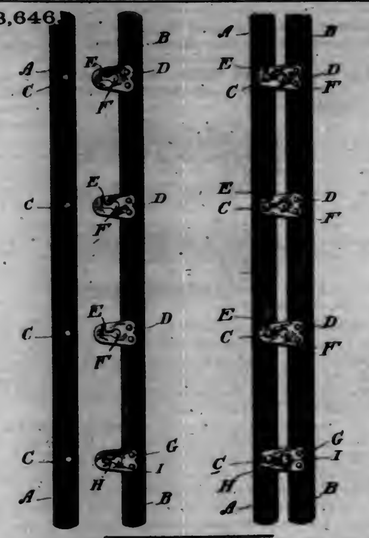
Claim.—1. In a corset-clasp, the steel B, having secured thereto the hooks D, having eyes *d*, vertical open gates *e*, inclined slots *f*, connecting said eyes and gates, and locking-points A at the outer ends of said slots, in combination with the steel A, having secured thereto the headed studs, substantially as set forth.

2. In a corset-clasp, the steel having secured thereto the hooks provided with eyes in the same vertical plane, one of said hooks having a closed recess leading upwardly from the eyes, the rest of the hooks having gates in the same vertical plane, and inclined slots leading from said eyes into the gates at a point above the bottom of the latter, in combination with the steel having secured thereto the headed studs, substantially as set forth.

413,646. CORSET-CLASP. WILLIAM F. BROOKS, Bridgeport, Conn. Filed July 6, 1889. Serial No. 316,667. (No model.)

Claim.—A corset-clasp comprising two busks and steels, one having studs and the other provided with a series of hooks having horizontal key-hole slots with vertical openings at the narrow ends of said slots, and a plate or hook at the lower end of said steel provided with a closed horizontal key-hole slot, substantially as set forth.

413,646.

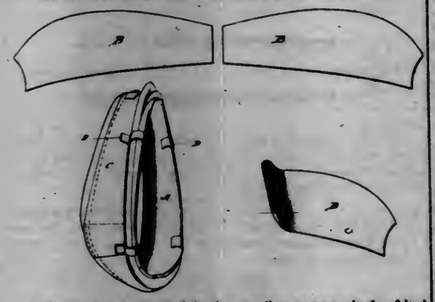


413,647. METHOD OF FORMING STITCHES. ALFRED A. CURTIS, Hingham, Mass. Filed Jan. 21, 1889. Serial No. 297,046. (No model.)



Claim.—The method of forming a stitch which comprises passing a thread through a hole in the material or pieces to be united, forming a loop upon the opposite side of said material; second, in passing into and through said loop a loop of another thread; third, in passing through the second loop a loop of still another or locking thread, and, fourth, drawing the loops of said threads into the hole of the material or fabric, substantially as described.

413,648. SWEAT-PAD. JAPHET S. CONDON, De Kalb, Ill., assignor of two-thirds to Joseph F. Glidden and Chase B. Glidden, same place. Filed Mar. 12, 1888. Serial No. 266,972. (No model.)

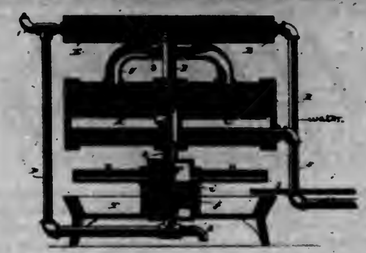


Claim.—1. A sweat-pad for horse-collars, composed of a felted fabric in flattened tubular form, whereby the parts have direct contact and are adapted to move upon each other, substantially as described.

2. A sweat-pad for horse-collars, formed of two lobes, each composed of a flattened seamless tubular body of felt thicker at one edge than at the other, substantially as described.

3. The combination of the sweat-pad herein described, made of felt and in flattened tubular form, with a horse-collar and means, substantially as described, for securing the pad to the collar.

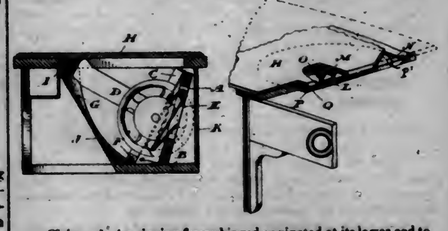
413,649. HYDROCARBON-BURNER. HENRY C. DAVIS, Terre Haute, Ind. Filed Jan. 19, 1889. Serial No. 296,950. (No model.)



Claim.—1. In a hydrocarbon-burning apparatus, the combination of the burners, a casing divided to form a retort C and a superheater A, connected with each other by the pipe *g*, a water-heater, heated by the said burners, but arranged away from immediate proximity thereto, a mixing-chamber, and the connecting-pipes between the superheater and the mixing-chamber and the water-heater and the mixing-chamber, substantially as set forth.

2. In a hydrocarbon-burning apparatus, the combination of the burners, the oil-retort C, and the superheater A, situated above the burners, the pipe *g*, connecting the retort and the superheater, the water-heater arranged above the retort and superheater, and the conducting-pipes for leading the hydrocarbon vapor and the steam to the burner, substantially as set forth.

413,650. SEWING-MACHINE STAND. CHARLES A. DEARBORN, New York, N. Y. Filed Dec. 1, 1888. Serial No. 292,290. (No model.)



Claim.—1. A swinging frame hinged or pivoted at its lower end to the bottom B at a point below an opening in the top of a stand, in combination with a platform hinged to the swinging frame and designed to support a sewing-machine, substantially as and for the purpose specified.

2. A swinging frame hinged or pivoted at a point below an opening in the top of a stand, a platform hinged or pivoted to the swinging frame and designed to support the sewing-machine, in combination with a spring designed to act against the platform to partially counterbalance the weight of the sewing-machine, substantially as and for the purpose specified.

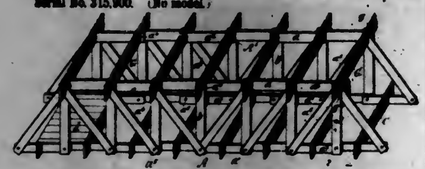
3. A swinging frame hinged or pivoted at a point below an opening in the top of a stand, a platform hinged to the swinging frame and designed to support the sewing-machine, a roller journaled on the front edge of the platform, in combination with a slanting curved track for the roller, and a ledge to support the platform in a horizontal position, substantially as and for the purpose specified.

4. A swinging frame hinged or pivoted at a point below an opening in the top of a stand, a platform hinged or pivoted to the swinging frame and designed to support the sewing-machine, a roller journaled on the front edge of the platform, in combination with a spring designed to act against the platform to partially counterbalance the weight of the sewing-machine, a slanting track for the roller, and a ledge to support the platform in a horizontal position, substantially as and for the purpose specified.

5. A swinging frame hinged or pivoted at a point below an opening in the top of a stand, a platform hinged or pivoted to the swinging frame and designed to support the sewing-machine, in combination with a top pivoted so as to overlap the top of the stand when its major portion is thrown clear of the stand, and to swing over to cover the opening in the top of the stand to form the stand into an ordinary table.

6. The plate M, having a center pin L secured to it and fastened to the bottom of the top H, a leg P, fixed to the plate M and designed to fit below the bracket Q, which is attached to the top plate N, substantially as and for the purpose specified.

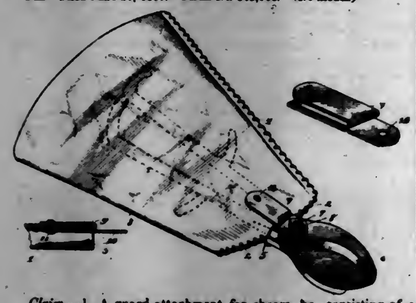
413,651. STRIP OR PIECE FOR BUILDING TOY GIRDERS, BRIDGES, &c. RUSSELL DUANE, Philadelphia, Pa. Filed June 28, 1889. Serial No. 315,900. (No model.)



Claim.—1. The herein-described toy, consisting of the longitudinal strips, the vertical struts, the tie-pieces diagonally disposed and said strips or pieces pinned to each other, the slotted spanning-strips, and the transverse tie-pieces, all arranged substantially as shown, and for the purposes set forth.

2. The herein-described toy, consisting of the longitudinal truss-chord strips or pieces, struts, and diagonally-disposed tie-pieces pinned to each other, the slotted spanning-strips, the slotted transverse tie-pieces, and the recessed floor-strips, all arranged substantially as shown, and for the purposes set forth.

413,652. PRUNING-SHEARS GUARD. DAVID A. DUNHAM, Palatka, Fla. Filed June 29, 1889. Serial No. 315,968. (No model.)



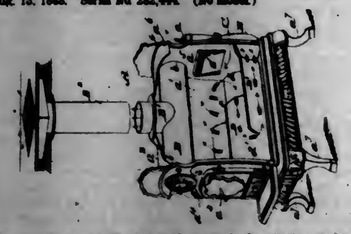
Claim.—1. A guard attachment for shears, &c., consisting of a cone-shaped flexible guard entirely inclosing the handle of the shears and open at the rear end only, and made of a single piece of material, and attached to the shears solely by a metallic clip.

2. A guard attachment for pruning-shears, of a cone shape, having a central opening at its apex provided with a sheet-metal clip perforated for the reception of the pivot-bolt of a pair of shears, substantially as specified.

3. The combination, with a pair of shears having a pivoted bolt, of a cone-shaped guard attachment made of leather, and having an opening at its upper end and provided with a sheet-metal plate riveted to the guard and having an opening through which is passed the pivot-bolt of the shears, and a nut mounted on the pivot-bolt, substantially as specified.

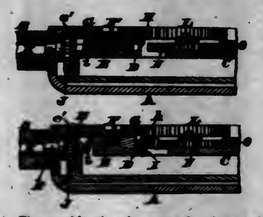
4. The combination, with a pair of shears having a pivot-bolt and nut, of a leather guard attachment of a cone shape, the apex of which is provided with an opening, and of a metal plate having a U-shaped arm embracing the edge of the opening and having its inner half bent upon itself and projecting beyond the opening, and provided with a perforation for the reception of the pivot-bolt, and a rivet passing through the three thicknesses of metal and the guard, substantially as specified

413,653. HEATING-STOVE. GILES F. FILLEY, St. Louis, Mo. Filed Aug. 13, 1888. Serial No. 282,444. (No model.)



Claim.—As an article of manufacture, the herein-described heating-stove having the T-shaped hot-air flue B B' in the top of its combustion-chamber, the circuitous smoke-flue D D', and the escape-flue E, into which said smoke-flue discharges, substantially as specified.

413,654. STEM WINDING AND SETTING WATCH. DAVID H. FLINT, Cincinnati, Ohio. Filed Feb. 12, 1889. Serial No. 299,561. (No model.)



Claim.—1. The combination, in a watch, of a winding mechanism, a hand-setting mechanism situated in a lower plane, a tilting wheel driven by geared connection with the stem or push-pin, and a lifter that actuates said tilting wheel and throws it in gear either with the winding or setting mechanism, said lifter being operated by said stem, substantially as herein described.

2. The combination, in a watch, of a winding mechanism, as L, a hand-setting mechanism, as N, situated in a lower plane, a tilting wheel H, turning upon the stud E and driven by the pinion J of stem K, and a lifter I, fitted around said stud and having a leg *i*, operated by the arbor *k* of said stem, substantially as herein described.

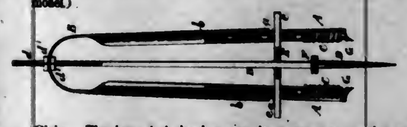
3. The combination, in a watch, of pendant B, traversed by the stem or push-pin K, the plate C, having a sloping pit D and a pair of slots *c c'*, the stud E, projecting from said pit, a tilting wheel H, turning upon said stud and driven by a pinion J of said stem K, a lifter I, fitted around said stud and having a leg *i*, operated by the arbor *k*, winding mechanism, as L, and setting mechanism, as N, as herein described.

413,655. PENCIL-CLASP. FRANK H. FOSTER, Chicago, Ill., assignor to himself and George Orvis, same place. Filed June 15, 1889. Serial No. 314,508. (No model.)



Claim.—In a pencil-holder, a wire B, bent to form the loops *c* and *e* and coils *d*, in combination with a plate A, having one end bent over around the coils, substantially as and for the purpose specified.

413,656. TOOL FOR FINISHING GLASS BOTTLES. GEORGE CARTON, Millville, N. J. Filed July 5, 1889. Serial No. 316,333. (No model.)



Claim.—The jaws A A, having opposite grooves *a a* and a pair of threading-rolls in each, combined with a centering-plug D, carrying the top-smoother F, all constructed and arranged substantially as shown, and for the purposes specified.

413,657. TENSION APPARATUS FOR SEWING-MACHINES. JAMES R. A. GIBBS, Rapidan, Va., assignor to the Wilcox & White Sewing Machine Company, New York, N. Y. Filed June 18, 1888. Serial No. 277,441. (No model.)



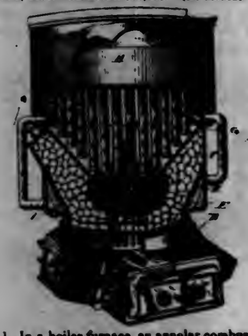
Claim.—1. A tension apparatus composed of, first, a rotary grooved wheel or pulley for the thread; second, means for applying friction to said wheel or pulley; third, a casing with portions thereof on opposite sides of said wheel or pulley and provided with flanges or projections that cover the edges of the groove in said wheel or pulley, leaving a slit or slot for the insertion of the thread, and, fourth, means whereby the portion of the casing on the outside of the wheel or pulley, as well as the inside portion thereof, is kept from turning with said wheel or pulley, substantially as described.

2. A tension apparatus having a rotary grooved wheel or pulley formed of a disk with the edge slit and the teeth thus formed bent in opposite directions, and a casing with flanges or projections that cover the edges of the groove, leaving a slit or slot between them and having the outside of one at least of said flanges sloped inward toward the slit or slot, the said tension being further provided with means for applying friction to the said wheel or pulley and with means whereby the said casing is kept from turning with the wheel or pulley, substantially as described.

3. A tension apparatus comprising, in combination with a rotating grooved wheel or pulley and a tension-spring for applying pressure thereto, a non-rotating two-part casing having flanges or projections over the edges of the groove in said wheel or pulley, leaving a slit or slot between them for the insertion of the thread, one of said flanged parts being interposed between the said wheel or pulley and the said tension-spring, and being movable toward and away from the said wheel or pulley, so as to convey thereto the pressure of said spring, substantially as described.

4. The combination, with the tension-stud and grooved wheel or pulley, of the non-rotating casing-disks or parts of the casing, one of them movable lengthwise of said stud and both provided with flanges or projections over the edges of the groove in said wheel or pulley, the friction-washers, the tension-spring, and the nut, substantially as described.

413,658. STEAM-BOILER. CHARLES GORTON, New York, N. Y. Filed Feb. 23, 1889. Serial No. 300,856. (No model.)



Claim.—1. In a boiler-furnace, an annular combustion fuel-reservoir and combustion-chamber formed between a depressed upper and lower section, substantially as described.

2. In a boiler-furnace, a combustion-chamber formed between two annular sections, each of said sections being of inverted conical shape and having openings in their center, as described.

3. In a boiler-furnace, the combination of an annular combustion-chamber formed of two sections of inverted cone shape, one diverging from a horizontal plane more than the other, whereby the reservoir is given a tapering form, substantially as described.

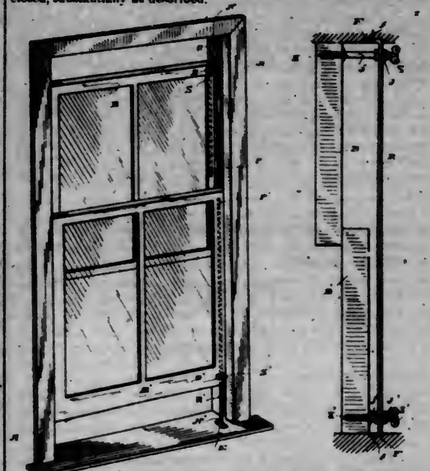
4. The combination, in a furnace, of a reservoir and combustion-chamber consisting of an upper and lower section, each being centrally depressed and having central openings varying in diameter, substantially as set forth.

5. The combination, in a furnace, of a fuel-reservoir and combustion-chamber, of an upper and lower section centrally depressed, having central openings of varying diameter, and the feeding-chutes and smoke and gas deflecting ring, substantially as described.

413,659. SASH-FASTENER. KENNEDY GRAHAM, Winnipeg, Manitoba, Canada. Filed July 12, 1889. Serial No. 317,362. (No model.)

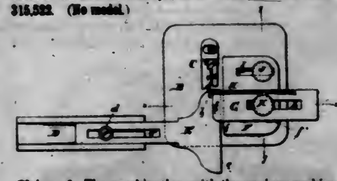
Claim.—1. In a window-fastener, the combination of a vertical rod which is attached to the window-casing, and which fits into a longitudinal perforation in the window-sash, a jaw which surrounds said rod and is set in the window-sash, and a set-screw which is mounted in said jaw and bears against said rod, substantially as described.

2. In a window-fastener, the combination of a vertical rod which is attached to the window-casing, and which fits into a longitudinal perforation in the window-sash, a jaw which surrounds said rod and is set in the window-sash, and a set-screw which is mounted in said jaw and bears against said rod, together with a notch cut in said rod at that point where it is seized by the clamp when the window is closed, substantially as described.



3. In a window-fastener, the combination of a vertical rod attached to the window-casing, a jaw which surrounds said rod and is attached to the window-sash, and a set-screw which is mounted in said jaw and bears against said rod, together with a notch in said rod at the point opposite the set-screw when the window is closed, which notch has a beveled lip which bears upon the side of the set-screw from which the sash should be forced to insure complete closure of the window, substantially as described.

413,660. TUCKING ATTACHMENT FOR SEWING-MACHINES. GEORGE W. GREEN, Brooklyn, N. Y. Filed June 25, 1889. Serial No. 315,522. (No model.)



Claim.—1. The combination, with the sewing-machine and cloth-plate, of a presser-foot having a needle-opening, a long U-shaped frame D, secured to the main frame of the machine below the cloth-plate and having its upper end approximately in the same plane with the cloth-plate, forming a large space between its ends for the passage of the cloth below the cloth-plate, a guide E, adjustably supported by the upper end of the frame D above the cloth-plate, having an edge *e* in a line to one side of the needle-opening, a guide adjustably clamped to the cloth-plate, forming a narrow slot with the edge of the guide E, an overhanging guide-plate G, supported upon the guide F and extending above the guide E, and a finger A, arranged above the plate E and slightly beyond the edge of said plate G.

2. The combination, with the cloth-plate, a presser-foot having a slot extending past and to one side of the needle, and needle of a sewing-machine, of adjustable guides E and F, forming a longitudinal guideway between them and toward the presser-foot, an adjustable overhanging guide-plate G, extending above the plate E, and a finger A, arranged above the plate E and slightly beyond the edge of the plate G, to which it is secured.

3. The combination, with a presser-foot having a longitudinal slot extending past the needle-hole, of a guide-plate E, over which the cloth is folded and from which it passes to the presser-foot, a guide-plate G and finger A, arranged above the edge of the plate E, and in which the space between the edge of the plate G and finger A is in line with the slot of the presser-foot, and a support for the plate G.

4. The combination, with the presser-foot having a longitudinal slot extending past the needle-hole, of a guide-plate E, over which the cloth is folded and from which it passes to the presser-foot, a guide-plate G, and spring-finger H A, carried by the plate G and arranged

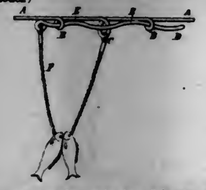
above the edge of the plate E, and in which the space between the edge of the plate G and finger *h* is in line with the slot of the presser-foot, and a support for the plate G.

5. The combination of a sewing-machine having a presser-foot C, formed with a longitudinal slot *c*, extending past the needle-opening and terminating in an oblique transverse slot T, with guides, substantially as set out, for folding the cloth into a fold for forming a tuck.

6. The combination of a sewing-machine having a presser-foot C, formed with a longitudinal slot *c*, extending past the needle-opening and having an oblique entrance and terminating in an oblique transverse slot T, with guides, substantially as set out, for folding the cloth into a fold for forming a tuck, and a guide for turning up the previously-formed tuck into position to enter the slot of the presser-foot.

413,661. DEVICE FOR STRINGING AND CARRYING FISH.

SYLPHEN S. HARMAN, New York, N. Y. Filed Apr. 13, 1889. Serial No. 307,150. (No model.)



Claim.—1. In a device for stringing fish, the bar A, with the loops B B, the string F, attached to the eyes C C, and the skewing-needle D, so arranged that the needle will pass through the loops B B, as herein described.

2. In a device for stringing and carrying fish, a chain or string having on one end a skewing-needle and on the other toggle-bar with a loop or loops formed upon it, through which the skewing-needle may be passed, thus forming a handle for the string, as herein set forth and described.

3. In a device for stringing fish, a skewing-needle of an undulated form, in combination with a string or chain and a toggle with a loop or loops upon it adapted to engage the needle, as herein set forth.

413,662. COMBINED CURRY-COMB AND BRUSH.

GUSTAVE HAVEMANN, New Bremen, Ohio. Filed July 15, 1889. Serial No. 317,528. (No model.)



Claim.—1. A curry-comb and brush of the character described, the cylinder or body of which is provided with the radial kerfs and radially-arranged blades having their inner edges properly secured therein and their outer or free working-edges converging in the center to an approximately V-shaped form, substantially as described.

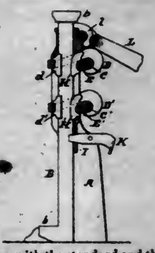
2. The combination, with the semicircular comb or blade portion of the cylinder, constructed as described, of the semicircular brush-backing secured in the semicircular recess of the body of the cylinder and provided with the bristles or other suitable material forming the brush portion or other half of the body of the cylinder, substantially as described, and for the purpose set forth.

413,663. LIFTING-JACK.

J. WESLEY HAWKINS, Kent, Ohio. Filed Aug. 12, 1889. Serial No. 320,551. (No model.)

Claim.—1. In a lifting-jack of the class designated, a clutch mechanism consisting of a bar bent to surround three sides of the lifting-bar and having hooked ends, a shaft resting in said hooked ends having crank-arms and bearing a cam, two shoes—one disposed between the lifting-bar and bent bar and the other between the lifting-bar and cam—and mechanism for moving said crank-arms to cause the shoes to clasp and release the lifting-bar, substantially as shown and described.

2. The combination, with the standard A and lifting-bar B sliding therein, of the clutch mechanism consisting of the yoke D, shaft C, cam E, arms *c*, and shoes *d* H, and the pivoted lever L, and links J for raising said bar, all constructed and arranged substantially as shown and described.



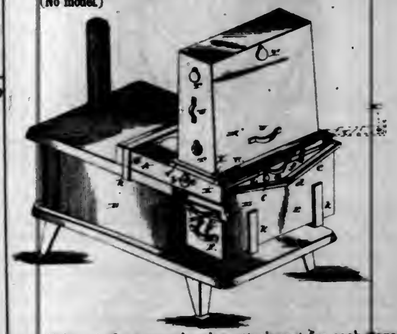
3. The combination, with the standard and the lifting-bar arranged to slide therein, of the lifting-clutch consisting of the yoke D, shaft C, cam E, shoes *d* H, and arms *c*, united with the pivoted lever L, by links J, and the retaining-clutch consisting of like parts, with the arms *c'* resting in the opening in the lugs *a'*, all constructed and arranged substantially as shown, and for the purpose specified.

4. The combination, with the standard, the lifting-bar mounted therein, and the retaining-clutch consisting of the yoke D', shaft C, cam E', shoes *d'* H', and arms *c'*, of the sliding plate I, to engage and raise the shoe H', and the pivoted foot-piece K, to actuate said plate, all constructed and arranged as shown.

5. In combination with the standard and the lifting-bar mounted therein, a pivoted lever, lifting and retaining clutches, each consisting of a yoke, a shaft-bearing, a cam, and end arms, shoes interposed between the lifting-bar and cams and yokes, respectively, a sliding plate to engage and raise one shoe of the retaining-clutch, and a pivoted lever to actuate said plate, all constructed and arranged substantially as shown and described.

413,664. STRAW-BURNING ATTACHMENT FOR STOVES.

JACOB L. HERMAN, Redfield, Dak. Filed Apr. 11, 1889. Serial No. 306,910. (No model.)



Claim.—1. In a straw-burning attachment for cook-stoves, the combination of the horizontal casing having the downwardly-extending ash-pit, and the grate-bars connecting the rear wall of said ash-pit with the top of the casing, substantially as herein set forth.

2. In a straw-burning attachment for cook-stoves, the combination of the horizontal casing having the downwardly-extending ash-pit, the grate-bars connecting the rear wall of said ash-pit with the top of the casing, and the fuel-box mounted removably upon the top of the casing directly above the ash-pit, substantially as herein set forth.

3. In a straw-burning attachment for cook-stoves, the herein-described horizontal casing adapted to rest upon the top of the cook-stove and having griddle-holes registering with the griddle-holes in the latter and provided with the downwardly-extending ash-pit, and the curved grate-bars connecting the rear wall of said ash-pit with the top of the casing, in combination with the fuel-box mounted removably upon said casing directly above the ash-pit, and an adjustable slide separating said fuel-box from the combustion-chamber, substantially as and for the purpose set forth.

4. The combination, with a cook-stove having a flanged top plate, of a straw-burning attachment comprising a casing mounted upon the top plate of the stove, projecting at one end, and having a downwardly-extending ash-pit and a fuel-box mounted removably upon the projecting end of the casing above the ash-pit, and a clamping or connecting strip arranged across the rear end of the casing and provided at its ends with downturned arms, the lower ends of which are provided with inturned lugs engaging the flange of the top plate of the stove, substantially as set forth.

5. The combination of the horizontal casing having the downwardly-extending ash-pit, the sliding box or ash-pan, the slide arranged above the latter and provided at its outer end with a flange and an upwardly-extending leg, and the door pivoted to the outer side of the casing and adapted to enter between the leg and the flange of said removable slide, substantially as herein set forth.

6. In a straw-burning attachment for cook-stoves, the combination of the horizontal casing having the downwardly-extending ash-pit, the grate-bars connecting the rear wall of said ash-pit with the top of the casing, the removable fuel-box provided with suitable draft-openings covered by pivoted slides, the adjustable slide arranged between the fuel-box and the combustion-chamber, and the slides arranged to cover suitable draft openings in the walls of the latter, substantially as and for the purpose herein shown and specified.

413,665. CREAMING-CAN.

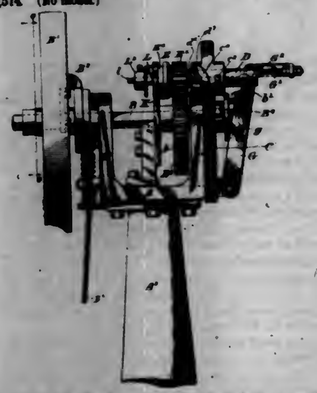
LOUIS HUMMEL, New Bremen, Ohio. Filed July 22, 1889. Serial No. 318,243. (No model.)



Claim.—A cream-can consisting of the body A, provided with the annular chamber B, having an upper annular flange *b*, bottom *b'*, and re-enforcing braces C, having their ends secured to the body of the can and wall of the chamber, as shown, cover D, having the tube or air-inlet E, secured to the apex of said cover, depending annular flange *d* of the cover, resting upon the inclined re-enforcing braces C in the interior of the chamber B, screw-cap seat *e*, screw-cap F, and cream-gage G, all constructed and arranged as herein shown and described, as, and for the purposes set forth.

413,666. MACHINE FOR FASTENING THE ENDS OF COILED-WIRE SPRINGS.

CHRISTIAN C. HILL, Chicago, Ill., assignor to Charles L. Ames and Abel H. Frost, same place. Filed Nov. 12, 1888. Serial No. 290,514. (No model.)



Claim.—1. A machine for the purpose set forth, comprising a slotted twisting-head and a wire-holder for sustaining two wires, said wire-holder comprising a stationary part provided with a groove to receive one wire, and a slide-bar provided with a prong arranged to cover the groove and to form an anvil over which the other wire is bent during the fastening of the ends of the wires, substantially as described.

2. A machine for the purpose described, comprising a slotted twisting-head and a wire-holder for sustaining one wire in alignment with the axis of the head and a second wire adjacent to the first wire, said wire-holder consisting of a stationary part provided with a groove and a notch to receive the first wire and a notch to receive the second wire located above the groove, and a bar provided with a prong adapted to pass over the wire in said groove and beneath the wire held in the notch, substantially as described.

3. The combination, with a slotted twisting-head, of a wire-holder consisting of a stationary part provided with a groove and a notch to receive one wire and a notch located above said groove to receive another wire, and a slide-bar provided with a prong arranged to cover the wire in the groove and pass beneath the wire in the notch, and provided also with a notch or recess to receive the said second wire, substantially as described.

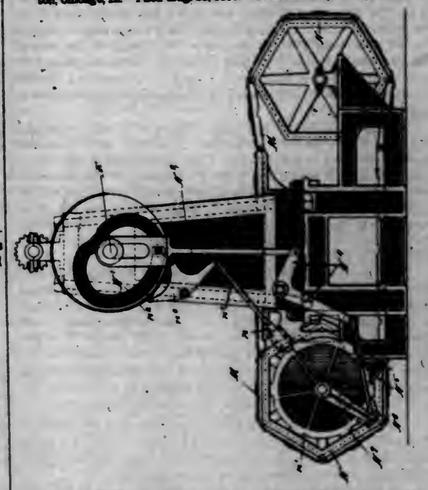
4. The combination, with a twisting-head and a wire-holder constructed to receive and hold a wire in line with the axis of the head and a second wire adjacent thereto, said twisting-head being provided with a bending-roller, and with a wiper, substantially as described.

5. The combination, with a slotted twisting-head, of a stationary spindle supporting the same, said spindle being provided with a longitudinal guide-groove, and a longitudinally-movable slide-bar mounted in said guide-groove, said spindle being provided with a groove and a notch to receive one wire and a notch to receive a second wire, and the slide-bar being provided with a prong arranged to cover the wire in said groove and to pass beneath the wire in the notch, substantially as described.

6. The combination, with a slotted twisting-head, of a stationary spindle supporting the same and provided with a wire-holder, said spindle being cylindric in its part engaged with the twisting-head, and a stationary arm bearing upon the outer face of the head to hold the same upon the spindle, substantially as described.

413,667. DOUBLE-ACTING GANG-DIE PRESS.

JOHN G. HOSMER, Maywood, Ill., assignor to Edwin Horton, same place, and Oliver W. Horton, Chicago, Ill. Filed Aug. 28, 1889. Serial No. 321,966. (No model.)



Claim.—1. The combination of an endless flexible intermittently-moving carrier M, having scrap-sheet-supporting plates m', provided with registering pins or bosses m^3, adapted to enter openings in the scrap-sheet, and a gang of dies arranged to cut blanks from the interstices in the scrap-sheet, substantially as specified.

2. The combination of an endless flexible intermittently-moving carrier M, having scrap-sheet-supporting plates m', provided with registering pins or bosses m^3, adapted to enter openings in the scrap-sheet, a gang of dies arranged to cut blanks from the interstices in the scrap-sheet, and mechanism for intermittently moving the carrier and locking or registering it in position, substantially as specified.

3. The combination, with intermittently-moving link-chain carrier M, of a die-plate or match-plate H, having passages or channels H^2 for the links of the chain, and a gang of dies, substantially as specified.

4. The combination of an intermittently-moving carrier M, furnished with sheet-holders m', and a die-plate H, having a recess H^4 for the reception of the sheet-holder m, substantially as specified.

5. The combination of an intermittently-moving carrier M, fur-

nished with sheet-holders m', a die-plate H, having a recess H^4 for the reception of the sheet-holder m', and means for raising such sheet-holder out of such recess as the carrier moves forward, substantially as specified.

6. The combination of an intermittently-moving carrier M, furnished with sheet-holders m', and a die-plate H, having a recess H^4 for the reception of the sheet-holders m', said die-plate H having a roller H^3, engaging a cam on the carrier for raising the sheet-holder out of the recess in the die-plate, substantially as specified.

7. In a gang-die press, the combination of two cross-heads B C with two gangs of male and two gangs of female dies, substantially as specified.

8. The double-acting gang-die press having two gangs of dies and two separate cross-heads for actuating the same, substantially as specified.

9. The combination, in a gang-die press, of an outer cross-head B and an inner cross-head C, die-plate c' and match-plate c^3, secured to said cross-head C, and die-plate b' and match-plate b^3, secured to said cross-head B below said plates c' c^3, and a gang of dies secured in said plates c' c^3 and a separate gang of dies secured in said plates b' b^3, substantially as specified.

10. The combination, in a gang-die press, of an outer cross-head B and an inner cross-head C, die-plate c' and match-plate c^3, secured to said cross-head C, and die-plate b' and match-plate b^3, secured to said cross-head B below said plates c' c^3, and a gang of dies secured in said plates c' c^3, a separate gang of dies secured in said plates b' b^3, and means for operating said cross-heads independently of each other, substantially as specified.

11. The combination, in a gang-die press, of an outer cross-head B and an inner cross-head C, die-plate c' and match-plate c^3, secured to said cross-head C, and die-plate b' and match-plate b^3, secured to said cross-head B below said plates c' c^3, and a gang of dies secured in said plates c' b^3, a separate gang of dies secured in said plates b' b^3, and a stripper or smoother plate F, substantially as specified.

12. The combination, in a gang-die press, of an outer cross-head B and an inner cross-head C, die-plate c' and match-plate c^3, secured to said cross-head C, and die-plate b' and match-plate b^3, secured to said cross-head B below said plates c' c^3, a gang of dies secured in said plates c' c^3, a separate gang of dies secured in said plates b' b^3, a bed-plate H' and match-plate H, a gang of cutting-dies h, secured in said plates H H', and a gang of forming-dies k, substantially as specified.

13. The combination, in a gang-die press, of an outer cross-head B and an inner cross-head C, die-plate c' and match-plate c^3, secured to said cross-head C, and die-plate b' and match-plate b^3, secured to said cross-head B below said plates c' c^3, a gang of dies secured in said plates c' c^3, a separate gang of dies secured in said plates b' b^3, a bed-plate H' and match-plate H, a gang of cutting-dies h, secured in said plates H H', and a gang of forming-dies k, said forming dies k being hollow and resting on movable tubular supports k', substantially as specified.

14. The combination, in a gang-die press, of an outer cross-head B and an inner cross-head C, die-plate c' and match-plate c^3, secured to said cross-head C, and die-plate b' and match-plate b^3, secured to said cross-head B below plates c' c^3, a gang of dies secured in said plates c' c^3, a separate gang of dies secured in said plates b' b^3, a bed-plate H' and a match-plate H, a gang of cutting-dies h, secured in said plates H H', and a gang of forming-dies k, said forming-dies k being hollow and resting on movable tubular supports k', said tubular supports k' being supported by springs k^3, substantially as specified.

15. In a gang-die press for cutting out blanks from the interstices of a scrap-sheet, the combination, with a gang of dies, of a scrap-sheet holder furnished with registering pins or bosses adapted to enter openings in the scrap-sheet, substantially as specified.

16. The combination, in a gang-die press, of a gang of dies with an intermittently-moving endless-chain carrier M, pulleys or wheels N N, cam N', link N^3, lever N^4, link N^5, pawl N^6, and ratchet N^7, substantially as specified.

17. The combination, in a gang-die press, of a gang of dies with an intermittently-moving endless-chain carrier M, pulleys or wheels N N, cam N', link N^3, lever N^4, link N^5, pawl N^6, ratchet N^7, lock-bolt n, said wheel N^7 having recesses n', cam n^2, lever n^3, and link n^4, substantially as specified.

18. The combination, in a gang-die press, of a gang of dies with an intermittently-moving endless-chain carrier M, pulleys or wheels N N, locking-bolt n, wheel N^7, provided with recesses n', cam n^2, lever n^3, and link n^4, substantially as specified.

19. The combination of an intermittently-moving endless flexible carrier with wheels or pulleys upon which it is mounted, such carrier being furnished with holders for supporting the sheet, and a pair of dies, substantially as specified.

20. The combination, with a gang of dies, of an intermittently-moving flexible carrier provided with holders for the sheets to be acted upon by the dies, whereby the sheets may be automatically carried to and register with the dies, substantially as specified.

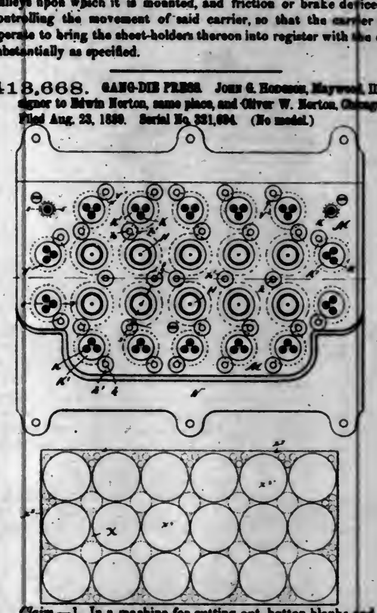
21. The combination, with a gang of dies, of an intermittently-moving endless flexible carrier provided with holders for the sheets to be acted upon by the dies, whereby the sheets may be automatically carried to and register with the dies, said sheet-holders being provided with registering pins or devices for governing the position of the sheet on the holder, substantially as specified.

22. In a double-acting gang-die press, the combination of a cross-head B and its guides, a cross-head C and its guides, and two separate gangs of dies operated by said cross-heads, substantially as specified.

23. The combination, with a movable sheet-carrier furnished with sheet-holders, of a cross-head, a die operated thereby, a stripper plate or pad F, and a cam for operating it so that the stripper-plate may serve to keep the sheet in place on its die-holder as the die is withdrawn, substantially as specified.

24. The combination, in a gang-die press, of a gang of male and female dies, an intermittently-moving flexible carrier M, wheels or pulleys upon which it is mounted, and friction or brake devices for controlling the movement of said carrier, so that the carrier may operate to bring the sheet-holders thereon into register with the dies, substantially as specified.

413,668. GANG-DIE PRESS. JOHN G. HODGSON, Maywood, Ill., assignor to Edwin Norton, same place, and Oliver W. Norton, Chicago, Ill. Filed Aug. 23, 1889. Serial No. 321,694. (No model.)



Claim.—1. In a machine for cutting out button-blanks and can-caps from the interstices of a scrap-sheet, the combination, with a bed die-plate N, of a match-plate M, a gang of can-cap-cutting female dies H, a gang of button-blank-cutting female dies K, guide or gage pins V V', a reciprocating cross-head B, die-carrying plate E, secured thereto, match-plate F, a gang of can-cap-cutting male dies C, and a gang of button-blank-cutting male dies D, operated by said cross-head B, substantially as specified.

2. In a machine for cutting out button-blanks and can-caps from the interstices of a scrap-sheet, the combination, with a bed die-plate N, of a match-plate M, a gang of can-cap-cutting female dies H, a gang of button-blank-cutting female dies K, guide or gage pins V V', a reciprocating cross-head B, die-carrying plate E, secured thereto, match-plate F, a gang of can-cap-cutting male dies C, and a gang of button-blank-cutting male dies D, operated by said cross-head B, said male dies D being mounted in stock-blocks D', secured to said plates E F, substantially as specified.

3. In a machine for cutting out button-blanks and can-caps from the interstices of a scrap-sheet, the combination, with a bed die-plate N, of a match-plate M, a gang of can-cap-cutting female dies H, a gang of button-blank-cutting female dies K, guide or gage pins V V', a reciprocating cross-head B, die-carrying plate E, secured thereto, match-plate F, a gang of can-cap-cutting male dies C, and a gang of button-blank-cutting male dies D, operated by said cross-head B, and feed-tubes R, extending from said female dies K, substantially as specified.

4. In a machine for cutting out button-blanks and can-caps from the interstices of a scrap-sheet, the combination, with a bed die-plate N, of a match-plate M, a gang of can-cap-cutting female dies H, a gang of button-blank-cutting female dies K, guide or gage pins V V', a reciprocating cross-head B, die-carrying plate E, secured thereto, match-plate F, a gang of can-cap-cutting male dies C, and a gang of button-blank-cutting male dies D, operated by said cross-head B, feed-tubes R, extending from said female dies K, and receiving-tubes S, attached to said feed-tubes R, substantially as specified.

5. In a machine for cutting out button-blanks and can-caps from the interstices of a scrap-sheet, the combination, with a bed die-plate N, of a match-plate M, a gang of can-cap-cutting female dies H, a gang of button-blank-cutting female dies K, guide or gage pins V V', a reciprocating cross-head B, die-carrying plate E, secured thereto, match-plate F, a gang of can-cap-cutting male dies C, and a gang of button-blank-cutting male dies D, operated by said cross-head B, feed-tubes R, extending from said female dies K, and receiving-tubes S, attached to said feed-tubes R, said receiving-tubes S having frictional wads or pistons S' to support the blanks as they are fed into the receiving-tube, substantially as specified.

6. The combination, with a hollow female die, as K, of a feed-tube R, provided with a spring-catch r, for supporting the blanks in the feed-tube, substantially as specified.

7. The combination, with a hollow female die, of a feed-tube R and a receiving-tube S, substantially as specified.

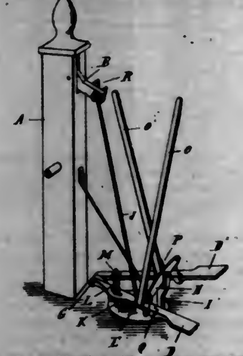
8. The combination, with a hollow female die, of a feed-tube R and a receiving-tube S, said receiving-tube S being furnished with a frictional wad or piston S', substantially as specified.

9. The combination, with a hollow female die, of a feed-tube R and a receiving-tube S, said receiving-tube being furnished with a frictional wad or piston S', and said feed-tube R having a spring-pawl r, substantially as specified.

10. In a machine for cutting blanks from the interstices of a scrap-sheet, the combination, with a gang of male and female dies arranged in a regular and definite order, of guide-pins or registering devices for registering the position of the scrap-sheet in respect to the dies, substantially as specified.

11. In a machine for cutting blanks from the interstices of a scrap-sheet, the combination, with a gang of male and female dies arranged in a regular and definite order, of guide-pins or registering devices for registering the position of the scrap-sheet in respect to the dies, and a smoother-plate descending in advance of the male dies for smoothing and flattening out the scrap-sheet, so that the interstitial spaces of the sheet will properly register with the gang of dies, substantially as specified.

413,669. ATTACHMENT FOR PUMPS. WILLIAM W. ROSS, Lansing, Mich. Filed June 12, 1889. Serial No. 314,017. (No model.)

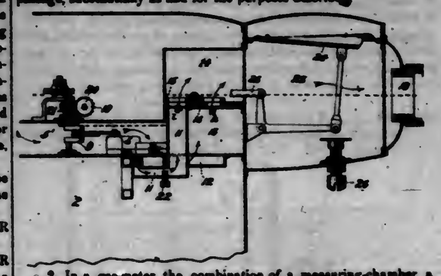


Claim.—1. In combination with a pump, two treadles pivotally connected at one end to the standard G of the base E of the standard I, walking-beam H, connected to the treadles, the standard K, the nut or flange M, the spring L, and the connecting-rod J, the parts being arranged to operate substantially as described.

2. In combination with a pump, two treadles pivotally connected to the base, a walking-beam pivotally secured to said base, the connection between the end of the walking-beam and the treadles, a hinge in said treadles, whereby one end may be turned up out of the way, a spring acting with its tension upon one of the treadles, the connection between the treadle and the pump-handle, and the hand-levers O and O', the parts being arranged to operate substantially as described.

413,670. PROPORTIONAL GAS-METER. HYAM J. HYAMS, Pittsburg, Pa. Filed Nov. 5, 1888. Serial No. 289,973. (No model.)

Claim.—1. A gas-meter having a measuring-chamber, a by-passage through which passes gas having a known ratio in volume to the gas passing through the measuring-chamber, and pressure-regulating mechanism controlling the passage of gas through the measuring-chamber and by-passage, said pressure-regulating mechanism being situate on the delivery side of the meter and being subjected to the conjoined pressures of the gas from the measuring-chamber and by-passage, substantially as and for the purposes described.



2. In a gas-meter, the combination of a measuring-chamber, a by-passage through which passes gas having a known ratio in volume to the gas passing through the measuring-chamber, ports affording communication between the by-passage and measuring-chamber, a common eduction-passage, a horizontal sliding valve controlling said ports, a pressure-regulator situate in said common eduction-passage, and a lever connecting the pressure-regulator with the horizontally-moving sliding valve, substantially as and for the purposes described.

3. A gas-meter having a measuring-chamber provided with moving mechanism, such as diaphragms, a by-passage, ports admitting gas into the measuring-chamber and into the by-passage, and a valve or valves which control the said ports and are operated by movement of the said diaphragms, a regulating-valve, and a pressure-regulator coupled to said regulating-valve and operating the same, accordingly as the pressure of gas is varied, substantially as and for the purposes described.

4. In a gas-meter, the combination of the measuring-chamber, a by-passage, a chamber 23, containing a pressure-regulator, ports i and k, leading from the by-passage and measuring-chamber into the chamber 23, and a valve or valves connected with the pressure-regulator and controlling the said ports, the said ports and valves being adapted to pass from the measuring-chamber and by-passage volumes of gas bearing a known ratio to each other, the port i being larger in area than that part of the area of the port or ports k which represents that fractional part of the whole volume of gas which is passed through said port i, for the purpose of compensating for the resistance of the measuring-chamber, and an outlet or eduction pipe leading from the chamber 23, substantially as and for the purposes described.

5. In a gas-meter, the combination of the measuring-chamber, a by-passage, a chamber 23, containing a pressure-regulator, ports i and k, leading from the by-passage and measuring-chamber into the chamber 23, a valve or valves connected with the pressure-regulator and controlling the said ports i k, the said ports and valve being adapted to pass from the measuring-chamber and by-passage volumes of gas bearing a known ratio to each other, the port i being larger in area than that part of the area of the port or ports k which represents that fractional part of the whole volume of gas which is passed through said port i, for the purpose of compensating for the resistance of the measuring-chamber, and an outlet or eduction pipe leading from the chamber 23, substantially as and for the purposes described.

6. In a gas-meter, the combination of the measuring-chamber, a by-passage, a chamber 23, containing a pressure-regulator, ports leading from the by-passage and measuring-chamber into the chamber 23, and a valve or valves connected with the pressure-regulator and controlling the said ports, the said ports and valve being adapted to pass from the measuring-chamber and by-passage volumes of gas bearing a known ratio to each other, and the said pressure-regulator being adapted, substantially as described, to cause the valve to close the ports as the pressure increases above the normal, and also to close the same as the pressure decreases below the normal, and an outlet or eduction pipe leading from the chamber 23, substantially as and for the purposes described.

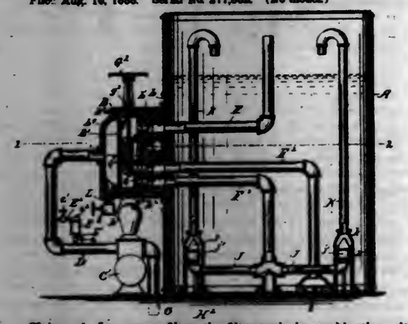
7. A gas-meter having a measuring-chamber, a by-passage through which passes gas having a known ratio in volume to the gas passing through the measuring-chamber, an induction-pipe admitting gas to the measuring-chamber and to the by-passage, an eduction-pipe, and a pressure-regulator having a valve or valves which control the passage of the gas into the said by-passage and measuring-chamber and the passage of the gas from the same, substantially as and for the purposes described.

8. A gas-meter having a measuring-chamber provided with moving mechanism, such as diaphragms, a by-passage, ports admitting gas into the measuring-chamber and into the by-passage, a valve or valves

which control the said ports and are operated by movement of said diaphragms, and a pressure-regulator having a valve or valves which control the passage of gas from the measuring-chamber and by-passage, substantially as and for the purposes described.

9. A gas-meter having a measuring-chamber provided with moving mechanism, such as diaphragms, and a by-passage through which passes gas having a known ratio in volume to the gas passing through the measuring-chamber, an eduction-passage, ports through which the by-passage and measuring-chamber communicate with the eduction-passage, and a valve controlling the passage of gas through the ports both of the measuring-chamber and by-passage at the place of communication of the measuring-chamber and by-passage with the eduction-passage, substantially as and for the purposes specified.

413,671. **WATER-FILTER.** OMAR H. JEWELL and IRA H. JEWELL, Chicago, Ill., assignors to the Jewell Pure Water Company, same place. Filed Aug. 16, 1888. Serial No. 277,362. (No model.)



Claim.—1. In a water-filter, the filter-tank, in combination with the valve-chest, the sliding valve G, arranged therein and recessed as described, the water-supply pipe opening into said valve-chest on one side of the valve, the four ports, and the four pipes connected to said ports, three of them—to wit, the wash-pipe and inlet and outlet pipes—extending into the tank, and the fourth connecting with the pure-water and waste pipes, substantially as and for the purposes specified.

2. In a water-filter, the filter-tank A, in combination with the valve-chest B, the recessed slide-valve G, arranged therein, and the supply-pipe D, said valve-chest being provided with the ports f, f' f^2, and f^3, the inlet-pipe F, outlet-pipe F^2, and wash-pipe F^3, connected, respectively, to the ports f, f^2, and f^3, and extending into the filter-tank, and the pipe F', connected to the port f', substantially as and for the purposes specified.

3. In a water-filter, the filter-tank, in combination with a single discharge-pipe leading from said tank and providing a single and common outlet for both the filtered water and the wash-water, a pure-water-supply pipe and a separate waste-pipe, both having a common junction with the said discharge-pipe outside of the filter, and a three-way valve at the junction of the said three pipes, substantially as and for the purposes specified.

4. In a water-filter, the filter-tank, in combination with the discharge-pipe F', forming the only outlet for both filtered water and wash-water from the tank, a pure-water-supply pipe H' and a waste-pipe H^2, separate from each other, and a three-way valve H, into the casing of which the pipe F', the waste-pipe H^2, and the pure-water pipe H' all open, the two former into one and the same chamber and the latter into the opposite chamber, and provided with two seats for the valve, one in the diaphragm which divides the casing into chambers and the other at the junction between the wash-pipe and said casing, substantially as and for the purposes specified.

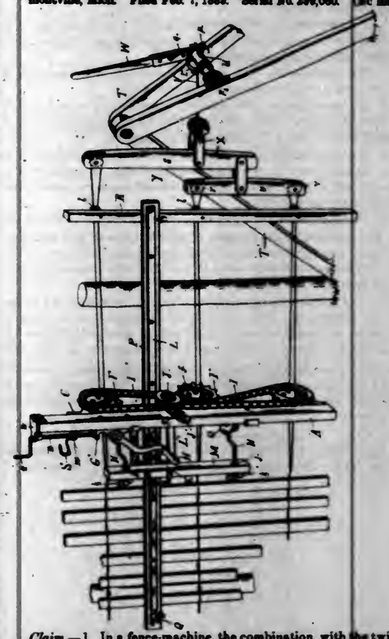
413,672. **FELLY-JOINT HOLDER.** MILTON KERCH and BENJAMIN M. MILLER, Conyngham, N. Y. Filed June 19, 1889. Serial No. 314,572. (No model.)



Claim.—1. The felly-joint comprising the wedge-shaped body 8, having the bolt-shanks 11 at its foot, the side flanges 10 to bear against the sides of the fellies, and the head-flanges 9 to bear against the edges of the tire, substantially as described.

2. The combination of the fellies having their approaching ends cut to form a wedge-shaped opening between them, the wedge-shaped body 8 in said opening and having the side flanges 10, bearing against the sides of the fellies, the head flanges 9, bearing against the edges of the tire, and the bolt-shanks 11, projecting from its foot, the clip-plate 5, bearing against the inner sides of the jointed fellies and having the hole a on the shank 11, and the end slots 6 7, and the bolts 4 5 in the ends of the fellies and extending through the end slots, said bolts and shanks having the nuts to clamp the clip-plate to the fellies, substantially as described.

413,673. **PICKET-FENCE MACHINE.** FRANKLIN W. KELLY, Vermontville, Mich. Filed Feb. 7, 1889. Serial No. 299,080. (No model.)



Claim.—1. In a fence-machine, the combination, with the twister-frame, of the rectangular outrigger-frame pivotally secured at one side to the standard of the twister-frame, the bar M on the outrigger-frame, and the bumpers O, all substantially as and for the purpose specified.

2. The combination, with the standard of the machine, of the outrigger-frame L', pivotally secured thereto and provided with the travelers K, the bar M, secured to said outrigger-frame, the rods N, having the hooked ends pivotally engaging into sockets in the bumper O, and the adjusting thumb-nuts k and k' on the screw-threaded ends of said rods, all arranged to operate substantially as described.

3. In a picket-fence machine, a vertically-adjustable picket-guide carried by a screw-nut engaging with an adjusting-screw, substantially as described.

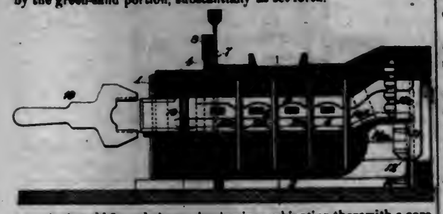
4. In a picket-fence machine, the combination, with the twister-frame, of a vertically-adjustable picket-guide S, provided with the nut m and the adjusting-screw n engaging into said nut, and provided with a crank-handle o, substantially as described.

413,674. **MOLD.** JACOB KERNER, Pittsburg, Pa., assignor, by mesne assignments, to the Kerner & Jones Manufacturing Company, same place. Filed Mar. 5, 1888. Serial No. 301,971. (No model.)

Claim.—1. A mold for axle-boxes, having in combination therewith a core consisting of a green-sand portion and a baked-sand portion molded into the green-sand portion, substantially as set forth.

2. A mold for axle-boxes, having in combination therewith a core consisting of a green-sand portion and a baked-sand portion having an opening therethrough and a core-bar extending through and supporting both portions of the core, substantially as set forth.

3. A mold for hollow articles, having in combination a core consisting of a green-sand portion and a baked-sand portion having an opening therethrough, the latter being molded into and held in position by the green-sand portion, substantially as set forth.



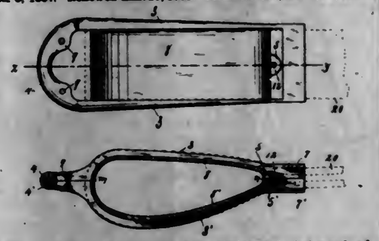
4. A mold for axle-boxes, having in combination therewith a core, a core-bar notched as described, and extending through the core, and slotted supporting-plates, the walls of the slots constructed to engage the notches in the core-bar when in normal position, the slots being made of such dimensions relative to the core-bar as to permit the longitudinal movement of the bars through them when shifted from normal position, substantially as set forth.

413,675. **COFFIN-FASTENER.** WILLIAM C. LANGSHAW, Brooklyn, Ohio. Filed June 17, 1889. Serial No. 314,555. (No model.)



Claim.—In a fastener for coffins, the combination of a notched bolt attached to the casket and extending into a cavity in the side thereof, a staple and plate in the top of the casket, a loop depending from said plate, and a catch with spring and thumb-piece, constructed and arranged substantially as and for the purpose set forth.

413,676. **MARTINGALE-LOOP.** JOHN LOSS, Freeport, Ill. Filed Feb. 5, 1887. Renewed Mar. 20, 1889. Serial No. 305,337. (No model.)



Claim.—The metallic harness-loop consisting of the independently-formed halves 8 8', having at their opposite margins the flanges 3 3 3' 3', respectively, the bars 4 7, joining the flanges 3 3, the bars 4' 7', joining the flanges 3' 3', the uniting-lugs 5 5', and the rivets 9 9 12, uniting the two parts into a rigid whole, substantially as and for the purpose set forth.

413,677. **WHEELBARROW.** JAMES W. MALOY, Marietta, Ga. Filed Dec. 17, 1888. Serial No. 293,790. (No model.)



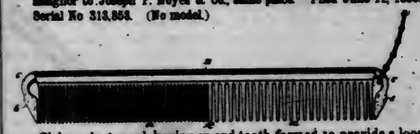
Claim.—1. A wheelbarrow having a supporting dished wheel turning upon an inclined axle and mounted beneath the body of the barrow, with the lower part of the rim of the wheel central vertically with said body, substantially as set forth.

2. A wheelbarrow having a supporting dished wheel mounted upon an inclined spindle or shaft, a bearing for the upper end of the shaft arranged to bring the ground-bearing of the wheel substantially centrally beneath the barrow-body, and a bearing for the opposite end of the said shaft carried by an arm or bracket projecting from a sill of the barrow, substantially as set forth.

3. A dished supporting-wheel adapted for a wheelbarrow having a hub, a rim, and a series of straight radial and series of inclined spokes between the hub and rim, substantially as set forth.

4. A dished supporting-wheel adapted to be used with a wheelbarrow having a spindle, a hub 1 2, mounted thereon, a series of inclined spokes extending between the part 1 of the hub and the wheel-rim, and a series of direct radial spokes extending between the part 2 of the hub and the wheel-rim, substantially as set forth.

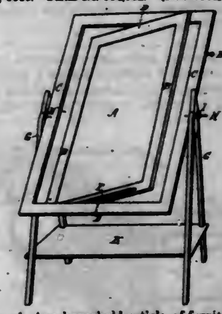
413,678. **DRESSING-COMB.** JOSEPH P. HOYER, Binghamton, N. Y., assignor to Joseph P. Hoyer & Co., same place. Filed June 11, 1889. Serial No. 313,853. (No model.)



Claim.—1. A comb having an end tooth formed to provide a loop or ring, as c, for the attachment of a cord or chain, substantially as described.

2. A comb consisting of the comb proper, a metallic back B, and an end tooth integral with said back, formed to provide a loop c, substantially as described.

413,679. **BLACKBOARD.** JOHN H. OSBORN, Titusville, Pa. Filed Mar. 27, 1889. Serial No. 304,962. (No model.)



Claim.—1. As a household article of furniture or toy, a slate and frame adjusted to revolve horizontally within an outer frame which is adjusted to revolve vertically between two standards, and which may be clamped in a horizontal, vertical, or inclined position, as required, all constructed substantially as shown, and for the purposes herein specified.

2. As a new article of manufacture, the slate-surface constructed and supported as shown, with the slate-surface and inner frame revolving horizontally in the outer frame, and the outer frame revolving vertically between the two supports, and with the spring-catches and clamp-screws, as shown, all the parts herein described constructed as shown, and working in combination, substantially as shown and described.

413,680. **NEEDLE-BAR FOR SEWING-MACHINES.** LEONARD W. PARKHURST, Hyde Park, Mass. Filed Apr. 1, 1889. Serial No. 305,698. (No model.)



Claim.—A sewing-machine needle-bar consisting of two sections B C, the section B having the latch-lever b, with the catch b' under one end, the spiral spring b^2 under the other, and the pressure-piece b^4 over the spring, and the section C having the rabbet c and notch c', as shown and described.

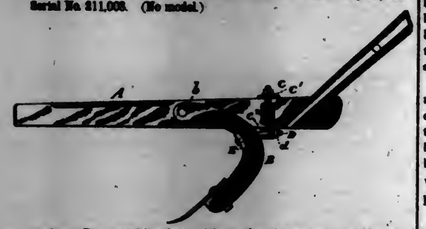
413,681. **BUNG.** FRIEDRICH PFEIFER and LUDWIG MEISSER, Dusseldorf, Germany. Filed Feb. 27, 1889. Serial No. 301,368. (No model.)

Claim.—The combination of threaded plug K, having collar O, with elastic packing P and with suspended valve F and catch H, substantially as specified.

418,681.

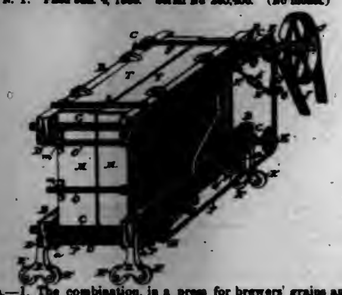


418,682. PLOW-STOCK. JESSE L. POOLE, Martinsville, S. C., assignor of one-half to Pierce Y. Poole, same place. Filed May 16, 1888. Serial No. 211,003. (No model.)



Claim.—The combination, with a plow-beam and a bifurcated standard pivoted thereto, of a yoke adjustably clamped to said beam and connected by a nut, plate, and screw with the standard, the latter being supported rearwardly against the draft-strain by the yoke-clamp, as shown and described.

418,683. PRESS FOR EXTRACTING MOISTURE FROM BREWERS' GRAINS. WILLIAM P. PRESTON and JAMES J. KELLEY, Brooklyn, N. Y.; said Kelley assignor to said Preston and Frank J. Rudner, New York, N. Y. Filed Jan. 4, 1889. Serial No. 295,606. (No model.)



Claim.—1. The combination, in a press for brewers' grains and other materials, of the two parallel movable lateral walls, the transverse connecting-screws formed with right and left threads engaging nuts in the opposing walls and all geared together to rotate in unison, and the overlapping top, bottom, and end plates, substantially in the manner and for the purpose herein set forth.

2. The combination, with the two parallel movable lateral walls, the transverse right and left screws connecting and actuating them, and the overlapping top, bottom, and end plates, the bottom plates being hinged to said lateral walls, of the transverse sliding supporting-bars moving under the ends of the bottom plates, and the levers actuating said bars, substantially in the manner and for the purpose herein set forth.

3. The combination, with the parallel movable lateral walls, the transverse screws connecting and actuating them, the sprocket-wheels on the screw-shafts, and the endless chain gearing them together, of the swinging arms pivoted on one of the screw-shafts, the tension-rollers pivoted on the end of each arm to swing against the proximate length of the endless chain, the link connecting the free ends of said arms, and means for adjusting the length of said link, substantially in the manner and for the purpose herein set forth.

4. The combination, with the two parallel movable lateral walls, the transverse right and left screws connecting and actuating them, and the overlapping top, bottom, and end plates, of the transverse end-supporting bars, each secured to one of the lateral plates to work through an eye or staple on the opposite plate, substantially in the manner and for the purpose herein set forth.

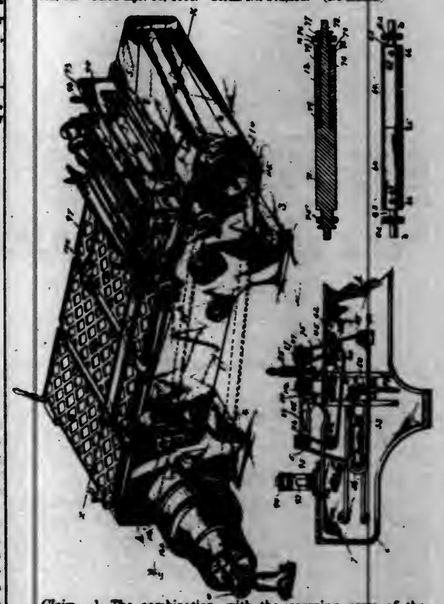
418,684. ROTARY PUMP. FREDERICK G. SARGENT, Gardnerville, Nev. Filed July 25, 1887. Serial No. 245,194. (No model.)



Claim.—1. In a rotary pump, the combination of the separate radial buckets H H, the disks F G, rigidly attached thereto and provided with a central inlet-opening through one of them and a central bearing-step *f* upon the other, and the casing A, formed of the flanged box *a*, provided with a step-bearing and having its flange embracing both of said disks and fitted to the outer edges of the same with water-tight running joints, and the plate *a'*, carrying the induct-pipe B, substantially as described.

2. The combination of the disks F and G, having the separate radial buckets H H between them and each having a groove in its outer edge, and wire packing M, the step *f*, placed centrally upon the face of one of said disks, and the casing A, formed of the flanged box *a*, provided with a central step-bearing, and having its flange embracing both of said disks and fitted to the outer edges of the same with water-tight running joints, and the plate *a'*, carrying the induct-pipe B, substantially as described.

418,685. WOOD-WORKING MACHINE. SAMUEL J. REIMER, Milton, Pa. Filed Apr. 30, 1888. Serial No. 272,252. (No model.)



Claim.—1. The combination, with the carrying-arms of the matcher-head spindles, of a tubular shaft 21 and a setting-bar, as 29, arranged in the bore of the tubular shaft, and a bar to press the end of the setting-bar against the cross-piece of the frame at the forward part of the machine, substantially as described.

2. The combination, with the carrying-arms of the matcher-head spindles, of a tubular shaft 21 in bearings on the carrying-arms, a cross-piece 18, formed with a depending flange 27, having a groove 28 on its face, a setting-bar, as at 29, arranged in the bore of the tubular shaft with its inner end to engage the groove of the flange of the cross-piece, and a threaded bar in the end of the tubular shaft to set the setting-bar thereto, substantially as described.

3. In a planing-machine, the line-shaft having fixed pulleys, and loose pulleys of less diameter than said fixed pulleys, the carrying-arms having the depending spindle-brackets and the horizontal belt-rests 42, projecting therefrom, the vertical matcher-head spindles journaled in bearings in the carrying-arms and having the pulleys above the belt-rests, and the belts connecting the pulleys on the line-shafts with the pulleys on the matcher-head spindles, the lower edges of said belts traveling on the belt-rests, substantially as described.

4. The carrying-arms having the depending brackets, bearings in said brackets and in the front ends of the arms for the vertical matcher-head spindles, and the horizontal belt-rests 42, projected from the said depending brackets, for the purpose set forth, substantially as described.

5. The combination, with the driving-chain of the feed-rollers, the forward set of feed-rollers, and the upper and lower rear feed-rollers, of an idler, as 60, mounted on a bearing and carrying the chains free from the neck of the lower rear feed-roller, substantially as described.

6. The combination, with the upper feed-rollers and the lower feed-rollers and the driving-chain, of an idler mounted on the machine and arranged to carry the drive-chain free from the neck of one of the said lower feed-rollers, substantially as specified.

7. The combination, in a planing-machine, of the vertically-adjustable brackets having the planer-head mounted thereon, and a feed-roller journaled in arms on said brackets and consisting of two concentric parts of equal length, one part being free to revolve a limited distance on its bearing independent of the other, substantially as described.

8. The combination, in a planing-machine, of vertically-adjustable brackets having the planer-head mounted thereon, and a feed-roller journaled in arms formed on said brackets, consisting of a solid section of substantially one-half the length of the roller and having a shaft centrally projected from one end thereof, and a shell mounted to revolve on said projected shaft and formed with a sleeve constituting the journal end bearing of the shell, substantially as described.

9. The combination, in a planing-machine, of vertically-adjustable brackets having the planer-head mounted thereon, and a feed-roller consisting of a solid central part journaled in arms formed on said brackets, and a shell mounted concentrically on the solid central part and arranged thereon to have a limited independent revolution, substantially as described, and for the purpose specified.

10. The combination, in a planing-machine, of vertically-adjustable brackets carrying the planer-head, and a feed-roller consisting of a central shaft formed with journal ends mounted in said brackets and formed with stops 67, and a shell mounted on the said shaft and formed with limited angular slots 66, to engage the stops on the shaft, substantially as described, and for the purpose specified.

11. The combination, with a yielding driving-chain, of a feed-roller consisting of a solid central part and an outer shell mounted thereon and slotted to engage holding-pins on the solid central part, substantially as described.

12. In a planing-machine, the combination, with the driving means, substantially as described, of a feed-roller consisting of a central shaft and two shells of equal length mounted on the central shaft, each of said shells being slotted to engage stops fixed on the central shaft, substantially as described, and for the purpose specified.

13. The combination, with the feed-roller and the planer-head of a planing-machine, of a presser-bar consisting of sections 81 82, having sockets in their inner and approaching ends, and vertical screw-threaded end bars, and a connecting-bar arranged in the sockets of the sections, whereby they are supported at the middle, substantially as described.

14. The combination, in a planing-machine having the curved ways 84 in its inner side faces, of the presser-bar frame at the rear of the upper planer-head, a presser-bar having a curved face adjacent to the planer-head and consisting of two parts detachably united at their inner ends and formed with curved end flanges to fit the curved ways on the planer-frame, and threaded bolts to hold the presser-bar in place, whereby the pressure of the bar is thrown close to the planer-bits, substantially as described.

15. The combination, in a planing-machine, of the front presser-bar 87, formed with inclined tongues 92 on its ends, and the horizontal sliding brackets 90, formed with tongues 89 to slide in horizontal grooves in their support, and inclined grooves 91, to receive the tongues 92, whereby the presser-bar is both longitudinally and vertically adjustable, substantially as described.

16. The combination, with a planing-machine, of the chip-break and board-guide consisting of a metal bar adjustably arranged on the planer-bed and means for automatically imparting longitudinal and sidewise movements to the bar, substantially as described, and for the purpose specified.

17. The combination, with a planing-machine, of the chip-break and board-guide consisting of a bar having a threaded end and provided with slanting slots, a spring anchored on the bar to throw it longitudinally, and studs arranged to engage the slanting slots in said bar to throw the bar laterally, substantially as described.

18. The combination, with the bed of a planing-machine, of a chip-break and board-guide arranged on the bed of the machine and consisting of a metal bar having a head to set adjacent to the matcher-head of the machine, slanting slots to engage studs in the bed-plate and carrying-arm of the machine, and a spring on the bar to press it forward and sidewise, substantially as described, and for the purpose specified.

19. The combination, in a planing-machine, of a chip-break and board-guide 97, having a threaded end portion 98, a rounded-out chip end 110, and slanting slots 105 107, the housing 100, secured to the carrying-arm of the machine, the studs 106 109, arranged as specified, the spring 108, and the adjusting-nut 104, all substantially as described.

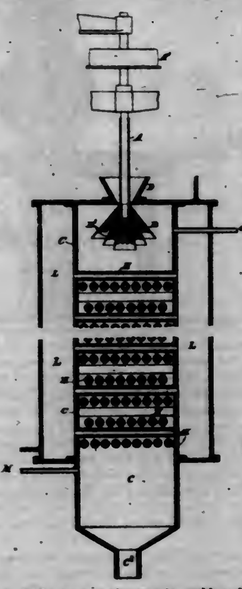
20. In a surface-planer of the kind herein described, the combination, with the driving-pulleys at the front of the machine, the upper and lower planer-heads provided with belt pulleys on their ends, and the driving-belts arranged thereon, of idler-pulleys 114, mounted on fixed shafts projected from the side of the machine-frame at the rear, said idlers 114 having the driving-belts arranged about them and being of such diameter as to carry the belt above and below the lower planer-head pulleys, substantially as described, and for the purpose specified.

21. The combination, with the line-shaft of the machine, of the belt-housing idler-pulley 116, arranged adjacent to the driving-pulley 116^{x}, and formed with a wide circumferential flange 117 and a belt-supporting stud 118, whereby the belt of the machine may be rolled up and packed in the space within the flange, substantially as described.

22. The combination, with the line-shaft of the machine, of the belt-housing idler 116, arranged adjacent to the driving-pulley 116^{x} and formed with a wide circumferential flange 117 and a belt-supporting stud 118, and a cover 120 to close the side face of the idler, substantially as described, and for the purpose specified.

23. The combination, with the carrying-arm of the matcher-head and the belt driving the spindle of the matcher-head, of a belt-shifting bar having its upper end fixed to the side of the carrying-arm, with the bar extending downward to engage the said belt, substantially as described, and for the purpose specified.

418,686. PROCESS OF EXTRACTING GOLD OR SILVER BY CHLORINATION. JEAN B. A. SUBERBIE, Clermont-Ferrand, France, assignor to Samuel Wilkins Cragg, Baltimore, Md. Filed June 27, 1888. Serial No. 315,774. (No model.) Patented in England Apr. 9, 1888, No. 6,116.



Claim.—1. In the process of extracting gold or silver or gold and silver from their ores or materials containing them, the improvement which consists in first roasting or oxidizing the ores or materials and then subjecting them in a dry state to the action of dry gaseous chlorine, the chlorination being effected at a temperature of from 100° to 140° centigrade, as set forth.

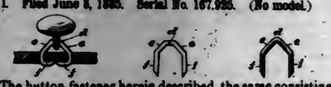
2. In extracting gold or silver or gold and silver from their ores

or material containing them, the process consisting in grinding or reducing the ores or materials to be treated and separating the finer portions or dust from the coarser portions or granules, roasting or oxidizing them separately, and subjecting such finer and coarser portions separately to the action of dry gaseous chlorine, the chlorination being conducted at a temperature of from 100° to 140° centigrade.

3. In the process of extracting gold or silver or gold and silver from their ores or materials containing them, the improvement consisting in subjecting said ores or materials in a dry state, after roasting or oxidizing, to the action of dry gaseous chlorine and maintaining the temperature at from 100° to 140° centigrade during chlorination by means of heated fluid—such as steam, air, or gas—surrounding the vessel in which the operation is carried on, as set forth.

4. In the process of separating gold or silver or gold and silver from their ores or materials containing the same, the improvement consisting in first roasting or oxidizing the reduced ores or materials and then showering the same in a dry condition through a chamber or column through which dry gaseous chlorine is passed in the opposite direction, the temperature being maintained during chlorination at from 100° to 140° centigrade, as set forth.

413,687. BUTTON-FASTENER. FRANKLIN A. SMITH, Jr., Providence, R. I. Filed June 3, 1885. Serial No. 167,925. (No model.)



Claim.—The button-fastener herein described, the same consisting of an angular crown or arch, for the reception of the eye of a button, and two parallel attaching-prongs having sharpened or attenuated points, said prongs being formed one at each end of said crown or arch and projecting downward therefrom, and being of substantially uniform size above the attenuated points as said crown or arch, substantially as herein set forth.

413,688. STAMPING OR DATING MACHINE. EDWARD F. SPIVEY and GEORGE W. SPIVEY, Flint, Tex. Filed Nov. 22, 1888. Serial No. 291,579. (No model.)



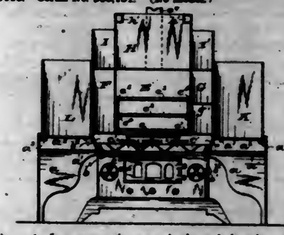
Claim.—1. The combination of the standards having the vertical longitudinal slots in their upper portions, the recessed guide secured horizontally to and between the standards, the cross-head playing in the slots of the standards, mechanism for reciprocating the cross-head, the stock pivoted to the cross-head and playing in the recessed guide, and the dating-wheels carried by said stock, as set forth.

2. The combination of the standards having the vertical longitudinal slots in their upper portions, the recessed guide secured horizontally to and between the standards, the cross-head playing in the slots in the standards, mechanism for reciprocating said cross-head, the stock pivoted to the cross-head and playing in the recessed guide, the dating-wheels carried by said stock, and the buttons pivoted to said guide and projecting inward beyond the sides of the recess therein, as set forth.

3. The combination of the table, the standards rising therefrom, the rollers at the ends of the table, the stock mounted between the upper ends of the standards and carrying the dating-wheels, the driving-shaft journaled between the lower ends of the standards, connections between the ends of the driving-shaft and the stock, the roller secured on the driving-shaft, and the carrier-belt passing over the table and around the rollers, as set forth.

4. The carrying-belt for dating-machines having ink-pads secured to its upper surface at regular intervals, as set forth.

413,689. OIL-STOVE. JOHN STANARD, Newark, N. J. Filed Oct. 15, 1888. Serial No. 288,131. (No model.)



Claim.—1. In a stove, the stove-body and chambered frame above and around the same, combined with an ash-receiver and a pivoted flame-spreading device arranged above said ash-receiver, for the purposes set forth.

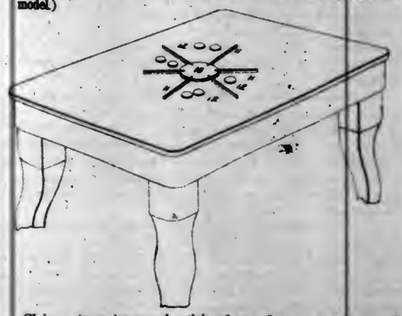
2. In a stove, the stove-body and chambered frame above and around the same, combined with an ash-receiver and a flame-spreading device pivotally arranged in the sides of the stove-frame, and having shields provided with rocker-arms connected with each other by a lever, one of said arms being provided with means for turning the same, a chambered compartment formed by the walls of the stove-body, in which said ash-receiver and flame-spreading device is arranged, compartments above the same, said compartments formed integrally with each other and arranged upon cleats secured to the walls of the stove-body, substantially as and for the purposes set forth.

3. The herein-described ash-receptacle, consisting of a frame *c*, provided with V-shaped bars *c'*, and openings or perforations c^2 in the bottom of said receptacle, in combination with a pivoted flame-spreading device, substantially as specified, and means for turning said device, for the purposes set forth.

4. The herein-described ash-receptacle, consisting of a frame *c*, provided with V-shaped bars or shields *c'*, arranged apart, with openings or perforations c^2 in the bottom of said receptacle, in combination with a flame-spreading device having shields *d* arranged above two of each of said V-shaped bars, said shields being pivotally arranged in the sides of the stove-frame, and means for turning said shields at an angle, consisting, essentially, of a rocker-arm attached to a shield, a lever connecting said arms, and a projection on one of said arms to receive a crank or key, for the purposes set forth.

5. The herein-described flame-spreading device, consisting of shields *d*, pivotally arranged in the sides of the stove-frame, each shield being provided with a rocker-arm *d'*, said arms being connected with each other by a lever d^3, as specified, one of said rocker-arms having a square nut or projection d^3 thereon to receive a crank, for the purposes set forth.

413,690. GAME ATTACHMENT FOR TABLES. JOSEPH A. R. STUDWELL, Brooklyn, N. Y. Filed Jan. 24, 1889. Serial No. 297,365. (No model.)

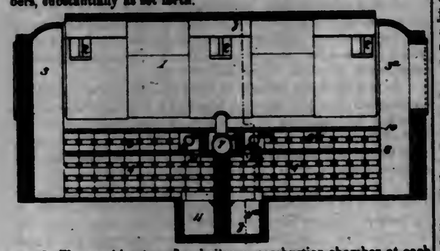


Claim.—As an improved article of manufacture, a game attachment for tables, consisting of the plate or disk 10 and the radial arm 11, projecting from the periphery or sides of the disk or plate, as set forth.

413,691. REGENERATING-FURNACE FOR BOILERS. WILLIAM SWINDELL, Allegheny, Pa. Filed June 24, 1889. Serial No. 315,365. (No model.)

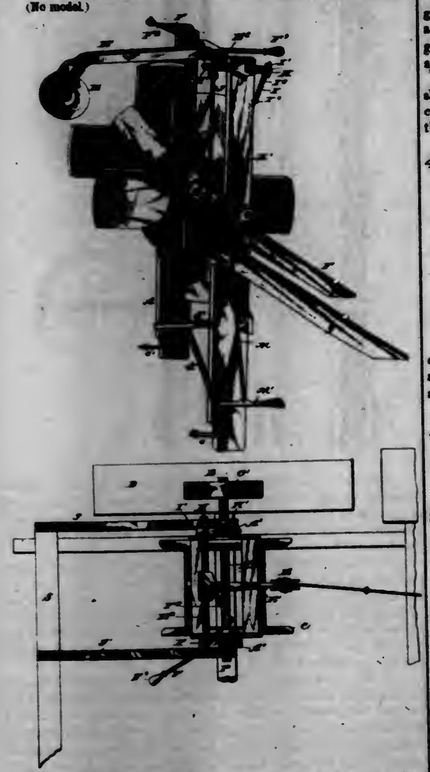
Claim.—1. The combination of a boiler, a combustion-chamber at each end of the boiler and extending along the boiler, and gas and air regenerative chambers located under each end of the boiler and connected to the combustion-chambers, substantially as set forth.

2. The combination of a boiler, a combustion-chamber at each end of the boiler and extending along the boiler, and gas and air regenerative chambers located under each end of the boiler and connected at their outer ends to the combustion-chambers, the gas-regenerative chambers being superposed on the air-regenerative chambers, substantially as set forth.



3. The combination of a boiler, a combustion-chamber at each end of the boiler and extending along the boiler, gas and air regenerative chambers located under each end of the boiler and connected to the combustion-chambers, and a flue provided with the valve for connecting the combustion-chambers, substantially as set forth.

413,692. REEL FOR CHECK-ROW PLANTERS. FREDERICK THELINGERDEN, Mount Union, Iowa. Filed June 8, 1889. Serial No. 313,574. (No model.)



Claim.—1. In a check-row-planter reel attachment, a tension-regulating device consisting of the oscillating shaft E^2, the guide E thereon carrying the wheel E at one end, the oscillating lever H, connected with said shaft, the rod I, connected with one arm of said lever with one end attached to some fixed part of the machine, the spring I^2 on said rod beneath the outer end of said lever, and the nuts I' I^2 on said rod, substantially as specified.

2. In a check-row-planter attachment, the combination, with an upright, a lever F on said upright, and a horizontal link hinged thereto, of a shaft and a guide adapted to reciprocate freely upon said shaft and having one end of said link connected therewith, substantially as specified.

3. In a check-row-planter reel attachment, the combination, with a lever and a horizontal link hinged thereto, a guide, and a pulley journaled thereon, said guide being adapted to reciprocate freely upon a shaft journaled in two uprights, of a lever fastened to the end of said shaft and a tension-regulating device fastened to the upright and to the lever on said shaft, substantially as specified.

4. In a check-row-planter reel attachment, the combination, with the shaft E^2 and suitable supports therefor, the guide E, free to move longitudinally on said shaft, the pulley E at the free end of said guide, the lever F, the draw-link F^2, connecting said lever and guide, the lever H on the extended end of said shaft, and the rod I, adjustably connecting one end of said lever with the support, of the reel-shaft, the hook K, engaging the same, and the rod J, connecting the lever H with said hook, substantially as specified.

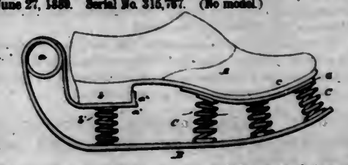
5. In a check-row-planter attachment, the combination, with the foot-lever M', draw-link M, and brake L, of the shaft B, friction-wheel C on said shaft, planter-wheel D, revolving in contact with said friction-wheel, reel C, hook K, engaging the shaft B, nut J^2, spring J', and rod J, substantially as specified.

6. In a check-row-planter reel attachment, the combination, with a guide mounted for oscillation at an angle to the reel, of connecting devices, substantially as described, extending from the guide to the reel-shaft and terminating in a hook supporting the shaft, and operating to raise said shaft by means of tension in the wire being reeled.

7. In a check-row-planter reel attachment, the combination of a guide mounted on the shaft and for oscillation at an angle to the reel, a lever secured to the guide-shaft to oscillate therewith and with the guide, and a rod extending from the lever and terminating in a hook arranged to embrace the reel-shaft, substantially as specified.

8. An oscillatory guide and its oscillating shaft provided with a slotted lever rigidly attached thereto, a connecting-rod adjustably secured in the slot of the lever and terminating in means for embracing the reel-shaft, substantially as specified.

413,693. SPRING-SHOE. JOHN S. WALKER, Claremont, N. H. Filed June 27, 1889. Serial No. 315,757. (No model.)



Claim.—A spring-shoe having a tread B extended from the toe of the boot or shoe back of the heel, provided with a posterior spring and a heel-seat all formed integral, in combination with a sole-plate and intermediate springs, as specified.

413,694. HAME-TUG. LEDRU R. WEBSTER, Holly, Mich. Filed July 1, 1889. Serial No. 316,236. (No model.)

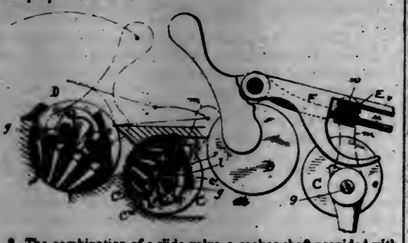


Claim.—A hame-tug composed of a front section or loop provided with a hame-clip and a rear section hinged thereto at the front end and provided at the rear end with a suitable trace-buckle, said rear section comprising a bar of wood, a metallic strap sunk into the bar and bent around the ends thereof to form eyes for engaging the front end with the cross-bar of a link which hinges it to the front section and for engaging the shank of the trace-buckle at the rear end, rivets securing the metallic strap to the bar, loops secured in notches of the bar by the metallic strap, and a lining in each eye of said strap, all substantially as described.

413,695. VALVE SYSTEM FOR STEAM-ENGINES. JEROME WEBLOCK, Worcester, Mass. Filed Mar. 30, 1889. Serial No. 304,989. (No model.)

Claim.—1. The combination of a slide-valve with a removable seat, and a spring acting directly against said valve, whereby the valve

is closed upon the release of tripping mechanism, substantially as and for the purpose set forth.



2. The combination of a slide-valve, a rocker-shaft provided with a crank, and a link connecting said crank and link with a cam on said rock-shaft, whereby the motion of the slide-valve is checked, substantially as described.

3. The combination of a slide-valve and a spring acting directly against said valve with a positive stop to check the movement of said valve, said stop and spring being within the valve-casing, substantially as described.

4. The combination of a slide-valve, a rocker-shaft provided with a crank, and a link connecting said crank and link, with a tapering pin flattened upon one side firmly secured within the lugs of the valve and the bushings, substantially as and for the purpose set forth.

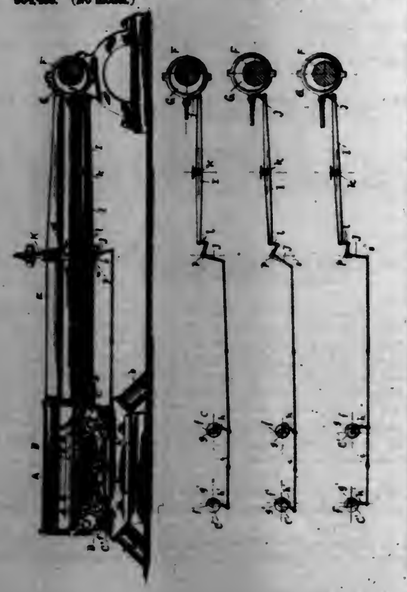
5. The combination of a slide-valve, a rocker-shaft provided with a crank, and a link connecting said crank and link, and a pin firmly secured within the lugs of the valve with a removable bushing, constructed substantially as described, and held upon said pin, as and for the purpose set forth.

6. In a slide-valve as above described, the combination of a link having tapering bushing with another bushing held stationary by means of a pin and the lug upon the valve, as described, and adapted to be removed therefrom, as and for the purpose set forth.

7. A latch-block with two holes through it at right angles, in combination with a bolt firmly fastened to the operating-arm of the cut-off valve, the block swiveling on said bolt when actuated by the link-bolt, substantially as shown and described.

8. The combination of a slide-valve, link, and rocker-arm with a crank the travel of which is on the side opposite the lugs on the valve, substantially down to a line passing through the rock-shaft and center of lugs, substantially as and for the purpose set forth.

413,696. MECHANISM FOR CONTROLLING CUT-OFF VALVES. JEROME WHEELOCK, Worcester, Mass. Filed Mar. 23, 1889. Serial No. 304,463. (No model.)



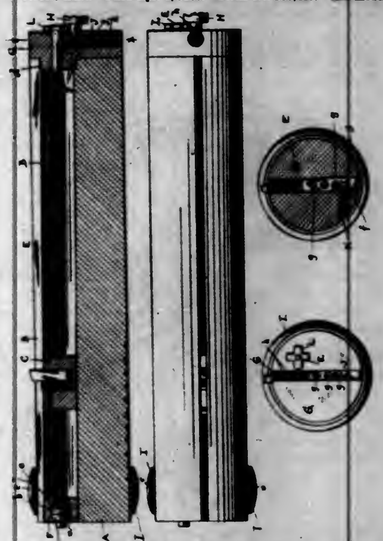
Claim.—1. In a valve-gear for controlling the cut-off valves of steam-engines, one or more trip-cams which complete one forward and backward movement during one revolution of the crank-shaft, means for operating the cams, and a governor for controlling the path of travel of said cams, substantially as and for the purpose set forth.

2. In a valve-gear for controlling the cut-off valves of engines, the combination of one or more trip-cams making a complete forward and backward movement during one revolution of the crank-shaft, with a governor whereby the path of such movement is controlled, substantially as and for the purpose set forth.

3. In a valve-gear for controlling the cut-off valves of engines, the combination of one or more trip-cams with means, substantially as described, for imparting to the trip-cams a complete forward and backward movement during one revolution of the crank-shaft, and a movable fulcrum controlled by the governor for controlling the path of travel of said cams, as and for the purpose set forth.

4. In a valve-gear for controlling the cut-off valves of engines, the combination of one or more trip-cams, an eccentric for imparting to the same a complete forward and backward movement during one revolution of the crank-shaft, and a governor whereby the path of such movement is controlled, substantially as and for the purpose specified.

413,697. METAL-BORING MACHINE. JEROME WHEELOCK, Worcester, Mass. Filed Apr. 3, 1889. Serial No. 306,415. (No model.)



Claim.—1. The combination of a boring-bar having a tubular chamber the axis of which is at an angle with the axis of the bar, and a cutter-head adapted to slide within said chamber, with means, substantially as described, for imparting a sliding motion to said cutter-head, as and for the purpose set forth.

2. The combination of a boring-bar having a tubular chamber the axis of which is at an angle with the axis of the bar, a cutter-head sliding within said chamber, and means, substantially as described, for imparting a sliding movement to said cutter-head, with a supporting-screw near one end of said bar, whereby the angle between the chamber and the axis of the bore may be varied, substantially as and for the purpose set forth.

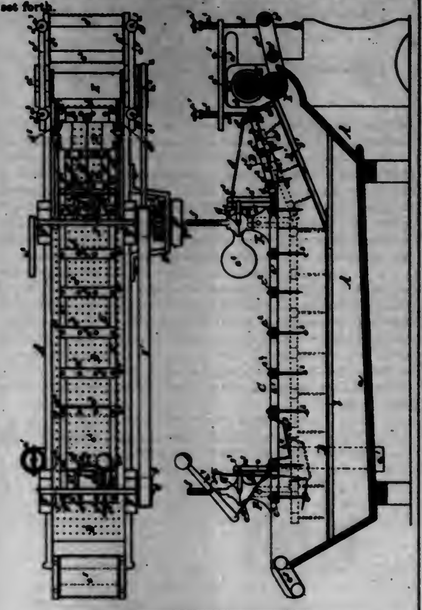
3. The combination of a boring-bar having a tubular chamber, a cutter-head sliding within said chamber, means, substantially as described, for imparting a sliding movement to said cutter-head, and a supporting-screw whereby the position of the axis of the chamber relatively to the axis of the bore may be varied, with a check-screw whereby said supporting-screw is secured and uniformly held in position relatively to the center which supports the bar, substantially as and for the purpose set forth.

413,698. WOOL-WASHING MACHINE. WILLIAM WEBB, Boston, N. H. Filed May 15, 1889. Serial No. 310,926. (No model.)

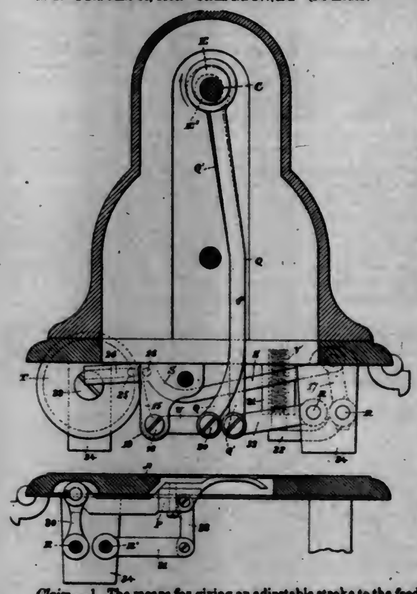
Claim.—1. In a wool-washing machine, the frame C, hung to parallel cranks g^2, in combination with balancing weighted levers c^2 and chain c^{10}, substantially as set forth.

2. In a wool-washing machine, the combination of the rake-frame

C, cranks g^2, hangers c, delivering-frame D, connected flexibly directly to the rake-frame C, and adjusting cord or chain c^9, substantially as set forth.



413,699. FEED MECHANISM FOR SEWING-MACHINES. CHAS. H. WILLCOX, New York, N. Y., and JAMES E. A. GIBBS, Rapidan, Va., assignors to the Willcox & Gibbs Sewing Machine Company, New York, N. Y. Filed June 18, 1888. Serial No. 277,454. (No model.)

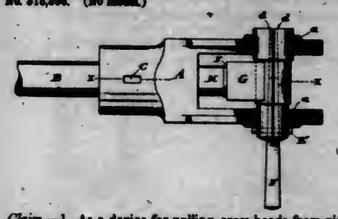


Claim.—1. The means for giving an adjustable stroke to the feed-bar, consisting of the vibratory arm, the reciprocating piece or link provided with a projection in the path of said arm and adjustable lengthwise thereof, and the hand-actuated regulator or crank-disk mounted on the machine-frame and provided with a pin-and-groove joint between itself and said reciprocatory piece or link, in combination with the feed-advancing rock-shaft, the feed-bar, the feed-lifting rock-shaft, means for returning the feed-bar, and connections whereby motion is imparted from the main shaft to said feed-bar through said stroke-adjusting means and said rock-shafts, substantially as described.

2. The combination, with the feed-bar, means for returning said feed-bar, and the feed-advancing and feed-lifting rock-shafts connected with said feed-bar, of the lever having a vibratory arm, the reciprocatory piece or link connected with an arm of said feed-advancing rock-shaft, provided with a projection in the path of said vibratory arm and adjustable to shift said projection lengthwise of said arm, the hand-actuated regulator or crank-disk mounted on the machine-frame and provided with a pin-and-groove joint between itself and said reciprocatory piece or link, the connecting-rods jointed one to an arm of said lever and the other to an arm of said feed-lifting rock-shaft, and the eccentrics on the main shaft for said connecting-rods, substantially as described.

3. The means for giving an adjustable stroke to the feed-bar, consisting of the vibratory arm, the reciprocatory piece or link provided with a projection in the path of said arm and adjustable lengthwise thereof, and the hand-actuated regulator, having a portion extending through the machine-frame to the outside thereof and provided inside the said frame with a pin-and-groove joint between itself and said reciprocatory piece or link, in combination with the feed-advancing rock-shaft, the feed-bar, the feed-lifting rock-shaft, means for returning said feed-bar, and the connections whereby motion is imparted to said feed-bar from the main shaft through said stroke-adjusting means and said rock-shafts, substantially as described.

413,700. DEVICE FOR PULLING CROSS-HEADS FROM PISTON-RODS. JOHN W. WOOD, Sr., Altoona, Pa. Filed July 23, 1889. Serial No. 318,206. (No model.)



Claim.—1. As a device for pulling cross-heads from piston-rods, a segment adapted to rest in the connecting pin-hole and having a groove in its upper face to receive a wedge, in combination with a wedge adapted to rest in the groove of the segment, and a strut adapted to rest against the end of the piston-rod and directly or indirectly against the wedge, all substantially as and for the purpose specified.

2. As a device for pulling cross-heads from piston-rods, the tapered and internally-grooved segments D D′, in combination with a strut adapted to rest on one of said segments and against the piston-rod, and a wedge adapted to enter the grooves in segments D D′ and force them apart, all substantially as and for the purpose specified.

3. As a device for pulling cross-heads from piston-rods, the tapered and internally-grooved segments D D′, having keyways d' d' at their smaller ends, in combination with a key E, a strut adapted to rest on one of said segments and against the piston-rod, and a wedge adapted to enter the groove in segments D D′ and force them apart, all substantially as and for the purpose specified.

4. As a device for pulling cross-heads from piston-rods, the tapered and internally-grooved segments D D′, in combination with a strut adapted to rest on one of said segments and against the piston-rod, said strut having a point J, adapted to enter the center on said rod, and a wedge adapted to enter the grooves in segments D D′ and force them apart, all substantially as and for the purpose specified.

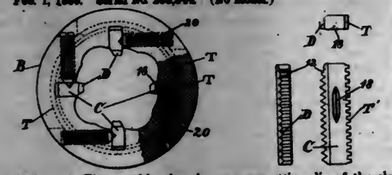
5. As a device for pulling cross-heads from piston-rods, the tapered and internally-grooved segments D D′, having on one face a groove d^3, in combination with a strut having a face grooved to fit on groove d^3 and adapted to rest on the segment and against the end of the piston-rod, and a wedge adapted to enter the grooves in segments D D′ and force them apart, all substantially as and for the purpose specified.

6. As a device for pulling cross-heads from piston-rods, the tapered and internally-grooved segments D D′, having on one face a groove d^3, in combination with a strut consisting of a block G, adapted to rest on the segments, and a bar H, having a point J, adapted to fit onto the block G and rest against the end of the piston-rod, all substantially as and for the purpose specified.

7. As a device for pulling cross-heads from piston-rods, the tapered and internally-grooved segments D D′, having on one face a groove d^3,

in combination with a strut consisting of a block G, adapted to rest on the segments, a bar H, having a point J, adapted to fit onto the block G and rest against the end of the piston-rod, and a washer adapted to fit between the block G and bar H, all substantially as and for the purpose specified.

418,701. SCREW-CUTTING DIE. JAMES R. WOODBRIDGE, Hartford, Conn., assignor to The Pratt & Whitney Company, same place. Filed Feb. 1, 1889. Serial No. 298,344. (No model.)

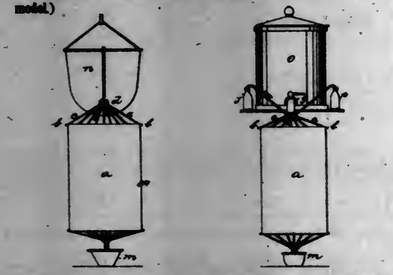


Claim.—1. The combination, in a screw-cutting die of the class described, of the annular collet having longitudinal slots and circumferentially spirally-distributed guide-notches formed on its inner face, and screw-cutting chasers seated in said slots and having notches engaging with said guide-notches, all substantially as described.

2. The improved screw-cutting die herein described, it consisting of a collet having slots on the inner surface thereof constructed to receive the chasers, and having spiral guide-notches on which to seat the chasers, and notched screw-cutting chasers seated in said slots, with their notches in engagement with said guide-notches, substantially as described.

3. The combination, with the collet B, slotted to receive the chasers and having the notches T, of the chasers C, constructed to be set in engagement with said notches, and means, substantially as described, holding said chasers in place, substantially as described.

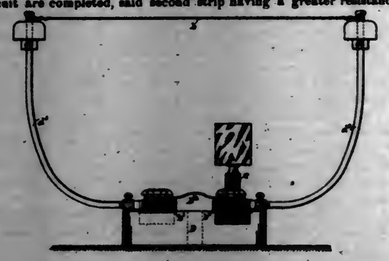
418,702. EVAPORATOR FOR DISINFECTANTS, &c. JUSTUS O. WOODS, New York, N. Y. Filed Mar. 27, 1889. Serial No. 305,044. (No model.)

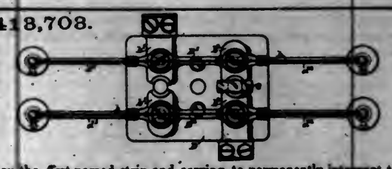


Claim.—The within-described apparatus for charging the air of apartments with vapors, consisting, essentially, of the absorbent apron, the cords attached thereto and converging to a central point in a knot or ring, and one or more reservoirs provided with pipes and regulating-valves arranged, substantially as shown and described, to discharge drops of fluid upon said central knot or ring, all combined and arranged to operate substantially as shown and described.

418,708. MULTIPLE THERMAL CUT-OUT. ALEXANDER WURTS, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed June 21, 1888. Serial No. 315,119. (No model.)

Claim.—1. An interrupting device for electric circuits, consisting of the combination, with a fusible strip, of a normally-closed shunt-circuit around the same, and a second fusible strip of conducting material through which the connections of said normally-closed shunt-circuit are completed, said second strip having a greater resistance





than the first-named strip and serving to permanently interrupt the shunt-circuit connections when the first-named fuse has been destroyed.

2. An interrupting device for electric circuits, consisting of the combination, with a fusible strip, of a normally-closed shunt-circuit around the same, and a second fusible strip of conducting material through which the connections of the said normally-closed shunt-circuit are completed, said second strip being of a different material from the first-named strip and serving to permanently interrupt the shunt-circuit connections when the first-named fuse has been destroyed.

3. An interrupting device for electric circuits, consisting of the combination, with an electric circuit, of a fusible strip, a normally-closed shunt-circuit, and a second fusible strip of conducting material through which the connections of the said normally-closed shunt-circuit are completed, said strips being so proportioned to each other and to the circuit that an abnormal increase of current in the circuit will destroy the first-named strip, while the second will be destroyed by the resultant current traversing its circuit, thereby permanently interrupting both circuits.

418,704. LAMP-BURNER. SAMUEL ADAMS, Chicago, Ill. Filed July 5, 1889. Serial No. 316,542. (No model.)



Claim.—1. The combination, with the wick-tube and the wick-adjusting wheels, of projections which extend into the wick-tube below said wheels and contract the tube, whereby the wick is prevented from dropping out of reach of the wheels in turning it down, substantially as set forth.

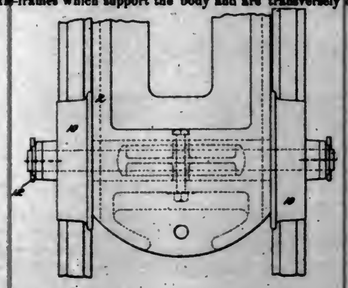
2. The combination, with the wick-tube having slots in one of its walls for the wick-adjusting wheels and the wick-adjusting wheels projecting into the wick-tube through these slots, of projections formed on the opposite wall of the wick-tube and extending into the wick-tube below said wheels, substantially as set forth.

3. The combination, with the wick-tube having slots in one of its walls for the wick-adjusting wheels and the wick-adjusting wheels projecting into the wick-tube through these slots, of a projection formed on the slotted wall of the wick-tube, whereby the wick is held away from the slots, substantially as set forth.

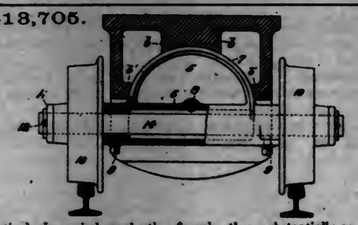
4. The combination, with the wick-tube having slots in one of its walls for the wick-adjusting wheels and the wick-adjusting wheels projecting into the tube through these slots, of a projection formed on the slotted wall of the wick-tube, whereby the wick is held away from the slots, and projections formed on the opposite wall of the wick-tube below the wheels, whereby the wick is held in reach of the wheels when turned down, substantially as set forth.

418,705. CAR OR TRUCK. HENRY AIKEN, Homestead, Pa. Filed Nov. 2, 1885. Renewed Aug. 3, 1889. Serial No. 319,631. (No model.)

Claim.—1. In a car or truck, the combination, with the body, of axle-frames which support the body and are transversely oscillatory



418,705.



in vertical planes independently of each other, substantially as and for the purposes described.

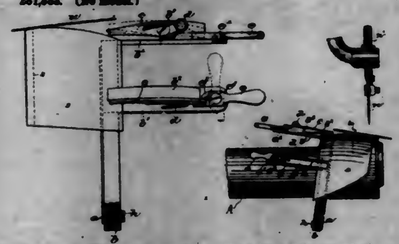
2. In a truck or car, the combination, with the body, of a transverse axle-frame on which the body is supported, said frame having bearings on a circular arc against the body and being oscillatory transversely in said bearings, substantially as and for the purposes described.

3. In a truck or car, the combination, with the body, of a transverse axle-frame on which the body is supported, said frame having a periphery made in circular arc curved transversely and having bearings against the body in which it is oscillatory, substantially as and for the purposes described.

4. In a truck or car, the combination, with the body, of a transverse axle-frame on which the body is supported, said frame being set in a vertical transverse recess formed in the truck-body, having bearings against the body and being oscillatory transversely in said bearings, substantially as and for the purposes described.

5. In a truck or car, the combination, with the body, of a transverse axle-frame on which the body is supported, said frame being set in a vertical transverse recess formed in the truck-body, having bearings therein against the body and being oscillatory transversely in said bearings, and a pin connecting the frame and body at the center of each oscillation, substantially as and for the purposes described.

418,706. COUNTER-HOLDER FOR SHOE-SEWING MACHINES. JONATHAN BARRETT, Malvern, Mass. Filed July 30, 1888. Serial No. 281,382. (No model.)

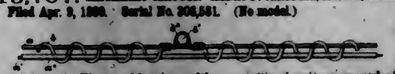


Claim.—1. The carrier and its circumferentially-attached arms b', having uprights b^2 thereon, combined with the spring fingers or jaws c, pivoted upon said uprights, and cam-levers e, having beveled portions e^2 to act upon the end of the fingers against the action of the springs, substantially as described.

2. The carrier and its arms b', projecting therefrom at substantially right angles, combined with the pivoted fingers or jaws c upon said arms, and with springs adapted to normally elevate said fingers, and with cams to move the said fingers into operative position against the action of said springs, substantially as described.

3. The race or support and the carrier movable thereon, combined with pivoted clamps attached to and projecting from the said carrier, the inner ends of the clamps being extended over the periphery of the carrier, substantially as described.

418,707. METALLIC CIRCUIT. HENRY F. CAMPBELL, Malden, Mass. Filed Apr. 9, 1888. Serial No. 306,581. (No model.)

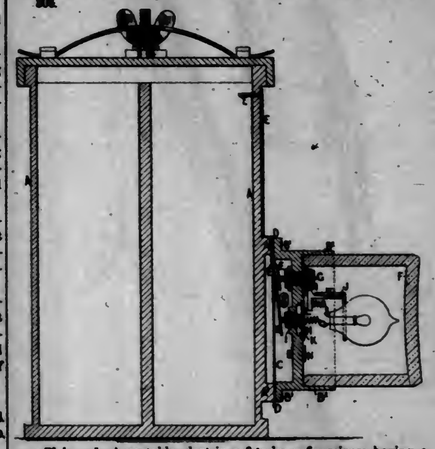


Claim.—1. The combination, with a metallic circuit composed of two branches or wires a a', of a separator b, of textile material, wound about and between the said branches throughout the length of the circuit to separate and yet bind the said branches, the said separator obviating short-circuiting of the metallic circuit, substantially as described.

2. The combination, with a metallic circuit composed of two branches or wires a a', the branch a' being an insulated conductor and the branch a a bare wire or indifferently-insulated conductor, of a separator b, of textile material, wound about and between the said branches throughout the length of the circuit to separate and yet bind the said branches, substantially as described.

3. The combination, with a metallic circuit consisting of branches composed of independent wires, of a separator b, of textile material, wound about the said branches to bind and yet separate the same, an insulator, and a wire b^3, wound about said insulator and one wire of the circuit only, substantially as described.

418,708. ELECTRIC SAFETY-LAMP FOR MINERS. THOMPSON COAD, Forest Gate, County of Essex, England. Filed May 21, 1888. Serial No. 311,536. (No model.) Patented in England Jan. 5, 1884, No. 206.

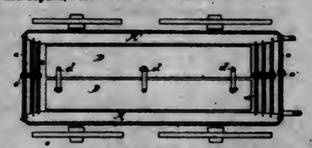


Claim.—1. A portable electric safety-lamp for miners, having a battery, an incandescent lamp suitably connected thereto within an air-tight glass envelope, a passage for the introduction of air into glass envelope, arranged to be closed, and a movable contact-point arranged to complete the circuit on depression, normally held out of circuit by spring appliance, having one of the connections for the lamp attached to a flexible diaphragm within the glass envelope operated by a pressure of air to depress the movable contact-point to complete the circuit, all substantially as described and set forth.

2. In a portable electric safety-lamp for miners, having a battery, an incandescent lamp suitably connected thereto within an air-tight glass envelope, a passage for the introduction of air into glass envelope, arranged to be closed, and a flexible diaphragm within the glass envelope, arranged to be depressed by a pressure of air within the glass envelope, in combination with a movable contact-point arranged under flexible diaphragm, capable of depression by the diaphragm to complete the circuit, normally held out of circuit by spring appliance, and having one of the connections for the lamp attached, substantially as described and set forth.

3. In a portable electric safety-lamp for miners, having a battery, an incandescent lamp suitably connected thereto within an air-tight glass envelope, a passage for the introduction of air into glass envelope, arranged to be closed, and a movable contact-point arranged to complete the circuit on depression, normally held out of circuit by spring appliance and having one of the connections for the lamp attached, in combination with a flexible diaphragm within the glass envelope capable of depression by a pressure of air with the envelope to operate a movable contact-point, substantially as described and set forth.

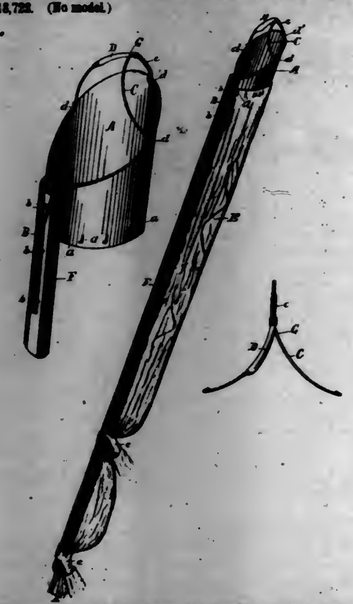
418,709. PERAMBULATOR. HENRY CORNISH, New York, N. Y. Filed Sept. 4, 1889. Serial No. 322,941. (No model.)



Claim.—In a perambulator, the combination, with the sides of the carriage-body, of a bottom piece hinged thereto and adapted to fold to the said sides, hinged links pivoted to the ends of the body-sides, whereby the said sides may fold to each other flatwise, and side

bars carrying the axle-trees united by cross-pieces pivoted to one side bar and detachably connected to the other side bar, substantially as and for the purpose set forth.

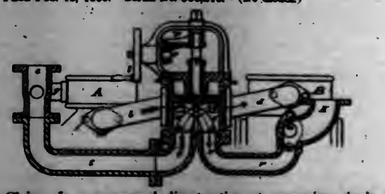
418,710. FRUIT-GATHERER. James M. Davenport and Benjamin F. Mitchell, Centreview, Mo. Filed July 26, 1889. Serial No. 318,722. (No model.)



Claim.—1. In a fruit-gatherer, the handle carrying at its upper end a scoop-shaped head, said head being provided with an upwardly-projecting frame C, formed with three prongs or branches, each of which is secured to the head, and a separate knife or blade attached to one of said prongs or branches, in combination with the chute E, substantially as described.

2. In a fruit-gatherer, the head having an inclined upper end, to which is secured an upwardly-projecting frame of twisted wire formed with three prongs or branches, one of which has a knife or blade riveted thereto, the lower end of said head being provided with hooks adapted to receive a chute E, in combination with a handle F, substantially as described.

418,711. STEAM-ENGINE. Charles P. Deane, Springfield, Mass. Filed Feb. 18, 1889. Serial No. 300,218. (No model.)



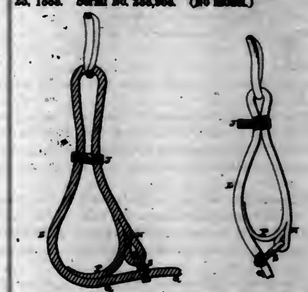
Claim.—In a compound direct-acting steam-engine, single or duplex, the cylindrical rotary switching-valve *c*, constructed as shown and described, and having its chambers *v s* and its interior passages *w i* arranged as shown with reference to the ports or openings in its shell *a* to and from the pipes *b*, *d*, *t*, and *r*, all substantially as and for the purpose described.

418,712. CORN-PLANER. Jules De Rose, San Francisco, Cal., assignor to Moses Cohn, New Orleans, La. Filed Apr. 24, 1889. Serial No. 308,470. (No model.)



Claim.—In corn-planing machines, the corn-planer composed of the frame B', with face-plate B, having the throat D, the revolving bit-stock F, having the bit or cutter G, the journal N, and crank J, in combination with the outside frame A, having the journal-slots K, the adjustable bearings H, and set-screws I.

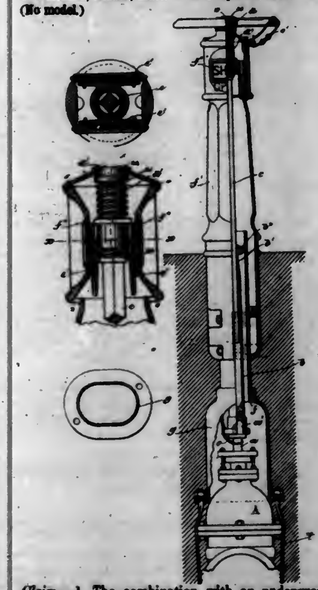
418,718. THILL-TUG. John Fehrer, Louisville, Ky. Filed Oct. 23, 1888. Serial No. 288,988. (No model.)



Claim.—1. In a shaft-tug, the combination of the buckle for securing it to the saddle, a single strap L, which passes through the buckle and is doubled upon itself, a keeper which incloses the strap below the buckle, and a fastening or buckle applied to one end of the strap, and through which the opposite free end Q of the strap passes, substantially as described.

2. In a shaft-tug, the combination of the buckle for securing it to the saddle, the strap L, which passes through and is doubled upon itself, one end of the strap being bifurcated and provided with the extension P for the purpose described, and a fastening S, secured to said bifurcated end, to which the opposite free end of the strap is detachably secured, substantially as shown and described.

418,714. VALVE OPERATING AND INDICATING POST. John R. Freeman, Boston, Mass. Filed Apr. 23, 1889. Serial No. 308,318. (No model.)



Claim.—1. The combination, with an underground valve, of a case for the valve-operating stem, said case comprising two or more parts jointed telescopically and having the clamping-plate f^* and bolts f^3, substantially as described.

2. A valve and valve-stem or extension thereof bearing a screw-threaded portion *d'*, combined with an inclosing-case for the valve-stem, having transparent windows or openings through it, and a tell-tale or indicator, as *e e'*, placed upon the screw-threaded portion *d'* of said valve-stem and movable longitudinally thereon back of the said openings, whereby the location of the valve may be indicated, substantially as described.

3. The valve placed beneath the surface of the ground and having an extended valve-stem, and an indicator moved by said valve-stem, combined with the inclosing-case for the valve-stem, rising above the surface of the ground and having openings through it for showing the tell-tale, substantially as described.

4. A valve and valve-stem and indicator moved by said valve-stem, combined with the inclosing-case consisting of the tubular portion *f* and the tubular portion *f'*, clamped thereon and having one or more transparent windows or openings, back of which the tell-tale or indicator is moved, substantially as described.

5. The valve, valve-stem, and tell-tale or indicator moved by the valve-stem directly or indirectly, combined with an inclosing-case having transparent portions, through which the indicator is visible, and vent-holes for preventing the accumulation of moisture thereon, substantially as described.

6. A valve and valve-stem and indicator or tell-tale moved by it, and an inclosing-case, combined with the removable cash-box, back of which the indicator moves, substantially as described.

7. A valve and valve-stem and the removable screw-threaded portion *d'*, combined with the indicator comprising the removable interiorly-screw-threaded collar *e* and the side plate or plates *e'*, substantially as described.

8. A valve and valve-stem and indicator bearing words indicating the location of the valve moved directly or indirectly by said stem, combined with an inclosing-case having portions through which the indicator is visible, substantially as described.

418,715. PORTABLE DARK-ROOM. Isaac W. Gibson, Woodbury, N. J. Filed Apr. 27, 1887. Serial No. 236,230. (No model.)



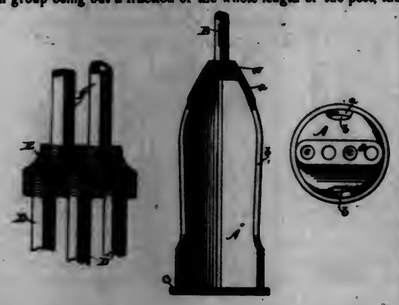
Claim.—1. A portable dark-room for photographers' uses, consisting of a flexible light-excluding hood or mantle for receiving and closely enveloping the head and arms of the user, a floor at the bottom of said hood, and the whole adapted to be pendent from and supported by the upper portion of the body of the user, substantially as described.

2. In a portable dark-room, the combination, substantially as hereinbefore described, of a flexible light-excluding hood or mantle for closely enveloping the head and arms of the user, and a folding floor-frame at the bottom of said hood, whereby, when not in use, the room can be folded and made into a package convenient for transportation.

418,716. METAL POST. Orson B. Hall, Malden, Mass. Filed July 18, 1889. Serial No. 317,903. (No model.)

Claim.—1. A metal post formed of tubes or rods arranged in groups, each group being but a portion of the whole height of the post, and having interposed between the meeting ends of adjacent groups a single solid coupling in which each and all of said ends are separately and independently secured, substantially as specified.

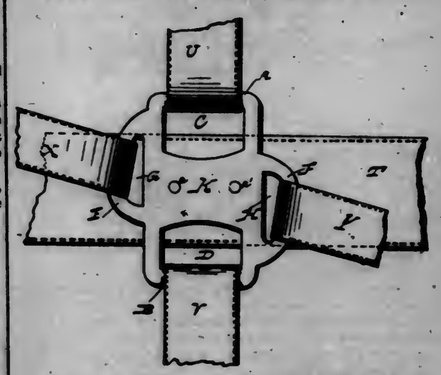
2. A metal post formed of iron tubes or rods arranged in groups, each group being but a fraction of the whole length of the post, the adjacent ends of the several tubes in each group being screw-threaded in the same coupling, and the axes of the several tubes being in a common plane, substantially as specified.



3. A metal post formed of tubes or rods arranged in groups, each group being but a fraction of the whole height of the post, the number of tubes in the several groups being diminished from the lowest upward, and the adjacent ends of the several tubes in each group being screw-threaded in the same coupling, substantially as specified.

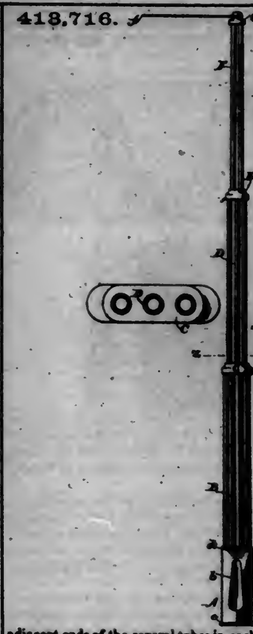
4. A metal post formed with base A, groups of tubes, as B D F, diminished in number, in groups, one above the other, couplings, as C E, between the meeting ends of the groups, and a cap, as G, all said pipes at the respective ends of each group being rigidly secured in the same coupling or holder, substantially as specified.

418,717. HARNESS-LOOP. James K. Hamilton, Brookville, Pa. Filed Mar. 19, 1889. Serial No. 303,986. (No model.)

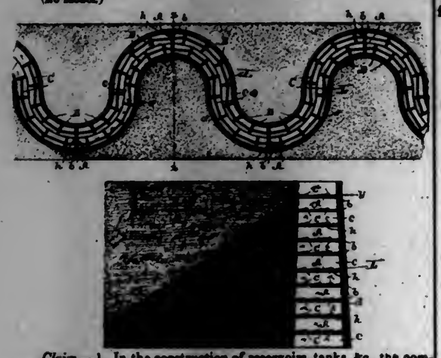


Claim.—The within-described improved article of manufacture, consisting of the plate K, constructed with the upper and lower loops C D and side loops formed integral and having the perforations, said plate having a flat back and inwardly-curved ends, and the side loops extending outwardly, the bars E F of which incline in opposite directions and adapted to receive, respectively, the breeching-strap and yoke-strap, all as and for the purpose set forth.

418,716.



418,718. CONSTRUCTION OF RETAINING-WALLS. WILLIAM H. HARRELSON, Kansas City, Mo. Filed June 20, 1889. Serial No. 316,061. (No model.)



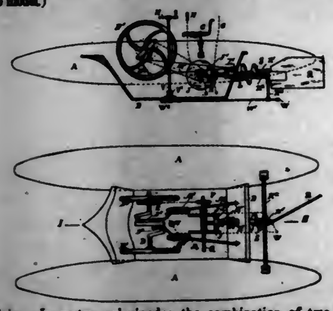
Claim.—1. In the construction of reservoirs, tanks, &c., the combination, with the constituent parts of the wall of the structure, of notched hooks embedded in the wall at intervals, and the bands placed longitudinally in the wall to engage the notches in said hooks, substantially as specified.

2. In the construction of reservoirs, tanks, &c., the combination, with the constituent parts of the wall, of notched hooks arranged in vertical series and embedded in the wall and placed transversely to the length of the same, and the bands embedded in the wall in the planes of said hooks and placed to engage the notches therein, substantially as specified.

3. In the construction of reservoirs, tanks, &c., the combination, with the constituent parts of the wall, of notched hooks arranged at the salient points of the wall and provided with lateral wings to bear against the outer or convex surface of the same, and the bands embedded in the wall and placed to engage the notches of the said hooks, substantially as specified.

4. In the construction of reservoirs, tanks, &c., the combination, with the constituent parts of the wall, of the pins or nails embedded therein in horizontal series, the wires or bands placed to engage the projecting ends of said pins or nails, and the notched hooks arranged at the salient points of the wall and engaging the said wires or bands, said hooks being provided with lateral wings to bear on the surface of the wall, substantially as and for the purpose specified.

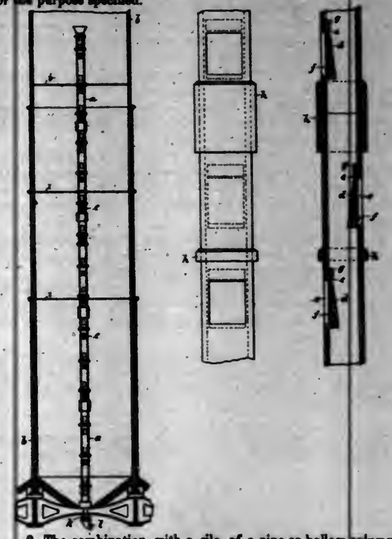
418,719. WATER-VELOCIPEDE. GEORG HEINZE, Klotzsche, near Dresden, Saxony, Germany. Filed Apr. 3, 1889. Serial No. 306,306. (No model.)



Claim.—In water-velocipedes, the combination of two lateral floats A A, a central connecting dry-well B, a rudder behind the rear of said dry-well, a cross-bar W below said rudder, a spindle V, passing through a stuffing-box in the floor of said dry-well, a cross-bar W^2 on the lower end thereof, and rods W', connecting said cross-bars W W^2, for the purpose set forth.

418,720. APPARATUS FOR DRAWING OFF GRAIN FROM SILOS. GEORGE HEPWORTH, Liverpool, County of Lancaster, England. Filed Feb. 20, 1888. Serial No. 265,763. (No model.) Patented in England Mar. 3, 1888, No. 3,081.

Claim.—1. In apparatus for drawing off grain from silos or other like places, the combination of the silo *b* with a pipe or hollow column *a*, extending from or near the top of a single silo *b* to the bottom thereof, and having openings *c* formed on its entire length at suitable intervals, through which the grain enters the pipe or hollow column *a* automatically, and is drawn off from the silo *b*, substantially as and for the purpose specified.



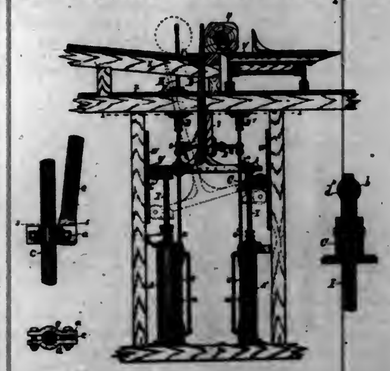
2. The combination, with a silo, of a pipe or hollow column extending from a higher to a lower point within the silo and having apertures at different heights, and inwardly-opening valves for opening or closing said apertures, substantially as set forth.

3. The combination, with a silo, of a pipe or hollow column extending from a higher to a lower point within the same and having apertures at different heights opening into the same silo, and valves situated at said apertures for preventing or permitting the ingress of grain, substantially as set forth.

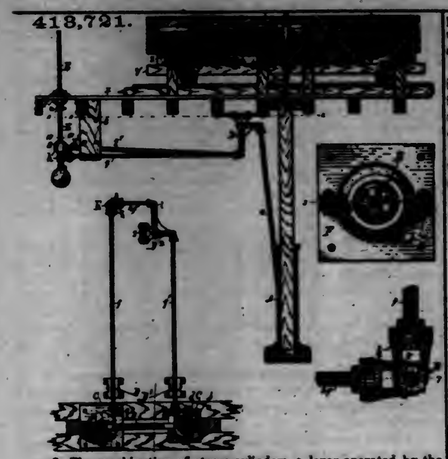
418,721. LOG-LOADER. WILLIAM R. HILL, Kalamazoo, Mich. Filed Aug. 12, 1889. Serial No. 320,505. (No model.)

Claim.—1. In a log-loading machine, the combination of two upright stationary steam-cylinders, the lever having the oppositely-extended arms at the base, the end of one of said arms being pivoted to the piston-rod of one of the cylinders, and the end of the other arm having both a pivoted and a sliding attachment to the piston-rod of the other cylinder, substantially as set forth.

2. In a log-loading machine, the combination of the steam-cylinders fixed in a stationary or rigid position, the lever having oppositely-extending arms at the base, a bracket attached to the end of each piston-rod of said cylinders, one arm of said lever being pivoted to one of the brackets, a thimble through which the end of the other arm reciprocates, said thimble being pivoted to the other bracket, and guideways traversed by said brackets, substantially as set forth.



418,721.

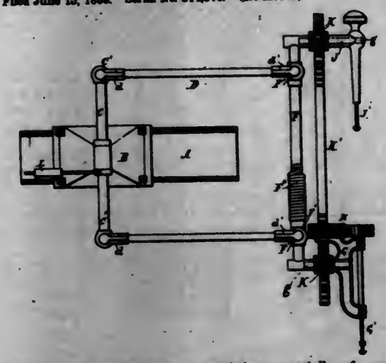


3. The combination of steam-cylinders, a lever operated by the piston-rods of said cylinders, an operating-lever having a ball-and-socket fulcrum, and suitable rods and cranks connecting the operating-lever with the valve-rods of steam-cylinders, whereby the valves of each cylinder are operated by the single lever, substantially in the manner set forth.

4. The combination of the upright steam-cylinders and piston-rods, a lever operated by said pistons, an operating-lever having a ball-and-socket fulcrum, the bell-cranks above the cylinders, the valve-rods pivoted to said bell-cranks, the operating-lever having the ball-and-socket fulcrum, a rod pivoted at one end to a coupling and said coupling attached in a swiveled manner to one of the bell-cranks, the other end of said rod being swiveled to a coupling, two collars loose on the operating-lever, so as to turn, the latter-named coupling being pivoted to one of said collars, a short rod swiveled to a coupling and said coupling being pivoted to the other collar, a bell-crank to which the other end of the short rod is pivoted indirectly by a coupling, said coupling being swiveled to the latter bell-crank, and a rod pivoted at one end to said bell-crank and at the other end to the other of the bell-cranks over the cylinder, substantially as set forth.

5. In a log-loader employing the steam-cylinders, an operating-lever fulcrumed to tilt in any direction, and jointed by connected rods and cranks between said lever and the valve-rods of the cylinders, all arranged and combined to cause the actions of the valves, substantially as set forth.

418,722. CARVING-MACHINE. HORACE HOLMES, Detroit, Mich. Filed June 15, 1889. Serial No. 314,370. (No model.)

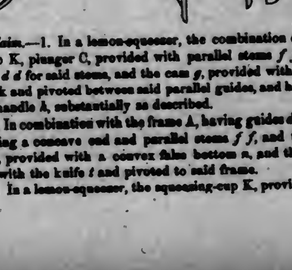


Claim.—1. A carving-machine consisting, essentially, of a carriage, a guide bed or ways along which it is designed to traverse, a horizontal shaft mounted transversely across said carriage, with arms pivotally engaged therewith and adapted to swing horizontally, a horizontal shaft journaled through pivoted bearings at the outer ends of said arms, a tool-support engaged with said latter shaft adapted to move up and down about the axis of the shaft, a tool engaged with a pivot in said support at right angles with the said shaft, and an electric motor engaged with and adapted to rotate the tool, substantially as and for the purposes described.

2. The combination, with the tool and the mechanism whereby it is engaged with the traveling carriage, of the guide-point J', pivoted in like manner as the tool, the gears K, and rack-bars K', whereby the movements of the guide are reproduced by the tool, substantially as described.

3. The combination, with the tool, the traveling carriage, and the intermediate connecting apparatus, of a counterpoise-weight L and spring F^9, substantially as described.

418,723. PULLEY. PETER JENSEN, Menasha, Wis. Filed July 16, 1889. Serial No. 317,663. (No model.)



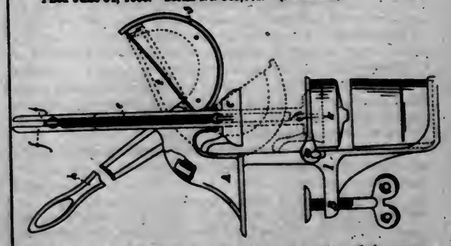
Claim.—The combination, in a separable pulley, of a hub divided longitudinally of its bore and comprising two similar sections, having bosses formed thereon for receiving bolts for clamping the sections together and sockets within their bore adapted to receive a nut, each section having a pulley-arm cast integral therewith and one or more detachable arms inserted therein, said detachable arms each having near its inner end and outside of the hub-section a collar or nut and upon its extreme inner end and within the socket aforesaid a nut securing the arm and hub-section together, and the outer ends of the pulley-arms being provided with ears adapted to and receiving semi-circular pulley-rim sections, and means, substantially as shown, for securing the arms to the pulley-rim sections and to each other, and the clamp-bolts 8, for securing the hub-sections together and clamping them upon a shaft, substantially as described.

418,724. BROWN DYE. HENRY D. KENDALL, Lowell, Mass. Filed May 24, 1889. Serial No. 311,996. (Specimens.)

Claim.—1. The herein described fast brown coloring-matter produced from dinitroso-resorcin and its homologues, and having the property of being soluble in water and alcohol and substantially insoluble in benzine, and of being fast to light, air, soap, &c., when fixed upon fabrics, substantially as described.

2. The process of making a fast brown coloring-matter from coal-tar products, which is soluble in water and alcohol and substantially insoluble in benzine, by treating dinitroso-resorcin or its homologues with a hydrosulphite, substantially as described.

418,725. LEMON-SQUEEZER. NATHAN LEVY, Auburn, N. Y. Filed June 21, 1889. Serial No. 315,062. (No model.)



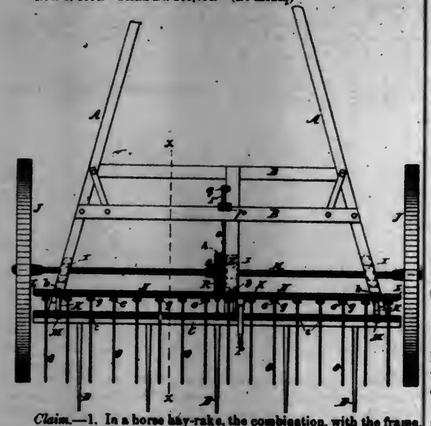
Claim.—1. In a lemon-squeezer, the combination of the squeezing-cup K, plunger C, provided with parallel stems *f f*, the parallel guides *d d* for said stems, and the cam *g*, provided with the knife *t* at its back and pivoted between said parallel guides, and having an actuating handle A, substantially as described.

2. In combination with the frame A, having guides *d d*, the plunger C, having a concave end and parallel stems *f f*, and the squeezing-cup K, provided with a convex false bottom *n*, and the cam *g*, provided with the knife *t* and pivoted to said frame.

3. In a lemon-squeezer, the squeezing-cup K, provided with guid-

ing-lugs *s s*, rods *p p*, springs *r r*, and glass-supporting ring at the lower extremities of said rods, in combination with a plunger C and actuating-cam *g*.

413,726. HORSE HAY-RAKE. PETER R. LITTLE, Dayton, Ohio, assignor to the Stoddard Manufacturing Company, same place. Filed Nov. 2, 1888. Serial No. 289,706. (No model.)



Claim.—1. In a horse hay-rake, the combination, with the frame, carrying-wheels, tilting rake-head mounted on said frame, and revolving axle, of a ratchet fast upon said axle, a lifting-wheel loose upon said axle by the side of said ratchet and connected to the tilting rake-head, a locking-dog carried upon the lifting-wheel, with means for causing the engagement with and disengagement from the ratchet-wheel, and a locking-bolt mounted on the frame, arranged to engage with said locking-dog when the latter is disengaged from the ratchet-wheel and to be disengaged from the locking-dog upon the engagement of the latter with the ratchet-wheel, substantially as and for the purpose described.

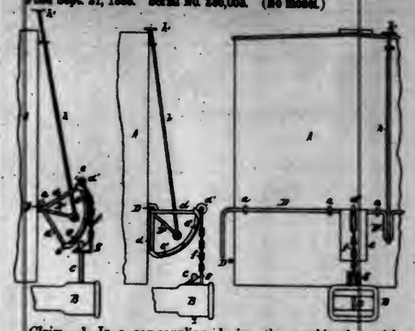
2. In a horse hay-rake, the combination, with the frame, carrying-wheels, tilting rake-head, and revolving axle, of a ratchet fast upon said axle, a lifting-wheel loose upon said axle by the side of said ratchet, a locking-dog carried upon the lifting-wheel, means for causing its engagement with and disengagement from the ratchet-wheel, a locking-bolt mounted on the frame and adapted to lock the lifting-wheel when the latter is disengaged from the ratchet-wheel and to release the lifting-wheel when the latter is locked to the ratchet-wheel, and chains secured at one end to the lifting-wheel and connected at the other to the tilting rake-head on opposite sides of the pivotal point of said rake-head, substantially as and for the purpose described.

3. In a horse hay-rake, the combination, with the frame, carrying-wheels, tilting rake-head, and revolving axle, of a ratchet fast upon said axle, a lifting-wheel loose upon said axle by the side of said ratchet, a locking-dog carried upon the lifting-wheel, means for causing its engagement with and disengagement from the ratchet-wheel, a locking-bolt mounted on the frame and adapted to engage with said locking-dog when the latter is disengaged from the ratchet-wheel and to be disengaged from the locking-dog upon the engagement of the latter with the ratchet-wheel, and chains or links secured at one end to the lifting-wheel and connected at the other to the tilting rake-head on opposite sides of the pivotal point of said rake-head, substantially as and for the purpose described.

4. In a horse hay-rake, the combination, with the frame, carrying-wheels, tilting rake-head, and revolving axle, of the ratchet-wheel Q, fast upon the revolving axle, the lifting-wheel R, loose upon said axle by the side of said ratchet-wheel, the locking-dog S, carried by the lever T on the wheel R, the chain A, connecting the lifting-wheel R to the rake-head, the chain or links *o*, for moving the dog S into engagement with the ratchet-wheel Q, and the plate *s*, mounted on the frame for disengaging the dog S from the ratchet-wheel Q, substantially as and for the purpose described.

5. In a horse hay-rake, the combination, with the frame, carrying-wheels, tilting rake-head, and revolving axle, of the ratchet-wheel Q, lifting-wheel R, locking-dog S, carried by the lever T on the wheel R, the links *o*, plate *s*, locking-bolt U, mounted on the frame, and chains A and links *n*, connecting the lifting-wheel R to the rake-head on opposite sides of its pivotal support, substantially as and for the purpose described.

413,727. CAR-COUPLING. PATRICK MCBRYDE, Montgomery, Minn. Filed Sept. 21, 1888. Serial No. 286,052. (No model.)



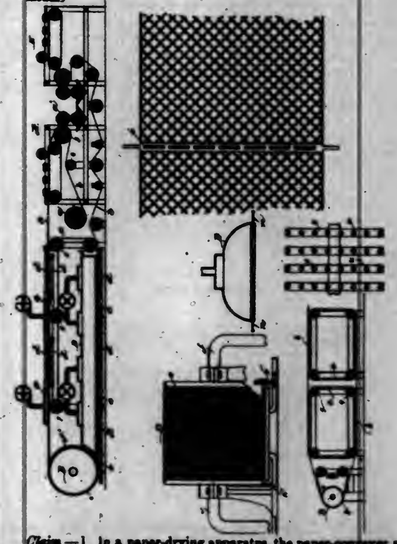
Claim.—1. In a car-coupling device, the combination, with a rocking rod and a segmental frame carrying a chain on its face, of the slotted angle-iron for engaging the head of a coupling-pin, substantially as set forth.

2. In a car-coupling, a quadrantal frame carried by a rocking rod that is provided with a lateral arm, cranks at the sides of the car, and a rod extending from said arm to the top of the car for operating said rocking rod, a chain attached to said frame and engaged by the curved surface thereof, and an angle-iron carried by the chain for engaging the head of a coupling-pin, substantially as set forth.

3. A car-coupling device consisting of a rocking rod bent at its middle to form a quadrantal frame at right angles thereto, and bent also at one side of the middle to form an arm, cranks on the ends of the rod, and a vertical lever connected to said arm, a curved plate secured to the arc of said frame, and a chain secured to its outer angle for raising and lowering a coupling-pin, substantially as set forth.

4. In a car-coupling device, a horizontal rocking rod bent at its middle to form a quadrantal frame at right angles thereto and the arc of such frame provided with lateral beads adapting it to serve as a bearing surface for a chain, substantially as set forth.

413,728. MACHINE FOR DRYING PAPER. LEWIS W. HOYES, East Pepperell, Mass. Filed Feb. 8, 1889. Serial No. 299,154. (No model.)



Claim.—1. In a paper-drying apparatus, the paper-conveyer and the exhaust or suction box, chamber, or device, combined with heating or drying pipes and hot-air boxes or chambers, all substantially as and for the purposes set forth.

2. In a paper-drying apparatus, a paper-conveyer, combined with an exhaust or suction box, chamber, or device for holding the paper in contact with the conveyer, and a system of heating or drying pipes or conduits in proximity to which the conveyer moves, substantially as described.

3. In a paper-drying apparatus, the endless reticulated paper-conveyer and means, substantially as described, for holding the paper on the conveyer on its upper side by a current of air, combined with the retaining-cylinder, around a portion of which the conveyer is passed, and means, substantially as described, for continuously exhausting the air therefrom, as and for the purposes set forth.

4. In a paper-drying apparatus, the paper-conveyer, combined with the exhaust or suction chamber or chambers having a perforated bottom adjacent to which said conveyer passes and slides to vary the width of opening of said bottom, as and for the purposes set forth.

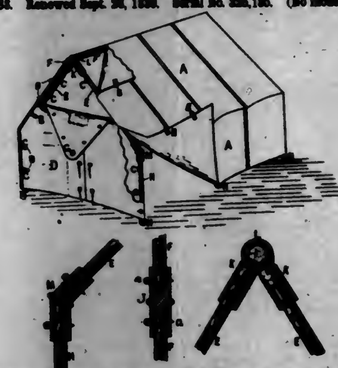
5. In a paper-drying apparatus, the reticulated paper-conveyer, combined with the hollow cylinder B, having closed ends and slits 8 in its barrel, and around a portion of which said conveyer passes, the shield *f*, closely encircling a portion of the cylinder opposite to that encircled by the conveyer, and means, substantially as described, for exhausting the air from the cylinder through its axis, whereby the paper will be held firmly upon the outer side of the conveyer as it passes around the cylinder opposite said shield, substantially as described.

6. In a paper-drying apparatus, the conveyer having cross-bars *i* and continuously-rotated rollers for moving the conveyer, and the guides for the cross-bars, combined with means, substantially as described, arranged above the conveyer at the lower part of the apparatus for holding the paper by suction, substantially as described.

413,729. CATTLE-FOOD. PAUL F. PALLAS, Dresden, Saxony, Germany. Filed May 26, 1888. Serial No. 312,468. (No specimens.) Patented in Belgium Mar. 6, 1887, No. 80,894; in Germany May 8, 1887, No. 41,970, and Dec. 2, 1887, No. 43,673; in France June 8, 1887, No. 184,095; in England Dec. 21, 1887, No. 17,570; in Norway Jan. 7, 1888, No. 730; in Sweden Jan. 9, 1888, No. 1,314; in Austria-Hungary June 12, 1888, No. 35,903 and No. 49,604, and in Spain Feb. 6, 1889, No. 9,051.

Claim.—The combination of malt and carrageen-moss with alimentary vegetable matters, as specified, and chaff, substantially as and for the purpose set forth.

413,730. TENT. GORDON P. PALMER, Boston, Mass. Filed Feb. 7, 1888. Renewed Sept. 26, 1889. Serial No. 325,195. (No model.)



Claim.—1. A wall-tent consisting of the ridge-pole pieces F, connecting socket-pieces J, rafters E, socket-pieces K, having rings L and projections *e*, posts H, connecting angle socket-pieces M, and socket foot-pieces N, as described.

2. An A-tent consisting of the ridge-pole pieces F, connecting socket-pieces J, socket-pieces K, having rings L and projections *e*, rafters E, and angle-socket foot-pieces P, as described.

413,731. CONDUIT FOR ELECTRIC RAILWAYS. CHESTER P. POTTS, Lynchburg, Va. Filed Mar. 23, 1889. Serial No. 304,571. (No model.)



Claim.—1. The combination, with the metallic box or trough, of the metallic slot-rails resting upon the upper edges of the sides and having the flanges and fastening-lips outside of and bolted to the box sides and the bracket-braces inside and supported on foot-rests upon the box sides, substantially as described.

2. The combination, with the metallic box or trough having the exterior laterally-projecting base-flanges and brace-webs, of the metallic slot-rails resting on the upper edges of the box sides and having the flanges outside of the box sides and bracket-braces inside of the box, said outside flange resting on the brace-web and having the fastening-ribs embracing the brace-webs and bolted to the sides of the box.

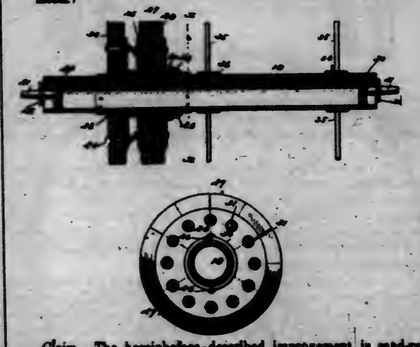
3. The combination, with the metallic box or trough having the interior stay-ribs, with supporting-shoulders at the upper ends, also having the exterior laterally-projecting base-flanges and brace-webs, of the slot-rails resting on the upper edges of the box sides, having the bracket-braces inside of the box and resting on the shoulders of the stay-ribs, also having the outside flanges resting on the brace-webs and provided with downwardly-projecting lips embracing the brace-webs and bolted to the box sides, as set forth.

4. The combination, with the sides of the box or trough, of the slot-rails resting on the upper edges of the box sides and having bracket-brace supports inside of the box, also a flange and bolting-lips extending down outside of the box sides, said flange and bolting-lips being tapered, substantially as set forth.

413,732. INSECTICIDE. JAMES RIDDEL, Fresno City, Cal. Filed Feb. 11, 1889. Serial No. 299,662. (No specimens.)

Claim.—The herein-described composition of matter to be used for the extermination and destruction of insect pests of all kinds which live or feed upon trees, shrubs, fences, plants, or which infest houses, closets, pantries, cupboards, bins, store-rooms, &c., consisting of soft soap, kerosene-oil, lime, oil of pennyroyal, oil of eucalyptus, wood-ashes, sulphur, and salt, in the proportions specified.

413,733. SAND-REEL FOR DRILLING-MACHINES. WILLIAM RICHARDS, Hayburn, Pa. Filed Dec. 7, 1888. Serial No. 292,905. (No model.)



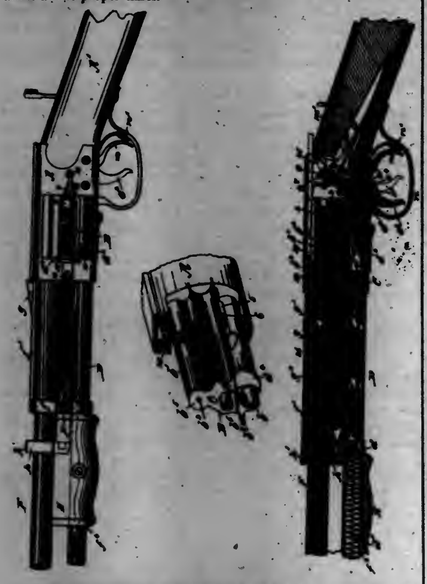
Claim.—The hereinbefore-described improvement in sand-reel pulleys, consisting of a sleeve-like casting adapted to be secured upon the shaft 19, provided with two spaced integral annular flanges upon the periphery, feathers extending from one flange to the end of the casting, a friction-pulley consisting of a series of wooden segments arranged to break joints, located upon the sleeve-like casting at the feathered portions and bearing against one of the said flanges, a detachable flange engaging one face of the pulley, bolts passing through the two flanges and through the said pulley at the center and joints of the several segments, and a brake-pulley rigidly secured to the remaining flange, all arranged substantially as and for the purpose described.

413,734. MAGAZINE FIRE-ARM. SYLVESTER H. ROOT, Boston, Mass. Filed Mar. 12, 1888. Serial No. 266,662. (No model.)

Claim.—1. In a magazine-gun, an intermittingly-rotating carrier having a compartment for the reception of a cartridge, a closed compartment opposite thereto for the permanent reception of a firing-pin and also constituting a recoil-block, an open compartment or space for the passage of the shell outward from the bore of the barrel, and a magazine-filling shelf, combined with a receiver set to receive the rotating carrier and form bearings therefor, a barrel attached to the outer end of the said receiver, and a magazine, substantially as described.

2. In a magazine-gun, the combination, substantially as described.

with a receiver adapted to retain a carrier and form a separating-wall between it and the lock mechanism, a rotary carrier adapted to receive a cartridge to be carried into position to be inserted into the barrel and having a firing-pin attached to and moving with the said carrier, and a recoil-block surrounding the said firing-pin, of a cam-rod rigidly attached to and projecting beyond the said carrier to actuate it at the proper times.



3. In a magazine-gun, a rotating carrier and a cam-rod rigidly attached thereto, combined with a saddle having an adjustable stud extended therethrough in operative connection with and to actuate the said cam-rod by longitudinal movement thereon, substantially as described.

4. The barrel, the magazine, intermittingly-rotatable carrier, and the attached cam-rod reduced at its ends to form journals for the said carrier, combined with a saddle operatively connected with and adapted to intermittingly rotate the cam-rod, and with a bar attached to the said saddle rigidly, and its spring-actuated combined inserter and extractor pivoted thereto at a point intermediate its ends, to operate substantially as described.

5. In a magazine-gun, the barrel, the magazine, the recessed and slotted receiver, and hammer provided with a projection at its upper end, combined with the reciprocating slide-bar adapted to enter the recessed receiver and having a finger to enter the slot to insert or extract a cartridge, further movement of the said finger being adapted to act upon the said projection and set the hammer automatically after the shell has been extracted, substantially as described.

6. In a magazine-gun, a barrel, a magazine, a carrier, its rigidly-attached cam-rod, substantially as described, to actuate the carrier intermittingly, and a hammer, combined with a reciprocating slide-bar having a spring-actuated finger provided with a projection *f'*, the said finger in its inward movement acting to engage the rim of and extract the cartridge-shell from the barrel and thereafter to set the hammer, and upon its outward movement removing the cartridge from the carrier and inserting it in the bore of the barrel, substantially as set forth.

7. In a magazine-gun, the receiver, the barrel, magazine, cam-rod, and means, substantially as described, to rotate it intermittingly, combined with a carrier rigidly connected to and moving with the said cam-rod and with a reciprocating slide-bar provided with the spring-actuated finger *g*, the said carrier being moved to carry the rim of the shell away from contact with the said finger during the partial rotation of the carrier, substantially as and for the purpose set forth.

8. The receiver, a magazine, and normally-operative spring-latch *d*, attached to the outside of and having its free end projecting within the receiver in front of the mouth of the magazine to retain the cartridge therein, combined with a rotating carrier having a compartment *b* for the reception of the cartridge and provided with the attached cam *d'* adjacent to said compartment to intermittingly move and retain the ratchet momentarily out of operative position as the cam is rotated, substantially as described.

9. The receiver, the carrier having a firing-pin, and the recessed hammer provided with the recoil-spring *o* therein, combined with the mainspring operatively attached to the hammer, and with an adjustable screw-stop *o'* to arrest the mainspring before the hammer strikes the firing-pin, substantially as described.

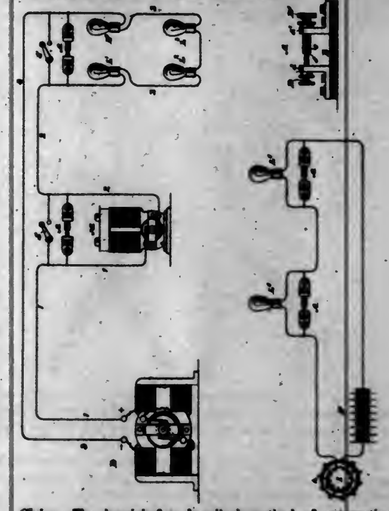
10. In a magazine-gun, a receiver, a barrel, magazine, and intermittingly-rotatable carrier having a curved shelf *b'* and an attached cam-rod to operate the said carrier, combined with a locking device on said carrier, consisting of a slotted sliding bolt, its end co-operating with the notched rear wall 2 of the receiver to hold the carrier in place while the cartridges are being inserted from the said shelf into the magazine to charge the same, substantially as described.

11. The receiver having the notched wall 2 and the intermittingly-rotating carrier combined with a hand-operated locking-bolt attached to the exterior of the carrier and sliding longitudinally thereon and engaging the said notched wall of the receiver at the will of the operator, substantially as described.

12. The receiver, the barrel, and the bracket or limiting-stop *h*, surrounding and fixed upon the said barrel and having a bearing for the reduced outer end of the cam-rod, combined with the carrier and its rigidly-attached cam-rod, substantially as described.

13. The receiver, the magazine, the barrel, and the cam-rod, and means, substantially as described, to rotate it intermittingly, combined with the attached rotatable carrier having a compartment for the reception of a cartridge to be inserted into the magazine, a compartment to receive a cartridge from the magazine, a compartment to receive entirely within it the firing-pin and to constitute the recoil-block, and a compartment or space to permit the outward passage of the shell from the barrel, and with a reciprocating bar sliding in the receiver and having an attached spring-finger to serve both as an inserting device for the cartridge and as an extracting device for the shell, substantially as described.

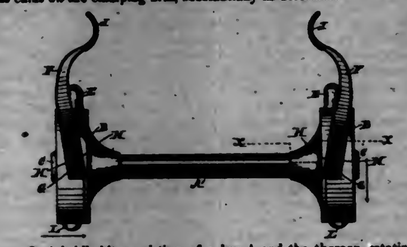
413,735. METHOD OF AUTOMATICALLY CLOSING AN INTERRUPTED ELECTRIC CIRCUIT. Leonard Schaefer, Boston, Mass., assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Feb. 16, 1889. Serial No. 300,163. (No model.)



Claim.—The hereinbefore-described method of automatically closing a normally-open circuit between two given points upon the interruption of a normally-closed circuit between the same points, which method consists in utilizing a momentary current of abnormal potential, caused by the inductive discharge of an electro-magnet included in said circuit, to act upon an interposed fusible material in such a manner as to permanently complete said normally-open circuit, substantially as set forth.

413,736. BRIDLE-BIT. Ryan T. Shelby, Ripon, Wis. Filed May 6, 1889. Serial No. 309,734. (No model.)

Claim.—1. A bridle-bit consisting of a bar adapted to pass through the mouth of a horse, and on each end thereof a movable case having therein a head-piece on the bar, to which head-piece is pivoted a clamping-arm, a draw-bar, and a spring, the case being provided with an inclined slot, the walls of which are adapted to act as cams on the clamping-arm, substantially as described.



2. A bridle-bit consisting of a bar A and the thereon rotating cases B B, in combination with head-pieces D D, removably secured on the bar A, clamping-arms F F, hinged on the head-pieces D D, bearing against the inclined walls H H of slots G G, springs K K, fixed in the cases B B and connected to the head-pieces D D, and means, substantially as described, for rotating the head-pieces, as and for the purpose set forth.

3. In a bridle-bit, clamping-arms F F, hinged on head-pieces D D, secured on and rotating with a bar A, in combination with cases B B, loose on the bar A and inclosing the head-pieces, and cams in the periphery of the cases, against which the clamping-arms bear and are moved laterally when the bit and clamping-arms are rotated, and means, substantially as described, for rotating the clamping-arms with reference to the cases, as and for the purpose set forth.

4. In a bridle-bit, a bar A, provided with head-pieces with swinging clamping-arms hinged thereon, and draw-bars pivoted thereto, in combination with cases B B, loose on the draw-bar and provided with bridle-lugs E E, retrieving-springs K K, and means, substantially as described, for throwing the arms F F inwardly against the nostrils of the horse, as set forth.

413,737. APPARATUS FOR SEALING PIPE-JOINTS. Thomas Shelton, McKeesport, Pa., assignor to the National Tube Works Company, same place. Filed June 16, 1887. Serial No. 241,489. (No model.)



Claim.—1. In apparatus for closing the crevice of a pipe-joint during the pouring of the calking material, the combination of a ring of expansible material, a split ring within the expansible ring, two conical frusta fitting within said ring, and means for forcing said cones toward and from one another to expand said split ring, and with it said expansible ring, against the inner surface of the joint, substantially as and for the purposes set forth.

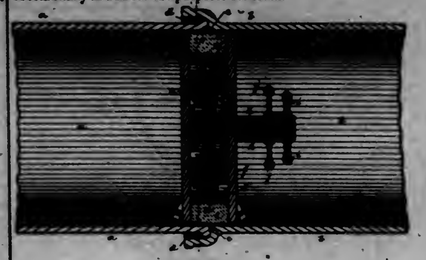
2. In apparatus for closing the crevice of a pipe-joint during the pouring of the calking material, the combination of the ring *n*, of expansible material, the disks *e* and *f*, having the conical frusta or cones thereon, and the split ring *m* between said frusta and the expansible ring, substantially as and for the purposes set forth.

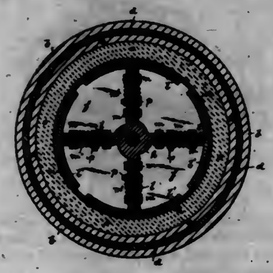
3. In apparatus for closing the crevice of pipe-joints during the pouring of the calking material, the combination of the ring *n*, of expansible material, the two disks *e* and *f*, the inner shaft *g*, and the supporting outer hollow shaft *h*, its outer end forming a journal or bearing for the inner shaft, substantially as and for the purposes set forth.

413,738. APPARATUS FOR SEALING PIPE-JOINTS. Thomas Shelton, McKeesport, Pa., assignor to the National Tube Works Company, same place. Original application filed June 16, 1887, Serial No. 241,489. Divided and this application filed Apr. 20, 1889. Serial No. 307,985. (No model.)

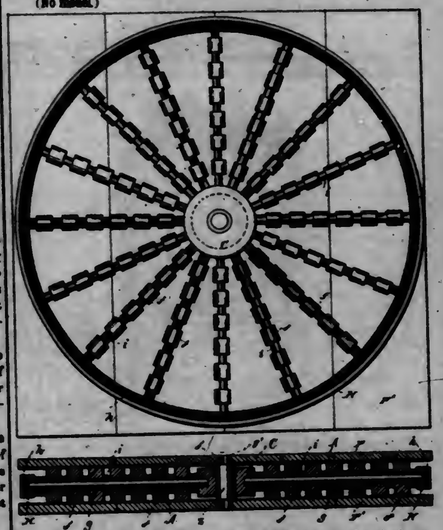
Claim.—1. In an apparatus for closing the crevice of pipe-joints, the combination of the ring *o*, of expansible material, the disks *e* and *f*, the cam *k*, the rods *l*, the segments *l'*, the split ring between the segments *l'* and the expansible ring, and means for rotating said cam *k*, substantially as and for the purposes set forth.

2. An apparatus for closing the crevice of pipe-joints, having a head or body carrying a ring of expansible material, mechanism for expanding the expansible ring against the crevice of the joint, and rollers *j'* on said body to support and guide the movement of said body, substantially as and for the purposes set forth.





413,739. PORTABLE TURN-TABLE. Thomas Slevin, St. Louis, Mo. Filed June 19, 1888. Renewed Mar. 26, 1889. Serial No. 304,920. (No model.)



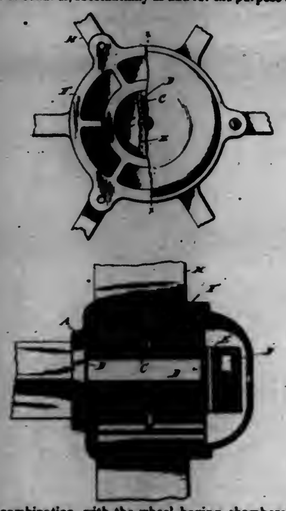
Claim.—1. The turn-table consisting of the rectangular platforms, the hub having the journals *g'*, the radiating rods, the rollers and the spacing-blocks, and the rim, substantially as specified.

2. In a turn-table, the combination of the sectional platforms F F, having metal facing, the hub C, the rods *f*, radiating from the hub, the rim H, having a tire, the rollers on the rods *g*, and the spacing-blocks between the said rollers, substantially as specified.

413,740. CAR-WHEEL. Robert Stalter, New Straitsville, Ohio. Filed July 16, 1889. Serial No. 317,922. (No model.)

Claim.—1. The combination, with the wheel having the flanged collar A, and the axle having collar B, to bear against one side of collar

A, of the sleeve C, held on the axle and obtaining a bearing on the opposite side of collar A, substantially as and for the purpose described.

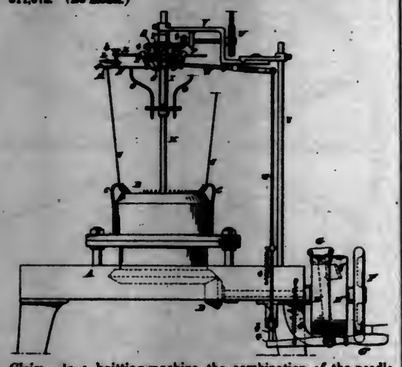


2. The combination, with the wheel having chambered hub for containing the lubricant and having flanged collar A, of the axle having collar B, and the sleeve held on the axle and adapted to bear on collar A, substantially as described.

3. The combination, with the wheel having chambered hub and oil-passages and having collar A, of the axle having collar B, the sleeve held on the axle and adapted to bear against the collar A, and the cap-plate, substantially as described.

418,741. AUTOMATIC STOP-MOTION FOR KNITTING-MACHINES.

John M. Stevens, Philadelphia, Pa. Filed May 22, 1889. Serial No. 311,672. (No model.)



Claim.—In a knitting-machine, the combination of the needle-head and power mechanism for operating it, a brake-wheel on the power-shaft, having a brake-surface rotating in the plane of the wheel, a brake therefor adapted to press laterally against the surface of said brake-wheel, a spring to apply said brake, thread-guides for guiding the thread to the needle-head, a rotating part provided with a projection, a movable part controlled by the thread and normally held out of the path of the projection of the rotating part, and intermediate lever mechanism between the brake and movable part for releasing the brake when the projection of the rotating part acts upon and moves the movable part.

2. In a knitting-machine, the combination of the needle-head and power mechanism for operating it, a brake-wheel, a brake therefor, and automatic stop-motion mechanism controlled by the thread leading to the knitting-head to apply the brake in case the said thread should break or have too high a tension put upon it, said stop-motion mechanism consisting of a power cam-wheel continually rotating a pivoted thread-supporting guide and arm, a pivoted lever controlled by said arm, a spring to move it in the path of the cam-wheel when released by the pivoted arm, and trip mechanism controlled by the movement of the pivoted lever when acted on by the cam-wheel to apply the brake.

3. In a knitting-machine, a needle-head and power mechanism to operate it, having a belt-shifter to stop the machine, in combination with an automatic stop-motion mechanism consisting of a rotating cam-wheel, a thread-guide having a pivoted arm supported by the thread passing through the guide, a vertically-movable frame or sleeve, a pivoted lever held by said arm away from the path of the cams on the cam-wheel, a spring to pull said lever into the path of the cams when the arm should be liberated from the thread, and trip devices for controlling the belt-shifter actuated by the movable frame or sleeve.

4. In a knitting-machine, a needle-head and power mechanism to operate it, having a belt-shifter to stop the machine, in combination with an automatic stop-motion mechanism consisting of a rotating cam-wheel having stop-motion cams and a resetting-cam, a thread-guide having a pivoted arm supported by the thread passing through the guide, a vertically-movable frame or sleeve, a pivoted lever held by said arm away from the path of the stop-motion cams on the cam-wheel, a spring to pull said lever into the path of the cams when the arm should be liberated from the thread, and trip devices for controlling the belt-shifter actuated by the movable frame or sleeve, and in which the continued rotation of the cam-wheel will by its resetting-cams automatically reset said pivoted lever back of the catch of the pivoted arm when the thread is readjusted in the thread-guide.

5. In a stop-motion mechanism, the thread-guide consisting of the frame L, having the two pivoted fingers or guides M, the spring *m*, to hold said fingers up against normal tensions of the thread, and the pivoted locking-arm N, arranged in a space between the pivoted fingers and supported by the thread passing over said fingers.

6. In a stop-motion mechanism, the thread-guide consisting of the frame L, having the two pivoted fingers or guides M, the spring *m*, to hold said fingers up against normal tensions of the thread, the adjusting-screw R, to vary the tension of the thread, and the pivoted locking-arm N, arranged in a space between the pivoted fingers and supported by the thread passing over said fingers.

7. In a stop-motion mechanism, the thread-guide consisting of the frame L, having the two pivoted fingers or guides M, the spring *m*, to hold said fingers up against normal tensions of the thread, the pivoted locking-arm N, arranged in a space between the pivoted fingers and supported by the thread passing over said fingers, the supporting-arm K, an adjustable connection between the frame L and said arm, and a support for the locking-arm N and the supporting-arm K.

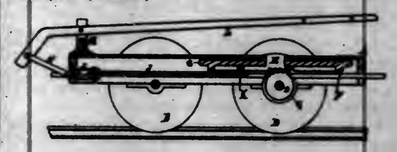
8. The combination of a knitting-machine, a standard H, a vertically-movable frame or sleeve I, having arms K extending therefrom, thread-guides secured to the ends of said arms, a rotating cam-wheel S, having cams *s* T, pivoted levers P, carried by the sleeve, springs whereby said levers P are pulled into position to be acted on by the said cams, a pivoted arm supported by the thread passing through the thread-guide and adapted to lock the pivoted levers P away from the path of the cams, and mechanism to stop the motion of the knitting-machine actuated by the sleeve or movable frame.

9. In a stop-motion for a knitting-machine, the combination of a standard, a stop-motion sleeve or frame capable of vertical movement, a rotating cam-wheel journaled on the standard, one or more radiating thread-guides about said standard, spring-actuated levers actuated by the cam-wheel to move the sleeve or frame, and latches controlled by the thread in the thread-guides to normally hold the levers out of the path of the cams on the cam-wheel.

10. In a knitting-machine, the combination of the needle-head with a series of thread-guides arranged about said head, a stop-motion mechanism arranged above and substantially central with respect to the needle-head and having a series of radiating thread-guide arms provided with thread-guides adjustable upon their arms about a vertical axis and arranged substantially above the thread-guides for the needle-head, mechanism to stop the motion of the knitting-machine, and means, substantially as shown, centrally located with respect to said radiating thread-guides and controlled thereby to operate said mechanism to stop the knitting-machine.

418,742. HAND-CAR.

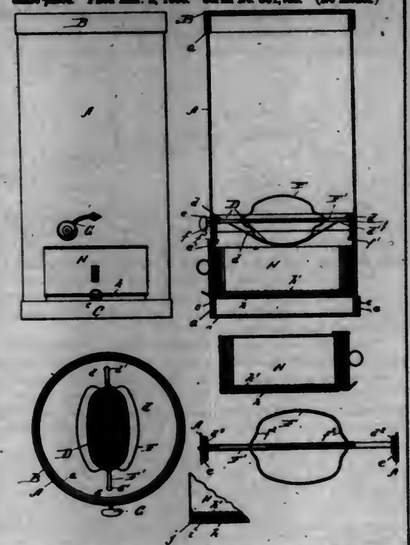
Ira R. Stump, Richville, assignor of one-half to Calvin S. Pierce, Cleveland, Ohio. Filed Mar. 29, 1889. Serial No. 305,285. (No model.)



Claim.—In a hand-car, and in combination with one of the axles thereof, the spur-wheel G, crown-wheel N, having the flange *a*, the connecting-rod J, crom-head I, link F, and actuating-lever L, the parts being arranged and operating in the manner and for the purpose set forth.

418,743. PORTABLE SCREENING FLOUR-BIN.

Christiaan Tabberman, Chicago, Ill., assignor to himself and Willis M. Sherman, same place. Filed Mar. 2, 1889. Serial No. 301,782. (No model.)



Claim.—1. In a cylindrical pasteboard screening flour-bin, an agitator mounted upon a shaft provided with supports located wholly within the bin and abutting at its ends against the inside walls, in combination with a crank threaded into one end of the shaft and passing through an opening in the wall of the bin of less diameter than the shaft, substantially as set forth.

2. In a cylindrical screening flour-bin made of pasteboard, the hoops *c* and *c'* and the plates d^2 d^3, in combination with the agitator-shaft, substantially as set forth.

3. In a cylindrical screening pasteboard flour-bin, the agitator, the shaft whereof is supported from hoop *c'*, and the dished screen supported from hoop *c*, in combination with said hoops, substantially as set forth.

4. The cylindrical screening flour-bin made of pasteboard, wherein are combined an agitator and a screen D, said screen having a metal rim *d*, supported upon an interior hoop *c* of the bin, substantially as set forth.

5. In a cylindrical screening flour-bin made of pasteboard and provided with a removable drawer located in the body of the cylindrical bin, an interior hoop *c'*, located just above the drawer-opening, substantially as and for the purpose specified.

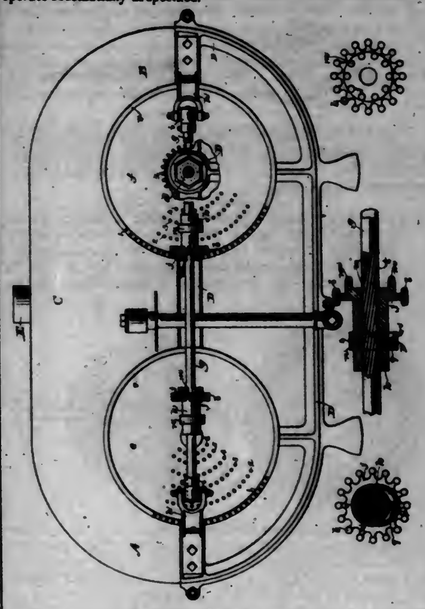
418,744. GEARING FOR OPERATING APPARATUS FOR MIXING AERIFORM FLUIDS.

Caleb C. Walworth and Herman Seitzer, Boston, Mass. Filed Oct. 23, 1888. Serial No. 288,706. (No model.)

Claim.—1. The combination, with arbors *c* and *d*, arranged to operate the wheels of a gas and air meter, of multiple crown-wheels *e f*, secured to the arbors *c* and *d*, respectively, and the coacting pinions *j*, arranged upon a common shaft and provided with locking and releasing devices, whereby they may be enmeshed with the several series or circles of teeth in their respective crown-wheels, substantially as specified.

2. The combination, with arbors *c* and *d*, arranged to operate the wheels of a gas and air mixing meter, of multiple crown-wheels *e f*, secured to the arbors *c* and *d*, respectively, and formed with a series of internal circles of teeth, and a peripheral flange *v*, having teeth thereon projecting beyond the plane of the interior teeth, and pinions *j*, mounted upon a common shaft and formed with peripheral teeth *l* and a circle of interior teeth *m*, all substantially as specified.

3. The combination, with arbors *c* and *d*, arranged to operate the wheels of a gas and air mixing meter, of multiple crown-wheels *e f*, secured to the arbors *c* and *d*, respectively, and pinions *j*, mounted on shaft *g*, formed with longitudinal slot *t* and duly-spaced holes *u*, rings *n*, their pins *p* and *s*, and spring *q*, all constructed and arranged to operate substantially as specified.



418,745. FLOWER-STAND.

Henry Whitbal, Chicago, Ill. Filed Aug. 4, 1888. Renewed July 23, 1889. Serial No. 318,294. (No model.)

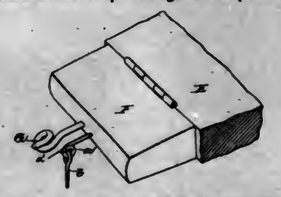


Claim.—A flower-stand consisting of angular brackets provided with steps or rests for supporting a flower-box and having swinging arms 5, which serve to hold the brackets in position, in combination with a flower-tray resting thereon and provided with an angular attaching-socket having means for engaging the steps and the risers of the stand, all substantially as set forth.

418,746. KINK-ARRESTER FOR SPINNING-FRAMES.

Thomas D. Wilkerth, Snidersville, Mass. Filed July 23, 1888. Serial No. 281,262. (Model.)

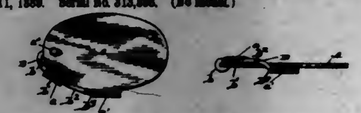
Brief.—The object of the invention is to provide a kink-arrester which shall be adapted for use with different weights of yarn and which cannot be thrown up and lodge in an inoperative position.



Claim.—The combination, with the kink-arrester, of a support having an eye shaped to suspend the kink-arrester and enable it to swing, and having a forwardly-extended stop portion to prevent the

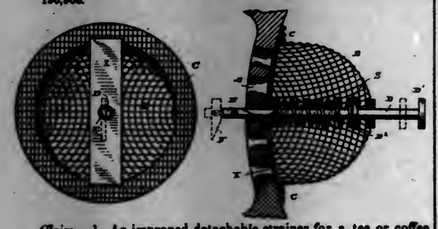
kink-arrester turning over and above the top of the support, to operate substantially as described.

413,747. TAG. Elza Anderson, Kansas City, Mo. Filed June 11, 1889. Serial No. 313,893. (No model.)



Claim.—A clothes-marker consisting of a plate provided with oppositely-projected hooks and an irregularly-carved pin loosely engaged with said plate, the said pin provided with carved portions b b' b^2 b^3, substantially as set forth.

413,748. TEA OR COFFEE POT OR SIMILAR VESSEL. Arthur H. Bowman, London, England. Filed Feb. 12, 1889. Serial No. 299,685. (No model.) Patented in England Oct. 26, 1885, No. 12,951, and Nov. 10, 1886, No. 14,562; in New South Wales July 5, 1886, No. 1,575; in Belgium Mar. 19, 1888, No. 81,902, and in France May 30, 1888, No. 190,908.



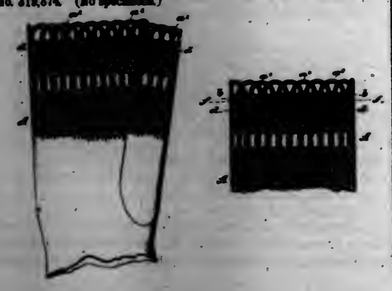
Claim.—1. An improved detachable strainer for a tea or coffee pot or similar vessel, comprising a strainer proper, of fine wire-gauze, of a dome shape, an attaching-pin projecting centrally through the apex of the dome and having a knob fast on its outer end and adapted to be grasped by the fingers for manipulating the strainer, and an attaching device at the opposite end of said pin, substantially as hereinbefore specified.

2. An improved detachable strainer comprising a flexible strainer proper, of fine wire-gauze, of a dome shape, an endwise-movable attaching-pin projecting centrally through the apex of the dome and having a knob fast on its outer end, an attaching device carried by the opposite end of said pin, and a spring reacting against abutments carried by the said pin and strainer proper, respectively, substantially as hereinbefore specified.

3. An improved detachable strainer comprising a strainer proper, of fine wire-gauze, of a dome shape, having a marginal rim, an attaching-pin projecting centrally through the apex of the dome, an attaching device carried by said pin and adapted to engage with the ordinary perforated strainer of a tea or coffee pot, and a spring reacting against abutments carried by the said pin and strainer proper, respectively, substantially as hereinbefore specified.

4. In combination with a strainer proper, of fine wire-gauze, of a dome shape, having a marginal rim and a cross-bar in the plane of the said rim, an attaching-pin extending through the apex of said strainer and having a fixed collar within the latter, a spring confined between said cross-bar and collar, and a gravitating finger pivoted to said pin and adapted to engage with the ordinary perforated strainer of a tea or coffee pot, substantially as hereinbefore specified.

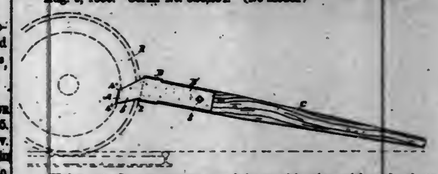
413,749. TRIMMING. Enoch Carrier, Brooklyn, N. Y., assignor to the Jennings Lace Works, same place. Filed Aug. 6, 1889. Serial No. 319,574. (No specimens.)



Claim.—1. A trimming comprising two plies of fabric at its edge and a series of loops projecting therefrom, each loop having one of its ends secured to one of the plies and its other end to the other ply, as set forth.

2. The trimming A, comprising two plies of fabric and having the projecting loops a^2, that are twisted throughout their length, each loop being connected at one end to one of the plies and at its other end to the other ply, substantially as described.

413,750. CAR-MOVER. Laurens A. Post, Raleigh, N. C. Filed Aug. 9, 1889. Serial No. 320,261. (No model.)



Claim.—1. In a car-mover, and in combination with a hook to enter behind the rim of the car-wheel, the open-ended socket to receive the handle-bar of the implement, provided with a dog or biting-edge formed by an edge of said socket, substantially as described.

2. In a car-mover, and in combination with a hook to enter behind the rim of the car-wheel, a socket to receive the handle-bar of the implement, provided with a dog or biting-edge in line with a wall of said socket, substantially as described.

3. In a car-mover, and in combination with a socket to receive the handle-bar, provided with a dog, a hook composed of a point arranged in front of said socket and dog, and a body or member connecting the said point with the said socket and obliquely disposed in (approximately at least) a plane parallel with the length of said socket, the top and bottom edges of said body or member being both oblique to the length of the said socket, substantially as described.

4. In a car-mover, and in combination with a socket to receive the handle-bar, provided with a dog, and the hook-body or connecting member, the hook-point transverse to the length of said socket, arranged in front of said dog, and having one at least of its top and bottom edges sloped from the base of said point outward, substantially as described.

5. In a car-mover, a socket with a dog at one edge thereof, in combination with a hook having its point opposite said dog and an obliquely-disposed body or connecting member between said point and said socket, substantially as described.

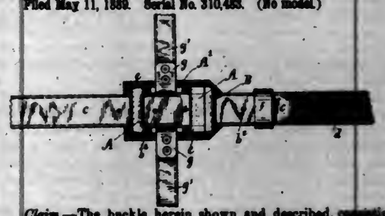
6. A car-mover comprising a handle-bar, an open-ended socket provided with a dog, and a hook having its point arranged in front of said socket and dog, leaving the open front end of said socket exposed for driving a wedge into the handle-bar, substantially as described.

7. The head of a car-mover, comprising the open-ended socket provided with a dog at its front end, the obliquely-disposed hook-body projecting forward from said socket, and the hook-point projecting laterally from said hook-body in front of said socket and dog, substantially as described.

8. The head of a car-mover, comprising the open-ended socket provided with a dog at its front end, a hook-body projecting forward from said socket, and a hook-point projecting laterally from said hook-body and front of said socket and dog, and having its top and bottom edges one above and the other below the said dog, so as to catch the car-wheel when said head, after application to the rim of said wheel, is moved either up or down, substantially as described.

9. The head of a car-mover, comprising a socket to receive the handle-bar, open at its front end also, and provided with a dog at the said front end, and a hook having its point arranged in front of said socket and dog, substantially as described.

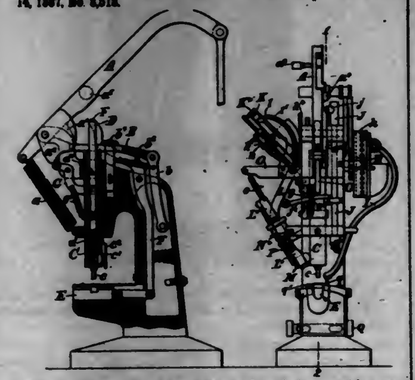
413,751. BUCKLE. Michael H. Freidline, near Fredonia, Kans. Filed May 11, 1889. Serial No. 310,483. (No model.)



Claim.—The buckle herein shown and described, consisting of the walls A', having integral loops A A at either end thereof of nu-

equal altitude, and an integral extension a', projecting laterally from the end having the highest loop, provided with an abutment a^2, in combination with the wedge B, having a tapering tongue b, provided with lateral projections b^2 to retain the straps C d in position laterally, having, moreover, a lug b', that engages a perforation in the straps C and abuts against the wall a^2 of the extension a, and the loop f, the whole co-operating as and for the purpose set forth.

413,752. PUNCHING AND EYELETING MACHINE. Arthur Garrett, Towcester, and Gilbert Wherrin, Astwick, County of Northampton, assignors to John Phipps, Northampton, England. Filed Jan. 22, 1889. Serial No. 297,172. (No model.) Patented in England June 14, 1887, No. 8,513.



Claim.—1. A combined punching and eyeleting machine consisting, essentially, of a reciprocating punching-cylinder carrying a laterally-movable punch, a cramping-rod reciprocating in said cylinder in line with said punch, and a shifting anvil for receiving the punch and cramping-rod, substantially as described.

2. A combined punching and eyeleting machine consisting, essentially, of a reciprocating punching-cylinder carrying a laterally-movable punch, a cramping-rod reciprocating in said cylinder in line with said punch, a shifting anvil for receiving the punch and cramping-rod, and an operating-lever and connections between the same and the punching-cylinder, anvil, and cramping-rod for operating them in proper sequence, substantially as described.

3. A combined punching and eyeleting machine consisting, essentially, of a reciprocating punching-cylinder carrying a laterally-movable punch, a cramping-rod reciprocating in said cylinder in line with said punch, a shifting anvil for receiving the punch and cramping-rod, and a feeding and delivery mechanism for presenting eyelets, one by one, in proper position beneath the cramping-rod, substantially as described.

4. A combined punching and eyeleting machine consisting, essentially, of a reciprocating punching-cylinder carrying a laterally-movable punch, a cramping-rod reciprocating in said cylinder in line with said punch, a shifting anvil for receiving the punch and cramping-rod, and a plurality of feeding and delivery mechanisms for presenting eyelets, one by one, in proper position beneath the cramping-rod, substantially as described.

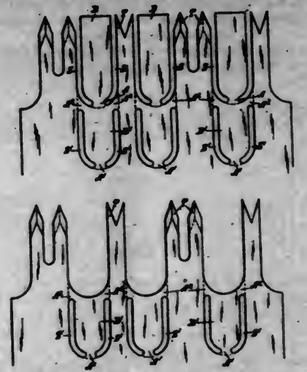
5. A combined punching and eyeleting machine consisting, essentially, of a reciprocating punching-cylinder carrying a laterally-movable punch, a cramping-rod reciprocating in said cylinder in line with said punch, a shifting anvil for receiving the punch and cramping-rod, a feeding mechanism having a swinging pendent chute or carrier for presenting eyelets, one by one, in proper position beneath the cramping-rod, a partially-rotating crank-rod connected to said chute to swing the same, an operating-lever, and connections between said lever and the punching-cylinder, anvil, crank-rod, and cramping-rod for operating them in proper sequence, substantially as described.

6. A combined punching and eyeleting machine consisting, essentially, of a reciprocating punching-cylinder carrying a laterally-movable punch, a cramping-rod reciprocating in said cylinder in line with said punch, a shifting anvil for receiving the punch and cramping-rod, a plurality of feeding mechanisms having swinging pendent chutes or carriers for presenting eyelets, one by one, in proper position beneath the cramping-rod, a partially-rotating crank-rod connected to said chutes to swing the same, an operating-lever, and connections between said lever and the punching-cylinder, anvil, crank-rod, and cramping-rod for operating them in proper sequence, substantially as described.

7. In a combined punching and eyeleting machine, the combination, with the punching and eyeleting mechanism of a work-gage, consisting of a pair of pivoted arms located upon the opposite sides of the anvil of the eyeleting mechanism, and having pins g g', arranged to enter the last-made hole in the material, and the sliding cam-faced bolt Q, acting upon both of said arms to raise one and depress the other, substantially as described.

8. The combination, in a punching and eyeleting machine, of a reciprocating punching-cylinder carrying a pivoted punch, and a reciprocating cramping-rod located within said cylinder in line with said punch and acting, when moved downward, to engage with the punch and move the same laterally out of its path.

413,753. SAW. James H. Griffith, Kingsmill, assignor of one-half to George A. Tuttle, South Dorchester, and David A. Short, Aylmer, Ontario, Canada. Filed Aug. 17, 1889. Serial No. 321,086. (No model.)



Claim.—1. A saw-blade having the transverse slots S formed therein, substantially as and for the purpose set forth.

2. A saw-blade having the transverse slots S' formed therein, substantially as and for the purpose set forth.

3. A saw-blade having the slots S S' formed therein, substantially as and for the purpose set forth.

4. A saw-blade having the blocks B between the teeth and connected therewith by the arms A, substantially as and for the purpose set forth.

5. A saw-blade having the blocks B' connected therewith by arms A' A^3, substantially as and for the purpose set forth.

6. A saw-blade having the blocks B and B' connected therewith by the arms A and A' and A^3, respectively, substantially as and for the purpose set forth.

7. A saw-blade having the slots S S' formed therein, and the blocks B and B' connected therewith by the arms A and A' and A^3, respectively, substantially as and for the purpose set forth.

413,754. TOP-PROP JOINT. George W. Hamm, South Bend, Ind. Filed Mar. 30, 1889. Serial No. 305,260. (No model.)



Claim.—1. A plate and spindle preferably cast integral therewith, in combination with a thimble screwing onto said spindle, substantially as specified.

2. A plate provided with a spindle, in combination with a thimble, a brace and its nut, and a spring interposed between said brace and thimble, substantially as specified.

3. A plate and spindle preferably formed integral therewith, in combination with a thimble flanged at its base, a brace and its nut, and a flat spiral spring inserted between the head of the brace and the thimble, substantially as specified.

4. A plate having a screw-threaded spindle, in combination with a flanged interiorly-screw-threaded spindle, a brace and its nut, and a

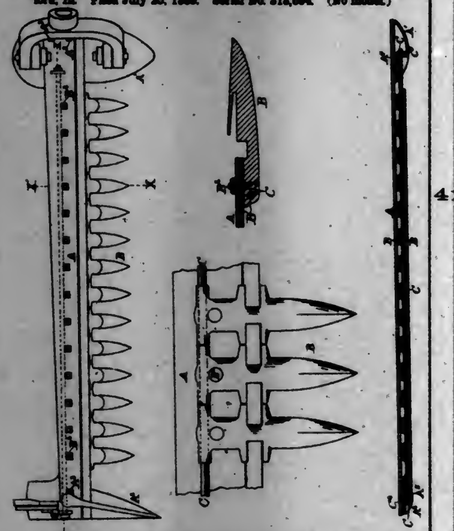
flat spiral spring or washer interposed between said brace-head and thimble, substantially as specified.

5. The plate A, having screw-threaded spindle A', in combination with flanged interiorly-screw-threaded spindle B, brace E, having head E', provided with a polygonal aperture for the reception of a similarly-constructed nut F, and a flat spiral spring D, interposed between the brace-head E' and the thimble B, substantially as specified.

6. A pivot screw-threaded at its extremity, in combination with a brace turning upon said pivot, provided with a polygonal aperture, and a nut screwing onto said pivot and provided with a shoulder fitting into said aperture, substantially as specified.

7. A pivot screw-threaded at its extremity, in combination with a brace turning upon said pivot, a spring interposed between the base of the pivot and the brace, the brace being provided with a polygonal aperture, and a nut screwing onto the pivot and provided with a shoulder fitting into said aperture, substantially as specified.

418,755. FINGER-BAR FOR MOWERS. GOTLAF JENSENIUS, Rockford, Ill. Filed July 25, 1889. Serial No. 318,004. (No model.)



Claim.—1. In combination, a finger-bar, inside and outside shoes depending therefrom and rigidly connected therewith, laterally-abutting guards secured to said finger-bar and having transverse openings therein to admit a truss-rod, and truss-rod passed through the transverse openings in said shoes and guards, the several parts being constructed and arranged to render said finger-bar vertically rigid, substantially as and for the purpose specified.

2. In combination, the finger-bar A, the inside and outside shoes A' A^3, rigidly connected therewith by means of the bolts A^3, the laterally-abutting guards B, provided with transverse openings B' therein and bolted to the finger-bar A, the truss-rod C, passed through the transverse openings B' A^4 A^5 in the guards B and inside and outside shoes A' A^3, and the nuts C' C^3, applied to the ends of the truss-rod C to secure all of said parts rigidly together, substantially as and for the purpose specified.

418,756. PUDDLER. MATHIAS H. JOHN, Escanaba, Mich. Filed Apr. 20, 1889. Serial No. 307,921. (No model.)

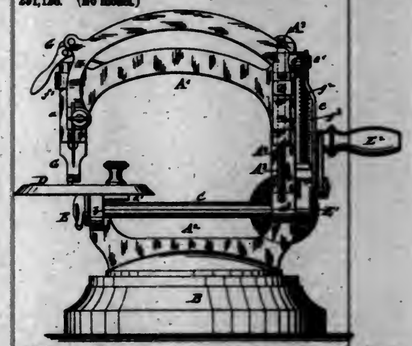


Claim.—1. The combination of a substantially rectangular compartment provided with side compartments, two-main aisles leading thereto, cross-aisles connecting such main aisles, and a set of blocks movable within such aisles and compartments, substantially as described.

2. The combination of a rectangular space A, provided with five compartments at each side, main aisles B and C, leading thereto, cross-aisles H and I, connecting the main aisles, and a set of twenty blocks sliding within such aisles and rectangular space, substantially as described.



418,757. SEWING-MACHINE. CHARLES LEWY, New York, N. Y., assignor to Jacob Kohn, same place. Filed Nov. 17, 1888. Serial No. 291,126. (No model.)



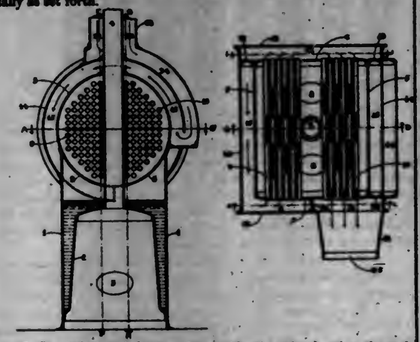
Claim.—1. The combination of a supporting main standard having a yoke-shaped upper arm provided with a grooved head at one end and a fixed guide-rod at the other end, a driving crank-shaft carrying the loop-forming hook at one end and a crank at the opposite end, a yoke-shaped needle-bar provided with a guide-hook at one end and guide-eyes at the opposite end, and a connecting-rod pivoted to the crank of the driving-shaft and the needle-bar, substantially as set forth.

2. The combination of a supporting-standard having a yoke-shaped upper arm provided with a grooved head, a fixed guide-rod secured to the opposite end of the main arm, a yoke-shaped needle-bar provided with a guide-hook at the outer end and guide-eyes at the opposite ends, a driving crank-shaft, a connecting-rod pivoted to the crank-shaft and needle-bar, a bracket-plate attached to the needle-bar and having a guide-eye, and a cushioning-spring applied to a fixed guide-rod of the main arm, so as to assist in raising the needle-bar, substantially as set forth.

418,758. COMBINED AIR-HEATER AND STEAM-BOILER. PETER LITHER, THOMAS HASLAM, and JOHN MOORHOUSE, Liverpool, County of Lancaster, England. Filed Mar. 12, 1888. Serial No. 266,963. (No model.)

Claim.—1. The combination, with a steam-boiler, of an air-heater having an outer inclosing-shell with a division therein at one end, an opening on each side of said division—one for the admission of air to be heated and the other for the exit of the heated air—an inner shell with a space between it and the outer shell at each end and around a portion of its periphery, and a series of pipes within the inner shell, substantially as described.

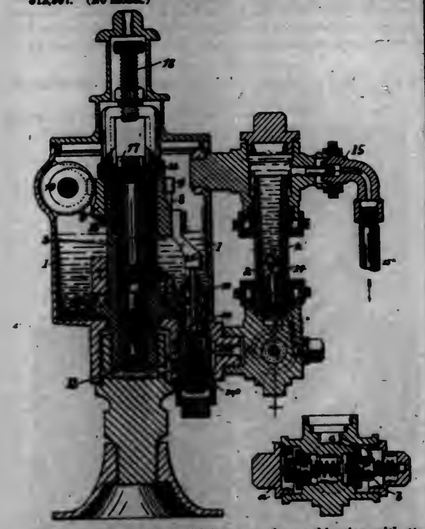
2. The combination, in one structure, of a steam-boiler with a tubular air-heater, the latter consisting of a chamber which forms part of the steam-space of the boiler, through which chamber pass a number of tubes divided into stacks, an annular passage which partially surrounds the said chamber, an air-inlet which surrounds the chimney of the boiler, a passage connecting the air-inlet to the annular passage, tube-doors, and division-plates to direct a current of air entering the air-inlet, so that it passes through the annular passage and then passes in succession through each stack of tubes, substantially as set forth.



3. In a tubular air-heater, the combination of a chamber through which pass a number of tubes divided into stacks, an annular passage which partially surrounds the said chamber, an air-inlet which surrounds a boiler or other chimney, a passage connecting the air-inlet to the annular passage, tube-doors, and division-plates to direct a current of air entering the air-inlet, so that it passes through the annular passage and then passes in succession through each stack of tubes, substantially as set forth.

4. The combined air-heater and steam-boiler, consisting, essentially, of the boiler 1, the inner shell 5, the outer shell 14, the annular passage 15, the tube-plates 6 and 7, the stacks of tubes 9 and 10, the tube-doors 16, 17, and 18, the air-inlet 22, surrounding the chimney 4, and the division-plates 19, 20, and 21, all substantially as herein described and illustrated.

418,759. SIGHT-FEED LUBRICATOR. GEORGE M. MARSHALL, Huddersfield, County of York, England. Filed June 3, 1889. Serial No. 312,907. (No model.)



Claim.—1. In a sight-feed lubricator, the combination, with the outer casing and the cylinder therein, provided at its base with an enlarged chamber for the reception of the oil for lubrication, and an outlet for the oil from said chamber, the plunger playing in said cylinder and its lower end adapted to enter said chamber and force the oil therefrom, and the operating mechanism of the lubricator, consisting of the cams and springs arranged substantially as set forth, of the valve arranged in the passage leading from the chamber below said plunger, its stem arranged in the path of a projection from one of said cams, whereby the movement downward of said cams opens the valve for the admission of oil to the chamber from the oil-reservoir, substantially as and for the purposes set forth.

2. In a sight-feed lubricator, the combination, with the outer casing containing oil and the cylinder arranged therein, and the chamber below said cylinder for the reception of the oil to be fed to the parts to be lubricated, of a valve controlling the admission of oil to said chamber and means, substantially as described, for opening and closing said valve.

3. In a sight-feed lubricator, the combination, with the fixed outer casing and the cylinder arranged therein, provided at its base with a chamber and a passage leading thereto for the admission of the oil to be fed, of the plunger in said cylinder, its lower end entering said chamber beneath the cylinder, means, substantially as described, for operating said plunger, and means for varying the stroke of said plunger, consisting of the adjusting-screw mounted in the casing, its lower end adapted to press upon the upper end of said plunger and limit the movement thereof.

418,760. VEHICLE-WHEEL. WALTER F. MABEE, Benton, Iowa. Filed Apr. 16, 1889. Serial No. 307,470. (No model.)



Claim.—1. In a wheel, the main axle, tire, and spokes, in combination with the sections B and C of the hub, and a threaded sleeve upon which said sections move, said sleeve being formed of two parts, one of which is formed with a socket and the other with a head adapted to fit within said socket, and a pin passing through the socket and engaging the head, whereby the two parts of the sleeve are held together, substantially as described.

2. An improved wheel, consisting of the main axle, the tire, and the spokes, the sections B and C of the hub, and the threaded sleeve upon which the sections move, said sleeve being formed in two parts, having their outer ends adapted to receive a wrench and their inner ends formed with heads adapted to be fitted together, one of said heads having an annular groove which receives a screw carried by the other head, whereby the two parts of the sleeve may be turned independently, substantially as described.

418,761. CROCHETING OR OVERSEAMING MACHINE. JOSEPH M. MERROW, Merrow, Conn. Filed Oct. 15, 1887. Serial No. 252,416. (No model.)

Claim.—1. In a machine such as described, the combination, with the needle and looper and means for reciprocating them, and a finger or plate around which loops may be formed by the needle and looper, of a shoulder, as at f^{16}, occupying a position above said finger or plate and between the latter and the path traversed by the looper around the edge of the fabric, substantially as described.

2. In a machine substantially such as described, the combination, with a reciprocating needle and a reciprocating crochet-hook, and means for controlling the movements of said needle and hook, of a thread stop or guide in proximity to the needle for controlling the position of the needle-thread, and a retaining shoulder or guide, as at f^{16}, for the loops carried by the hook, said last-named shoulder or guide occupying a position between the plane of motion of the needle and the path traversed by the crochet-hook around the edge of the fabric, substantially as described.

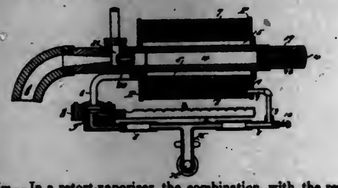
3. In a machine such as described, the combination, with a crochet-hook and a needle, and means for operating the same, of a finger or plate around which loops may be formed, and a finger or projection, as at f^{15}, provided with a retaining shoulder or guide for the needle-thread and a shoulder or guide engaging the loops carried by the crochet-hook, said last-named finger or projection being supported to occupy a position between the finger or plate around which the loops are formed and the path traversed by the crochet-hook, substantially as and for the purpose described.

4. In a crocheting or overseaming machine, the combination, with a needle and looper and means for actuating the same, and a finger around which loops may be formed, of a presser-foot provided with a lateral extension forming a finger or projection for engaging the loop carried by the looper when advancing toward the needle-thread, substantially as described.

5. In a machine substantially such as described, a reciprocating needle and a crochet-hook reciprocating above and below the fabric in planes transverse to the needle, in combination with a presser-foot provided with a finger or projection for engaging the loops, and a guide or stop, such as f^{21}, for engaging the needle-thread, substantially as described.

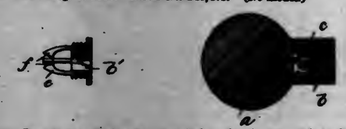
6. In a crocheting or overseaming machine, the combination, with a reciprocating needle and crochet-hook, and a finger or plate around which loops may be formed, of a second or loop-engaging finger, as at f^{15}, overlapping the first-named finger or plate and located beneath but in proximity to the path traversed by the crochet-hook above the fabric, substantially as and for the purpose specified.

418,762. RETORT-VAPORIZER. LOUIS J. PHELPS, Passaic, N. J. Filed Apr. 5, 1889. Serial No. 306,042. (No model.)



Claim.—In a retort-vaporizer, the combination, with the retort, of the sealed water-jacket surrounding the retort, a burner *b*, for heating the water in the jacket, and a flexible diaphragm, one side of which forms a valve adapted for controlling the supply of vapor to the burner, and the opposite side of which is subjected to the pressure in the water-jacket, substantially as described.

418,763. BUTTON OR STUD. ALBERT RAMDOHR, Berlin, Germany. Filed Aug. 8, 1887. Serial No. 246,475. (No model.)



Claim.—In a two-part button, a tubular shank screw-threaded internally, having a headed stud extending into the center thereof at its inner extremity, the other part of said button being screw-threaded, corresponding to the tubular portion, and having spring-arms provided with inclined ends to slip over the headed stud and inwardly-extending points to catch behind the head, substantially as described.

418,764. MANUFACTURE OF WELDLESS CHAINS. HIPPOLYTE ROSSIER, Birmingham, County of Warwick, England. Filed Aug. 22, 1889. Serial No. 321,693. (No model.)

Claim.—1. The manufacture of weldless chains of stayed links by the consecutive series of punching, twisting, and stamping operations, substantially as herein described.



2. In the process of manufacturing weldless stayed chains from a bar of cruciform section, the step in the process which consists in punching out (whether in one or two operations) pairs of mortises corresponding in position to the intervals to be formed between the outer ends of the same series of links, said step being so performed as to prepare the webs for the ultimate operation of removing the metal at these points, and yet leave the metal so disposed as to maintain the transverse stiffness of the bar during the repetition of the same operation on the other pair of webs, as described.

3. In the process of manufacturing weldless stayed chains from a bar of cruciform section, the combination or series of steps herein designated as the second, third, and fourth operations, as described.

4. In the process of manufacturing weldless stayed chains from a bar of cruciform section, the combination or series of steps herein designated as the second, third, fourth, and fifth operations, as described.

5. In the process of manufacturing weldless stayed chains from a bar of cruciform section, the combination or series of punching and twisting operations herein designated as the second, third, fourth, fifth, and sixth operations, as specified.

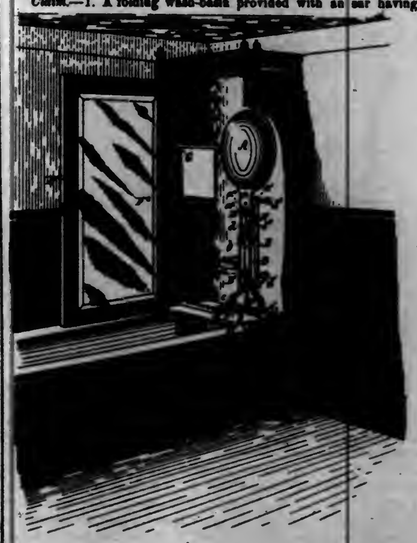
6. In the process of manufacturing weldless stayed chains from a bar of cruciform section, the combination or series of steps herein designated as the fifth, sixth, and seventh operations, as specified.

7. In the process of manufacturing weldless stayed chains from a bar of cruciform section, the step which consists in compressing the bows of each link laterally in such a way as to cause the ends of the links to become thickened in the direction of the line of strain and of wear by the upsetting or compression of the metal at these points, as described.

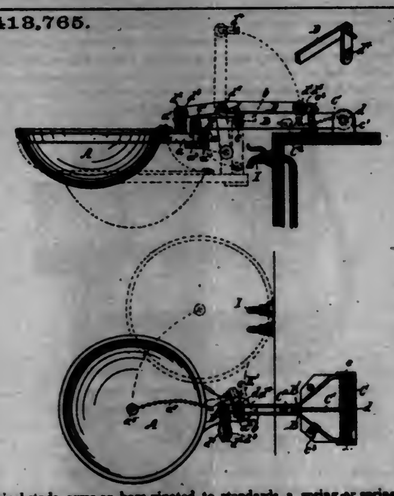
8. In the process of manufacturing weldless stayed chains from a bar of cruciform section by a consecutive series of punching, twisting, and stamping operations, herein described, the method of narrowing the width of the link by punching out the middle of the cross-stay and subsequently contracting the width by lateral pressure, so as to bring the stumps together to form the cross-stay, as described.

418,765. WASH-BASIN. GEORGE L. SEYMOUR, Philadelphia, Pa. Filed Apr. 1, 1889. Serial No. 305,576. (No model.)

Claim.—1. A folding wash-basin provided with an ear having



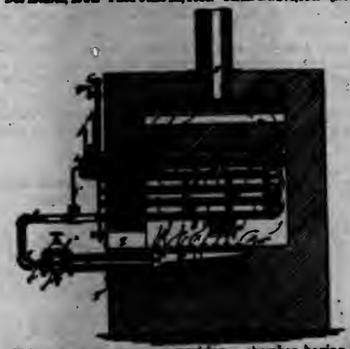
418,765.



swivel-stude, arms or bars pivoted to standards, a spring or springs coiled around said pivot, and the free extremities formed into a coiled bar held between said bars or arms, lever-arms pivoted to said bars or arms, and one of the swivel-studs of said ear, and a fulcrumed lever with a catch and handles pivoted to the other stud of said ear and to said bars or arms, substantially as and for the purposes set forth.

2. The combination, with a bath-tub provided with a cabinet having standards secured to the base thereof, supports pivoted to said standards, springs interposed between said supports, a basin with an ear having swivel-studs, lever-arms connected with said supports and one of the swivel-studs of said ear, and a fulcrumed lever pivoted to said lever-arms and to the other swivel-stud of said ear, substantially as and for the purposes set forth.

418,766. BURNER FOR GAS-GENERATORS. DE WITTE STEARNS, Des Moines, Iowa. Filed June 12, 1888. Serial No. 276,836. (No model.)

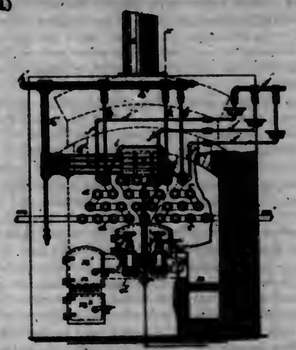


Claim.—1. A gas-burner comprising a chamber having an inlet at one end thereof and having the floor of its interior inclined upwardly from the inlet side to the rear wall in two planes, the one adjacent to the inlet being at a greater angle to the horizontal plane than the other, and a horizontal top of refractory material provided with outlet-orifices at intervals over its entire surface, substantially as set forth.

2. The combination, with flat tiles of refractory material provided with a series of parallel slots beveled at the upper edges, of semi-cylindrical burner-nipples of refractory material, having their lower edges tapered to correspond with the beveled edges of the slots in the tiles, and having transverse slots formed through their rounded upper parts connecting with their interior surfaces, substantially as set forth.

3. A gas-burner comprising a chamber having an inlet at one end thereof and having the floor of its interior inclined upwardly from the inlet side to the rear wall in two places, the one adjacent to the inlet being at a greater angle to the horizontal plane than the other, and a horizontal top of refractory material provided with outlet-orifices over its entire surface, in combination with a gas and air mixing chamber and adit-pipe.

418,767. GAS-GENERATOR. DE WITTE STEARNS, Des Moines, Iowa. Original application filed June 12, 1888, Serial No. 276,836. Divided and this application filed Nov. 2, 1888. Serial No. 289,893. (No model.)

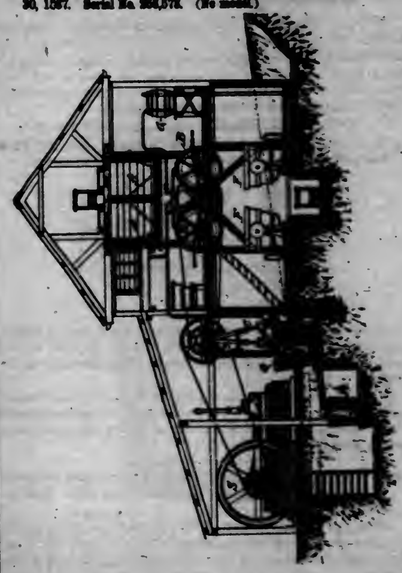


Claim.—1. In an apparatus for the production of gas from liquid hydrocarbons, the combination of a series of retorts each composed of connected pipes arranged in rows embraced in a triangular area and alternately reversed or inverted, substantially as and for the purpose set forth.

2. In an apparatus for the production of gas from liquid hydrocarbons, the combination of a series of retorts each composed of connected pipes arranged in rows embraced in a triangular area, with steam-superheaters placed above the retorts and connected therewith, substantially as and for the purpose set forth.

3. In an apparatus for the production of gas from liquid hydrocarbons, in combination, a series of retorts each composed of connected pipes arranged in rows embraced in a triangular area and alternately reversed or inverted, steam-superheaters connected to the retorts, a burner arranged to heat all the retorts and the steam-superheaters, and a connecting-pipe joining one of the retorts to the burner, substantially as set forth.

418,768. APPARATUS FOR THE EXTRACTION OF GOLD BY CHLORINATION. CLEMENS P. J. VAUTIN, London, England. Filed Nov. 20, 1887. Serial No. 255,573. (No model.)

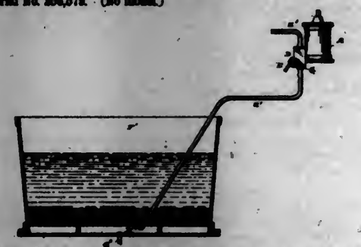


Claim.—1. A hydro-metallurgical gold-extracting apparatus comprising an air-forcing pump in which the suction-valve opens inward from the atmosphere, a pipe into which the delivery-valve of said pump opens, a hermetically-closed vessel in the form of a rotary drum, having an inlet-valve to which said pipe is detachably coupled, and a peripheral man-hole door, a filtering-vessel arranged to receive the discharge of said drum through its man-hole when the drum is opened and inverted, a reflux suction-pump which withdraws the liquid contents of the filtering-vessel, an air or steam agitated vat into which said suction-pump discharges, a deep filter-bed of charcoal which receives the discharge of said vat, and a motor and connections for rotating said drum and operating the pumps, substantially as herein-before specified.

2. In such a hydro-metallurgical gold-extracting apparatus, the combination of an air-forcing pump in which the suction-valve opens inward from the atmosphere, a pipe into which the delivery-valve of this pump opens, a hermetically-closed vessel in the form of a rotary drum constructed to work with considerable internal pressure, and provided with an inlet-valve to which said pipe is detachably coupled, and a peripheral man-hole door and means for rotating said drum and operating said pump, substantially as hereinbefore specified.

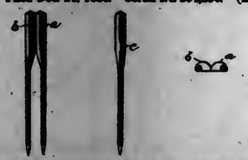
3. In such a hydro-metallurgical gold-extracting apparatus, the combination of a hermetically-closed vessel in the form of a rotary drum having a peripheral man-hole door, a filtering-vessel arranged to receive the discharge of said drum through its man-hole when the drum is opened and inverted, a reflux suction-pump which withdraws the liquid contents of the filtering-vessel, an air or steam agitated vat into which said suction-pump discharges, and a deep filter-bed of charcoal which receives the discharge of said vat, substantially as hereinbefore specified.

413,769. APPARATUS FOR SEPARATING SOLUTIONS OF METALLIC SALTS FROM PULVERIZED MATERIAL MIXED THEREWITH. CLAUDE T. J. VAUTIN, London, England. Filed Nov. 30, 1887. Serial No. 256,573. (No model.)



Claim.—In an apparatus for the separation of solutions of metallic salts from pulverized material mixed therewith, the combination of a suitable filter having a suction-chamber, a pump having a contracted reflux-passage, and a pipe or pipes connecting said chamber with said reflux-passage and with the suction-inlet of the pump, substantially as hereinbefore specified, for the purposes set forth.

413,770. NEEDLE FOR SEWING-MACHINES. ALPHA O. VERY, Boston, Mass. Filed Dec. 21, 1888. Serial No. 294,256. (Model.)

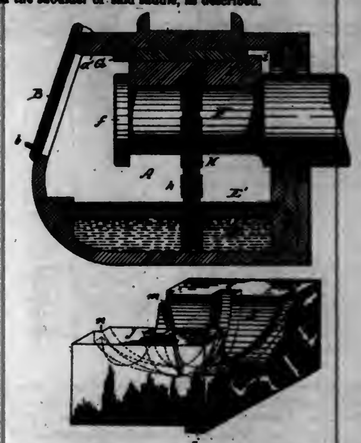


Claim.—1. A sewing-machine needle having an eye in the point thereof extending from front to rear and a shank set with its longitudinal axis at one side of that of the needle, substantially as described.

2. A sewing-machine needle having an eye in the point thereof extending from front to rear and a shank having its rear slabbed and set with its longitudinal axis at one side of that of the needle, substantially as described.

413,771. CAR-AXLE LUBRICATOR. HENRY F. WISE, Gloucester City, N. J. Filed Mar. 16, 1888. Renewed Mar. 20, 1889. Serial No. 303,393. (No model.)

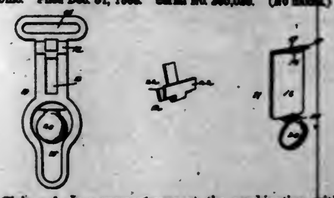
Claim.—1. The combination, with a car-axle box having an oil-well, a journal, and self-feeding lubricant-conveyer consisting of an endless chain mounted on said journal and depending therefrom into said oil-well, of a saddle provided with a shoulder and with a longitudinal channel tapering in both directions to the middle thereof and diverging channels communicating therewith, whereby the lubricant lifted onto said journal may be uniformly distributed over the entire surface thereof, and a block interposed between the top plate of the box and saddle and engaging with a projection formed with said plate and the shoulder of said saddle, as described.



2. The combination, with a car-axle box having an oil-well, a journal, an endless chain mounted thereon, and one or more horizontal bars secured into the front and rear walls of said box for maintaining said chain in operative position and preventing undue lateral movement thereof, of a saddle with a rear shoulder, and a longitudinal channel in the body thereof tapering in both directions to the middle, and narrow channels diverging therefrom to the lower corners, whereby the lubricant lifted onto said journal may be uniformly distributed over the entire surface thereof, and a block engaging with a projection formed with the top plate of the box and with the shoulder of said saddle, all arranged as shown and described, and for the purposes set forth.

3. In a car-axle box, the combination, with the journal of the axle, of a block with a shoulder or projection, and the body of said block being hollowed out with a channel formed therein tapering slightly in both directions to the middle, channels diverging in opposite directions from the central channel to the lower corners of said block, a plate for holding said block in position upon said journal, and an endless chain mounted on said journal and passing downward through a lubricant contained in a reservoir in said box, substantially as and for the purposes described.

413,772. GARMENT-SUPPORT. CLARENCE R. ANDREW, Wellsville, Ohio. Filed Dec. 31, 1888. Serial No. 295,022. (No model.)

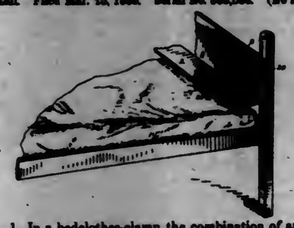


Claim.—1. In a garment-support, the combination, with a body portion having a key-hole slot in its lower end, of the clasp 11, hinged to and sliding on the said body and provided with the shank 21, projecting at an angle from its bottom edge, and with the button 20, extended downward from and at right angles to the shank, the said button having a convex face, substantially as described.

2. In a garment-support, the combination, with a body portion having a key-hole slot at its lower end and a longitudinal slot above the key-hole slot, of the hinge-plate secured in the longitudinal slot of the body portion and sliding thereon and a clasp hinged to the said hinge-plate and provided at its lower end with a button having a convex surface, substantially as herein shown and described.

3. In a garment-support, the combination, with a longitudinally-slotted body portion provided with a key-hole slot at its lower end, of a T-shaped hinge-plate having lugs projecting from each side parallel with the head thereof and a clasp having a slotted upper end and provided with a button at its lower end, the said button having a convex surface and projecting from the end of the clasp and in a different plane from that of the body of the clasp, substantially as herein shown and described.

413,773. BEDCLOTHES-CLAMP. THEODORE J. BAKER, Salt Lake City, Utah. Filed Mar. 13, 1889. Serial No. 303,020. (No model.)

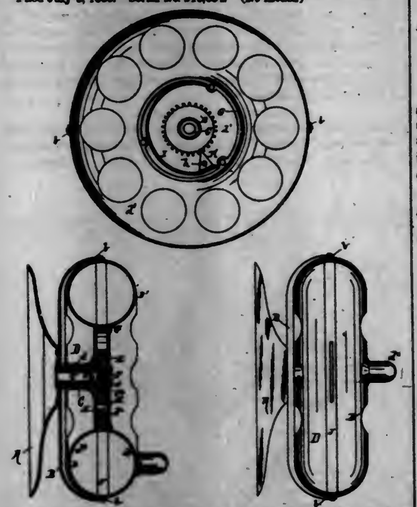


Claim.—1. In a bedclothes-clamp, the combination of an adjustable clamping-board adapted to be hinged to a foot-board, the rods connected to the clamping-board and adapted to pass through apertures in the foot-board, and locking devices supported by the foot-board and arranged to engage the rods to positively hold them against endwise movement, arranged and combined for service substantially as herein shown and described.

2. The combination, with a perforated foot-board, of an adjustable clamping-board hinged to the foot-board, the spring-rods secured to the clamping-board and passing through the apertures in the foot-board, and devices on the foot-board in proximity to the apertures therein for engaging the rods to hold them against endwise movement, substantially as and for the purpose described.

3. The combination of an adjustable clamping-board hinged to the perforated foot-board of a bed, spring-racks secured to the board, and adjustable notched bolts supported in suitable keepers on the foot-board in proximity to apertures therein, through which the spring-racks are passed, and adapted to fit into the notches in said racks, substantially as and for the purpose described.

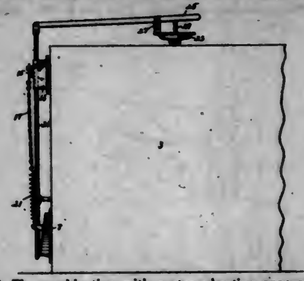
413,774. FISHING-REEL. CHARLES M. CLEVTON, Ithaca, N. Y. Filed July 8, 1889. Serial No. 316,634. (No model.)



Claim.—In a fishing-reel, the combination of the hollow stud or center post, which serves as an oil-reservoir, an orifice therein for the passage of oil to the reel-bearing, the disks having bearing therespon and being provided with parallel center faces, a peripheral band against which the outer edges of the disks revolve, and the click-wheel and spring-click located in a central orifice in one of the disks, substantially as described.

413,775. TEMPERATURE-REGULATOR. REUBEN H. DRAPER, Minneapolis, Minn. Filed Aug. 16, 1888. Serial No. 282,982. (No model.)

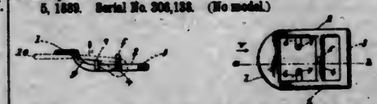
Claim.—1. The combination, with a steam-heating apparatus provided with a suitable draft-opening and a damper therefor, of a thermostatic regulator connected with said damper and controlled by a thermostat located in the room or apartment to be heated, and a pressure-lever arranged to be operated by the pressure of the steam and also connected with said damper, substantially as described.



2. The combination, with a steam-heating apparatus provided with a suitable draft-opening and a damper therefor, of a thermostatic regulator governed by the temperature of the room or apartment to be heated and connected with said damper by a suitable spring-connection, and a pressure-lever arranged to be operated by the pressure of steam in the boiler of the apparatus and connected with said damper and adapted to close the same against the tension of the spring-connection of the thermostatic regulator.

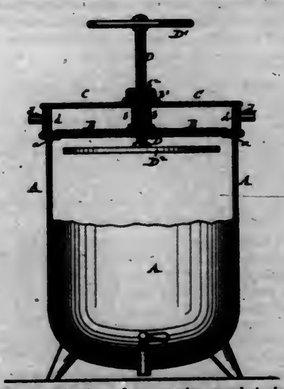
3. The combination, with a steam-heating apparatus provided with a suitable draft-opening, of a thermostatic regulator controlled by the temperature of the apartment to be heated and governing said draft-opening when the steam in the boiler is below the maximum pressure desired, and a pressure-lever arranged to close said draft-opening when the steam reaches the maximum pressure desired, and to hold the same closed independently of the thermostatic regulator so long as the steam remains above such pressure.

413,776. BUCKLE. JAMES S. GILBERT, Buffalo, N. Y. Filed Apr. 5, 1889. Serial No. 306,138. (No model.)



Claim.—A buckle consisting of the front and rear cross-pieces 1 and 3 and curved side bars 2, in combination with a cross-bar 4, connected with the side bars 2, an upwardly-projecting tongue 5, and two arms 6, projecting toward each other from the sides 2 and terminating in two upwardly-projecting tongues 7, as and for the purpose described.

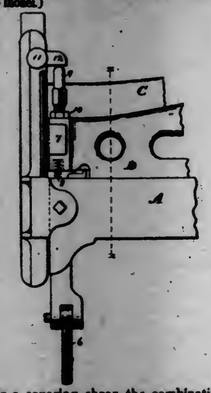
413,777. APPARATUS FOR EXTRACTING MEAT-JUICE. ISAAC GILES, New York, N. Y. Filed Oct. 27, 1888. Serial No. 289,206. (No model.)



Claim.—The combination of an exterior vessel A, having an interior seat *a* and an exteriorly-threaded rim *a'*, a cover B, having a center sleeve *b*, a screw-cap C, screwing on the rim and having a cen-

tral screw-nut, a follower at the interior of the vessel, and a screw-spindle attached to the follower and passed to the outside of the vessel, substantially as set forth.

418,778. HOLDING ATTACHMENT FOR TINSMITHS' SQUARING-SHEARS. HIAL S. GRAHAM, Southington, Conn., assignor to the Peck, Stow & Wilcox Company, same place. Filed Feb. 6, 1889. Serial No. 299,894. (No model.)



Claim.—1. In a squaring-shear, the combination of the shear-slide, the holders, the rocker-arm, mechanism connected with said shear-slide for operating said rocker-arm, and the adjustable studs 9 intermediate said rocker-arm and holder, substantially as described, and for the purpose specified.

2. The combination of the bed, slide, and blades of a tinsmith's squaring-shears with the pin 14, attached to said slide, the angularly-slotted arm 13, rock-shaft 11, rocker-arm 12, the adjustable bearing-studs 9, and the holder D, substantially as described, and for the purpose specified.

3. The combination of the bed, slide, and blades of a tinsmith's squaring-shears with the pin 14, attached to said slide, the angularly-slotted arm 13, rock-shaft 11, rocker-arm 12, and the holder D, substantially as described, and for the purpose specified.

4. In a squaring-shear having a holder and operating mechanism, the combination of the slide or gate C, bearing the pin 14, and the slotted arm 13, the slot of which has one portion extending at an angle to the path of said pin and another portion coincident with the path of said pin, whereby the angular portion operates the slide and the coincident portion acts to hold the slide, substantially as specified.

5. The combination of the slide, the bed, the holder D, springs for lifting said holder, and mechanism intermediate said holder and slide for depressing said holder through the movement of said slide, substantially as described, and for the purpose specified.

6. The combination of the slide, the bed, the holder D, the adjustable studs 9, mounted on said holder and mechanism intermediate said slide and studs for pressing upon the ends of the latter to depress said holder through the movement of said slide, substantially as described, and for the purpose specified.

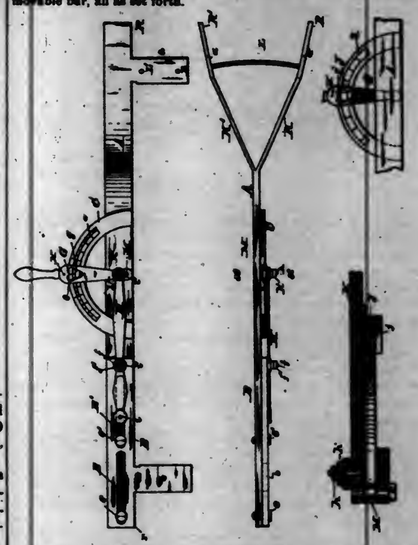
418,779. GAGE. PATRICK H. GRIFFIN, Buffalo, N. Y. Filed June 14, 1889. Serial No. 314,268. (No model.)

Claim.—1. A gage for measuring the treads of car-wheels and similar objects, consisting of a stationary bar having two legs and a suitable dial, a further bar provided with a single downwardly-projecting leg, and a lever fulcrumed on the stationary bar and connected with the movable bar by a connecting-rod, said bars being held in sliding contact by screw-bolts passing through apertures in the movable bar, as and for the purpose set forth.

2. In measuring-gages, the combination, with the bar A, having legs *a a'*, of a movable bar B, having two longitudinal slots B E', engaging bolts *e e'*, and near its end a leg *b*, lever G, fulcrumed on the bar A and connected with the bar B by the connecting-rod H, and a suitable dial upon said bar A, as and for the purpose set forth.

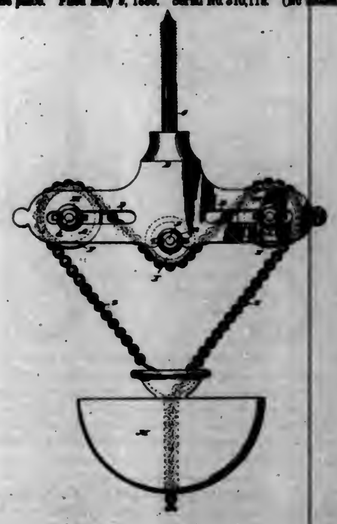
3. In measuring-gages, a dial having graduations on both of its faces, in combination with a lever having its fulcrum in the center of said dial, said lever having in its face an opening provided with a pointer and on the back a guard-piece overlapping the edge of said dial, and also provided with a pointer, whereby the graduations on either side of said dial may be used and the lever held in proper position, substantially as described.

4. In measuring-gages, the combination, with the bar A, having two downwardly-projecting legs *a a'* and overhanging bars B E', a dial C, having graduations *c d*, a sliding bar B, having longitudinal slots E E', bolts *e e'*, a downwardly-projecting leg *b*, and overhanging bar *r*, a pivoted lever G, having aperture *g*, provided with a pointer *o* on one side and a guard provided with a pointer *j* on the opposite side, and a connecting-rod H, to connect the stationary bar with the movable bar, all as set forth.



5. In a combined in and out side measuring-gage, the combination, with the bar A, having near one end a Y-shaped fork provided with downwardly-projecting legs *a a'* and overhanging portions B E', and on the other end a sliding bar B, provided with two longitudinal slots E E' and downwardly-projecting leg *b*, and two screw-bolts *e e'*, engaging in said slots and being screwed into said bar A, whereby the said bar B is movably secured to the said bar A, substantially as and for the purpose stated.

418,780. SUSPENSION DEVICE FOR HANGING LAMPS. LEWIS F. GRISWOLD, Meriden, Conn., assignor to The Charles Parker Company, same place. Filed May 9, 1889. Serial No. 310,119. (No model.)



Claim.—1. In a suspension device for hanging lamps, the combination, with a frame, of three or more rollers mounted therein, a suspension-chain passing over the rollers, so as to be deflected between them, and a counter-balance attached to the chain, substantially as set forth.

2. In a suspension device for hanging lamps, the combination, with a frame of three or more rollers mounted therein, a suspension-chain passing over them, so as to be deflected between them, and a counter-balance attached to one end of the chain, one or more of the rollers being adjustable to change the angle in which the chain is deflected, substantially as set forth.

3. In a suspension device for hanging lamps, the combination, with a frame, of a roller mounted therein, two rollers located outside of the said roller and adjustable in their relations thereto, a suspension-chain passing over the rollers and changed in its deflections by the adjustment of the adjustable rollers, and a counter-balance attached to one end of the chain, substantially as set forth.

4. In a suspension device for hanging lamps, the combination, with a frame, of three or more rollers, mounted therein, a suspension-chain passing over the rollers, so as to be deflected between them, and a counter-balance, one or more of the rollers being adapted to be clamped against rotation to increase the friction between them and the chain, substantially as set forth.

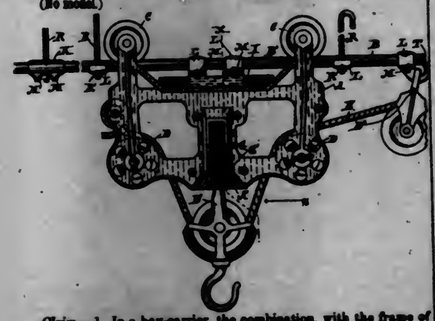
5. In a suspension device for hanging lamps, the combination, with a slotted frame, of three or more rollers mounted therein, a suspension-chain passing over the rollers, so as to be deflected thereby, and a counter-balance attached to the chain, one or more of the rollers being adjustable in the slotted frame to change the deflections of the chain, and hence vary the amount of friction developed, substantially as set forth.

6. In a suspension device for hanging lamps, the combination, with a frame having two slotted arms, of a roller mounted in the said frame, two rollers respectively mounted in the slotted arms thereof and adjustable within the limits of the slots, a suspension-chain passing over the rollers, so as to be deflected thereby, and a counter-balance attached to the chain, substantially as set forth.

7. In a suspension device for hanging lamps, the combination, with a frame, of three or more rollers mounted therein, a suspension-chain passing over the rollers by which it is deflected, and a counter-balance attached to one end of the chain, the said frame being adapted to be sprung to clamp one or more of the rollers against rotation, substantially as set forth.

8. In a suspension device for hanging lamps, the combination, with a frame having two slotted horizontal arms, of two rollers respectively mounted in the said arms and adapted to be adjusted in the limits of the slots therein, a roller mounted in the frame between the said adjustable rollers, a suspension-chain passing over the rollers and changed in its deflections by adjusting the outer rollers, and a counter-balance attached to the chain, substantially as set forth.

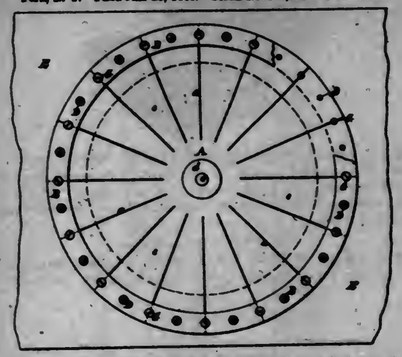
418,781. HAY-CARRIER. WILLIAM GUTHEIMER and CHARLES A. GUTHEIMER, Milwaukee, Wis. Filed May 11, 1889. Serial No. 310,417. (No model.)



Claim.—1. In a hay-carrier, the combination, with the frame of the carrier, of a lever G, pivoted at one end in the lower part of the carrier, so as to swing transversely thereof, and having a median projection adapted to engage the head of the tackle, and a lever-latch H, pivoted centrally in the side of the carrier and swinging transversely thereof, the lower end of the lever-latch being adapted to bear movably against the upper end of the lever G, and the upper end of the latch being adapted to impinge and bear laterally against a fixed stop on the track, substantially as described.

2. In a hay-carrier, the combination, with the frame, of a grappling-lever G, so pivoted in the frame as to swing transversely thereof, a spring G', adapted to hold the lever G yieldingly up to its work, and a lever-latch H, pivoted in the frame and bearing at one end against the grappling-lever G and at the other end adapted to engage a stop on the track, substantially as described.

418,782. TELEPHONE-DIAPHRAGM. ALEXANDER W. HALL, New York, N. Y. Filed Jan. 28, 1889. Serial No. 297,512. (No model.)



Claim.—The combination of a diaphragm for a telephone, phonograph, or other instrument divided radially into sections from the periphery toward the center, a pair of clamping-rings and screws therefor common to all the said sections, a circular bearing common to all of said sections, and tension-screws for drawing the clamping-rings over said bearing and so applying tension to all of said sections, substantially as and for the purpose herein set forth.

418,783. UNLOADING ATTACHMENT FOR CARS. JONATHAN S. HARSHMAN, Harshmans, Ohio. Filed Aug. 26, 1889. Serial No. 322,202. (No model.)



Claim.—1. The combination, with a car-body provided with aligned bearings, of a shoveling-board hinged to a rod resting in said bearings, substantially as specified.

2. The combination, with a car-body having aligned bearings near its upper edge at its end, of a hinged shoveling-board or guide supported by a rod resting in said aligned bearings, substantially as specified.

3. The combination, with a car-body having aligned bearings near its end in its side walls, of a shovel-board provided with a longitudinal sleeve or half-hinge along its upper edge, and a hinge-rod passed through said aligned bearing and sleeve or half-hinge and provided with a head at one end and a threaded portion at the other end, having a securing-nut turned thereon, substantially as specified.

4. The combination, with a car-body having bearings in its side walls, of a shoveling-board provided with a downwardly-turned sleeve along its upper edge, and a hinge-rod having a head and a threaded portion, and a nut turned on the threaded portion of the hinge-rod, substantially as specified.

5. The combination, with a car-body provided with aligned bearings, of a shoveling-board provided with an integral sleeve along its upper edge, and a headed threaded hinge-rod having a securing-nut on its threaded portion, substantially as specified.

6. The combination, with a car-body, of a shoveling-board hinged to one of the walls thereof and adapted to turn within the body, substantially as specified.

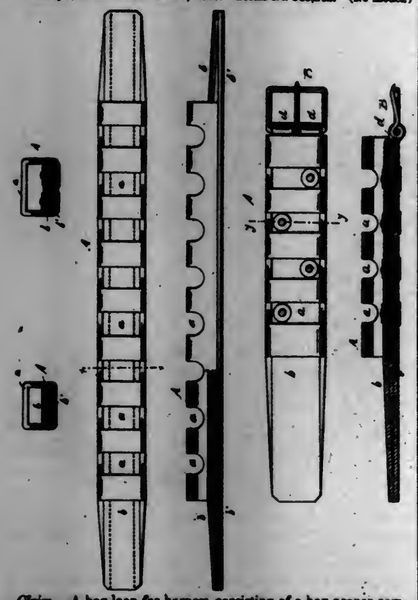
418,784. PAPER BOX. FREDERICK G. HOSSFELD, Brooklyn, N. Y. Filed Oct. 29, 1888. Renewed Sept. 26, 1889. Serial No. 324,956. (No model.)

Claim.—As an improved article of manufacture, a folding box made from paper in one piece and consisting of the rectangular bottom, the sides 2 2, each having a cover-flap 5 on its edge, the side 3, having on its edge the main cover-flap 6, the side 3', having on its



edge the cover-flap 6', and the corner-gussets, each divided by a crease into two plies 4 and 4', the plies 4 being permanently secured to the box sides, which they overlap, said cover-flap 6 being provided with a hook which engages a slit in one side of the box when the box is closed.

413,785. BOX-LOOP FOR HARNESS. RICHARD J. MANNHEIM, Brooklyn, N. Y. Filed June 6, 1889. Serial No. 313,212. (No model.)



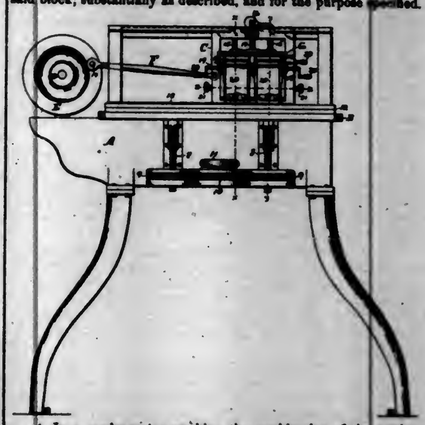
Claim.—A box-loop for harness, consisting of a box proper composed of a single blank in one piece folded longitudinally of itself into box shape and provided with a series of centrally-disposed transverse slots which constitute openings extending across the top and down the sides of the box, in combination with an inner strap and an outer bottom strap, the edges of said box-blank extending between said straps and forming an intermediate layer, and fastening devices uniting said straps, and an intermediate layer disposed on opposite sides of the several top openings of the box, substantially as described.

413,786. SANDPAPERING-MACHINE. HENRY MILLER, Thomaston, Conn. Filed June 6, 1889. Serial No. 313,262. (No model.)

Claim.—1. The combination of a suitable frame, the reciprocating carriage-frame mounted therein, the vertically-movable carriage mounted within said carriage-frame, the paper-carrying rollers and pattern or former-block mounted on said carriage, springs 15, for depressing said vertically-moving carriage, and the cam 16, for lifting the same, substantially as described, and for the purpose specified.

2. The combination of a suitable frame, the reciprocating carriage-frame mounted therein, the vertically-movable carriage mounted within said carriage-frame, the paper-carrying rollers and pattern or former-block mounted on said carriage, springs 15, for depressing said vertically-moving carriage, and the cam 16, for lifting the same, the vertically-adjustable work-bed underneath said carriage, and its adjusting mechanism, substantially as described, and for the purpose specified.

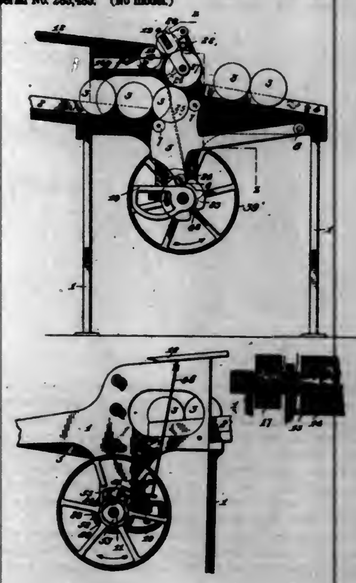
3. In a sandpapering-machine, the combination of a carriage, devices for holding a strip of sand-paper, the attachable and detachable pattern or former-block, shaped in conformity to a portion of said molding, the spring-pressed clip upon one side of said former-block, and the laterally-adjustable bar or roller 26 upon the other side of said block, substantially as described, and for the purpose specified.



4. In a sandpapering-machine, the combination of the carriage having uprights, the pattern or former-blocks fitted between said uprights, and the clamping-rod 24, for adjustably securing said blocks in place, substantially as described, and for the purpose specified.

5. In a sandpapering-machine, the combination of a reciprocating carriage, the rollers 18 and 19, mounted thereon on axes that are parallel to the line of reciprocation of said carriage, a strip of sand-paper having its respective ends secured to said rollers, and a former-block or pattern with the sand-paper passing over its edge, substantially as described, and for the purpose specified.

413,787. MACHINE FOR ATTACHING LABELS. JOHN C. MCBEAN, Rochester, N. Y., assignor of three-fourths to Alexander Ross, Samuel J. Parker, and Burton F. Blackall, all of same place. Filed Aug. 22, 1888. Serial No. 283,483. (No model.)



Claim.—1. In a machine for attaching labels to cans, a can-feeding table, a can-lifting device, and a can-delivery table located above the feeding-table arranged substantially as set forth, whereby a can fed onto the lifting device will be under a can to be fed or dropped onto the delivery-table.

2. In a machine for attaching labels to cans, a can feeding or supplying table, can-elevating mechanism, and can-gripping devices, and a delivery-table located on a higher plane than the supply-table, whereby a can may be fed, lifted, gripped, and then released and passed laterally onto the delivery-table in a plane above the incoming can, substantially as set forth.

3. In a machine for attaching labels to cans, the pivoted lifting-bracket and an inclined table to automatically deliver a can upon the bracket, in combination with a cam for lifting the bracket and can, substantially as set forth.

4. In a machine for attaching labels to cans, the felt roller having yielding journal-bearings, a swinging bracket moving about the axis of the can-grippers, and a cam and connecting-rod, whereby the felt roller is moved back and forth upon the surface of a can held in the grippers, substantially as set forth.

5. In a machine for attaching labels to cans, the combination of the felt roller and its journaled bracket, with the two-part adjustable cam and the intermediate devices, whereby the felt roller can be applied to the ends of labels of unequal lengths, substantially as set forth.

6. In a machine for attaching labels to cans, the cam having two parts, each with portions of its periphery cut away at different points, one part being keyed to the shaft and provided with a slot, and the other part provided with a set-screw, and thereby made adjustable on the fixed part to cause the peripheral portions situated between the cuts or notches to overlap more or less, according to the length of a label to be pasted, in combination with the journaled felt-roller bracket and intermediate devices, substantially as set forth.

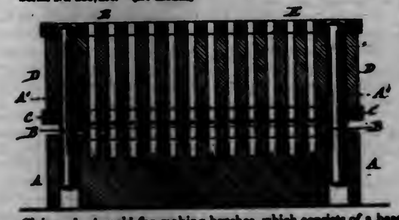
7. In a machine for attaching labels to cans, the combination of the rotary brush, pivoted lever, cord and weight, and the pin on the drive-wheel, whereby the brush is alternately rotated in opposite directions to brush the opposite ends of the label, substantially as set forth.

8. In a machine for attaching labels to cans, the combination of the hinged table with the loose pulley, the main shaft, and clutch mechanism, whereby the table is used to operate the clutch to start the machine, substantially as set forth.

9. In a machine for attaching labels to cans, the combination of the table, loose pulley, shaft, and cranked clutch-piece, with the springs, lever, and intermediate rod, whereby the clutch is operated and the machine started or stopped, substantially as set forth.

10. In a machine for attaching labels to cans, the combination of the felt roller having yielding journal-bearings, with the spring-fingers resting in grooves in the circumference of the felt roller, both roller and fingers being supported in a swinging or journaled bracket, whereby the fingers are kept constantly in the grooves, substantially as set forth.

413,788. MOLDING-BLOCK FOR THE MANUFACTURE OF BRUSHES. LOUIS W. HERSCHEL, New York, N. Y. Filed Jan. 4, 1889. Serial No. 295,690. (No model.)

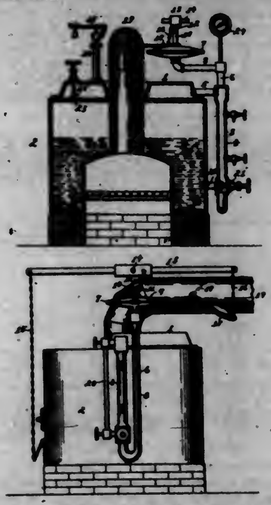


Claim.—1. A mold for making brushes, which consists of a base-block having sockets with enlarged upper ends, a stripping or clearing plate, and a filling-block, the stripping-plate and filling-block being provided with openings in line with the sockets of the base-block, substantially as set forth.

2. A molding-block for making brushes, composed of a base-plate having sockets with enlarged upper ends, a stripping or clearing plate, a filling-block, and a protecting plate or shield above said filling-block, said stripping-plate, filling-block, and protecting-plate being provided with openings in line with the sockets of the base-block, substantially as set forth.

413,789. AUTOMATIC DRAFT-REGULATOR. WILLIAM H. PAGE, Norwich, Conn. Filed Mar. 14, 1889. Serial No. 303,202. (No model.)

Claim.—1. In an automatic draft-regulator, the combination of an exterior tank or reservoir, an elevated diaphragm-chamber above the tank, a vertical siphon-column located exteriorly of the heater or boiler and having its shorter member communicating directly with the tank or reservoir and its longer member with the diaphragm-chamber, substantially as described, and mechanism connected to the diaphragm for controlling the regulating-dampers of the boiler, all arranged and combined for service as herein shown and described, for the purpose set forth.

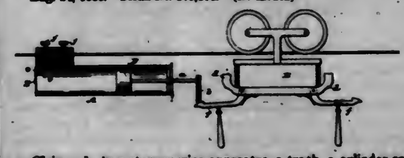


2. In an automatic draft-regulator, the combination of an exterior reservoir or tank, a vertical column or tube communicating with the reservoir and having a valved connection with the water-space of a boiler, and a diaphragm adapted to be operated by an excessive pressure of the fluid contents of the vertical column or tube to control the draft-door of the boiler, substantially as and for the purpose described.

3. In an automatic draft-regulator, the combination of an exterior tank applied laterally to a boiler, a vertical siphon-column arranged laterally of a boiler and one of its members having a valve-connection at its lower end with the water-space of said boiler and communicating at its upper end with the reservoir or tank, an elevated diaphragm-chamber communicating with the upper end of the longer member of the siphon-column, and mechanism connected with a diaphragm for controlling the movement of the draft-door, substantially as and for the purpose described.

4. In an automatic draft-regulator, the combination of an exterior reservoir or tank having a valved connection with the steam-space of a boiler, a vertical siphon-column having its shorter member communicating with the reservoir and by a valved connection with the boiler, an elevated diaphragm-chamber communicating with the upper end of the longer member of the siphon-column, and mechanism connected with the diaphragm for controlling the movement of the draft-door, substantially as described.

413,790. STORE-SERVICE BUFFER. LEROY G. POWERS, Somerville, assignor to the Lamson Cash Railway Company, Boston, Mass. Filed Aug. 24, 1885. Serial No. 173,191. (No model.)



Claim.—1. In a store-service apparatus, a track, a cylinder supported adjacent to the track, and a piston arranged to be moved along the cylinder by a cash-car traveling on the track, and a port arranged to permit a limited escape of the air from the cylinder on the sudden movement of the piston therein and its continued escape thereafter until there is no pressure upon the piston, substantially as described.

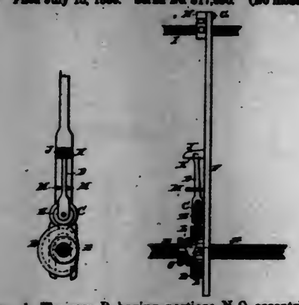
2. The combination, in a buffer for store-service apparatus, of a cylinder, a piston arranged to be moved along the cylinder by the movement of the car to compress the air therein, a port for the con-

tinuous limited escape of the air from the cylinder, and a valve hung to permit the free entrance of the air on the return movement of the piston, substantially as described.

3. The combination, with the way of a store-service apparatus, of a cylinder mounted thereon and provided with a port and valve, and a piston moved by the car and adapted to said cylinder, and provided with a piston-rod extending parallel with the way and carrying a cross-bar for engaging with the car, substantially as described.

4. The combination of a car provided with a catch, a way, and an air-buffer cylinder supported adjacent to the way and provided with a piston, with a piston-rod parallel to the way, a port to permit the escape of air from the back of the piston, and a cross-bar on the piston-rod adapted to be engaged by the catch, substantially as described.

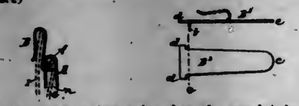
418,791. MECHANICAL MOVEMENT. EMANUEL RAS, New York, N. Y., assignor to the Emanuel Ras Manufacturing Company, same place. Filed July 15, 1889. Serial No. 317,690. (No model.)



Claim.—1. The cam B, having portions N O eccentric to each other, around both of which portions the track L is formed, constructed and arranged to operate substantially in the manner and for the purposes specified.

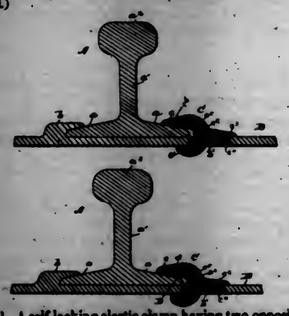
2. The cam B, having portions N O, the pitman F, cam-roll C, vibrating rod D, lug J, guide-pins M, and shaft A, all combined and arranged to operate substantially as specified.

418,792. GARMENT-SUPPORTING CLASP. FRANK A. RICHARDSON, Worcester, Mass., assignor to Edmund Converse and Ambrose T. Matthews, both of same place. Filed Dec. 15, 1888. Serial No. 293,672. (No model.)



Claim.—In a garment-supporting clasp, the guard A, having the straight horizontally-folded top *f* and the downwardly-extended sides, one of which is slotted, as at *a*, in combination with the part B, having the flange *b*, lateral edrs *d d*, and overhanging hook arranged through the slot *a* in the guard, all substantially as shown, and for the purpose described.

418,793. METALLIC CLAMP. EDWIN R. SHEPARD, New York, N. Y. Filed Jan. 26, 1887. Renewed Mar. 21, 1889. Serial No. 304,233. (No model.)



Claim.—1. A self-locking elastic clamp having two opposing jaws held toward each other with an elastic force, and having also a locking projection adapted, when the clamp is in position, to prevent movement or displacement thereof, substantially as set forth.

2. The herein-described elastic clamp, having two opposing jaws held toward each other with an elastic force and at a distance apart slightly less than the parts which they engage, and having also a flange portion situated in rear of the jaws and adapted to rest upon the face of one of the parts which the clamp unites, whereby the elastic force of the jaws is supplemented and the clamp guided into engagement with the parts which it unites, substantially in the manner set forth.

3. The herein-described spring or elastic clamp, having the longer upper jaw *c*, the shorter lower jaw *c'*, the shank portion *c²*, and the rearward-projecting flange portion *c³*, rabbeted to form the locking projection *c⁴*, substantially as set forth.

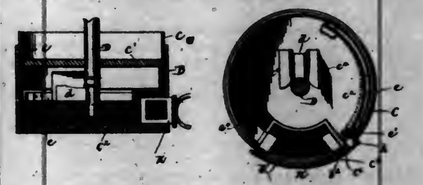
4. In combination with the rail A, having the flanges *a*, and the tie B, perforated at *b'* and having the lugs *b*, against which the flanges *a* bear laterally, the clamp C, adapted to lie in said perforation *b'* and having jaws *c* and *c'*, the shank portion *c²* of the clamp between the jaws and opposite the flange *a* being chambered out, as at *c³*, whereby any lateral or sidewise thrust of the rail will not be directly against the shanks of the clamps, but will be borne by the lugs *b*, substantially as set forth.

5. In combination with the parts A and B and the clamp which unites them, a lining D, interposed between the clamp and said parts, substantially as set forth.

6. In combination with the parts A and B and the clamp which unites them, a lining of elastic material, of a form substantially conforming to the interior of the clamp, interposed between said parts and the clamp, substantially as set forth.

7. A metallic clamp having two opposing jaws adapted to engage with opposite faces of the parts which it unites, one of the jaws being cut away upon its inner face, whereby there is left a bearing-face, as at *c³*, near the end of the jaw, substantially as set forth.

418,794. LOCK. CLARENCE M. STEBBINS, New York, N. Y. Filed Apr. 23, 1888. Serial No. 308,309. (No model.)



Claim.—1. In combination with a lock-holder, a lock which may be embraced by the said holder, but which is removable therefrom, a keeper, and a key adapted to operate said lock to lock the keeper, holder, and lock together, for the purpose described.

2. A lock provided with a bolt and with a catch to prevent the movement of the bolt, in combination with a lock-holder in which the lock is placed, and a keeper provided with an attachment for releasing the bolt, substantially as described.

3. A lock provided with a bolt and with a catch to prevent the movement of the bolt, in combination with a lock-holder embracing the lock and provided with an opening, a keeper adapted to pass through or into said opening to become engaged with the lock, and an attachment upon said keeper for releasing the bolt, substantially as described.

4. A lock, in combination with a lock-holder which embraces the lock, said holder being provided with an opening, and a keeper adapted to pass through or into said opening to become engaged with the lock.

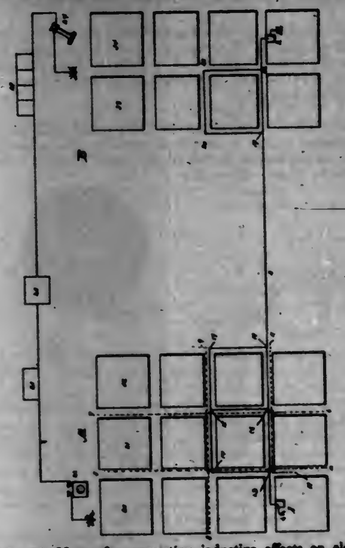
5. The combination, with a lock and key, of a holder for the lock, a keeper engaging with the lock-bolt to hold the lock, holder, and keeper together, and mechanism operating on the withdrawal of the keeper when it is unlocked to prevent the removal of the key from the lock, as described.

6. A portable lock constructed to retain or hold the key while the bolt is withdrawn, in combination with the key, a stationary lock-holder, and a keeper adapted to be locked to the lock when the bolt is thrown by the turning of the key.

7. A lock provided with a bolt, and a latch for holding the bolt in its withdrawn position, in combination with a keeper provided with a releasing device for releasing said bolt and allowing it to be turned when the keeper is brought into position to be locked to the lock.

8. The combination, with a key, of a lock, a bar to the removal of the key from the lock while the bolt is in the withdrawn position, a catch for holding the bolt in its withdrawn position, and a keeper provided with a device for releasing the bolt when the keeper is brought into position to be locked to the lock.

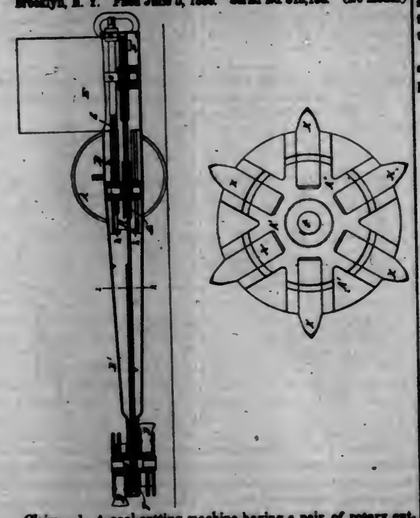
418,795. ANTI-INDUCTION SYSTEM. JOHN G. BOSKOWELL, Burlington, Kans., and ALBERT BARRETT, Kansas City, Mo. Filed Feb. 26, 1889. Serial No. 301,208. (No model.)



Claim.—1. Means for preventing inductive effects on electric signaling-lines, consisting of a shunt or loop in closed relation to the line in the neighborhood of inductive disturbance, the return-circuit for the line being out of inductive range of the disturbing source.

2. Means for preventing inductive effects on electric signaling-lines, consisting of a closed shunt or loop around the source of disturbance, only part of said loop lying in inductive proximity to the disturbing source.

418,796. COAL-CUTTING MACHINERY. WILLIAM H. STEBBINS, Brooklyn, N. Y. Filed June 5, 1889. Serial No. 313,188. (No model.)



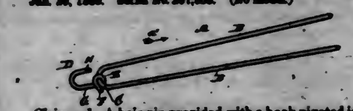
Claim.—1. A coal-cutting machine having a pair of rotary cutters and driving mechanism therefor, and having the frame in the form of a closed box entirely inclosing the driving mechanism, and an axis passing through the outer end of the box and carrying within the latter a wheel to receive the driving-power, while on the outside the axis carries the two rotary cutters.

2. The combination of the motor of a coal-cutting machine with driving mechanism and the frame in the form of a closed box inclosing the motor and the mechanism for transmitting motion from the motor, and an axis passing through the outer end of the box and carrying within the latter a wheel to receive the driving-power, while on the outside the axis carries two rotary cutters.

3. The combination of a coal-cutting machine having its entire frame in the form of a closed box, a vertical driving-shaft, and pulley at one end of the frame, with a vertical axis passing through the outer end of the frame and carrying within the latter a pulley and carrying rotary cutters outside the frame, and an endless rope transmitting motion from one pulley to the other, the said frame inclosing the rope and pulleys, all substantially as described.

4. The combination of the frame of a coal-cutting machine having a motor, driving-shaft, and wheel, with a vertical axis having a central wheel, a pair of rotary cutters, and an endless rope passed twice around both of said wheels, and an adjustable idler-pulley around which the rope is also passed, all substantially as set forth.

418,797. HAIR-PIN. CHARLES WALSH, Brooklyn, N. Y. Filed Jan. 30, 1889. Serial No. 297,893. (No model.)



Claim.—1. A hair-pin provided with a hook pivoted in the middle or bent portion thereof, substantially as shown and described.

2. A hair-pin comprising an ordinary hair-pin, a hook pivoted in the middle or bent part thereof, and a lug formed on the said hook for conveniently closing and opening the hook, substantially as shown and described.

418,798. INK-ERASER. MCCLINTOCK YOUNG, Frederick, Md. Filed May 16, 1889. Serial No. 311,044. (No model.)

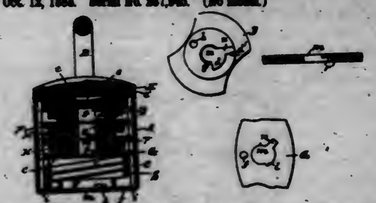


Claim.—1. An ink-eraser consisting of the pliable strip coated with abrasive material and a holder or support to which the strip is adjustably secured.

2. The combination of a flexible strip coated with abrasive material, a holder or support having a convex surface, over which the strip is passed and by which it is supported, a confining-band, substantially as shown, acting to hold the strip in place to permit its longitudinal adjustment.

3. A rubber block or support, the flexible strip coated with abrasive material and applied to said block, and the clasp or band C, applied as shown and described.

418,799. PADLOCK. JACOB B. ANWAKE, Lancaster, Pa., assignor to Miller W. Frahn and Edward T. Frahn, both of same place. Filed Oct. 12, 1888. Serial No. 287,965. (No model.)



Claim.—1. The combination, with the case, of vertically-movable plates secured therein provided with projections upon their bearing-surfaces, and rotary tumblers resting upon said plates, having indentations formed therein adapted to register with the said projections when the tumblers occupy certain positions, substantially as and for the purpose specified.

2. The combination, with the case, of a series of stationary plates having centrally-located openings through them, and rotary tumblers provided with annular flanges or ribs upon their upper and lower faces adapted to engage in the openings in the stationary plates between which they rest, the upper tumbler-bearing in the case being provided with a recess to receive the annular flange on the upper surface of the adjacent tumbler, substantially as and for the purpose specified.

3. In a padlock, the combination of the stationary plates provided with openings, and rotary tumblers having projections or ribs

on their upper and lower faces adapted to be held in continuous engagement with the openings in the plates between which they rest, so that the entire series of plates and tumblers may be connected together, substantially as and for the purpose specified.

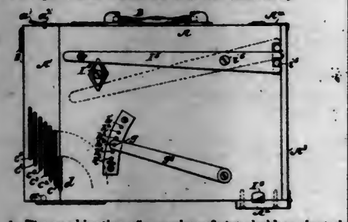
413,800. RAILWAY-SIGNAL. ROBERT BLACK and CORNELIUS M. HAVEY, New York, N. Y., assignors to the Black Automatic Railway Block Signal Company, same place. Filed May 13, 1889. Serial No. 310,513. (No model.)



Claim.—1. The combination, with the signal and the rail-bars and connections for moving the same, of the springs 5 and 13 and the rods for the same for pressing the rail-bar against the side of the track-bar and for allowing the rail-bar to yield laterally when the train is going in one direction, substantially as set forth.

2. The combination, with the pivoted rail-bar and the connections from the same to the signal, of the frame Y, the yielding angle-iron 10, the rod 8, and spring 13, for pressing the angle-iron against the rail-bar and for allowing such rail-bar to yield laterally, substantially as and for the purpose set forth.

413,801. PHOTOGRAPHIC CAMERA. CHARLES W. EDDY, Ware, Mass. Filed Sept. 1, 1888. Serial No. 284,316. (No model.)



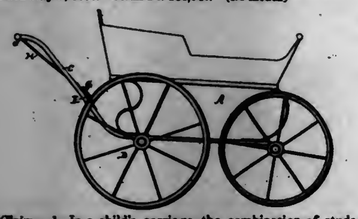
Claim.—1. The combination of a number of plate-holders pivoted in place at different levels at their lower ends, so as to be capable of swinging forwardly into a horizontal or rearwardly into a vertical position, substantially as specified.

2. The combination of a number of plate-holders respectively pivoted in place at their lower ends at different levels, and a front cover therefor also pivoted in place on a pivot-rod journaled in the box, substantially as specified.

3. The combination of a number of plate-holders respectively pivoted in place at their lower ends and having arms on the ends of their pivots serving as handles, substantially as specified.

4. The combination of a number of plate-holders pivoted in place at their lower ends and having arms on the ends of their pivots serving as handles and as catches for retaining them in position, substantially as specified.

413,802. CHILD'S CARRIAGE. WASHINGTON JOHNS, Lancaster, Pa. Filed July 9, 1889. Serial No. 316,947. (No model.)



Claim.—1. In a child's carriage, the combination of studs projecting from the sides of the wheels, and a brake adapted to engage said studs, substantially as specified.

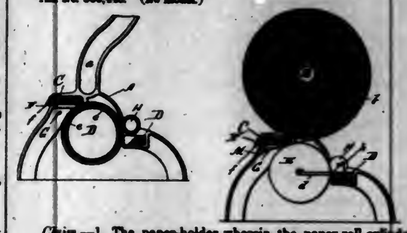
2. The combination, with the brake constructed to engage and lock the wheels, of cords connecting the brake and propeller-bar, the propeller-bar journaled in the handles C, and a handle *a*, adapted to revolve the propeller-bar in its journals and wrap the cords around it to disengage the brake from the wheels, substantially as specified.

3. The combination, with the wheels provided with studs *d*, of the brake constructed to engage said studs, connections between the brake and propeller-bar, and the propeller-bar adapted to disengage the brake from the studs, substantially as specified.

4. In a child's carriage, the combination, with the propeller-bar journaled in the handles thereof, of a brake movably secured to the handles and provided with notches adapted to take over the rims of the wheels, studs *d* on the rims of the wheels, and cords connecting the brake and propeller-bar, substantially as and for the purpose specified.

5. In a child's carriage, the combination, with a brake constructed to slide up and down on the handles and hold in engagement with the wheels by gravity, of staples, in which the brake slides, secured to the handles, and connections for disengaging the brake from the wheels, substantially as specified.

413,803. PAPER PRINTING AND CUTTING HOLDER. GUY L. KENNEDY, Chicago, Ill., assignor, by mesne assignments, to the Merchants Roll Paper Supply Company, same place. Filed May 3, 1889. Serial No. 309,446. (No model.)



Claim.—1. The paper-holder wherein the paper-roll cylinder is provided with curved or inclined long slot bearings, and combined with a cross-bar against which the periphery of the paper rests, and which is located at that side of the bearings which is opposite the side upon which the bearings are inclined, substantially as set forth.

2. The paper-holder wherein are combined a paper-roll cylinder revolving in long slot bearings, a cross-bar upon which the paper rests, and a printing-roller, substantially as set forth.

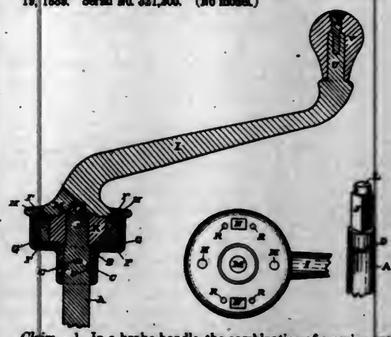
3. The paper-holder wherein are combined the paper-roll cylinder revolving in long slot bearings, a cross-bar upon which the paper rests, and a printing-roller revolving in contact with said bar, substantially as set forth.

4. The printing-paper holder consisting of side standards having open slot bearings for the paper-cylinder, the paper-cylinder revolving in said bearings, the cross-bar carrying the knife, and a printing-roller rotating in contact with said cross-bar, substantially as set forth.

5. The combination, in a paper-roll holder, of a printing-roller having fixed bearings, and a stationary bar against which the roller rotates, the roller having a rubber type-plate, substantially as set forth.

6. The paper-holder wherein the paper-roll cylinder is provided with slotted bearings, and combined with a tension-producing support located below and wholly at one side of the bearings, substantially as specified.

413,804. BRAKE-HANDLE. JOHN KIRBY, Jr., Dayton, Ohio, assignor to the Dayton Manufacturing Company, same place. Filed Aug. 19, 1889. Serial No. 321,305. (No model.)



Claim.—1. In a brake-handle, the combination of a casing rotatably mounted upon the brake-rod, a ratchet-wheel mounted within the casing and engaging the brake-rod, one or more pawls adapted to engage the ratchet-wheel, and a brake-handle secured to the casing and designed to operate the same.

2. In a brake-handle, the combination of a casing rotatably mounted upon the brake-rod, a ratchet-wheel mounted within the casing and removably fitted upon the brake-rod, one or more pawls adapted to engage the ratchet-wheel, and a brake-handle adapted to fit over the casing, hold the various parts mounted therein in place, and operate the said casing.

3. In a brake-handle, the combination of a casing rotatably mounted upon the brake-rod and having recesses formed therein, a brake-handle adapted to be secured to the casing and having recesses similar to those in the casing, pawls having pintles adapted to engage the recesses, and a ratchet-wheel adapted to be engaged by the pawls.

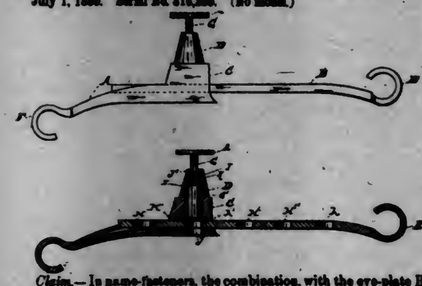
4. In a brake-handle, the combination of a casing rotatably mounted upon the brake-rod, ratchet mechanism mounted therein, inward-extending lugs formed on the interior of the said casing, and a brake-handle having downward-extending lugs adapted to fit between the lugs in the casing.

5. In a brake-handle, the combination of a brake-rod having a circumferential groove, a casing fitting on the brake-handle and having pins or screws adapted to engage the said groove, ratchet mechanism mounted within the casing, and a brake-handle for operating the casing.

6. In a brake-handle, the combination of a casing rotatably mounted upon the brake-rod, a ratchet-wheel mounted within the casing and engaging the said brake-rod, one or more pawls also mounted within the casing and adapted to engage the ratchet-wheel, the said pawls and ratchet-wheel moving in the same plane, and a brake-handle adapted to operate the casing.

7. In a brake-handle, the combination of a casing rotatably mounted upon the brake-rod, ratchet mechanism carried by the casing, a brake-handle secured to the casing, the upper end of which is reduced, a revoluble hand-piece mounted upon the reduced portion, and means for holding the hand-piece in place.

413,805. HAME-FASTENER. JOHN KERSER, Buffalo, N. Y. Filed July 1, 1889. Serial No. 316,226. (No model.)



Claim.—In hame-fasteners, the combination, with the eye-plate B, having a hook E and a series of holes H H' H'' *h h'*, of the head A, having the hook F and lug C and upward projection D, provided with a central passage J', having enlargements J *j*, within which is located a shoulder-pin G, provided with a head *d* and a spring *k*, the horizontal passage K, and ways *e e'*, as shown and described.

413,806. LIQUID-COOLER. FREDERICK T. KERN, Buffalo, N. Y. Filed Aug. 27, 1888. Serial No. 283,907. (No model.)

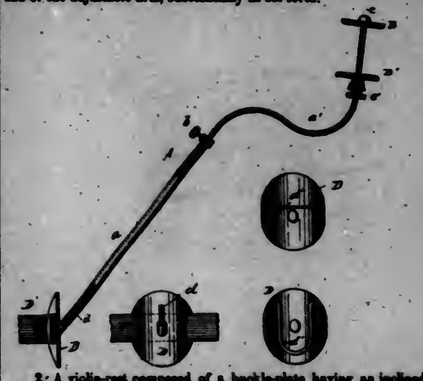


Claim.—1. In a liquid-cooler, the combination, with a series of vats, of a series of tubular coils suspended therein from a horizontal or substantially horizontal pipe, each coil having an open passage at one end thereof leading to and through the pipe and at the other end a two-way cock for opening or closing the passage either through the coil or through the pipe, whereby any coil in the series or the whole number of coils may be brought into action, or any one coil may be shut off without interfering with the action of the other coils, substantially as described.

2. A liquid-cooling device consisting of a coil of pipe having its two vertical ends connected to and communicating with a horizontal pipe, and a means consisting of a stop cock or valve for opening the passage through the coil and closing it through the horizontal pipe at the same point, so that the fluid may pass around through the coil and through the horizontal pipe beyond the valve, or closing the passage in the coil and opening the passage through the horizontal pipe, substantially as described.

413,807. VIOLIN-REST. MANUEL LEDERER and CARL VERITY, Brooklyn, N. Y. Filed May 11, 1889. Serial No. 310,268. (No model.)

Claim.—1. A violin-rest composed of a buckle-plate, an inclined supporting-pin on the buckle-plate, a supporting arm or standard formed of a lower tubular and an upper curved part, means for adjusting the upper part of the arm, and clamping-plates on the upper end of the adjustable arm, substantially as set forth.

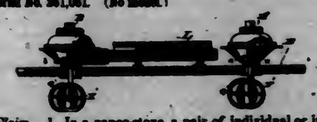


2. A violin-rest composed of a buckle-plate having an inclined supporting-pin, means for attaching said buckle-plate to the body, and a supporting-arm formed of a lower tubular part and an upper curved part, a clamping-screw for connecting said parts, and clamping-disks applied on the upper threaded end of the adjustable part of the arm, and a nut for tightening said disks on the violin-body, substantially as set forth.

413,808. PROCESS OF LEACHING ORES. JOHN S. MAC ARTHUR, Pollokshields, County of Renfrew, Scotland. Filed Sept. 4, 1888. Serial No. 284,552. (No specimens.)

Claim.—The process herein described of treating ores containing oxides or carbonates of earth metals, said process consisting in first subjecting such ores to the action of a proportionate quantity of a solution of a ferrous salt or a bisulphate of an alkali to combine with the oxides or carbonates of earth metals, and then treating the ores with an acid or salt to obtain the contained metals, all substantially as described.

413,809. AUTOMATIC HEATING AND LIGHTING DEVICE FOR VAPOR-STOVES. JAMES A. MARSH, Cleveland, Ohio. Filed Jan. 16, 1888. Serial No. 261,081. (No model.)



Claim.—1. In a vapor-stove, a pair of individual or independent generating-burners and pipes or tubes leading to each burner to supply oil thereto, in combination with two pipes arranged between said burners, one of said pipes serving to heat one burner from another and the other to light one burner from another, said pipes situated one above the other, and the heating pipe or tube perforated to supply vapor to the lighting pipe or tube, substantially as set forth.

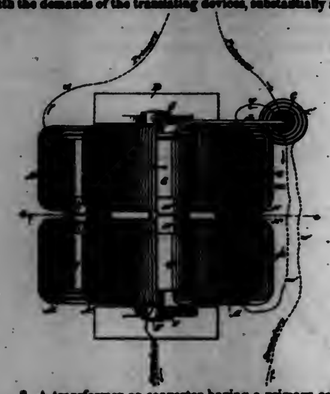
2. In a vapor-stove, two individual self-generating burners and pipes to supply oil to each burner separately, in combination with two other pipes situated between the said burners and apart from the burner-cones at both ends, said pipes located one above the other, and the lower pipe serving to heat and the upper pipe serving to light one burner from another, substantially as set forth.

3. In a vapor-burner stove, two burners having independent oil-supply, in combination with a heating-tube having both ends open to the outer air, one end in proximity to a burner and the other burner provided with a coupling at its side having a jet-orifice for the escape of vapor into the end of the tube, and suitable mechanism for holding said tube in a rigid position, substantially as and for the purpose specified.

413,810. TRANSFORMER OR CONVERTER FOR ALTERNATING ELECTRIC CURRENTS. LEONARD PAGE, New York, N. Y., assignor of one-half to Charles J. Kintner, same place. Filed Feb. 12, 1889. Serial No. 299,642. (No model.)

Claim.—1. A transformer or converter having a primary coil connected in circuit with a source of electrical energy and a secondary coil connected in circuit with one or more translating devices, with

means located directly in one leg or branch of the secondary circuit for regulating the energy required in the primary circuit in accordance with the demands of the translating devices, substantially as described.



2. A transformer or converter having a primary coil and a secondary coil, the latter including in its circuit one or more translating devices, with electro-magnetic means located directly in one leg or branch of the secondary circuit for regulating the energy required in the primary circuit in accordance with the demands of the translating devices in use, substantially as described.

3. A regulator for transformers or converters, consisting of primary and secondary coils, including, respectively, the current-source and translating devices, in combination with means located in one leg or branch of the secondary circuit for automatically varying the magnetic condition of the converter-core in accordance with the demands of the translating devices, substantially as described.

4. A regulator for transformers or converters, consisting of primary and secondary coils, including, respectively, the current-source and translating devices, in combination with an adjustable armature for changing the magnetic condition of the converter-core, and means under the control of the translating devices, located in one leg or branch of the secondary circuit, for effecting this change in accordance with the current demands of the translating devices, substantially as described.

5. A regulator for transformers or converters wherein current-impulses are transformed from a primary to a secondary system, consisting of one or more fixed coils located in the secondary circuit and having fixed cores, with one or more movable primary coils having a movable core, the poles of which are located in close proximity to the poles of the secondary core, substantially as described.

6. A regulator for use in a system of converters or transformers wherein primary currents in one circuit of electricity are converted into secondary currents in a second circuit, consisting of one or more fixed coils located in the secondary circuit, with translating devices, said coils being wound about a fixed core or cores, in combination with one or more movable coils wound about a movable core or cores, and included in the primary circuit, in combination with two solenoids, one located in the primary and the other in the secondary circuit, the one surrounding the other, with mechanical connections between one of said solenoids and the rotary coils, whereby the relative location of the poles of said coils is varied in accordance with the current demands in the secondary circuit, substantially as described.

7. A transformer or converter having core-pieces made of two parts, one of said parts constituting the core for the primary and the other the core for the secondary of said transformer, the poles of said primary and secondary being adjustable with relation to each other, whereby the magnetic circuit of said transformer or converter may be adjusted for maximum or minimum effect, substantially as described.

8. A core for a transformer, consisting of a thin sheet of magnetic material having projecting pole-pieces located at stated intervals, the whole being wound, as described, in spiral form, so that the pole-pieces constitute shoulders against which the coils rest when wound in place, substantially as described.

9. A converter consisting of a fixed secondary magnet, in combination with a movable primary magnet, said magnets having cores or pole-pieces adapted to slide past each other, substantially as described.

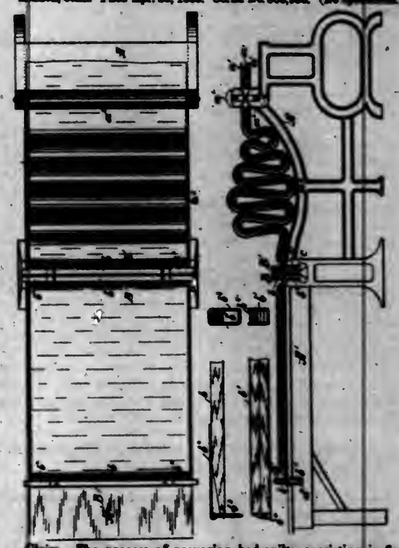
10. A converter consisting of a fixed secondary magnet and a movable primary magnet, said magnets having cores lying in close proximity to each other, in combination with means for causing said poles to vary their magnetic relations, substantially as described.

11. A converter consisting of a series of secondary coils wound upon a fixed circular core having internally-projecting pole-pieces, in combination with a series of primary coils wound upon a similar movable core having internally-projecting pole-pieces, which are adapted to slide past the first-named pole-pieces, and a magnetic axle joining said core-pieces, with mechanical connections, as described, and a pair of solenoids located, respectively, in the primary and secondary circuits, one of said solenoids being attached to the mechanical connections which move the movable coils, substantially as described.

12. A transformer or converter having a primary coil connected in circuit with a source of electrical energy, and a secondary coil connected in circuit with one or more translating devices, with means, also located in the secondary circuit, but in one leg or branch only thereof, for regulating the energy required in the primary circuit in accordance with the demands of the translating devices in the secondary circuit, substantially as described.

13. A transformer or converter having its primary coil connected in circuit with a source of electrical energy and its secondary coil connected in multiple-arc circuit with two or more translating devices, in combination with an electro-magnet or solenoid, also located in the secondary circuit, but in series with the multiple-arc translating devices and connections, as described, the whole being arranged for regulating the energy required in the primary circuit in accordance with the demands of the translating devices in the secondary circuit.

413,811. PROCESS OF PREPARING BED-QUILTS FOR SEWING. WILLIAM H. PALMER, Jr., Norwich, assignor to Palmer Brothers, New London, Conn. Filed Apr. 20, 1889. Serial No. 308,093. (No specimens.)



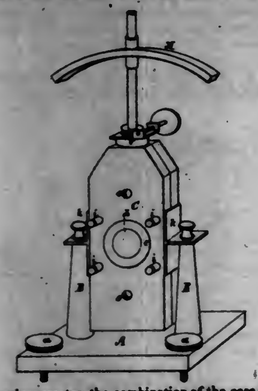
Claim.—The process of preparing bed-quilts, consisting in first sewing the material of which the bed-quilt is to be composed along its side edges, then measuring off a sufficient quantity of such material for a quilt, then where the quilt is to be cut off compressing the material upon both sides throughout its width in parallel lines extending at right angles to the length of the goods, so that a space will be left between said compressions, and subsequently severing the goods between said compressions, whereby both the ends of the quilt so severed and the end of the material remaining will be maintained under compression after severing, substantially as specified.

413,812. GALVANOMETER. ANDREW M. HYDE, Brooklyn, Assignor to Himself and Edward Weston, Newark, N. J. Filed Jan. 12, 1889. Serial No. 296,788. (No model.)

Claim.—1. In a galvanometer, the case C, formed in two parts, each part provided with the cavities *b* and *g*, recesses *h*, and hole *d*, the rabbet *f*, inclined at top and connecting said hole and cavities, all arranged and constructed essentially as shown and set forth.

2. In a galvanometer, the case C, formed in two parts, each provided with the cavities, the recesses, and hole, and rabbeted, as shown, combined with the brackets supporting said case, essentially as described and represented.

3. In a galvanometer, the combination of the case C, formed in two parts, each provided with the cavities, the recesses, and hole, and rabbeted, as shown, with the coils *c*, the plugs *n*, sustaining said coils within the cavities *b* and secured to the case, all as shown and set forth.



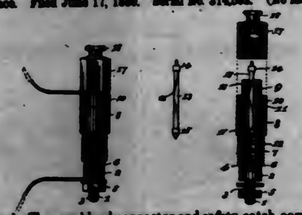
4. In a galvanometer, the combination of the case C, constructed in two parts, each part recessed, provided with cavities and holes, and rabbeted, as shown, with the coils *c*, the plugs *n*, secured to the case and supporting the said coils within the cavities *b*, and the pole-caps *i*, all as shown and set forth.

5. In a galvanometer, the combination of the case C, constructed in two parts, each part recessed, provided with cavities and hole, and rabbeted, as shown, with the coils *c*, having apertures *m*, the plugs *n*, secured to the case and supporting the said coils within the cavities *b*, the pole-caps *i*, the plate *p*, sliding pin *r*, sustaining fiber *s*, needles *t*, and reflecting-mirror *u*, all essentially as shown and set forth.

6. In a galvanometer, the combination of the case C, formed in two parts, each part recessed, provided with cavities and hole, and rabbeted, as shown, said case sustaining the coils *c*, and pole-caps *i*, with the cap and tube *v'*, plate *p*, and sliding pin *r'*, for supporting the fiber *s*, which sustains the needle system, all as shown and set forth.

7. In a galvanometer, the combination of the case C, formed in two parts, each part recessed, provided with cavities and hole, and rabbeted, as shown, and sustaining the coils *c*, and pole-caps *i*, with the tube *v'*, supported by the case and provided with the plate *p*, and sliding pin *r*, for supporting the fiber *s*, sustaining the needle system, the tube T, surrounding the tube *v'*, resting on the case and carrying the adjusting-magnet M, with said magnet, all as shown, and essentially as set forth.

413,813. COMBINED BINDING-POST AND THERMAL CUT-OUT. HOWARD C. ROSE, Brooklyn, N. Y., assignor of one-half to John G. Reilly, same place. Filed June 17, 1889. Serial No. 314,592. (No model.)

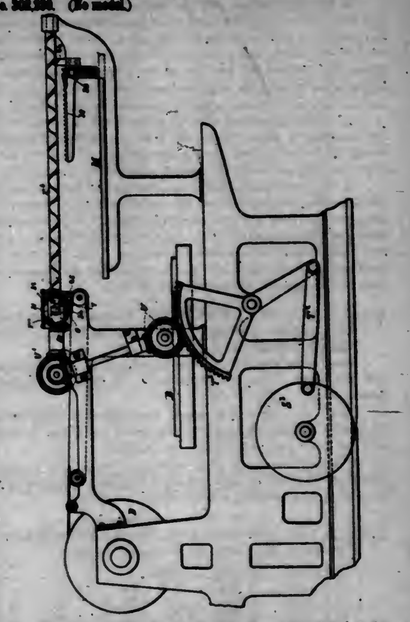


Claim.—1. The combined connector and safety-catch comprising two metallic binding-posts insulated from each other, but rigidly in line, and a non-conducting fuse-carrier having metal tips connected by a fusible strip and held between said posts by a spring at one end and at the other by a removable abutment-screw passing through one of said posts in line with the fuse-carrier.

2. The combined connector and safety-catch comprising a sleeve of insulating material interposed between two metal binding-posts and forming a rigid structure therewith, a metal spring in contact with one binding-post, a removable abutment projecting from the other, and a non-conducting fuse-carrier having metal tips connected by a fusible strip placed between said spring and abutment.

3. The combined binding-post and safety-catch comprising, in combination, the shank 1, provided with clamping devices, spring 11, tubular nipple 9, insulated fuse 16, screw-cap 17, and pressure-screw 18, adapted to force the fuse 16 against the spring 11 and compress the latter, said shank 1 and nipple 9 being held in fixed position in a solid insulating material.

413,814. SHEET-DELIVERY APPARATUS FOR PRINTING-PRESSES. WALTER SCOTT, Plainfield, N. J. Filed Mar. 7, 1889. Serial No. 302,399. (No model.)



Claim.—1. The combination, with the grippers 6 and 7 and the cross-bar N and its end bearings, of screws or their equivalents for reciprocating the bearings, the cross-bar and parts carried by the same, the table M, upon which the sheets are delivered, a stop for opening the grippers, and mechanism, substantially as specified, for raising the grippers to clear them from the sheet laid upon the table, substantially as set forth.

2. The combination, with the cross-bar N and screws r^4 or their equivalents for reciprocating such cross-bar N, of the grippers 6 and 7, the cross-shaft 21 for the grippers 7, a spring for closing the grippers, an arm and catch for holding the grippers when open, and a gear and rack for giving to the cross-bar N and parts connected therewith a rotary or partial rotary movement after the grippers have been opened for dropping the sheet, substantially as set forth.

3. The combination, with the cross-bar N, of bearings at the ends of such cross-bar and screws or their equivalents for reciprocating the bearings and cross-bar, grippers carried by the cross-bar, a gear and rack for revolving or partially revolving the cross-bar N and grippers, and a roller and spring acting in a recess to steady the cross-bar and grippers and prevent them revolving during the time that the sheet is carried by the grippers, substantially as set forth.

4. The combination with the cross-bar N and the bearings r^4 and mechanism for reciprocating such bearings and carrying the cross-bar laterally above the sheet-delivery table, of the grippers 6, the shaft 21, and grippers 7, the arm and catch 22, the spring-latch 23, for holding the grippers open, the interrupted gear 31, the rack 30, the starting-latch 33, and the projection 34, against which the starting-latch operates to give to the interrupted gear a partial revolution at the commencement of the return movement of the grippers, substantially as and for the purposes set forth.

5. The combination, with the grippers for conveying the sheet along above the delivery-table, of the stationary guide-plates between which the sheet is passed to the grippers, substantially as set forth.

6. The combination, with the reciprocating gripping mechanism for seizing and delivering sheets, of the delivery-table and an adjustable support near each end of the table for raising or lowering one or both ends and inclining the table, substantially as specified.

7. The combination, with the sheet-delivery table, of a support near one end of the table, and a rack and pinion near the other end of the table to raise or lower the same, substantially as set forth.

8. The combination, with the grippers and their cross-bar, of nuts for receiving the ends of the cross-bar, screws for actuating such nuts, and gearing for revolving the screws first in one direction and then

the other and reciprocating the gripper-bar and parts connected therewith, substantially as set forth.

9. The combination, with the sheet-delivery table, the grippers, and cross-bar carrying the same, of supports for the ends of the cross-bar, screws or their equivalents occupying a fixed position for supporting and reciprocating the cross-bar laterally above the table, and means for varying the position of the grippers in relation to their supports and raising the grippers above the path of the sheet on the return movement of such grippers, substantially as set forth.

10. The combination, with the grippers and the cross-bar carrying the same, of a gear-wheel and rack for rotating or partially rotating the cross-bar and moving the grippers away from the sheet after the grippers have been opened, substantially as set forth.

11. The combination, with the cross-bar and its end bearings, of the screws or their equivalents for reciprocating the same laterally, grippers connected with and carried by the said cross-bar, and mechanism, substantially as set forth, for giving to the cross-bar a rotary or partially rotary movement in its bearings during the return movement and between the dropping of one sheet and the grasping of the next by the grippers, substantially as set forth.

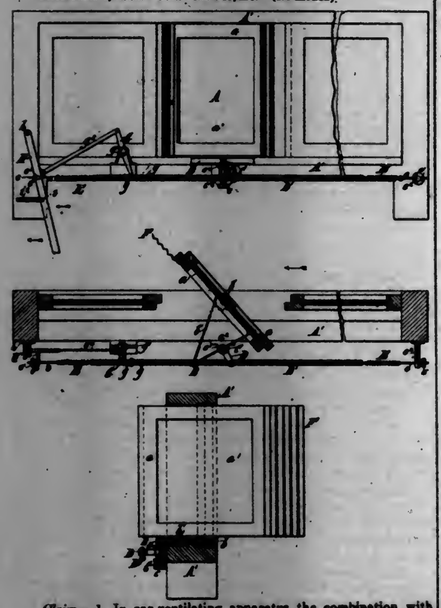
413,815. MOLD FOR CASTING. FRANCIS D. TAYLOR, Brockville, Ontario, Canada. Filed Apr. 3, 1889. Serial No. 305,758. (No model.) Patented in Canada May 4, 1889, No. 31,254.

Brief.—The parts of the mold are shaped by hydraulic pressure and then dried. They are supported in the flask by a backing of molding-sand.

Claim.—1. As a new article of manufacture, a lining for molds for casting metal, composed of a mixture of pulverized peroxide of iron and wood pulp, substantially as described.

2. A mold composed of an inner shape formed of a mixture of pulverized peroxide of iron and wood pulp and a backing of molding-sand or like material, substantially as described.

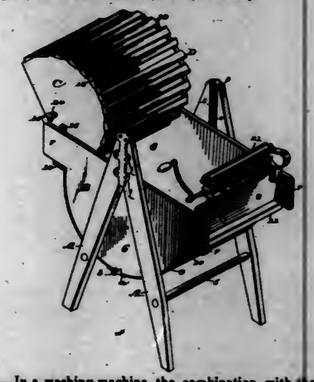
413,816. CAR-VENTILATOR. OLIVER H. TAYLOR, Brooklyn, N. Y. Filed June 7, 1889. Serial No. 313,426. (No model.)



Claim.—1. In car-ventilating apparatus, the combination, with a swinging ventilator, of an automatically-operating opener acting to always swing said ventilator in a direction to open it, said opener consisting of a reciprocating part connected to said ventilator, and a resistance device, substantially such as described, acting on said reciprocating part, said ventilator being moved in a direction to close it by exterior currents of air against the resistance offered by said resistance device, substantially as specified.

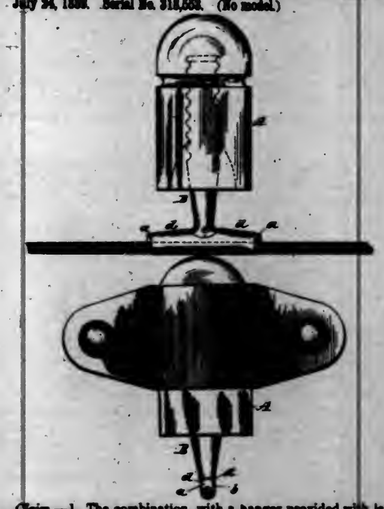
2. In car-ventilating apparatus, the combination, with a swinging ventilator, of an automatically-operating opener acting to always swing said ventilator in a direction to open it, said opener consisting of a reciprocating part connected to said ventilator, a resistance device, substantially such as described, acting on said reciprocating part, and a stop for said opener, said ventilator being moved in a direction to close it by exterior currents of air and against the resistance offered by said resistance device, substantially as specified.

413,817. WASHING-MACHINE. DANIEL B. WAGNER, Carey, Ohio. Filed Apr. 9, 1889. Serial No. 306,496. (No model.)



Claim.—In a washing-machine, the combination, with the semicircular tub, of the semicircular rubber having gains 18 in the bottom edges of the side pieces, a sheet-metal lining extending over about one-half of the bottom of the rubber and formed with tongues 17, projected from the side edges to lie in the gains of the side pieces, and rubbing slats having their ends secured in the gains and over the extensions of the partial-metal lining, substantially as described.

413,818. DEVICE FOR SUSPENDING ELECTRIC CONDUCTORS FOR ELECTRIC RAILWAYS. THOMAS E. ADAMS, Cleveland, Ohio. Filed July 24, 1889. Serial No. 318,553. (No model.)

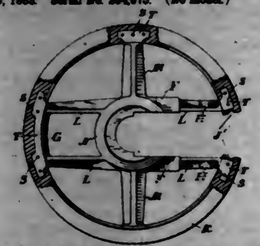


Claim.—1. The combination, with a hanger provided with laterally-projecting arms and a conductor, of a sheet-metal clip bent around the conductor and said arms and securing the conductor to the hanger, substantially as and for the purpose specified.

2. The combination, with a hanger provided with laterally-projecting arms and a conductor, of a sheet-metal clip having open slots formed in its sides, and projections or fingers folded around said arms, substantially as and for the purpose specified.

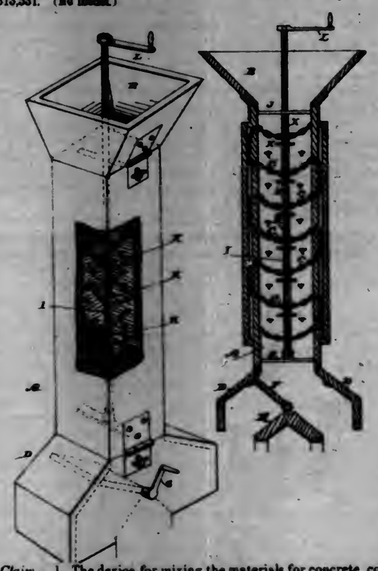
3. The combination, with a conductor and a hanger constructed with laterally-projecting arms, of a sheet-metal clip folded around the conductor and provided with arms bent around the laterally-projecting arms of the hanger, substantially as and for the purpose specified.

413,819. PULLEY. WARREN W. ARMABLE, Grand Rapids, Mich. Filed Sept. 5, 1883. Serial No. 294,675. (No model.)



Claim.—A pulley having a rim made with a segment D, provided with lugs J' J', the spokes or arms, and a separable hub, one part of which is secured to said spokes or arms by a conical or tapering screw-bolt B, and the rim of said pulley having a balance-weight G opposite the removable segment, all substantially as shown and described.

413,820. CONCRETE-MIXING MACHINE. EVARISTE CHATAIN and SECONDO GILETTI, San Francisco, Cal. Filed June 7, 1889. Serial No. 313,531. (No model.)



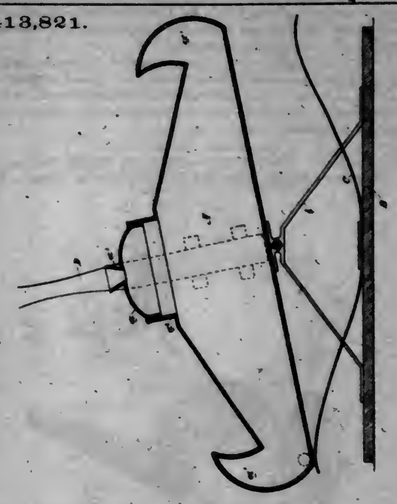
Claim.—1. The device for mixing the materials for concrete, consisting of the vertical tube having the suspended chains fixed transversely within it, substantially as described.

2. A concrete mixing device consisting of the vertical tube, a series of loosely-suspended chains fixed transversely across it at intervals from top to bottom, the vertical shaft with transverse arms and an operating-crank, and the discharge-passages and controlling-gate at the bottom of the tube, substantially as described.

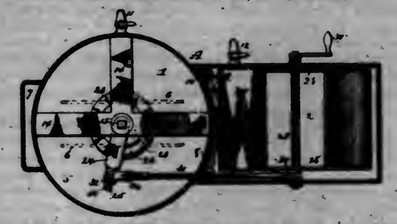
413,821. WASHING-MACHINE. HUGH CHURCHILL, Tulare, assignor of one-half to William L. Morrow, San Luis Obispo, Cal. Filed Mar. 25, 1889. Serial No. 304,721. (No model.)

Claim.—1. The rocking or oscillating containing-vessel A, having its interior space contracting to each end, and an air-chamber *a'*, opening out of and rising above said ends, and in which the air is compressed by the movement of the vessel's contents, substantially as described.

2. The combination of the rocking or oscillating containing-vessel A, having its top walls inclined downwardly from its center portions, and provided with a cap-controlled entrance-opening in its top center, upwardly and inwardly turned contracted ends, and air-chambers *a'* opening out of and rising above said ends, whereby air is compressed in said chambers by the action of the vessel's contents, the handle for rocking said vessel, and the assisting-spring beneath the bottom of the vessel, substantially as described.



413,822. DISH-WASHER. WELLINGTON R. CHERRAN, West Line, Mo. Filed June 15, 1889. Serial No. 314,445. (No model.)



Claim.—1. In a dish-washing machine, the combination, with a case, a rotary crank-shaft, and buckets thereon, of a removable basket, a pitman extending from the crank-shaft, and a ratchet-and-pawl connection between the basket and pitman, whereby motion from the crank-shaft is communicated to the basket, substantially as set forth.

2. In a dish-washing machine, the combination, with a case, a rotary crank-shaft, and buckets thereon, of a shaft at right angles to the vertical crank-shaft, a basket mounted on the shaft, and a pitman extending from the crank-shaft and loosely connected with the other shaft, whereby motion is communicated to the basket, substantially as set forth.

3. In a dish-washing machine, the combination, with a case, a crank-shaft, and buckets thereon, of a shaft at right angles to the crank-shaft, a basket removably mounted on the shaft, a crown ratchet-toothed wheel on the shaft, an arm extending laterally from the shaft and having a gravity-pawl thereon adapted to engage the teeth of the wheel, and a pitman extending from the crank-shaft and having loose connection with the arm, whereby the latter is vibrated, substantially as set forth.

4. In a dish-washing machine, the combination, with a case, a rotary crank-shaft, and oppositely-extending buckets thereon, of a vertical shaft having an angular upper end, a removable basket, a crown-toothed ratchet-wheel secured on the shaft, and arm extending from the shaft, with a pawl thereon extending beneath a portion of the arm, a pitman extending from the crank-shaft, and a universal joint connecting the pitman with the arm, substantially as set forth.

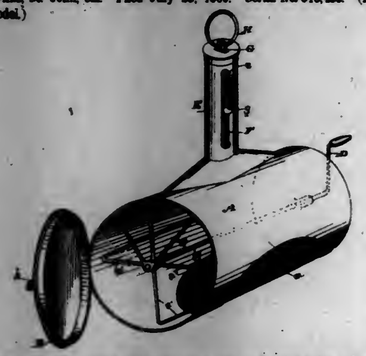
5. The combination, with a vessel divided into two communicating apartments and provided with a hollow bottom and a water-tank communicating with said hollow bottom, of a rotary shaft having buckets thereon, a vertical shaft actuated by the bucket-carrying shaft, and a basket carried by the vertical shaft, substantially as set forth.

6. The combination, with two compartments, each having a false bottom, said bottom being braced and having a frame thereon, of a vertical shaft having an angular upper end, a removable skeleton wire basket, a crown-toothed wheel on the shaft, an arm extending laterally from the shaft, with a gravity-pawl to engage the teeth on the

wheel, a rotary crank-shaft with the buckets thereon, a pitman extending from said shaft, and a universal joint connecting the pitman with the arm, substantially as set forth.

7. The combination, with a rotary basket, of a crank-shaft, a pair of buckets thereon with concaved bottoms, a pitman attached to the crank-shaft, and a pawl and ratchet connecting the pitman and basket support, whereby the latter is given periodical movement, substantially as set forth.

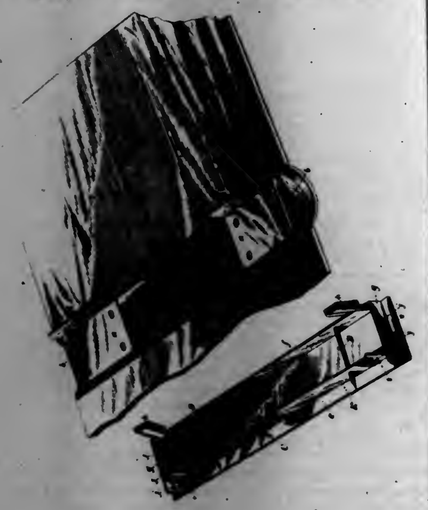
413,823. COMBINED FLOUR-SIEVE AND SCALES. ADELINE T. EVANS, St. John, Cal. Filed July 23, 1889. Serial No. 318,426. (No model.)



Claim.—1. The combined flour-sieve and scales consisting of the receptacle A, having the bottom screen, said receptacle being closed at one end and provided at the opposite end with a door, the rotating stirrers within the receptacle, the graduated hollow casing connected or formed with the top of the receptacle and having an elongated slot, the spring within the casing, the suspending-rod attached to the spring, and the indicating-finger connected with the rod and extending through the slot, substantially as described.

2. A combined flour-sieve and scales consisting of the receptacle A, closed at one end and having the bottom screen, the hinged cover at the opposite end of said receptacle, the central shaft in the receptacle projecting through the closed end thereof and having stirrer-arms, and the crank on the end of the shaft, the graduated hollow casing connected or formed with the top of the receptacle and having an elongated slot, the spring within the casing, the suspending-rod connected with the spring, and the indicating-finger carried by the rod and passing through the slot, substantially as described.

413,824. TEMPORARY BINDER. JAMES F. FITZPATRICK, Brooklyn, N. Y. Filed Sept. 23, 1888. Serial No. 286,659. (No model.)



Claim.—1. A temporary binder consisting of the combination, with an outer cover having transverse slideways on its back, of a separate filing-plate constructed to slide laterally into said ways, whereby it is united to said back.

2. A temporary binder consisting of the combination, with an outer cover having transverse slideways on its back and a stop at one side thereof, of a separate filing-plate constructed to slide laterally into said ways against said stop.

3. A temporary binder consisting of the combination, with an outer cover having transverse slideways at top and bottom of its back, of a separate filing-plate constructed at its ends to slide laterally into said ways.

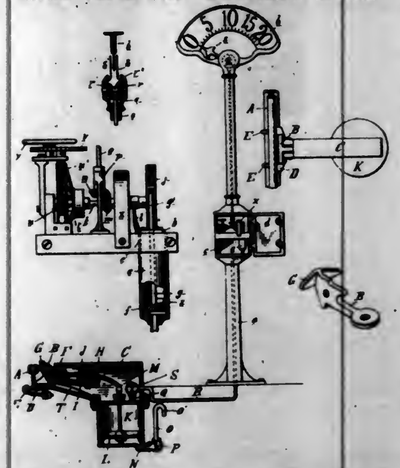
4. A temporary binder consisting of the combination, with an outer cover having transverse slideways on its back, of a separate filing-plate constructed to slide laterally into said ways, and a fastening for preventing lateral displacement of said plate relatively to said back.

5. A temporary binder, consisting of the combination, with an outer cover having transverse slideways on its back and a stop at one side thereof, of a separate filing-plate constructed to slide laterally into said ways against said stop, and a fastening for preventing lateral displacement of said plate, consisting of a clip pivoted to said plate and constructed to turn down into engagement with said stop.

6. In a temporary binder, a filing-plate consisting of a flat back having a perpendicular side flange and perforated end flanges, filing-pins projecting from said side flange parallel with the back, a longitudinal follower-strip having perforations to admit said pins, and movable between said end flanges toward or from said side flange, and bolts at the ends of said strip adapted to enter the perforations in said end flanges, whereby the escape of the filed papers from the pins is prevented by said strip, which is adjustable to admit between itself and the side flange different thicknesses of papers.

7. In a temporary binder, an eye-piece for the papers to be bound, consisting of a strip to enter the fold in the paper, with an eye and two fingers projecting at the middle thereof and adapted to pass outside the fold, and said fingers adapted to be bent down against the exterior of the fold, whereby the paper is confined at its fold between the inside strip and the outside fingers.

413,825. RAILWAY TIME-SIGNAL. EUGENE FOSTAIN, Auburndale, Ohio. Filed Mar. 9, 1889. Serial No. 302,672. (No model.)



Claim.—1. In an automatic railway time-signal, a signal-actuating lever pivotally fulcrumed, and having a short arm extending into proximity to the rail and a resiliently-jointed long arm connected to the signaling devices, substantially as described.

2. In an automatic railway time-signal, the lever B, having a jointed long arm and actuated by the passing train on its short arm, and provided with the elastic cushion *j* in its long arm, substantially as described.

3. The combination, with the rail, of the signal-actuating lever B, provided with the cross-head G, arranged parallel to the rail, and with the resiliently-jointed arm consisting of the integral arm I, the arm H, fulcrumed thereon, and the elastic cushion J, secured between, substantially as described.

4. The combination, with the rail, of the signal-actuating lever B, the housing C, in which said lever is fulcrumed, and the clip E, securing the housing to the rail, substantially as described.

5. The combination, with the signal-actuating lever operated by a passing train and consisting of two parts resiliently jointed together, of an air-compressing device consisting of a cylinder and a piston operated by said lever, and of induction and eduction ports upon opposite ends of the cylinder, whereby the device operates as a dash-pot, substantially as described.

6. The combination, with the signal-actuating lever operated by the passing train, of the air-cylinder K, the piston L, actuated by said lever and operating non-air-tight in said piston, the induction-valve communicating with one end of said cylinder, and the eduction-valve S, communicating with the opposite end of the piston, substantially as described.

7. The combination of the signal-actuating lever B, provided with the cross-head G and the arm H, the housing C, inclosing said lever, and provided with the abutment D, the clamp-bolts E, securing said housing to the rail, the air-compressing cylinder K, secured to the housing, and the piston L, connected to the lever, substantially as described.

8. The combination, with the rail, of the lever B, provided with the cross-head G and the resiliently-jointed arm H, the housing C, in which said lever is fulcrumed, the abutment D of the housing fitted onto the rail, the clips E, securing the housing to the rail, the spring T, the air-cylinder K, secured to the housing, the piston L, the link M, connecting the piston-rod and the arm H of the lever, the induction-port N, the induction-valve P, the induction-pipe O, the eduction-port Q, the eduction-valve S, and the eduction-pipe R, all combined and arranged to operate substantially as described.

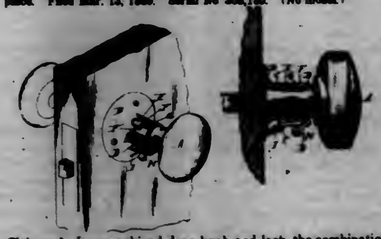
9. The combination, with the lever consisting of two parts resiliently jointed together and the air-compressing device actuated by the passing train, of the air-receiving cylinder, the riding and falling piston in said cylinder, the gear mechanism connecting it with the index-hand, the vent and automatically-operating valve for the escape of the compressed air from the cylinder after the piston is forced up, and the air-relief for the receding piston, substantially as described.

10. The combination of the air-receiving cylinder *e*, the piston *f*, actuated by the passing train, the piston-rod *g*, provided with a rack-bar, the clock mechanism provided with the actuating-spring and adapted to wind on its arbor, the gear-wheel *j*, engaging with the rack-bar, the gear mechanism connecting the index with the arbor of the clock mechanism, and the clutch *t* on the arbor, substantially as described.

11. The combination of the index-hands *s* on opposite sides of the signal-dial, the shaft r^2, the bevel-pinions $r r'$, journaled upon said shaft and carrying the index-hands, the intermeshing bevel-pinion *q*, the vertical shaft *o*, carrying the said pinion, the bevel-pinion *n* on the lower end of said shaft, the clock mechanism, the arbor *k* of the clock mechanism, and the bevel-pinion *m* on said arbor, engaging with the bevel-pinion *n*, substantially as described.

12. The combination, with the actuating-lever operated by a passing train and its air-compressing device actuated by said lever, of the hollow post *a*, provided with the box *c*, the time-signal mounted on top of said post, the air-receiving cylinder *e*, provided with the piston *f*, the pipe R, connecting the air-receiving cylinder with the air-compressing device, the clock mechanism mounted in the box *c*, the gear mechanism connecting the arbor *k* of said clock mechanism with the piston of the air-receiving cylinder, and the signal-staff and gear mechanism connecting said arbor with the index-hands, substantially as described.

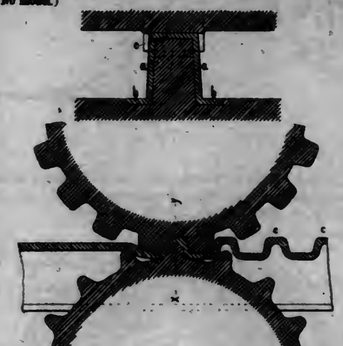
413,826. LOCKING DEVICE FOR DOOR-KNOBS. EPHRAIM HARBURN, Detroit, Mich., assignor of one-half to Robert Stewart, Jr., same place. Filed Mar. 13, 1889. Serial No. 303,195. (No model.)



Claim.—1. In a combined door knob and lock, the combination, with the shank of the knob, of the sliding sleeve D, provided with the tongue E, the longitudinal slot F, provided with the offset F', the pin or screw G on the shank of the knob engaging into said slot, and the notch C, formed on the cup of the rose, substantially as described.

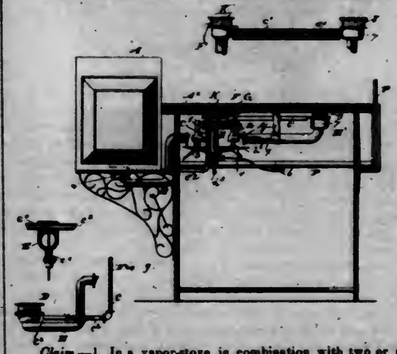
2. In a combined door knob and lock, the combination of the sleeve slidingly secured on the shank of the knob and provided with a projecting tongue, and a notch formed on the rose, into which said tongue is adapted to engage, and a latch or dog and a keeper independent of said tongue and respectively attached to the sliding sleeve and the rose, substantially as described.

413,827. RACK-RAIL FOR MOUNTAIN RAILWAYS. HERMANN R. LEUPOLD, Berne, Switzerland. Filed May 8, 1889. Serial No. 310,048. (No model.)



Claim.—A rack-rail consisting in a bar of wrought-iron or steel having hollow projections formed thereon, which are closed at the sides and the top, and which constitute gear-teeth, substantially as described.

413,828. VAPOR BURNER AND STOVE. JAMES A. MANN, Cleveland, Ohio. Filed Jan. 28, 1887. Serial No. 225,822. (No model.)



Claim.—1. In a vapor-stove, in combination with two or more burners, one of said burners being provided with a commingling-chamber, a pipe for carrying ignited gas from one burner to the other, and a pipe c^4, leading from said commingling-chamber into said gas-pipe for carrying into the latter unignited gas, as and for the purpose described.

2. In a vapor-stove, in combination with two burners, an induction or vapor tube for carrying the vapor from one burner to the other, a tube for carrying ignited gas from one of said burners to the other, a duct leading from said vapor-tube into said lighting-tube, and a valve controlling said duct, whereby gas may be thrown to both burners, substantially as described.

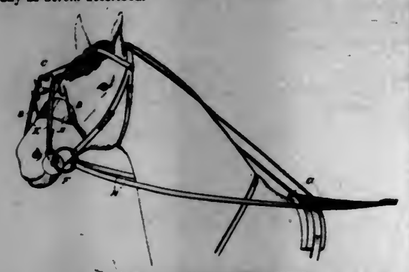
413,829. OVERDRAW BRIDLE ATTACHMENT. PENTALBA L. MANN, Hollister, Cal. Filed May 9, 1889. Serial No. 310,162. (No model.)

Claim.—1. A bridle having a standard adapted to be supported upon the face of the horse so as to project outwardly therefrom, said standard having guides for the check-rein, substantially as described.

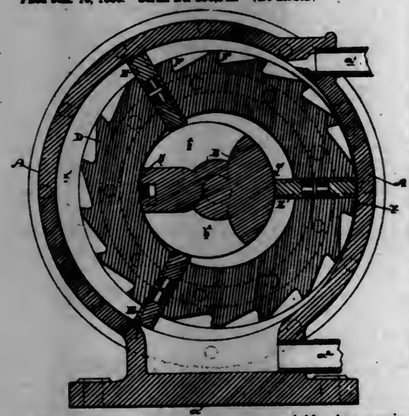
2. A bridle having standards provided with rein-guides D and the curved padded face-plate adapted to fit upon the face of the horse below the eyes, substantially as described.

3. A bridle having the padded face-plate and standards projecting therefrom, guides upon said standards, through which the check-rein may pass between the attachment at the bit and the top of the

horse's head, said checkrein having its opposite ends attached to the driving-reins, so as to be operated in connection therewith, substantially as herein described.



413,830. ROTARY STEAM-PUMP. ENOCH I. NICHOLS, San Francisco, Cal., assignor to the Nichols Manufacturing Company, same place. Filed Jan. 16, 1889. Serial No. 296,542. (No model.)



Claim.—1. In a rotary steam-pump, a revolvable piston-carrier forming a separate steam and water abutment and a separate steam and water space and having a single set of pistons, each of which alternately traverses and withdraws from said steam and water spaces, and a fixed center bolted to the main frame and having the inlet and outlet ports in its ends, substantially as described.

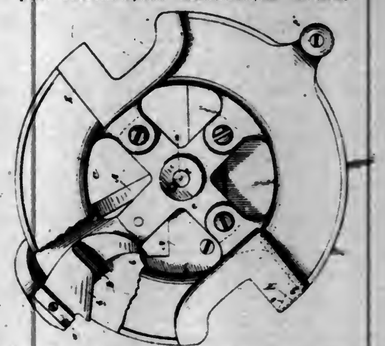
2. In a rotary steam-pump, the combination of the outer shell having a steam-inlet and a steam-exhaust port, an inner fixed center bolted to said shell and having a water-inlet port and a water-outlet port formed in its ends, a rotary annular piston-carrier between the outer shell and the fixed center, forming with each a contact-abutment and a steam and water space, respectively, and pistons mounted in said carrier and adapted to be projected into and withdrawn from said steam and water spaces, substantially as described.

3. In a rotary steam-pump, the combination of the outer shell having a steam-inlet and a steam-exhaust port, an inner fixed center having a water-inlet port and a water-outlet port formed in its ends and communicating with pipes at the ends of said center, a rotary annular piston-carrier between the outer shell and the fixed center, forming with each a contact-abutment and a steam and water space, respectively, and sliding pistons mounted on the piston-carrier, their ends bearing against the shell and the fixed center, whereby they are withdrawn from and projected into the steam and water spaces, substantially as described.

4. A rotary steam-pump comprising an outer shell having a steam-inlet and a steam-exhaust port, an inner center fixed to the shell and having a port with inlet and outlet connections through its ends and the ends of the outer shell, a rotary annular piston-carrier between the outer shell and the fixed center and mounted upon the ends of said center, said carrier having peripheral pockets and being so arranged as to form a contact-abutment with the outer shell and contact-abutment with the fixed center and steam and water spaces, as described, and sliding pistons mounted in the carrier and extending between the periphery of the fixed center and the inner circumference of the outer shell, whereby they are adapted to be projected into and withdrawn from the steam and water spaces, substantially as described.

5. In a rotary steam-pump, the combination of the outer shell with inlet and outlet steam-ports, the ported center fixed to the outer shell and having water inlet and outlet ports, the rotary piston-carrier located between the fixed center and the outer shell and forming opposite contact-abutments with each and opposite spaces for steam and water, said carrier having pockets upon its periphery, into which the steam is projected from the inlet-port, and sliding pistons mounted in the carrier and bearing between the fixed center and the outer shell, whereby they are projected into and withdrawn from the steam and water spaces, substantially as described.

413,831. FRUIT-PITTING MACHINE. ENOCH I. NICHOLS, San Francisco, Cal., assignor to the Nichols Manufacturing Company, same place. Filed Jan. 16, 1889. Serial No. 296,544. (No model.)



Claim.—1. In a fruit-pitting machine, a rotary wheel having a grooved periphery with perforated-bottomed sockets formed therein for the fruit, in combination with a fixed punch lying within the grooved periphery of said wheel, with its axis in the line of travel thereof, substantially as described.

2. In a fruit-pitting machine, a rotary wheel having a grooved periphery with perforated and slitted bottomed sockets formed therein for the fruit, in combination with a fixed punch lying within the grooved periphery of said wheel, with its axis in the line of travel thereof, and cutting-wings secured to each side of the punch and lying within the grooved periphery of the wheel and in the radial plane thereof, substantially as described.

3. In a fruit-pitting machine, a fixed bracket having at its base a journal-pin and a rotary wheel mounted on said pin and having a grooved periphery with open-bottomed sockets formed therein, in combination with a punch fixed to the top of the bracket and lying within the grooved periphery of the rotary wheel, with its axis in the line of travel thereof, and cutting-wings secured to each side of the punch and lying within the grooved periphery of the wheel and in the radial plane thereof, substantially as described.

4. In a fruit-pitting machine, a winged punch, in combination with a carrier having sockets with perforated and slitted bottoms for the passage of the winged punch, separated metal plates fitted in said sockets as seats for the fruit, and perforated slitted cushion-pieces under said plates, with their edges projecting into the space between the separated bases thereof, substantially as described

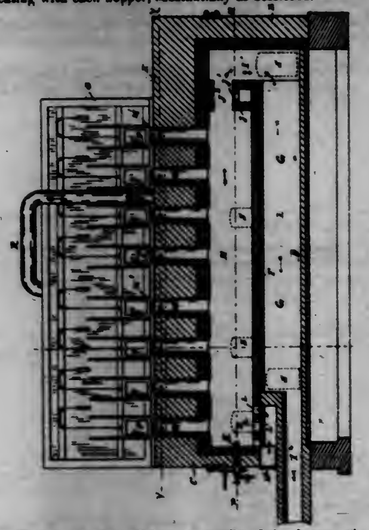
413,832. GARBAGE-CREMATING FURNACE. ALEXANDER L. PATRICK, Detroit, Mich. Filed Apr. 15, 1889. Serial No. 307,264. (No model.)

Claim.—1. In a cremating-furnace, the combination of the furnace-chamber, the fuel-burning device at the front end of said chamber, the hollow bridge-wall at the rear end thereof, having air-feeding devices, the return-flues below the furnace-chamber, the hoppers communicating with said chamber, and the vents communicating with the hoppers, substantially as described.

2. In a cremating-furnace, the combination of the furnace-chamber and return-flue, the air-flue at the front end of the furnace-chamber, the fuel-burning device at the said front end, the hollow bridge-wall at the rear end of said furnace-chamber having air-feeding openings, the hoppers above said furnace-chamber, the flue connecting said hoppers, the garbage-receptacle, and the ventilating-pipe leading from said receptacle to the said flue, which connects the hoppers, substantially as described.

3. In a cremating-furnace, the combination, with the furnace-chamber, of the feed-hoppers and the flue connecting said hoppers, substantially as described.

4. The combination, with the outer walls of the furnace and the furnace-chamber formed therein, of the rows of hoppers formed through the top of the furnace and the vent-flue closed at its ends and communicating with each hopper, substantially as described.

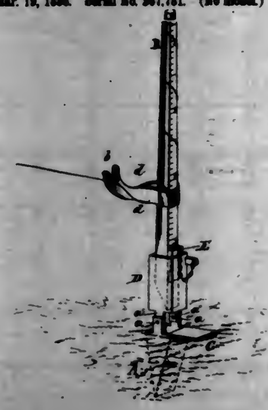


5. The combination of the outer walls of the furnace, the division-walls F and G, dividing the furnace into a furnace-chamber H and return-flues I, the downflue I', connecting the furnace-chamber and return-flues, the burners K in the front wall of the furnace, the perforations L in the division-wall F, the air-flue L', communicating therewith, the bridge-wall J, with its air-feeding devices, the openings M in the top of the furnace-chamber, and the closed vent-flue N, communicating with the openings M, all substantially as described.

6. The combination, with the furnace and furnace-chamber extending on top and provided with openings through the top of the furnace, and the hoppers communicating with said openings for filling in the garbage, substantially as described, of the garbage-receptacle elevated above the top of the furnace and along one side thereof, the sliding doors P in proximity to the tops of the hoppers, the closed vent-flue communicating with the said hoppers, and the ventilating-pipe R, leading from the receptacle into the ventilating-pipe connecting said hoppers, substantially as described.

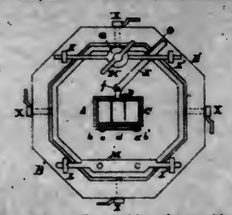
7. In a cremating-furnace, the combination of the furnace-chamber, the hollow bridge-wall, the air-supply, the hoppers, the flue connecting said hoppers, the garbage-receptacle, and the ventilating-pipe leading from the receptacle to said flue, substantially as and for the purpose described.

413,833. WIRE-STRETCHER. ROBERT G. PIKE, Jr., Brooklyn, N. Y. Filed Mar. 19, 1888. Serial No. 267,781. (No model.)



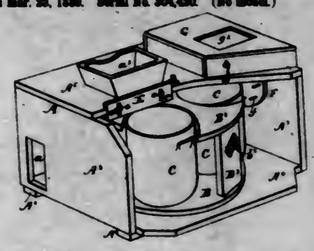
Claim.—A wire-stretcher consisting of the wedge A, provided with flange C, and the socket D, hinged to said wedge, in combination with the lever B, fitted to socket D, substantially as shown.

413,834. DETACHABLE HEAD FOR BRICK OR TILE MACHINES. EDMUND ROTHWELL, NAPOLEON L. DARBY, and ALBERT ANDREWS, Little Falls, Minn. Filed Nov. 3, 1888. Serial No. 290,056. (No model.)



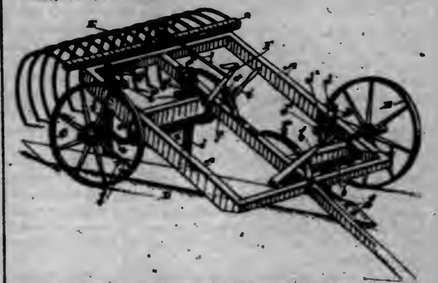
Claim.—In a brick or tile machine, the combination of a body B, plate B', set-screws X, and eyebolts L and L' K and K', combined with the hinge-bar M, plate A, press-bar G, screw I, and handle H, all substantially as and for the purpose set forth and described.

413,835. GRAIN-TALLY. FRANCIS M. ROWE, Middlebury, Ind. Filed Mar. 23, 1889. Serial No. 304,430. (No model.)



Claim.—A grain-register consisting of a frame having a hopper in the top and perforations in the bottom and side thereof, a revolving measure-carrier having open sides, a perforated bottom disk, removable measures therein, and segmental arms level with the top of said measure, standards uniting said disk and arms, laterally-extended beveled projections upon said standard, and registering gearing operated by said projections, substantially as described.

413,836. CULTIVATOR. ISAAC SYLVESTER, Colusa, Cal., assignor of one-half to R. A. Gray, same place. Filed June 26, 1889. Serial No. 315,057. (No model.)



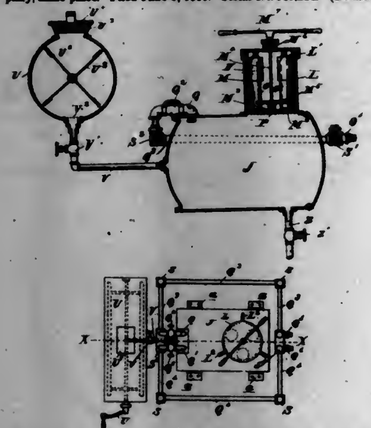
Claim.—1. In a cultivator, the frame and the independent axles carrying wheels, one of said wheels being near the front at one side and the other near the rear at the other side, in combination with the diagonally-arranged cutting-blade extending from one of the front corners to one of the rear corners of the machine and standards extending from said blade and adjustably secured to the frame, substantially as described.

2. In a cultivator, the frame, the independent wheels carrying it, one arranged near the front at one side and the other near the rear at the other side, the independent crank-axles on which said wheels are mounted, and the levers for operating them, in combination with the diagonally-arranged cutting-blade carried by the frame and extending from one of its front corners to one of its rear corners, substantially as described.

3. In a cultivator, the frame, the independent wheels, and the independent axles upon which said wheels are mounted, in combination with a diagonally-arranged cutting-blade carried by the frame and extending from one of its front corners to one of its rear corners, a rake attachment at the rear of the frame, and a lever for operating the same, substantially as described.

4. A cultivator consisting of the frame, the wheels carrying it, and the independent crank-axles and the levers for operating them, the diagonally-arranged cutting-blade, the adjustable standards connected with the blade and frame, and the swinging rake attachment at the rear of the frame, substantially as herein described.

413,837. **CHEMICAL-ENGINE.** RANDALL T. VAN VALKENBURG, Muskegon, Mich., assignor to the Muskegon Chemical Fire Engine Company, same place. Filed June 5, 1889. Serial No. 313,221. (No model.)



Claim.—1. In a chemical-engine, the combination, with the generator, of a quadrilateral system of discharge-pipes divided by central partitions and two independent discharge-pipes connecting each half thereof with the generator, substantially as described.

2. In a chemical-engine, the combination, with the generator, of a quadrilateral system of discharge-pipes divided by central partitions, perforated caps contained in enlarged couplings or sections of said system, and two independent discharge-pipes connecting said system with the generator, substantially as described.

3. The combination, with the generator, of a quadrilateral system of discharge-pipes provided with the couplings S, S', and S^2, the dividing-partitions *c* in the couplings S' S^2, the hose-connections Q^3 and Q^4 on the coupling S', and the two independent discharge-connections Q and Q' from the generator to the coupling S^2, substantially as described.

4. The combination, with the generator, of the quadrilateral system of discharge-pipes Q^3 and Q^4, the couplings S' and S^2 in said system, the dividing-partitions *c* in said couplings, the hose-connections Q^3 and Q^4 on the coupling S', the corner-couplings S, and the perforated caps T, removably secured in the couplings S and S', substantially as described.

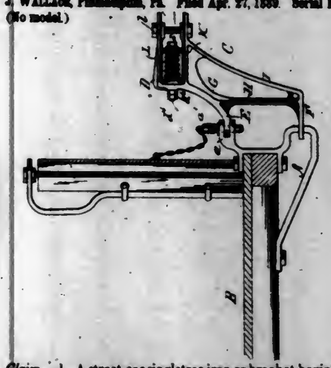
5. In a chemical-engine, the combination of the generator, the dome L, provided with the removable head L', the acid-containing vessel M, detachably fitting therein and provided with the ribs M', engaging into grooves in the cylindrical wall of the dome, the acid-holding pocket secured to the walls of the vessel M, the breaker-shaft M^4, provided with the breaker-arms M^3, and the lever M^7, substantially as described.

6. In a chemical-engine, the combination of the frame, a generator supported therein, the quadrilateral system of discharge-pipes, the couplings and hose-connections for said pipes, the dome on the generator, the perforated bottom, the breaker and the pockets in said dome, the stirring-tub communicating with the generator, and the stirrer in said tub, the parts being adapted to serve substantially as and for the purpose described.

7. In a chemical-engine, the combination of the frame, the generator supported therein, the quadrilateral system of pipes having the couplings and hose-connections, the stirring-tub having the stirrer, the pipe leading from the said tub to the generator and having a valve, the dome on the generator, the detachable acid-containing vessel in said tub having the pockets and perforated bottom, the breaker in said vessel, and the catch for retaining the breaker, all arranged and adapted to operate substantially as and for the purpose described.

8. In a chemical-engine, the combination of the frame, the generator supported therein, the quadrilateral system of discharge-pipes divided by central partitions, two independent discharge-pipes connecting each half thereof with the generator, the couplings for the said pipes, and the hose-connections, all substantially as described.

413,838. **STREET-CAR COUPLING.** GEORGE R. ALLEN and EDWARD J. WALLACE, Philadelphia, Pa. Filed Apr. 27, 1889. Serial No. 308,890. (No model.)



Claim.—1. A street-car singletree iron or bracket having an outer open end, a sliding casing in said open end, draft-springs in said casing, and a singletree coupling-pin mounted in said open end and sliding casing, substantially as set forth.

2. A street-car singletree iron or bracket C, having an open-end yoke D, a sliding open-end casing K, bolt d^3, and spring L, substantially as set forth.

3. A street-car singletree iron or bracket C, having open-end yoke D, provided with elongated slots, a sliding open-end casing K, having pin-openings registering with said slots, a bolt d^3, and spring L, substantially as set forth.

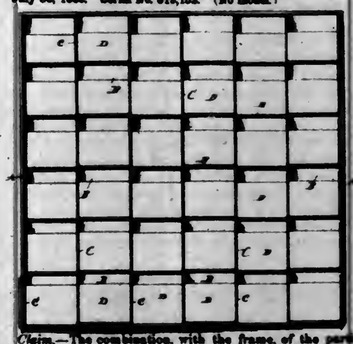
4. A street-car singletree iron or bracket having a fixed yoke with open end provided with elongated slots, a sliding open-end casing having pin-openings registering with said slots, a bolt passing through the rear ends of said yoke, and a spring or springs between the head of the bolt and the rear end of said sliding casing, substantially as set forth.

5. A street-car singletree iron or bracket having an open end, sliding casing, a draft-spring therefor, and guides or ways for said yoke, substantially as set forth.

6. A street-car singletree iron having limbs E and F, yoke D, provided with slots d^3, and ways or guides d^4, sliding casing K, and bolt d^3, with adjusting mechanism and spring or springs L, substantially as set forth.

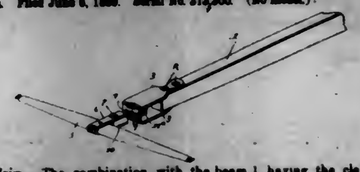
7. A street-car singletree iron or bracket having an outer open end, guides or ways on said end, a sliding casing in said open end between its guides or ways, draft-springs of different capacities in said sliding casing, and a singletree coupling-pin mounted in said open end and sliding casing, substantially as set forth.

413,839. **HOG-CAGE.** JOHN W. ALBACK, Connecton, Ohio. Filed July 30, 1888. Serial No. 319,152. (No model.)



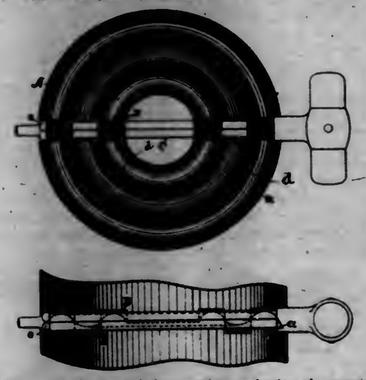
Claim.—The combination, with the frame, of the partitions secured at their ends to the frame and separate strips bent to form cells placed between the partitions and secured at their ends only, the cells being free to adapt themselves to large or small commodities, substantially as described.

413,840. **COUPLING FOR CLEVISES.** CORNELIUS AVERITT, Blakely, Ga. Filed June 6, 1889. Serial No. 313,300. (No model.)



Claim.—The combination, with the beam 1, having the clevis-strap 3 bolted to the sides thereof, and the horizontal key-hole slot 4, in combination with the singletree 5, the block 10, and the clip 6, for connecting the block and tree, and the key 8, having the shank 9, and vertical fins 11, adapted to fit within the slot 4, substantially as specified.

413,841. **PIPE-DAMPER.** HENRY W. AVERY, Cleveland, Ohio, assignor to the Avery Stamping Company, same place. Filed Jan. 31, 1889. Serial No. 297,864. (No model.)



Claim.—1. A sheet-metal damper-plate E, having the annular corrugations *d d* and the alternately-bent straps B B', the upper straps being bent from the upwardly-bent corrugations and the lower straps from the downwardly-bent corrugations, substantially as and for the purpose specified.

2. A sheet-metal damper-plate A, having the annular corrugations *d d*, the alternately-bent straps B B', and the downwardly-bent annular flange *a*, combined with a damper-rod C, having a shoulder *c*, substantially as and for the purpose specified.

3. A sheet-metal damper-plate having a substantially-horizontal rim with annular corrugations, a conical central part with an opening therethrough, and the alternately-bent straps B B', substantially as and for the purpose specified.

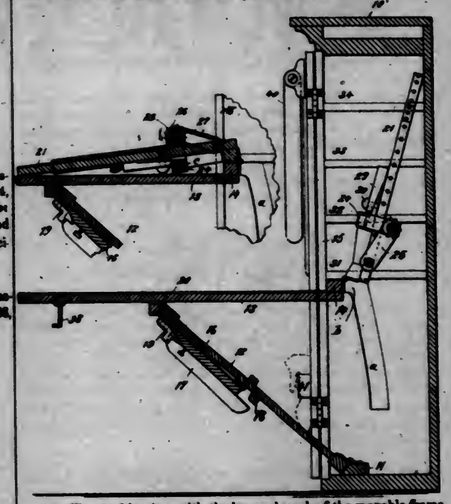
4. A sheet-metal damper-plate having the alternately-bent straps integral therewith, combined with the damper-rod C, having the shoulder *c* upon the upper side of said rod, whereby the weight of the damper causes it to engage with said shoulder *c*, substantially as and for the purpose specified.

413,842. **KITCHEN-CABINET.** JOHN H. BALL, Kansas City, Kans. Filed Apr. 2, 1889. Serial No. 305,708. (No model.)

Claim.—1. The combination, with a kitchen-cabinet having an open front provided with a door and guideways in the lower portions of its sides extending upwardly and outwardly to the door-opening, of an ironing-board of a length to pass through the door-opening into the cabinet, and provided at its inner end with projections entering said ways, whereby the board may be raised from its operative position, pushed inwardly, and lowered to completely inclose it within the cabinet, substantially as set forth.

2. The combination, with a cabinet formed with slots *a* and *b*, of a brace 12, hinged to the flooring of the cabinet, and an ironing-board hinged to the brace and provided with a cross-bar which rides in the slots *a* and *b*, substantially as described.

3. The combination, with an ironing-board, of a bosom-board hinged thereto, a frame arranged in connection with the bosom-board, a roller supported by the frame, a ratchet-wheel carried by the roller, a pawl arranged to engage the ratchet, and a frame-locking cam pivoted to the under side of the bosom-board and adapted to engage the lower cross-piece of the frame and press the roller against the upper side of said bosom-board, substantially as described.

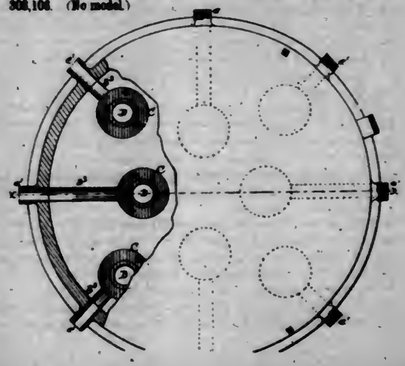


4. The combination, with the bosom-board, of the movable frame 24, embracing it, the roller 23, journaled in the side bars of the frame and extending across the upper side of the board, links pivoted to the board and to the frame, a cam for operating the frame to bring the roller against the board, and means for adjusting the roller, substantially as set forth.

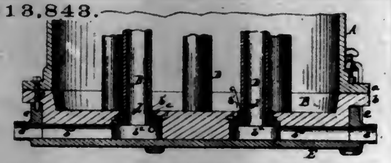
5. A kitchen-cabinet having an open front, upwardly and outwardly extending slots or ways *a b* in its sides, the lower ends of the slots being about midway between the vertical edges of the sides, the ironing-board having a cross-piece 14 entering said slots or ways, a bosom-board hinged at its rear end to the rear end of the ironing-board on the upper side thereof, a brace 12, hinged at its upper end to the lower side of the ironing-board between the ends thereof and at its lower edge hinged to the cabinet-bottom in front of the lower ends of the slots or ways, the bench 16, hinged to the outer side of the brace between its ends, whereby the bosom-board will occupy the space behind the ironing-board and the bench the space in front thereof when the said parts are swung into the cabinet, substantially as set forth.

6. The combination, with a cabinet, of a brace hinged therein, a wash-bench hinged to the brace, a catch arranged in connection with the wash-bench, an ironing-board hinged to the brace, and a transverse strip carried by the ironing-board and arranged to ride in grooves or recesses formed in the cabinet, substantially as described.

413,843. **APPARATUS FOR MAKING PRINTERS' ROLLERS.** LEANDER K. BUSHMAN, New York, N. Y. Filed Mar. 13, 1889. Serial No. 303,106. (No model.)



413,843.



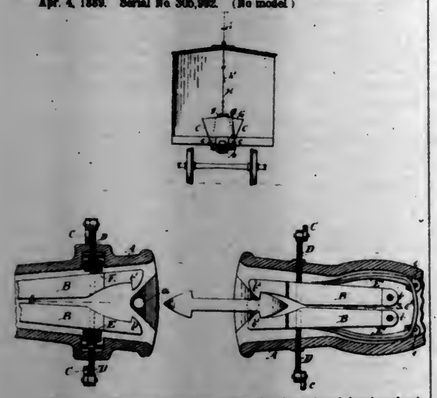
Claim.—The combination of the cylinder, its mold-tubes, the lower head having the holes for the mold-tubes, and the channels running from the holes to the edge of the head, with the bottom provided with the nozzles, as set forth.

413,844. **MARKING-PUNCH.** VINCENT BIRNIE, Greenville, N. J. Filed Jan. 3, 1889. Serial No. 295,275. (No model.)



Claim.—In a changeable marking-punch, the combination of the solid bar-like stock A, having a slot *c* in its forward end, the peripherally-notched projecting marking-wheel B, arranged to rotate within said slot and having a series of symbolically-marked stamping projections *g*, also corresponding symbols on its face opposite said projections, and the side lever-catch C, arranged to engage directly with the notches in the peripheral surface of the marking-wheel, between the projections *g*, and a spring operating to maintain said engagement, substantially as shown and described.

413,845. **CAR-COUPLING.** WILLIAM M. BUSCH, Sheldon, Mo. Filed Apr. 4, 1889. Serial No. 305,992. (No model.)



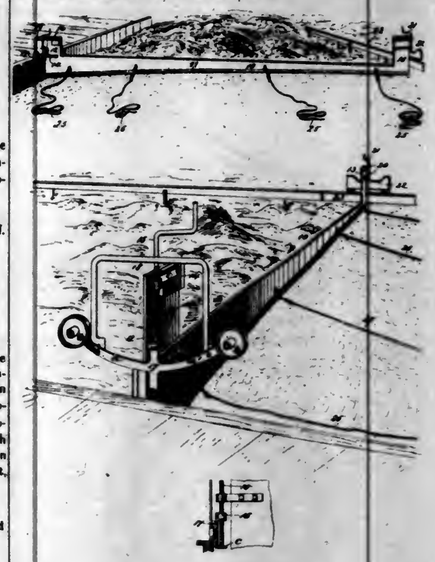
Claim.—1. The combination, with the draw-head having horizontal spring-pressed coupling-jaws provided with upwardly-projecting operating-levers C C, pulleys *g g* on the end of the car, and the chain G, connecting the upper ends of the levers and passing upward between the pulleys, of the vertically-sliding rod H, connected at its lower end to the chain above the pulleys and provided with a laterally-projecting catch h, adapted to engage a projection on the car and hold the rod in its raised position, substantially as set forth.

2. The combination, with the draw-head having longitudinally-extending hooked jaws B, pivoted at their inner ends within the inner end of the head, and operating-levers, of two plate-springs E E, secured at *e e* and bearing against the sides of the jaw, and a U-shaped spring *e'*, embracing the springs E E, substantially as set forth.

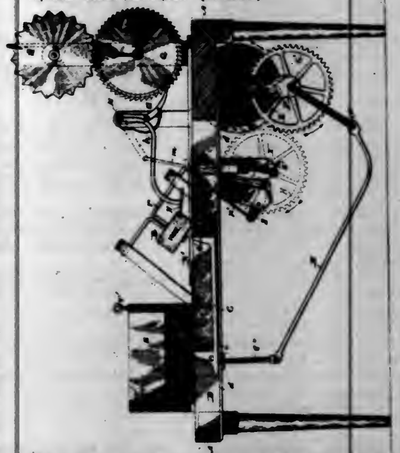
413,846. **ROAD-GRADER.** HENRY J. CHAMBERS, Beatrice, Nebr., assignor to William H. Duffett, same place. Filed July 31, 1889. Serial No. 319,262. (No model.)

Claim.—1. The combination, with a board 10, of trucks secured to the ends thereof, and central rails 23, one of the trucks being arranged to ride upon said rails and the other truck being arranged to ride upon the curb, substantially as described.

2. The combination, with a board 10, having a shoe 11, and provided with draft-ropes 25, of trucks, center guide-rails, upon which one of the trucks is arranged to run, the other truck being arranged to ride upon the curb, and an adjustable connection, substantially as described, between the board and the trucks.



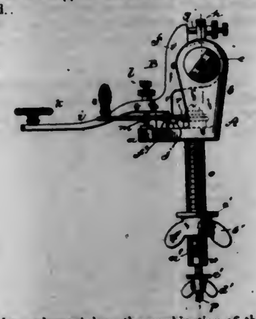
413,847. **COMBINED LETTER-STAMP CANCELER, DATER, AND NUMERICAL REGISTER.** HUGH C. CRANE, Forest, Miss. Filed July 11, 1888. Serial No. 279,647. (No model.)



Claim.—The combination of the stamp N, provided with the table A A, having the letter-box B, the guides *k* and *k'*, the stop P and its connecting-pitman, the carriage C, having the fingers *c* and *c'*, the way *d d*, the projecting arms *e'*, the pitman E, the crank *f* of the shaft F, the cog-wheels G and G', the shaft I and the cog-wheel H, the shaft K and the spur-wheel *g* and the fly-wheel L, the cam S' and lever S, the rod or axle M and its supports *a* and *a'*, with its arm *h* and the pitman *m*, the ink-pad R, the rod *r* and its supports, the connecting rod or pitman *r'*, the pawl O and its spring, the regulating-screws T and T', and the registering device Q and Q', as and for the purposes substantially as described.

413,848. **TELEGRAPH-KEY.** EUGENE S. CHILL, Mount Carmel, Ill. Filed Mar. 21, 1889. Serial No. 304,106. (No model.)

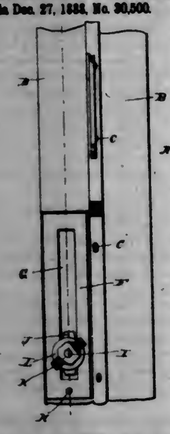
Claim.—1. In a telegraph-key, the combination, with the key-lever B, provided with the annular internally-grooved end *c*, of the screws C, provided with grooved inner ends, the balls *d*, placed between the ends of the screws C and the annular ends *c* of the key-lever, and the supports and electrical connections, substantially as specified.



2. In a telegraph-key, the combination of the head A, provided with the apertured and internally-threaded base-plate *a*, the tubular leg *v*, the inner leg *p*, the insulation separating the two legs, the contact-disk *r*, and the circuit-closing lever *s*, placed upon the inner leg *p*, the key-lever B, provided with the contact-arm *f'* and the internally-grooved annular end *c*, the grooved screws C, and the balls *d*, substantially as specified.

3. In a telegraph-key, the combination of the head A, provided with the apertured and internally-threaded base-plate *a*, the tubular leg *v*, the inner leg *p*, the insulation separating the two legs, the contact-disk *r* and the circuit-closing lever *s*, placed upon the inner leg *p*, the key-lever B, provided with the contact-arm *f'* and the internally-grooved annular end *c*, the grooved screws C, the balls *d*, the limit-screw *g*, and the retractile spring *m*, substantially as specified.

413,849. **SASH-FASTENER.** WILLIAM DENGOLL, Brockville, Ontario, Canada. Filed Jan. 30, 1889. Serial No. 298,092. (No model.) Patented in Canada Dec. 27, 1888, No. 30,500.



Claim.—1. A sash-supporter comprising a plate secured to the window-frame below the sash and adapted to bear against the lower edge of the sash and adjustable vertically along the window-frame, as set forth.

2. A sash-supporter comprising a longitudinally-slotted plate arranged adjacent to the window-frame below the sash, the screw passing through the slot in the plate and secured in the window-frame, and the thumb-nut mounted on the screw and bearing against the outer side of the plate, as set forth.

3. A sash-supporter comprising the longitudinally-slotted plate arranged below the sash and adjacent to the window-frame, the screw passing through the slot in the plate and into the window-frame and having lateral wings fitting in the slot in the plate, and the thumb-nut mounted on the screw and bearing against the outer side of the plate, as set forth.

413,850. **STOVE-PIPE HANGER.** CHARLES W. BUNDY, Emerald Grove, Wis. Filed June 6, 1889. Serial No. 313,353. (No model.)

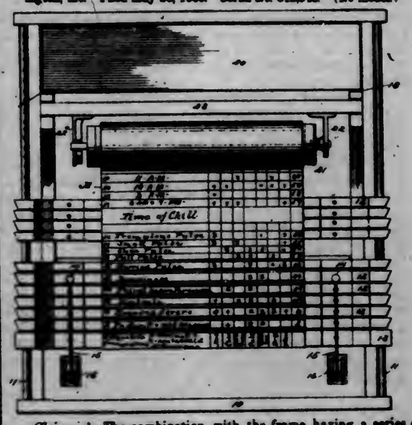


Claim.—1. In a device for the purpose described, the combination, with the disk and the parallel wires secured thereto and having a block secured at their lower ends, of the wire D, passed loosely through a vertical opening in said block and made adjustable therein, substantially as and for the purpose described.

2. The combination, with the disk, the parallel wires, and the block secured to the lower ends of the wires, of the wire D, vertically adjustable within said block, said wire D being provided at its upper end with loops loosely embracing the parallel wires, and at its lower end with hooks D^3 and D^4, substantially as and for the purpose described.

3. The pipe-hanging device herein described, the same comprising, in combination, a disk provided upon its upper face with a screw, the parallel wires secured at one end to the lower face of the disk and having a block secured to their opposite ends, the wire D, vertically adjustable within said block and provided at its lower end with hooks, the wire E, bent to form the loop E^2 and the horizontal arms E^3, and the sheet-metal band F, provided at its ends with loops F', to engage the arms E^3, substantially as described.

413,851. **MECHANICAL REPERTORY.** JOSEPH J. FOWLER, Washington, No. Filed May 26, 1889. Serial No. 312,344. (No model.)



Claim.—1. The combination, with the frame having a series of adjustable parallel transverse strips, of a roller having an indicating or symptom-carrying fabric adapted to extend over and between said strips, substantially as set forth.

2. The combination, with the frame having a series of parallel transverse strips adjustable in the same plane, of the indicating or symptom-carrying fabric and the block 30 to rest thereon for inserting the fabric between the strips, substantially as set forth.

3. The combination, with the frame having a series of parallel transverse strips adjustable in the same plane and having apertures, of the springs having cords provided with pegs to enter said aper-

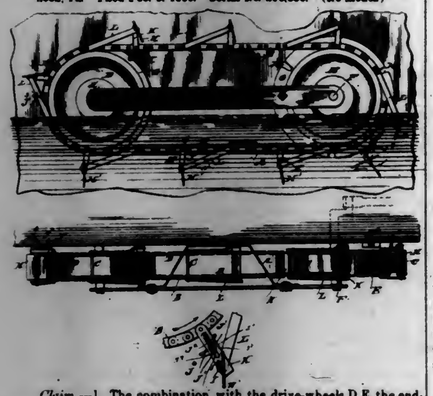
tures and draw the strips toward one end of the frame, substantially as set forth.

4. The combination, with the frame having parallel rods 11, of the strips 12, having apertures *a*, through which the rods pass, and apertures *b*, the pulleys *c*, the cords 15, passing over said pulleys and having pegs to enter apertures *b*, and the springs 17, connected to the opposite ends of the cords, substantially as set forth.

5. The combination, with the frame having ways 18, openings *f f*, and the removable roller-supporting frame 20 in said ways, of the fabric-carrying rollers transferable from said removable frame to the openings *b*, and the adjustable strips 12, substantially as set forth.

6. The combination, with the frame having a series of parallel adjustable strips in the same plane, of a roller provided with a strip ruled transversely to form spaces to register with the exposed faces of the strips, and similar numbers at the ends of each ruled space to show when the space is on its proper strip, substantially as set forth.

413,852. CHAIN PROPELLER. NELSON W. FRENCH, Tunkhannock, Pa. Filed Feb. 6, 1889. Serial No. 298,856. (No model.)



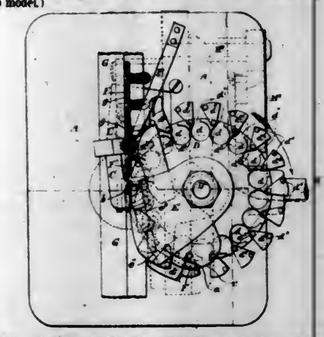
Claim.—1. The combination, with the drive-wheels D E, the endless chains traveling thereon, and fixed projections secured to the side of the boat and disposed one near the lower rear edge of the wheel E and the other near the upper front edge of the wheel D, of blades pivotally secured to the endless chains, as shown, and automatically-operated stops carried by the said chains and normally holding said blades in operative position, said stops adapted to engage the fixed projections on the boat and be thereby released from contact with the blades, substantially as and for the purpose hereinbefore described.

2. The combination, with the drive-wheels D and E, the endless chains mounted thereon, provided with arms K, normal to the chain, and projections J^3 J^4, fixedly secured to the sides of the boat and disposed one near the lower rear edge of the wheel E and the other near the upper front edge of the wheel D, of the blades H', provided near the upper portion of their ends with journals, said journals pivoted in the outer ends of the arms K, and automatic stops on one of each pair of arms K, adapted to engage the blades and hold them in position for operation and arranged to engage the fixed projections to release said blades, substantially as and for the purpose hereinbefore described.

3. The combination, with the drive-wheels D E, endless chains mounted thereon, provided with a series of pivoted frames J, consisting of projecting arms K and the brace-rods L, the blades H', pivoted above their central portion in the lower ends of the arms K, and the fixed projections J^3 J^4, secured to the sides of the boat and disposed one near the lower rear edge of the wheel E and the other near the upper front edge of the wheel D, of spring-actuated stops secured to one of each pair of said arms K, said stops provided with a head portion J^5, provided with a recess J^6, a long projecting portion J^7, a short projecting portion j^8, having a beveled edge, whereby said stop will be raised when the blades H' are operated in a backward direction, thereby causing the upper ends of said blades to engage said beveled portion, raise the stop, and slip into the recess, and a projection J^8, adapted to engage the fixed projections J^3 J^4, substantially as and for the purpose described.

4. The combination, with the drive-wheels D E, provided with a series of transverse recesses H in their peripheries and annular recesses G G at their peripheral edges, as shown, of the endless chains formed of flat links B, traveling in said annular recesses G, connected by cross-bars C C, adapted to engage the recesses H H in the wheels D E, pivoted frames secured to said chains the blades pivotally mounted in said frames, as shown, automatically-operated stops secured in said frames J, adapted to normally hold the blades H' in operative position while in motion in the water, and fixed projections J^3 J^4, secured to the sides of the boat and disposed one near the lower rear edge of the wheel E and the other near the upper front edge of the wheel D, said automatic stops adapted to engage said projections J^3 J^4 and be released from contact with the blades, substantially as and for the purpose shown and described.

413,853. CORD-LOOPING ATTACHMENT FOR SEWING-MACHINES. MARSHALL GARDNER, Aurora, Ill., assignor, by direct and mesne assignments, to James Stone and Alice M. Ball, same place, and Elizabeth Florsheim, Chicago, Ill. Filed Dec. 1, 1887. Serial No. 256,595. (No model.)



Claim.—1. The combination, with the work-plate and needle of a sewing-machine, of a loop-forming device embracing a revolving plate having a marginal surface located adjacent to the needle and provided with peripheral recesses and movable pins or equivalent means engaging the cord and acting to draw the same into said recesses and to retain the cord-loops therein during the action of the stitching devices upon the cord, substantially as described.

2. The combination, with the stitch-forming devices of a sewing-machine, of a revolving plate provided with a series of marginal recesses, and means for drawing a cord into said recesses to form a series of loops, comprising swinging arms provided with pins entering the recesses and engaging the cord and a cam actuating said arms in the rotation of the plate, substantially as described.

3. The combination, with the stitch-forming devices of a sewing-machine, of a revolving plate D, provided with recesses *d d*, opening through the vertical marginal surface of the plate, a series of arms d^3 d^3, provided with pins d^4, entering the recesses, and with studs d^5 d^5, and a stationary cam-plate E, provided with cam-surfaces e' e^2 e^3, substantially as described.

4. The combination, with the stitch-forming devices of a sewing-machine, a revolving plate D, provided with marginal recesses opening through the vertical marginal surface of the plate, of a series of loop-holding pins movable into and out of said recesses, means for actuating said pins, and a guide for the cord directing the latter against the edge of the plate behind the pins, substantially as described.

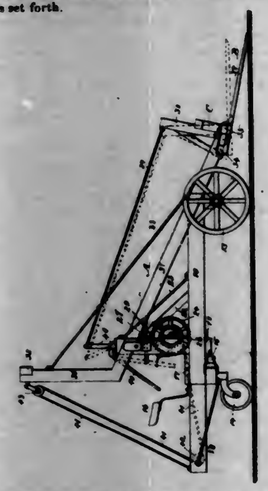
5. The combination, with the stitch-forming devices of a sewing-machine and a loop-forming device embracing a circular revolving plate provided with peripheral recesses, and means for drawing a cord into said recesses to form a series of loops, of means for actuating said plate, embracing a ratchet on the plate and a reciprocating pawl actuated from the moving parts of said stitch-forming devices, substantially as described.

6. The combination, with the stitch-forming devices of a sewing-machine and a loop-forming device embracing a revolving plate provided with marginal recesses, a series of pins movable into and out of said recesses, swinging arms supporting the pins, and means for actuating said arms, of a spring adapted for engagement with said arms and constructed to act upon the finished strip to release the loops thereof from said pins, substantially as described.

413,854. COMBINED HAY RAKE AND STACKER. PETER HEISTE, Grand Island, Nebr. Filed Apr. 19, 1889. Serial No. 307,666. (No model.)

Claim.—1. The combination, with the main frame, of a forwardly-inclined lifting-frame journaled thereon near its rear upper end, and provided in rear of its pivotal point with an upwardly-projecting extension 30 and at its front end with a pivoted rake, a lifting-rope connected to the upper end of said extension, and a second rope connected with the rake for holding it in position while raking and rising, and permitting it also to dump, substantially as set forth.

2. The combination, with the main frame and the vertically-swinging lifting-frame journaled thereon, of a rake journaled on the forward end of the lifting-frame and having an upward-extending arm, an angle-lever mounted on the rear portion of the main frame and having an upwardly-extending member, and a connection between the upward-projecting member of said lever and the said rake-arm, substantially as set forth.



3. The combination, with the main frame and the vertically-swinging lifting-frame provided at its forward end with a dumping-rake having an upwardly-extending arm, of a lever journaled on the main frame and provided with an upwardly and a downwardly extending arm, means for locking the downwardly-extending arm to the main frame, and a connection between the upwardly-extending arm and the rake-arm.

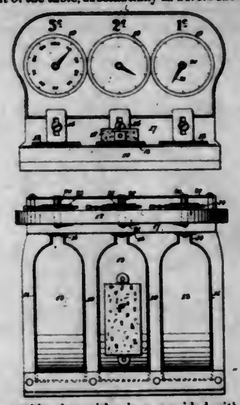
4. In a hay rake and stacker, the combination, with a base-frame and a perpendicular frame secured to the base-frame, of a lifting-frame fulcrumed upon the perpendicular frame, having an angular rear end overhanging the rear portion of the base-frame, a rake journaled in the forward end of the lifting-frame, an angled lever fulcrumed upon the perpendicular frame between the side bars of the lifting-frame, a rope connecting the angled lever and the rake, a drum journaled in the perpendicular frame, having a toothed head, a shaft journaled above said drum, provided with a pinion meshing with the head, a pulley secured to the rear end of the lifting-frame, a second pulley secured to the rear extension of the base-frame, and a rope secured to said rear extension, passing over the said pulleys, and connecting with the said drum, all combined for operation substantially as shown and described.

5. In a hay rake and stacker, the combination, with a portable frame, of an angular lifting-frame fulcrumed at the rear of its center, brace-rods connecting the members of the said frame, and a rake journaled in the forward end of the lifting-frame, and a rope connected with the rake for holding it in position while raking and rising and permitting it also to dump, all combined for operation as and for the purpose specified.

413,855. STAMP-REGISTER. ELTON B. HEFFNER, Bootner, Mo. Filed Apr. 26, 1889. Serial No. 308,679. (No model.)

Claim.—1. The combination, with the base 10 and the apertured plate 12, secured to the base and provided with a dial, of the post 20, journaled in the plate 12 and provided with the hand 21 and the ratchet-wheel 23, the table 13, pivoted to the base and projecting through the aperture of the plate 12, the dog 24, secured to the projecting end of the table and engaging the ratchet-wheel, and a pawl 25, for preventing backward movement of the ratchet-wheel, substantially as herein shown and described.

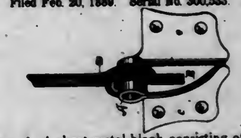
2. The combination, with the base 10 and apertured plate 12, provided with a dial, of the post 20, provided with the hand 21 and ratchet-wheel 23, the table 13, pivoted to the base and projecting through the aperture of the plate 12, the dog 24, secured to the end of the table, projecting through the said plate, a pawl for preventing the backward movement of the ratchet-wheel, and means for limiting the movement of the table, substantially as herein shown and described.



3. The combination, with a base provided with a series of depressions or recesses in its upper face, and a plate projected vertically from said base at the rear, having openings therein registering with the base-recesses, of a spring-actuated table pivoted at the forward end in each of the said recesses of the base, extending through the opening in the plate, a guide-plate adjustably held above each table, a dial produced upon the vertical plate over each of the tables, a post projected through each dial carrying an indicator at its outer end and a ratchet-wheel behind the dial, and a dog contacting with each of the said ratchet-wheels and secured to the table immediately below the same, substantially as and for the purpose specified.

4. The combination, with a base provided with a series of recesses in its upper face, a perpendicular plate projected upward at a right angle to the base at the rear, having openings therein registering with the base-recesses, a table pivoted at its forward end in each of the base-recesses, a spring secured to the base and bearing against the under face of each table, and a pad secured to the upper face of said tables, of a guide-plate adjustably held above each table, a dial produced upon the vertical plate over each of the tables, a post projected through each dial carrying an indicator at its outer end, and a ratchet-wheel behind the dial, and a dog contacting with each of the said ratchet-wheels and secured to the table immediately below the same, substantially as and for the purpose specified.

413,856. SHEET-METAL EAR FOR KETTLES, &c. FRED W. JUDD, Cleveland, Ohio, assignor to the Avery Stamping Company, of Ohio. Filed Feb. 20, 1889. Serial No. 300,533. (No model.)



Claim.—1. A sheet-metal blank consisting of a rectangular part *a*, the ends *c c*, and the substantially-triangular intermediate parts *b b*, for the purpose specified.

2. A sheet-metal kettle-ear consisting of the vertical double rib B, having a hole *b'* and a cylindrically-bent part A upon its upper edge, and the wings *c c*, bent in opposite directions substantially at right angles to said rib, for the purpose specified.

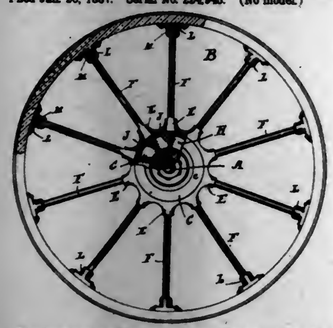
413,857. RAIL-JOINT. STEVEN B. KINARD, JAMES B. MCKINLEY, and JAMES R. THAYER, Towaliga, Ga. Filed June 14, 1889. Serial No. 314,223. (No model.)



Claim.—1. The combination of the chair, the rails secured therein, and the springs secured to the chair and the rails, as set forth.

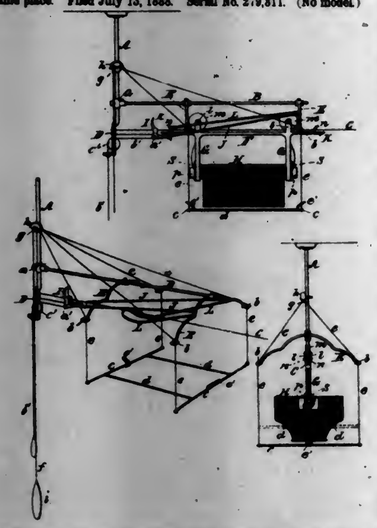
2. The combination of the chair having vertical flanges at its side edges, the rails fitting in the chair and having longitudinal slots, the bolts secured in the flanges of the chair and passing through the longitudinal slots of the rails, and the springs having their opposite ends secured to the rails and the chair, as set forth.

418,858. WHEEL FOR VEHICLES. HOSEA W. LIBBEY, Boston, Mass. Filed Jan. 20, 1887. Serial No. 224,943. (No model.)



Claim.—The herein-described vehicle-wheel, consisting of the hub comprising the two bands having flanges fitting together to provide a chamber, the two sets of springs arranged in said chamber, the spokes having their inner ends rigidly connected to the outer of said bands and their outer ends bearing against springs or cushions carried by the felly of the wheel, substantially as shown, and for the purpose described.

418,859. STORE-SERVICE APPARATUS. WILLIAM MENDENHALL, Cincinnati, Ohio, assignor to the Mendenhall Store Service Company, same place. Filed July 13, 1888. Serial No. 279,311. (No model.)



Claim.—1. In a store-service apparatus, a carrier having a hanger provided at its lower end with a hook rigid with the hanger, in combination with an elevator-frame and a detachable basket carried thereby and provided with a projection arranged, when the basket is elevated, to tilt the hook and hanger to one side and become automatically engaged with said hook, substantially as and for the purpose described.

2. In a store-service apparatus, a carrier having a hanger provided with a beveled lower side and an inclined slot to form a hook, in combination with an elevator-frame and a basket carried thereby and provided with a projection arranged, when the basket is elevated, to bear against the lower beveled side of the hanger to tilt the same and become automatically engaged therewith, substantially as and for the purpose described.

3. In a store-service apparatus, a carrier having a hanger provided with a beveled lower side and an inclined slot to form a hook, in combination with an elevator-frame and a basket carried thereby and provided with an inclined lug arranged, when the basket is elevated, to bear against the lower beveled side of the hanger to tilt the same and become automatically engaged therewith and rigidly held therein, substantially as and for the purpose described.

4. In a store-service apparatus, a carrier having a hanger provided at its lower end with a hook, and a latch extending over the point of said hook, in combination with an elevator-frame and a basket carried thereby and provided with a projection arranged, when the basket is elevated and lowered, to tilt the hook to one side and become automatically engaged therewith and disengaged therefrom, substantially as and for the purpose described.

5. In a store-service apparatus, a carrier having a hanger provided at its lower end with a hook and a gravitating-latch extending over the point of said hook, in combination with an elevator-frame and a basket carried thereby, and provided with a projection arranged, when the basket is elevated and lowered, to tilt the hanger to one side and become automatically engaged with and disengaged from said hook, substantially as and for the purpose described.

6. In a store-service apparatus, the carrier-hanger having a beveled lower side and provided with an inclined slot to form a hook, and a gravitating latch extending across the mouth of said slot, in combination with an elevator-frame and a basket carried thereby, and provided with a projection arranged, when the basket is elevated and lowered, to bear against the lower beveled side of said hanger to tilt the same to one side and become automatically engaged with and disengaged from said slot, substantially as and for the purpose described.

7. In a store-service apparatus, a carrier having a hanger provided with a beveled lower side and an inclined slot to form a hook, and a gravitating latch extending across the mouth of said slot, in combination with an elevator-frame and a basket carried thereby, and provided with an inclined lug arranged, when the basket is elevated and lowered, to bear against the lower beveled side of the hanger to tilt the same and become automatically engaged with and disengaged from said hook, substantially as and for the purpose described.

8. In a store-service apparatus, the carrier having the hangers G, provided at their lower ends with the hooks *r*, rigid therewith, and having beveled lower sides, in combination with an elevator-frame and the detachable basket H, carried thereby, and provided with legs *p*, arranged, when the basket is elevated, to bear against the lower beveled sides of the hooks and tilt the same to one side and become automatically engaged therewith, substantially as and for the purpose described.

9. In a store-service apparatus, the carrier having the two hangers G, one at each end of the carrier, and provided at their lower ends with hooks, and the latches S, extending over the points of said hooks, in combination with the elevator-frame and the basket H, carried thereby, and provided with lugs *p*, arranged, when the basket is elevated and lowered, to tilt the hooks to one side and become automatically engaged therewith and disengaged therefrom, substantially as and for the purpose described.

10. In a store-service apparatus, an elevator-frame composed of the bars *c d*, the former provided with guide-plate *d'*, in combination with a basket smaller at the bottom than at the top and adapted to fit between and be directly supported by said bars, substantially as described.

11. In a store-service apparatus, the combination, with the elevator frame composed of the bars *c d*, of the operating-cords *e*, bars E, provided with pulleys *b*, the grooved pulley *g*, covered by the guide-housing *h*, and the cord *f*, connected to the cords *e*, substantially as described.

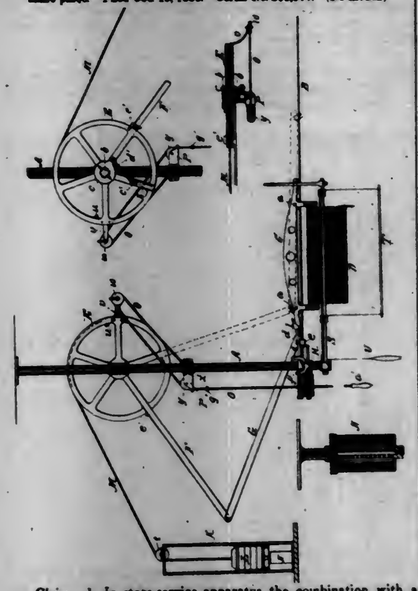
12. In a store-service apparatus, the combination, with the carrier, of the bell-crank latch I, the springs J, connected to said latch by hooked pins *d'*, the pulley *c'*, and operating-cord *b'*, substantially as and for the purpose specified.

13. The carrier provided with the two hangers G, one at each end of the carrier, said hangers having the slots *g*, and latches *s*, pivoted to the lower end portions thereof, in combination with a basket having plates provided with inclined lugs *p*, and a suitable elevator for raising and lowering said basket, substantially as described.

14. The carrier provided with the hangers G, having the ribs *u*, upwardly-inclined hooks *r*, and inclined slots *q* at the lower end of said hangers, and latches connected to said hangers and confined in slots in said ribs, in combination with a basket having plates provided with inclined lugs *p*, and a suitable elevator for raising and lowering said basket, substantially as described.

15. In a store-service apparatus, the combination, with the track-wire C and the carrier mounted thereon, and provided with the upwardly-projecting propelling-forks *n*, of the upright support A, the laterally-extending arm B, the arm E, secured to the outer end of the arm B, the spring L, having its ends secured to the arm E and its loop resting on the track-wire C, the bell-crank latch I, the springs J, secured at one end to the bell-crank latch I and at the other to the arm E on opposite sides of the track-wire C, and the operating-cord *b'*, substantially as and for the purpose described.

413,860. STORE-SERVICE APPARATUS. WILLIAM MENDENHALL, Cincinnati, Ohio, assignor to the Mendenhall Store Service Company, same place. Filed Oct. 19, 1888. Serial No. 288,577. (No model.)



Claim.—1. In store-service apparatus, the combination, with a way and a carrier and receptacle adapted to move on said way, of a propelling-weight and a pusher arranged parallel to said way and connected to said weight, whereby upon lifting and releasing said weight the carrier and receptacle are given a gradually-increasing initial impetus for the purpose of propelling them on said way, substantially as described.

2. In store-service apparatus, the combination, with a way, a carrier and receptacle adapted to move on said way, and a catch for holding the carrier, of a propelling-weight and a pusher arranged parallel to said way and connected to said weight, whereby upon lifting and releasing said weight the catch is thereby disengaged and the carrier and receptacle are given a gradually-increasing initial impetus for the purpose of propelling them upon said way, substantially as described.

3. In store-service apparatus, the combination, with a way, a carrier and receptacle adapted to move on said way, a propelling-wheel or its equivalent, and a propelling-arm connected to said wheel and carried on said way, of a weight united by a rope to said wheel, whereby upon turning said wheel and lifting the weight and then releasing the same the carrier and receptacle are given a gradually-increasing initial impetus for propelling them upon said way, substantially as described.

4. In store-service apparatus, the combination of a way, a carrier and receptacle adapted to move on said way, a propelling-wheel, a propelling-arm connected to said wheel and carried on said way, a latch for said carrier, and a weight united by a rope to said wheel, whereby upon turning said wheel and lifting the weight and then releasing the same the latch is disengaged and the carrier and receptacle are given a gradually-increasing initial impetus for propelling them upon said way, substantially as described.

5. In store-service apparatus, the combination of a way, a carrier and receptacle adapted to move on said way, a propelling-wheel or its equivalent provided with an automatic spring locking and releasing bolt, a propelling-arm hung loosely by the side of said wheel, resting on said way, and a cord for rotating said wheel in one direction to cause its engagement with said arm and then in the opposite direction to propel the carrier and receptacle along the way and to effect the disengagement of the wheel and arm, substantially as described.

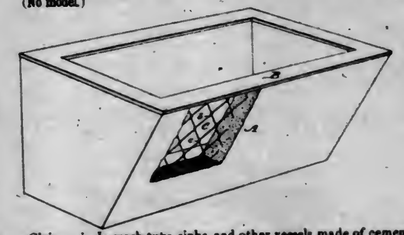
6. In store-service apparatus, the combination of a way, a carrier and receptacle adapted to move on said way, a propelling-wheel provided with an automatic spring locking and releasing bolt, a propelling-arm hung loosely by the side of said wheel and resting on said way, a weight secured by a rope to said wheel, and a cord for rotating said wheel in one direction to first cause its engagement with said arm and to lift the weight, whereby upon releasing said cord the weight rotates said wheel in the opposite direction and propels the carrier and receptacle along said way and causes the disengagement of the wheel and arm, substantially as described.

7. In store-service apparatus, the combination of a way, a carrier and receptacle adapted to travel on said way, and means for propelling the same, of the forked bracket H, with slotted arms *f g*, and the latch I, provided with the hook *m*, releasing-lug *f''*, slot *i*, and resetting-spring *j*, substantially in the manner and for the purpose specified.

8. A store-service apparatus comprising the weight L, air-cushion N, rope M, grooved wheel E, the jointed arms G F, the lug *e'*, secured to the arm F, the spring-bolt *c'* upon the wheel E, washer *c*, spring *d'*, and lifting-cord O, attached to the wheel E, substantially as and for the purpose specified.

9. A sliding pivoted spring-retracted latch-piece having an inclined lug, in combination with a bearing for said latch-piece, whereby the drawing forward of said latch-piece causes it to be tilted to effect its disengagement, substantially as described.

413,861. SINK, &c., MADE OF CEMENT. JOHN MOORE, East New Durham, assignor to himself, Alphonse Thourot, Union, and John Darling, West New York, N.J. Filed Sept. 16, 1889. Serial No. 324,005. (No model.)



Claim.—1. In wash-tubs, sinks, and other vessels made of cement or cement composition, the combination, with the cement body of the vessel, of a metallic frame composed of an outer or exposed metal cap-strip exterior to the cement and extending over or around the top or rim of said body, and a wire-netting fixedly united above to said cap-strip and embedded within the cement throughout the sides, ends, and bottom of the vessel, substantially as specified.

2. The combination, with the cement body A of the vessel, of the exposed unembedded metal cap-strip B on the top or rim of said body, and the wire-netting C, embedded within the cement throughout the sides, ends, and bottom of the vessel, and composed of interwoven wires *b*, fixedly united at their upper ends with the cap-strip and connected with each other where crossing one another, essentially as and for the purposes herein set forth.

3. The combination, with the cement body A of the vessel, of the exposed continuous upper metal cap-strip B, exterior to the cement, and the wire-netting C, composed of interwoven wires *b*, fixedly united at their upper ends with the cap-strip and connected with each other where crossing one another, as at *c*, also where meeting below, as at *c'*, and the end wires *f* of the frame, said wires *b* and *f* all being united with each other and being embedded within the cement of the body throughout the sides, ends, and bottom of the vessel, substantially as shown and described.

413,862. BOOT OR SHOE HEEL. ERNEST A. MUDGE, Beaver Dam, Wis., assignor to George E. Swan, same place. Filed May 8, 1888. Renewed May 10, 1889. Serial No. 310,357. (No model.)

Claim.—1. The improved heel herein described, comprising two sections A and B, a cushion arranged between said sections, and connections fixed at one end to one of such sections and extended and



secured at their opposite ends in openings in the other section, such openings being sufficiently larger than the portions of the connections fitted therein to permit lateral play of the connections in said openings, whereby the sections A B may move laterally independent of each other, substantially as set forth.

2. In a heel, the combination of a cushion having sockets or openings which open or lead out of its opposite sides or faces, two sections or plates fitted against the opposite sides or faces of the cushion, such sections or plates being provided on their faces next the cushion with studs or projections which enter the openings of the cushion, and connections between the plates or sections, substantially as set forth.

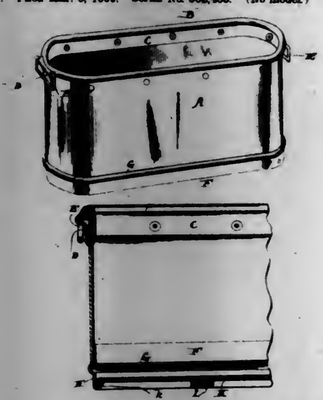
3. The improved heel herein described, comprising the upper section or plate formed with a recess or socket in its upper face and having the wall or rim-flange thereof provided on its edge with prongs or spurs, the lower section or plate, the cushion, and connections, substantially as and for the purposes specified.

4. As an improved article of manufacture, the heel, substantially as described, consisting of the upper section or plate having its upper side recessed and provided on its under side with downwardly-extended studs or projections, the cushion having sockets or openings fitted to receive said studs, the lower plate or section, and connections, substantially as set forth.

5. In a heel, the combination of the plate A, having in its lower face the recesses A^3, the plate B, having in its upper face recesses B^3, the cushion arranged between the plates A B and having sockets or openings registering with recesses A^3 B^3, and the studs A' B', extended from plates A B into the sockets of the cushion, with their extremity arranged to enter the recesses of the opposite plate when the cushion is compressed, substantially as and for the purposes specified.

6. The heel herein described, consisting of the section A, having openings *c*, countersunk at *c'*, and the projections A', extended from its under side, the cushion C, and the lower plate B, having projections B' and connecting-posts E, and the washers c^2 c^2, substantially as set forth.

413,863. **METALLIC VESSEL.** DEWITT C. MCINTIRE, Salamanca, N. Y. Filed Mar. 8, 1889. Serial No. 302,483. (No model.)



Claim.—1. In a metallic vessel, the combination, with the body, of a vertical strengthening-band fitting within the lower end of the same and having an annular bead to support the lower edge of the body, and transverse braces to support the bottom, substantially as set forth.

2. In a metallic vessel, the combination, with the body, of a vertical strengthening-band fitting within the lower end of the same and having an exterior annular bead to support the lower edge of said body, and an inwardly-turned or struck-up flange forming a groove to afford a seat for the bottom on the side of the strengthening-band opposite to the bead which supports the body, substantially as set forth.

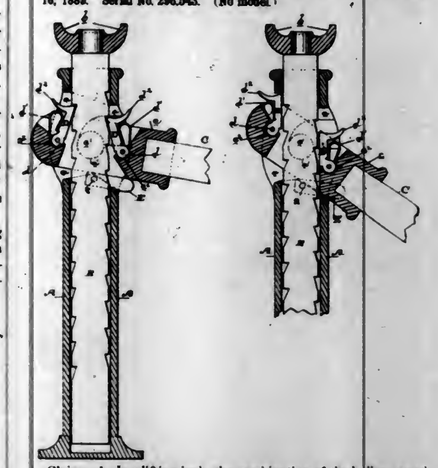
3. In a metallic vessel, the combination, with the body, of a vertical strengthening-band fitting within the lower end of the same and having an annular inturned or struck-up flange forming a groove to afford a seat for the bottom, and transverse bottom-supporting bars or braces, substantially as set forth.

4. In a metallic vessel, the combination, with the body, of the band fitting within the lower edge of the body and provided with a groove H at its lower edge, the transverse bars L L, connected to the lower edge of the band, and the bottom bearing on the said bars and provided at its edge with a flange *k*, fitting in the groove H, substantially as specified.

5. In a metallic vessel, the combination, with the body, of a bottom attaching and re-enforcing device comprising a band fitting in the lower end of the body and having a bead to support the lower edge of the same, an annular flange forming a groove to receive the bottom, and transverse braces connecting the said annular flange, substantially as set forth.

6. A metallic vessel comprising the body, the annular re-enforcing bands fitted in the upper and lower ends of the same, and the bottom having a downturned flange seated in a groove formed by an upturned flange at the lower end of the bottom-re-enforcing band, substantially as set forth.

413,864. **LIFTING-JACK.** EMORY I. NICHOLS, San Francisco, Cal., assignor to the Nichols Manufacturing Company, same place. Filed Jan. 16, 1889. Serial No. 296,543. (No model.)



Claim.—1. In a lifting-jack, the combination of the hollow standard, vertically-movable lifting-bar therein having teeth on each side, vibrating lever pivoted in the standard, pawls carried by the lever and engaging alternately the teeth of the lifting-bar, and a movable stop-piece on the standard for limiting the movement of the lever when operating and allowing, when turned out of the way, its further movement, whereby its pawls are thrown from and held out of engagement with the teeth of the lifting-bar, substantially as described.

2. In a lifting-jack, the combination of the hollow standard having the slotted top with bearing-shoulders therein, the operating-lever, the head of which is slotted and passes through the slotted top of the standard, said head having side pivot pins or lugs seated in the bearing-shoulders of the standard, and having also bearing-shoulders for the pawls, the lifting-bar seated in the hollow standard and passing through the slotted head of the operating-lever, said lifting-bar having ratchet-teeth on both sides, the spring-controlled pawls having bases seated in the bearing-shoulders of the lever-head and adapted to engage the teeth of the lifting-bar, and the movable stop-piece E in the standard-top for limiting the movement of the lever-head when operating and allowing, when turned aside, its further movement, whereby the pawls are thrown from and held out of engagement with the teeth of the lifting-bar, substantially as described.

413,865. **SPIROMETER.** SETH W. PAINE, Rochester, N. Y. Filed Jan. 12, 1889. Serial No. 296,190. (No model.)

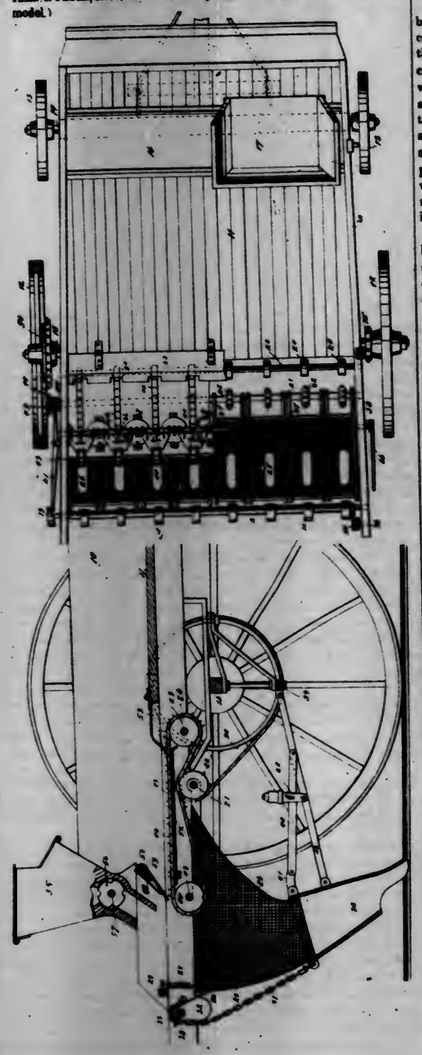


Claim.—1. In a lung-developer, the combination, with a yoke consisting, essentially, of two side arms connected at the top, and a tube secured to the top of the yoke, of a wheel journaled on a pin supported in the free ends of the yoke and provided with concentric flanges around its periphery, and buckets located between the flanges and arranged to pass in close proximity to the end of the tube, substantially as set forth.

2. In a lung-developer, the combination, with a yoke carrying a tube, of an axle journaled in the yoke, a bucket-wheel rigidly secured to the axle, a movable indicator-wheel journaled on one arm of the yoke, and gearing connecting the axle and indicator-wheel, substantially as set forth.

3. In a lung-developer, the combination, with a yoke carrying a tube, of an axle journaled in the yoke, a bucket-wheel rigidly secured to the axle, an indicator-wheel journaled on one arm of the yoke, and worm-gearing between the axle and indicator-wheel for imparting motion from the former to the latter, substantially as set forth.

413,866. **SEED-DRILL AND FERTILIZER-DISTRIBUTER.** JONATHAN C. PEDEN, Rose, Mo. Filed May 23, 1889. Serial No. 311,708. (No model.)



Claim.—1. The combination, with a vehicle-body provided with a partial bottom, a series of laterally-movable conductors suspended from the body, hoes contacting with said conductors, and a rock-shaft secured in the rear of the vehicle-body provided with cam-blocks, of a chain attached to each hoe and passing over one of the cam-blocks, a crank-arm secured to the said rock-shaft, a lever fulcrumed upon the body, a link connecting the crank-arm and lever, and means, substantially as shown and described, for locking the said lever, as and for the purpose specified.

2. The combination, with a vehicle-body provided with a partial bottom, a shaft journaled in the sides of the body, conductors pivoted at one end upon said shaft and suspended from the body at the opposite end by springs, a hoe contacting with each conductor, a rock-shaft journaled in the rear of the body and provided with a series of cam-blocks, and chains attached to the several hoes and passing over the said cam-blocks, of endless carrying-belts held to travel above the conductors, a platform supported beneath the said belts, a lever fulcrumed upon one side of the vehicle-body, a link-connection between the rock-shaft and lever, and means, substantially as shown and described, for locking the lever, as set forth.

3. The combination, with a vehicle-body provided with a partial bottom, a shaft journaled in the sides of the body, laterally-movable conductors pivoted at one end upon the said shaft and suspended from the body at the opposite end by springs, a hoe contacting with each conductor, a rock-shaft journaled in the rear of the body provided with a series of cam-blocks, and chains attached to the several hoes and passing over the said cam-blocks, of endless carrying-belts held to travel one over each conductor, a platform supported beneath the series of belts, a shaft journaled in the sides of the body above the said carrying-belts, gates secured to the said shaft above each chain, partitions between the gates, a lever fulcrumed upon one side of the vehicle-body, a connection between said lever and the rock-shaft, and means, substantially as shown and described, for actuating the carrying-belts, all combined for operation as set forth.

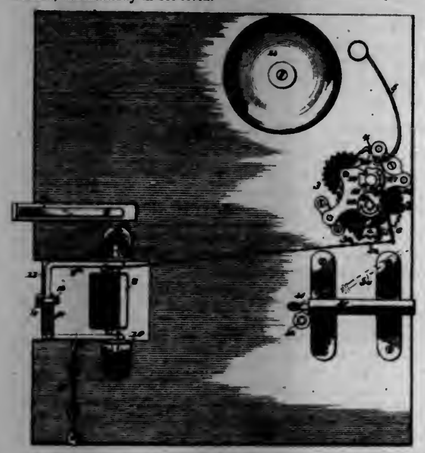
4. The combination, with a vehicle-body provided with a partial bottom, a shaft journaled in the sides of the body, conductors pivoted at one end upon the said shaft and suspended from the body at the opposite end by springs, a hoe contacting with each conductor, a rock-shaft journaled in the rear of the body and provided with a series of cams, and chains attached to the several hoes and conductors and passing over the said cam-blocks, of endless chain belts held to travel over each of the conductors, a platform passing beneath the several chain belts, a shaft journaled transversely in the body beneath the belts and carrying sprocket-wheels engaging with the said belts and at one end provided with a fixed clutch-section and a sliding clutch-section, a cam-wheel secured upon one end of the rock-shaft, a forked lever pivoted upon the vehicle-body and engaging the cam-wheel and the sliding clutch-section, a shaft carrying a series of spring-actuated gates, one gate located over each chain belt, partitions between the gates, a lever fulcrumed upon one side of the vehicle-body and connected with the rock-shaft, substantially as shown and described, whereby, when the said rock-shaft is manipulated, the sliding clutch-section will be also manipulated, as and for the purpose specified.

5. The combination, with a vehicle-body provided with a partial bottom, a shaft journaled in the sides of the body, conductors pivoted at one end upon the said shaft and suspended from the body at the opposite end by springs, a hoe contacting with each conductor, a rock-shaft journaled in the rear of the body provided with a series of cam-blocks, and chains attached to the several hoes and conductors and passing over the said cam-blocks, of a series of endless carrying-chains supported one over each conductor, a platform passing horizontally beneath the several carrying-belts, a shaft provided with sprocket-wheels engaging each of the said carrying-belts and having a fixed and a sliding clutch-section at one end, a cam-wheel secured to one extremity of the rock-shaft, a lever contacting with the cam-wheel and sliding clutch-section, a shaft carrying a series of spring-actuated gates, one gate located over each carrying-belt, partitions between said gates, a seed-box supported over each of the conductors and provided with a distributing-wheel secured upon a common shaft, an apron hinged to the fixed bottom of the vehicle-body and resting upon the platform located beneath the endless carrying-belts, a lever fulcrumed to one side of the vehicle-body, a link-connection between the said lever and rock-shaft, and a connection, substantially as shown and described, between the said lever and the shaft carrying the distributing-wheels of the seed-boxes, and means for actuating the carrying-belts and the seed-distributers from the axle of the vehicle-body, as and for the purpose specified.

413,867. **BURGLAR-ALARM.** CALEB C. REID, New Burnside, Ill. Filed June 20, 1889. Serial No. 315,014. (No model.)

Claim.—1. The combination of the bell, the clock mechanism having on its escapement-shaft the hammer and the arm 6, the pivoted arm, the chain 7, connecting the pivoted arm and the arm 6, and the

pivoted trigger having the hooked upper end adapted to engage the pivoted arm and arranged to be operated by the opening door or window, substantially as set forth.



2. The combination of the bell, the clock mechanism having on its escapement-shaft the hammer and the arm 6, the arm having the serrated plate on its free rounded end and having at its lower end the curved frame 8^a, pivoted on the rod 9, the spring 18, arranged to throw down the arm 8, the pivoted trigger having the hooked upper end engaging the curved frame 8^a and arranged to be operated by the opening door or window, the lamp, the match-holder, and the match placed in the same, substantially as set forth.

3. The combination of the bell, the clock mechanism having on its escapement-shaft the hammer and the arm 6, the arm having the serrated plate on its free rounded end and having at its lower end the curved frame 8^a, pivoted on the rod 9, the spring 18, arranged to throw down the arm 8, the pivoted trigger having the hooked upper end engaging the curved frame 8^a and arranged to be operated by the opening door or window, the lamp, the match-holder, the match placed in the same, and the reflector, substantially as set forth.

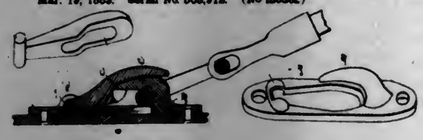
4. In a burglar-alarm, the combination, with the bell, the clock mechanism having on its escapement-shaft the hammer and the arm 6, and the arm 8, having the pivoted frame 8^a at its lower end and connected by a chain 7 to the arm 6, of the pivoted trigger 12, having the hooked upper end engaging the pivoted frame 8^a and formed with the longitudinal slot 13, the slotted rod 15, having the rounded lower end, and the guide-rod 14 at its upper end, and the spring 16, substantially as set forth.

5. In a burglar-alarm, the combination, with the clock mechanism having on its escapement-shaft the arm 6, the pivoted arm 8, connected by a chain 7 to the arm 6, and having the serrated plate on its curved free end, the trigger engaging the arm, and the lamp 22, of the horizontal tubular match-holder 21, having the spiral spring 24 and loose disk 23^a in its closed end, substantially as set forth.

6. In a burglar-alarm, the combination, with the bell, the clock mechanism having on its escapement-shaft the hammer and the arm 6, and the arm 8, connected by a chain 7 to the arm 6, and having the pivoted frame 8^a at its lower end, of the trigger pivoted on the rod 11 and having the hooked upper end engaging the frame 8^a, and the spring 30, coiled on the rod 11 and engaging the pivoted trigger, substantially as set forth.

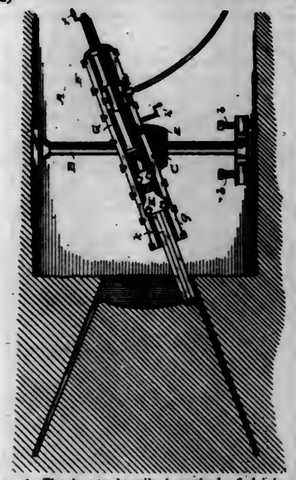
7. In a burglar-alarm, the combination, with the bell, the clock mechanism having on its escapement-shaft the hammer and the arm 6, and the arm 8, connected by a chain 7 to the arm 6, and having the pivoted frame 8^a at its lower end, of the pivoted trigger engaging the frame 8^a, and the sliding rod 31, adapted to engage the frame 8^a, substantially as set forth.

413,868. TRACE-CARRIER. Hiram Rosmon, Garwood, Pa. Filed Mar. 19, 1889. Serial No. 303,912. (No model.)



Claim.—As an improved article of manufacture, a trace-support consisting of the apertured plate A, provided with the outwardly and upwardly projecting hook B and with the socket *a* above the hook, and the tongue C, having a rounded outer surface and provided with the T-shaped end *b* to enter the socket and the recess *c* in its inner surface for inclosing the point of the hook, as specified.

413,869. METHOD OF DRIVING TUNNELS. William L. Saunders, New York, N. Y. Filed May 10, 1888. Serial No. 273,286. (No model.)



Claim.—1. The herein-described method of driving tunnels of small sectional area in hard rock, which consists in making a first cut in the form of a narrow open channel driven into and across the face of the rock or heading and without the use of explosives, then placing surrounding or adjacent drill-holes and blasting out the material between the channel and the wall or walls of the tunnel after the channel has been completed, substantially as described.

2. The herein-described improvement in the art of driving shafts or headings of small sectional area in hard rock, which consists in making a first cut in the shape of a narrow open channel driven into and across the face of the rock or heading to the depth of the cut and without the use of explosives, then placing surrounding or adjacent drill-holes and blasting out the material between the channel and the walls of the shaft or heading after the channel has been completed, substantially as described.

3. The herein-described method of driving tunnels of small sectional area in hard rock, which consists in making a first cut in the form of a narrow open channel extending across the face of the rock or heading and of the depth of the proposed cut, said channel dividing or separating the material to be removed, and placing surrounding or adjacent drill-holes and blasting out the material between the channel and the wall or walls of the tunnel, substantially as described.

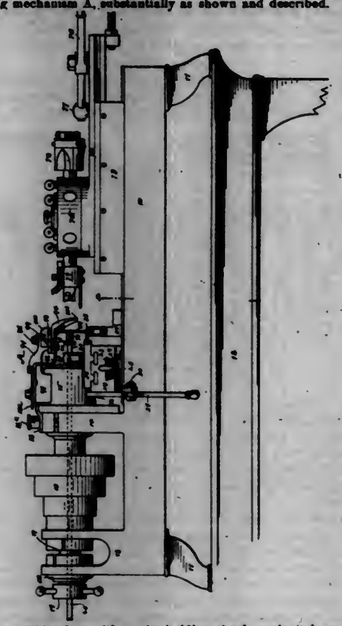
4. The herein-described improvement in the method of boring or tunneling hard rock, which consists in cutting an open groove or channel into and across the face of the heading and simultaneously drilling holes for the reception of explosives in the material between the channel and the wall or walls of the bore, substantially as described.

413,870. LATHE ATTACHMENT FOR MAKING METAL SCREWS. John H. Severance, Readville, assignor to the Lockie Button and Manufacturing Company, Boston, Mass. Filed May 16, 1889. Serial No. 311,084. (No model.)

Claim.—1. The combination, with a wire-holding chuck and a pivoted gage pivoted in advance of the chuck, of a sliding carriage carrying a turret, and reamers horizontally projected from the turret, provided with a horizontal finger upon their under side capable of contact with the gage, substantially as shown and described.

2. The combination, with a wire-holding chuck and a pivoted gage located in front of the chuck, of a sliding carriage carrying a turret, and reamers horizontally projected from the said turret, provided with a horizontal finger secured to the under side of their body, having one curved and one straight edge, and an angle trip-bar secured upon the top of said body, and the trip mechanism A, substantially as shown and described.

3. The combination, with a wire-holding chuck, a pivoted gage located in front of the chuck, a sliding carriage, and a revoluble turret mounted upon said carriage, of reamers horizontally secured in the turret, provided with a finger horizontally attached to the under side, an angle trip-bar adjustably attached to the upper side of the reamer-body, the vertical member whereof extends beyond the front of the body and is provided with a groove in its outer surface, and the tripping mechanism A, substantially as shown and described.



4. The combination, with a wire-holding chuck, a pivoted gage located in front of the chuck, a carriage sliding in front of the gage, and a revoluble turret mounted upon said carriage, of reamers horizontally held in the turret, provided with a finger projected from their under face capable of contact with the gage, and a second carriage sliding beneath the wire-holding chuck and at the rear of the gage, and cutters adjustably held upon said carriage, all combined for operation substantially as set forth.

5. The combination, with a wire-holding chuck and the trip mechanism A, extending over and beyond the chuck, of a die-head provided with pivoted jaws, and a revolving cam-ring surrounding the jaws, having pins projected therefrom for contact with the trip mechanism, substantially as set forth.

6. The combination, with a wire-holding chuck and the trip mechanism A, of a sliding carriage, a turret mounted upon the carriage, and die-heads horizontally supported in said turret, comprising a body, jaws pivoted in the body, a loosely-mounted cam-ring inclosing and contacting with the jaws, and pins projected from the outer periphery of the ring, substantially as shown and described, and for the purpose specified.

7. The combination, with a wire-holding chuck, a gage pivoted in front of the chuck, a knife-carriage sliding below the chuck, and an arm attached to the carriage capable of setting the gage, of a reamer comprising a tubular body and a finger projected from the under surface of its body beyond its front face and capable of displacing the gage, substantially as shown and described.

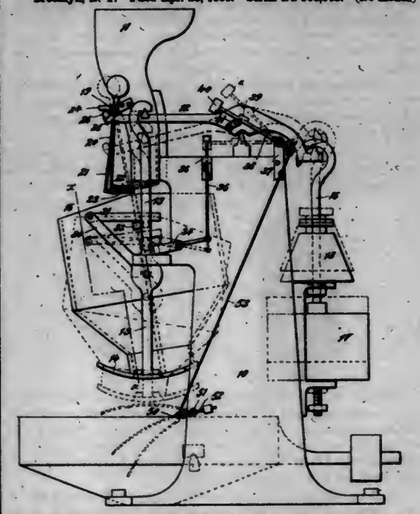
8. The combination, with a wire-holding chuck, a gage pivoted in front of the chuck, a knife-carriage sliding below the chuck, and an adjustable arm projected longitudinally from one side of the carriage to set the gage, of a second carriage sliding in front of the chuck, a revoluble turret mounted upon the said second carriage, and reamers supported in the turret, comprising a tubular body and a finger having one straight and an opposite curved edge secured to the under face of the body and extending beyond its front, substantially as shown and described.

9. The combination, with a wire-holding chuck and the tripping mechanism A, located above the chuck, of a sliding carriage, a turret mounted upon the carriage, and reamers and die-heads alternately secured in the turret, the reamers comprising a tubular body and an angled trip-bar adjustably secured to the upper face of the same at its front, the die-heads comprising a body containing pivoted jaws, a loosely-mounted cam-ring surrounding and clamping the jaws, and pins projected from the said ring, all combined for operation substantially as specified.

10. The combination, with a wire-holding chuck, the tripping mechanism A, a gage pivoted in front of the chuck, a carriage sliding in front of the gage, and a turret mounted upon said carriage, of reamers and die-heads alternately arranged in said turret, the reamers comprising a tubular body, a finger projected from the bottom of the body, and an angle trip-bar adjustably secured upon the top of the same, and the die-heads consisting of a body portion provided with pivoted jaws, a loosely-mounted cam-ring clamping the jaws, and pins projected from the said ring, all combined for operation substantially as specified.

11. The combination, with a die-head comprising a body portion provided with pivoted jaws, a cam-ring loosely mounted upon the body surrounding the jaws, and pins projected from the said ring, of a tripping device comprising a body portion provided with a neck, a spring-actuated locking-plate having a shoulder 97 upon its under side and pivoted to the neck, a spiral cam-finger projected from the said locking-plate, and a spring-actuated angle tripping-arm provided with a pin projecting from its upper surface near its outer edge, substantially as shown and described.

413,871. ATTACHMENT FOR GRAIN-SCALES. James H. Shelley, Brooklyn, N. Y. Filed Apr. 25, 1889. Serial No. 308,565. (No model.)



Claim.—1. The combination, with a plate arranged to be pivotally supported beneath the discharge-orifice of the grain-scales, of a weighted lever formed with a lateral projection and arranged for pivotal connection with the scale-standard, a latch-tripping lever also arranged for pivotal connection with the standard, and connections such that the falling of the weighted lever will actuate the latch-tripping lever, substantially as described.

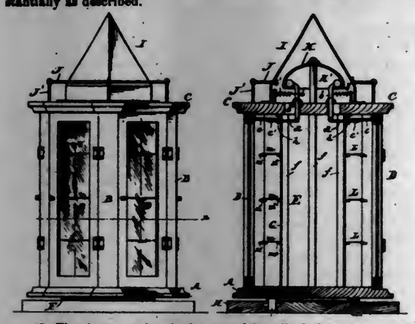
2. In grain-measuring scales, the combination, with a pivotally-mounted leaf or plate, of weighted levers, connections between the plate and the levers, projections carried by the levers, projections carried by the scale-beam upon which the lever projections rest, a tilting bucket, a latch arranged in connection therewith, a latch-tripping lever, and an upwardly-extending stem carried by the latch-tripping lever, substantially as described.

3. In grain-measuring scales, the combination, with a tilting bucket provided with projections 32, of latches 31, supported substantially as described, latch-tripping levers 34, upwardly-extending stems 35, carried by the levers, weighted levers 38, formed with projections 39, projections 41, carried by the scale-beam, a plate 50, and connections, substantially as described, between the plate and the weighted levers, as and for the purpose stated.

413,872. SHOW-CASE. Andrew B. Shipman, Columbus Junction, Iowa. Filed May 23, 1889. Serial No. 311,835. (No model.)

Claim.—1. A show-case comprising a base and top board united

by a series of outer vertical posts and a series of inner vertical posts, in combination with an inner wall surrounding the series of inner vertical posts, outer doors hinged to the outer posts, and the horizontal supports L, arranged between the outer and inner series of posts, substantially as described.



2. The show-case herein shown and described, the same consisting of a base and top board united by an inner and outer series of vertical posts, in combination with a dome mounted upon the top board, a gong placed therein, doors hinged to the outer posts, and striking mechanism connected to the doors and top board for sounding the gong upon the opening of any one of the doors, substantially as described.

3. The door D, having the arm *c*, formed with a rounded enlargement *c'*, in combination with the bell K, spring-actuated hammer *b*, link *d*, pivoted to the hammer, and the spring *h*, the said link being formed with a loop *d'*, substantially as described.

413,873. LUBRICATOR. MELVIN SHOLL, Terrace, Utah. Filed June 20, 1889. Serial No. 314,934. (No model.)



Claim.—1. In a lubricator, the combination of a reservoir having an escape-opening provided with a valve-seat and a cross-bar having a vertical screw-threaded perforation, a screw-threaded stem working in the latter and having a valve at its lower end, and a spring arranged to so bear against the said stem as to hold the valve in a closed position, substantially as set forth.

2. In a lubricator, the combination of a reservoir having an escape-opening, a valve to close the said escape-opening, and a spring to hold the said valve in a closed position, substantially as set forth.

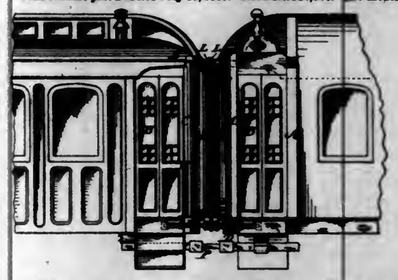
3. In a lubricator, the combination of a reservoir having an escape-opening, a valve to close the latter, said valve being mounted upon a screw-threaded stem working in a screw-threaded bearing, and a spring arranged to so rotate the said valve-stem as to keep the valve in a closed position, as set forth.

4. In a lubricator, the combination of a reservoir having an escape-opening, a screw-threaded stem working in a suitable bearing and having a valve adapted to close the said opening, a spring arranged to so rotate the valve-stem as to keep the valve in a closed position, and a cover for the said reservoir, having an interiorly-located boss or projection provided with a recess to receive the upper end of the valve-stem and a groove to accommodate a stud extending laterally from the latter, substantially as set forth.

5. In a lubricator, the combination of a reservoir having an escape-opening, a screw-threaded stem working in a suitable bearing and having a valve adapted to close the said opening, a spring arranged to so rotate the valve-stem as to keep the valve in a closed position, a cover for the said reservoir, having an interiorly-located boss or projection provided with a recess to receive the upper end of the valve-stem and a groove to accommodate a stud extending laterally from the latter, a series of notches formed in the lower edge of the cap or cover, and a stud extending laterally from the cap or reservoir to engage the said notches, substantially as set forth.

6. In a lubricator, the combination of a reservoir having an escape-opening, a screw-threaded stem working in a suitable bearing and having a valve adapted to close the said bearing, a spring arranged to so rotate the said valve-stem as to keep the valve in a closed position, a lug or stud extending laterally from the cap or reservoir, a lug or stud extending laterally from the valve-stem, and a cap or cover having a series of notches at its lower edge, a vent-opening at its upper end, and an interiorly-located boss or projection having a recess to receive the upper end of the valve-stem and a groove to accommodate the lug or stud of the latter, substantially as set forth.

413,874. VESTIBULE RAILWAY-CAR. RENALDO SHARP, Brooklyn, N. Y., assignor of two-thirds to John W. Howard and David R. Morse, both of same place. Filed July 13, 1889. Serial No. 317,378. (No model.)



Claim.—1. The combination, in a railway-car, of a threshold buffer-plate oscillating upon a vertical axis movable longitudinally to the car, a transom-plate similarly movable, and vertically-pivoted connecting-flanks, to the movable extremities of which the extremities of the said plates are swiveled in common vertical axes to receive corresponding advancing, retracting, or oscillating movements simultaneously.

2. The combination, with the vestibuled end of a railway-car, of a threshold buffer-plate oscillating upon a vertical axis movable longitudinally to the car, a transom-plate similarly movable, and vertically-pivoted connecting-flanks inclosing the sides of the spaces that intervene adjacent cars, to the movable extremities of which flanks the extremities of the said plates are swiveled in common vertical axes and present abutting surfaces in a common plane with the abutting surfaces of the said flanks for the purpose of forming contact with a corresponding structure of an adjacent car.

3. The combination, in a railway-car, of a threshold buffer-plate, a transom-plate, guide-bolts sliding in bearings longitudinally to the car, to which guide-bolts the said plates are swiveled to oscillate, buffer-springs for advancing the threshold-plates, and vertically-pivoted connecting-flanks, to the movable extremities of which the extremities of said plates are swiveled in common vertical axes, whereby the oscillation of the threshold-plate and the advancement of the same by the buffer-springs is imparted to the transom-plate.

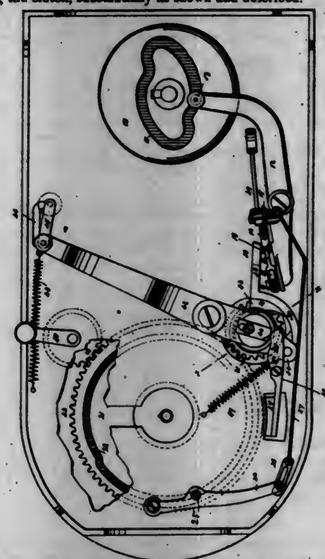
4. The combination, with the adjoining ends of railway-cars, of vestibule-extensions communicating to form a continuous passage, offset walls extending laterally from the outposts of the vestibule, flanks extending the height of the vestibules vertically pivoted at the extremities of said walls and inclining at their movable extremities (in horizontal cross-section) toward the center of the cars and toward a plane of contact with one another, threshold buffer-plates, and transom-plates oscillating upon vertical axes movable longitudinally to the cars to abut at said plane of contact, the movable extremities of the flanks being swiveled to the extremities of said plates, substantially as and for the purposes set forth.

5. The combination, in the vestibuled end of a railway-car, of a threshold buffer-plate and transom-plate, both oscillating upon a vertical axis movable longitudinally to the car, vertically-pivoted flanks supplementing the interval of the vestibule and a plane of junction of an adjoining car, said flanks having convex or rolling contact-surfaces co-operative in the manner specified with the flanks of such adjoining car, swivel-studs in the movable extremities of the flanks and slots in the extremities of the said threshold, and transom-plates with which the studs engage, as and for the purposes set forth.

6. The combination, in a railway-car, of a movable threshold buffer-plate, a movable transom-plate, and pivoted connecting-flanks that inclose the sides of the space that intervene adjacent cars.

413,875. FEED MECHANISM FOR BUTTON-HOLE SEWING-MACHINES. RUDOLPH STAHL, Brooklyn, N. Y. Filed June 19, 1888. Serial No. 277,502. (No model.)

Claim.—1. In a button-hole sewing-machine, the combination, with a feed-wheel having a toothed periphery and a feed-lever connected with the driving mechanism, of a hubbed pinion meshing with the feed-wheel, a collar surrounding the hub of the pinion and having side apertures, a clutch-arm pivoted to said collar and provided with lugs for alternately engaging the hub of the pinion, a spring for returning the clutch-arm to its normal position, a trip-lever fulcrumed upon the feed-lever, and spaced blocks upon said trip-lever alternately engaging the clutch, substantially as shown and described.



2. In a button-hole sewing-machine, the combination of a feed-wheel having a toothed periphery, a feed-lever connected with the driving mechanism, a hand lever, a pinion carried by the hand-lever and meshing with the feed-wheel, a clutch operating the pinion, a trip-lever pivoted to the feed-lever and provided with blocks alternately engaging the clutch, a second pinion meshing with the feed-wheel, and a crank-handle for operating the said second pinion, substantially as and for the purpose set forth.

3. In a button-hole sewing-machine, the combination, with a feed-wheel having a toothed periphery, a feed-lever connected with the driving mechanism, a weighted trip-lever fulcrumed upon said feed-lever, and spaced blocks attached to the trip-lever, of a hubbed pinion meshing with the feed-wheel, a collar surrounding said hub and provided with side apertures, a clutch-arm pivoted to said collar alternately engaged by said blocks, and a hand-lever, substantially as shown and described, connected with the hub of said pinion, as and for the purpose specified.

4. In a button-hole sewing-machine, the combination, with a feed-wheel having a toothed periphery, a feed-lever connected with the driving mechanism, a weighted trip-lever fulcrumed upon said feed-lever, and spaced non-aligning blocks secured upon the trip-lever, of a hubbed pinion meshing with the feed-wheel, a collar loosely surrounding said hub, a clutch pivoted to said collar and alternately engaged by said blocks, a hand-lever connected with said pinion, a slide adjustably held upon the hand-lever, and a brake-lever engaging said slide, substantially as shown and described.

413,876. OIL-CAN. LE GRAND TERRY, Horseheads, N. Y. Filed June 15, 1889. Serial No. 314,460. (No model.)

Claim.—1. In an oil-can, the combination, with a can, a tube extending out of the latter, and a plug or stopper connected with the tube, of an adjustable sleeve adapted to slide over the tube and receive the stopper therein, whereby the discharge of oil is regulated, substantially as set forth.

2. The combination, with a can having an oil-outlet therein, and a plug or stopper connected with the can and located over the opening, of an adjustable sleeve adapted to slide over the opening and plug or stopper, whereby the discharge of the oil is regulated, substantially as set forth.

3. The combination, with a can having an oil-outlet therein, and a plug or stopper connected with the can and located over the opening, of an adjustable sleeve adapted to slide over the opening and plug or stopper and an air-tube leading from the bottom of the can to its upper end, substantially as set forth.

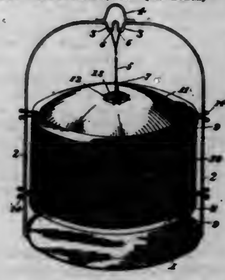
4. The combination, with a can, a tube thereon, and a plug or stopper yieldingly connected to the tube, of an adjustable sleeve having a small opening at its upper end, said sleeve adapted to slide over the tube and be closed by the plug, substantially as set forth.



5. The combination, with a can, a flanged collar thereon, and an air-tube leading from the bottom of the can to the top inside of the collar, of a discharge-tube attached to the top of the can, a plug connected thereto by spring-strips, and a sleeve adjustably secured on said discharge-tube, substantially as set forth.

6. The combination, with a can having an opening for filling, a collar at its top, an inwardly and downwardly projecting flange on the collar, and an air-tube extending from the bottom to the top inside the collar, of a discharge-tube, a plug or stopper, spring-strips connecting the latter with the tube, and an adjustable sleeve mounted on the discharge-tube, substantially as set forth.

413,877. ANIMAL-TRAP. DAVID V. THRIFT, Nevada, Iowa. Filed July 17, 1889. Serial No. 317,773. (No model.)



Claim.—1. In a trap, a trigger formed of a single piece of wire bent upon itself and intermediate its ends to form a supporting-eye, and one of said ends terminating in a hook and the opposite end in a spring bait-retaining bar, substantially as specified.

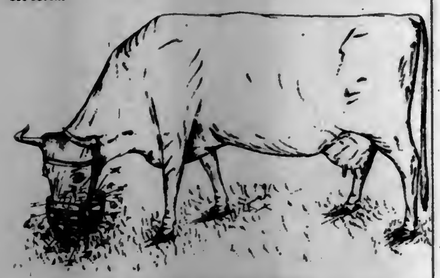
2. The base 1 and the inverted-U-shaped bail 2, comprising opposite vertical arms, and bent at its center to form opposite depending loops 3, in combination with the cage 8, mounted upon the base and having diametrically and vertically opposite clips 14, adapted to embrace the arms 2, an opening formed in the top of the case and a cross-bar located thereover, and the herein-described trigger formed of a single piece of wire doubled and bent to form a foot and coiled to form opposite eyes 17 for the reception of the cross-bar, and having one terminal bent to form an eye 19, and a bait-arm 18, adapted to enter the eye, and the pivoted tongue formed of a single piece of wire bent upon itself and twisted and terminating in a foot engaging hook 7, and diverged at its opposite end to form eyes engaging the eyes and loops 3, substantially as specified

413,878. MUZZLE. EDWARD B. WEBBER, Collierville, Tenn. Filed June 25, 1889. Serial No. 315,536. (No model.)

Claim.—1. The improved muzzle, consisting of the wire frame A, the elliptical guide secured to the said frame, the wires I I, arranged parallel with the guides, the connecting-wires secured to and between the wires I I, the doors provided with eyes at their corners engaging

the guides, and the outwardly-projecting arms H on the doors, as set forth.

2. The improved muzzle consisting of the wire frame A, having the guides B and the gravity-doors C, sliding vertically on the guides independently of each other, and having the arms H, said doors being arranged at the front and rear of the wire frame and coming together in their normal position at the bottom of the frame, for the purpose set forth.



413,879. ELECTRIC TRAIN-SIGNAL. WILLIAM WINDER, Portsmouth, N. H. Filed Aug. 8, 1889. Serial No. 320,163. (No model.)



Claim.—1. The combination, for each of two like members of a coupling for an electric train-signal, of a metallic piece A, provided with a branch *a* to receive the split pin of the other member, and a branch *b*, having an insulated split pin B secured therein, two flexible electric cords which are insulated from each other, but which united in one cable are linked to a bracket E, adapted to be fastened to a car, one of said cords being electrically connected with said piece A and with one of two plates or studs *p*, adapted to be fastened to the car, and the other of said cords being electrically connected with the split pin and with the other of said plates or studs, substantially as and for the purposes set forth.

2. In combination with a car having a hood, a flexible electric cable composed of two cords insulated from each other, a metallic piece A, to form one member of an electric coupling, provided with a branch *a*, having an opening to receive a split pin attached to the other member of the coupling, and provided with a branch *b*, in which is secured an insulated split pin B, the cable being protected by a metallic covering F where it passes through an opening in the hood, and linked to a bracket E, fastened to the car, the cords of the cable being separated at each end, one of the cords being electrically connected with the split pin and with one of two insulated plates or studs *p* fastened to the car, and the other of said cords being electrically connected with the piece A and with the other of said plates or studs, substantially as and for the purposes set forth.

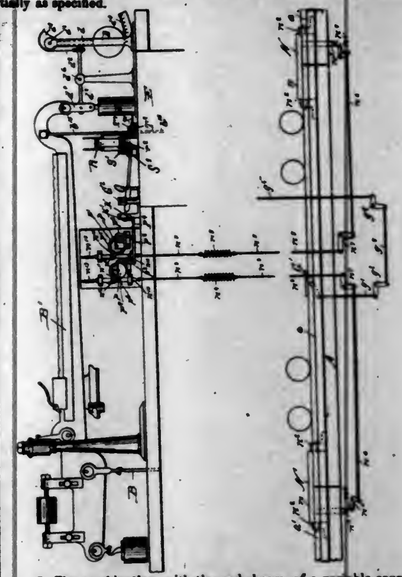
413,880. AUTOMATIC SCALE FOR WEIGHING RAILROAD-CARS AND RECORDING THE WEIGHT THEREOF. EDWARD H. AMET, Chicago, Ill., assignor to Herbert A. Streeter, same place. Filed Jan. 28, 1889. Serial No. 297,750. (No model.)

Claim.—1. The combination of a car-scale platform with levers N N′ at the end of the scale-platform, and spanning a portion of the scale-platform and a portion of the track outside of the platform, whereby one or the other of said levers may be operated by the front wheel of the car on the platform or by the front wheel of the succeeding car, according as the car is a long or short one, substantially as specified.

2. The combination of a car-scale platform with levers N N′ at the end of the scale-platform and spanning a portion of the scale-platform and a portion of the track outside of the platform, whereby one or the other of said levers may be operated by the front wheel of the car on the platform or by the front wheel of the succeeding car, according as the car is a long or short one, and a pair of ratchet or count wheels P P′, connected with and operated by said levers N N′, substantially as specified.

3. The combination, in an automatic car-scale, with a printing-wheel connected with and actuated by the scale, of an impression-lever, and a pair of car-wheel-operated levers N N′ at the ends of the scale-platform and spanning a portion of the scale-platform and a portion of the track outside of the platform, whereby one or the other of said levers may be operated by the front wheel of the car on the platform or by the front wheel of the succeeding car, according as the car is a long or short one, substantially as specified.

4. The combination of car-scale platform A with levers N N′, spanning a portion of said platform and of the track outside of the platform, ratchet or count wheels P P′, pawl K, impression-lever G, and type-wheel C, connected with and actuated by the scale, substantially as specified.



5. The combination, with the scale-beam, of a variable counterpoise consisting of a pendulum-balance and a printing-wheel connected with and operated by the movement of the scale-beam, substantially as specified.

6. The combination, in a car-scale for weighing cars in motion, of a scale-platform having track-rails thereon with a scale-beam and a dash-pot having a piston furnished with a yielding valve, so that the valve may open when the beam moves quickly, substantially as specified.

7. The combination, in a car-scale for weighing cars in motion, of a scale-platform having track-rails thereon with a scale-beam and a dash-pot having a piston furnished with two yielding valves, one opening up and the other down, substantially as specified.

8. The combination, with scale-beam B′, of a variable counterpoise, a type-wheel, and a dash-pot having a piston furnished with spring-valve, and a scale-platform having track-rails thereon, substantially as specified.

9. The combination, with scale-beam B′, of a variable counterpoise, a type-wheel, and a dash-pot having a piston furnished with two spring-closed ports, one opening up and the other down, and a scale-platform having track-rails thereon, substantially as specified.

10. The combination, with scale-beam B′, of type-wheel C and variable counterpoise D, consisting of a pendulum-balance having an arm *d*, furnished with an eccentric arc-shaped head d^2, and flexible band d^3, for connecting said pendulum-balance and said beam, substantially as specified.

11. The combination, with scale-beam B′, of type-wheel C and variable counterpoise D, consisting of a pendulum-balance having an arm *d*, furnished with an eccentric arc-shaped head d^2, and flexible band d^3, for connecting said pendulum-balance and said beam, and intermediate lever d^5, substantially as specified.

12. The combination, with scale-beam B′, of type-wheel C and variable counterpoise D, consisting of a pendulum-balance having an arm *d*, furnished with an eccentric arc-shaped head d^2, flexible band d^3, for connecting said pendulum-balance and said beam, and a dash-pot having piston connected with said beam, substantially as specified.

13. The combination, in an automatic-printing weighing-scale, with a scale-beam, of a type-wheel connected therewith, an impression lever or block and disk T, carrying a carbon-paper, substantially as specified.

14. The combination, in an automatic-printing weighing-scale, with a scale-beam, of a type-wheel connected therewith, an impression lever or block, and a carbon-paper-carrying disk T, and means for revolving said disk, substantially as specified.

15. The combination, in an automatic-printing weighing-scale, with a scale-beam, of a type-wheel connected therewith, an impression lever or block, and disk T, consisting of rubber and carrying a carbon-paper, substantially as specified.

16. The combination, in an automatic-printing weighing-scale, with a scale-beam, of the type-wheel connected therewith, and impression lever or block, and a movable elastic disk T, interposed between said impression-lever and type-wheels, substantially as specified.

17. The combination, with a scale-beam, of the type-wheel connected therewith, an impression lever or block, and a movable elastic disk T, interposed between said impression-lever and type-wheel, and a carbon-paper *t*, carried by said movable disk T, substantially as specified.

18. The combination, with a scale, of a variable counterpoise, a type-wheel C, rack-bar *b*, gears *c*′, dash-pot F and its piston F′, having a spring-closed port, and a scale-platform having track-rails thereon, substantially as specified.

19. The combination, with the scale-platform A, having track-rails *a* thereon, of the track *a*′, leading to the scale-platform, and the bail-shaped levers N N′, extending partly on the scale-platform and partly on the track, substantially as specified.

20. The combination, with an automatic-printing weighing-scale having a platform A, furnished with track-rails *a*, of the lever N, extending partly on the scale-platform and partly on the track beyond the scale-platform, substantially as specified.

21. The combination, with an automatic-printing weighing-scale having a platform A, furnished with track-rails *a*, of the lever N, extending partly on the scale-platform and partly on the track beyond the scale-platform, and a similar lever N′ at the other end of the scale-platform, substantially as specified.

22. The combination of the scale-platform A with a scale-beam, a variable counterpoise, a type-wheel, an impression lever or block, and the car-wheel-operated levers N N′, extending partly on the scale-platform and partly on the track leading thereto, substantially as specified.

23. The combination of the scale-platform A with a scale-beam, a variable counterpoise, a type-wheel, an impression lever or block, and the car-wheel-operated levers N N′, extending partly on the scale-platform and partly on the track leading thereto, a pawl K for holding said impression-lever raised, said car-wheel-operated levers N N′ operating to release said pawl, substantially as specified.

24. The combination of scale-platform A with a scale-beam, a variable counterpoise, a type-wheel, an impression lever or block, and the car-wheel-operated levers N N′, extending partly on the scale-platform and partly on the track leading thereto, a pawl K for holding said impression-levers raised, said car-wheel-operated levers N N′ operating to release said pawl, mechanism connecting said levers N N′ and pawl K, and provided with ratchet or count wheels, so that said pawl will only be operated after a certain number of impulses have been imparted to said levers N N′, substantially as specified.

25. The combination of the scale-platform A with platform and track lapping levers N N′, the scale-beam, the type-wheel, the impression-lever G, the pawl K, the ratchet-wheels P P′, the levers p^3 p^4, the connecting-link p^3, and the link p^4, substantially as specified.

26. The combination of the scale-platform A with the platform and track lapping levers N N′, the scale-beam, the type-wheel, the impression-lever G, the pawl K, the ratchet-wheels P P′, the levers p^3 p^4, the connecting-link p^3, the link p^4, and the cam-wheels p', substantially as specified.

27. The combination of the scale-platform A with the platform and track lapping levers N N′, the scale-beam, the type-wheel, the impression-lever G, the pawl K, the ratchet-wheels P P′, the levers p^3 p^4, the connecting-link p^3, the link p^4, the cam-wheels p', the slides n^{10}, and the pawls n^{11}, substantially as specified.

28. The combination of the slides n^{10}, having pawls n^{11}, the ratchet-wheels P P′, cam-wheels p', levers p^3, link p^3, pawl K, connected to said link p^3, impression-lever G, and type-wheel C, connected with and actuated by the scale, substantially as specified.

29. The combination of the slides n^{10}, having pawls n^{11}, the ratchet-wheels P P′, cam-wheels p', levers p^3, link p^3, pawl K, connected to said link p^3, impression-lever G, and type-wheel C, connected with and actuated by the scale, and levers N N′ on the scale-platform and connected with said slides n^{10}, substantially as specified.

30. The combination of the slides n^{10}, having pawls n^{11}, the ratchet-wheels P P′, cam-wheels p', levers p^3, link p^3, pawl K, connected to said link p^3, impression-lever G, type-wheel C, connected with and actuated by the scale, levers N N′ on the scale-platform and connected with said slides n^{10}, lever G′ on the scale-platform, near the middle thereof, and connecting mechanism whereby the same operates to raise the impression-lever, substantially as specified.

31. The combination of the slides n^{10}, having pawls n^{11}, the ratchet-wheels P P′, cam-wheels p', levers p^3, link p^3, pawl K, connected to said link p^3, impression-lever G, type-wheel C, connected and actuated by the scale, levers N N′ on the scale-platform and connected with said slides n^{10}, lever G′ on the scale-platform, near the middle thereof, and connecting mechanism whereby the same operates to raise the impression-lever, and a pawl-lever regulating the feed of the paper and operated by said impression-lever, and the paper-strip-feeding guiding spools and pulleys, substantially as specified.

32. The combination, with a scale-platform, of the levers N N′ and G thereon, ratchet or count wheels P P′, pawl K, impression-lever G, and mechanism, substantially as described, connecting said parts, substantially as specified.

33. In an automatic car-scale, the combination, with a scale-platform having track-rails thereon, of a device at each end of the scale-platform adjacent to the track-rail adapted to be operated by the passage of the car-wheels, and an impression-lever connected and operated by one or the other of said car-wheel-actuated levers, according as the car is a long or a short one, substantially as specified.

413,881. FIRE-ESCAPE. EDWARD H. AMET, Chicago, Ill., assignor to himself and Herbert A. Streeter, same place. Filed Mar. 11, 1889. Serial No. 302,855. (No model.)



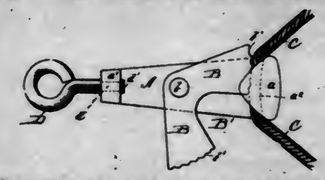
Claim.—1. The combination, in a stand-pipe fire-escape, of the stand-pipe with a hollow side bar communicating therewith and hollow rungs communicating with said hollow side bar and a valve, said rungs having no communication with the stand-pipe except through said valve and hollow side bar, so that the admission of water to said rungs may be controlled by said valve, substantially as specified.

2. The combination, in a stand-pipe fire-escape, of the stand-pipe with hollow side bar communicating therewith and hollow rungs communicating with said hollow side bar, said hollow rungs being provided with spraying-perforations, substantially as set forth.

3. The combination, with the stand-pipe A, of hollow side bar C, communicating therewith, fire-escape platform H, and perforated spraying-arm G, substantially as set forth.

4. The combination, with the stand-pipe A, of hollow side bar C, communicating therewith, fire-escape platform H, perforated spraying-arm G, and valve E, said side bar C having no communication with said stand-pipe except through said valve, substantially as specified.

413,882. DEVICE FOR HOLDING CORDS OR LINES. EDWARD H. AMET, Chicago, Ill., assignor to himself and Herbert A. Streeter, same place. Filed Mar. 11, 1889. Serial No. 302,856. (No model.)



Claim.—The combination, in a line or rope holder, of clamp-bar A, having hook *a*, with double-wing eccentric clamping-pawl B B, piv-

oted to said bar A, and swivel-ring D, having shank *d* extending through a projection *a'*, with which said bar A is provided, substantially as specified.

413,883. BROOM-CORN-COMBING MACHINE. ABRAHAM ANDERSON, Galesburg, Ill., assignor to G. D. Colton & Company, same place. Filed Sept. 26, 1885. Serial No. 178,410. (No model.)



Claim.—1. In a broom-corn comber, a spiked belt for conveying the straw, in combination with a toothed wheel revolving at the side of said belt and in the same direction, and a fixed guide for holding the brush in place.

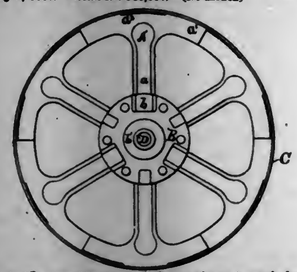
2. In a broom-corn comber, revolving pulleys, horizontal feed-belts running upon the same, and a spiked belt for conveying the straw running between said belts, in combination with a toothed wheel revolving at the side of said belt and in the same direction, and a fixed guide for holding the brush in place.

3. In a broom-corn-combing machine, the combination of the combing-cylinders arranged obliquely to the line of feed, a spiked belt for conveying the straw, a toothed wheel revolving at the side of said belt, and a fixed guide for holding the brush in place.

4. In a broom-corn-combing machine, the combination of the combing-cylinders arranged obliquely to the feed, a spiked belt for conveying the straw, a toothed wheel revolving at the side of the belt, a fixed guide for holding the brush in place, and the feed-belt I².

5. In a broom-corn-combing machine, the combination of the combing-cylinders, the spiked belt for conveying the straw, a toothed wheel revolving at the side of the belt, a fixed guide for holding the brush in place, and the doffer-bars N', carved around the feed-belt to disengage the brush from the latter.

413,884. METALLIC WHEEL. HENRY W. AVERY, Cleveland, Ohio. Filed May 9, 1889. Serial No. 310,097. (No model.)



Claim.—1. The combination of the sections A, each having a spoke *a*, a rim *a'*, and a turned-over flange a^3, with two hub-pieces having radial sockets which receive the ends of said spokes, substantially as and for the purpose specified.

2. The combination of the section A, each having a spoke *a*, a rim *a'*, and a flange a^3, bent to both sides of the rim, with two hub-pieces having radial sockets which receive the ends of the spokes, substantially as and for the purpose specified.

3. The combination of a sheet-metal wheel having a turned-over annular flange with a tire, said tire and flange being connected by bending one part into holes in the other part, substantially as and for the purpose specified.

413,885. RETORT-VAPORIZER. COUTLAND HALL, Indianapolis, Ind. Filed May 13, 1889. Serial No. 310,673. (No model.)

Claim.—1. In apparatus for vaporizing and burning hydrocarbon oils, in combination with the gas-chamber C, having the burners constructed as described, the vaporizing-retort A, arranged a short distance above the gas-chamber and provided with flues H H for conducting the flame and heat from the burners upward, with pipes for supplying oil and water thereto, and with interior alternating partitions for prolonging the passage of vapor to its exit, the superheating-retort B, of similar construction to the retort A, arranged above said retort A and connected thereto by the pipe E for conducting the vapor to the superheater, and connected with the gas-chamber by the pipe S, opposite pipe E, for conducting the gas to the gas-chamber and burners, substantially as and for the purpose specified.



2. In apparatus for vaporizing and burning hydrocarbon oils, the vapor-generating retort A, provided with square flues H and partition-walls *a a'*, and divided into vapor-generating cells *a c c² c³ c⁴*, formed by the walls of flues H and the partitions, a retort B, of similar construction to retort A, situated a short distance directly above it and connected to it by a pipe E, through which the vapor from retort A may pass into retort B, wherein the vapor is decomposed and converted into gas, and a burner located below retort A, and connected to said decomposing-retort B by pipe S, substantially as set forth.

3. In apparatus for vaporizing and burning hydrocarbon oils, in combination with a gas-chamber provided with burners for consuming gas, a vapor-generating retort and a vapor-decomposing retort of similar construction arranged a short distance apart, the former directly above the burners and the latter directly above the former, provided with alternating partitions, thus forming a series of cells within them and connected together by a pipe through which the vapor may pass to the decomposing-cells, the former retort connected with the supply-pipe opposite its exit and provided with flues for conducting the flame and heat to the decomposing-retort from the burners, and the latter retort connected by a pipe opposite its supply-inlet to the gas-chamber for supplying gas to the burners, substantially as set forth.

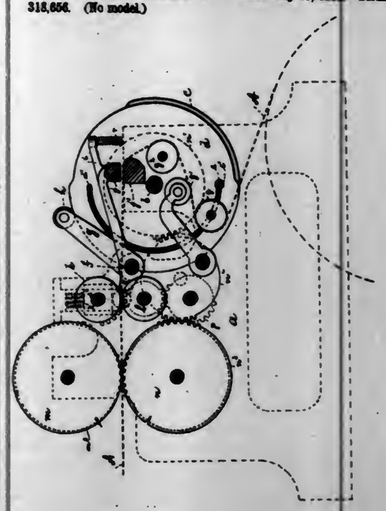
413,886. YEAST-CAKE. JOSHUA BARBER, Brooklyn, N. Y. Filed July 7, 1888. Serial No. 279,312. (No specimens.)

Claim.—1. As an article of manufacture, a yeast-cake having a coating or envelope of sugary matter, as set forth.

2. As an article of manufacture, a yeast-cake having a hermetically-sealing envelope of sugary matter, as specified.

3. As an article of manufacture, a yeast cake having its particles sealed and protected from the deleterious effects of the atmosphere by a coating of sugar and gum or equivalent material, as and for the purpose set forth.

413,887. CUTTING ATTACHMENT FOR PRINTING-PRESSES. AUGUST R. BARTLAU, Plainfield, N. J. Filed July 25, 1888. Serial No. 318,656. (No model.)

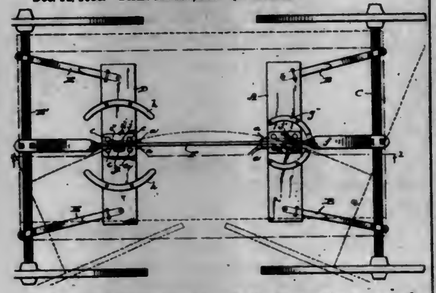


Claim.—1. The combination of a pair of adjustable cams with a shaft *f*, carrying arms *g i*, the arm *g*, having roller *h*, that engages the cams, and the arms *i*, having stop *j'*, and with the block *j'*, substantially as specified.

2. The combination of a pair of adjustable cams with shaft *f*, arm *g*, and roller *h*, engaging the joint surfaces of the cams, and with the arms *i*, having extensions *i'*, the arms *i*, carrying stop *j'*, and the extensions *i'*, engaging the adjustable bearings of a feeding-roller, and with the block *j'*, substantially as and for the purpose specified.

3. The combination, in a cutting attachment for printing-presses, of the following elements: a pair of cams, a roller engaging the cams, a pair of arms connected to the roller-carrying shaft, a stop and a feed mechanism operated by the arms, and a pair of cutting-cylinders, substantially as and for the purpose described.

413,888. WAGON-GEAR. CHARLES S. BEERS, Racine, Wis. Filed Dec. 11, 1888. Serial No. 293,310. (No model.)

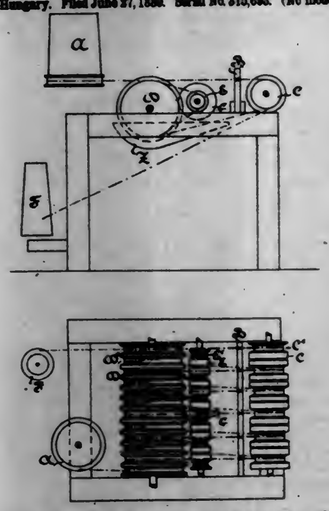


Claim.—1. The combination, with the front and rear gear of a wagon, of an elastic reach and pivotal connections between the front gear and the body, and pivotal and sliding connections between the rear gear and the body.

2. The combination, with the front and rear axles of a wagon, of an elastic reach and front and rear pivotal connections between the said axles, substantially as set forth.

3. The combination, with a wagon-body and its front and rear gear, of an elastic reach having pivotal connections with each gear, whereby the said body may be moved sidewise both in front and rear equally.

413,889. WIRE-DRAWING MACHINE. BLASIUS BRODE, Feistritz, Austria-Hungary. Filed June 27, 1889. Serial No. 315,693. (No model.)



Claim.—1. In a wire-drawing machine, the combination, with a revolvable drawing-cylinder, of a series of guide-rollers journaled on a shaft, a series of dies for gradually reducing the wire arranged between the said rollers and the cylinder, and a series of intermediate guide-rollers journaled between said dies and the cylinder for the wire to pass around, substantially as set forth.

2. In a wire-drawing machine, the combination, with a revolvable drawing-cylinder provided with a series of circumferential projecting ribs for separating the loops of the wire, of a series of guide-rollers journaled on a shaft, a series of dies arranged between the said rollers and the cylinder, and a series of intermediate guide-rollers journaled between said dies and the cylinder for the wire to pass around, substantially as set forth.

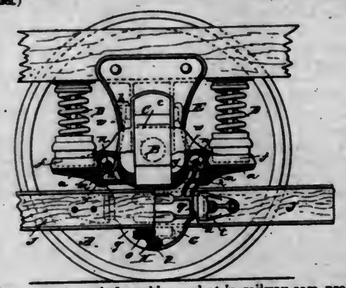
3. In a wire-drawing machine, the combination, with a revolvable conical drawing-cylinder provided with a series of circumferential projecting ribs for separating the loops of the wire, of a series of guide-rollers journaled on the shaft, a series of dies arranged between the said rollers and the cylinder, and a series of intermediate guide-rollers journaled between said dies and the cylinder parallel with the surface of said cylinder for the wire to pass around, substantially as set forth.

4. In a wire-drawing machine, the combination, with a revolvable drawing-cylinder, of a series of guide-rollers journaled on a shaft at a short distance from said cylinder, and one or more rollers of greater diameter than said guide-rollers journaled on the said guide-roller shaft and bearing against the surface of the cylinder for relieving the shaft from bending strain, substantially as set forth.

5. In a wire-drawing machine, the combination, with a revolvable drawing-cylinder, of a longitudinally-reciprocating shaft and a series of guide-rollers for the wire to pass around, journaled on said shaft and partaking of its reciprocating motion, substantially as and for the purpose set forth.

6. In a wire-drawing machine, the combination, with a revolvable drawing-cylinder, of a shaft parallel with the surface of said cylinder, a series of grooved guide-rollers journaled on said shaft, and a cam and a spring for imparting a longitudinal reciprocating motion to said shaft and guide-rollers, substantially as and for the purpose set forth.

413,890. TRUCK FOR CABLE OR ELECTRIC CARS. SUMNER A. BEMIS, Springfield, Mass. Filed Sept. 2, 1889. Serial No. 322,779. (No model.)



Claim.—1. A truck for cable or electric railway cars, provided with a suitable horizontal support pivotally mounted for a swiveling motion in a vertical plane, and one or more rests located and supported laterally beyond said horizontal support, combined with a grip or other supporting-beam adapted to be maintained on said horizontal support and projected forwardly and rearwardly therefrom and provided forwardly or to the rear of said rest or rests with bearing-abutments, substantially as and for the purpose described.

2. A truck for cable or electric railway cars, provided, first, with a suitable horizontal support pivotally mounted for a swiveling motion in a vertical plane and having on its upper side a cushion, and, secondly, with one or more rests located and supported laterally beyond said horizontal support, combined with a grip or other supporting-beam adapted to be maintained on said horizontal support and projected forwardly and rearwardly therefrom, and provided forwardly and to the rear of said rest or rests with bearing-abutments, substantially as described.

3. The combination, in a truck for cable and electric railway cars, with the hollow step-extensions *a a*, of the beam-support consisting of the opposing cheek-pieces supported from said step-extensions, and provided, first, with the horizontal supporting-block H, pivotally supported therein and having the cushion *o*, and, secondly, with the laterally-extended rest *q*, and the carrying-beam adapted to be passed between said cheek-pieces, resting on said cushioned block and extending forwardly and rearwardly therefrom, and provided forwardly and to the rear of said rest or rests with cushioned bearing-abutments, substantially as and for the purpose described.

4. In cable or electric railway car trucks, a carrying-beam support consisting of separated and opposing cheek-pieces, each having extending between their lower portions a removable beam-supporting

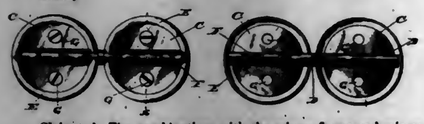
block, and having extending laterally from the outer side of one or both of said cheek-pieces one or more rests *q*, substantially as and for the purpose set forth.

5. In cable or electric railway car trucks, a carrying-beam support consisting of separated and opposing cheek-pieces having at their upper portions the extensions *m m'*, through which supporting-bolts therefor may be passed, and provided with the uniting cross bracing *k*, and provided between their lower portions with the cushioned block H and the removable supporting-bolt *p*, and also having extending laterally from the outer side of one or both of said cheek-pieces one or more rests *q*, substantially as described.

6. In a truck, the combination, with the car-body having the pedestal thereon, of the journal-box steps provided with the transverse bolts *n*, and the rods *w*, by their upper portions secured to said pedestals and having their lower ends hooked and adapted to engage with said bolts *n*, substantially as and for the purpose described.

7. In a truck, the combination, with the car-body having the pedestal thereon, of the hollow journal-box steps provided with the transverse bolts *n*, the beam-support G, pending from said bolts, and the rods *w*, by their upper portions secured to said pedestals and having their lower ends hooked and adapted to engage with said bolts, substantially as and for the purpose described.

413,891. FRICTION-HINGE. Julius Berkey, Grand Rapids, Mich. Filed Nov. 28, 1888. Renewed Sept. 30, 1889. Serial No. 325,468. (No model.)



Claim.—1. The combination, with the mirror-frame and mirror-supports, of a pintle and two slightly-separated superposed plates provided with registering grooves adapted to receive the end of the pintle, whereby a uniform frictional bearing is formed for nearly the entire surface of the end of the pintle, and means for clamping the plates upon the pintle, whereby rotation upon the pintle may be resisted by any desired friction.

2. The combination, with a hinge-pintle, of two plates provided with diametrical registering grooves for the pintle and having an annular groove which serves as a stiffening-rib and a keeper for the pintle.

3. The combination, with the plates C, arranged in pairs, provided with registering screw-holes G and each having the marginal groove E and the diametrical groove F, of the pintle-rod D, lying between the plates in the groove F, substantially as and for the purpose set forth.

413,892. COMBINED BOTTLE AND CORK-CAP. Paul C. Birrbach, Milwaukee, Wis. Filed July 1, 1889. Serial No. 316,222. (No model.)



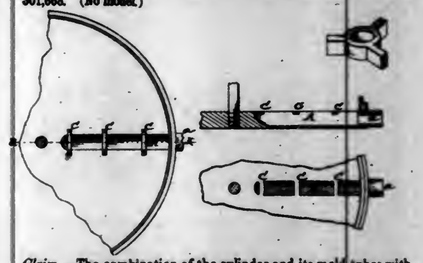
Claim.—1. A bottle exteriorly provided with a spiral ridge contracted at the upper end of the bottle to form a thread and a screw-cap engaged by the thread, substantially as set forth.

2. A bottle having a screw-threaded neck and a cap for engagement with said neck cut away to leave a central opening and diametrically-opposed tongues, the latter being bent up to form lugs, substantially as set forth.

3. A bottle having a screw-threaded neck and a cap for engagement with said neck cut away to leave a central opening and diametrically-opposed tongues, the latter being bent up and over to form open lugs, substantially as set forth.

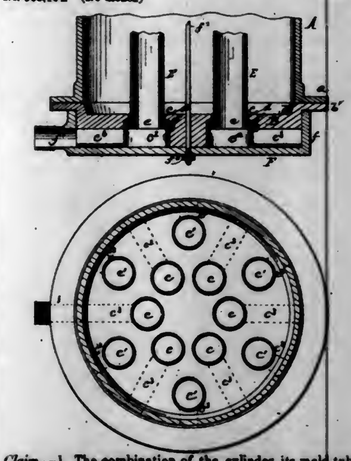
4. A bottle having an exterior spiral ridge contracted at the upper end of the bottle to form a thread and a screw-cap having the top thereof cut away to leave a central opening and diametrically-opposed tongues, the latter being bent up and over to form open lugs, substantially as set forth.

413,893. APPARATUS FOR MAKING PRINTERS' ROLLERS. Leander K. Bingham, New York, N. Y. Filed Mar. 1, 1889. Serial No. 301,668. (No model.)



Claim.—The combination of the cylinder and its mold-tubes with a bottom having a gutter across which there are several bridges in the paths of the mold-tubes, as set forth.

413,894. APPARATUS FOR MAKING PRINTERS' ROLLERS. Leander K. Bingham, New York, N. Y. Filed Mar. 13, 1889. Serial No. 303,104. (No model.)

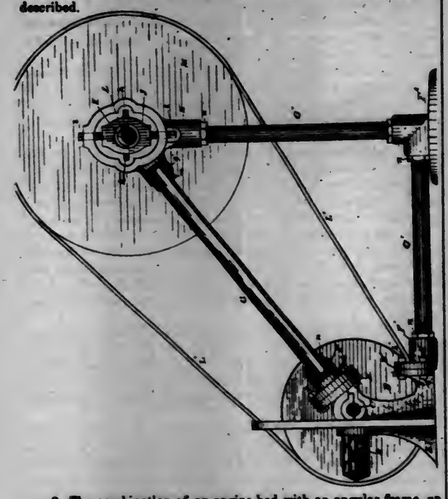


Claim.—1. The combination of the cylinder, its mold-tubes, the bottom head having the holes for the tubes, the countersinks around the holes, and the bottomless channels running from the countersinks to the edge of the head with the bottom provided with the nozzle, as set forth.

2. The combination of the cylinder, its mold-tubes, the bottom head having the holes for the tubes, and the bottomless channels running from the holes to the edge of the head with the bottom provided with the nozzle, as set forth.

413,895. ENGINE AND SHAFTING BED. Virgil W. Blanchard, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Mar. 29, 1889. Serial No. 305,297. (No model.)

Claim.—1. The combination, with an engine-bed and a belt-wheel on the main or crank shaft of an engine, of a frame which is rigidly secured to said bed and provided with a head in which is adjustably mounted a journal-box for the journal of a line-shaft, substantially as described.



2. The combination of an engine-bed with an angular frame, an adjustable head thereon, and an adjustable gimbal mounted in said head and carrying an adjustable journal-box for a line-shaft, substantially as described.

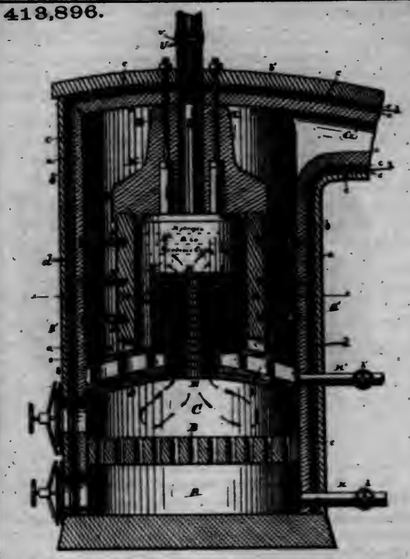
3. The combination of an open head H, a vertically and horizontally adjustable journal-box, a line-shaft bearing a belt-wheel, and a frame supporting the same secured rigidly to an engine-bed bearing a crank-shaft, and a belt-wheel on this shaft, substantially as described.

4. A supporting-frame for a line-shaft, consisting of the sections G G' G'', secured by means of right and left screw-threads into an open head H, to a base-coupling F', and to ferrules which are bolted to an engine-bed, substantially as described.

5. In combination with an engine-bed, a triangular support for a line-shaft secured to said bed and having the section G, connected by pivots P to the parts F H, substantially as described.

6. In an engine-bed and shaft-support, the combination of the bed A, having circular heads E E', and the head H, with the sections G G' G'' and ferrule F, all substantially as specified.

413,896. FURNACE. Virgil W. Blanchard, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Mar. 29, 1889. Serial No. 305,300. (No model.)



Claim.—1. In a furnace, the double-wall magazine or tube E, having both of its walls perforated horizontally, in combination with an air-supply pipe, a fuel-chamber, a mixing-chamber above said tube, and a narrow vertical passage leading from the latter to an exterior mixing-chamber G, all constructed and adapted to operate substantially as described.

2. In a furnace, the combination, with a fire-chamber, of a hollow dome above the same, having an interior air-channel, a tube rising from said dome and having double walls, each laterally perforated, the space between the walls of said tube communicating with the air-passage in said dome, the mixing-chamber above said tube, the descending flue exterior thereto, and the exterior gas-mixing chamber communicating at bottom with said flue, substantially as described.



3. In a furnace, the combination of a central double-wall magazine, both of the walls of which are perforated, a double-walled dome having an air-channel communicating with the space between the walls of the magazine, means for supplying air thereto under pressure, a mixing-chamber F, passages *j i*, and a mixing-chamber G, having perforated rings is it, substantially as described.

4. In a furnace, the combination of the fuel-chamber C, the hollow dome D, open at top, the double-walled tube having each wall perforated, the mixing-chamber F, descending flues exterior to said tube, and the exterior chamber G, and annular perforated rings therein; all constructed and arranged to operate substantially as and for the purpose described.

5. In a furnace, the combination, with a fire-box, of a dome D, a double-walled tube having each wall perforated, an annular wall W exterior thereto, and a cap closing the top of said wall, all substantially as and for the purpose specified.

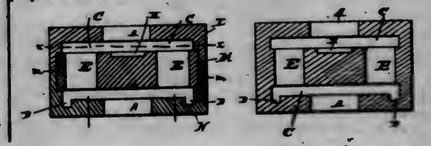
6. A furnace consisting of an exterior casing, a fire-chamber therein, a hollow dome D, the double-walled tube having each wall perforated, the wall W exterior to said tube, the cap K, and annular perforated rings J J, all substantially as described.

7. In a furnace, the combination of the fuel-chamber C, having a grate, a hollow dome D, tube E, having double laterally-perforated walls, mixing-chamber F above said tube, the descending flues inside the same, the air-supply passages and jets in said dome and tube, and the mixing-chamber G exterior to said tube and chamber F and separated therefrom by a fire-brick wall, all constructed and arranged to operate substantially as and for the purpose described.

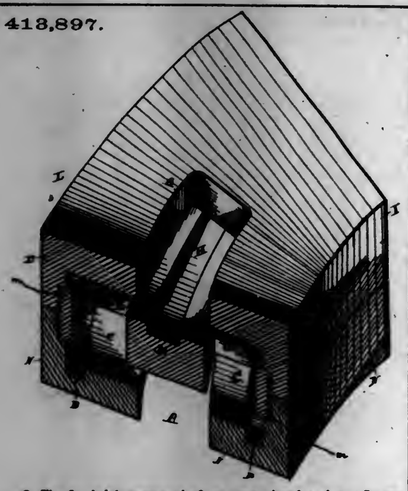
413,897. BRICK FOR FURNACES. Virgil W. Blanchard, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Mar. 29, 1889. Serial No. 305,302. (No model.)

Claim.—1. A fire-brick composed of an upper chambered part provided with a central flue, a lower chambered part provided with a central flue, and an intermediate partition having flues E E, all substantially as specified.

2. A hollow or chambered brick having the upper and lower horizontal passages C C, the interior partition having flues E E and trap H, and the vertical passages A A, all substantially as and for the purpose described.



413,897.



3. The fire-brick composed of an upper chambered part L, provided with a central flue, a lower chambered part N, formed with a central vertical flue and cinder-traps, and a partition M, interposed between parts L and N and having flues E E and trap H, all substantially as described.

413,898. GRATE FOR FURNACES. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 4, 1889. Serial No. 305,968. (No model.)



Claim.—1. The combination, in a grate, of stationary bars with intermediate rocking bars having crushing-heads provided with a series of air-passages, for the purpose and substantially as described.

2. In a grate, the combination of stationary bars having double beveled heads with a series of intermediate rocking bars having double beveled heads formed with air-passages, whereby air is admitted through the bars, substantially as and for the purpose specified.

3. In a grate constructed with movable bars, the combination therewith of longitudinally-grooved stationary bars having double beveled and grooved heads and longitudinally grooved on their under surfaces, substantially as described.

4. The movable hammer-headed bars composed of sections locked together and provided with air-jet passages, as described, in combination with the stationary bars, as specified.

5. The combination, with a series of stationary bars, of a series of rocking bars parallel with and between the stationary bars, said rocking bars being composed of sections fitted together by tongue-and-socket joints and provided with coincident grooves forming air-passages, substantially as described.

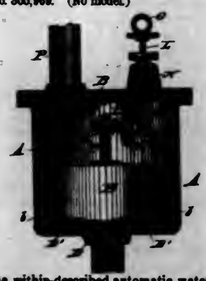
6. The combination of a series of stationary bars having double inclined and grooved upper edges with a series of rocking bars alternating with said stationary bars and having enlarged and perforated heads and depending shanks, and the uniting-links between said rocking bars for operating them simultaneously, substantially as set forth.

7. The combination, with the stationary bars, of intermediate rocking bars composed of sections fitted together upon a supporting-rod, and having enlarged heads channeled on their meeting edges, and depending shanks, the rods passing through said shanks, and the links connecting said rods for operating the rocking bars, substantially as specified.

8. The combination of the grate-bars having inclined upper edges and longitudinally channeled or grooved, with a series of rocking bars composed of similar sections having enlarged heads grooved on their meeting faces, and tongues and sockets for locking the adjoining sections together, and the links and rods for rocking said bars, substantially as described.

9. The herein-described grate, composed of a series of stationary bars having a longitudinal channel at bottom and their upper edges beveled and grooved, with a series of rocking bars composed of similar sections fitted on a suspending-rod, each section having an enlarged double beveled head channeled on its sides, and a tongue and socket on its depending portion or shank, and a laterally-perforated eye, and the rods passing through said eyes, the links connecting said rods, and the operating-rod for rocking the bars, all substantially as and for the purpose specified.

413,899. LOW-WATER ALARM. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 4, 1889. Serial No. 305,969. (No model.)



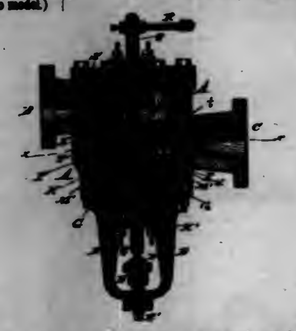
Claim.—1. The within-described automatic water-alarm, consisting of a vessel having inlet and outlet passages, a hollow float having a collared stem, a pivoted latching-dog above said float engaging said stem, and a rod playing through a stuffing-box above the float and provided with a disk on its lower end engaging said dog, and means for connecting the rod with an alarm, all substantially as specified.

2. The within-described automatic water-alarm, consisting of a vessel A, having inlet and outlet passages, a hollow float having a vertical stem provided with a collar, a latching-dog pivoted above the float, and a spring-actuated rod playing through a stuffing-box and provided with a disk on its lower end, and means for connecting the rod with an alarm, all constructed and adapted to operate substantially in the manner set forth.

3. The combination of the vessel A, the float E therein, having a stem F, and the dog H, engaging said stem and having a catch K, and pivoted to lugs depending from the top of said vessel, with the vertically-movable rod L, engaging said catch and passing through the top of said vessel, and means for connecting the rod with an alarm, all substantially as set forth.

4. The combination of the vessel A, having inlet and outlet passages and studs D', and the rod L, having disk L' and spring M, and means for connecting the rod with an alarm, with the pivoted dog K, the float E, and its collared stem F, all substantially as and for the purpose specified.

413,900. STEAM-VALVE. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 4, 1889. Serial No. 305,970. (No model.)

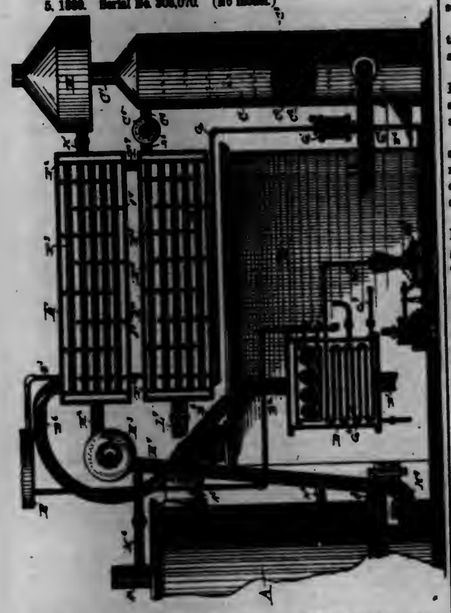


Claim.—1. The combination of the valve-casing having an internal annular channel, and the annular flanges below and above said channel, an inlet-port above said flange, and an outlet-port from said channel, with a cup-shaped valve-seat H, constructed substantially as described, supported on said flanges and slitted substantially as described, and a cup-shaped slitted valve fitted in said seat, and the adjustable valve-stem carrying said valve, all substantially as specified.

2. The combination of the valve-casing and the cup-shaped slitted valve-seat therein with the cup-shaped slitted valve M, fitted in said seat and having strengthening-ribs p' p', and the valve-stem, all substantially as and for the purpose specified.

3. The combination of the valve-casing having channel T and annular flanges and inlet and outlet ports, substantially as described, the conical slitted valve-seat H, fitted in said casing, and the conical slitted valve M, fitted to said seat and having openings M' in its bottom, with the valve-stem Q, carrying said valve, the stuffing-boxes therefor, and the bracket D and adjustable oil-cup F, all constructed and arranged to operate as specified.

413,901. GAS-COOLER FOR FURNACES. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 5, 1889. Serial No. 306,070. (No model.)



Claim.—1. The combination of a steam-boiler furnace with a steam-condensing vessel and means, substantially as described, for withdrawing gases from the chimney and returning them through said vessel to the furnace, substantially as set forth.

2. The combination, in a steam-boiler furnace, of a gas-collecting trap, a steam-condenser, and means, substantially as described, for withdrawing the gases from the trap and directing them through said condenser to the furnace, for the purpose specified.

3. The combination, in a steam-boiler furnace, of an air-heater in the uptake and a steam-condenser with means, substantially as described, for directing a current of air through said condenser into the air-heater, and from thence to the furnace, as specified.

4. The combination, in a steam-boiler furnace, of a steam-condenser with means, substantially as described, for withdrawing gases from the chimney and directing them through a part of said condenser to the furnace, and means for directing a current of air through the other portion of the condenser to the furnace, all substantially as specified.

5. The combination of the steam-condenser and water-heater with the exhaust-steam pipe leading to said heater, the pipes connecting said heater and condenser, the pump communicating with said condenser and with a coil in said heater, and the connection between said coil and boiler, all constructed as and for the purpose set forth.

6. In a steam-boiler furnace, the combination of the air-heater and gas-trap communicating with the chimney with the steam-condensing vessels and the connections between the said vessels and the gas-trap and air-heater, respectively, all substantially as specified.

7. The combination, in a steam-boiler furnace, of a steam-condenser and a gas-trap communicating with the chimney with the air-forcing engine and pipes, whereby the gases are withdrawn from the trap and through the condenser and directed into the furnace, all as and for the purpose described.

8. The combination of the furnace and the air-heater located in the chimney, and the steam-condenser, with the air-forcing engine, the pipes connecting the condenser with the air-heater and the heater with the furnace, as and for the purpose specified.

9. The combination, in a steam-boiler furnace, of the gas-trap and air-heater connected to the chimney and the steam-condensing vessels communicating with the exhaust of an engine with the air engines and pipes connecting said vessels respectively with the gas-trap and air-heater and with the furnace, whereby gases and air may be drawn through said vessels and carried to the furnace, substantially as described.

10. The combination, with the water heater and purifier D and the condensing-vessel E, of the air-heater C, the pipes connecting the condenser and heater, the alarm, and the air engine and pump, all substantially as set forth.

11. The combination of the condenser F F', the air-heater C, and the furnace and pipe connections between said condenser and furnace and the air-engines, all substantially as and for the purpose specified.

12. The combination, in a steam-boiler furnace, of the condenser F F', the water heater and purifier D, and the connections between said heater and purifier with the air-heater C and gas-trap H, all as and for the purpose described.

13. The combination, with the steam-condenser and air-heater, substantially as described, provided with an air-inlet pipe having a regulating-valve, with an air-forcing engine connected to said condenser, whereby the air may be attenuated in its passage therethrough, substantially as and for the purpose specified.

14. The combination, in a steam-boiler and furnace, of the vessels F F', connected and constructed substantially as described, with the gas-trap H, the air-heater C, the air-forcing engines, water-pump, and cold-water condenser, all substantially as specified.

15. The combination, in a steam-boiler furnace, of the water heater and condenser D, the steam-condensing vessels F F', and the cold-water condenser E with the gas-trap G, air-heater C, alarm, and the air and water pumps, all constructed and arranged to operate substantially as specified.

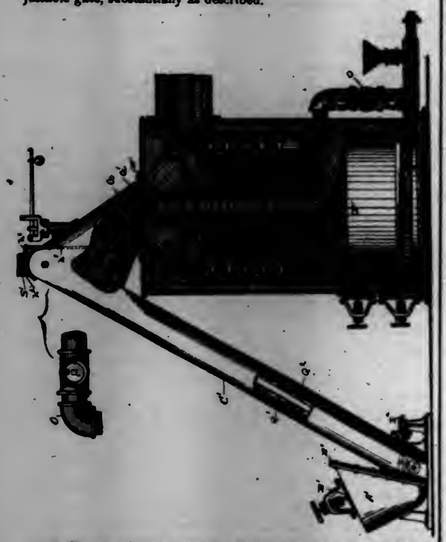
413,902. FUEL-FEEDER FOR FURNACES. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 5, 1889. Serial No. 306,071. (No model.)

Claim.—1. In combination with a furnace and an endless-chain fuel-elevator, substantially as described, a valve adapted to receive the fuel from the buckets and deliver it into the furnace, and the mechanism, substantially as described, whereby said valve is automatically opened and closed by the buckets, as and for the purpose set forth.

2. The combination, with the furnace, the automatically-operated valve G', and the endless-chain fuel-elevator and its casing, of the air-supply pipe for said casing and the devices for automatically regulating the admission of air into the casing at the moment valve G' is operated, all substantially as specified.

3. The combination, with the elevator-casing, its endless chain and buckets, and the tracks therefor, of the tracks or ways for the trucks, substantially as specified.

4. The combination of the elevator-casing, its endless chain and buckets, and the receptacle A^0 with the agitator-wheel and the adjustable gate, substantially as described.



5. The combination, with the fuel-elevating buckets, of the adjustable bottoms, constructed and arranged substantially as specified.

6. The combination of the furnace, the feed-valve G', and the elevator-casing and elevator chain and buckets therein with the tripping-levers and connections thereof to said valve and the mechanism for operating said chain, all substantially as specified.

7. The combination, with the furnace and the elevator casing and chain and buckets, of the worm-gearing and shafting for operating said chain, and the pulleys and clutch and governor for automatically operating said shafts, all substantially as specified.

8. The herein-described elevator-buckets Q', having legs U' and adjustable bottoms S^3, substantially as and for the purpose set forth.

9. The combination of the valve G' and the tripping-levers H' and I', connected to said valve, with an endless-chain elevator and the buckets thereon adapted to operate said levers, all substantially as set forth.

10. The combination of the valve G' and the tripping-levers H' and I', connected thereto, with the endless-chain elevator and its buckets adapted to operate said levers, and the valve X^2 and the connections between the same and lever H', all substantially as set forth.

11. The combination, with the furnace, the casing C', and fuel-receptacle A^3, and the agitator-wheel W', elevator-chain Q^2, and its buckets, of the shaft Z^3 and its connections for operating said chain, the cone-pulleys Z' and Y', shaft a^2, and clutch c', connected to a steam-governor, all substantially in the manner and for the purpose set forth.

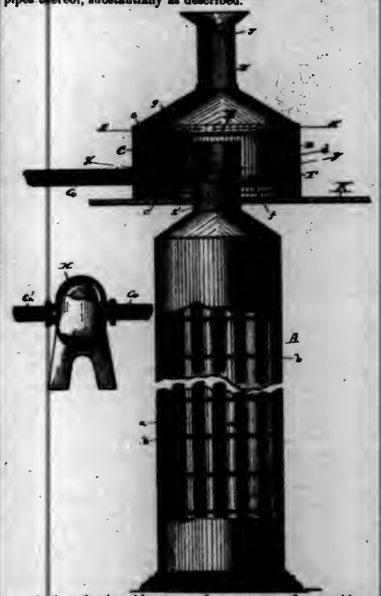
12. The combination, with the furnace, the air-tight casing C', the fuel-elevator chain and buckets therein, and the air-supply pipe S', and the devices, substantially as described, for automatically controlling the operation of said chain, of the valve G', levers H' I', rods H^3 I^3, and arms A A and rod, all constructed substantially in the manner and for the purpose specified.

413,903. GAS-TRAP FOR CHIMNEYS. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 6, 1888. Serial No. 306,208. (No model.)

Claim.—1. The combination, with the escape-flue of a furnace, of a gas-trap having a receiving-chamber communicating with the flue closed at top and bottom, but open at its sides near the bottom, a gas-arresting chamber communicating with the receiving-chamber and with the outlet to the chimney, and a pipe leading from the bottom of said chamber to an exhaust and forcing engine, substantially as and for the purposes specified.

2. A carbonic-acid-gas trap for the escape-flue of a furnace, consisting of a hood, a receiving-chamber having a closed bottom, and an annular arresting-chamber outside the receiving-chamber, and a pipe leading from said arresting-chamber to an exhausting and forcing engine, substantially as described.

3. In a gas-trap constructed substantially as described, the pipe-coil having perforations in its lower side and located in the annular space d, in combination with an exhausting and forcing engine and the pipes thereof, substantially as described.

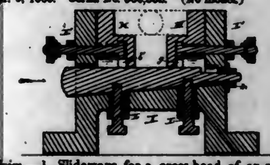


4. A carbonic-acid-gas trap for an escape flue or chimney, consisting of the following elements: a cylindro-conical hood, a contracted outlet therefor, an internal cylinder forming spaces d g, outlets f therefor, the perforations e, leading out of the space d, and a perforated pipe-coil communicating with a blower, all constructed and adapted to operate substantially as described.

5. The combination, with the escape-flue of a furnace, of a device having a horizontal downwardly-deflecting diaphragm, a chamber outside and below the same, outlets below the same, a suction-pipe leading from said chamber, and an exhausting-engine, substantially as and for the purposes described.

6. The combination, with a gas-trap and an escape-flue, of a perforated pipe lying in the bottom of said trap, and an exhausting-engine, substantially as and for the purposes described.

413,904. SLIDEWAY FOR CROSS-HEADS. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 9, 1889. Serial No. 306,532. (No model.)



Claim.—1. Slideways for a cross-head of an engine, which are adjustable vertically and horizontally, substantially as described.

2. The combination of the frame, the vertically and horizontally adjustable slideways, and the screw-bolts, jam-nuts, and endwise-adjustable gibs, substantially as described.

3. The combination of vertically and horizontally adjustable slideways, the supporting-frame, screw-bolts tapped through the cheeks of said frame, adjustable gibs, and lock-nuts, substantially as described.

4. In combination with slideways which are vertically and transversely adjustable, means, substantially as described, for adjusting and locking said slideways, for the purpose specified.

5. In the combination of the recessed slideways with laterally-adjustable screw-bolts and endwise-adjustable gibs, substantially as described.

6. The combination of the support having angular cheeks, the angular slideways supported thereon, with the angular gibs C C and the bolts E and F, for locking said slideways, substantially as described.

7. The combination of the support having angular cheeks, the slideways B, supported thereon and slotted substantially as described, with the gibs C and the locking bolts and nuts, all substantially as described.

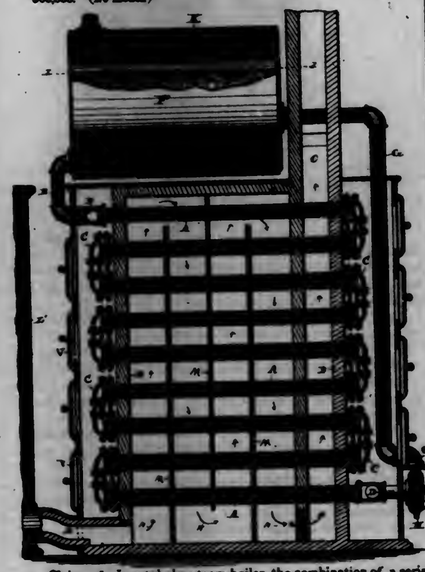
413,905. FURNACE-WALL. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 9, 1889. Serial No. 306,534. (No model.)



Claim.—1. A wall for furnaces and other purposes, composed of an internal lining of dense fire-brick, an external metal jacket, and intermediate layers of porous fire-bricks and refractory substance, substantially as described.

2. A furnace-wall composed of dense fire-brick lining, a layer of loose refractory material, a layer of porous fire-brick made as described, another layer of loose refractory material, and a metal jacket, substantially as described.

413,906. STEAM-BOILER. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 9, 1889. Serial No. 306,535. (No model.)



Claim.—1. In a tubular steam-boiler, the combination of a series of water-pipes with the flattened tubular connections C and the clamping-straps U, substantially as and for the purpose specified.

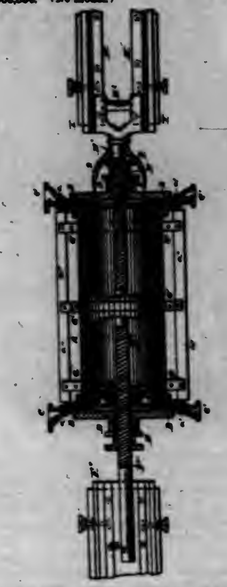
2. The combination of the connected series of water-pipes, the steam-dome, and the pipe connecting the upper series of water-pipes to said dome, with a propeller and casing, a pipe connecting the steam-dome and propeller-casing, and the pipe-connections between said casing and the lowermost series of water-pipes, all substantially as and for the purpose specified.

3. The combination of the supporting-walls and chimney and partitions arranged to form a zigzag flue between said walls, with a series of water-pipes extending through said walls and partitions, and the flattened tubular connections C for the extremities of said pipes, substantially as specified.

4. The combination of the water-pipes having ferruled ends, the clamping-straps U, the tubular flattened connections C, and the uniting-bolts, all substantially as described.

5. The herein-described tubular boiler, consisting of a series of water-pipes, supporting-walls therefor, partitions between said walls, the tubular flattened connections C for the water-pipes outside the walls, the steam-dome, the pipe-connections between the upper series of water-pipes and the dome, the pipes connecting said dome with the lowest series of water-pipes, and the inclosing-casing provided with a series of doors opposite the ends of the water-pipes, substantially as and for the purpose set forth.

413,907. STEAM-ENGINE. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 9, 1889. Serial No. 306,536. (No model.)



Claim.—1. The combination, with a cylinder in which works a piston, of a piston-rod which extends through stuffing-boxes in the cylinder-heads, and adjustable slideways for the cross-heads on the extremities of the piston-rod, substantially as described.

2. The combination of indicators with a cylinder and a piston-rod which is supported at both ends by adjustable slideways, substantially as described.

3. The combination of the cylinder and its supporting-bed, the piston-rod extending through both cylinder-heads and bearing indicators P, slideways for supporting the cross-heads of the piston-rod, and means for adjusting said slideways, all constructed and adapted to operate substantially in the manner and for the purposes described.

4. The combination of adjustable slideways, a piston-rod which extends through both cylinder-heads, and indicators thereon, substantially as described.

5. The combination of the cylinder and piston and piston-rod extending through both cylinder-heads with frames I at the opposite ends of the cylinder, slideways H, supporting the cross-heads of the piston-rod, the screws for adjusting these ways horizontally, the gibs for adjusting the ways vertically, and means for securely holding these slideways, substantially in the manner and for the purpose described.

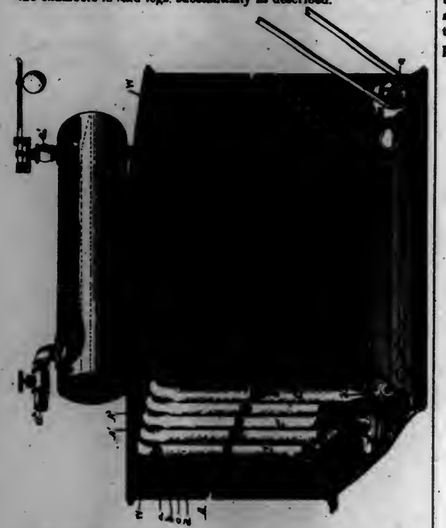
413,908. STEAM-GENERATOR. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 9, 1889. Serial No. 306,537. (No model.)

Claim.—1. The combination, in a steam-generator, of a series of horizontal tubes jointed to independent vertical legs which are subdivided by partitions into two independent chambers, with return-tubes in said horizontal tubes, and a common horizontal pipe suitably supported and communicating with a steam-drum and with the legs, substantially as described.

2. The combination of a series of vertical legs subdivided by a diaphragm and communicating with a common supply-drum at their lower ends, with a series of horizontal tubes arranged one within the other and communicating, respectively, with the chambers in said legs, substantially as set forth.

3. A series of vertical pipes vertically subdivided into two inde-

pendent water-circulating chambers, in combination with a lower communicating water-supply drum, pipes leading to a steam-drum from one of the water-chambers in each leg, and horizontal tubes arranged one within the other and communicating, respectively, with the chambers in said legs, substantially as described.



4. A steam-boiler consisting of a series of vertical water-legs C, and horizontal tubes closed at their outer ends and opening into one of the chambers of a vertical water-leg, in combination with internal tubes opening into one of the other chambers of the leg, a horizontal transverse base-pipe supporting the legs, and the water-supply thereto, all substantially as set forth.

5. The combination of a series of vertical water-legs C, horizontal tubes closed at their outer ends and opening into one of the chambers of a series of vertical legs, with internal tubes opening into one of the other chambers of the legs, a horizontal transverse base-pipe connected to said legs, a steam-drum, its connections with said legs, and a forcing-engine and its connections with said drum and base-pipe, substantially as set forth.

6. In combination with a series of vertical subdivided pipes C, having bent upper ends, a horizontal base-pipe communicating with the latter and provided with a feed-pipe, the pipe-communications with the steam-drum, and the horizontal internal and external tubes communicating with the said subdivided legs, all constructed and arranged substantially as specified.

7. The herein-described water-legs for tubular boilers, consisting of the metal tubular casting having an internal partition dividing its interior into two non-communicating chambers, openings through the outer wall into one of said chambers and through the partition into the other chamber, and having its upper end bent at right angles, substantially as specified.

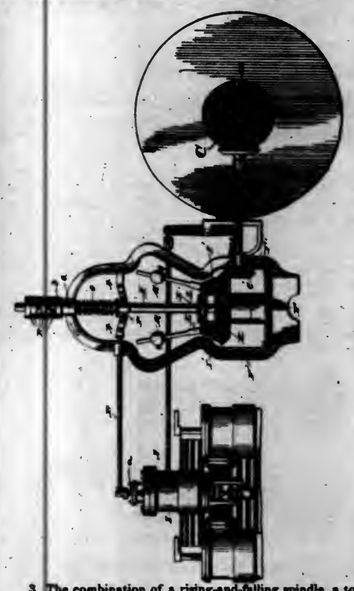
8. In a steam-boiler, the combination of one or more vertical pipes subdivided by a vertical diaphragm forming two chambers, one of which is closed at its upper end and the other at its lower end, with a base-pipe, a steam-drum, a series of external tubes closed at their outer ends, a series of internal return-tubes open at both ends, and a series of short pipes connecting the upper ends of the vertical pipes to a horizontal pipe communicating with the steam-drum, substantially as described.

9. The combination, with the water-legs having two compartments, of the external water-tubes communicating with one of said compartments, a water-tube open at both ends and placed within the external tube and communicating with the other compartment of the water-leg, and a series of vertical partitions through which said tubes pass, all substantially as specified.

413,909. STEAM-GOVERNOR. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 10, 1889. Serial No. 306,638. (No model.)

Claim.—1. The combination, with a vertically-movable spindle and the rod B and toggle-joint connecting said spindle with the stem of the main steam-valve, of the upright arms mounted on a rotatable support and loosely engaging the lower end of said spindle, and the governor-balls on the said arms, all substantially as and for the purpose set forth.

2. The combination, with the vertically-movable spindle, the toggle-joint loosely connected to said spindle, and the connection between the joint and the main steam-valve, of the upright arms mounted on a rotating support and carrying the governor-balls, and the means for transmitting motion from the main shaft of the engine to said support, all substantially as and for the purpose specified.



3. The combination of a rising-and-falling spindle, a toggle-joint connection between said spindle and the main steam-valve rod, a spring and weight applied to said spindle, and governor-balls mounted on upstanding pivoted arms, all constructed and adapted to operate substantially as described.

4. The combination of a vertically-movable governor-spindle and a toggle-joint connection between the same and the steam-valve, the arms bearing the governor-balls and jointed below the latter and mounted on a rotatable support, the grooved wheel keyed on the governor-spindle and receiving the lower ends of said arms, and the means for transmitting motion from the main shaft of the engine to said support, all substantially as and for the purpose set forth.

5. The combination of the vertically-movable spindle, the toggle-joint connection between the spindle and steam-valve, the upright pivoted arms carrying adjustable governor-balls and mounted on a rotatable support and loosely engaging said spindle, with the shaft and gear-connections between said support and the main engine-shaft, all substantially as described.

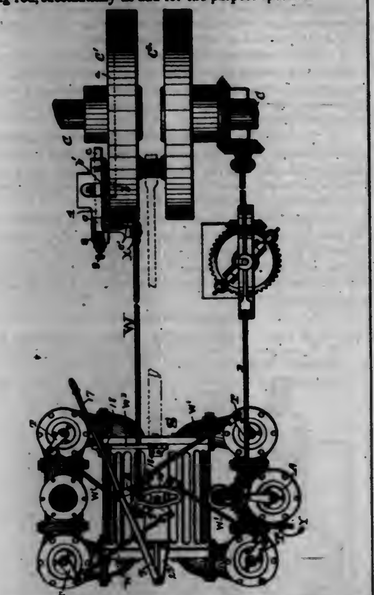
6. The combination of the spindle K, the weights R, and wheel I with the angular arms L, wheel H, adjustable balls M, and toggle-joint, all substantially as described.

7. The combination of the frame F, the vertically movable spindle K, journaled therein, the gear H, carrying said spindle, and the spring O, with the angular arms L L, pivoted on ears rising from gear H, the balls M thereon, and the grooved wheel I, and the connections between said spindle and steam-valve and between the gear H and main shaft, all substantially as and for the purpose described.

8. The combination of the upright vertically-movable and slotted spindle K and the toggle-joint N P N, engaging the slot therein, the grooved wheel I, angular pivoted arms L L, carrying balls M M, the rod B, connecting the toggle-joint with the main steam-valve, and the gears H D, and intermediate shafting and gearing between said gears, all constructed and arranged for the purpose and substantially as set forth.

413,910. VALVE-GEAR. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 10, 1889. Serial No. 306,639. (No model.)

Claim.—1. The combination of the engine-cylinder, its inlet and exhaust valves, and the spider for actuating the same, with the slotted plate above and rigidly secured to said spider, the connecting-rod adjustably attached to said plate, and the reversing-lever for shifting said connecting-rod, substantially as and for the purpose specified.



2. The combination of the spider *g*, connected to the inlet and exhaust valves of a steam-engine cylinder, with the slotted plate 15, connected to said spider, the connecting-rod W, loosely engaging plate 15, and the devices for shifting rod W, all constructed and arranged substantially as and for the purpose specified.

3. The combination of the engine-cylinder, its inlet and exhaust valves, and the spider *g*, pivoted on said cylinder and connected to the stems of the valves by rods W', with the slotted plate 15, rod W, connected thereto, the lever 17, and the link-connection between said lever and rod W, all as and for the purpose described.

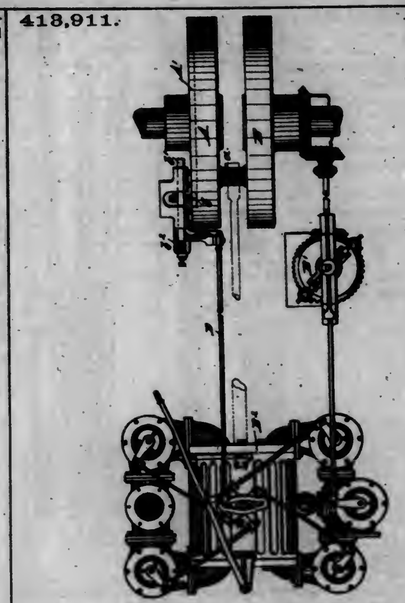
4. The combination, in a steam-engine, of the cylinder, its inlet and exhaust ports, and the cam-grooved wheel on the main shaft, the roller playing in said groove, the slide actuated thereby, and the connecting-rod attached to said slide, with the spider mounted on the cylinder, and link-connections between the arms thereof and the valves, and the slotted plate supported by said spider, and the adjustable link-connection between the same and the connecting-rod, substantially as and for the purpose described.

5. The combination of the cam-grooved wheel C, the slide *c*, its wrist-pin and roller *b*, and the connecting-rod W, with the steam-engine cylinder, its inlet and exhaust port valves, the spider mounted thereon and connected to said valves, the plate 15, secured to said spider and connected to rod W, the reversing-lever 17, the link 16, and shouldered bracket W^3, all substantially as and for the purpose described.

413,911. CRANK-WHEEL. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 10, 1889. Serial No. 306,640. (No model.)



413,911.



Claim.—1. The herein-described crank-wheel, having an annular groove in its face, in combination with diametrically-opposite segments secured to said wheel and forming parts of the walls of said groove, substantially as and for the purpose specified.

2. A crank-wheel for the purpose described, having a cam-groove A, with eccentric deflections formed by inserted segments, substantially as and for the purpose specified.

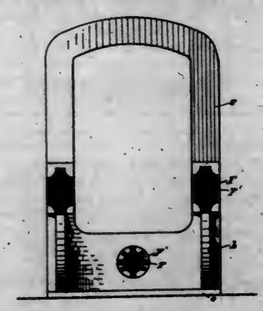
3. The combination, with the crank-wheel A, having an annular groove in its face, of the removable segments S S', secured in diametrically-opposite recesses in the face of the wheel respectively on the inner and outer sides of said groove, as and for the purpose specified.

4. The combination, with the annularly-grooved crank-wheel, of diametrically-opposite removable segments secured thereto and having their adjoining opposite ends dressed to form the deflections of said groove, as and for the purpose specified.

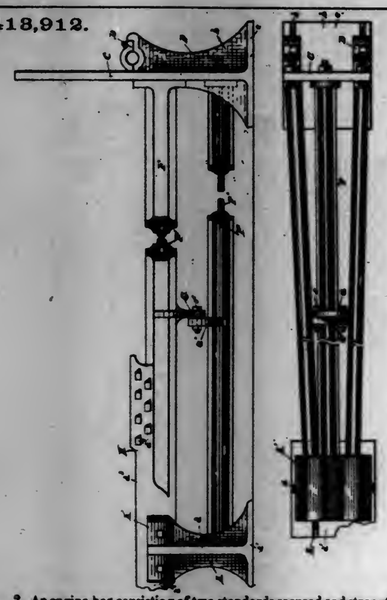
5. The combination, with the crank-wheel having an annular cam-groove in its face, substantially as described, of the roller *b*, having a yielding annular core b^2, a non-conducting layer b^3 exterior to said core, and a metal tire b^4, all substantially as and for the purpose specified.

413,912. ENGINE-BED. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 11, 1889. Serial No. 306,801. (No model.)

Claim.—1. An engine-bed consisting of two standards strengthened and secured together substantially as described, in combination with a concave receptacle on one of the standards and the shell supported on said receptacle, substantially as and for the purpose described.



418,912.



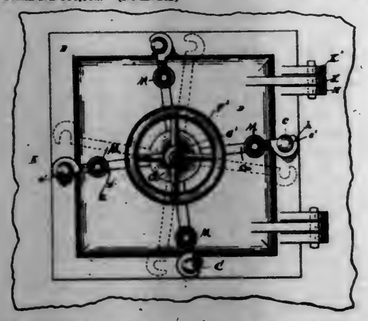
2. An engine-bed consisting of two standards secured and strengthened substantially as described, in combination with a concave receptacle on one of the standards, and a shell secured to such standard, substantially as specified.

3. The combination of a standard having a shell secured to it, an arched standard provided with journal-boxes for the main shaft of an engine, and the bracing and tie rods, substantially as and for the purpose described.

4. The combination of the standards, a shell secured to one of said standards, braces and tie-rods for the same, and intermediate connections for said braces, constructed and arranged as and for the purpose specified.

5. The combination of the standards A' B', constructed substantially as described, a shell H, secured to one of said standards, braces and tie-rods for the same, and the intermediate connections for said braces, all as and for the purpose specified.

418,918. FURNACE-DOOR. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 11, 1889. Serial No. 306,902. (No model.)



Claim.—1. The combination, with a rectangular double-hinged furnace-door having a rib on its inner face, a door-frame having a rectangular gasket to receive said rib, and four headed lugs equidistant from each other, of the spider having four radial locking-arms having notched ends, and the screw-clamping device for forcibly seating the door when closed, all constructed and adapted to operate substantially as and for the purposes described.

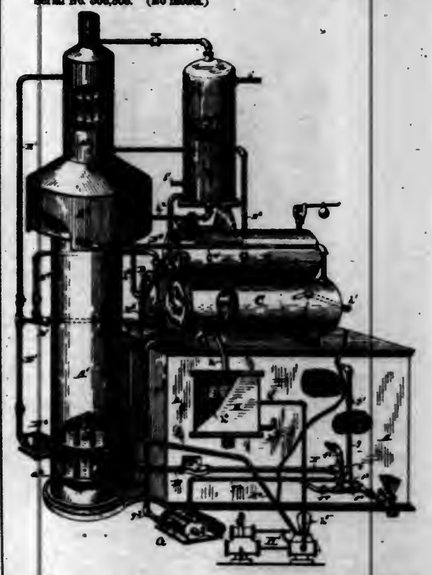
2. The combination, with the door-frame having an angular gasket and four headed lugs at equidistant points, of a door hinged by loose joints to said frame and having an angular rib adapted to engage said gasket and a central screw-threaded post, the four radial locking-arms engaging said headed lugs and the central post of the door, and the screw-clamping devices for forcibly seating the door when closed, all substantially as and for the purpose specified.

3. The combination of the door-frame having a gasket and the door having a rib engaging said gasket, with a spider having arms engaging lugs projecting from said frame, and the screw-bolts in said arms engaging and locking the door when closed, as and for the purpose specified.

4. The combination of the door-frame having a gasket and posts C, and the door loosely hinged to said frame, having a central screw-threaded post D^2, with the socket-piece F, engaging said post D^2, and the spider having a hub G^2, and radial arms G, mounted on piece F, all constructed substantially as described.

5. The combination, with the door-frame, its gasket J, the door D, having an angular rib engaging said gasket and a central screw-threaded post and loosely hinged to said frame, with the screw-threaded socket F, radial arms G G, engaging lugs on said frame, and the screw-bolts M on said arms, all substantially as and for the purpose described.

418,914. WATER-HEATER. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 11, 1889. Serial No. 306,903. (No model.)



Claim.—1. In an apparatus for purifying water for steam-boilers, the combination of a purifier provided with feed and outlet pipes and siphons with a casing provided with steam-inlet pipes, substantially as described.

2. In an apparatus for purifying water, the combination of a purifier provided with siphons and a reticulated diaphragm, and also with a feed-pipe, a steam-outlet pipe, and a sediment-cock, substantially as described.

3. In an apparatus for heating and evaporating water for steam-boilers and other purposes, the combination, with a series of communicating pipe-coils arranged in a suitable casing, of steam-pipes open at one or both ends and applied longitudinally and centrally inside of the straight portions of the said coils and in communication with the steam-space of said casing at the bends of the coils, substantially in the manner and for the purposes described.

4. A gang or bank of water-circulating coils arranged inside a casing, in combination with steam-pipes inside said coils and a series of alternate diaphragms arranged between the pipe-coils, substantially as described.

5. A gang or bank of water-circulating coils arranged inside of a steam-casing, in combination with steam-pipes inside the straight portions of the said coils, plugged at one end and communicating with the steam-space at the other end, substantially as and for the purpose specified.

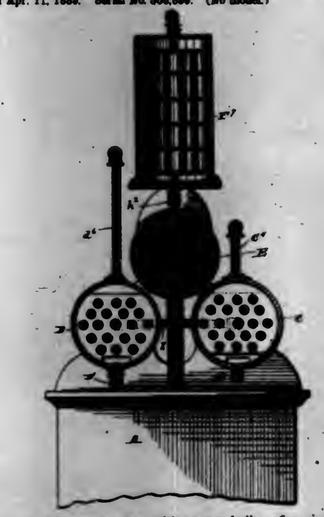
6. The combination of the casing provided with steam inlet and outlet pipes, a bank of water-circulating coils, a series of short straight steam-pipes in said coils, and tubular conical plugs holding said steam-pipes in their places, substantially as described.

7. The combination of a casing having steam-inlet pipes and a coil of pipes communicating with a steam-boiler, in combination with a purifier consisting of siphons arranged in a case and communicating with the interior of the said casing, and the feed and steam-outlet pipes, all constructed and arranged to operate substantially in the manner and for the purpose specified.

8. The combination of a casing provided with steam inlet and outlet pipes, a bank of water-circulating coils of pipe, steam-pipes through the horizontal portions of said coils, and a series of alternating diaphragms between the coils forming serpentine channels for the circulation of steam through the casing, substantially as and for the purpose described.

9. In a water heater and purifier, the combination of the casing, a vessel secured therein having a case provided with siphons, and water feed and drain pipes, with a coil of water-circulating pipes below said vessel and a series of steam-pipes arranged inside the horizontal limbs of said coils, all substantially as and for the purpose specified.

418,915. STEAM-CONDENSER AND AIR-HEATER. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 11, 1889. Serial No. 306,899. (No model.)



Claim.—1. The combination, with a steam-boiler, of an air-heater A', the steam-condenser and air-heater communicating with heater A', the air-forcing pump, and the water-pump and exhaust-steam supply, all substantially as described.

2. The combination, with the furnace and boiler, of the condensers C D, the pump communicating therewith, and the exhaust-steam supply thereto, with the air-heater A', the gas-trap A^2, and the pipes connecting the condensers with the heaters and gas-trap, and the engines E^2 and G, all constructed and arranged substantially as specified.

3. The combination, with the steam-boiler furnace, of the condensers C, D, and F^7, and the water-heater H, the pump H', communicating with the said condensers and with a coil in heater H, and the exhaust-steam supply to said heater, all substantially as and for the purpose set forth.

4. The combination, in a steam-boiler furnace, of the air-heater A' and gas-trap A^2, with the steam-condenser C, communicating with the gas-trap and with an exhaust-steam supply, the steam-condenser D, communicating with heater A' and condenser C, and the air, gas, and water forcing engines, all constructed and connected substantially as and for the purpose specified.

5. The combination of the condensers C, D, and F^7, and the exhaust-steam supply thereto, with the pump H', and the pipe H^5 and its branches H^7 H^8, and the connections between said pump and boiler, all constructed and arranged substantially as specified.

6. The combination, in a steam-boiler furnace, of the air-heaters A' A^2, the condensers C and F^7, the air-pump E^2, and water-pump H' and heater H, all substantially as and for the purpose set forth.

7. The combination of the heaters A' A^2 and gas-trap A^2, with the condensers C and D, water-heater H, the air and gas forcing engines, and the pump H', substantially as and for the purpose described.

8. The combination, with the steam-boiler furnace and the air-heater and gas-trap, constructed substantially as described, of the air and gas forcing engines, the air and gas supply pipes F and g^8, and the valved branch pipes connecting therewith, all constructed and arranged substantially as specified.

9. The combination, with the furnace and boiler, the air-heaters A' A^2, and water-heater H, of the gas-trap A^2, the condensers C, D, and F^7, and the air, gas, and water pumps, and pipe-connections, all substantially as and for the purpose set forth.

418,916. FURNACE. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 12, 1889. Serial No. 306,972. (No model.)



Claim.—1. The combination, with the ash-pit of a furnace, of a blast-pipe, a fuel-chamber provided with a passage at the end of the grate leading from said ash-pit into said chamber, and means for supplying fuel to said blast-pipe, whereby the ashes or fuel are blown into the latter, substantially as described.

2. The combination, in a furnace, of a fire-wall having a space outside of the grate, forming a communication between the ash-pit and fuel-chamber, with means for regulating the size of said space and a blast-pipe and fuel-feeder applied thereto, substantially as described.

3. In combination with a furnace having a passage outside of the grate area, a blast-pipe below the grate provided with curved perforated branches, substantially as described.

4. The combination, with a furnace having a passage outside of its grate area in or through its wall, of a blast-pipe in its ash-pit provided with apertures which converge to said passage.

5. A furnace having a blast-passage leading directly from its ash-pit, through its wall facing the door thereof and outside of the grate, to the combustion-chamber above the grate, in combination with a blast and a fuel-feeder, constructed and arranged to operate substantially as described.

6. The combination, with a furnace, of one or more blast-pipes leading into the ash-pit thereof, means for allowing the ashes to be blown from said pit into the fuel-chamber, means for regulating the size of the passage leading into said chamber, and a removable block applied at the upper terminus of said chamber, substantially as described.

7. The combination of a fuel-feeder arranged below a furnace-grate and a passage leading from the ash-pit to a point above the grate, substantially as described.

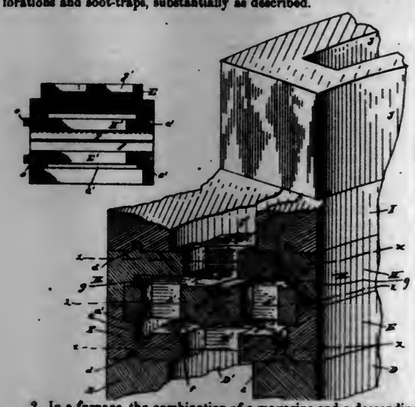
8. The combination, with a furnace, of a blast-pipe and a fuel-feeder, substantially as specified, whereby pulverized fuel is supplied to the ash-pit of a furnace and forced by a blast up through the grate and also above the grate, substantially as described.

9. The combination of the ash-pit and fuel-chamber, having communication between them outside of the margin of the grate, with an injecting-pipe, a blast-pipe, and a pulverized-fuel feeder, substantially as described.

10. The combination, with a furnace, of an injecting-pipe thickly perforated and located on or near the floor of the ash-pit, a blast-pipe F, provided with a regulating-cock, an automatic pulverized-fuel feeder, and a feed-hopper provided with a regulating-valve, all constructed and adapted to operate substantially as described.

418,917. MIXING-CHAMBER FOR FURNACES. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 12, 1889. Serial No. 306,973. (No model.)

Claim.—1. In a furnace, the combination of the flue or magazine and a descending flue communicating therewith with mixing-chambers composed of layers of fire-bricks having central vertical passages through them and the intermediate fire-bricks having perforations and soot-traps, substantially as described.

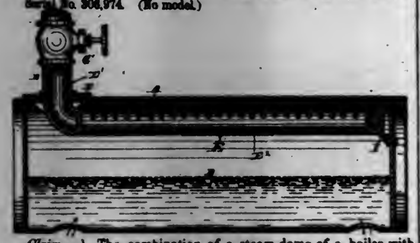


2. In a furnace, the combination of a magazine and a descending flue communicating therewith at its upper end with the mixing-chambers composed of bricks F, having vertical passages and soot-traps, and the upper and lower bricks E and H, also having vertical passages and communicating with the passages of bricks F, all substantially as described.

3. In a furnace, the combination of a flue through which the gases are caused to descend with mixing-chambers composed of layers of fire-bricks E and H, having vertical passages through them, and the fire-bricks F, having vertical openings of different superficial area to the openings in bricks E and H and interposed between the same, substantially as and for the purpose specified.

4. A cellular or chambered fire-brick for the mixing-chamber of furnaces, constructed with a tenon on one end and a mortise on the opposite end and ribs and recesses in its upper and lower sides, respectively, said brick having a passage through it of varying superficial area and also provided with soot-traps, substantially as specified.

413,918. STEAM-DRUM. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 12, 1889. Serial No. 306,974. (No model.)



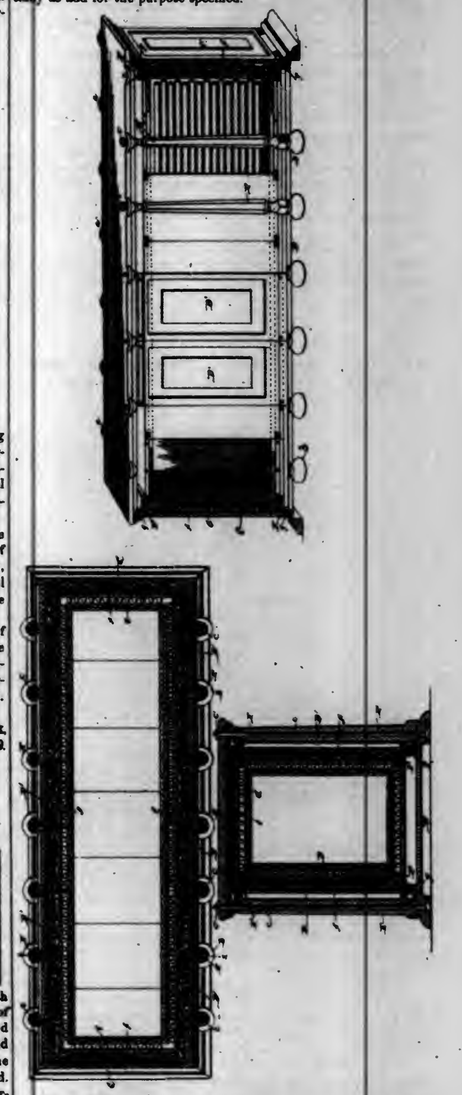
Claim.—1. The combination of a steam-dome of a boiler with an angular pipe having a horizontal leg entering the upper part of the dome and numerously perforated above its horizontal axis in said dome, and a vertical portion extending through the dome-shell and provided with a throttle-valve and a flange and a support for the inner end of said leg, all substantially as and for the purpose specified.

2. The combination, with a steam-drum, of a pipe which is perforated on its upper part and which is sustained at both ends, substantially as described, whereby it is allowed to expand and contract freely, and having an angular end extending through an opening in the drum, substantially as set forth.

3. The combination of the steam-drum A, the pipe E, perforated, as described, and bent at one end, the steam-cock applied to said pipe, and the flange connecting the said pipe to the drum A, and the support for the free end of the pipe within the drum, all constructed and arranged as and for the purpose specified.

413,919. STEAM-BOILER CASING. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 12, 1889. Serial No. 306,975. (No model.)

Claim.—1. A casing consisting of non-conducting walls composed of sections secured together by hollow pillars and stay-bolts, substantially as and for the purpose specified.

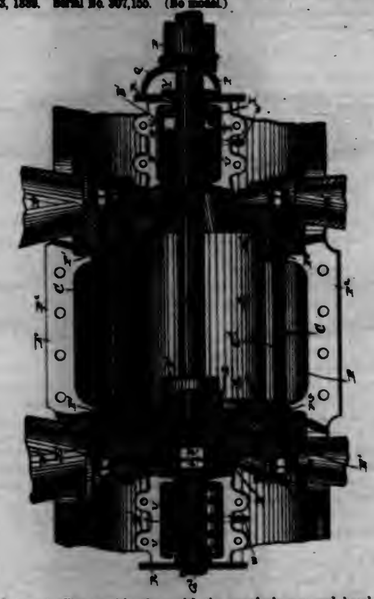


2. A casing the walls of which are respectively composed of a studded plate covered interiorly with a poor conductor of heat, an external wall, and an intermediate space filled with refractory material, substantially as specified.

3. A casing consisting of a top wall A, a base B, and walls C, and side walls formed of removable panels which are non-conductors of heat, secured together substantially in the manner and for the purpose specified.

4. The herein-described casing, consisting of a non-conducting top having lugs *a* on it, a non-conducting base, also having lugs on it, non-conducting end walls, angle-irons F, hollow pillars, tie-bolts, and removable panels, all constructed and arranged substantially in the manner and for the purpose specified.

413,920. STEAM-ENGINE CYLINDER. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 13, 1889. Serial No. 307,155. (No model.)



Claim.—1. The combination, with the annularly-recessed heads and the thin tube confined between the same, of the semi-cylindrical flanged supporting-shell sustaining the heads, substantially as specified.

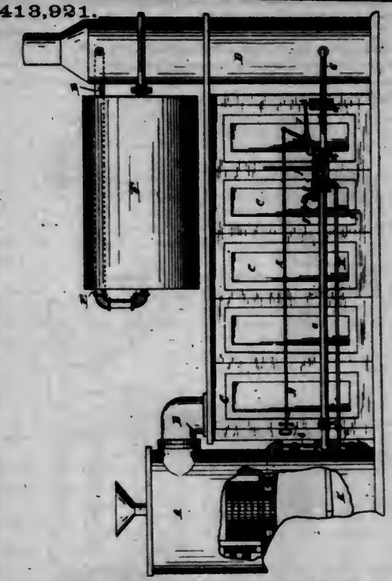
2. The combination of the tube, the annularly shouldered and recessed heads having inlet and outlet steam passages fitted on the ends of said tube, and the confining-bolts therefor, with the supporting semi-cylindrical shell for said heads and the non-conducting filling between the casing and tube surrounding the latter, all substantially as set forth.

3. The combination, with the tube A and the annular casing thereof, of the heads B B, having boxes B' B', and the piston and piston-rod, all substantially as and for the purpose described.

413,921. AUTOMATIC APPARATUS FOR SUPPLYING AIR TO FURNACES. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 13, 1889. Serial No. 307,156. (No model.)



413,921.



Claim.—1. The combination, with a furnace and boiler, of an air-blast pipe having branches that enter, respectively, the ash-pit and the combustion-chamber of the furnace, provided with regulating-valves and a balanced valve actuated automatically by steam, and a loaded lever, substantially as set forth.

2. The combination, with a furnace and boiler, of the air-blast pipe having branches that enter, respectively, the ash-pit and combustion-chamber of the boiler, and a balanced valve actuated automatically by steam and a loaded lever, and a steam-supply pipe connecting the boiler with the ash-pit of the furnace and provided with a regulating-valve, as set forth.

3. The combination, with a furnace and boiler, of the air-blast pipe, the steam-supply pipe, a balanced valve operated automatically by steam and a loaded lever, and a valve in the steam-supply pipe connected by a system of levers with the stem of the balanced valve, so as to be operated automatically and simultaneously with the latter, substantially as described.

4. The combination, with a furnace and boiler, of the air-blast pipe having a balanced valve, steam-supply pipe having valve *i*, the lever *j*, link *k*, toothed levers *e e'*, link *f*, steam-cylinder *g*, link g^6, and the loaded lever J, all arranged and operating substantially as set forth.

5. The combination of the valve-box having three branches with the valve pivoted at the junction of said branches, whereby the pressure against its upper and lower ends is caused to balance said valve in whatever position it may be made to assume, substantially as and for the purpose specified.

6. The combination of a balanced valve having the stem at the middle of its length with a valve-box having three branches, said valve being pivoted to the box at one angle, formed by the junction of the lateral and main pipe branches, and the main pipe branches being in the same axial line, substantially as described.

7. The combination, with a furnace, of an air-supply pipe entering the same, a three-way-valve box applied to said pipe, and a valve in said box actuated automatically by the pressure of steam from the boiler and a loaded lever, substantially as described.

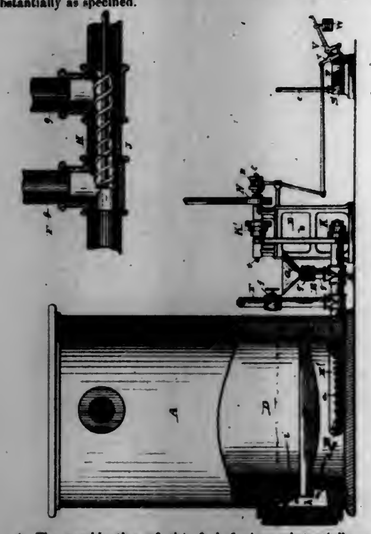
413,922. FURNACE. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 13, 1889. Serial No. 307,157. (No model.)

Claim.—1. The combination, with the pulverized-fuel feeder and the blast-pipe, of the cone-pulleys, their belt, the belt-pulley, the clutch, and means for automatically actuating this clutch and starting or stopping the feed at certain determined pressures of steam, substantially as described.

2. The combination, with a furnace and a pulverized-fuel feeder, substantially as described, of the shafting and clutch connecting with said feeder, and the means for automatically operating this clutch to

start or stop the feed at a certain predetermined pressure of steam, all as and for the purpose specified.

3. The combination of a furnace and a fuel-feeder therefor with the shaft driven by an engine and operating said feeder, the clutch engaging said shaft, and the devices, substantially as described, for automatically actuating said clutch to start or stop the feeder, all substantially as specified.



4. The combination of the fuel-feeder, substantially as described, the blast-pipe connecting therewith, the steam-cylinder, its weight-controlled piston, and the connections between the same and the fuel-feeder, whereby the latter is automatically stopped or started at a certain boiler or steam pressure, substantially as and for the purpose described.

5. In combination with a furnace, an automatic pulverized-fuel feeder, an air-blast, pulleys and belts for actuating the feeder, a clutching device, a steam-cylinder communicating with a boiler and provided with a piston loaded as described, and the connections between the piston-rod and said clutching device, substantially as specified.

6. The combination of the injecting-pipe and a conveyer-screw arranged therein, a fuel-feed hopper, the shafts and pulleys for driving said conveyer, and the automatically-operated clutch engaging one of said shafts, whereby the conveyer is stopped or started, substantially as and for the purpose set forth.

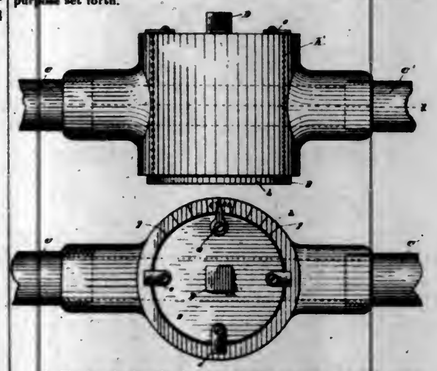
7. The combination of the injecting-pipe arranged in an ash-pit of a furnace below the grate, with a conveyer-screw applied in a cylinder outside of the furnace, a fuel-feed hopper, a blast-pipe communicating with said cylinder, and regulating-valves applied to the neck of the hopper and to the said blast-pipe, all substantially as and for the purpose described.

8. The combination, with a furnace, an automatic pulverized-fuel feeder, cone-pulleys and belts for operating said feeder, and the feed-hopper and its valved neck, of the steam-cylinder, its piston, the weighted lever connected thereto, and the clutch on one of the cone-shafts, and the connections between said clutch and the piston, all constructed and arranged substantially as set forth.

9. The combination, with a furnace having an injecting-pipe below its grate, a casing connecting therewith, having a feed-hopper and a rotary screw-conveyer in said casing, the cone-pulleys and belts, and the clutching device, of the air-blast pipe valved as described and communicating with said casing, the steam-cylinder, its weighted lever and piston, and the connections between the piston and clutch, all constructed and arranged to operate for the purpose and in the manner specified.

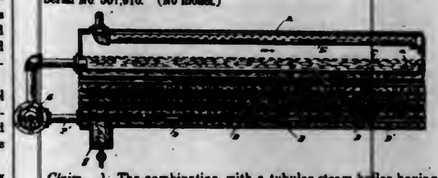
413,923. VALVE. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 15, 1889. Serial No. 307,369. (No model.)

Claim.—1. The herein-described registering-valve, consisting of a cylindrical casing A, having diametrically-opposite sockets A' A', engaging the connecting-pipes, and the bores of said sockets being rectangular in cross-section adjoining the valve, with a cylindrical valve having a diametrically-rectangular passage corresponding to the bores of the sockets in section, said valve occupying the entire interior of the cylinder and suitably confined therein, and the registering or indicating marks and finger on said casing and valve, all as and for the purpose set forth.



2. The herein-described valve, for the purpose specified, consisting of a cylindrical casing A, having diametrically-opposite sockets A' A', internally screw-threaded at their outer ends and having the inner portions of their bores rectangular, the cylindrical portion of the casing having index-marks *g g* on one edge, with the cylindrical valve B, having a diametrical passage B', rectangular in cross-section and fitted in said casing and confined therein by a flange *b* on one end and by a series of fingers *c* fixed on its other end, moving with the valve, and the indicator-finger G and post D, all substantially as described.

413,924. STEAM-BOILER. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 17, 1889. Serial No. 307,610. (No model.)

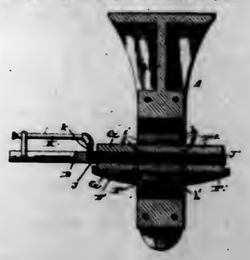


Claim.—1. The combination, with a tubular steam-boiler having a diaphragm C, a series of tubes below said diaphragm, and a steam-space above the same, of an exhausting and forcing pump communicating with the spaces above and below said diaphragm, substantially in the manner and for the purposes described.

2. The combination, with a steam-boiler, of the diaphragm having an aperture at one end, the flues below this diaphragm, the vertical partitions in the flue-space, a pump, and its pipe-connections with the spaces above and below said diaphragm, substantially as described.

3. A compound steam-boiler consisting of a series of boiler-sections arranged one above the other and united by diaphragms, each perforated at one end, in combination with flues, the partitions arranged as described, and a pump, substantially as described.

413,925. LUBRICATOR AND COOLER FOR SHAFTS. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 17, 1889. Serial No. 307,611. (No model.)



Claim.—1. A hanger for shafts, provided with half-boxes, in combination with adjustable blocks, a continuous ring, and a balanced journal-box, substantially as described.

2. The combination of the shaft having a closed bore in its journal and pipe rotating with and exterior to said shaft and communicating with said bore, said bore and pipe being provided with heat-diffusing fluid for cooling the journal, substantially as specified.

3. The combination of the block C, having oil-receptacles, a journal-box balanced by a knife-edge on said block, and oil-feed rings for the shaft, substantially as described.

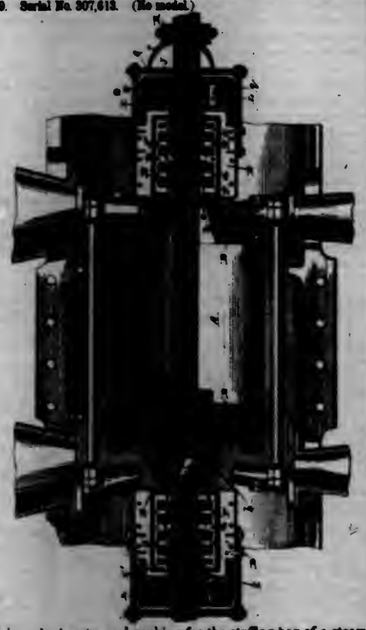
4. The combination of the shaft having a closed bore in its journal and a pipe communicating with said bore and rotating with said shaft with the slotted journal-box, the block having an oil-receptacle, and the lubricating-ring suspended on said shaft and passing through the slot in the journal-box, substantially as and for the purpose specified.

5. The combination of the hanger A, the serrated blocks having the oil-receptacles therein, the balanced journal-box, and the lubricating-ring, substantially as described.

6. In a hanger for shafts, the combination of the serrated half-boxes, the blocks vertically adjustable in the same and provided with recesses or notches, and the reversible journal-box having knife-edges, substantially as described.

7. The combination of the block having oil-receptacles, a journal-box balanced therein by a knife-edge, and oil-feed rings for the shaft with the shaft having a closed bore through its journal, and a pipe rotating with said shaft and communicating with said bore and adapted to receive heat-diffusing fluid therein, substantially as described.

413,926. PISTON-ROD PACKING. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 17, 1889. Serial No. 307,613. (No model.)



Claim.—1. A piston-rod packing for the stuffing-box of a steam-engine cylinder, consisting of packing-rings applied in annular cavities, in combination with means for conducting a current of water or other fluid through an annular cavity between the rings in the stuffing-box, substantially as described.

2. The combination, with the stuffing-box, of the cylindrical box centered and secured therein by a Babbitt or soft metal filling, substantially as and for the purpose specified.

3. The combination of the stuffing-box, the cylindrical interiorly-channeled box secured therein, and the packing-rings resting in the annular cavities of the latter box, and the stuffing-annulus I, constructed and arranged substantially as and for the purpose specified.

4. The combination of the stuffing-box having an internal annular cavity and annular grooves on each side of said cavity with packing-rings fitted in said grooves and the water inlet and outlet pipes leading to and from said cavity, as and for the purpose set forth.

5. The herein-described stuffing-annulus I, having flanges I' and conical flaring mouth *i*, as and for the purpose described.

6. The combination of the annulus having a conical bore, a conical soft-metal plug, and a screw-cap, all substantially as specified.

7. The combination of the stuffing-box having horizontally-divided walls, the divided packing-rings, and longitudinally-divided cylindrical annularly-grooved box, constructed and arranged substantially as specified.

8. The combination, with the stuffing-box and the stuffing-annulus I, having a conical bore, of the conical packing J and the screw-cap, constructed and arranged substantially as set forth.

9. The herein-described box F F, consisting of two semi-cylindrical pieces having semi-annular grooves in them and united, substantially as set forth.

10. The combination, with a stuffing-box having a conically-bored extension at its end, of the conical soft-metal stuffing-ring, the screw-cap engaging threads on the stuffing-box for tightening said conical ring, and also having an auxiliary stuffing-box in its extremity, for the purpose and substantially as described.

11. The combination, in a piston-rod packing, of the cylindrical annularly-grooved box F F, the packing-rings H H, annulus I, and the plug J, substantially as described.

12. The combination, in a stuffing-box, of the half-boxes F F, internally grooved, the soft-metal packing G, packing-rings H, and stuffing-annulus I, all substantially as described.

13. The combination of the cylindrical internally-grooved box F F, the packing-rings H H, annulus I, and the water-supply pipes, all substantially as described.

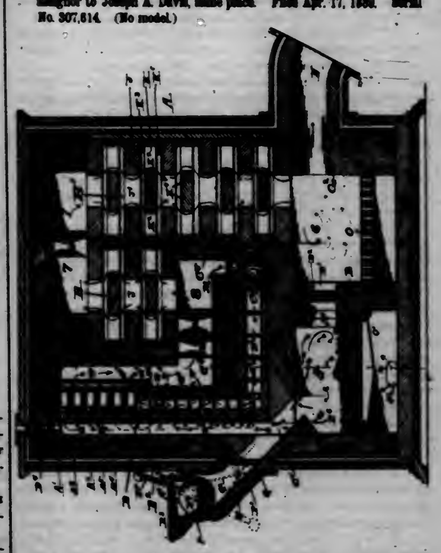
14. The combination of the half-boxes F F, rings H, annulus I, plug J, and screw-cap L, all substantially as set forth.

15. The combination, with the cylinder-head and piston-rod, of the annular plate E, substantially as set forth.

16. The combination, with the cylinder-heads having exterior stuffing-boxes and the piston-rod extending therethrough, of the annular plates fitted around the piston-rod and secured loosely to the inner faces of the cylinder-heads, all substantially as set forth.

17. The combination, in a piston-rod packing, of the half-boxes F F, the packing G, the packing-rings H H, packing-annulus I, plug J, and the screw-cap for compressing said plug, all constructed and arranged substantially as and for the purpose specified.

413,927. FURNACE. VIRGIL W. BLANCHARD, New York, N. Y., assignor to Joseph A. Davis, same place. Filed Apr. 17, 1889. Serial No. 307,614. (No model.)



Claim.—1. In a furnace, the combination of the fire-chamber, a compartment in the furnace above the chamber, a partition dividing the said compartment into an ascending and a descending flue, said ascending flue communicating with the fire-chamber, and the descend-

ing flue communicating with the outlet-passages, the said partition having in its lower portion a vertical air-passage with a series of lateral jet-openings leading therefrom, and in its upper portion a series of independent transverse mixing-channels leading from one flue to the other, substantially as and for the purposes described.

2. In a furnace, the combination of the ascending flue communicating with the fire-chamber, the descending flue, the partition between said flue having air-passages and jet-openings, and the ascending series of mixing-chambers communicating with the descending flue, and the descending series of mixing-chambers communicating with the ascending series and with the outlet, substantially as described.

3. The combination, in a furnace, of a primary fire-chamber communicating with a series of flues, and mixing-chambers in the upper part of the furnace communicating with the flues and with an outlet, a secondary fire-chamber communicating with said outlet, and a damper between said fire-chambers, as and for the purpose specified.

4. The combination of the primary fire-chamber, the ascending and descending flues above the same separated by a partition having air-passages and jet-openings, substantially as described, the secondary fire-chamber, and a series of ascending and descending mixing-chambers communicating with said secondary chamber and with said descending flue, substantially as described.

5. In a furnace, the combination of a fire-chamber, the roof above the same, the ascending flue communicating with the fire-chamber, and descending flue above said roof separated from the ascending flue by an intermediate partition having air-passages and jet-openings, substantially as described, with the tortuous air-channel in said roof communicating with the air-passage in said partition and the air-supply thereto, all substantially as set forth.

6. In a furnace, the combination of an ascending flue communicating with the fire-chamber and a descending flue, with a partition between said flues, the lower portion of which has a central air-passage and lateral jet-openings leading therefrom, and its upper portion having vertical air-passages connecting with said central air-passage, and also having transverse gas channels or passages communicating with the ascending and descending flues, substantially as and for the purpose described.

7. The combination, in a furnace, of a fire-chamber having a closed roof in which is a tortuous air-heating passage, a pair of vertical flues above said passage communicating, respectively, with the fire-chamber and with passages leading to the outlet, and a partition separating said flues having air-passages communicating with the said tortuous air-heating passage, jet-openings, substantially as described, a series of mixing-chambers communicating with the lower end of the inner vertical flue, and a series of mixing-chambers communicating at top with the aforesaid chambers, and at bottom with an outlet, said chambers having soot-traps, substantially as described.

8. In a furnace, the combination of the fire-chamber, the ascending and descending flues, closed at top and separated by a partition having air-passages, perforations, and channels, substantially as described, and a safety-valve connected to the top of one of said flues for regulating the pressure of gases therein, substantially as and for the purpose described.

9. The combination of the primary fire-chamber, the ascending flue above the same communicating therewith, the descending flue, and the partition between said flues, channeled and perforated for the passage of air and gases, and a gas-supply pipe leading from the outlet or uptake of the furnace and communicating with one of said flues, substantially as and for the purpose described.

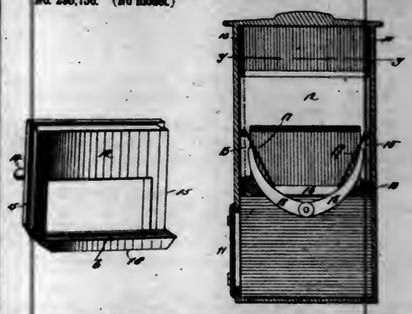
10. The combination of the fire-chamber, the ascending flue communicating therewith, and the descending flue above said chamber, separated from the ascending flue by a partition channeled and perforated for the passage of air and gases, substantially as described, the tortuous air-passage formed in the roof of said fire-chamber and communicating with the air-channels in said partition, the air-supply pipes communicating with said passage and ash-pit, and the gas-supplying pipes, all substantially as set forth.

11. The combination of the fire-chamber, the vertical flue communicating therewith, the descending flue separated from said vertical flue by a partition having passages, channels, and soot-traps, substantially as described, and the tortuous channel in the roof of the fire-chamber communicating with the air-passages and with a supply for heating the air supplied to the passages in said partition, substantially as set forth.

12. The combination of the fuel-chamber, the vertical ascending flue communicating with the fire-chamber, the descending flue, the partition between said flues having air-passages, channels, and jet-openings, substantially as described, and the air-heating channel in the roof of the fire-chamber communicating with an air-supply and with the passages in said partition, the air-supply pipe *a c*, and gas-supplying pipes *f g*, all substantially as and for the purpose set forth.

13. The combination of the furnace having a primary fire-chamber 5, an auxiliary fire-chamber 6, a closed roof formed with an interior air-heating channel D' over chamber 5, the vertical ascending flue communicating with chamber 5, and the descending flue, and the vertical partition separating said flues having air-passages and perforations, substantially as described, with the series of mixing-chambers H, the trapping-chambers 7 and 8, and the descending series of mixing-chambers H', communicating with the chambers 6 and 7, the outlet from said chambers, and the air and gas supply pipes, all substantially as described.

418,928. LETTER-BOX. WILLIAM COOK, New York, N. Y., assignor to himself and Paul D. Reed, same place. Filed Jan. 3, 1889. Serial No. 295,756. (No model.)

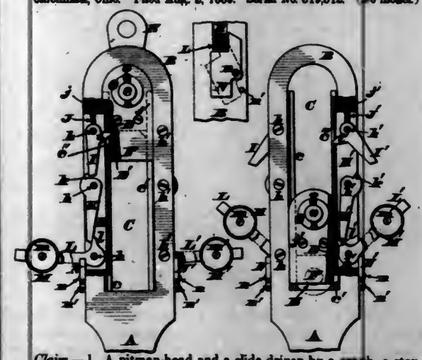


Claim.—1. The combination, with a case provided with a receiving-opening, of a slide normally covering said opening, leaves pivotally connected to the case-walls, and pivotally-mounted arms which bear against the leaves and against which the slide bears, substantially as described.

2. The combination, with a case, of leaves hinged therein, arms pivotally mounted within the case beneath the leaves, a slide arranged in connection with an opening formed in the case, and connections between the slide and the arms, whereby when the slide is raised the arms will be moved inward and the leaves upward, substantially as described.

3. The combination, with a case formed with an opening *a* and a lip I9, of a slide mounted to normally close the opening *a* and formed with downwardly-extending arms that are connected to a longitudinally-slotted cross-bar, arms pivotally mounted within the case and arranged to extend upward through the cross-bar slot, and leaves pivotally mounted above the arms and below the case-lip, all arranged substantially as described.

418,929. PITMAN. JONATHAN CREAGER and HARRY M. CREAGER, Cincinnati, Ohio. Filed Aug. 2, 1889. Serial No. 319,512. (No model.)



Claim.—1. A pitman-head and a slide driven by a crank, a stop that locks said slide to said head, and automatic devices that liberate said stop and thereby release said slide whenever a certain pressure is exceeded, substantially as described.

2. A pitman-head having a longitudinal slot or groove, a slide driven by a crank and traversing said slot or groove, a trip-lever having a stop that locks said slide within said slot, and a system of levers operated by said trip-lever, one of the levers of said system having a weight applied to it, substantially as described.

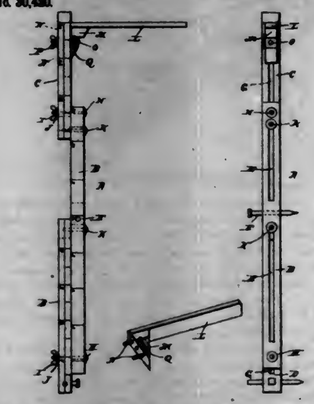
3. The combination of slotted pitman-head B, guides *e f*, slide D,

pivoted trip-levers I I', intermediate levers K K', and levers L L', which latter are provided with weights M M', for the purpose described.

4. The combination, with a slotted pitman-head, of a slide driven by a crank and traversing said slot, a system of levers that automatically liberate said slide, as herein described, a pair of weighted levers and a pair of drop-catches pivoted to said head, and a pair of stops that arrest said catches, for the purpose stated.

5. The combination, with a slotted pitman-head, of a slide driven by a crank and traversing said slot, a system of levers that automatically liberate said slide, as herein described, and a pair of springs, as J J', that bear against the trip-levers I I' of said system, for the purpose stated.

418,930. MEASURING-ROD. WILLIAM DERBOLL, Brockville, Ontario, assignor to James H. Conner, Ottawa, Canada. Filed Jan. 30, 1889. Serial No. 298,068. (No model.) Patented in Canada Dec. 17, 1883, No. 30,430.



Claim.—1. A measuring-rod comprising the sections B C D, the central section B having the longitudinal slots E, and the end sections C D having the longitudinal slots G, the bolts H, secured in the ends of section B and passing through the slots G in the sections C D, the nuts and washers on the ends of said bolts, and the bolts K, inserted through the slots E in the central section B and into the inner ends of the sections C D, as set forth.

2. The combination of the central section B, the end sections C D, secured thereto and longitudinally adjustable thereon, and the arm L, secured to and projecting laterally from the section C and adjustable along the same, as set forth.

3. The combination of the central section B, the end sections C D, having the longitudinal slots G and adjustably secured to the central section, and the arm L, adjustably secured to the section C and provided with a bracket M, having pins N, engaging the slot G, as set forth.

4. The combination of the central section, the end sections adjustably secured thereto, the arm L, having a bracket at one end adjustably secured to one of the end sections, and the plummet pivoted to said bracket, as set forth.

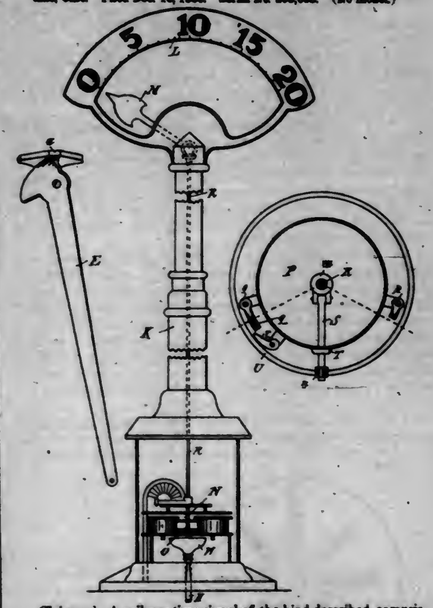
5. The combination of the central section, the end sections adjustably secured thereto, the arm L, having a bracket at one end, the plummet pivoted to said bracket, and the bolt passing through said bracket and one of the end sections to adjustably secure the arm to said section, as set forth.

418,931. HAME-FASTENER. ALFRED FELLOWS, Lansing, Kans., assignor of one-half to Frank M. Gable, same place. Filed Apr. 10, 1889. Serial No. 307,759. (No model.)



Claim.—In a hame-fastener, the combination, with the casing provided with a hook at one end designed to be secured to one of a pair of hames and having parallel sides *a*, provided with a series of adjusting-holes, the lever pivoted intermediate of its ends between the sides *a* and having a curved end a^2, and the adjusting-screw, of the metal strap designed to have one end connected to the other hame and having its other end curved to engage the curved end of the lever, substantially as described.

418,932. RAILWAY TIME-SIGNAL. BOOMER FONTAINE, Auburndale, Ohio. Filed Dec. 10, 1888. Serial No. 293,095. (No model.)



Claim.—1. A railway time-signal of the kind described, comprising an air-compressing device operated by a passing train, an air-receiving chamber communicating therewith and provided with a rising and falling diaphragm, a signal-dial mounted on the post, actuating clock mechanism for operating the index-hand of said dial, a clutch in the actuating-shaft of the clock mechanism controlled by the rising and falling diaphragm of the air-receiving chamber to engage and disengage said clutch, and a retracting-weight or its equivalent for the index-hand, substantially as described.

2. In a time-signal, the combination, with an air-compressing device and its actuating-lever operated by a passing train, of a signal-dial mounted on a hollow post, actuating clock mechanism mounted in the base of said post, a shaft operated by said clock mechanism and provided with an extension into the top of the post and operating the index-hand of the dial, an intermediate clutch mechanism consisting of the notched disk revolving with the shaft of the clock mechanism, and the hinged dog on the extension of said shaft, a rising and falling guide-rail on which said dog is adapted to travel, an air-receiving chamber provided with a rising and falling diaphragm, and an actuating-connection of said diaphragm with the rising and falling guide-rail, substantially as described.

3. The combination, with the hollow signal-post, of the clock mechanism mounted in the base thereof, and with the actuating-shaft in line with the axis of the post, a stop formed on the upper end of said shaft, an extension of said shaft into the top of the post and supported on said stop, the clutch mechanism between said shaft and its extension, the beveled pinion secured to the upper end of said shaft-extension, the transverse shaft carrying the beveled pinions engaging with the beveled pinion on the extension of the shaft, the index-hands secured to said transverse shaft, and the dials mounted on top of the post, substantially as described.

4. The combination, with the lever E, operated by a passing train to control the time-signal, of the box B, inclosing such lever and provided with an aperture through which the inner end of said lever projects into proximity to the rail, and the rail-clip C, securing the inner end of such box to the rail, substantially as described.

5. The combination, with the lever operated by a passing train to control the time-signal, of the box B, inclosing such lever, the rail-clip C, securing the box to the rail, the piston F, carried by the free end of the lever, and the air-cylinder G, secured in an aperture of the box, substantially as described.

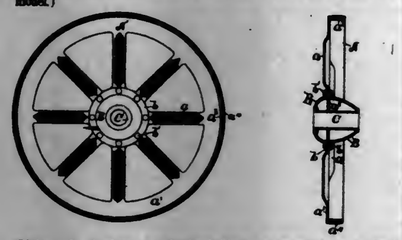
6. The combination, with the shaft O of the actuating clock mechanism of the signal, of the notched disk P, secured thereto, the stop Q, formed thereon, the shaft-extension R, supported thereon, the hinged dog S, adapted to engage with the notched disk P, the fixed zero-stop *p*, the fixed disengaging-stop *o*, and the back stop *r*, substantially as described.

7. The combination, with the shaft O of the clock mechanism of the signal, of the notched disk P, revolving therewith, the stop Q, formed on said shaft, the shaft-extension R, supported thereon and operating the index-hand of the signal-dial, the hinged dog S, adapted to engage with the notched disk, the rising and falling guide-rail U, the fixed zero-stop *p*, and the weight *l* and its connection with the shaft R, to retract the index-hand, substantially as described.

8. The combination of the shaft O of the clock mechanism of the signal, the notched disk P, revolving therewith, the stop Q, formed on said shaft, the shaft-extension R, supported thereon and operating the index-hand of the signal-dial, the hinged dog S, adapted to engage with the notched disk, the rising and falling guide-rail U, the fixed zero-stop *p*, the fixed disengaging-stop *o*, the back stop *r*, and the weight *l* and its connection with the shaft R, to retract the index-hand, substantially as described.

9. The combination, with the shaft O of the actuating clock mechanism of the signal, of the notched disk P, secured thereto, the shaft-extension R, adapted to revolve independently of the shaft of the clock mechanism, the dog S, secured to said shaft and adapted to engage with the notched disk, the rising and falling guide-rail U, on which said dog is adapted to travel, the vertical frame V, carrying said guide-rail, the air-receiving chamber W, the rising and falling diaphragm Y, and the lever Z, bearing upon the center of said diaphragm and operating the frame V, substantially as described.

413,933. METALLIC WHEEL. ROSS FOSTER and JACOB HOWARD, Cleveland, Ohio, assignors to the Avery Stamping Company, same place. Filed Feb. 29, 1888. Renewed Apr. 22, 1889. Serial No. 308,235. (No model.)



Claim.—1. A sheet-metal-wheel blank stamped from a single piece of metal, consisting of the following integral parts, to wit: a hub a^3, spokes *a a*, rim *a'*, and turned-over annular flange a^2 said spokes being bent longitudinally, every alternate spoke in one direction and the intermediate spokes in the opposite direction, substantially as and for the purpose specified.

2. A sheet-metal wheel consisting of a hub a^3, spokes *a a*, rim *a'*, and turned-over annular flange a^2, all stamped from a single piece of sheet metal, combined with sheet-metal hub-pieces riveted thereto, substantially as and for the purpose specified.

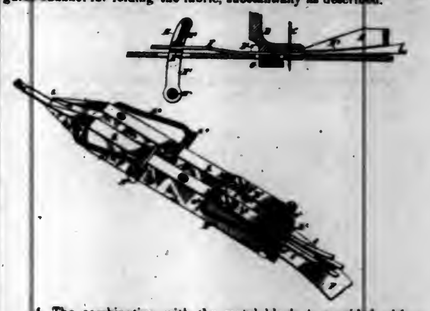
3. A sheet-metal-wheel blank and the hub-pieces B B, secured thereto, combined with a pipe C, passed through said blank and hub-pieces and secured in place by having its ends upset, substantially as and for the purpose specified.

413,934. SEWING-MACHINE ATTACHMENT FOR MAKING DRESS-STIFFENING. MARSHALL GARDNER and JAMES STONE, Aurora, Ill., assignors, by mesne assignments, of two-thirds to Alice M. Ball, same place, and Elizabeth Florabaum, Chicago, Ill. Filed July 8, 1887. Serial No. 243,735. (Model.)

Claim.—1. In an apparatus for making stiffening of the character described, and in combination, a block having a channel for guiding the fabric, a block within said channel having passages therein to guide the stiffening-filaments side by side, and pressers for folding the fabric, substantially as described.

2. A sewing-machine attachment for the purpose set forth, consisting of a metal block having a channel therein formed with converging walls for the passage of the fabric, guides for the stiffening-filaments within said channel, a guide-passage having parallel side walls for the passage of the fabric, and stiffeners and pressers within said guide-passage, substantially as described.

3. A sewing-machine attachment for the purpose set forth, comprising a metal block A, provided with a central guide-channel having converging side walls at its receiving end, a U-shaped block B, fitting the receiving end of said channel and having converging walls, the spaces between the walls of the block B and guide-channel forming a converging guide-passage for the fabric and provided with guides for the stiffening-filaments, and pressers located in the said guide-channel for folding the fabric, substantially as described.



4. The combination, with the metal block A, provided with a guide-channel having converging side walls at its receiving end, of a block of U shape in cross-section fitting the receiving end of said channel and having converging walls, the spaces between the walls of the blocks B and guide-channel forming a converging guide-passage for the fabric, a partition in said block B, forming two guides for the stiffening-filaments, a presser in said block acting upon the said filaments, and pressers for folding the cloth located in the said guide-channel, substantially as described.

5. The combination, with the metal block A, provided with a guide-channel having converging side walls at its receiving end, of a block B, having converging walls and fitting within the said channel, the spaces between the walls of the block and the walls of the guide-channel forming a converging guide-passage for the fabric, said block having a yielding connection with the block A, guides for the stiffening-filaments, and pressers for folding the fabric, substantially as described.

6. In an apparatus for making dress-stiffenings of the character described, and in combination, a main block having a passage for guiding the fabric, a block within said passage, having channels therein for guiding the stiffening-filaments side by side, said main block being provided with a guide-passage having parallel side walls forming a continuation of the said fabric-guiding passage, adapted to receive the fabric and stiffeners, pressers within said fabric-guiding passage for folding the fabric upon the stiffeners, shafts passing through the block, each having a presser attached thereto, said shafts being also provided with arms, and the main block being provided with recesses which are entered by said arms, whereby the pressers are held in operative position, substantially as described.

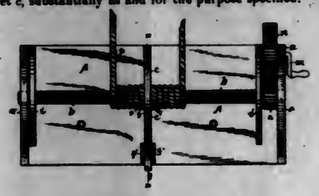
7. The combination, with the stitch-forming mechanism of a sewing-machine, guides for stiffening-filaments, and pressers for folding a fabric about said filaments, of a feed device for the stiffening, consisting of a vibrating frame having opposing clamp-jaws acting to engage and move forward the stiffening when the frame is moving in one direction, substantially as described.

8. The combination, with the stitch-forming devices of a sewing-machine and a presser-foot thereof, of guides for stiffening-filaments, pressers for folding a fabric about the said filaments, stationary guides, as blocks D' D', located at opposite sides of the presser-foot and supported upon the bed-plate of the machine, and feed devices for carrying the stiffening beneath the presser-foot, substantially as described.

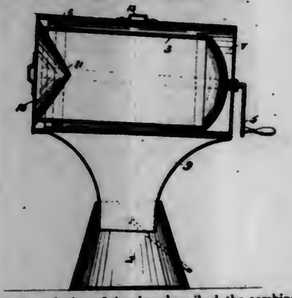
9. An apparatus for making stiffening of the character set forth, consisting of a metal block A, having a guiding-channel for the fabric, said channel having its walls parallel throughout the greater portion of its length, but having convergent walls at the receiving end, a block, as B, fitting said channel at its receiving end and provided with converging walls, said block having guides formed therein for the passage of the stiffening material, springs for holding said block B upon the fabric, and pressers A^9 A^9, arranged in the guiding-channel for the fabric, substantially as described.

413,935. AWNING-REEL. HENRY M. RAUBERT, Hot Springs, Ark. Filed June 12, 1888. Serial No. 313,864. (No model.)

Claim.—In an awning-reel, the combination of the frame-plate A, having end flanges *a*, a shaft *b*, pivoted therein, central ratchet-wheel *c*, and gear-wheel *k*, fixed on said shaft, awning-ropes *p p*, secured, as described, to opposite sides of the ratchet *c*, and coiled upon shaft *b*, with the gear-wheel *n*, its pivoted operating-crank *m*, and spring-actuated pawl *g*, pivotally supported from plate A, and held in contact with ratchet *c*, substantially as and for the purpose specified.



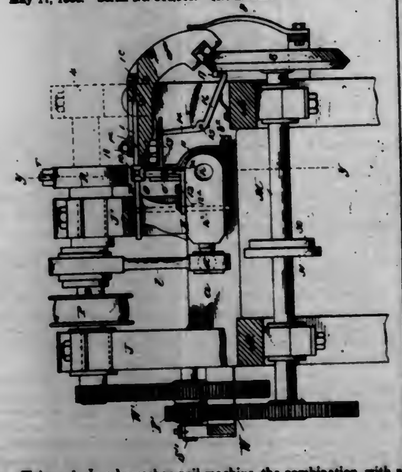
413,936. ASH-SIFTER. JOHN HANLEY, Minneapolis, Minn. Filed May 6, 1889. Serial No. 309,673. (No model.)



Claim.—1. In a device of the class described, the combination of the receptacle-case 7, having a cylindrical body, and the funnel-shaped bottom 9, adapted to fit into a suitable receptacle, the cylindrical rotatable sieve 3, having the crank 5 and supported on the rollers 6, and the lid 10, adapted to close the open ends of the case and of the sieve, substantially as described.

2. The combination, with a case having an open end and a bottom portion adapted to fit into a suitable receptacle and to direct material from said case into said receptacle, of a sieve arranged in said case and provided with an open end and a cover adapted to close the open ends of the case and sieve.

413,937. MACHINE FOR MAKING HORSESHOE-NAILS. CHRISTIAN A. HANSEN and OLE C. GULBRANDSEN, Christiania, Norway. Filed May 17, 1889. Serial No. 311,108. (No model.)



Claim.—1. In a horseshoe-nail machine, the combination, with a hammer and a cutter, of an anvil provided with cutting-edges and constructed to co-operate with said hammer in forging a nail and with said cutter in severing the forged nail from a nail-rod, substantially as described.

2. In a horseshoe-nail machine, the combination, with an anvil and a forging-roller co-operating therewith, of an auxiliary anvil, a hammer co-operating therewith, and two cutters arranged on opposite sides of the auxiliary anvil, said anvil being constructed to co-operate with the cutters to sever the forged nail-rod, substantially as described.

3. In a horseshoe-nail machine, the combination, with a hammer and two cutters, of an anvil constructed to co-operate with said hammer in forging a nail and with said cutters in severing the forged nail from a nail-rod, and a nail-rod carrier co-operating with the cutters to carry the forged nail thereto to be cut, substantially as described.

4. In a horseshoe-nail machine, the combination, with a vertical anvil and a forging-roller co-operating therewith, of a horizontal anvil and a hammer co-operating therewith, two cutters arranged on opposite sides of the horizontal anvil, said anvil being constructed to co-operate with the cutters to sever the forged nail from the nail-rod, and a nail-rod carrier having a periodical lateral movement to carry the forged nail to the cutters, substantially as described.

5. In a horseshoe-nail machine, the combination, with the forging devices, of a nail-rod carrier having a vibratory motion between the forging devices, for the purposes specified.

6. In a horseshoe-nail machine, the combination, with a forging-roller and an anvil co-operating therewith, of a nail-rod carrier, a hammer operating to impart a vibratory movement to the carrier, and an anvil co-operating with said hammer, substantially as described.

7. In a horseshoe-nail machine, the combination, with a hammer adapted to reciprocate in a horizontal plane, an anvil adapted to co-operate with said hammer, and two cutters arranged on opposite sides of the anvil, said anvil being adapted to co-operate with the cutters to sever a nail from the rod, of a nail-rod carrier adapted to move to and from the cutters, substantially as and for the purposes specified.

8. In a horseshoe-nail machine, the combination, with the forging devices, the cutters for severing the forged nail from a nail-rod, and the feeding devices, of a reel for the reception of a coil of continuous nail-rod, said reel being adjustable toward and from the feeding devices, substantially as and for the purposes specified.

9. In a horseshoe-nail machine, the combination, with the forging devices, the cutters for severing the forged nail from a nail-rod, and the feeding devices, of a revolubie carrier for the reception of a coil of continuous nail-rod, said carrier having its perimeter constructed and adapted for adjustment, substantially as and for the purposes specified.

10. The combination, in a horseshoe-nail machine, of an elastic or springy nail-rod carrier with an anvil and a hammer adapted to impart motion to the carrier toward the anvil, substantially as and for the purposes specified.

11. The combination, with the hammer H and the tappet 12, secured to the hammer-stock, of the nail-rod carrier 11, provided with the boss or projection 11^a, substantially as and for the purposes specified

12. The combination of an anvil constructed with cutting-edges on its under side and having a periodical vibratory movement with the cutters 9 and 9', arranged on opposite sides of the anvil, substantially as and for the purposes specified.

13. The mechanism for imparting a periodical vibratory movement to the pivoted cutter-anvil 1, consisting in the combination, with said anvil having an extension 2, in which is journaled a roller 5, of the revoluble cone-disk 6, provided with a notch 7, substantially as described.

14. The combination, with the cutters 9 and 9' and the cutter-anvil 1, co-operating therewith, as set forth, to sever a forged nail from a nail-rod, and an elastic or springy nail-rod carrier 11, provided with the slotted arm 13, of the bell-crank lever L, connected with said slotted arm, and the revoluble cone-disk 6, provided with the cam-face 17, adapted to co-operate with the bell-crank lever to impart motion in one direction to the nail-rod guide, substantially as and for the purposes specified.

15. The combination, with the feeding and forging devices of a horseshoe-nail machine, of the furnace *f*, constructed with the tapering projection *f'*, the combustion-chamber 69, the fire-bridge 66, the flue 70, and the fuel-magazine 63, arranged substantially as described, and for the purposes specified.

16. The combination, with the furnace for heating the nail-rod, said furnace having a transverse slot for the exit of said nail-rod, of a vibratory nail-rod carrier and a shield or guard-plate 73, applied over said slot and having an aperture for the passage of the nail-rod, said shield being connected to and vibrating with the nail-rod carrier, substantially as and for the purposes specified.

17. The nail-rod-feeding devices consisting of a clamp having a periodical reciprocating movement and a push-rod to open the jaws of the clamp just prior to and during said vibratory motion, in combination with an auxiliary stationary clamp having its jaws normally

open and a push-rod operating to close said jaws and maintain the same closed as soon as the reciprocating clamp commences to move and during its motion in one direction, substantially as and for the purposes specified.

18. The combination, with the cam-disk 31, the connected rock-shafts I and F, the radial arm 32 on rock-shaft I, the radial arm 24 on rock-shaft E, and the spring-actuated dog 20, co-operating with the upper end of the arm 24 to clamp the nail-rod, of the rock-shaft F, the lever or arm 28, and the push-rod 27, connecting the lever with the spring-dog, substantially as and for the purposes specified.

19. The combination, with the cam-disk 31, the rock-shaft I, its radial arms 32 33, the rock-shaft F, its radial arms 24 25, a connection between the latter, and a connection between the radial arm 25 and the radial arm 33, the spring 22, and the dog 20, carried by said spring, of the rock-shaft E, the lever 28 thereon, and the push-rod 27, connecting said lever with the spring 22, substantially as and for the purposes specified.

20. The combination, with the standard 51, the spring actuating lever 42, and the locking-dog 40, of the cam-disk 30, the rock-shaft E, and its levers 29 and 49, and the push-rod 46, connecting the lever 49 with the lever 42, substantially as and for the purposes specified.

21. The combination, with the standard 51, the spring-actuated lever 42, having its rear end slotted and curved upwardly, and the dog 40, secured to said lever and arranged relatively to the standard 51, as described, of the rod 46, extending through the slotted end of the lever and having the shoulders 48 and 48^a, and the lever 49 on rock-shaft E, substantially as and for the purposes specified.

22. The combination, with the spring 22, carrying the dog 20, the push-rod 27, the rock-shaft E, and the levers 28 and 29, of the hand-lever 54 and the cam 54^a, substantially as and for the purposes specified.

23. The combination, with nail making and cutting devices of a horseshoe-nail machine, of a reel provided with radial forked bearings for the reception of a coil of continuous nail rod or wire, one side of said forked bearings being detachable, substantially as and for the purposes specified.

418,938. SOLDER-MELTING FURNACE. ELISHA HAWES, Sacramento City, Cal. Filed Oct. 28, 1887. Serial No. 253,662. (No model.)

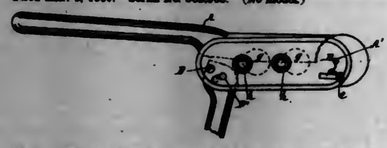


Claim.—1. The furnace having the doors E at one side, the bottom formed of inclined step-like strips F, with transverse supporting-bars G between them, whereby air-spaces H are formed between the strips, the trough I at the lower side of the bottom, and the pyramidal roof B, having the smoke-flue C and the doors D, substantially as described.

2. The furnace having the doors E on one side, the doors D in its top, the escape-flue, the bottom formed of a series of inclined step-like strips with air-spaces between them, and the trough at the lower side of the bottom, substantially as described

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418,939. BULLET-MOLD. WILLIS W. HARRIS, Sioux City, Iowa. Filed Mar. 8, 1889. Serial No. 302,583. (No model.)

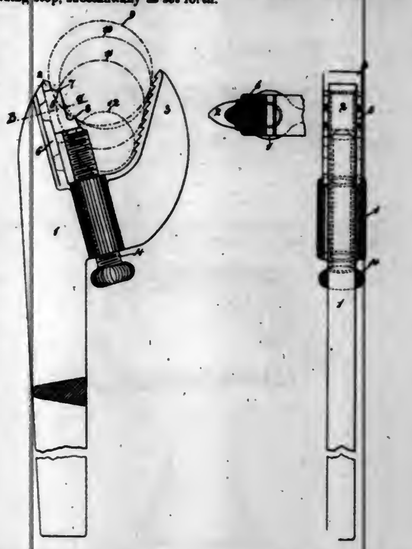


Claim.—The combination, substantially as shown and described, of the bullet-mold made in halves hinged together at one end, the plate B, pivotally secured to the handle C, the latter hinged to one half of the mold, the inlet holes or perforations A *h*, with cutting-edges, made in the said plate B, and the elongated slot *d*, engaging with the guide-stud *e*, secured to one half of the mold, as and for the purpose specified.

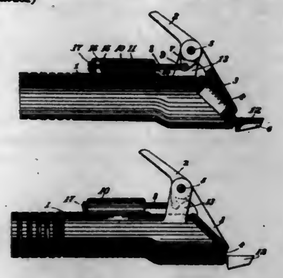
418,940. PIPE-WRENCH. JOHN T. HAWKINS, Taunton, Mass. Filed Apr. 26, 1889. Serial No. 309,037. (No model.)

Claim.—1. In a pipe-wrench constructed of a serrated or toothed jaw, as 3, and an opposite smooth or unserrated jaw, as 2, the combination of a stop for the pipe sliding upon the smooth jaw and an adjusting-screw for regulating the position of said sliding stop, substantially as set forth.

2. In a pipe-wrench constructed of a serrated or toothed jaw, as 3, and an opposite smooth or unserrated jaw, as 2, in combination with a stop, as 5, sliding upon the smooth jaw and having formed thereon tooth-edges, an adjusting-screw, as 4, for regulating the position of said sliding stop, substantially as set forth.



418,941. VALVE FOR PNEUMATIC PIPES OR TUBES. JOHN T. HAWKINS, Taunton, Mass. Filed Apr. 29, 1889. Serial No. 308,983. (No model.)



Claim.—In combination with a valve externally pivoted upon a pipe or coupling, a helical spring inclosed within a tube or case formed upon or attached to the body of said pipe or coupling and suitably connected to an arm formed upon the valve-lever, whereby the valve is automatically closed by the action of said spring and the spring protected from dust, dirt, or other matters liable to cause wear and deterioration of said spring, substantially as set forth.

418,942. MEANS OF ACCESS TO A NUMBER OF SURFACE, ELEVATED, OR UNDERGROUND RAILWAYS. ROWLAND B. HAZARD, New York, N. Y. Filed Apr. 2, 1887. Serial No. 233,371. (No model.)

Claim.—1. In underground-railway stations, the combination of four adjacent tracks, of which the two outer ones are arranged in different vertical and horizontal planes from the two inner ones, with platforms adjacent to each track, substantially as described.

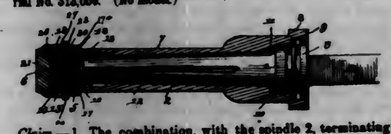
2. An underground-railway station having tracks on different planes, the outer track being depressed below the inner, and a landing for the inner track extending over the outer one, and a second landing adjacent to the latter, substantially as shown and described.

3. In underground railways having tunnels arranged close together, a double-platform station with tracks on different planes, the inner tracks having an adjacent platform which extends over the outer tracks, substantially as described.

418,942.



418,943. AXLE. PATRICK K. HOOBER, Wilkes-Barre, Pa., assignor of one-half to William J. Parmelee, same place. Filed June 4, 1889. Serial No. 313,050. (No model.)



Claim.—1. The combination, with the spindle 2, terminating in the reduced portions 5 and 6, oppositely screw-threaded, of the sleeve or axle-box 7, projecting slightly beyond the beginning of the reduced portion and terminating in the annular groove 13, having the washer 14, the binding-nut 15, threaded on the portion 5 and having a reduced rear portion forming a ground joint with the recess 13, and having a forward annular recess 19, and of the lock-nut 21, having the internal bore provided with the interiorly-threaded integral collar 26, mounted on the reduced portion 6, the exterior of said collar taking within the annular recess 19 of the nut 15 and forming a ground joint with the wall of the same, said lock-nut having the hollow cap portion 22, which is of a length sufficient to wholly receive the nut 15 and fit around the end of the axle-box, substantially as specified.

2. The spindle having the oppositely-threaded portions 5 and 6 at the outer end, combined with the nut 15, screwing over the threaded portion 5, and the cap or set-nut 21, screwing upon the threaded portion 6 and inclosing the nut 15 and the end of the axle-box, as set forth.

3. The spindle having the oppositely-threaded portions 5 and 6 at the outer end and the axle-box on the spindle, combined with the nut 15, screwing over the portion 5 and forming a ground joint with the interior surface of the outer end of the axle-box, and the cap or set-nut 21, having the threaded collar 26, screwing upon the portion 6 of the spindle and inclosing both the nut 15 and the end of the axle-box, as set forth.

4. The spindle having the threaded portion 6, combined with the cap-nut 21, having an interior screw-threaded collar 26 to engage with the threaded portion 6 of the spindle, said cap-nut being extended forward and inclosing the end of the axle-box, as set forth.

418,944. YEAST-CAKE. WOLCOTT A. HULL, New York, N. Y. Filed July 6, 1889. Serial No. 316,714. (No specimens.)

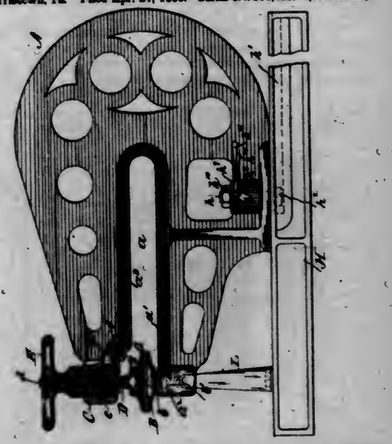


Claim.—1. A yeast-cake having its exterior surface free from sharp angles, substantially as set forth.

2. A yeast-cake having a thin exterior surface-crust formed of the cake material, the exterior surface of said crust being rounded throughout and free from sharp angles, substantially as set forth.

3. A yeast-cake the exterior surface of which is adapted to receive an envelope or coating, being of rounded form throughout and free from sharp angles, substantially as set forth.

418,945. DEVICE FOR CLAMPING PLATES OR SHEETS OF METAL. CHARLES L. HUSTON, Contesville, assignor to John D. Newbold, Norristown, Pa. Filed Apr. 27, 1889. Serial No. 308,792. (No model.)



Claim.—1. The combination, with a pivotally-supported holding device A, of a stop-bar L, having an adjusting-screw *l*, substantially as set forth.

2. The combination, with a pivotally-supported holding device A, of a stop-bar L and eccentric sleeve A^1, substantially as set forth.

3. The combination, with holding device A and its bed-plate, of a pivotal connection between said parts and an eccentric sleeve with operating-handle within said pivotal connection, substantially as set forth.

4. The combination, with a holding device A, having a swinging movement on a pivotal support, of mechanism for initially moving the device A longitudinally and separate mechanism for terminally adjusting the device A longitudinally, substantially as set forth.

5. The combination, with a holding device A, having sleeve-bear-

ing A^9, of a bed-plate, bolt-connection A, sleeve A^8, and eccentric sleeve A^7, having handle A^{11} and locking mechanism, substantially as set forth.

6. The combination of a holding device A, having a swinging motion on a pivotal support, stop-bar therefor, mechanism for initially longitudinally moving said device, and separate mechanism for completing such longitudinal movement, substantially as set forth.

7. The combination of a yoke-frame A, the head or disk B, vertically-sliding screw D, rotating tubular sleeve or bushing C, engaging with said screw and having hand-wheel E, and disk or head G at the lower end of screw D, substantially as set forth.

8. The combination of yoke-frame *a*, tubular sleeve or bushing C, threaded in its bore and having hand-wheel E, the vertically-sliding screw D, engaging with sleeve C, head or disk G, and ball-and-socket connection between disk G and screw D, substantially as set forth.

9. The combination of yoke-frame *a*, rotating disk B, tubular sleeve C, threaded in its bore and having hand-wheel E, screw D, engaging with sleeve C and having longitudinal slots *d*, plate F, having studs *f*, engaging with screw-slots *d*, and head or disk G at the lower end of screw D, substantially as set forth.

10. In a holding device A, the disk G, having supplementary biting-surfaces, substantially as set forth.

11. In a sheet-metal holding device A, the rocking clamping disk or head G, provided with supplementary biting-surfaces, substantially as set forth.

12. In a sheet-metal holding device A, clamping disks or heads, supplementary biting surface or surfaces on said disks, and actuating pressure-screw, substantially as set forth.

13. In combination with the rotatable sheet-metal holding device A, the stop-bar L, substantially as set forth.

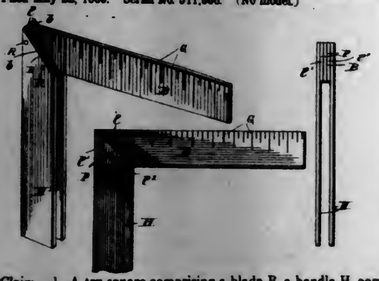
14. In combination with the rotatable sheet-metal holding device, a bed-plate and mechanism interposed between the bed-plate and holding device for sliding the latter upon the former, substantially as set forth.

15. In combination with the sheet-metal holding device A, the bottom piece I, bed-plate H, and mechanism interposed between bottom piece I and bed-plate H for sliding the bottom piece on the bed-plate, substantially as set forth.

16. The combination of sheet-metal holding device A, bottom piece I, pivotal connection between holding device A and bottom piece I, shaft i^3, having gear-wheel i^3, mounted on bottom piece I, and bed-plate H, having rack A^{21}, engaging with wheel i^3, substantially as set forth.

17. The combination of bed-plate H, bottom piece I, holding device pivoted to bottom piece I, stop-bar L on the latter, and mechanism interposed between the bed-plate H and bottom piece I for sliding the latter on the former, substantially as set forth.

413,946. TRY-SQUARE. DANIEL H. ISENHOWER, Bloomington, Ill. Filed May 22, 1889. Serial No. 311,666. (No model.)

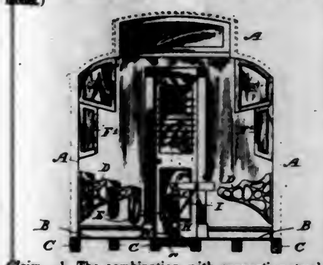


Claim.—1. A try-square comprising a blade B, a handle H, composed of two members, one on either side of the blade, pieces P between the ends of said members and of the blades, the ends *b* of said members and one side *p* of said pieces being beveled, as shown, for the purpose set forth.

2. A try-square comprising a blade B, a handle H, composed of two members, one on either side of the blade, pieces P between the ends of said members and of the blades, the ends *b* of said members and one side *p* of said pieces being beveled, as shown, and the lower faces of said pieces being flush with the lower edge of the blade, substantially as set forth.

3. A try-square comprising a blade B, a handle H, composed of two members, one on either side of the blade, pieces P between the ends of said members, the ends *b* of said members and one side *p* of said pieces being beveled, as shown, and the lower faces of said pieces being flush with the lower edge of the blade, said members below the lower edge of said blade being spaced a distance equal to the thickness of two clapboards at their lapping edges, whereby said handle will retain a loose clapboard in place, as herein specified.

413,947. REVERSIBLE MAIL-ASSORTING TABLE. CHARLES A. KENDALL, Concord, N. H. Filed Oct. 25, 1888. Serial No. 289,126. (No model.)



Claim.—1. The combination, with supporting-standards having angle-irons secured to their top, the vertical portion of which contains a single perforation, of a reversible table having rims on both sides and all around, plates secured to each end of said table and provided with studs for entering the perforation of said angle-iron, and brace-rods having one end pivoted to either end of said table and the other end capable of vertical movement upon said supporting-standards.

2. The combination of supporting-standards provided with angle cap-irons having in their vertical portions a single perforation, a reversible table having rims on both sides and all around hinged at either end near one side to said angle cap-irons, brace-rods having one end pivoted to either end of said table and the opposite end connected to either supporting-standard and capable of vertical movement thereon, and means for securing said brace-rods and reversible table in a vertical position, for the purpose set forth.

3. The combination of supporting-standards provided with angle cap-irons having in their vertical portions a single perforation, one or more bars running horizontally between said standards, having adjustable mail-bag hooks mounted thereon, a reversible table hinged to said angle cap-irons, and brace-rods connecting said table with said standards in a manner whereby the said table may be securely adjusted to a vertical position and to a horizontal position at either side of said standards, substantially in the manner specified.

413,948. CORNER-FASTENING FOR CRATES. ALBERT T. LIEBERMAN, Whitehall, Mich. Filed Apr. 17, 1889. Serial No. 307,345. (No model.)



Claim.—1. A triangular-shaped fastener for the corners of crates or boxes, the two ends of which fastener are drawn to and fastened at one of the angles of the triangular-shaped fastener, substantially as and for the purposes set forth.

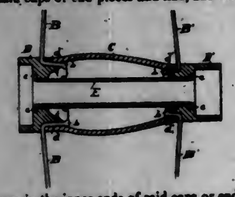
2. A triangular-shaped wire fastener for the corners of crates or boxes, the two ends of which fastener are drawn to and fastened at one of the angles of the triangular-shaped fastener and their points driven into the wood of the crate-frame, substantially as set forth.

3. The combination, with an angle-wood crate-frame provided at the corners with grooves or recesses to receive it, of the triangular-shaped fastener fastened at one of the corners of the crate-frame at or near the groove or recess therein, whereby the tightening or closing of the fastener draws and holds the other two angle-woods to the one where the tightening or closing of the fastener takes place, substantially as described.

4. The combination, with a triangular fastening for angle-wood crate-frames, the ends of which fastener are fastened at one of its angles, of a chamfered-off recess upon the corner of the angle-wood, whereby contact with the ends of the fastener and outside objects is prevented, substantially as shown.

413,949. METALLIC WHEEL. CHARLES E. MARX, Flint, Mich., assignor to the Marx Metal Wheel Company, same place. Filed Mar. 2, 1889. Serial No. 301,770. (No model.)

Claim.—In a metallic wheel, the combination, with the hub and caps or end pieces adapted to enter the ends of said hub, of spokes engaged between said caps or end pieces and hub, and having headed



ends lying in recesses in the inner ends of said caps or end pieces, substantially as described.

413,950. LATHE-TOOL. EDWARD R. MARKHAM, Chicopee Falls, Mass., assignor to the J. Stevens Arms and Tool Company, same place. Filed Dec. 22, 1888. Serial No. 294,455. (No model.)



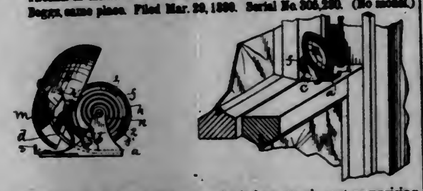
Claim.—1. A cutting-tool consisting of a shank divided into two sections—a body-section and a head-section—swiveled together by being formed the one with a socket and the other with a dowel entering said socket, a cutter carried at all times by the head-section, a fastening for adjustably clamping the cutter thereto irrespective of whether the head-section is secured to the body-section or not, and an independent fastening for clamping the head-section to the body-section after the adjustment of its swivel-joint, said latter fastening between the head and body sections being independent of the fastening between the cutter and the head-section, whereby the cutting-edge may be adjusted to different angles without disturbing the union between the cutter and the head-section, substantially as set forth.

2. The body-section of a cutting-tool, the head-section thereof, a swivel-connection between said head and body sections, whereby said head-section is axially adjustable on said body-section, and a fastening for clamping said sections in the required relative position, in combination with a cutter carried by said head-section and rotatively adjustable thereon, and a fastening for clamping said cutter in the required position on said head-section, said fastening being wholly independent of the fastening between the head and body sections, substantially as set forth.

3. The body-section of a cutting-tool having a socket, a head-section having a dowel entering and capable of turning axially in said socket, and a set-screw for securing said body-section and head-section in the required position, in combination with a cutter carried by said head-section, and a stud securing said cutter to said head-section irrespective of the connection between the head-section and the body-section, on which stud said cutter is rotatively adjustable, substantially as set forth.

4. A cutting-tool consisting of a shank divided into two sections, a body and head section, the body-section formed with a longitudinal socket and an intersecting transverse socket, and the head-section provided with a dowel adapted to fit either of said sockets, and a set-screw screwing into the body-section at the point of intersection of said sockets, whereby the head-section may be swiveled to the body-section on either a longitudinal or transverse axis, and may be fastened in either case by said set-screw.

413,951. BURGLAR-ALARM ATTACHMENT FOR WINDOWS. THOMAS H. MARTIN, Des Moines, Iowa, assignor of one-half to George C. Bogen, same place. Filed Mar. 30, 1889. Serial No. 305,280. (No model.)



Claim.—1. A burglar-alarm and window attachment comprising a base *a*, having posts *b* and *c* at its sides, a roller having a series of catches 1 2 3 4 in bearings at the tops of said posts, a curved post *d* between said posts, a bell fixed to the curved post, a striker *w*, having a spring-stem *s* fixed to one of the side posts, and a lever *e*, pivoted on top of the base, constructed and combined to operate in the manner set forth.

2. The base *a*, having fixed posts *b* and *c* at its sides, the roller *f*, having a series of catches on its side face in bearings at the tops of said posts, a curved post *d* between the posts *b* and *c*, a bell fixed to the said curved post, a striker having a spring-stem fixed to one of the side posts, and an elbow-shaped lever pivoted on top of the base, constructed and combined and attached to the top of the window-sash to operate in the manner set forth, for the purposes stated.

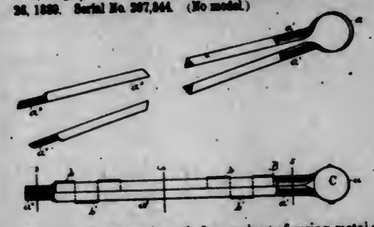
413,952. CURTAIN-PIN. FANNIE A. MATHEWS, New York, N. Y. Filed June 7, 1888. Serial No. 313,494. (No model.)



Claim.—1. As an article of manufacture, a curtain hook and pin made of a single piece of wire having the hook D and shank C, of two strands, one of said strands being extended laterally near the end of the shank to form a catch for the hook D, substantially as described.

2. As an article of manufacture, a curtain hook and pin made of a single piece of wire having the hook D and shank C, of two strands, one of which is extended laterally near the end of the shank to form a catch for the hook D, the said strands branching in opposite directions at the end of the shank and being formed with a spring-pin and a catch therefor, substantially as described.

413,953. SHEET-METAL ROD, &c. FRANK. MILLER, Cleveland, Ohio, assignor to the Avery Stamping Company, same place. Filed Jan. 26, 1889. Serial No. 297,844. (No model.)



Claim.—1. A rod or pin made from a sheet of spring metal somewhat more than twice the desired length of the rod or pin, having the legs on each side of the central part bent longitudinally into any desired form, and having the said central part bent transversely, whereby the two legs may be brought together and whereby the spring of the bent central part tends to spread the legs apart and thereby automatically hold them in engagement with a part of which surrounds them, substantially as and for the purpose specified.

2. A pivot-rod for dampers, &c., consisting of a strip of spring sheet metal bent transversely near its middle to bring the two legs thereof together, said legs being bent longitudinally into such shape that when they lie together they form the angular part a^2 and the cylindrical parts a' a^3, substantially as and for the purpose specified.

3. The combination, with a plate B, having the retaining-straps *b b'*, of a spring pivoting-rod made of a strip of sheet metal bent transversely near its middle to bring the two legs thereof together and bent longitudinally, so that when said legs are brought together they will form an angular part for engagement with the straps *b b'* and cylindrical parts upon which it turns, substantially as and for the purpose specified.

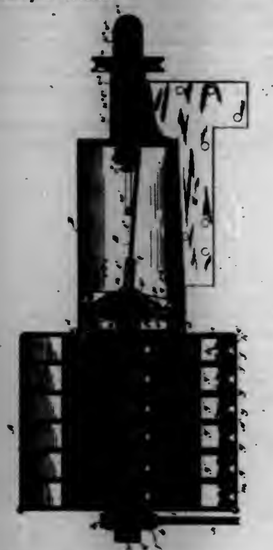
4. A pivot-rod for dampers, &c., consisting of a strip of sheet metal bent transversely near the middle to bring the two legs thereof together, said legs being bent longitudinally into such shape that when brought together they form the angular part a^2, the cylindrical part a', and the cylindrical part a^3 at the ends, of smaller diameter than a', substantially as and for the purpose specified.

413,954. SPRING-MOTOR. JAMES T. MILLER, Atlanta, Ga. Filed Oct. 12, 1888. Serial No. 287,895. (No model.)

Claim.—1. In a spring-motor, a series of coiled springs arranged side by side and all connected together, in combination with the rotating gear-wheel *o*, the rocking gear-wheel *p*, the connecting-rod l^2, and the pulley or band wheel, substantially as herein set forth.

2. In a spring-motor, a series of coiled springs arranged side by side and all connected together, in combination with the main driving-

shaft *c*, formed with a ball *n* thereon, rotating gear-wheel mounted on said shaft, a rocking gear-wheel loosely mounted on said ball, the rod t^3, connected to said rocking gear-wheel, and the pulley or band wheel, substantially as set forth.



3. The combination of the operating-springs, the main driving-shaft *c*, deriving power therefrom, rotating gear-wheel rigidly mounted on said shaft, having the ball *n* formed on the end of said shaft, the rocking gear-wheel *p*, loosely mounted on said ball, the yoke D, embracing said rocking gear-wheel, for the purpose set forth, the connecting-rod t^3, and the pulley-wheel, all combined and arranged substantially as set described.

4. The combination of the operating-springs, the sleeve *j*, connected thereto, the hub or nut *k*, fitting loosely within said sleeve and provided with inclined tracks *l' l' l'*, the balls *l l l*, mounted on such inclines, the main driving-shaft rigidly connected to said hub or nut, the rotating gear-wheel mounted on said main shaft, having the ball *n* formed on the end of said shaft, the rocking gear-wheel loosely mounted on said ball, the yoke D, encircling said rocking gear-wheel, the connecting-rod t^3, and the pulley or band wheel, substantially as set forth.

5. The combination of the operating-springs, the main driving-shaft connected therewith, rotating gear-wheel mounted on said shaft, having the ball *n* formed on the extreme end of said shaft, the rocking gear-wheel *p*, mounted loosely on said ball, the rod t^3, connecting said rocking gear with the fly-wheel *v*, the face-wheel *u*, the shaft *u'*, and pulley or band wheel mounted on the same, substantially as set forth.

6. The combination of the operating-springs, the main driving-shaft connected therewith, the rotating gear mounted on said shaft, having the ball *n* formed on the extreme end of said shaft, the rocking gear *p*, loosely mounted on said shaft, the connecting-rod t^3, the face-wheel *u*, mounted on the shaft *u'*, the rod v^3 within said shaft, and the pulley or band wheel mounted on said shaft, substantially as set forth.

7. The combination of the operating-springs, the main driving-shaft connected therewith, the rotating gear-wheel mounted on said shaft, having the ball formed on the extreme end of said shaft, the rocking gear-wheel loosely mounted on said ball, the rod t^3, the face-wheel *u*, the shaft *u'*, the rod v^3 within the same, and the governor-weights acting with said rod, for the purposes set forth, substantially as described.

8. The combination of the operating-springs, the main driving-shaft connected therewith, the rotating gear-wheel mounted on said shaft, having the ball *n* formed on the end of the same, the rocking gear-wheel *p*, mounted loosely on said ball, the connecting-rod t^3, the face-wheel *u*, mounted on the shaft *u'*, the rod v^3 within said shaft, the governor-weights pivotally attached to said face-wheel, coiled springs encircling said rod v^3, for the purposes set forth, and the pulley-wheel mounted on said shaft *u'*, substantially as herein described.

9. The combination of the operating-springs, the main driving-shaft connected therewith, the rotating gear-wheel mounted on said shaft, having the ball *n* formed on the end of the same, the rocking gear-wheel *p*, mounted loosely on said ball, the connecting-rod t^3, the face-wheel *u*, mounted on the shaft *u'*, the rod v^3 within said shaft, the governor-weights pivotally attached to said face-wheel, coiled springs encircling said rod v^3, for the purposes set forth, the pulley or band wheel mounted on said shaft *u'*, and the thumb-nut on the extreme end of the rod v^3, substantially as described.

10. In a spring-motor, the combination, with a gear-wheel *o*, rotated by means of springs, of a gear-wheel *p*, provided with a different number of teeth from the gear-wheel *o*, oscillatingly mounted on a ball and held from rotation by means of a yoke, substantially as set forth.

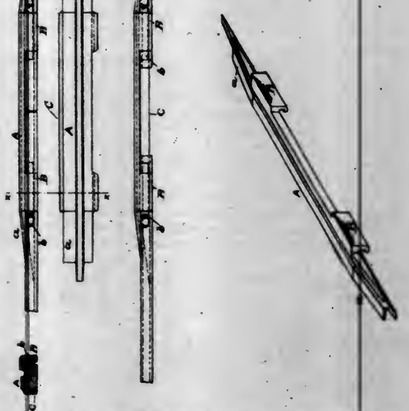
413,955. TRIMMING FOR THE EDGES OF FABRICS. JOSEPH B. MORLEY, Philadelphia, Pa., assignor to himself, Robert W. Scott, and Louis H. D. Williams, all of same place. Filed Aug. 12, 1889. Serial No. 320,473. (No specimens.)



Claim.—1. The within-described trimming or border for fabrics, the same consisting of a row of stitches on the fabric, a row of stitches some distance beyond the edge of the fabric, and two rows of loops or festoons, one row being confined to the fabric by the row of stitches thereon and the other row being incorporated with the outer row of stitches, said rows of loops or festoons being intermeshed at a point between the two lines of stitches, substantially as specified.

2. The within described trimming or border for fabrics, the same consisting of a row of stitches formed on the fabric, a row of stitches some distance beyond the edge of the fabric, two rows of intermeshed loops or festoons, one row confined to the fabric by the stitches thereon and the other row incorporated with the outer line of stitches, and a thread incorporated with the outer line of stitches only and forming loops or festoons beyond the same, substantially as specified.

413,956. ADJUSTABLE CLAMP-JOINT FOR RAILROAD-RAILS. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Aug. 16, 1889. Serial No. 320,953. (No model.)



Claim.—1. A joint clamp-plate for railroad-rails, provided with a side lug to clamp each rail.

2. A joint clamp-plate for railroad-rails, provided with a side lug at each end thereof secured to the rails by side keys.

413,957. MONEY-CHANGE GAME. JAMES MCCARRELL, St. Petersburg, Fla. Filed July 27, 1889. Serial No. 318,999. (No model.)



Claim.—The game of money-change herein shown and described, comprising the following elements: a series of checks or jettons of varying size and denominations, the slotted box adapted for shuffling and dealing the same, and the removable partitioned frame, constructed and combined to co-operate substantially in the manner and for the purpose set forth.

413,958. STATION-INDICATOR. JOHN F. O'BRIEN, Quebec, Quebec, assignor to George H. Patterson and John W. Allison, both of Montreal, Canada. Filed Apr. 11, 1889. Serial No. 306,816. (No model.) Patented in Canada Feb. 20, 1889, No. 30,836.



Claim.—1. In a station-indicator, the combination, with a series of cards arranged in consecutive order and loosely bound together at one edge and having non-registering notches in the opposite edge, of a revolving wheel having teeth projecting down in front of said cards, for retaining and releasing the cards successively, and mechanism for operating said wheel, substantially as set forth.

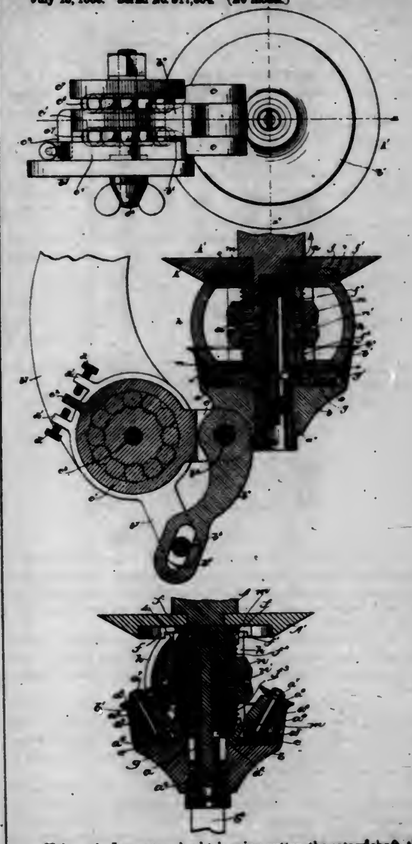
2. The combination, with a series of cards having non-registering notches in their upper edges, of a wheel revolving by a step-by-step movement and having teeth which register at one step with the notch in one card and at the next step with the notch in the next card, and mechanism for operating said wheel, substantially as and for the purpose set forth.

3. In a station-indicator, the combination of an open-fronted frame, a series of cards bound together mounted therein with their free edges uppermost, and a wheel for retaining such cards in an elevated position and also for releasing them consecutively and permitting them to fall and display their backs, and mechanism, substantially as described, for giving a step-by-step motion to the wheel, substantially as set forth.

4. The combination, with the frame A, of the case carrying the wheel *d* and mechanism for operating the latter, and notched cards mounted on staples in the frame A and alternately held and released by said wheel *d*, substantially as set forth.

5. In a station-indicator, the combination, with a frame A, carrying the notched cards D, of the toothed wheel *d*, the pivoted lever G, the arm H, connecting one end of said lever to the said toothed wheel, and the lever E, connected to the other end of said lever G, all substantially as and for the purposes set forth.

413,959. HEEL-TRIMMING CUTTER. JEROME I. PACKARD, Boston, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed July 15, 1889. Serial No. 317,604. (No model.)



Claim.—1. In a rotary heel-trimming cutter, the rotary shaft, the rings having lips, the cutter-blades having projections 4 to engage the said lips, and the movable blocks to engage the said projections, combined with means to slide the said blocks radially and to hold them, substantially as described.

2. In a rotary heel-trimming cutter, the rotary shaft, the rings having lips, the cutter-blades having projections 4 to engage the said lips, and the movable blocks to engage the said projections, combined with the bushings having beveled ends and with the nut to move the said bushings, substantially as described.

3. The combination, with a rotary heel-trimming cutter, of a rand-cutter and means to rotate the said cutter independently during its rotation with the heel-trimming cutter, whereby the said rand-cutter is given a planetary motion, substantially as described.

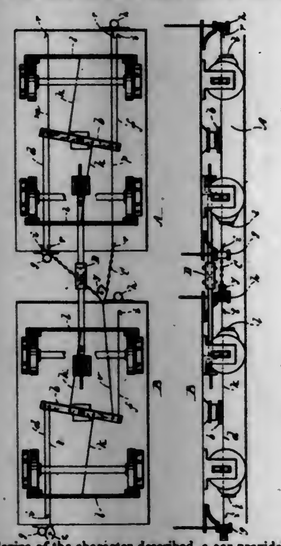
4. The rotary heel-trimming cutter, a tipping carriage having the teeth *c*, and the hub having bearings a^3, combined with the shafts a^4, their pinions, and the rand-cutters, substantially as described.

5. A rotary heel-trimming cutter, a tread-guard, and a carriage having an attached chambered rand or counter guard, combined with a rotating hub, a series of disk-like rand-cutters, and means to give to them a planetary motion, substantially as described.

6. The rotary heel-trimming cutter, the carriage having an attached chambered or recessed rand or counter guard, and an arm b^4, combined with a loosely-held hub, on which the said carriage is pivoted, and with ball-bearings acting against the said hub, substantially as described.

413,960. BRAKE FOR ELECTRIC CARS. LOUIS PYENDE, Boston, Mass. Filed Sept. 2, 1889. Serial No. 322,690. (No model.)

Claim.—1. A brake device for a train of electric cars, comprising a chain connected with the forward brake-spindle of the motor-car, passing over a pulley on a brake-rod of the following car, and secured to the rear brake-rod of said motor-car, substantially as described.



2. In a device of the character described, a car provided with a supplemental brake-rod having a pulley at its outer end and a chain passing over said pulley, its ends being respectively connected with the rear brake-rod and forward brake-spindle of the car, substantially as described.

3. In a car-brake, a pulley on the brake mechanism of a rear car and a chain passing over said pulley and connected with the brake mechanism of a forward car, substantially as and for the purpose set forth.

4. In a car-brake mechanism, a supplemental rod on a lead-car, connected with its forward brake-spindle, and a chain secured to the rear end of said rod and passing over a pulley on a forward brake-rod on a following car and connected with the ordinary brake-rod at the rear of the lead-car, substantially as described.

5. In a car-brake of the character described, an independent rod detachably connected with the forward brake-spindle of a lead-car, a supplemental rod connected with the brake-lever of a following car, a pulley on the outer end of said rod, and a chain passing over said pulley and having its ends respectively secured to said independent rod and the rear brake-rod of the lead-car, substantially as and for the purpose specified.

6. In a device of the character described, the combination of a motor-car provided with independent rods parallel with its brake-rods and adapted to be connected with the brake-spindles, a car having supplemental brake-rods bearing a pulley on their outer ends, and a chain passing over one of said pulleys and having its ends respectively attached to an independent rod and a brake-rod on said motor-car, substantially as described.

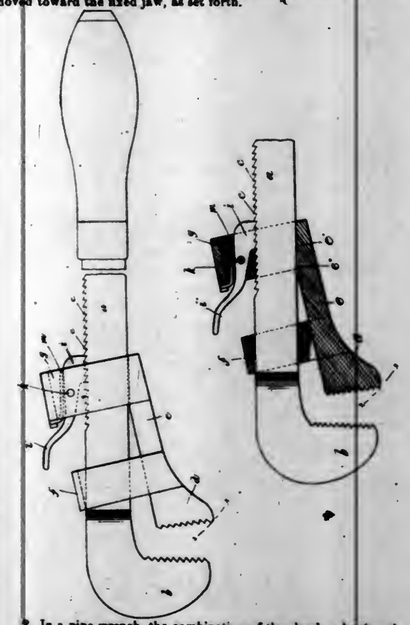
7. In a device of the character described, a lead-car provided with independent rods adjacent to its brake-rods and attachable to the brake-spindle, hooks in the ends of said rods, a car having supplemental rods on its brake-lever, provided with a pulley on their outer ends, and a chain attachable to an independent rod and an ordinary brake-rod of the lead-car, said chain passing over one of said pulleys, whereby the brakes of both cars may be applied by one spindle on the lead-car, substantially as described.

8. The car B, provided with the supplemental brake-rods *t v*, bearing pulleys *y x*, substantially as and for the purpose set forth.

9. The car A, provided with the independent rods *m p*, attachable to the brake-spindles, in combination with the car B, having the supplemental brake-rods *t v*, provided with pulleys *x y*, and the chain C, for connecting said pulleys with an ordinary brake-rod and the opposite independent rod of the car A, substantially as described.

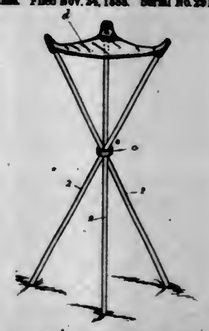
413,961. PIPE-WRENCH. DANIEL R. PORTER, Chelsea, Mass., assignor to William F. Goldthwaite, same place. Filed Mar. 15, 1889. Serial No. 303,406. (No model.)

Claim.—1. In a pipe-wrench, the combination of the shank *a*, having the jaw *b* projecting from one side and the ratchet-teeth *c* formed on its back or opposite side, the movable jaw *d*, having the arm *e* and yoke *f g*, the dog *i*, pivoted to the yoke *g* at the opposite side of the shank *a* from the jaws *b d*, and a spring whereby the dog is normally held yieldingly in engagement with the ratchet-teeth of the shank *a*, the arrangement of the pivot connecting the yoke of the movable jaw with the dog *i* being such that said jaw in swinging inwardly is also moved toward the fixed jaw, as set forth.



2. In a pipe-wrench, the combination of the shank *a*, having the jaw *b* projecting from one side and the ratchet-teeth *c* formed on its back or opposite side, the movable jaw *d*, having the arm *e*, provided with a beveled seat *e'* and yokes *f g*, the dog *i*, pivoted to the yoke *g* at the opposite side of the shank *a* from the jaws *b d*, and a spring whereby the dog is normally held yieldingly in engagement with the ratchet-teeth of the shank *a* and the beveled seat *e'* is held against the front edge of the shank, thereby holding the arm *e* in an inclined position with the jaw *d* thrown outwardly, as set forth.

413,962. COMBINED CANE AND CAMP-STOOL. GEORGE R. PUTNAM, Boston, Mass. Filed Nov. 24, 1888. Serial No. 291,784. (No model.)



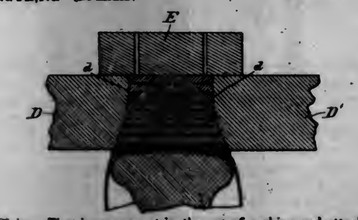
Claim.—1. A seat-support composed of a plurality of rods 2 and a loose ring *c*, adapted to slide on said rods and to connect the central portions thereof, as set forth.

2. A stool composed of the independent rods 2, the loose ring thereon, and a detachable seat engageable with the upper ends of said rods, as set forth.

3. The flexible seat *d*, having pockets 3, combined with the rods 2, formed to engage said pockets, and the loose connecting-ring on said rods, as set forth.

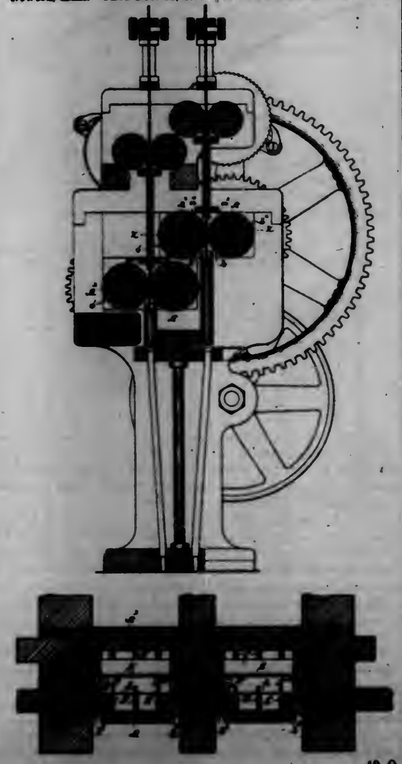
4. The herein-described folding camp-stool, comprising the plurality of rods, the ring loosely secured thereon, the canvas seat having corner pockets, the ferrule, and the handle to which said ring is designed to be secured, substantially as set forth.

413,963. METHOD OF ATTACHING HEELS TO BOOTS OR SHOES. FREDERICK F. RAYMOND, 2d, Newton, Mass. Filed July 25, 1887. Serial No. 245,173. (No model.)



Claim.—That improvement in the art of making and attaching heels which consists in trimming a detached heel-blank to the form substantially of a finished heel, locating said finished heel-blank upon the heel end of the outsole of a boot or shoe held or supported by a last or jack, maintaining the trimmed contour of the edge of the heel-blank by side supports arranged to be held in contact therewith during the attaching of the heel, and the attaching of the heel while it is thus held, whereby the heel-blank is trimmed before attachment to the boot or shoe and its trimmed form maintained during its attachment to the boot or shoe and the subsequent trimming of the heel-blank rendered unnecessary, substantially as described.

413,964. NAIL-MAKING MACHINE. FREDERICK F. RAYMOND, 2d, Newton, Mass. Filed Feb. 11, 1889. Serial No. 299,516. (No model.)



Claim.—1. In a nail-making machine, the combination of a series of nail-pointing dies, arranged upon the same line and adapted to be simultaneously operated, with a common cut-off bar *b*, substantially as described.

2. The combination of the dies *a' a*[4] and the blocks *b* C, having head-forming cavities, and one or both of which are laterally movable across the ends of the dies, substantially as described.

3. The combination of the movable dies *a' a*[4] and the cut-off bar *b*, carried above or at the rear end of said dies and movable across the same, substantially as described.

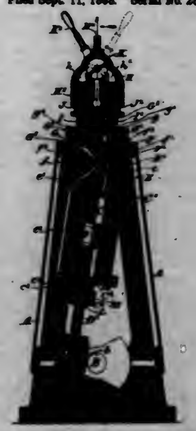
4. The combination of wire-feed mechanism with the cut-off bar or block *b*, having one or more head-forming recesses *d*, substantially as described.

5. The combination of the movable block or bar *b*, having one or more head-forming recesses *d*, with the movable presser bar or block C, adapted to co-operate with the block *b*, as described.

6. The combination of the movable block or bar *b*, having one or more head-forming recesses *d*, and the movable presser bar or block having one or more head-forming recesses *d'*, substantially as described.

7. The combination of the drawing or heading dies *a' a*[4] with the head-forming and cut-off device comprising the bars *b* C, having one or more head-forming recesses, and one or both of which are movable laterally across the line of action of the drawing-dies, substantially as described.

413,965. OSCILLATING STEAM-ENGINE. CHARLES B. RICE, Chicago, Ill., assignor to the Rice & Whitacre Manufacturing Company, same place. Filed Sept. 11, 1888. Serial No. 285,123. (No model.)



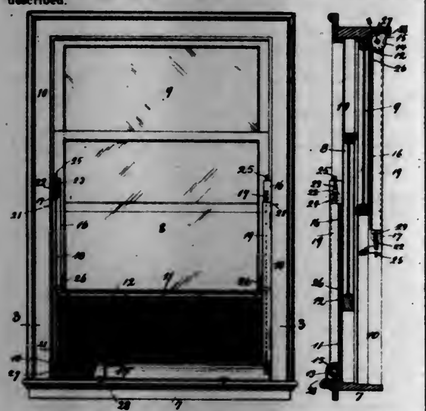
Claim.—1. The combination, with an oscillating cylinder, of a steam-valve for the same, consisting of a convex cylindric valve-seat attached to and moving with the cylinder, a movable part or sliding valve fitting against the said valve-seat and containing steam inlet and exhaust passages, a stationary part also provided with steam inlet and exhaust passages, and separate steam supply and exhaust tubes connecting said movable part or sliding valve with said stationary part, said tubes being attached to one part and sliding in the other part, said part in which the tubes slide being provided with packing rings or glands surrounding said tubes, substantially as described.

2. The combination, with an oscillating cylinder provided with a convex cylindric valve-seat, of a sliding part or valve provided with steam inlet and outlet passages and fitting against said valve-seat, an engine-frame provided with cylindric casing or valve-chest G, within which the said valve fits and slides, a spring located within said casing and pressing against the sliding valve, and an adjusting-screw engaging the wall of the casing and bearing on the spring, said screw having a nut inside the casing, and the casing being provided with a hole for the insertion of a wrench to turn the adjusting-screw, substantially as described.

413,966. WINDOW-SCREEN. ALPHONSO RICE, Cincinnati, Ohio. Filed Feb. 15, 1889. Serial No. 300,021. (No model.)

Claim.—1. The combination of a sash, a screen connected thereto, a roller 13, to which the other end of the screen is connected, pulleys 14, secured to the ends of roller 13, pulleys 17, secured in a vertical plane with the former but a distance remote therefrom equal to a little more than the movement of the sash, as shown, an endless chain or cord passing around pulleys 14 and 17, an adjustable spring-actuated bearing 23 23 25, in which roller 17 revolves and whereby the

endless cord or chain is kept taut, and a connection from sash to the cord, whereby cord, pulleys, and roller 13 are operated, as shown and described.



2. The combination of a sash, a screen connected thereto, an adjustable telescoping roller 13, to which the other end of the screen connects, pulleys 14, secured to the ends of roller 13, pulleys 17, secured in a vertical plane with the former but a distance remote therefrom equal to a little more than the movement of the sash, as shown, an endless chain or cord passing around pulleys 14 and 17, an adjustable spring-actuated bearing 22 23 25, in which roller 17 revolves and whereby the endless cord or chain is kept taut, a connection from sash to cord, whereby cord, pulleys, and roller 13 are operated, and guides to either side of the screen to keep the latter straight, as shown and described.

3. The combination of a sash, a screen connected thereto, an adjustable telescoping roller 13, to which the other end of the screen connects, an adjustable roller-box 15, pulleys 14, secured to the ends of roller 13, pulleys 17, secured in a vertical plane with the former but a distance remote therefrom equal to a little more than the movement of the sash, as shown, an endless chain or cord passing around pulleys 14 and 17, an adjustable spring-actuated bearing 22 23 25, in which roller 17 revolves and whereby the endless cord or chain is kept taut, a connection from sash to the cord, whereby cord, pulleys, and roller 13 are operated, and yielding guides to either side of the screen to keep the latter straight, as shown and described.

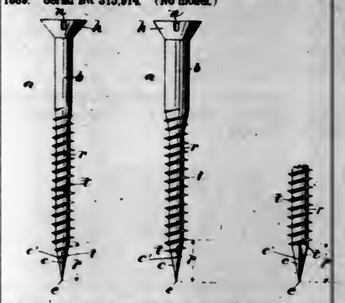
413,967. HARNESS FOR HORSE-BLANKETS. EDGAR S. ROBINSON and JOHN D. MINOR, Hobart, N. Y. Filed Apr. 16, 1889. Serial No. 307,498. (No model.)



Claim.—1. A horse-blanket comprising the blanket, the plate D, the straps leading therefrom through the blanket to the crupper, the breast-straps leading from said plate passing over the blanket and secured together across the breast of the animal, and the strap F, secured to the breast-straps and passing over the blanket below said straps, as set forth.

2. A harness for horse-blankets, comprising the plate D, straps leading therefrom to the crupper, the breast-straps E, passing forward from said plate over the blanket and having their front ends secured together, and the straps F, consisting of two sections passing over the blanket and having their upper ends secured to the breast-straps and their lower ends secured together, as set forth.

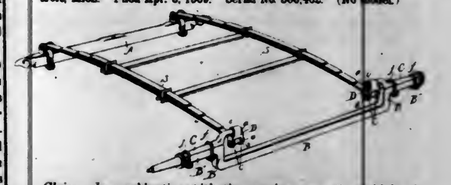
413,968. WOOD-SCREW. CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed June 28, 1889. Serial No. 315,914. (No model.)



Claim.—1. As a new article of manufacture, a wood-screw having the point portion thereof provided with a sharpened unthreaded part for entering the wood and centering itself therein, and having the other part of the point portion provided with a thread gradually increasing in width and depth until it forms a part of the normal thread at the base of the point, substantially as hereinbefore described.

2. A wood-screw having a sharpened cone-shaped point portion *p*, provided with a diminishing thread *f* and a plain or unthreaded part *e*, extending from the termination of said thread to the end *c* of the point, substantially as shown, and for the purpose hereinbefore described.

413,969. VEHICLE RUNNING-GEAR. WILLIAM D. RUSSELL, Detroit, Mich. Filed Apr. 8, 1889. Serial No. 306,462. (No model.)



Claim.—In combination with the running-gear of a vehicle, the crank-axle, the arm C, mounted on the end portion B² of said axle, the inner and upward projecting end of said arm carrying the link D, said link supporting the end of the spring at right angles to and over the vertical center of the axle, for the purposes specified.

413,970. RETAINING DEVICE FOR BOTTLE-STOPPERS. JOSIAS J. SANDS, Merton, Wis. Filed May 13, 1889. Serial No. 310,604. (No model.)



Claim.—1. The combination, with the walls of a vessel-orifice having an internal groove, and with a stopper in the orifice, of a flexible metal holding-bar engaged at its ends with said groove and a plate having upturned lateral flanges interposed between the holding-bar and stopper, substantially as described.

2. The combination, with the walls of a vessel-orifice having an internal groove, and with a stopper in the orifice, of a flexible metal holding-bar engaged at its ends with said groove and a plate having upturned lateral flanges interposed between the holding-bar and stopper, said flanges being made of such length as to come into contact with the inner surface of the orifice, substantially as described.

3. The combination, with the walls of a vessel-orifice having an internal groove, and with a stopper in the orifice, of a flexible metal holding-bar engaged at its ends with said groove and a plate having upturned lateral flanges interposed between the holding-bar and stopper, said flanges being inwardly inclined, and the holding-bar being of arched form and beveled at its sides to fit within said flanges, substantially as described.

4. The combination, with the walls of a vessel-orifice having an internal groove, and with a stopper in the orifice, of a flat flexible

metal holding-bar engaged at its ends with said groove, and a flanged plate interposed between the holding-bar and stopper, said plate being apertured to allow the insertion of a lifting-tool beneath the center of the bar, substantially as described.

413,971. SASH-CORD GUIDE. ABRAM S. SCHELLINGER, Trenton, N. J. Filed Feb. 2, 1889. Serial No. 298,664. (No model.)



Claim.—1. The combination, with a sheave-case, of a block located above or below said case, and a pin inserted between the case and block to lock the case within the frame, substantially as shown and described.

2. The combination, with a sheave-case, of a block and locking-pin that is elliptical in cross-section, substantially as described.

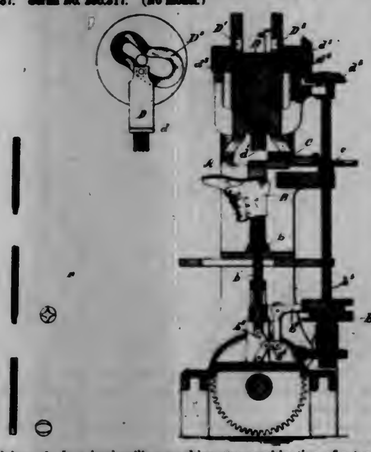
3. The combination, with a sheave-case provided with a spur or projection upon its lower face, of a block located above the case and provided with a spur or projection upon its upper face, and a locking-pin for locking the case within the frame, substantially as described.

413,972. AUGER. HENRY L. SEALER, Deep River, Conn., assignor of one-half to Simeon H. Jennings, same place. Filed Feb. 18, 1889. Serial No. 300,223. (No model.)



Claim.—The herein-described double-twist auger, each twist terminating in a like floor-lip, one of the said lips constructed with a depression forming a gouge-shape less in extent than the cutting-edge of said lip, substantially as described.

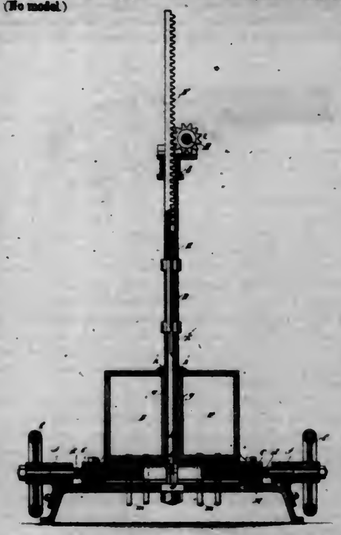
413,973. HEEL-NAILING MACHINE. ORESTES G. SMALL, Malden, assignor to Frederic P. Raymond, 2d, Newton, Mass. Filed Apr. 19, 1887. Serial No. 235,217. (No model.)



Claim.—1. In a heel-nailing machine, the combination of a templet with a head suspended from and operated by cams to have a variable reciprocation in relation to the templet, and a gang or group of implements to be used as awls or as drivers mounted on the one end thereof, adapted to be moved alternately or successively to operate in their two capacities, substantially as described.

2. In a heel-nailing machine, the combination, with a templet and a last or work-support between which and the templet the heel-blank is compressed, of a head suspended from cams, and thereby provided with a variable throw or vertical reciprocation in relation to the templet, and a gang or group of implements to be used as awls and as drivers mounted on the one end thereof, adapted to be moved alternately or successively to operate in their two capacities, substantially as described.

413,974. MACHINE FOR MANUFACTURING DRESS-SHIELDS. HARRIS B. SMITH, Bridgeport, Conn. Filed Jan. 5, 1889. Serial No. 295,899. (No model.)



Claim.—1. The combination, with the two steam-chambers B, the parallel adjacent faces *g* of which form the female member of the die, of the reciprocating plate D, adapted to enter between said chambers and having its edge recessed to form the male member of the die, substantially as described.

2. The combination, with the two steam-chambers B, having parallel adjacent faces which form the female member of the die and having their apexes curved to approximate the curvature of the folded edge of the shield, of the reciprocating plate D, forming the male member of the die and having its edge reversely curved to conform to the curvature of the folded edge of the shield, substantially as described.

3. The combination, with the two steam-chambers B, having parallel adjacent faces which form the female member of the die, and having their apexes curved to approximate the curvature of the folded edge of the shield, of the reciprocating plate D, forming the male member of the die and having its edge reversely curved to conform to the curvature of the folded edge of the shield, but of less curvature than the curvature of the apexes of said chambers, substantially as described.

4. The combination, with the two steam-chambers B, each of which is adjustable to and from the other and having parallel adjacent faces which form the female member of the die, of the reciprocating plate D, forming the male member of the die, substantially as described.

5. The combination, with the plate D, having its edge recessed to form the male member of the die, of the two steam-chambers B, forming the female member of the die and each adjustable to and from the other, of the laterally-adjustable guides *b*, substantially as described.

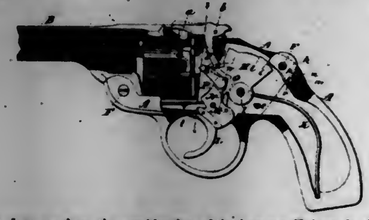
6. The combination, with the plate D, having its edge recessed to form the male member of the die, of the two steam-chambers B, forming the female member of the die and each adjustable to and from the other, the laterally-adjustable guides *b*, and adjusting-screws *s*, substantially as described.

7. The combination, with the two steam-chambers B, having parallel adjacent faces which form the female member of the die and having their apexes curved to approximate the curvature of the folded edge of the shield and provided with raised ribs or flanges *h*, of the reciprocating plate D, forming the male member of the die and having its edge reversely curved to conform to the curvature of the folded edge of the shield, substantially as described.

413,975. REVOLVER. JOHN T. SMITH, Rock Fall, Conn. Filed Feb. 26, 1889. Serial No. 301,031. (No model.)

Claim.—1. In a revolver, the combination of the hammer H, hung upon a pivot within the frame, a trigger hung below and forward of

the hammer, a spring-dog N, hung in the said trigger and adapted to engage the cocking-notch of the hammer, the hammer constructed with a bearing against which the said dog rests as the hammer approaches its full-cocked position, the cylinder-hand R, hung to the trigger forward of said dog and above the pivot of the trigger, the pivot of the hand being in such relation to the pivot of the trigger that when the cylinder reaches its position of rest, under the action of the hand, the hand-pivot will have come into a line drawn from the nose of the pawl to the trigger-pivot, substantially as and for the purpose described.



2. In a revolver, the combination of the hammer H, hung in the frame, a trigger hung forward of and below the hammer, a spring-dog N, hung in the trigger and adapted to engage the hammer forward of its pivot, the mainspring K, hung to the hammer, with a stationary bearing *e* in the frame below the mainspring, and against which bearing the mainspring will strike as the hammer approaches its extreme open position, substantially as described.

3. In a revolver, the combination of the hammer and its operative mechanism arranged in the frame, the back of the hammer constructed with shoulders *i l*, the latch A, hung upon a pivot in the frame parallel with the axis of the hammer and above the back of the hammer, the forward and rear ends of the said latch, under oscillation, adapted to engage the respective shoulders *i l* on the back of the hammer as the said hammer is in either its down or cocked position, and a spring-stop arranged to engage the said latch in either of its positions, substantially as described.

4. In a revolver, the combination of the cylinder-pawl *a*, hung in the frame at the rear of the cylinder, the pawl constructed with a spring-finger *f*, beveled on its inner rear edge, extending down into the frame and forward of the hammer, the hammer constructed with a cam *g*, the path of which is in the plane of the said finger *f*, and so that the said cam will operate upon the finger in its cocking movement, but escape from said finger in the discharge movement, substantially as described.

5. In a revolver, the combination of the hammer H, hung in the frame, the hammer constructed with a projection upon its forward side, forming a shoulder T, and the cam U, forward of said shoulder, the trigger hung forward of and below the hammer, and constructed with an upward projection P, the said projection adapted to engage the said cam and shoulder on the hammer, substantially as and for the purpose described.

6. In a revolver, the frame A, in which the operative mechanism is arranged, a trigger-guard formed as an integral part of said frame, and with a mortise from said trigger-guard into the frame to receive the trigger, combined with a trigger composed of a finger-piece L, broader than the said mortise in the frame, and the upper portion of the trigger corresponding to said mortise and hung upon a pivot in the frame, the said finger-piece secured to the said upper portion of the trigger, substantially as described.

413,976. WATER-WHEEL. EDWARD STERN, Philadelphia, Pa. Filed Mar. 1, 1889. Serial No. 301,646. (No model.)

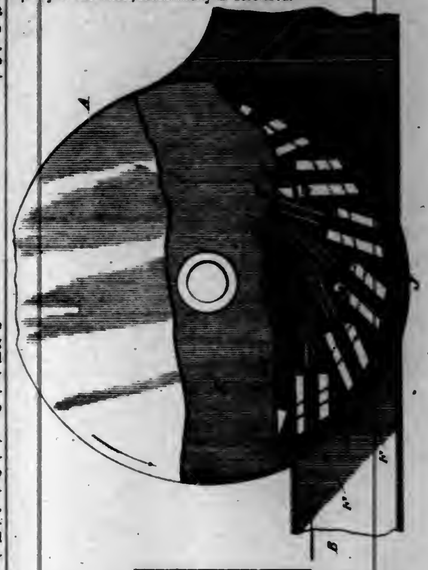
Claim.—1. A water-wheel with radiating arms, tubes connecting with said arms and having peripheral openings, an elastic medium in said tubes, and plungers working in the tubes and adapted to compress said medium, said parts being combined substantially as described.

2. A water-wheel with arms having tubes with openings at the periphery of the wheel, an elastic medium in said tubes, plungers working in said tubes and adapted to compress said elastic medium, and peripheral pockets in said wheels between the openings of said tubes, said parts being combined substantially as described.

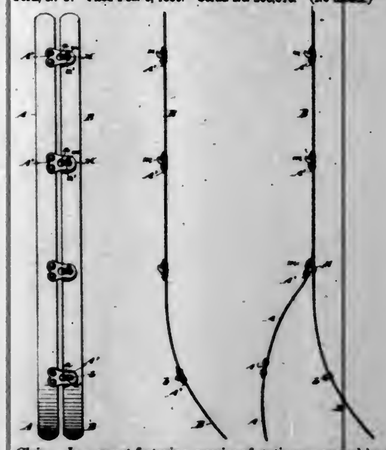
3. A water-wheel with radiating arms and having an elastic medium stored therein and disposed at a line at or about a right angle to said radiating arms on the wheel, and plunger fitted in the wheel, adapted to receive the impact or pressure of water and thereby compress said medium, substantially as described.

4. A water-wheel having radiating arms and casings disposed at or about a right angle thereto, an elastic medium in contact with said arms, and plungers bearing against said medium, the plungers and medium being located in said casings, substantially as described.

5. A water-wheel provided with casings, an elastic medium in said wheel, and plungers in said wheel adapted to compress said medium, in combination with a flume having an abutment for the periphery of the wheel, substantially as described.



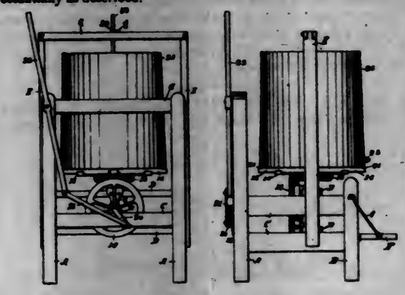
413,977. CORSET-FASTENING. RANDOLPH W. STILWELL, New York, N. Y. Filed Feb. 6, 1889. Serial No. 298,816. (No model.)



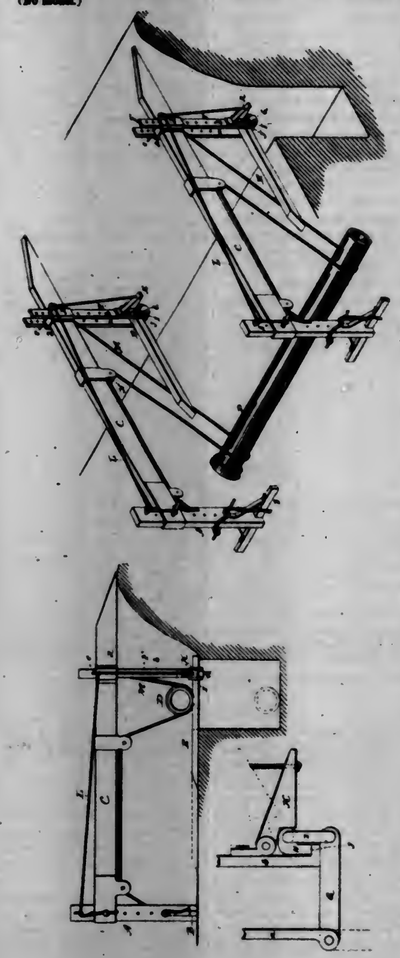
Claim.—In a corset-fastening, a series of stationary curved hooks M, projecting forward with the points *m* extending parallel to the steels, in combination with eyes *a a'*, carried on the other part or steel A, adapted to be readily detached by the bending of the steels as herein specified.

413,978. ROTARY CHURN. HENRY F. STOUTENBURGH, Davenport, Iowa. Filed Apr. 1, 1889. Serial No. 305,642. (No model.)

Claim.—In a rotary churn and frame, with mechanism for rotating the churn-body, the combination of socket-pieces attached to the inner bottom surface of the churn-body, the transverse bar 40, adapted to be held in said socket-pieces, the horizontal transverse bar 31, centrally pivoted to the upper surface of bar 40, the horizontal transverse bar 30, having angled slots, located within the interior of the churn-body and above bar 31, the vertical posts 33, connecting bars 30 and 31, the vertical wings 35, pivotally connected to said bars 30 and 31, the central vertical shaft 38, attached to the bar 30 and extending above the churn-body, the cross-bar G of the frame horizontally above the churn-cover, and means for attaching said shaft to said cross-bar, substantially as described.



413,979. APPARATUS FOR LAYING PIPE IN TRENCHES. DANIEL A. STEWART, Waterbury, Conn. Filed Apr. 8, 1889. Serial No. 306,395. (No model.)



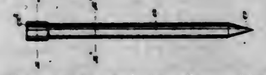
Claim.—1. The combination of the upright A, the beam C, extending horizontally therefrom, the upright provided with a suitable base for its vertical support, a hanger F, extending down from said beam, open at its lower end, a cross-bar hinged to one side of the open lower end of said hanger, a trip and latch upon the other side to hold said cross-bar in place or permit its disengagement, and a skid-bar E, one end adapted to be supported in said hanger on said cross-bar, substantially as and for the purpose described.

2. The combination of the upright A, the horizontal beam C, extending from said upright, a vertically-adjustable hanger F, arranged upon said beam, open at its lower end, a cross-bar hinged to one side of said open lower end of the hanger and detachably engaged with the other side, so as to form a detachable support across said lower end of the hanger, the said hanger adapted to receive a skid-bar E, substantially as and for the purpose described.

3. The combination of the upright A, the horizontal beam C, projecting therefrom, a vertical hanger F, open at its lower end, a cross-bar hinged at one side of said open lower end of the hanger, with mechanism, substantially such as described, to detachably engage said cross-bar with the other side of the open end of the hanger, the said hanger adapted to receive one end of a skid-bar E, with a line, one end attached to the beam at the hanger, a pulley arranged between said hanger and said upright, over which said line passes, and whereby a loop is formed in said line between said point of attachment and said pulley, substantially as described.

4. The combination of the upright A, the horizontal beam C, extending from said upright, the hanger provided with sockets *d d*, the hanger composed of two sides extending up through said sockets and vertically adjustable therein, the said sides detached at their lower end, a cross-bar G, hinged to one of said sides, the other side constructed with a shoulder J, a trip H, hung to said cross-bar G, and a latch K, hinged to said side *b*, substantially as and for the purpose described.

413,980. NAIL. EDWARD M. SUMNEY, South Hanover, Mass., assignor to E. Phillips & Sons, same place. Filed July 15, 1889. Serial No. 317,544. (No model.)



Claim.—The herein-described wire nail, comprising the cylindrical body or shank *a*, pointed at one end, and the cylindrical die-formed head a^2, having a length greater than its diameter, concentric with the shank, but larger in diameter, the sides of the said die-formed head being parallel with the sides of the body or shank of the nail, substantially as described.

413,981. RING OR BAIL FOR SUSPENDING OR LIFTING VESSELS. ALVIN TAPLIN, Forestville, assignor to the Bristol Brass and Clock Company, Bristol, Conn. Filed Dec. 24, 1888. Serial No. 294,467. (No model.)



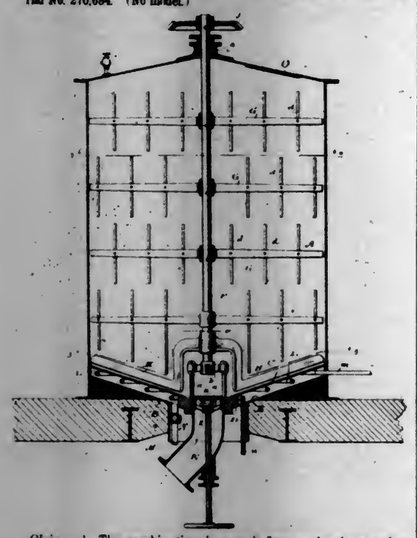
Claim.—1. A bail and attached ring having lapped ends, one of which is provided with an angular slot 15, having longitudinal and transverse portions, and the other provided with a headed pin or stud working in said angular slot, substantially as described, and for the purpose specified.

2. The combination of a ring having lapped ends arranged to move transversely one upon the other for locking said lapped ends when the ring is contracted, a bail attached to said ring, with one member located at a point near one of the lapped ends of said ring, and the other member located near the middle of the length of the band forming said ring, and the leg 11 on the opposite one of the lapped ends of the ring from that to which the adjacent member of the bail is secured, substantially as described, and for the purpose specified.

3. A bail and attached ring having lapped ends, one of which is provided with an angular slot 15 and the other with a pin or stud working in said slot, one of said ends being also provided with the

guide-leg 16, cut away in its angle for a portion of its width, while the other end of said ring is also provided with a slot 13 for engaging the solid portion at the angular bend of said leg 16, substantially as described, and for the purpose specified.

413,982. APPARATUS FOR EXTRACTING LUPULINE FROM HOPS. Jacob F. Theurer, Milwaukee, Wis. Filed Apr. 14, 1888. Serial No. 270,684. (No model.)

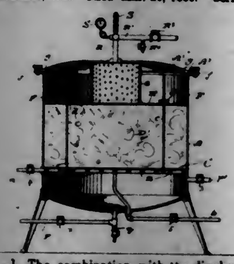


Claim.—1. The combination, in a tank for steeping hops and extracting the lupuline therefrom, of a revolving shaft, and radial arms carried thereby and having vertical fingers, a perforated false bottom, a draining-pipe leading from the space beneath the false bottom, and heating-pipes located in said space, substantially as described.

2. The combination, in a steeping-tank, of an inclined perforated false bottom, a vertical shaft stepped therein, and arms carried by the shaft in a plane parallel with that of the false bottom and in near proximity to it, a central outlet for the tank, and a separate outlet for the fluid that drains through the false bottom, both outlets controlled by suitable valves, substantially as set forth.

3. The combination, in a steeping-tank for hops, of a vertical shaft, radial arms carried thereby and having vertical fingers, a set of inclined arms also carried by the said vertical shaft, a perforated false bottom, a pipe for draining the space beneath the false bottom, a heating-coil located in said space, a central outlet for the tank, and a valve for closing the same, substantially as described.

413,983. APPARATUS FOR STERILIZING AIR. Jacob F. Theurer, Milwaukee, Wis. Filed Mar. 29, 1889. Serial No. 305,375. (No model.)

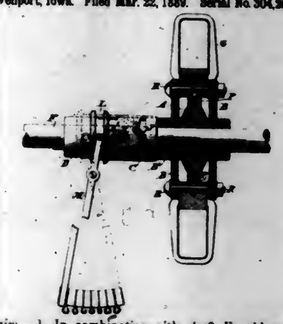


Claim.—1. The combination, with the diaphragms and inclosed filtering material, of the compressing-rods, superimposed perforated cylinder, and ring and top adapted for being clamped in place on the tank, substantially as set forth.

2. The combination, in a vessel containing a fibrous filtering material, of a steam-coil, an inlet for conveying steam directly to the filtering material, an inlet for the air to be filtered, and outlets for the steam and air, substantially as described.

3. In an apparatus for sterilizing and filtering air, the combination, with a tank, of two loose perforated diaphragms, a fibrous filtering material contained between them, a steam-conductor arranged adjacent to the said filtering material, a steam-inlet for conveying steam directly thereto, an inlet for the air to be filtered, outlets for the steam and air, and one or more compressing-rods extending from the lower to the upper diaphragm and provided with a compressing and tightening nut or nuts, substantially as set forth.

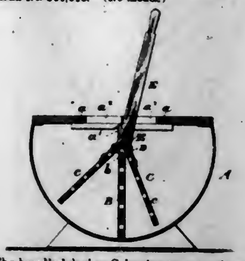
413,984. ELECTRIC-CURRENT REGULATOR. Frank Trobe, Davenport, Iowa. Filed Mar. 22, 1889. Serial No. 304,264. (No model.)



Claim.—1. In combination with shaft F, spiders B B, mounted loosely thereon and carrying the armature G, a spider A, secured rigidly upon the shaft between the spiders B B, springs P, connecting the spider A and armature G, a regulator, and a sleeve or collar C, mounted upon the shaft and connected with a moving part of the regulator, all substantially as shown.

2. In combination with shaft F, provided with fixed spider A and loose spiders B B, armature G, secured to said spiders B B, springs P, connecting the spider A with the armature, a sleeve C, provided with slots J and K, and with a groove L, a pin or stud J', secured to one of the spiders B and working in the slot J, a sleeve or collar D, secured rigidly to the shaft and provided with a pin or stud K' to work in the slot K, a regulator N, and a pivoted lever M, adapted to be actuated by the movement of the sleeve C, all substantially as shown.

413,985. CHURN. Robert L. Trimble, Newman, Ill. Filed Mar. 11, 1889. Serial No. 301,618. (No model.)

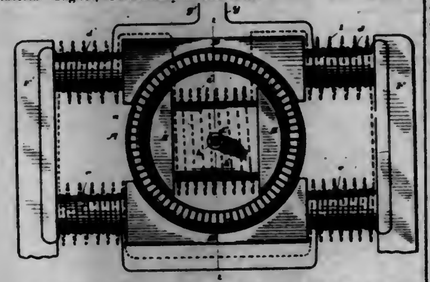


Claim.—The handled dasher C, having two equal perforated wings fastened together at a meeting angle, and the journals *d d*, projecting at the sides from the angle-piece D, in combination with the perforated dividing-board B, knife-edged at the top, and the churn-body A, having the vertical grooves *a' a'*, as and for the purpose specified.

413,986. ALTERNATE-CURRENT INDUCTION-MOTOR. Charles J. Van Depoele, Lynn, Mass. Original application filed May 4, 1888, Serial No. 308,503. Divided and this application filed July 29, 1889. Serial No. 319,088. (No model.)

Claim.—1. An electro-dynamic motor for use with alternating or intermittent currents, comprising an armature wound with closed-circuit conductors, an exterior field-magnet system acting to polarize said armature-core, and a stationary secondary field-magnet system within the armature for reacting upon the poles induced by the exterior field-magnet and then in turn creating other poles to be reacted upon by the exterior field-magnet, and vice versa.

2. An electro-dynamic motor comprising a rotating armature provided with one or more closed circuits upon its armature-core, an interior stationary field-magnet system arranged to polarize the armature-core by induction, and an exterior field-magnet system reacting upon the poles produced by the interior magnet, and itself in turn establishing other poles in the armature to be reacted upon by the interior magnet, substantially as described.



3. An electro-dynamic motor comprising an armature having an iron core and a closed circuit or circuits thereon, an exterior inducing system comprising field-magnet poles in inductive relation to the armature-conductor, an interior secondary field-magnet, the polar extensions of which are between the poles of the main field-magnet, magnetizing-coils upon said secondary field-magnet, and a secondary winding in closed circuit with the said secondary field-magnet coils and in inductive relation to the coils of the primary field-magnet.

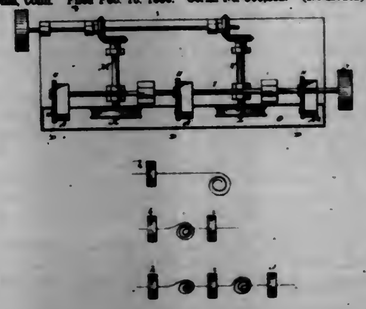
4. An electro-dynamic motor comprising an armature wound with closed-circuit conductors, an exterior field-magnet system acting to polarize said armature-core, a secondary field-magnet within the armature for reacting upon the poles induced by the exterior field-magnet and then in turn creating other poles to be reacted upon by the exterior field-magnet, and vice versa, a single external source of current energizing one of the field-magnets, and coils in secondary relation to said field-magnet and connected to magnetizing-coils upon the other field-magnet.

413,987. COMBINED SHIRT AND VEST. Clarence Wagner, Charleston, S. C. Filed June 27, 1889. Serial No. 315,610. (No model.)



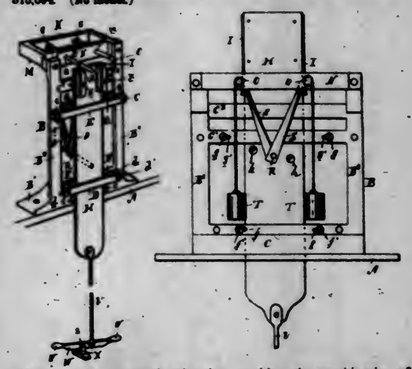
Claim.—The combination, with a shirt, of vest-sections the upper ends of which terminate below the shoulders, each section being secured at its side edges near their upper ends to the shirt, leaving the central portions of said upper ends disconnected for the passage of the suspenders between the shirt and vest sections, and back straps secured to the rear lower edges of each section, substantially as set forth.

413,988. MODE OF DRAWING WIRE. William Wallace, Ansonia, Conn. Filed Feb. 18, 1889. Serial No. 300,332. (No model.)



Claim.—The herein-described improvement in drawing wire, which consists in drawing the wire into several reducing-dies while the said dies are detached from the machine in which the drawing is to be done, leaving the said dies on the wire preparatory to the introduction to the drawing-machine, substantially as described.

413,989. CAPSULE-TRIMMING MACHINE. John L. Warren and John R. Warren, Detroit, Mich. Filed June 21, 1889. Serial No. 315,094. (No model.)



Claim.—1. In a capsule-trimming machine, the combination of the reciprocating knife-bearing plate H with the ways in which the knife-bearing plate reciprocates, the pitman U, the foot-treadle W, the knives I, and the revolving spindles O, all substantially as described.

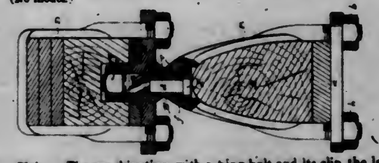
2. In a capsule-trimming machine, the combination of the knife-bearing plate H with the ways in which the knife-bearing plate reciprocates, the means for reciprocating the knife-bearing plate, the knives, the friction driver for revolving the capsule, the revolving spindle, and the belt and weight for revolving the spindle, all substantially as described.

3. In a capsule-trimming machine, the combination of the knife-bearing plate with the means for reciprocating the knife-bearing plate, the knives, the friction driver for revolving the capsules, the revolving spindles, and the means for revolving the spindles, substantially as described.

4. In a capsule-trimming machine, the combination of the knife-bearing plate with the means for reciprocating the knife-bearing plate, the knives, the revolving grooved spindles, the means for revolving the grooved spindles, and the friction driver for revolving the capsule, all substantially as set forth.

5. In a capsule-trimming machine, the combination of the reciprocating knife-bearing plate with the means for reciprocating the knife-bearing plate, the rear guides, the side guides, and the spring-bars in front of the reciprocating plate for preserving the alignment of the knives with the grooves in the spindles, the grooved revolving spindles, the means for revolving the spindles, and the knives, substantially as described.

413,990. KING-BOLT CONNECTION FOR VEHICLES. John P. Wiesmann, Milwaukee, Wis. Filed Aug. 30, 1889. Serial No. 321,981. (No model.)

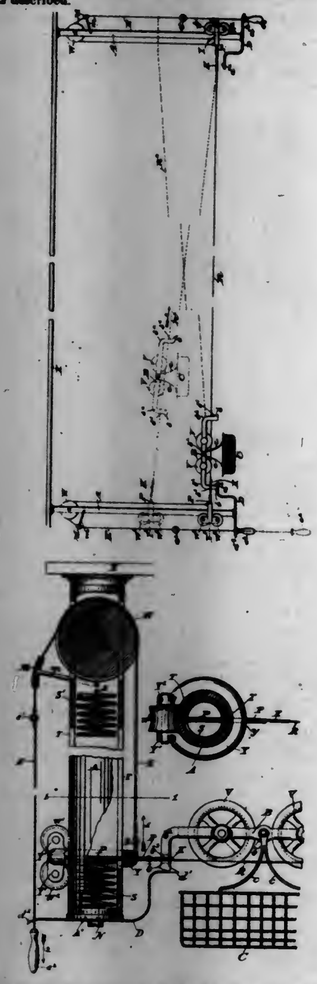


Claim.—The combination, with a king-bolt and its clip, the latter having a rounded projection on its upper side through which the king-bolt passes, of a wear-plate fitting the round portion of the clip and having a squared opening through which a squared portion of the king-bolt passes, a nut for securing the king-bolt in the wear-plate, and means for securing the wear-plate to the bolster.

413,991. STORE-SERVICE APPARATUS. Thomas Wilson, Jr., Watervliet, N. Y. Filed May 17, 1889. Serial No. 311,202. (No model.)

Claim.—1. In a store-service apparatus, the combination of the vertically-depending tube formed with oppositely-arranged vertical guide-slots, a sliding yoke arranged on the tube, friction-rollers jour-

naled in the yoke to bear on the face of the tube, a track-supporting pin arranged in the sliding yoke and through the slots of the tube, and mechanism for lifting the sliding yoke and track-supporting pin, substantially as described.

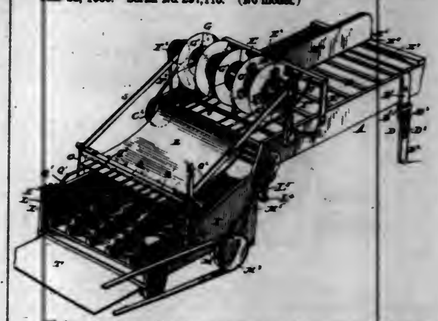


2. In a store-service apparatus, the combination of a vertically-depending tube formed with oppositely-arranged vertical slots, a sliding yoke arranged on the tube, provided with friction-wheels to bear against the face of the tube, a track-supporting pin extending through the sliding yoke and through the slots of the tube, mechanism to lift the sliding yoke and track-support, and elastic cushions interiorly arranged in the top and bottom of the tube to contact the track-supporting pin, substantially as and for the purpose specified.

3. In a store-service apparatus, the combination of the vertically-depending tube having oppositely-arranged vertical slots, a sliding yoke on the exterior of the tube, a track-holding pin in the yoke and extending through the slots of the tube, a wire track, and an extensible spring-connection supporting the end of the track and fixed to the end of the track-holding pin, substantially as and for the purpose specified.

4. In a store-service apparatus, a dependent oppositely-slotted tube, such as described, combined with a vertically-movable yoke, and a mechanism for producing such movements, and provided with the shoe D, formed with the catch d' and the claw d^2, as hereinbefore described and set forth.

413,992. BAND-CUTTER AND FEEDER. ADOLPHUS J. WIEST, CHARLES H. WIEST, and HENRY J. C. RICHTER, Grand Harbor, Dak. Filed Jan. 22, 1889. Serial No. 297,113. (No model.)



Claim.—1. In combination with a feeder-frame and platform, a series of teeth Q', extending in the same general direction with the platform, vertically-adjustable supports for said teeth, and means for securing the supports rigidly in position.

2. In combination with a feeder-frame and platform, a series of teeth Q', extending in the same general direction with the platform, a rocking frame in which said teeth are mounted, vertically-adjustable supports for the rocking frame, and means for securing the supports rigidly in position.

3. In combination with a feeder-frame and platform, a series of teeth Q', extending in the same general direction with the platform, a rocking frame in which said teeth are carried, a shield R, secured to the rocking frame, and means for securing the rocking frame in its adjusted positions, all substantially as shown.

4. In a combination with a feeder-frame and platform, a series of teeth Q', extending in the same general direction with the platform, a shield, as R, a rocking frame by which said teeth and shield are carried, vertically-adjustable supports for said rocking frame, and means for locking the supports and rocking frame in position.

5. In combination with a feeder-frame and platform, a cross-bar Q and supports for the same, teeth Q', projecting from one side of the bar, and a shield R, projecting from the opposite side, said shield and teeth being substantially parallel with the platform.

6. In combination with a feeder-frame provided with eyes N, a series of teeth Q', notched upright supporting the teeth and engaging the eyes, and pawls P, all substantially as shown.

7. In combination with a feeder-frame I and its platform J, links pivotally supporting the lower end of the platform, a rock-shaft L^4, and an elbow-lever secured to the rock-shaft and connected with the upper end of the platform, all substantially as shown, whereby the upper end of said platform has an up and down and backward and forward movement, while the lower end has only a swinging movement.

8. In a combined band-cutter and feeder, the combination, with a frame I, having a feeder, of a frame A, in which the cutters are mounted, detachably connected with the frame I, and a series of rake-fingers mounted upon the feeder-frame and having their supports pivotally connected with the frame A, whereby the machine is adapted to be folded into compact form.

9. In a machine substantially such as shown, the combination, with frame A and apron B, of the center board E^6, the rotatable disk in line with the center board and forming a continuation thereof, and the cutting-disks on both sides of the said center board, all substantially as shown.

10. In combination with frame A and apron B, cutting-disks G, teeth U, extending in the same general direction with the apron, between the disks and terminating at the delivery end of the apron, a frame I, provided with a platform J, and a shield R, carried by said frame I and extending up to the ends of the teeth U.

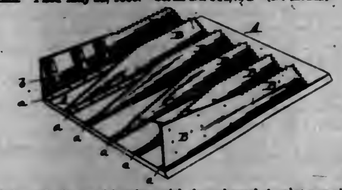
11. In combination with frame I, a platform J, mounted therein and provided with bars K, extending lengthwise thereof, a press rake or shield R, extending across the frame directly above the platform, and means, substantially such as shown, for imparting an upward and forward and downward and backward motion to the platform.

12. In combination with frame I, a platform J, mounted therein and provided with a series of longitudinal A-shaped bars, means for imparting motion to the platform, and a shield, as R, directly above the bars, all substantially as shown.

13. In combination with frame I, a platform J, provided on its upper face with a series of notched A-shaped bars separated from one another and extending lengthwise of the platform, a shield R, extending across the frame at the receiving end, and means for imparting motion to the platform.

14. In combination with frame I, a platform J, provided on its upper face with notched A-shaped bars K, higher at the receiving end than at the delivery end, and separated to form channels, as shown, means for imparting an upward and forward and downward and backward movement to the receiving end of the platform, and a press rake or shield R, extending across the frame above the receiving end of the platform.

413,993. FEEDER-PLATFORM. ADOLPHUS J. WIEST and HENRY J. C. RICHTER, Grand Harbor, Dak., and CHARLES H. WIEST, Northfield, Minn. Filed May 22, 1889. Serial No. 311,794. (No model.)



Claim.—1. In combination with base-board A, plates or bars B' B', increasing in height, and intermediate plates or bars B B, decreasing in height toward the delivery end, all substantially as shown.

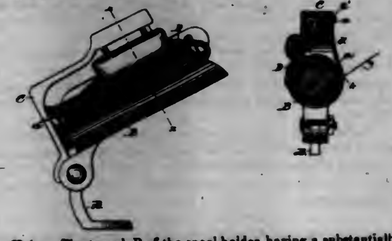
2. In combination with base-board A, plates or bars B B, applied to the upper face thereof, and having their upper edges parallel with the base-board throughout a portion of their length and decreasing in height from the termination of said parallel portion toward the delivery end.

3. In combination with base-board A, plates or bars B B, decreasing in height toward the delivery end and notched on their upper edge, and plates B' B', increasing in height toward the delivery end and also notched on their upper edge.

4. In combination with base-board A, plates or bars B and B', the former decreasing in height toward the delivery end of the platform, and ribs *b b*, secured to the inner faces of the plates B' at approximately right angles to the board A.

5. In combination with base-board A, plates or bars B' B', applied thereto, and ribs or flanges secured to the inner face of each bar or plate and projecting outwardly therefrom.

413,994. SPOOL-HOLDER. CHARLES W. WOOD, Baltimore, Md., assignor of one-half to George Draper & Sons, Hopedale, Mass. Filed July 20, 1889. Serial No. 318,128. (No model.)



Claim.—The trough B of the spool-holder, having a substantially straight edge 4, and the head C and a weighted lip D at one side thereof, combined with the blade *d*, connected to the said head C and extended downwardly to place its lower edge close to the said edge 4, to operate as shown and described.

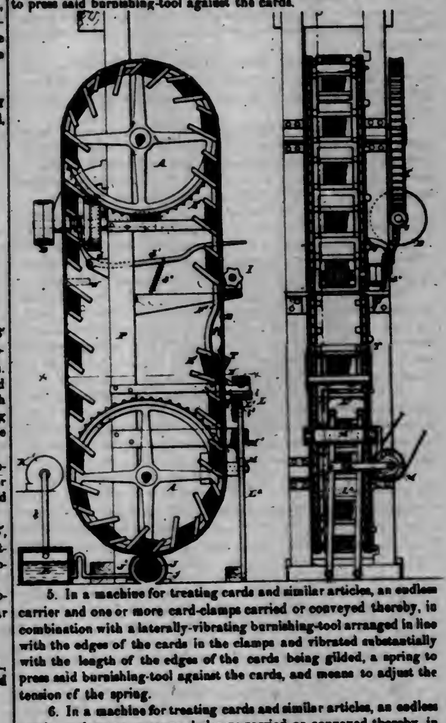
413,995. MACHINE FOR TREATING CARDS. CHARLES A. WRIGHT, Philadelphia, Pa. Filed Jan. 7, 1889. Serial No. 295,646. (No model.)

Claim.—1. In a machine for treating cards and similar articles, an endless carrier, in combination with a series of card-clamps carried or conveyed thereby and a burnishing-tool having a movement relatively to the card-clamp.

2. In a machine for treating cards and similar articles, an endless carrier and one or more card-clamps carried or conveyed thereby, in combination with a laterally-vibrating burnishing-tool arranged in line with the edges of the cards in the clamps.

3. In a machine for treating cards and similar articles, an endless carrier and one or more card-clamps carried or conveyed thereby, in combination with a laterally-vibrating burnishing-tool arranged in line with the edges of the cards in the clamps and vibrated substantially with the length of the edges of the cards being gilded.

4. In a machine for treating cards and similar articles, an endless carrier and one or more card-clamps carried or conveyed thereby, in combination with a laterally-vibrating burnishing-tool arranged in line with the edges of the cards in the clamps and vibrated substantially with the length of the edges of the cards being gilded, and a spring to press said burnishing-tool against the cards.



5. In a machine for treating cards and similar articles, an endless carrier and one or more card-clamps carried or conveyed thereby, in combination with a laterally-vibrating burnishing-tool arranged in line with the edges of the cards in the clamps and vibrated substantially with the length of the edges of the cards being gilded, a spring to press said burnishing-tool against the cards, and means to adjust the tension of the spring.

6. In a machine for treating cards and similar articles, an endless carrier and one or more card-clamps carried or conveyed thereby, in combination with a transversely vibrating or reciprocating frame and two or more burnishing-tools arranged laterally thereon at different distances apart.

7. In a machine for treating cards and similar articles, an endless carrier and one or more card-clamps carried or conveyed thereby, in combination with a transversely vibrating or reciprocating frame, two or more burnishing-tools arranged laterally thereon at different distances apart, and springs to press said burnishing-tools against the cards

8. In a machine for treating cards and similar articles, the combination of an endless carrier, one or more card-clamps carried or conveyed thereby, and a burnisher arranged in the path of the card-clamps and so that their cards shall be moved past and in contact with the burnisher.

9. In a machine for treating cards and similar articles, the combination of an endless carrier with a series of detachable card-clamps carried or conveyed thereby and a burnishing device for burnishing the cards held in the clamps as they are moved past the burnisher.

10. In a machine for treating cards and similar articles, the combination of a carrier, a series of card-clamps carried or conveyed thereby, and a cutting tool or device arranged in the path of the cards in the clamps.

11. In a machine for treating cards and similar articles, the combination of a carrier, a series of card-clamps carried or conveyed thereby, and a rotary cutting tool or device arranged in the path of the cards in the clamps.

12. In a machine for treating cards and similar articles, the combination of a carrier and clamps for moving packs of cards past given points with a burnishing tool or device and an embossing or indenting device in the path of the cards and so arranged as to act on the gilded cards after leaving the burnisher.

13. In a machine for treating cards and similar articles, the combination of a carrier and clamps for moving packs of cards past a given point with an embossing or indenting device arranged in the path of the cards.

14. In a machine for treating cards and similar articles, the combination of a carrier and clamps for moving packs of cards past given points with a cutter to cut the edges of the cards and a burnisher to burnish the edges after being cut and treated with gold.

15. In a machine for treating cards and similar articles, a conveyer to move a card past a given point, in combination with an embossing device arranged in the path of the card and against which it is pressed.

16. In a machine for treating cards and similar articles, a conveyer to move a card past a given point, in combination with a burnishing device arranged in the path of the card and against which it is pressed.

17. In a machine for treating cards and similar articles, a carrier device moving past a burnisher, a detachable card-clamp detachably connected to the carrier and so as to present the edge of the card or cards in the clamp to the burnisher as it is passed, and a burnisher arranged in the path of the card or cards held in the clamp.

18. In a machine for treating cards and similar articles, a carrier device moving past a burnisher, a detachable card-clamp detachably connected to the carrier and so as to present the edge of the card or cards in the clamp to the burnisher as it is passed, and a movable burnisher arranged in the path of the card or cards held in the clamp.

19. In a machine for treating cards and similar articles, an endless carrier having a series of card-clamps, in combination with a waxing-brush to wax the gilded edges of the cards, an inclosing-case to receive the gold-leaf brushed off the cards, a pipe leading from said case to a closed tank below the liquid-level, and an exhauster for exhausting the air from said tank and the case around the brush.

20. In a machine for treating cards and similar articles, an endless carrier having a series of card-clamps, in combination with a waxing-brush to wax the gilded edges of the cards, an inclosing-case around said brush, a liquid-tank, and means for exhausting the air from said case for collecting the waste gold-leaf brushed from the cards.

21. In a machine for treating cards and similar articles, an endless carrier having a series of card-clamps, in combination with a waxing-brush to wax the gilded edges of the cards, an inclosing-case around said brush, a liquid-tank, and means for exhausting the air from said case for collecting the waste gold-leaf brushed from the cards in said liquid-tank below the liquid.

22. In a machine for treating cards and similar articles, an endless carrier having a series of card-clamps, in combination with a waxing-brush to wax the gilded edges of the cards, an inclosing-case around said brush, a liquid-tank, means for exhausting the air from said case for collecting the waste gold-leaf brushed from the cards, and a burnishing device arranged in the path of the cards after leaving the waxing-brush.

23. In a machine for treating cards and similar articles, an endless carrier having a series of card-clamps, in combination with a waxing-brush to wax the gilded edges of the cards and a burnishing device arranged in the path of the cards for burnishing the waxed gilded edges of said cards.

24. In a machine for treating cards and similar articles, the combination of an endless carrier and a series of card-clamps conveyed thereby, a movable frame arranged close to the clamps, a stationary guide therefor, and a burnishing-tool carried upon said movable frame and movable with it.

25. In a machine for treating cards and similar articles, the combination of an endless carrier and a series of card-clamps conveyed thereby, a movable frame arranged close to the clamps, a stationary guide therefor, a burnishing-tool carried upon said movable frame and movable with it, and a spring to press said burnishing-tool toward the edges of the cards in the clamps.

26. In a machine for treating cards and similar articles, the combination of an endless carrier, detachable card-clamps carried thereby, and a stationary guide F, to guide said carrier and clamps in a portion of its length, and in which the said guide is formed with a curved part *f*, bent away from the carriers to allow the clamps to be released from the carrier.

27. In a machine for treating cards and similar articles, an endless carrier, in combination with a series of card-clamps conveyed thereby, and in which the front edges of the clamps and their cards are all in the same plane when passing a given point.

28. In a machine for treating cards and similar articles, an endless carrier, in combination with a series of card-clamps conveyed thereby, in which the front edges of the clamps and their cards are all in the same plane when passing a given point, and a burnishing-tool arranged at said point to treat the cards in succession as they are conveyed past it.

29. In a machine for treating cards and similar articles, an endless chain carrier, in combination with a series of card-clamps conveyed thereby, and in which the front edges of the clamps and their cards are all in the same plane with the line of the carrier-chains.

30. In a machine for treating cards and similar articles, the combination of two endless chains, each having notched projections at intervals apart, in combination with two or more card-clamps having pins or projections to fit into the notches, and thereby connect the clamps with the chains.

31. In a machine for treating cards and similar articles, the combination of two endless chains B, having thin links at given distances apart alternately provided with notched or slotted projections B' and spring snap-hooks B^2, and card-clamps provided with pins or projections R to fit into the notches or slots and under the hooks.

32. In a machine for treating cards and similar articles, the combination of two endless chains B, having thin links at given distances apart alternately provided with notched or slotted projections B' and spring snap-hooks B^2, card-clamps provided with pins or projections R, to fit into the notches or slots and under the hooks, the fixed guide F, having the curved part *f*, to guide said chains B and pins R, and a stop T in the path of said hooks, to release the clamp when they reach the curved part *f* of the guide.

33. In a machine for treating cards and similar articles, the combination of an endless carrier having a series of card-clamps, power mechanism to move said endless carrier, a clutch device to arrest the movement of the carrier, a lever to operate the clutch, and projections carried by the carriers to actuate the lever at given times in the travel of said carrier to stop the machine.

34. In a machine for treating cards and similar articles, the combination of an endless carrier having a series of card-clamps, power mechanism to move said endless carrier, means to stop the action of the power mechanism to arrest the movement of the carrier, and automatic mechanism actuated by the carriers or their connections to stop the movement of the carrier at given times in its travel.

35. In an organized machine for treating cards, a card-clamp for card-gilding and other purposes, consisting of the boards H and H', the section A', having jaw A, section A^2, having jaw A^3, and clamping-screw G, substantially as set out.

36. In an organized machine for treating cards, a card-clamp for card-gilding and other purposes, consisting of the boards H and H', of different lengths, the section A', having jaw A, section A^2 having jaw A^3, and clamping-screw G, substantially as set out.

37. In an organized machine for treating cards, a card-clamp for card-gilding and other purposes, consisting of the boards H and H', the section A', having jaw A, section A^2, having jaw A^3, clamping-screw G, and spring *g*, to spread the jaws apart, substantially as set out.

38. In an organized machine for treating cards, a card-clamp for card-gilding and other purposes, consisting of the boards H and H', having pins R on their ends and near their front edges, the section A', having jaw A, section A^2, having jaw A^3, and clamping-screw G, substantially as set out.

39. In an organized machine for treating cards, the combination of two clamping boards or parts H H', having pins or projections R upon their ends and near their front edges, and a suitable clamping device to draw the parts H H' toward each other.

40. In an organized machine for treating cards, the combination of two clamping boards or parts H H', of different lengths and having pins or projections R upon their ends and near their front edges, and a suitable clamping device to draw the parts H H' toward each other.

41. An endless carrier, in combination with a series of card-clamps carried thereby, having their clamping-surfaces arranged at an angle to the line of travel, whereby the front edges of the cards clamped in the several clamps shall move in the same plane in passing a given place or places.

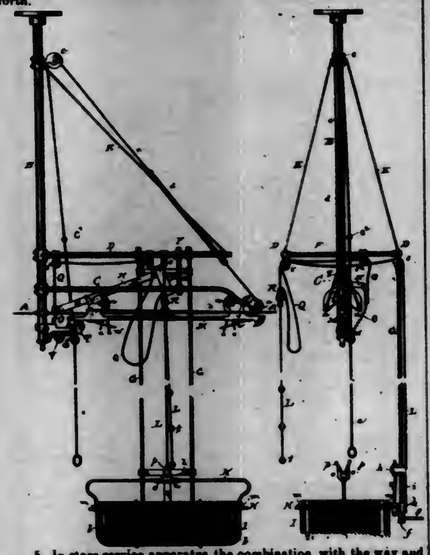
413,996. STORE-SERVICE APPARATUS. HENRY YOH, Detroit, Mich., assignor to the Rapid Service Store Railway Company, same place. Filed May 16, 1887. Serial No. 238,316. (No model.)

Claim.—1. In store-service apparatus, the combination of a way, a carrier placed thereon, a receptacle, devices for detachably securing the receptacle to said carrier, an elevator for raising and lowering said receptacle, a cord for raising the elevator, a releasing device, and a separate cord for operating the releasing device, substantially as set forth.

2. In store-service apparatus, the combination, with the way and the carrier thereon having a detachable receptacle, of the vertical standard at the end of the way, an arm extending from said standard, rods extending downwardly from said arm, a frame sliding on said rods, and the holder attached to said frame for the parcel-receptacle, substantially as set forth.

3. In store-service apparatus, the combination, with the way and the carrier thereon, of the vertical standard at the end of the way, the propelling device in front of the standard, the branching arms extending out from said standard, the vertical rods extending down from one of said arms at the side of the way, the frame sliding on said rods, and the holder projecting from said frame under the way for holding the parcel-receptacle, substantially as set forth.

4. In store-service apparatus, the combination, with the way and the carrier thereon, of the elevator consisting of a sliding frame and a laterally-extending holder consisting of a continuous loop attached to said frame, and the parcel-receptacle fitting within the holder and having lugs or projections adapted to rest thereon, said receptacle being adapted to detachably engage said carrier, substantially as set forth.



5. In store-service apparatus, the combination, with the way and the carrier thereon, of the parcel-receptacle, two arms pivotally mounted above the receptacle, connected thereto, and held together at their lower ends by springs, and adapted to engage said carrier when they pass above it by the upward movement of the receptacle, substantially as set forth.

6. In store-service apparatus, the combination, with the way and the carrier thereon, of the receptacle detachably engaging with said carrier at its middle part, and a spring near each end of the carrier contacting with said receptacle to steady it, substantially as set forth.

7. In store-service apparatus, the combination, with the way and the carrier thereon, of the parcel-receptacle having attached above it the two pivoted arms held together at their lower ends by springs and adapted to engage said carrier when they pass above it by the upward movement of the receptacle, a releasing device for forcing said arms apart, and a connection extending within reach of the operator for moving said device, substantially as set forth.

8. In store-service apparatus, the combination, with the way and the carrier thereon, of the parcel-receptacle having attached above it the two pivoted arms held together at their lower ends by springs and adapted to engage said carrier when they pass above it by the upward movement of the elevator, the pivoted spring-retracted bar provided with a forked head adapted to descend on each side of said pivoted engaging-arms, and the cord for moving said bar against its spring, substantially as set forth.

9. The combination of the way, the carrier thereon, and the receptacle adapted to detachably engage said carrier, said carrier being provided with the downwardly-extending fingers, and the flat spring at each end for steadying the receptacle, substantially as set forth.

10. In store-service apparatus, the combination of the way, the carrier thereon having a hooked end, and the hinged catch carrying a corrugated roller, with which said hooked end of the carrier engages, substantially as set forth.

11. In store-service apparatus, the combination of the way, the carrier thereon having a hooked end, the catch-plate, the hinged catch supported thereby, and the coiled spring attached rigidly to said plate at one end and its other end projecting into the path of the carrier, substantially as set forth.

12. In a store-service apparatus, the combination, with a standard, a lateral arm on the standard, and a track beneath the arm, of a car on the track, an automatic latching device carried by the receptacle for connecting the receptacle to the car, a guide supported by the lateral arm, and an elevator mounted on said guide and having a holder to engage lugs on the receptacle, substantially as described.

418,997. STEAM-BOILER FIRE-BOX. JOHN ABELL, Toronto, Ontario, Canada. Filed Mar. 28, 1889. Serial No. 305,063. (No model.)

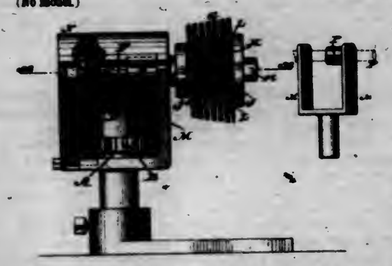


Claim.—1. A fire-box having its lower portion extending beyond the tube-sheet and having its upper portion, where the flues enter, partially separated from its lower portion by a hollow chamber arranged adjacent to the flues and extending from the tube-sheet to a point near the opposite side of the fire-box, and provided with openings leading to the outside of the boiler to admit air, which is heated and escapes into the fire-box at the point where the smoke and heated gases pass the hollow chamber, substantially as and for the purpose specified.

2. The fire-box A, having its lower portion projecting beyond the tube-sheet C and its upper portion D separated by a hollow perforated chamber E, having holes F to connect it with the outside of the boiler, substantially as and for the purpose specified.

3. A fire-box having a hollow perforated air-chamber E located below the tubes, so as to separate the combustion-chamber D from the lower portion of the fire-box, and a perforated air-chamber G, located substantially opposite to the perforated air-chamber E, substantially as and for the purpose specified.

413,998. APPARATUS FOR CLEANING WOOL-COMBS. REUBEN AGHBOTH, Crum Lynne, Pa. Filed Apr. 20, 1889. Serial No. 308,060. (No model.)



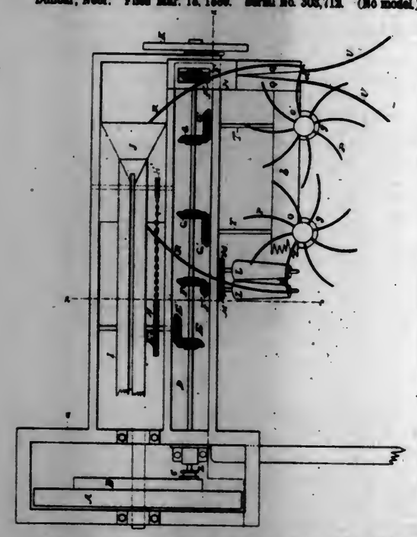
Claim.—1. A brush for cleaning combs, having a shaft supporting the same and an arm forming the bearing for said shaft, in combination with a shaft having a gear-wheel meshing with the circular rack of the combing-machine, said shafts being geared together, all substantially as described.

2. An apparatus for cleaning combs, consisting of a shaft suitably journaled and with a gear-wheel thereon, mechanism, substantially as described, for rotating said gear-wheel, a bevel-wheel on the end of said shaft, a counter-shaft with a bevel-wheel meshing with said first bevel-wheel, an arm in which said counter-shaft is journaled, a housing secured to said arm and inclosing said bevel-wheel, and a brush

on the outer end of said counter-shaft, said parts being combined substantially as described.

3. In an apparatus for cleaning combs, a shaft with a bevel-wheel thereon, mechanism, substantially as described, for rotating said shaft, a sleeve on the outer end of said shaft, having a collar on its inner end, a head with wires on said sleeve, a collar on said shaft outside of said head and bearing against it, and a nut on the threaded end of the shaft, said parts being combined substantially as described.

413,999. CORN-GATHERING MACHINE. SAMUEL A. ARBUCKLE, Dunbar, Nebr. Filed Mar. 18, 1889. Serial No. 303,712. (No model.)



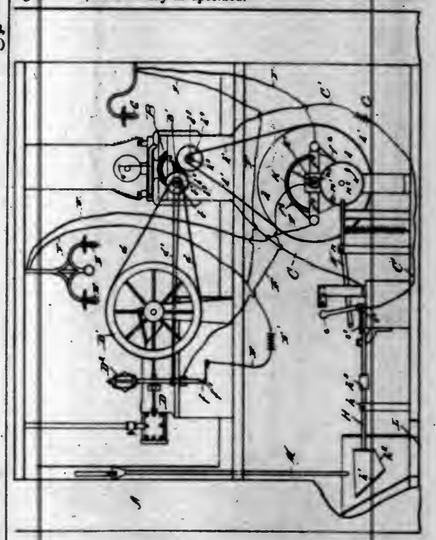
Claim.—The corn-gathering machine consisting of the inclined frame-like bars, the sets or pairs of inclined tapered rollers arranged below and coincidently with said inclined frame-like bars, and each pair geared together and to a common shaft, the inclined pairs of knives arranged above said inclined rollers and having their cutting-edges inclined toward each other, the guide-prongs connected to the forward or elevated ends of said knives and curving forward, downward, and outward from each other, the reels having curved horizontal arms [illegible] intermediately of said sets or pairs of knives, prongs, and rolls upon cross-bars or supports connected with the inner knives at their outer ends, said reels having their shafts geared to said common shaft, the horizontal chute comprising a series of spaced-apart wire rods curved and covering at their inner ends and connected to the hopper, the hopper and inclined elevator, the curved guide-rims extending from the hopper above said chute and terminating adjacently to the guide-prongs, and mechanism to actuate the said geared-together shafts, substantially as set forth.

414,000. COIN-OPERATED DISPLAY APPARATUS. EDWARD H. AMET, Chicago, Ill., assignor to himself and Herbert A. Streeter, same place. Filed Mar. 29, 1889. Serial No. 305,223. (No model.)

Claim.—1. In a coin-operated-machinery display apparatus, the combination, with a case having a coin chute or passage, of a coin-operated lever, an electric motor, a battery, an electric circuit having a movable contact-piece operated by said coin-lever, a display-engine connected with said motor, an electric-light battery and circuit, said engine having a governor, a movable contact-piece for making and breaking the light-circuit connected with and operated by said governor, and a circuit-breaking mechanism connected with the motor for breaking the motor-circuit after the lapse of a certain period, substantially as specified.

2. The combination, with a case having a coin chute or passage M, of coin-operated lever H, movable contact *c*, operated by said lever H, electric motor B, battery C, motor-circuit C′, engine D, connected with said motor and furnished with governor D^2, electric lights E and G, light-circuit F and battery F′, contact f' and movable contact *f*, connected with said governor D^2, revolving circuit-breaker K, connected with and driven by said motor, contact-pieces f^3 and f^5 in said light-circuit F, whereby the lights E and G are alternately lighted and extinguished, lever N, and revolving circuit-breaker wheel n^2, having projection *n*′, substantially as specified.

3. The combination, in a display apparatus, of an electric motor with a display-engine, a battery and motor-circuit, a case having a coin-receiving chute or passage, and mechanism for closing the electric circuit by the fall or passage of the coin, an electric light and electric-light circuit, and mechanism for making and breaking the electric-light circuit, substantially as specified.



4. The combination, with a case having a coin passage or chute M, of a coin-operated lever H, having a shield or plate *h*′ in the path of the coin, an electric circuit, and a movable contact-piece operated by said lever H, substantially as specified.

5. The combination, with a case having a coin-passage, of a coin-operated lever having a hopper provided with an inclined side arranged in the path of the coin and furnished with an opening in its bottom for the coin to pass through, so that the lever will be operated by the impact of the coin and then automatically discharge the coin through the opening, substantially as specified.

6. The combination, with a case having a coin-passage, of a coin-operated lever having a hopper arranged in the path of the coin and furnished with an opening for the coin to pass through, so that the lever will be operated by the impact of the coin and then automatically discharge the coin through said opening, said coin passage or chute having an inclined portion provided with an opening for the coin to pass through, and a projection for deflecting coins of the required size through said opening and permitting smaller coins to pass by their momentum without being deflected, substantially as specified.

7. The coin-chute M, having opening *m* and projection *m*′ for automatically separating coins of the required size from smaller ones, substantially as specified.

8. The combination, with a coin-operated lever, of a coin-chute leading thereto, comprising a straight branch and a deflected branch communicating with each other, and a projection or device for deflecting coins of the required size into the branch leading to the coin-operated lever, substantially as specified.

9. The combination, with an electric motor, of an engine connected thereto, a circuit-breaking mechanism, also connected to said motor, an electric light, electric circuits and contact-pieces, a case having a coin-chute, and coin-operated lever for closing the electric circuit, substantially as specified.

414,001. CAR-COUPLING. CHARLES A. ANDERSON, Rockford, Ill. Filed Aug. 15, 1889. Serial No. 320,573. (No model.)

Claim.—1. In a car-coupler, the combination of a draw-head, a coupling-pin supported above the link-opening, and a double-ended bar pivoted to the draw-head, one end entering the link-opening and the other end coming in contact with the coupling-pin when a link is inserted in the opening, thereby releasing the pin and causing it to descend, substantially as set forth.

2. In a car-coupler, the combination of a draw-head, a coupling-pin having its upper end pivoted with a rearward projection which engages an upward rising portion of the draw-head, and a double-ended bar pivoted to the draw-head, one end entering the link-opening and its other end coming in contact with the coupling-pin when a link is inserted in the opening, thereby disengaging the pin and permitting it to descend, substantially as set forth.



3. In a car-coupler, the combination of a draw-head, a coupling-pin supported above the link-opening, and a double-ended bar pivoted to the draw-head, one end entering the link-opening and its other end being weighted, thus holding it in position to be acted upon by one incoming link, substantially as set forth.

414,002. HORN FOR CAN-MACHINES. EDWIN R. ASDELL, Boston, assignor of one-half to E. B. Welch, Cambridge, Mass. Filed Jan. 29, 1889. Serial No. 298,006. (No model.)

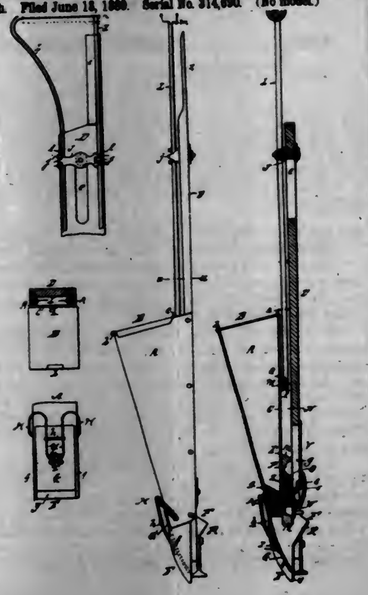


Claim.—1. The combination, with a horn *a*, consisting of the uniformly-tapered inner portion 2 and the outer cylindrical portion 3, the latter having the slots *i*, of a reciprocating carrier within said horn, and inwardly-yielding spring-jaws pivoted to said carrier and having their outer ends working in said slots, as set forth.

2. The combination, with the fixed support *b*, of the horn *a*, having tapered and cylindrical portions, as shown, the arm *k*, the spring-pressed shank *n* at the outer end of said arm, and the guide *o*, carried by said shank above the cylindrical portion of said horn and provided with the beveled inner end *u*, as set forth.

3. A horn having longitudinal slots, combined with a reciprocating carrier within the horn, pivoted jaws on said carrier projecting through said slots, and springs whereby the jaws are pressed outwardly, as set forth.

414,003. HAND CORN-PLANTER. SYLVESTER P. BABCOCK, Adrian, Mich. Filed June 13, 1889. Serial No. 314,090. (No model.)



Claim.—1. In a hand planter, the casting F F, consisting of the shoe *y*, sight-hopper R, separated upwardly-extending plunger, guide-arms *r r*, wings *f f*, and cross-piece S, connecting the upper end portions of said separated arms, substantially as shown and described.

2. In a hand planter, the combination of the standard D, provided with the slot *g*, the casting F F, provided with the separated upwardly-projecting plunger, and guide-arms *r*, connected by the cross-piece S and attached to the slotted part of the standard, substantially as shown and described.

3. In a hand planter, the combination of a plunger provided with upwardly-extending arms N N, said arms forming shoulders *q q* at their upper ends, a plate *n n*, connecting the upper ends of said arms and less in thickness than the depth of said arms, a stud Q, extending from near the center of said plate, and a handle having its looped lower end passing between said stud and said shoulders, substantially as shown and described.

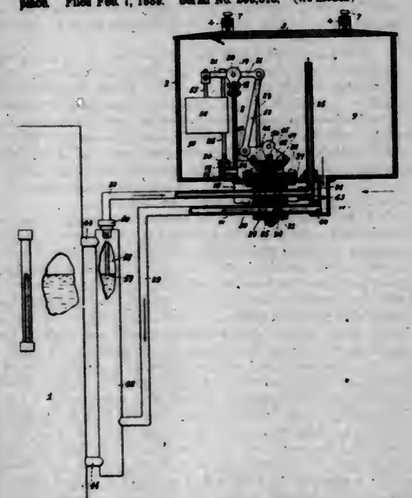
4. In a hand planter, the combination, with a standard D, of the hopper A, having a rear wall C, provided with the slot E and located parallel to the standard and at a distance therefrom uniformly equal from end to end of the hopper to the thickness of the plunger, and a plunger sliding between the parallel standard and hopper-wall and bearing against and guided by the lower end of said wall, substantially as described.

5. In a hand planter, the hopper A, having an elastic rear wall C formed on its top edge, with a catch-stud *c*, in combination with the hinged lid B, substantially as described.

6. In a hand planter, the handle L L, formed of one rod bent near its center, then extending in parallel directions toward its ends, separating near the ends, and having one end bent and passed through an eye upon the other end and secured, said handle being provided with the offsets *l l*, and rod J, having studs *j j* bent down upon and embracing said handle at the offsets, substantially as shown and described.

7. In a hand planter, the combination of the standard D, the spring *i*, extending from the upper end of said standard, and a handle provided with a stud at its upper end adapted to engage with said spring, substantially as shown and described.

414,004. WATER-FEEDER FOR BOILERS. CHARLES A. I. BARRINGER, Baltimore, Md., assignor of one-half to Harry Fisher, same place. Filed Feb. 7, 1889. Serial No. 299,013. (No model.)



Claim.—1. The combination, with the boiler and the trap 2, of a pipe connecting the upper part of said trap with the upper part of the boiler and having a downwardly-projecting end adapted to be sealed by the boiler-water, a pipe connecting the lower part of the trap with the lower part of the boiler, a cock for closing said pipes, and a float in said trap for operating said cock, substantially as set forth.

2. The combination, with the boiler, the trap 2, and the supply-pipe 41, of a housing having ports communicating with the upper part of the boiler and upper part of said trap and ports communicating with the lower part of the boiler and the lower part of the trap and with said water-supply pipe, a plug in said housing having corre-

sponding ports, and a float in said trap for operating said plug, substantially as set forth.

3. The combination, with the boiler and the trap 2, of pipes 33 39, connecting the upper and lower parts of said trap with the upper and lower parts of the boiler, respectively, the extension 58 on said pipe 33 extending below the water-line of the boiler, a water-supply pipe connected to one of said pipes, a cock for shutting off either the water-supply or pipes from the boiler, and a float in said trap for operating said cock, substantially as set forth.

4. The combination, with the boiler and the trap, of pipes connecting the upper and lower parts of said trap with the upper and lower parts of the boiler, respectively, the cock-housing interposed in the length of said pipes, the supply-pipe connected to said housing, a plug in said housing for shutting off either the water-supply or the pipes from the boiler, a partition in said trap forming compartment 10 and having an aperture, a valve guarding said aperture, a float for operating said valve, and a float in said compartment for operating said plug, substantially as set forth.

5. The combination, with the boiler and trap 2, of pipes connecting said trap with the upper and lower portions of the boiler, a water-supply pipe communicating with one of said pipes, a cock for forming communication between either the supply-pipe and trap or the trap and the boiler, a partition in said trap forming compartments 9 10 and having an aperture, a valve guarding said aperture, a float in compartment 9 for operating said valve, and a float in compartment 10 for operating said cock, substantially as set forth.

6. The combination, with the boiler and trap 2, having two compartments 9 10, connected by an aperture, of pipes connecting said compartment 9 with the upper and lower portions of the boiler, a water-supply communicating with one of said pipes, a cock for forming communication between either the supply-pipe and trap or trap and boiler, a valve guarding said aperture, the well or pit in compartment 9, having an outlet, a float in said well connected to said valve for actuating it, and a float in compartment 10 for operating said cock, substantially as set forth.

7. The combination, with the boiler, of the trap 2, having two compartments 9 10, connected by an upper and a lower aperture, a valve guarding said lower aperture, a well or pit in compartment 9, having an outlet, a float in said well connected to said valve for actuating it, pipes connecting compartment 9 with the upper and lower portions of the boiler, a supply-pipe communicating with one of said pipes, a cock for forming communication between either the supply-pipe and trap or trap and boiler, and a float in compartment 10 for operating said cock, substantially as set forth.

8. The combination, with the boiler, of the trap 2, having compartments 9 10, connected by an upper and a lower aperture, a valve guarding said lower aperture, the well 16, having an outlet in compartment 9, a float in said well connected to said valve for actuating it, pipes connecting compartment 9 with the upper and lower portions of the boiler, a partition 12, separating said pipes and valve from said well, a water-supply pipe communicating with one of said pipes, a cock for forming communication between either said supply-pipe and trap or the trap and boiler, and a float in compartment 10 for operating said cock, substantially as set forth.

9. The combination, with the boiler, of the trap 2, having compartments 9 10, connected by an upper and a lower aperture, a valve guarding said lower aperture, the well 16 in compartment 9, a float in said well for actuating said valve, pipes connecting the upper and lower portions of the boiler with said trap, the housing 26, with which said pipes connect, a supply-pipe connected to said housing, the compound plug 29 in said housing, a pipe 63, connecting well 16 with one of the pipes from the boiler, a valve in pipe 63, and a float in compartment 10 for actuating said plug 29, substantially as set forth.

10. The combination, with the boiler, of the trap 2, having compartments 9 10, connected by an upper and lower aperture, a valve guarding said lower aperture, the well 16 in compartment 9, a float in said well, a lever connected to said valve and float, the housing 26, having two series of ports 30 31 32 and 36 37 38, pipes 33 39, connecting the upper and lower portions of the boiler with ports 30 36, pipes 34 40, connecting ports 31 37 with the compartment 9, the supply-pipe 41, connected to port 38, a compound three-way plug in said housing, a pinion on said plug, a segment-rack engaging said pinion, a lever 21, connected to said rack, a float suspended from said lever 21 in compartment 10, a pipe 63, connecting well 16 with pipe 40, a valve in said pipe, and the stand-pipe 35, connected to pipe 34, as set forth.

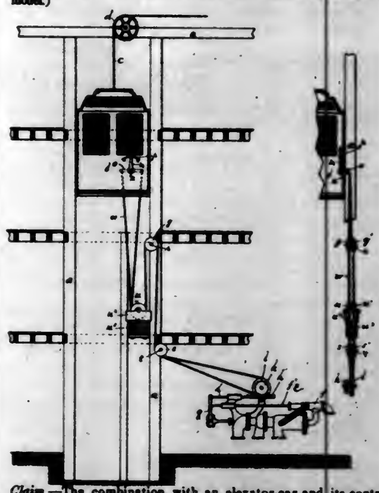
11. The combination, with the boiler, of the trap 2, having compartments 9 10, connected by the lower aperture 14, a valve guarding said aperture, a float in compartment 9 for actuating said valve, the barrel 42, connected to the boiler, pipes connecting the upper and lower portions of said barrel with the upper and lower portions of the compartment 9, respectively, a supply-pipe, a compound cock having ports communicating with said pipe and an air-port, a partition isolating said well from said pipes and valve, a drain-pipe provided with a valve leading from said well, and a float in compartment 10 for actuating said compound cock, as set forth.

12. The combination, with the boiler, of the trap 2, having compartments 9 10, connected by the lower aperture 14, a valve guarding said aperture, a float in compartment 9 for actuating said valve, the barrel 42, connected to the boiler, pipes connecting the upper and lower portions of said barrel with the upper and lower portions of the compartment 9, respectively, a supply-pipe, a compound cock having ports communicating with said pipe and an air port, a partition isolating said well from said pipes and valve, a drain-pipe provided with a valve leading from said well, a float in compartment 10 for actuating said compound cock, and the extension 58, projecting down into said barrel, as set forth.

13. The combination, with the boiler and the trap 2, of the barrel 42, connected to said boiler, a water-supply pipe leading to said trap, the pipe 39, connecting said barrel with the lower part of said trap, the pipe 33, connecting the upper part of said trap with the upper end of said barrel, and the extension 58, extending down into said barrel, substantially as set forth.

414,005. VALVE-OPERATING MECHANISM FOR ELEVATORS.

CARL BERG, Buffalo, N. Y., assignor of one-half to the Howard Iron Works, same place. Filed June 30, 1888. Serial No. 278,673. (No model.)



Claim.—The combination, with an elevator-car and its controlling-valve, of a hand-lever attached to the car, a pair of weighted pulleys traveling up and down along the side of the shaft, the loose pulleys located just above the central point in the height of the shaft, the guide-pulleys arranged at or near the bottom of the shaft, the pulley connected with the change or reversing valve, and the flexible cord passing around these pulleys, as shown, and secured at its ends to the hand-lever on the side of the car, all operating substantially as herein described.

414,006. STRAIGHT-KNITTING MACHINE.

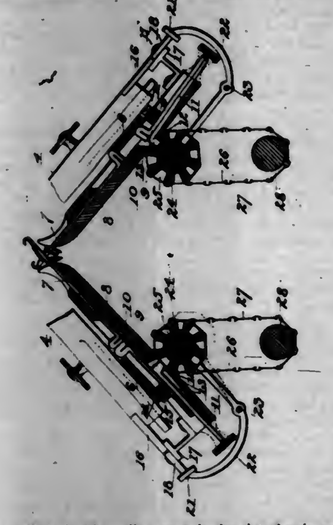
HERMANN RIESER, Philadelphia, Pa. Filed Oct. 17, 1888. Serial No. 288,404. (No model.)

Claim.—1. In a knitting-machine, the combination of a cam-carriage, a slide secured to said carriage, a bar operated upon by the slide, levers having their outer ends supporting said bar, and a roller carried by said levers, substantially as described.

2. In a knitting-machine, the combination of the needle-bed, the carriage carrying the cams, the bits having the feet adapted to be operated upon by said cams, the needles adapted to be in contact with said bits, the slide carried by the carriage, the bars or plates having the elongated slots, the levers abutting against said bars or plates, the rollers carried by said levers, and the bits having the feet adapted to engage the openings in the cards, all arranged and operating in the manner and for the purpose described.

3. A needle-bed with needle-grooves having slots therein, needles having feet, bits with feet projecting into said slots, bits resting on said first-named bits and having feet at their upper ends, said last-named bits adapted to move in the needle-grooves, a carriage provided with a cam adapted to engage said needles and said last-named bits, and means to raise the feet of the first-named bits, said parts being combined substantially as and for the purpose set forth.

4. A needle-bed with needle-grooves having slots therein, needles in said grooves, lower bits with downwardly-projecting feet in said slots, upper bits with upwardly-projecting feet in said needle-grooves, a spring-plate having blocks thereon adapted to depress said bits, a carriage provided with a cam for engaging said needles and upper bits, and means to raise the feet of the first-named bits, said parts being combined substantially as and for the purpose set forth



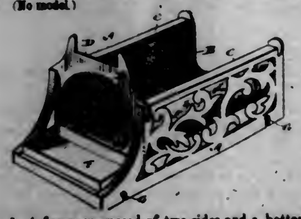
5. A needle-bed with needle-grooves having slots therein, needles having upwardly-projecting feet, bits having feet in said slots, bits on said first-named bits and having feet at their upper ends, a carriage provided with a cam adapted to engage said needles and last-named bits, and a roller adapted to carry a Jacquard pattern-chain, and means for raising, lowering, and rotating, said parts being combined substantially as described.

6. A needle-bed with needle-grooves having slots therein, needles in said grooves, bits having feet projecting in said slots, bits having upwardly-turned feet, a carriage provided with a cam adapted to raise said needles, bits having upwardly-turned feet, a slide secured to said carriage, a rail for said slides, a bar secured loosely to the needle-bed, and a shaft carrying rocking levers having their upper ends bearing against said bar and the other ends carrying a roller which is adapted to carry a Jacquard pattern-chain, said parts being combined substantially as and for the purpose set forth.

7. A knitting-machine having a grooved needle-bed with the slots 13 therein, needles in said grooves, the bits 11, with feet 12 projecting in said slots, the bits 9, resting on said bits 11 and provided with feet 10, the carriage 4, with cam 6, spring 14, and blocks 15, connected therewith, the slide 16, the longitudinal bar 18, having slots extending transversely thereof and secured to the carriage-bed, the shaft 23, with levers 22 thereon, the upper end 21 of said levers bearing against said bar 18, and roller 24 on the other ends of said levers, having recesses 25 and adapted to carry a Jacquard pattern-chain, said parts being combined substantially as and for the purpose set forth.

414,007. COMBINED BOOT SCRAPER AND WIPER.

CHARLES BORCHE, Toronto, Ontario, Canada. Filed Dec. 31, 1888. Serial No. 294,969. (No model.)



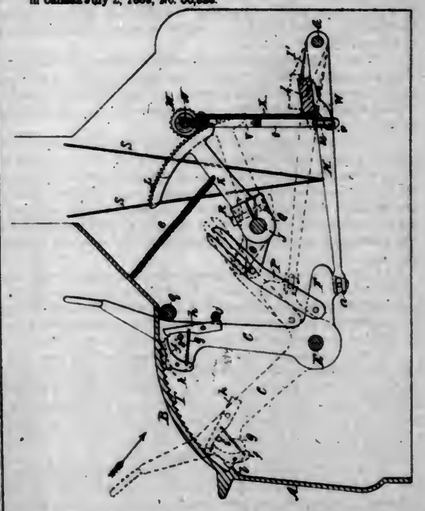
Claim.—1. A frame composed of two sides and a bottom, combined with a flexible detachable mat, of suitable material, inserted within it, so as to cover the interior of the said sides and bottom, substantially as and for the purpose specified.

2. A frame A, having sides with ribs C formed on them, in combination with a flexible detachable mat B, designed to cover the interior of the bottom and sides of the frame and butt against the ribs C, substantially as and for the purpose specified.

3. A frame A, having sides with ribs C formed on them, and a mat B, designed to cover the interior of the bottom and sides of the frame and butt against the ribs C, in combination with a scraper D, located at the end of the mat B, and having a hole through it, with a pliable wiper E projecting from one side of the said hole, substantially as and for the purpose specified.

414,008. CASH REGISTER AND INDICATOR.

ISRAEL D. BOYER, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed July 2, 1889. Serial No. 316,337. (No model.) Patented in Canada July 2, 1889, No. 30,226.



Claim.—1. In a cash register and indicator, the combination of a rack and an operating-key provided with a pawl which engages said rack during the stroke of the key in one direction and is disengaged therefrom during its stroke in the opposite direction, substantially as and for the purpose described.

2. In a cash register and indicator, the combination of a rack and an operating-key provided with a pawl which engages said rack during the registering-stroke of the key and is disengaged therefrom at the completion of said stroke, substantially as and for the purpose described.

3. In a cash register and indicator, the combination of a rack, an operating-key provided with a pawl which engages said rack during the registering-stroke of the key and is disengaged therefrom at the completion of said stroke, a latch for holding the pawl out of engagement with the rack during the opposite stroke of the key, and a trip for said latch, substantially as and for the purpose described.

4. In a cash register and indicator, the combination of a segment-rack and a pivoted operating-key which is engaged with said rack during its stroke in one direction and disengaged therefrom during its stroke in the opposite direction, substantially as and for the purpose described.

5. In a cash register and indicator, the combination of a segment-rack and a pivoted operating-key which is engaged with said rack during its registering-stroke and disengaged therefrom at the completion of said stroke, substantially as and for the purpose described.

6. In a cash register and indicator, the combination of a segment-rack and a pivoted operating-key provided with a pawl which engages said rack during the registering-stroke of the key and is disengaged therefrom at the completion of said stroke, substantially as and for the purpose described.

7. In a cash register and indicator, the combination of a segment-rack, a pivoted operating-key provided with a pawl which engages said rack during the registering-stroke of the key and is disengaged therefrom at the completion of said stroke, a latch for holding the pawl out of engagement with the rack during the opposite stroke

of the key, and a trip for said latch, substantially as and for the purpose described.

8. In a cash register and indicator, the combination of a rack and an operating-key, which is free from the rack during its registering-stroke and engaged therewith during its opposite stroke, substantially as and for the purpose described.

9. In a cash register and indicator, the combination of a rack, an operating-key provided with a pawl, a latch for holding the pawl out of engagement with the rack during the registering-stroke of the key, and a trip for said latch, substantially as and for the purpose described.

10. In a cash register and indicator, the combination of a segment-rack and a pivoted operating-key, which is free from the rack during its registering-stroke and engaged therewith during its opposite stroke, substantially as and for the purpose described.

11. In a cash register and indicator, the combination of a segment-rack, a pivoted operating-key provided with a pawl, a latch for holding the pawl out of engagement with the rack during the registering-stroke of the key, and a trip for said latch, substantially as and for the purpose described.

12. In a cash register and indicator, the combination of an operating-key and two stationary racks, with one of which the key is engaged during its stroke in one direction and with the other of which it is engaged during its stroke in the opposite direction, substantially as and for the purpose described.

13. In a cash register and indicator, the combination, with two stationary racks, of an operating-key provided with two pawls, one of which is free from both of the racks during the registering-stroke of the key and engaged with one of the racks during its opposite stroke and the other of which is engaged with the other of said racks during the registering-stroke of the key and is free from both of the racks during its opposite stroke, substantially as and for the purpose described.

14. In a cash register and indicator having a series of keys, the combination of a registering-shaft, a driving-pinion loose on said shaft, a clutch between said pinion and shaft, and a shifter for automatically disengaging the clutch at the completion of the registering stroke of an operated key, substantially as and for the purpose described.

15. In a cash register and indicator having a series of operating-keys, the combination of a registering-shaft, a driving-pinion loose on said shaft, a clutch between said pinion and shaft, a shifter for automatically disengaging the clutch at the completion of the registering-stroke of an operated key, a latch for holding the clutch out of engagement during the opposite stroke of the key, and a trip for said latch, substantially as and for the purpose described.

16. In a cash register and indicator having a series of operating-keys, the combination of a registering-shaft, a driving-pinion loose on said shaft, a clutch between said pinion and shaft, a movable bar extending across the keys and moved by the operation of any one of them, and a shifter actuated by said bar to automatically disengage the clutch at the completion of the registering-stroke of an operated key, substantially as and for the purpose described.

17. In a cash register and indicator having a series of operating-keys, the combination of a registering-shaft, a driving-pinion loose on said shaft, a clutch between said pinion and shaft, a movable bar extending across the keys and moved by the operation of any of them, a shifter actuated by said bar to automatically disengage the clutch at the completion of the registering-stroke of an operated key, a latch for holding the clutch out of engagement during the opposite stroke of the key, and a trip for said latch, substantially as and for the purpose described.

18. In a cash register and indicator, the combination of a series of operating-keys of different values, a rack actuated to different degrees by the operation of the different keys of said series, a registering-shaft, a driving-pinion loose thereon and meshing with the rack, a clutch between the pinion and shaft, and a shifter for automatically disengaging the clutch at the completion of the registering-stroke of an operated key, substantially as and for the purpose described.

19. In a cash register and indicator, the combination of a series of operating-keys of different values, a segment-rack actuated to different degrees by the operation of the different keys, a registering-shaft, a driving-pinion loose thereon and meshing with the segment-rack, a clutch between the pinion and shaft, a shifter for automatically disengaging the clutch at the completion of the registering-stroke of an operated key, a latch for holding the clutch out of engagement during the opposite stroke of the key, and a trip for said latch, substantially as and for the purpose described.

20. In a cash register and indicator, the combination of the rack T and operating-key C, carrying the pawl *f* and latch *h*, substantially as and for the purpose described.

21. In a cash register and indicator, the combination of the rack T, operating-key C, pawl *f*, latch *h*, ledge *l*, and stop *j*, substantially as and for the purpose described.

22. In a cash register and indicator, the combination of the rack U and operating-key C, carrying the pawl *o* and latch *m*, substantially as and for the purpose described.

23. In a cash register and indicator, the combination of the rack U, operating-key C, pawl *o*, latch *m*, trip *p*, and stop *q*, substantially as and for the purpose described.

24. In a cash register and indicator, the racks T U, in combination with the key C, carrying the pawls *f o* and latches *h m*, substantially as and for the purpose described.

25. In a cash register and indicator, the slotted guide-plate B, provided with the racks T, one adjacent to each of the slots in said plate, in combination with the operating-keys C, which are engaged with said racks during their forward stroke and disengaged therefrom during their opposite stroke, substantially as and for the purpose described.

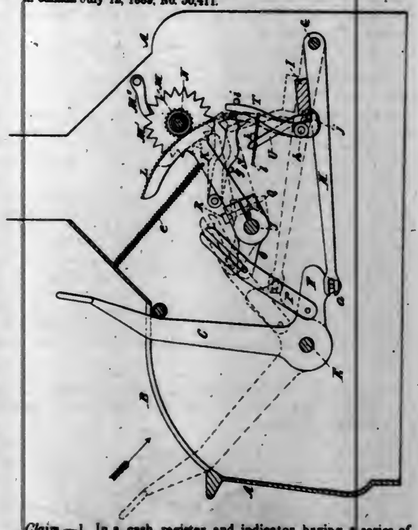
26. In a cash register and indicator, the slotted guide-plate B, provided with the racks U, one adjacent to each of the slots in said plate, in combination with the operating-keys C, which are free from said racks during their forward stroke and engaged therewith during their opposite stroke, substantially as and for the purpose described.

27. In a cash register and indicator, the slotted guide-plate B, provided with the racks T U, one of each adjacent to each of the slots in said plate, in combination with the operating-keys C, which are free from the rack U and engaged with the rack T during their forward stroke, and free from the rack T and engaged with the rack U during their opposite stroke, substantially as and for the purpose described.

28. In a cash register and indicator having a series of operating-keys, the combination of the segment-rack L, registering-shaft N, pinion M, loose on the shaft N and meshing with the rack L, the clutch between the pinion M and shaft N, shifter V, and bar I, which actuates the shifter V at the completion of the stroke of a key to disengage the clutch between the pinion M and shaft N, substantially as for the purpose described.

29. In a cash register and indicator having a series of operating-keys, the combination of the segment-rack L, registering-shaft N, pinion M, loose upon the shaft N and having clutch-teeth on one of its hubs, the clutch-hub *b*, tight on the shaft N, the shifter V, actuated by the bar I, the latch *y*, and the link X, engaged by the bar I to trip the latch *y*, substantially as and for the purpose described.

414,009. CASH REGISTER AND INDICATOR. ISRAEL D. BOYER, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed July 8, 1889. Serial No. 316,749. (No model.) Patented in Canada July 12, 1889, No. 50,411.



Claim.—1. In a cash register and indicator having a series of operating-keys of different values and a registering mechanism actuated to different degrees by the different keys of said series to register their respective values, the combination, with said registering mechanism, of a ratchet secured to a primary moving part thereof and a locking-dog which is engaged with said ratchet at the completion of the registering-stroke of an operated key and disengaged therefrom

at the completion of the opposite stroke of such key, substantially as and for the purpose described.

2. In a cash register and indicator having a series of operating-keys of different values and a registering mechanism actuated to different degrees by the different keys of said series to register their respective values, the combination, with said registering mechanism, of a ratchet secured to a primary moving part thereof, a locking-dog which is free from said ratchet during the registering-stroke of an operated key, means for engaging said dog with the ratchet at the completion of the registering-stroke of such key, a latch for holding the dog and ratchet in engagement during the opposite stroke of said key, and a trip for said latch operated at the completion of such opposite stroke of the key, substantially as and for the purpose described.

3. In a cash register and indicator having a series of operating-keys of different values and a registering-shaft actuated to different degrees by the operation of the different keys of said series to cause the registering mechanism to register their respective values, the combination, with said registering-shaft, of a ratchet and a locking-dog which is engaged with said ratchet at the completion of the registering-stroke of an operated key and disengaged therefrom at the completion of its opposite stroke, substantially as and for the purpose described.

4. In a cash register and indicator having a series of operating-keys of different values and a registering-shaft actuated to different degrees by the operation of the different keys of said series to cause the registering mechanism to register their respective values, the combination, with said registering-shaft, of a ratchet, a locking-dog which is free from said ratchet during the registering-stroke of an operated key, means for engaging said dog with the ratchet at the completion of the registering-stroke of such key, a latch for holding the dog and ratchet in engagement during the opposite stroke of said key, and a trip for said latch operated at the completion of such opposite stroke of the key, substantially as and for the purpose described.

5. In a cash register and indicator, the combination of a series of operating-keys of different values, a rack actuated to different degrees by the different keys of said series, a registering-shaft, a driving-pinion loose thereon and meshing with the rack, a clutch between the pinion and shaft, a ratchet on said shaft, and a locking-dog which is free from said ratchet during the registering-stroke of an operated key and engaged therewith during its opposite stroke, substantially as and for the purpose described.

6. In a cash register and indicator, the combination of a series of operating-keys of different values, a rack actuated to different degrees by the different keys of said series, a registering-shaft, a driving-pinion loose thereon and meshing with the rack, a clutch between the pinion and shaft, a ratchet rigidly secured to said shaft, and a locking-dog which is free from said ratchet during the registering-stroke of an operated key and engaged therewith during its opposite stroke, substantially as and for the purpose described.

7. In a cash register and indicator, the combination of a series of operating-keys of different values, a rack actuated to different degrees by the different keys of said series, a registering-shaft, a driving-pinion loose thereon and meshing with the rack, a clutch between the pinion and shaft, a ratchet rigidly secured to said shaft, a locking-dog which is free from said ratchet during the registering-stroke of an operated key, means for engaging said dog with the ratchet at the completion of the registering-stroke of said key, a latch for holding the dog and ratchet in engagement during the opposite stroke of said key, and a trip for said latch, substantially as and for the purpose described.

8. In a cash register and indicator, the combination of the operating-keys C, rack L, actuated thereby, shaft N, pinion M, loose on said shaft and meshing with the rack L, the clutch between said pinion and shaft, ratchet M′, locking-dog S, latch T, bar I, and arm U, substantially as and for the purpose described.

9. In a cash register and indicator, the combination of the keys C, levers H, rack L, arms O, rigid therewith, links P, shaft N, pinion M, the clutch between said pinion and shaft, ratchet M′, locking-dog S, latch T, bar I, and arm U, substantially as and for the purpose described.

414,010. CASH REGISTER AND INDICATOR. ISRAEL D. BOYER, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed July 8, 1889. Serial No. 316,750. (No model.) Patented in Canada July 12, 1889, No. 50,412.

Claim.—1. In a cash register and indicator having a series of operating-keys, the combination of a registering-shaft, a driving-pinion loose thereon, a clutch between said pinion and shaft, a ratchet secured to said pinion, and a pawl which is free from said ratchet during the registering-stroke of the operating-keys and engaged therewith during the opposite stroke of said keys, substantially as and for the purpose described.

2. In a cash register and indicator having a series of operating-keys of different values, a rack actuated to different degrees by the different keys of said series, a registering-shaft, a driving-pinion loose thereon and meshing with the rack, a clutch between the pinion and shaft, a ratchet rigidly secured to said shaft, and a locking-dog which is free from said ratchet during the registering-stroke of the operating-keys and engaged therewith during its opposite stroke, substantially as and for the purpose described.

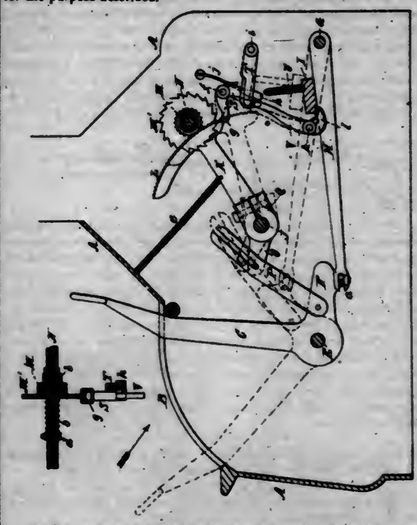
3. In a cash register and indicator, the combination of a series of operating-keys of different values, a rack actuated to different degrees by the operation of the different keys of said series, a registering-shaft, a driving-pinion loose thereon and meshing with the rack, a clutch between the pinion and shaft, a ratchet secured to the driving-pinion, and a pawl which is free from said ratchet during the registering-stroke of the operating-keys and engaged therewith during the opposite stroke of said keys, substantially as and for the purpose described.

4. In a cash register and indicator, the combination of a series of operating-keys of different values, a rack actuated to different degrees by the operation of the different keys of said series, a registering-shaft, a driving-pinion loose thereon and meshing with the rack, a clutch between the pinion and shaft, a ratchet secured to the driving-pinion, a pawl arranged to engage therewith, a latch for holding the pawl and ratchet out of engagement during the registering-stroke of the keys, and a trip for said latch, substantially as and for the purpose described.

5. In a cash register and indicator having a series of operating-keys of different values, the combination of the rack L, actuated to different degrees by the different keys of said series, the shaft N, pinion M, loose on said shaft, the clutch between said pinion and shaft, ratchet M′, secured to the pinion M, pawl *g* on the bell-crank S, latch T, and trip U, substantially as and for the purpose described.

6. In a cash register and indicator, the combination of the operating-keys C, levers H, rack L, arms O, rigid therewith, links P, registering-shaft N, pinion M, the clutch between said pinion and shaft, ratchet M′, pawl *g* on bell-crank S, latch T, bar I, trip U, and lever V, substantially as and for the purpose described.

414,011. SNAP-HOOK. RICHARD A. BERRY, Bridgeport, Conn., assignor to the Bridgeport Chain Company, same place. Filed Apr. 1, 1889. Serial No. 305,903. (No model.)

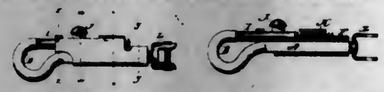


Claim.—1. The herein-described snap-hook, consisting of a body and hook made from a single piece of wrought metal, combined with a blank of sheet metal closed around said body so as to embrace three sides thereof, leaving a space on the third side to form the bolt and spring-barrel parallel with and above the body, a bolt arranged in said barrel in line with and movable toward and from the nose of the hook, with a spring in said barrel the tendency of which is to hold the hook in the closed position, substantially as described.

2. In a snap-hook, the body and hook made from wire, combined with a barrel made from a blank of sheet metal closed around the body, the edges of the blank brought together and so as to form a barrel parallel with the body of the hook, a notch formed in the edge of the blank, and which, when the blank is closed around the

barrel, produces a longitudinal slot D, a bolt I, arranged in said barrel, the bolt constructed with a thumb-piece J extending through the said slot in the barrel, and a spring arranged in the barrel in the rear of the bolt, so as to yieldingly hold the bolt against the nose of the hook, substantially as described.

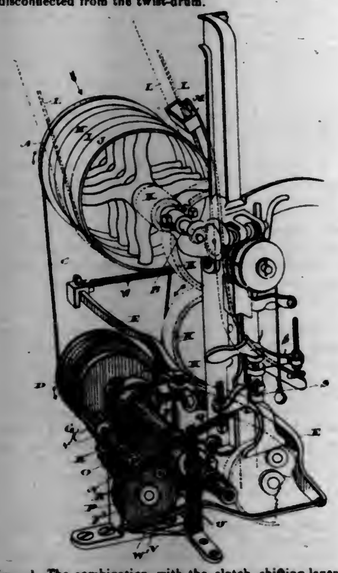
3. A snap-hook consisting of the body A and hook B, made of wire, combined with a barrel made from a blank of sheet metal closed around the body to form the barrel parallel with the body, the said blank constructed with an ear F at its rear end adapted to be closed upon the top of the body and in rear of the barrel, a bolt I, arranged in said barrel, and a spring also arranged in said barrel and resting against said ear F as a resistance, the said spring adapted to hold the bolt against the nose of the hook, substantially as described.



4. The body A and hook B, made from wire, combined with a blank closed around the said body to form the barrel, the blank constructed with a notch in its edge, which, when the blank is closed around the body and the edges of the blank brought together, will leave a longitudinal slot E into the barrel, the blank also constructed with a notch H at its forward end with inwardly-projecting ears *a*, the said ears turned inward over the body and so as to form a cylindrical end to the tubular barrel, a bolt arranged in the said barrel and extending through the said cylindrical end, the bolt provided with a thumb-piece J, arranged to work in the said slot E of the barrel, and a spring in the barrel at the rear of the bolt, the tendency of which is to yieldingly hold the bolt against the nose of the hook, substantially as described.

414,012. SPINNING-MULE. JOSEPH L. BROOK, Simcoe, Ontario, Canada. Filed Mar. 17, 1888. Serial No. 267,483. (No model.)

Brief.—The object of the invention is to prevent the backing-off clutch from being thrown into action until after the driving power has been disconnected from the twist-drum.



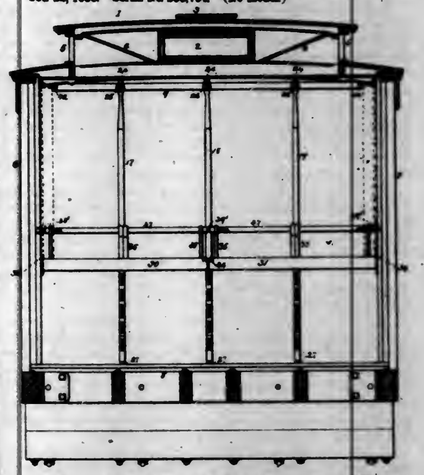
Claim.—1. The combination, with the clutch-shifting lever and clutch and a stop arranged to engage the lever and hold the clutch out of action, of the backing-off mechanism, the twist-slide, the flattened disk, means intermediate the disk and the stop to move the latter, a shaft operated from some moving part of the machine, a friction-roller on said shaft in contact with the disk, and the pivoted lever Q, engaging a stop on the disk and actuated by the twist-slide, as set forth, whereby the said mechanism fails to remove the stop from said lever till the power has been removed from the backing-off mechanism, substantially as and for the purpose specified.

2. A clutch-shifting lever E, a clutch, and a pivoted lever V, arranged to act as a stop for the clutch-shifting lever, combined with the twist-slide and the backing-off mechanism, the disk having flattened portion, the shaft N, friction-roller O thereon, roller U on the face of the disk, and the pivoted lever Q, one end engaging a stop on the disk and the other arranged to be actuated by the twist-slide, substantially as shown, and for the purpose specified.

3. The levers Q and V, the disk P, having a cam or a roller U, designed to engage with the lever V, a pin R, to engage with the lever Q, and a friction-pulley O, arranged to impart movement to the disk P, in combination with the rim-pulley D, clutch G, lever E, arm F, spring W, means for rotating said clutch G, and the twist-slide S, arranged to strike the lever Q, so that it will release the pin R and permit the roller U to strike the lever V, substantially as and for the purpose specified.

4. A pivoted lever Q, pin R, driving-pulley O, rim-pulley D, clutch G, lever E, arm F, spring W, and disk P, weighted on one side and having a portion of its periphery flattened to be held opposite to its driving-pulley O by the pivoted lever Q engaging with the pin R, in combination with means for rotating said clutch G, the twist-slide S, to act on the lever Q, and a cam or roller U, to act on the lever V, substantially as and for the purpose specified.

414,013. STOCK-CAR. GEORGE D. BURTON, Boston, Mass. Filed Oct. 22, 1888. Serial No. 288,784. (No model.)



Claim.—1. A stock-car provided with longitudinal stalls and a breast-bar consisting of two sections and having securing devices whereby the outer ends of each section are attached to the side of the car and the inner ends of the two sections secured together, substantially as set forth.

2. A stock-car having longitudinal stalls and provided with a breast-bar in front of the stalls, consisting of a hollow bar or pipe and bolts sliding in the outer ends thereof to engage holes in the sides of the car, as set forth.

3. A stock-car having longitudinal stalls and a transverse feed-trough in front thereof, consisting of two sections hinged at their outer ends to the sides of the car and connected together at their inner ends, as set forth.

4. A stock-car having a feed-trough transversely placed, consisting of two sections hinged at the sides of the car, one section provided at its inner end with a bolt to enter and engage with a socket in the inner end of the other section, as set forth.

5. A stock-car having a feed-trough transversely placed, consisting of two sections attached at their outer ends to the sides of the car and having at their inner end a bolt on one section which engages in a socket in the other section, as set forth.

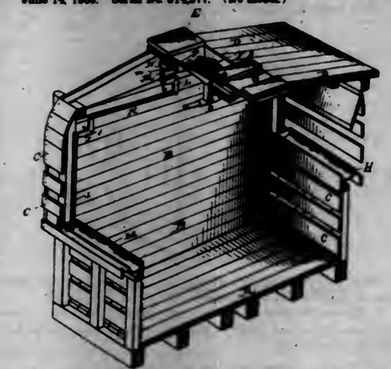
6. A stock-car having a feed-trough transversely placed, consisting of two sections having beaded edges supported at their outer ends against the sides of the car, and one section provided with a bolt sliding in the inner end of its bead and engaging with the bead of the inner end of the other section, as set forth.

7. A stock-car provided with a feed-trough consisting of two sections hinged to the sides of the car, a breast-bar, and hinged hanger from the breast-bar to support the feed-trough, as set forth.

8. A stock-car having longitudinal stalls provided with a breast-bar in front thereof, a trough below said breast-bar, and brackets or hangers from the breast-bar for supporting the trough, as set forth.

9. In combination, a partition, a casting having eyes secured to said partition, a trough, the breast-bar, the hooks pivoted on the breast-bar and engaging the eyes of the casting, and hangers connecting the breast-bar and trough, as set forth.

414,014. STOCK-CAR. GEORGE D. BURTON, Boston, Mass. Filed June 14, 1888. Serial No. 314,377. (No model.)



Claim.—1. A stock-car provided with a pivoted feed-trough, a water-tank, a trap-door covering said water-tank, and levers connecting the feed-trough with the trap-door, whereby closing and opening the trap-door will cause the trough to be dumped and righted, as set forth.

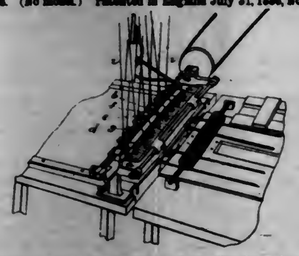
2. A stock-car provided with a pivoted feed-trough, a water-tank, a trap-door located in the walking-plank on the roof of the car for covering said tank, and levers connecting said trough and trap-door, whereby the operating of the trap-door dumps and rights the trough, as set forth.

3. A stock-car provided with a pivoted trough set to dump laterally of the car, a tank, a hinged trap-door in the walking-plank to cover said tank, set to open longitudinally of the car, and levers connecting the trough and trap-door, whereby the movement of the trap-door longitudinally of the car and in the act of opening and closing causes the trough to be tilted upward and downward laterally of the car, as set forth.

4. In a stock-car, the combination of the pivoted trough, the crank-arm secured thereto, the tank, the trap-door covering said tank, and the links and elbow-levers connecting said crank-arm with the trap-door, for the purposes set forth.

5. In a stock-car, the combination of the pivoted trough, the crank-arm secured thereto, the upright link, the elbow-lever pivoted to the end of the car, the link connecting them, the elbow-lever pivoted to move longitudinally of the car, the link connecting it with the aforesaid elbow-levers, the trap-door, and the link connecting the last-named elbow-lever with said door, for the purposes set forth.

414,015. MACHINE FOR COATING GLASS AND OTHER SURFACES WITH PHOTOGRAPHIC EMULSIONS. JAMES W. T. CADETT, Ashstead, County of Surrey, England. Filed June 25, 1888. Serial No. 278,193. (No model.) Patented in England July 31, 1886, No. 9,986.



Claim.—1. The combination, with the tank, of a series of emulsion-pumps provided with discharge-chutes, a crank for operating said pumps, and a traveling support for the plates, substantially as and for the purpose set forth.

2. The combination, with the tank having an inclined bottom for collecting sediment, of a series of emulsion-pumps having discharge-chutes projecting through the tank-bottom, a crank for operating the pumps, and a traveling support for the plates, substantially as and for the purpose set forth.

3. The combination, with the tank and the crank-shaft, of a series of emulsion-pumps detachably connected to said crank-shaft, whereby plates of different widths may be coated, and a traveling support for the plates, substantially as set forth.

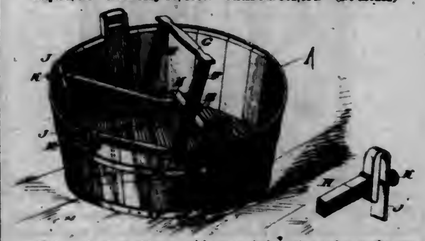
4. The combination, with the series of emulsion-pumps provided with discharge-chutes, of an inclined guide-plate pivotally supported below the chutes, and a traveling support for the plates, substantially as and for the purpose set forth.

5. The combination, with the series of emulsion-pumps provided with discharge-chutes, of a distributing-roller for evening the film of emulsion upon the surface of the plates, and a traveling support for the plates, substantially as set forth.

6. A distributing-roller for evening the film of emulsion upon uneven surfaces, formed of sections coupled by an india-rubber cord, substantially as set forth.

7. The combination, with the emulsion-tank and the series of pumps, of the inclined guide-plate pivotally supported below the discharges of said pumps, the distributing-roller supported by cords, for evening the film of emulsion, and a traveling support for the plates, substantially as and for the purpose set forth.

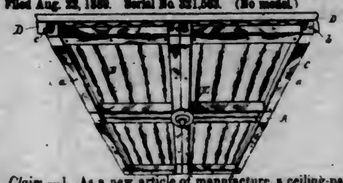
414,016. WASHING-MACHINE. CHARLES H. CADWALLADER, Philadelphia, Pa. Filed May 20, 1889. Serial No. 312,050. (No model.)



Claim.—1. A washing-machine consisting of a tub or other receptacle, the arms H, pivotally attached to the clamping devices J, the latter being adapted to embrace the sides of said tub, a rubber consisting of side bars and cross-slats, the levers F, pivotally attached to the arms H and to the said side bars of the rubber and having the handle G, the handle M, connecting the ends of the arm H, and the bottom B, said parts being combined substantially as described.

2. A washing-machine consisting of a tub, devices adapted to be removably secured to the sides of the tub and having arms pivoted thereto, a rubber consisting of side bars and cross-slats, a handle having levers secured thereto, the said levers being pivoted to the side bars of the rubber and to the arms of the said devices, the pivotal connection to the arms being in a position above the center of the sides of the rubber and the said arms having extensions secured together by a cross-piece, said parts being combined substantially as described.

414,017. METAL CEILING. FRANK G. CALDWELL, Wheeling, W. Va. Filed Aug. 22, 1889. Serial No. 321,563. (No model.)



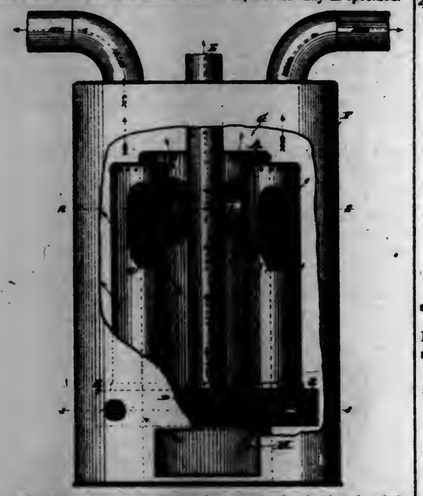
Claim.—1. As a new article of manufacture, a ceiling-panel composed of an open frame, a metal sheet or plate secured to one side of said frame, and a metal cap covering the exposed portion or side of said frame, substantially as described.

2. As a new article of manufacture, a recessed ceiling-panel composed of an open frame and a metal sheet or plate secured to one side of said frame and provided with a cap that covers the exposed side of the frame, substantially as described.

414,018. HOT-AIR FURNACE. FRASER M. CAMPBELL, St. Louis, Mo., assignor of one-half to William Thuener, same place. Filed Feb. 26, 1889. Serial No. 301,116. (No model.)

Claim.—1. In a furnace, the combination, with the hot-air chamber having an air-inlet in one side near its bottom, of the combustion-chamber situated eccentrically within the hot-air chamber and ad-

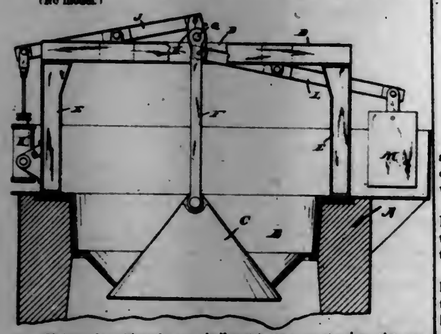
jacent to the side thereof opposite that having the air-inlet, the flues B B', extending from the inner side of the combustion-chamber near the top thereof, the descending flues C C', communicating at top with the flues B B', respectively, the chamber D, communicating with the lower ends of the flues C C', and the ascending flue E, rising centrally from the chamber between the flues B B', substantially as specified.



2. The combination, with the hot-air chamber having the air-inlet in one side near its bottom, of the combustion-chamber situated eccentrically within the hot-air chamber near the side opposite that having the air-inlet, the chamber D, immediately above the air-inlet, and provided with the air-ports *d' d'* at its lateral extensions, the flues B C and B' C', respectively connecting the said lateral extensions with the upper portion of the combustion-chamber, and the ascending flue rising from the chamber D midway between the flues C C', substantially as specified.

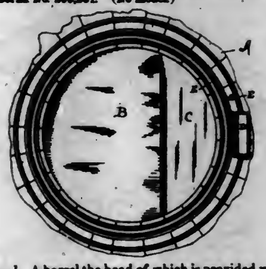
3. In a furnace, the combination, with the hot-air chamber and the combustion-chamber situated eccentrically therein, of the flues B B', extending from the top of the combustion-chamber, the descending flues C C', of large diameter, communicating, respectively, with the flues B B', the heating-chamber D, communicating with the lower ends of the flues C C', and the ascending flue E, rising from the chamber D between the flues C C' and of much smaller diameter than the latter flues, as and for the purposes set forth.

414,019. HOPPER MECHANISM FOR BLAST-FURNACES. JOHN G. CARLISLE, Philadelphia, Pa., assignor of one-half to Gordon, Strobel & Laureau, (Limited,) same place. Filed June 6, 1888. Serial No. 276,236. (No model.)



Claim.—In a blast-furnace bell and hopper mechanism, the combination, substantially as set forth, of a bell-rod connected with the apex of the bell, a horizontal pivot at the upper end of the bell-rod, a link pivoted at its center to said pivot and disposed substantially vertically when the bell and bell-rod are up, a centrally-pivoted motor-beam, a motor mechanism arranged to apply force to the outer end of said beam, a counterbalance-beam with its pivot out of the plane of the pivot of the motor-beam, a counter-balance arranged to apply force to the outer end of said beam, and pivots uniting the inner ends of said two beams with the ends of said link.

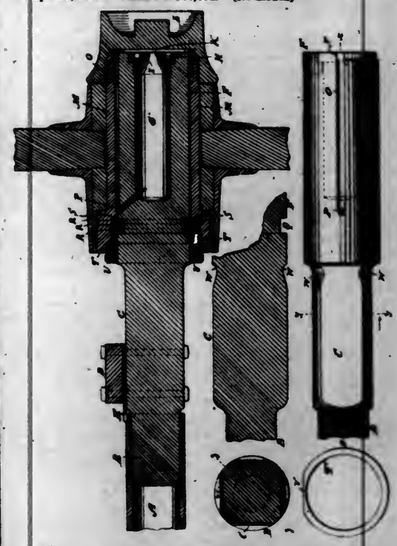
414,020. BARREL. DAVID G. CLEMOW, Peoria, Ill. Filed Feb. 6, 1889. Serial No. 299,261. (No model.)



Claim.—1. A barrel the head of which is provided with the raised section B, substantially as described.

2. A barrel the head of which is provided with the raised section B, and the raised block D, set in the body of the stave or staves, substantially as described.

414,021. VEHICLE-AXLE. JOHAN R. COLE, New York, N. Y., assignor to Lesfort Lesfortz and Fannie T. Cole, both of same place. Filed Apr. 19, 1889. Serial No. 307,651. (No model.)



Claim.—1. A vehicle-axle consisting of a bed portion, a neck, and a cylindrical arm of a diameter equal to the cornerwise thickness of the neck, said neck having a groove or depression at its juncture with the arm, substantially as described.

2. A vehicle-axle consisting of an arm F, a neck C, a bed portion B, and a bed A, adjustable along the bed portion, in combination with the spring D and the key E, extending along the axle-neck beneath the spring and engaging the axle-bed, substantially as described.

3. The axle having a cylindrical arm F, provided with the annular groove Q, and the washer R, located in said groove and held by the opposite side walls of the groove, in combination with the hub M, having the shoulder S and extending inward over the washer, and the nut U, located directly upon the inner end of the cylindrical axle-arm and engaging the hub, substantially as described.

4. The combination, with an axle-arm having a groove Q and a washer seated in said groove and made to project beyond the arm, of a hub seated on the arm and having a shoulder S, made to engage the washer, a nut U, for locking the hub and washer together, and an anti-friction ring T, interposed between the washer and nut, substantially as described.

5. The combination, with an axle-arm having a groove Q and a washer seated in said groove and made to project beyond the arm, of a hub seated on the arm and having a shoulder S, made to engage the washer, and a nut U for locking the hub and washer together, said washer and hub having flat faces or portions for preventing the hub turning independently of the washer, substantially as described.

6. A vehicle-axle having its arm provided with an oil-chamber having a cap provided with a filling-opening I and discharge-opening K, said arm having a channel O and return-opening P, for leading the surplus oil to the chamber, substantially as described.

7. A vehicle-axle having its arm provided with an oil-chamber having a cap provided with a filling-opening I and discharge-opening K, said arm having a channel O, a return-opening P, and a shoulder N, for removing surplus oil from the hub, substantially as described.

414,022. METALLIC LINING FOR PUMPS. ELIJAH J. COLES, Liberty, Ohio. Filed Sept. 20, 1888. Serial No. 285,804. (No model.)



Claim.—A pump-stock provided with a tubular unbroken lining of malleable metal fitting snugly within the stock and provided at its ends with semicircular annular beads fitting snugly within corresponding shaped grooves in the stock and having their free edges lying flush with the bore of the same, the extreme ends of the said tube being of less diameter than the central part of the annular beads and of greater diameter than the bore of the pump-stock, substantially as set forth.

414,023. DISH-WASHING MACHINE. ROBERT H. CORBETT, St. John, Kans. Filed June 12, 1889. Serial No. 277,509. (Model.)

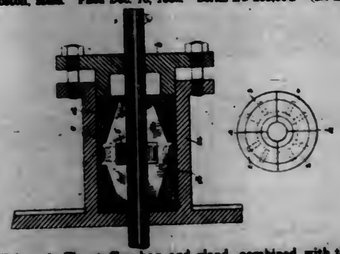


Claim.—1. The combination, with a cylinder provided with grooves *b* near its ends, of a pair of supports consisting each of a pair of prongs *a a*, which embrace the said cylinder and are provided with eyes at their upper ends, removable wire links *c*, passing over the top of the said cylinder and connecting the eyed ends of the prongs *a a*, and legs attached to the said prongs *a*, the said links and prongs resting in the said grooves in the cylinder, as and for the purpose described.

2. The combination of a cylinder A, a shaft *d*, journaled therein and carrying a gauze cylinder, and sponges secured to this shaft in the said gauze cylinder, as and for the purposes described.

3. The combination of a stationary cylinder, a shaft journaled therein and carrying a reticulated cylinder, this shaft being provided with holes for the passage of a sponge-securing wire *d'*, and said wire and sponges, substantially as described.

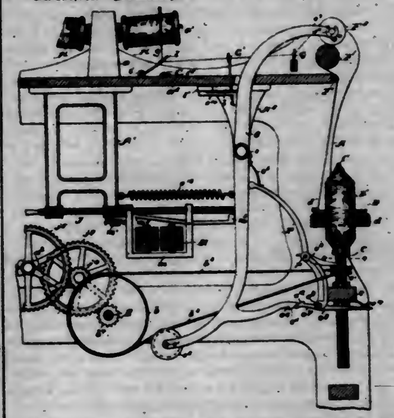
414,024. PACKING FOR PISTON-RODS. DANIEL W. CROSBY, Boston, Mass. Filed Dec. 10, 1888. Serial No. 293,094. (No model.)



Claim.—1. The stuffing-box and gland, combined with the perforated rocking metallic sectional tube surrounding the rod, the cork filling, and the absorbent material, substantially as described.

2. The stuffing-box and gland, combined with the metallic sectional tube surrounding the rod, made larger in diameter at the middle than at its ends and having the internal steam-receiving chamber 5, the perforations leading therefrom, the chambered projection 6, the cork packing surrounding said metallic tube, and the absorbent material in the chamber of the projection 6, substantially as described.

414,025. ELECTRIC STOP-MOTION FOR TWISTING-MACHINES, &c. VICTOR I. CUSHMAN, Lowell, Mass. Filed Aug. 14, 1888. Serial No. 280,740. (No model.)



Claim.—1. The combination of an electric circuit containing a circuit-closer normally held open by the work, but automatically closed upon the failure of the work, a lever, a reciprocating bar or rod, an electro-magnet arranged in said circuit, and its armature arranged, when attracted, to move between said reciprocating rod and lever, and thereby to occasion the movement of said lever, the bottom roll, and the top roll supported upon said lever and adapted by the movement of said lever to be raised out of contact to stop the feed of the work between the rolls, as and for the purpose specified.

2. The combination of a spindle, a brake-lever, an electric circuit containing a circuit-closer normally held open by the work, but automatically closed upon a failure of the work, another lever, a reciprocating bar or rod, and an electro-magnet arranged in said circuit, its armature arranged, when attracted, to move between said reciprocating rod and said last-named lever, and thereby to move said lever and to cause said brake-lever to press upon said spindle and stop its rotation, as and for the purpose specified.

3. The combination of a band-cylinder, a spindle, a loose band connecting said cylinder and spindle, a lever and an idle-pulley supported upon said lever and normally pressing against said band, an electric circuit containing a circuit-closer normally held open by the work, but automatically closed upon the failure of the work, a reciprocating rod or bar, and an electro-magnet arranged in said circuit, its armature arranged, when attracted, to move between said reciprocating rod and lever, and thereby to move said lever and loosen said band and allow the spindle to stop, as and for the purpose specified.

4. The combination of an electric circuit containing a circuit-closer normally held open by the work, but automatically closed upon a failure of the work, a band-cylinder, a spindle provided with a whirl, a loose band or belt connecting said band-cylinder and whirl, a lever, an idle-pulley supported upon said lever and normally pressing against said band to strain the same and to cause said spindle and whirl to be rotated by the rotation of said band-cylinder, a reciprocating bar or rod, and an electro-magnet arranged in said circuit, its armature arranged, when attracted, to move between said reciprocating rod and said lever and to be pushed by said rod against said lever to rock said lever and loosen said band and allow said spindle to stop, as and for the purpose specified.

5. The combination of an electric circuit containing a circuit-closer normally held open by the work, but automatically closed upon a failure of the work, a band-cylinder, a spindle provided with a whirl, a loose belt or band connecting said band-cylinder and whirl, a lever, an idle-pulley supported upon said lever and normally pressing against said band to strain the same and to cause said spindle and whirl to be rotated by the rotation of said band-cylinder, a reciprocating bar or rod, an electro-magnet arranged in said circuit, its armature arranged, when attracted, to move between said reciprocating

rod and said lever and to be pushed by said rod against said lever, and thereby to rock said lever and loosen said band, and a brake-lever, one arm of which extends over said whirl, but is normally out of contact therewith, and the other arm of which brake-lever is arranged in contact with said first-named lever, whereby the rocking of said first-named lever will cause said brake-lever to press upon said whirl and to stop the rotation of said whirl and spindle, as and for the purpose specified.

6. The combination of an electric circuit containing a circuit-closer normally held open by the work, but automatically closed upon a failure of the work, a band-cylinder, a spindle provided with a whirl, a loose belt or band connecting said band-cylinder and whirl, a lever, an idle-pulley supported upon said lever and normally pressing against said band to strain the same and to cause said spindle and whirl to be rotated by the rotation of said band-cylinder, a reciprocating bar or rod, an electro-magnet arranged in said circuit, its armature arranged, when attracted, to move between said reciprocating rod and said lever and to be pushed by said rod against said lever, and thereby to rock said lever and loosen said band, a brake-lever, one arm of which extends over said whirl, but is normally out of contact therewith, and a spring secured to said first-named lever and holding the other arm of said brake-lever in contact with said first-named lever, whereby the rocking of said first-named lever will cause said brake-lever to press upon said whirl and to stop the rotation of said whirl and spindle, as and for the purpose specified.

7. The combination of an electric circuit containing a circuit-closer normally held open by the work, but automatically closed upon a failure of the work, a band-cylinder, a spindle provided with a whirl, a loose belt or band connecting said band-cylinder and whirl, a lever, an idle-pulley supported upon said lever and normally pressing against said band to strain the same and to cause said spindle and whirl to be rotated by the rotation of said band-cylinder, a reciprocating bar or rod, an electro-magnet arranged in said circuit, its armature arranged, when attracted, to be moved between said reciprocating rod and said lever and to be pushed by said rod against said lever to rock the same and loosen said band and allow said spindle to stop, the bottom roll, and the top roll supported upon said lever and turned by frictional contact with said bottom roll or with the work passing between said rolls, and adapted by the rocking of said lever to be moved out of such contact to stop the feed of the work, as and for the purpose specified.

8. The combination of an electric circuit containing a circuit-closer normally held open by the work, but automatically closed upon a failure of the work, a band-cylinder, a spindle provided with a whirl, a belt or band connecting said band-cylinder and whirl, a reciprocating rod, a brake-lever, one arm of which extends over said whirl, but is normally out of contact therewith, an electro-magnet arranged in said circuit, its armature arranged to move, when attracted, into the path of said reciprocating rod and to be carried along with said rod and to cause said brake-lever to press upon said whirl and to stop the rotation of said spindle and whirl, and a switch arranged in said circuit and normally closed, but opened upon the rocking of said lever, as and for the purpose specified.

9. The combination of an electric circuit containing a circuit-closer normally held open by the work, but automatically closed upon a failure of the work, a band-cylinder, a spindle provided with a whirl, a belt or band connecting said band-cylinder and whirl, a lever, a reciprocating rod, an electro-magnet arranged in said circuit, its armature arranged, when attracted, to move between said reciprocating rod and said lever and to be pushed by said rod against said lever and to rock the same, the bottom roll, the top roll, supported upon said lever and turned by frictional contact with said bottom roll or with the work passing between said rolls, and adapted by the rocking of said lever to be moved out of such contact to stop the feed of the work, and a switch arranged in said circuit and normally closed, but opened by the rocking of said lever, as and for the purpose specified.

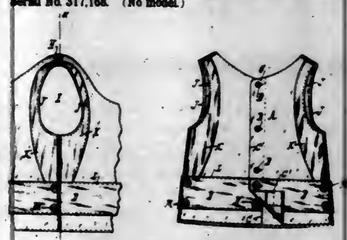
10. The combination of an electric circuit containing a circuit-closer normally held open by the work, but automatically closed upon a failure of the work, a band-cylinder, a spindle provided with a whirl, a loose belt or band connecting said band-cylinder and whirl, a lever, an idle-pulley supported upon said lever and normally pressing against said band to strain the same and to cause said spindle and whirl to be rotated by the rotation of said band-cylinder, a reciprocating bar or rod, an electro-magnet arranged in said circuit, its armature arranged, when attracted, to move between said reciprocating rod and said lever and to be pushed by said rod against said lever to rock said lever and loosen said band and allow said spindle to stop, and a switch arranged in said circuit and normally closed, but opened by the rocking of said lever, as and for the purpose specified.

11. The combination of a lever, a bottom roll, a top roll supported upon said lever, said lever being provided with a hook, and the catch-lever adapted to engage said hook and to hold said top roll out of contact with said bottom roll or out of contact with the work between said top roll and bottom roll, as and for the purpose specified.

12. The combination of the band-cylinder, the spindle provided with a whirl, a loose belt or band connecting said band-cylinder and said whirl, a lever provided with a hook, an idle-pulley supported upon said lever and normally pressing against said band to strain the same and to cause said spindle to be rotated by the rotation of said band-cylinder, and a catch-lever adapted to engage said hook on said lever to hold said idle-pulley from straining said band, as and for the purpose specified.

13. The combination of the lever provided with a hook, the brake-lever having one arm in engagement with said first-named lever, a spindle provided with a whirl arranged below the other arm of said brake-lever, and a catch-lever adapted to engage said hook and to hold said last-named arm of said brake-lever in contact with said whirl, and thereby to prevent the rotation of said whirl and spindle, as and for the purpose specified.

414,026. UNDERWAIST. HELEN D. DE BEVOISE, Long Island City, and CHARLES R. DE BEVOISE, Flushing, N. Y. Filed July 11, 1889. Serial No. 317,168. (No model.)



Claim.—An underwaist provided with a surrounding band and having its upper portion provided with shoulder-straps which are overlaid by a continuous re-enforcing band surrounding the armhole and extended down the side of the waist under the armhole and stitched at the surrounding band.

414,027. BALANCED SLIDE-VALVE. HENRY D. DUNBAR, North Hartland, Vt. Filed July 22, 1889. Serial No. 318,223. (No model.)

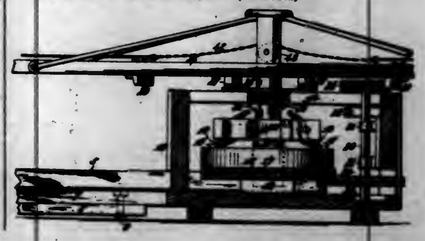


Claim.—1. The valve having in the back an inner chamber communicating with the exhaust-passage and an outer chamber containing packing-strips, said inner and outer chambers presenting an area in excess of that of the exhaust-chamber of the valve and both being in communication with the exhaust-chamber, substantially as specified.

2. The combination of the valve having inner and outer chambers formed in the back of the same, with packing-strips adapted to said outer chamber and free to move laterally therein to a slight extent, so as to permit steam to pass from the central chamber to the outer chamber behind the packing-strips, substantially as specified.

3. The combination of the body of the valve and the packing-strips at the back of the same with an angular frame secured to the body of the valve and forming with the same a chamber for the reception of said packing-strips, substantially as specified.

414,028. PRESS. CHARLES A. ERICKSON, Red Wing, Minn. Filed Dec. 19, 1888. Serial No. 294,056. (No model.)



Claim.—1. In a hay, cotton, or other press, the combination, with a suitable press mechanism, the box of which is connected to the frame of a horse-power, of a plunger-bar, a wheel having lugs, a segment of gear-teeth and a crank-pin to which the plunger-bar is connected, a main shaft on which the wheel is loosely mounted, said shaft carrying a cross-head having dogs which normally engage the lugs on the wheel, a gear meshing with the segment of gear-teeth, a shaft carrying said gear and having a pinion at its upper end, a cross-head revolving the main shaft and having racks by which reverse rotation is imparted to the pinion, gear, and wheel, and tripping cams or blocks arranged on a part of the horse-power frame above the dogs for tripping the latter prior to the action of the racks, substantially as described.

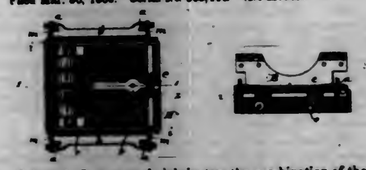
2. In a hay, cotton, or other press, the combination, with a plunger-bar, of a horse-power frame, a wheel having lugs, a segment of gear, and a crank-pin to which the bar is connected, a cross-head having dogs normally engaging the lugs on the wheel, a gear meshing with the segment of gear-teeth on the wheel, a shaft carrying said gear and having a pinion at its upper end, a cross-head by which motion is communicated to the cross-head carrying the dogs, the former having segmental racks by which reverse rotation is imparted to the pinion, gear, and wheel, and tripping cams or blocks arranged on a part of the horse-power frame above the dogs, and by which the latter are tripped and released from engagement with the lugs on the wheel, substantially as described.

3. In a hay, cotton, or other press, the combination, with a horse-power frame and a plunger-bar, of a wheel having lugs, a segment of gear, and a crank-pin by which the bar is reciprocated, a cross-head carrying dogs engaging the lugs on the wheel, a gear meshing at each part revolution with the segment of gear-teeth on the wheel, a shaft carrying said gear and having a pinion at its upper end, a main shaft, a cross-head on the main shaft having racks which mesh at each half-revolution with the pinion, tripping cams or blocks arranged on a part of the horse-power frame above the dogs, and elastic arms and slotted bearings supporting the shaft which carries the pinion and the gear, substantially as described.

4. In a hay, cotton, or other press, the combination, with a horse-power frame and a main shaft, of a plunger-bar, a wheel loosely mounted on the shaft and having lugs, a segment of gear-teeth, and a crank-pin to which the bar is connected, a cross-head on the main shaft having dogs which normally engage the lugs on the wheel, a gear and a pinion on a separate shaft, the gear meshing with the segment of gear-teeth on the wheel, a cross-head on the main shaft having racks which mesh at each half-revolution with the said pinion, tripping cams or blocks arranged on a part of the horse-power frame above the dogs to trip the latter, rock-shafts on opposite sides of an opening in the press-box, said shafts having packer-arms, and connecting-bars operated by a cross-head on the plunger-bar and connected to actuating-levers on the rock-shafts, substantially as described.

5. The combination of the plunger and the lengthwise-reciprocating plunger-bar 5, having a cross-head 37, with the press-box having a top feed-opening, a rock-shaft 32, journaled directly on the press-box at one side of the feed-opening, a series of packer-arms 34, rigidly fixed to the rock-shaft, a lever-arm 35, rigidly secured to and depending from the end of the rock-shaft at one side of the press-box, and a connecting-bar 36, pivoted at one end to said depending lever-arm and at the other end to the cross-head on the lengthwise-reciprocating plunger-bar, substantially as described.

414,029. CAR-AXLE LUBRICATOR. RUDOLPH FAAS, Chicago, Ill., assignor to the Standard Car Axle Lubricator Company, same place. Filed Mar. 30, 1889. Serial No. 305,444. (No model.)

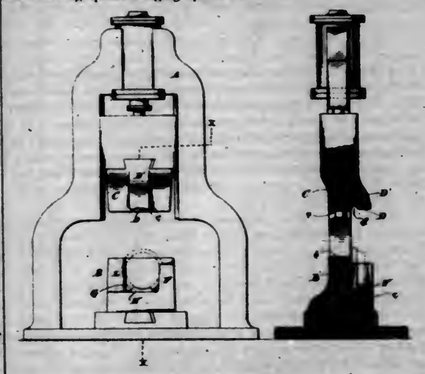


Claim.—1. In a car-axle lubricator, the combination of the base H, sides *i i*, brackets *m m*, forming bearings for the bars *b b*, supported by the springs *a a*, affixed to the brackets *m m*, and the vertical metal shield B, tipped with leather, canvas, or other firm yielding material, as and for the purpose above specified.

2. The combination of the metal bars *b b*, springs *a a*, brackets *m m*, and metal shield B, tipped with leather, canvas, or other yielding material, as and for the purpose above specified.

414,030. STEAM-HAMMER FOR FORGING STEEL WHEELS. JAMES A. FACER, Philadelphia, Pa. Filed May 8, 1889. Serial No. 310,026. (No model.)

Claim.—1. In a steam-hammer for forging wheels, a hammer-die having a projection upon one face thereof, in combination with an anvil-die provided with a laterally-extending support for the periphery or tread of the wheel-blank to hold said blank in an upright position against the side or face of the anvil and permit it to be turned during the rounding-up and flanging operation.



2. In a steam-hammer for forging wheels, a hammer-die having a projection upon one face thereof, in combination with an anvil-die provided with a laterally-extending support for the periphery or tread of the wheel-blank at the base and face to hold said blank in an upright position against the side or face of the anvil and permit it to be turned during the rounding-up and flanging operation.

3. In a steam-hammer for forging wheels, a hammer-die having a projection upon one face thereof, having a curved under surface, in combination with an anvil-die provided with a laterally-extending support for the periphery or tread of the wheel-blank to hold said blank in an upright position against the side of the anvil and permit it to be turned during the rounding-up and flanging operation.

4. In a steam-hammer for forging wheels, a hammer-die having a projection upon one face thereof, having a curved and grooved under surface, in combination with an anvil-die provided with a laterally-extending support for the periphery or tread of the wheel-blank to hold said blank in an upright position against the side or face of the anvil and permit it to be turned during the rounding-up and flanging operation, provided with a groove for receiving the flange on the periphery of the blank.

5. In a steam-hammer for forging wheels from solid ingot-blooms, the combination of a hammer and an anvil-die having flat surfaces to flatten and drive a punch into the bloom, a projection upon said hammer-die, and laterally-projecting supports upon the base of the anvil-die to support the flattened blank in an upright position against the face of the anvil-die for the purpose of rounding it up.

6. Dies for forging steel wheels, consisting of an anvil-die having a smooth or flat upper surface and a vertical front portion provided at a point below the upper surface with a grooved support for the flange of the wheel-blank, in combination with a hammer-die having an under face corresponding in area to the face of the anvil-die, and a front projection above the support of the anvil-die and having its under surface to correspond to the flange of the wheel-blank.

7. Dies for forging steel wheels, consisting of an anvil-die having a smooth or flat surface and a vertical front portion provided at a point below the upper surface with a grooved support for the flange of the wheel-blank and a lateral support secured to the anvil-die and arranged to one side of the grooved support to hold the wheel-blank from moving laterally, in combination with a hammer-die having an under face corresponding in area to the face of the anvil-die, and a front projection above the said lateral support secured to the anvil-die and having its under surface shaped to correspond to the flange of the wheel-blank.

8. Dies for forging steel wheels, consisting of an anvil-die having a smooth or flat upper surface and a vertical front portion provided at a point below the upper surface with a grooved support for the flange of the wheel-blank and a lateral support to the anvil-die and arranged to one side of the grooved support to hold the wheel-blank from moving laterally, and detachable pins secured to the anvil-die laterally with respect to the grooved support and on the side opposite to the lateral support, in combination with a hammer-die having an under face corresponding in area to the face of the anvil-die, and a front projection above the support of the anvil-die and having its under surface shaped to correspond to the flange of the wheel-blank.

414,031. PROCESS OF MANUFACTURING METALLIC WHEELS. James A. Facer, Philadelphia, Pa. Filed May 6, 1889. Serial No. 310,087. (No model.)



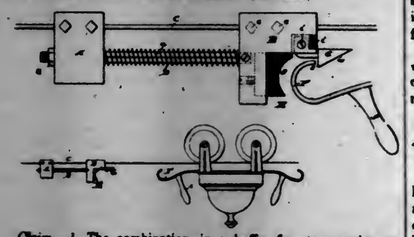
Claim.—1. The herein-described process of making forged wheels, which consists in first subjecting an ingot or bloom in a heated condition to forging operations to reduce it to approximately the proper thickness, then placing it between dies in an upright position, or in a position parallel to the line of action of said dies, and subjecting it to forging operations between said dies, turning it under them and rounding it up into approximately the shape of the finished wheel, and finally subjecting it to pressure between finishing-dies, forging its entire surface into the finished form.

2. The herein-described process of making forged wheels, which consists in first subjecting an ingot or bloom in a heated condition to forging operations to reduce it to approximately the proper thickness, then placing it between dies in an upright position, or in a position parallel to the line of action of said dies, and subjecting it to forging operations between said dies, turning it under them and rounding it up into approximately the shape of the finished wheel, simultaneously forming the flange upon the bloom while in said upright position by the forging operation, and finally subjecting it to pressure between finishing-dies, forging its entire surface into the finished form.

3. The herein-described process of making forged wheels, which consists in first subjecting an ingot or bloom in a heated condition to forging operations to reduce it to approximately the proper thickness, then placing it between dies in an upright position, or in a position parallel to the line of action of the dies, and subjecting it to forging operations between said dies, turning it under them and rounding it up into approximately the shape of the finished wheel, simultaneously forming the flange upon the bloom while in said upright position by the forging operation, then punching the axle-hole through its center, and finally subjecting it to pressure between finishing-dies, forging its entire surface into the finished form.

4. The herein-described process of making forged wheels, which consists in first flattening a heated bloom to approximately the proper thickness, then placing the bloom on end and rounding it up and forming the flange by turning it under forging-dies, then reheating the rounded and flanged bloom, then placing it on end and tapping it slightly to remove scales and dirt, and finally subjecting the bloom so shaped to finishing-dies, forging the bloom into its finished shape.

414,032. STORE-SERVICE BUFFER. Theodore P. Farmer, Boston, Mass., assignor to the Lamson Cash Railway Company, same place. Filed Feb. 12, 1885. Serial No. 156,422. (No model.)



Claim.—1. The combination, in a buffer for store-service apparatus, of the stationary section A, movable section B, provided with an elastic bearing E, and a pivoted dog having a shoulder *s* and an interposed spring, substantially as specified.

2. The combination, in a buffer for store-service apparatus, of a section A and means for securing it to the wire, the movable section B, provided with an elastic bearing E, and a pivoted spring-seated dog G, a spring interposed between said sections, and an arm or rod *a*, provided with a head or bearing *b*, substantially as specified.

3. The combination, with the car having a movable catch provided with a handle, of the stop carrying a pivoted dog having an inclined face *w* and an elastic bearing E, substantially as described.

4. The combination, in a buffer for store-service apparatus, of the stationary section, the movable section provided with an elastic bearing, a pivoted dog having a locking shoulder, and a spring interposed between the sections, and a carrier provided with a catch, and a handle secured to the latter, substantially as described.

414,033. PROCESS OF MAKING SILICIUM COPPER. Walther Feld and Georg von Knorre, Charlottenburg, Germany. Filed Nov. 12, 1888. Serial No. 290,604. (No specimens.)

Claim.—The production of silicium copper by smelting a mixture or mingling of copper or cupric oxide with coal or tar and fossil-meal with substances discharging chlorine or fluorine (such as common salt, chloride of copper, chloride of magnesium, chloride of potassium, chloride of calcium, &c., or fluor-spar, &c.) in a reverberatory furnace or in a shaft furnace.

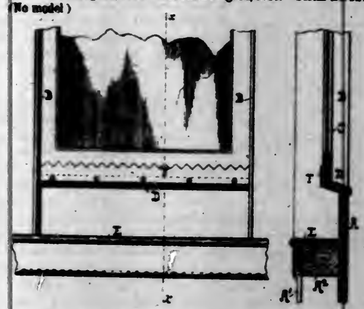
414,034. GAGE-COCK. John G. Fendley, Wallaceburg, Ontario, Canada. Filed June 29, 1889. Serial No. 316,023. (No model.)



Claim.—1. In a gage-cock, the combination of a hollow stem, a head pivoted to said stem, and a rotary plug having separate and independently-removable packing-strips on two sides thereof, substantially as shown and described.

2. In a gage-cock, the combination, with the stem F, having therein the bore G, of the head C, pivoted to said stem and having therein the cylinder D, and the rotary plug A, carrying the separate and independently-removable packing-strips B B, substantially as shown and described.

414,035. RAILWAY-CAR BODY. Matthias H. Forney, New York, N. Y. Filed Aug. 26, 1886. Renewed Aug. 24, 1889. Serial No. 321,850. (No model.)



Claim.—1. In a railway-car, an arm-rest formed by removing a portion of the inner casing of the car below and under the window-sash and between two of the studs, which studs, together with the inner and outer casings, form the side of the car, substantially as specified.

2. In a railway-car, a portion of the side of the car below the window-sash reduced in thickness from the inner side of the car, the cavity thus formed extending under the said sash, whereby an arm-rest is formed, substantially as specified.

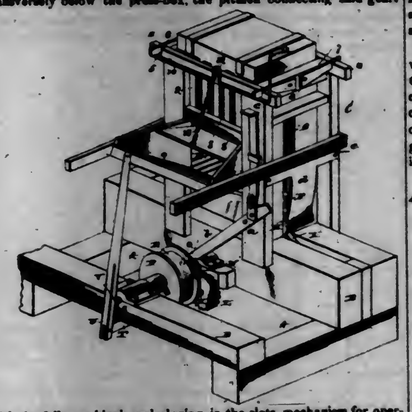
414,036. BALING-PRESS. Domenico Fontebasso, Belton, Tex. Filed Mar. 13, 1889. Serial No. 303,072. (No model.)

Claim.—1. The combination of the vertical press-box, the follower-block moving therein, the intermeshing segmental gears arranged below the press-box and connected with the follower-block to operate the same, the shaft N, having a fixed disk Q, the band-pulley loosely mounted on said shaft adjacent to said disk, the disk P, loosely mounted on said shaft and adapted to bind the band-pulley against the disk Q, the pivoted lever adapted to shift the disk P, and gearing between the shaft N and the segmental gears, as set forth.

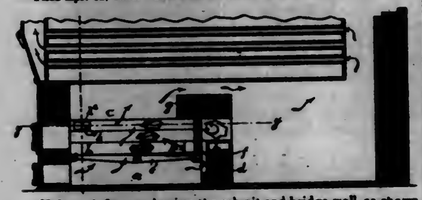
2. The combination of the main frame, the longitudinal shaft N, the pinion M on said shaft, the detent pivoted on the frame and having a series of notches in its end adapted to engage the teeth of the pinion, and the vertically-sliding bar mounted on the frame and pivoted to the detent, all arranged and operating substantially as and for the purposes set forth.

3. The combination of the vertical press-box having a feed-opening in its side, the chute projecting from the press-box and leading to said opening, the upwardly-swinging gate in the lower end of the chute adapted to cover the feed-opening, the horizontal rock-shaft mounted on the side of the press-box above the gate and having a central crank-arm, and the chain connecting said crank-arm with the gate, as set forth.

4. The combination of the press-box having vertical slots in its sides, the follower-block moving therein, the segmental gears arranged transversely below the press-box, the pitmen connecting said gears with the follower-block and playing in the slots, mechanism for operating said gears, and the springs mounted on the press-box and bearing on the pitmen, as set forth.



414,037. FURNACE. George F. Gallagher and Thomas B. Moore, Rochester, N. Y., assignors of one-sixth to Henry Gallagher, same place. Filed Apr. 12, 1889. Serial No. 306,957. (No model.)



Claim.—A furnace having the ash-pit and bridge-wall, as shown, a passage or passages between the bridge-wall and an auxiliary wall, such passage or passages leading from the ash-pit to the fire-box, for the purpose stated, and two sets of air-passages, one set starting from the outer sides of the fire-box, extending along the sides to the rear, and joining at the center in one common passage, which discharges the heated air in the rear of the fire-box, the other set of passages starting from the outer sides of the fire-box, extending along the sides to the rear, and returning along the same sides and discharging their heated air in the front of the fire-box, substantially as and for the purpose stated.

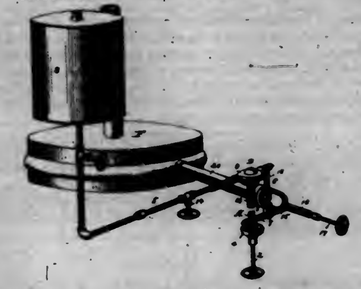
414,038. APPARATUS FOR THE MANUFACTURE OF GAS. Chas. Graniss, Pittsburg, Pa., assignor to Charles M. Gearing, same place. Filed Dec. 20, 1888. Serial No. 294,312. (No model.)



Claim.—1. The combination, in a gas apparatus, of a structure A, provided with a horizontal partition B, a combustion-chamber located below this partition, valved pipes and an injector for supplying this combustion-chamber with gas-producing materials, a superheating-chamber separated from the said combustion-chamber by a perforated wall C, a superheating-coil in this superheating-chamber and connected to the injector of the said combustion-chamber, tortuous generating-chambers located above and communicating with the said superheating-chamber, a pipe F, for supplying hydrocarbon to one of the said generating-chambers, an oil-supply tank connected to this pipe, an injector also connected to this pipe, and an exhaust apparatus connected to one of the generating-chambers for withdrawing the resultant gases, substantially as and for the purpose herein set forth.

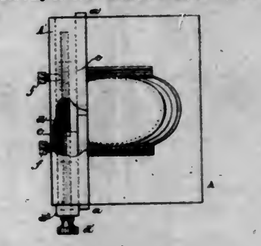
2. In a gas apparatus, the combination of a combustion-chamber, valved pipes and an injector for supplying gas-producing materials to the said combustion-chamber, tortuous gas-generating chambers located above and communicating with each other and the combustion-chamber below, means for exhausting the gases from the upper one of these chambers, a hydrocarbon-supply pipe leading into the lower gas-generating chamber, and an injector for forcing the hydrocarbon into the said chamber, as and for the purposes herein set forth.

414,039. HEATING APPARATUS. Henry Seymour, Philadelphia, Pa., assignor to James H. and Frank Ferguson, both of Bridgeton, N. J. Filed Feb. 21, 1889. Serial No. 300,955. (No model.)



Claim.—In a vapor-heating device, the combination, with the hollow ring 21, an open-ended pipe 20, communicating with the ring, a casing provided with an opening, and a valve arranged opposite the open end of the pipe 20 to inject therein a stream of vapor, a retort for generating the vapor, of a vapor-conduit between the retort and the casing, and the burners communicating with the ring 21, substantially as set forth.

414,040. APPARATUS FOR ASSEMBLING HEEL-LIFTS. Chas. W. Gildden, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed July 15, 1889. Serial No. 317,585. (No model.)





Claim.—1. In an apparatus for assembling heel-lifts in the production of heels, a support for the lifts, and slides forming a stop for the breast end of the lifts, combined with a series of edge-stops located at different distances apart upon said slides and projecting at right angles therefrom to receive between them and correctly position the said lifts on both sides as they are being laid in a pile, substantially as described.

2. The support and slides having edge-stops arranged in a projecting series upon each slide to form opposite parallel pairs, combined with means to adjust the said slides simultaneously toward and from each other, substantially as described.

3. The support for the lifts and slides having edge-stops arranged in a projecting series upon each slide to form opposite parallel pairs, as shown, combined with means to hold the said slides in adjusted position, substantially as described.

4. A support for lifts, combined with edge-stops arranged in pairs for the different lifts of the heel, the said stops being open, as described, to permit the introduction of the said lifts horizontally into position between the said stops, substantially as described.

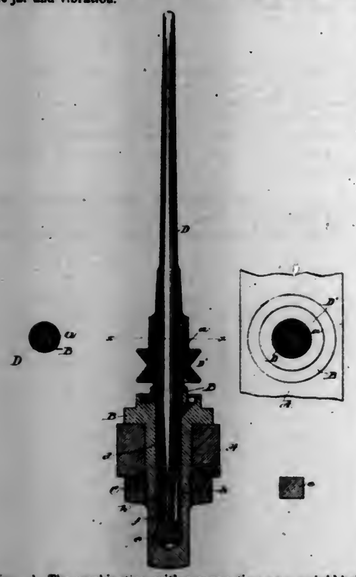
414,041. HEAD-PROTECTOR. PHILIPP GOLDMANN, New York, N. Y. Filed Aug. 22, 1889. Serial No. 321,571. (No model.)



Claim.—A head protector or muff consisting of the imperforate body-strip for covering the back and sides of the head, the segmental contracting strip secured continuously along one edge to the top edge of the body-strip, contracted inwardly to overlie and hug the rear of the crown of the head and tapering from the middle of its length to each end, and a fastening for holding the protector or muff in position, substantially as described and shown.

414,042. SUPPORT FOR SPINNING-SPINDLES. BENJAMIN N. GOODALE, Saco, Me., assignor to the Sawyer Spindle Company, Boston, Mass. Filed May 24, 1889. Serial No. 311,966. (No model.)

Brief.—The object of the invention is to produce a simple and cheap support which will permit the spindle to run at high speed and with little jar and vibration.

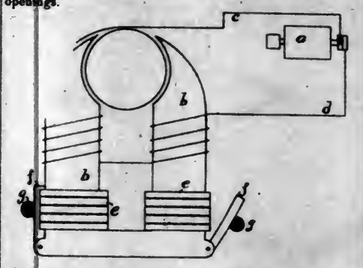


Claim.—1. The combination, with a supporting-case, a rigid bolster or lateral bearing therein in the line of the band-pull, and a step for the lower end of the spindle, of a sleeve-whirl spindle having a pintle of less diameter, as described, externally than the internal diameter of the said bolster-bearing, whereby the foot of the spindle is free to wander in the supporting-case on the said step, substantially as described.

2. The combination, with a supporting-case, a bolster-bearing therein in the line of the band-pull, and a step having a concaved or countersunk top, of a sleeve-whirl spindle having a pintle of less diameter, as described, externally than the internal diameter of the said bolster-bearing, the foot of the spindle being free to wander in the supporting-case, substantially as described.

414,043. ELECTRIC REGULATOR. LEONHARD GUTHARD, Fort Wayne, Ind. Filed Dec. 5, 1888. Serial No. 292,608. (No model.)

Claim.—1. In an electric-motor regulator, the combination of one set of coils connected in circuit with an alternating-current generator and mounted upon the arms of the field-magnet of the motor, and a set of rings of conducting material mounted on the same field-magnet core and provided with openings or slots, and a circuit-closer for said openings, the said closers being adapted to open and close the openings.



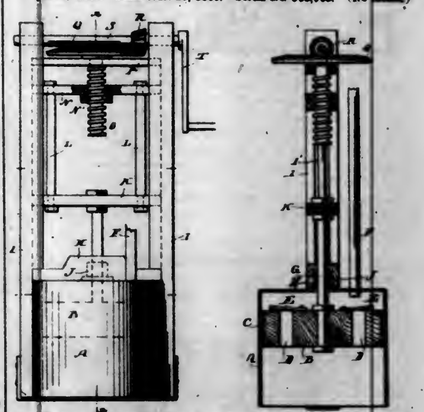
3. In an electric-motor regulator, the combination of conducting-rings mounted upon and surrounding the arms of the field-magnet of the said motor, and provided with openings to form incomplete rings, and a movable conducting-rod fitting into said openings.

3. In an electric-motor regulator, the combination of field-magnets provided with coils and independent concentric open rings insulated from one another mounted on the said field-magnets and provided with terminals, as and for the purpose described.

4. In combination with the field-magnets of an electric motor, open conductors surrounding in part the arms of the field-magnets and movable conductors connecting the open parts of the said open conductors.

5. In a regulator, the combination, with an iron core of a motor, choking-magnet, converter, or other induction apparatus, of a conductor in form of coils mounted upon the said iron core and in circuit with a suitable generator of alternating, pulsating, or intermittent currents, open conductors surrounding the said iron core, and means for closing said open conductors.

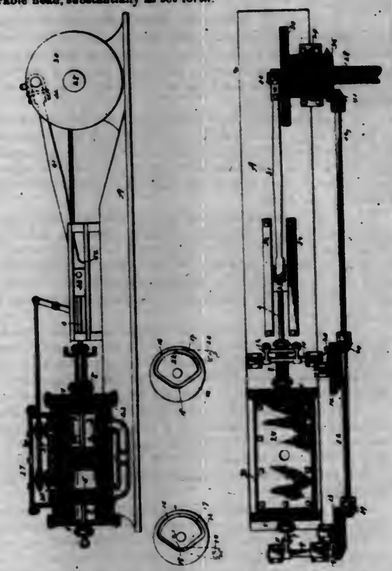
414,044. FORCE-PUMP. ROBBIN A. HEATH and JAMES HAY, Hopewell, Nebr. Filed Mar. 30, 1889. Serial No. 305,963. (No model.)



Claim.—The combination, in a force-pump, of a barrel closed at its top, vertical guide-posts I, horizontal hand-operated shaft bearing therein, a fixed horizontal beam P below said shaft, and having a short depending screw-shaft bearing therein and geared to the said horizontal shaft, horizontal cross-bars having their ends engaging said posts and connected together to form a movable frame, the upper bar having a threaded opening for the engagement of the depending screw-shaft, together with valved piston in barrel, fixed beam J, and piston-rod playing through beam J and connected to lower bar of movable frame, substantially as set forth.

414,045. STEAM-ENGINE. EDWARD HUBER, Marion, Ohio. Filed Apr. 25, 1889. Serial No. 308,542. (No model.)

Claim.—1. The combination, with a cylinder having inlet and exhaust ports, of a piston, movable heads located within the cylinder for closing the exhaust-ports, a main shaft actuated by the piston, a rotary shaft located alongside of the cylinder and extending in the direction of the length thereof, gearing connecting the rotary shaft and main shaft, and gearing on the rotary shaft for actuating the movable head, substantially as set forth.

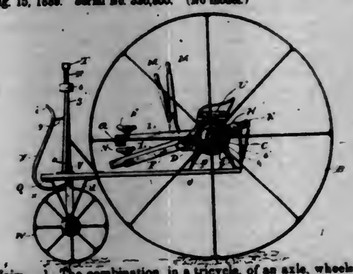


2. The combination, with a steam-cylinder and movable heads therein, of rocking-shafts, bevel gear-wheels having cams for rocking the shafts, and gearing for operating the cams, substantially as set forth.

3. The combination, with a steam-cylinder and movable heads therein, of rocking shafts connected with the heads, said shafts having arms with anti-friction rollers thereon, bevel gear-wheels with cams on their backs in which said rollers travel, and means for turning said gear-wheels, substantially as set forth.

4. The combination, with a cylinder and movable heads, of stems connected with the heads, rocking shafts for driving the stems, arms on the shafts with rollers thereon, bevel gear-wheels having cams, substantially as described, on their backs, with which the rollers engage, a main shaft having a bevel gear-wheel, and a shaft having bevel gear-wheels meshed with the other gear-wheels for communicating motion, substantially as set forth.

414,046. TRICYCLE. ROBERT T. HUGGINS, Florence, S. C. Filed Aug. 15, 1889. Serial No. 320,855. (No model.)



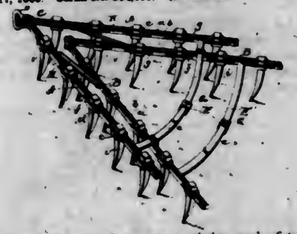
Claim.—1. The combination, in a tricycle, of an axle, wheels revolving on said axle, ratchet-wheels fixed to the hubs of said wheels, means, substantially as described, for revolving said ratchet-wheels, a front wheel, a bifurcated steering-rod, to which said wheel is journaled, a fifth-wheel fixed on said steering-rod, a platform, and hangers connecting said steering-rod and said axle, substantially as described.

2. The combination, in a tricycle, of an axle, wheels on said axle, ratchet-wheels fixed to the hubs of said wheels, forward levers and rear levers fulcrumed on said axle, pawls pivoted to said levers and adapted to engage the teeth of the ratchet-wheel, substantially as shown, a cross-bar connecting said forward levers, a cross-bar connecting the rear levers, operating-levers fulcrumed on said axle, one operating-lever being fixed to said rear cross-bar and one lever fixed to said forward cross-bar, means, substantially as described, for working said operating-levers, a front wheel, a bifurcated steering-rod, in which said wheel is journaled, the fifth-wheel, and a platform resting on said fifth-wheel and attached to said axle, constructed and combined substantially as described.

3. The combination, in a tricycle, of an axle, wheels adapted to turn on said axle, ratchet-wheels fixed to the hubs of said wheels, levers fulcrumed on said axle, forward pawls pivoted on the forward levers, a coiled spring adapted to keep said pawls in contact with said ratchet-wheels, rear pawls pivoted on the rear levers, a semicircular spring adapted to keep said rear pawls in contact with said ratchet-wheels, cross-bars connecting the forward and rear levers, respectively, operating-levers adapted to form with said levers compound levers and to depress said cross-bars alternately, said operating-levers having pivoted foot-pedals and lever-handles, springs adapted to bring the operating-levers back to their normal position, a front wheel, a bifurcated steering-rod, a fifth-wheel on said rod, and a platform having a seat and connecting said axle and said fifth-wheel, all constructed and combined to co-operate substantially as shown.

4. The combination, in a tricycle, of an axle, wheels on said axle, means, substantially as described, for turning said wheels and propelling the machine, a front wheel, a bifurcated steering-rod, a platform connecting said axle and said rod and having a vertical frame supporting said rod, a handle and cross-rod adapted to guide the machine with the hands or feet, respectively, a spring encircling said vertical steering-rod, a brake pivoted to said bifurcated rod, and a spring connecting said brake and vertical steering-rod, all constructed and combined to operate substantially in the manner and for the purpose shown.

414,047. HARROW. WILLIAM P. HUGHES, Black Lick, Va. Filed June 17, 1889. Serial No. 314,655. (No model.)



Claim.—In a harrow, the beams consisting each of two slotted and parallel bars bent or shaped to form angular tooth-recesses and adapted to slide upon one another longitudinally, in combination with the bolts for connecting and locking the bars together in their properly-adjusted position to bind the teeth, substantially as and for the purpose set forth.

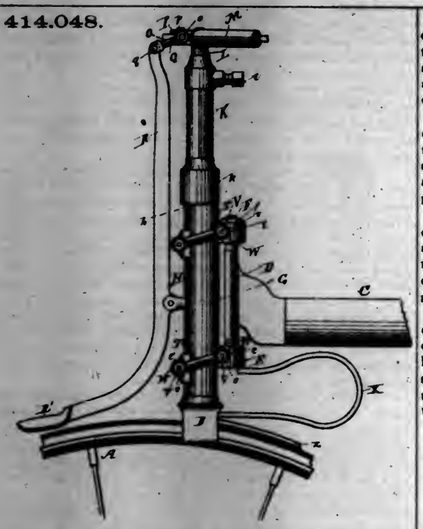
414,048. VELOCIPEDE. DAVID R. HUNTER, Salem, Mass., assignor to the Pope Manufacturing Company, Portland, Me. Filed May 3, 1888. Serial No. 272,633. (No model.)

Claim.—1. The combination, in a velocipede-frame, of a spindle and reach and a pillar with bearing-seats for the spindle, another pillar connected with the first by one or more links on each side, having hinge-bearings to permit longitudinal movement of the pillars, and a spring, as X, constructed and operating to resist the relative longitudinal movement of the pillars, one of said pillars being constructed as an outer slotted tube and the other as an inner slide entering and operating substantially within the slotted tube.

2. The combination of fork B and a rigidly-connected pillar H, a brake-spoon lever R, fulcrumed on the fork-pillar, and a brake-handle lever O, fulcrumed on a handle-bar mounted on supporting

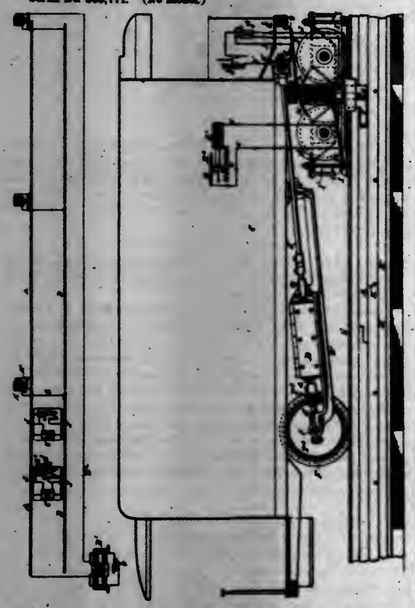


414,048.



devices, substantially as set forth, having a longitudinal motion with respect to the brake-spoon lever, and a swing-link Q between the brake-handle lever and the brake-spoon lever.

414,049. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor, by mesne assignments, to the Thomson-Houston Electric Company, Boston, Mass. Original application filed Nov. 30, 1886, Serial No. 220,940. Divided and this application filed Apr. 2, 1889. Serial No. 305,771. (No model.)



Claim.—1. In an electric railway, two working-conductors, a source of electrical energy, two or more electrically-propelled vehicles in multiple-arc connection and receiving current from said conductors, and shunt-circuits upon said vehicles to shunt a portion of the current around the motors.

2. In an electric railway, two working-conductors, a source of electrical energy, two or more electrically-propelled vehicles in multiple-arc connection and receiving current from said conductors, shunt-circuits upon said vehicles to shunt a portion of the current around the motors, and means to increase or decrease the resistance of said shunts.

3. In an electric railway, two working-conductors, a source of electrical energy, two or more electrically-propelled vehicles in multiple-arc connection and receiving current from said conductors, shunt-circuits upon said vehicles to shunt a portion of the current around the motors, and automatic means to increase or decrease the resistance of said shunts.

4. In an electrically-propelled vehicle, the combination of a source of electric supply, an electric motor, a shunt-circuit around the motor, a resistance-changer in said shunt-circuit, and an electrically-actuated regulator to control the resistance-changer to reduce the resistance of the shunt if the current in the motor-circuit increases above the normal, or vice versa.

5. In an electric railway, two or more sections of working-conductors, one or more electrically-propelled vehicles on each section, connections for coupling up said conductors, so as to put all the vehicles on the different sections in series connection and those upon the same section in multiple-arc connection, shunt-circuits around the motors on each of the vehicles, and a resistance-changer in each of the shunt-circuits.

6. In an electric railway, two working-conductors, a source of electricity of constant potential, two or more electrically-propelled vehicles receiving electricity from said conductors and coupled in multiple-arc connection with each other, a shunt-circuit around the motor on each of said vehicles, and a resistance-changer in said shunt-circuits.

7. In an electric railway, two working-conductors, a source of electricity of constant potential, two or more electrically-propelled vehicles receiving electricity from said conductors and coupled in multiple-arc connection with each other, a shunt-circuit around the motor on each of said vehicles, and an electrically-actuated resistance-changer in said shunt-circuit.

8. In an electric railway, two working-conductors, a source of electrical energy, two or more electrically-propelled vehicles in multiple-arc connection and receiving currents from said conductors, shunt-circuits upon said vehicles to shunt a portion of the current around the motors, means to increase or decrease the resistance of said shunts, and a resistance-changer on the vehicles to control the current flowing through the motors at the will of the operator.

9. In an electric railway, two working-conductors, a source of electricity of constant potential, two or more electrically-propelled vehicles receiving electricity from said conductors and coupled in multiple-arc connection with each other, a shunt-circuit around the motor on each of said vehicles, an electrically-actuated resistance-changer in said shunt-circuits, and a resistance-changer on the vehicles to control the current flowing through the motors at the will of the operator.

10. The combination of sectional conductors extending along an electric railway, two opposite conductors in succeeding sections being connected as described, electric locomotives in circuit between opposite sections and in series with one another, an electric switch at the end of each section for breaking connection between two successive sections, and shunting-circuits carried by the locomotives to shunt more or less of the current around the motors to prevent an excessive current passing through the motors.

11. The combination of two sectional conductors extending along an electric railway, two opposite conductors in succeeding sections being connected as described, electric locomotives in series making connection therewith, and an electric switch at the end of each section for controlling the connection between successive sections of one conductor, and shunting-circuits carried by the locomotives to shunt more or less of the current around the motors to prevent an excessive current passing through the motors.

12. The combination of a vehicle, a propelling electric motor therefor in series with other motors on the same road, bared conductors adapted for conveying the main current extending along the said road, a constant connection between said conductors and the motors, electrically-operated switches for shunting the main current through said motors, and shunting-circuits carried by the locomotives to shunt more or less of the current around the motors to prevent an excessive current passing through the motors.

13. The combination of a vehicle, a propelling electric motor therefor in series with other motors on the same road, bared conductors adapted for conveying the main current extending along said road, switches operated electrically for shunting the main current through said motor, means for preserving the continuity of the main line during the operation of said switches, and shunting-circuits carried by the locomotives to shunt more or less of the current around the motors to prevent an excessive current passing through the motors.

14. The combination of a vehicle, a propelling-motor in series with other motors on the same road, bared conductors extending along said road and adapted for carrying the main current, electric switches operated from a distance for directing the course of the main current over said conductors, electrical devices for operating said switches controlled by the current which passes over said conductors between said motor and the adjacent switch, and shunting-circuits carried by the locomotives to shunt more or less of the current around the motors to prevent an excessive current passing through the motors.

15. The combination of two conductors parallel with the line of an electric railway, electric locomotives in electrical connection with said conductors, said conductors being divided into insulated sections, each section of one conductor being connected with the opposite succeeding section of the other conductor, cross-connections containing electrical devices which control a connection between successive sections of the other conductor, and shunting-circuits carried by the locomotives to shunt more or less of the current around the motors to prevent an excessive current passing through the motors.

16. The combination of two or more electric motors in series, a vehicle supporting each motor and propelled thereby, a sectional electric conducting-path extending along the line of progress of said vehicles, conductors extending from each motor and making continuous connection with said conducting-path, the main current normally passing through the motors in succession, an automatic circuit-closer for each motor acting to preserve the continuity of the main line in the case of rupture of any motor-circuit, and shunting-circuits carried by the locomotives to shunt more or less of the current around the motors to prevent an excessive current passing through the motors.

17. The combination in an electric railway, of two conductors extending along the line of the road and divided into sections longer than the ordinary locomotives or trains on the road, electric locomotives having their motor-terminals constantly in connection with the two conductors, respectively, switches operated by the progress of the train or locomotive for sending the main current through the motors in succession, and shunting-circuits carried by the locomotives to shunt more or less of the current around the motors to prevent an excessive current passing through the motors.

18. The combination, with the two main conductors of an electric railway, of an electric locomotive having its terminals in connection with said conductors, respectively, a connection between said conductors, a circuit-breaker in said connection controlled by the progress of said locomotive, and shunting-circuits carried by the locomotives to shunt more or less of the current around the motors to prevent an excessive current passing through the motors.

19. The combination of two sectional conductors extending along an electric railway, each section of one conductor being electrically connected with the preceding section of the other conductor, locomotives in series in traveling connection with said conductors, circuit-controllers between the successive sections of one of the conductors, and shunting-circuits carried by the locomotives to shunt more or less of the current around the motors to prevent an excessive current passing through the motors.

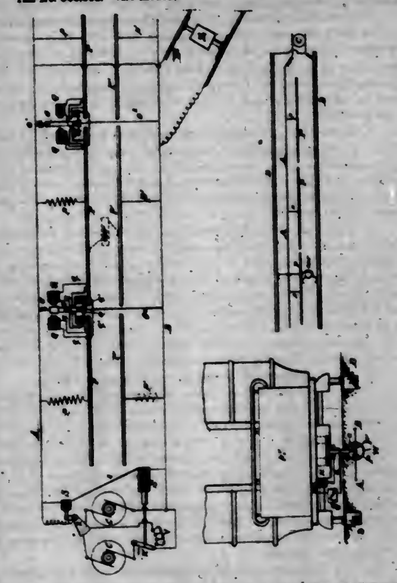
20. The combination of sectional conductors extending along an electric railway, two opposite conductors in succeeding sections being connected as described, electric locomotives in circuit between corresponding sections of opposite conductors and in series with one another, an electric switch at the end of each section for breaking connection between two successive sections, and a shunt-circuit around the electric switch-magnet to reduce the current passing through the switch-magnet.

21. The combination of two sectional conductors extending along an electric railway, two opposite conductors in succeeding sections being connected as described, electric locomotives in series making connection therewith, an electric switch at the end of each section for controlling the connection between successive sections of one conductor, and a shunt-circuit around the electric-switch magnet to reduce the current passing through the switch-magnet.

22. The combination of a vehicle, a propelling electric motor therefor in series with other motors on the same road, bared conductors adapted for conveying the main current extending along the said road, a constant connection between said conductors and the motor, electrically-operated switches for shunting the main current through said motors, and a shunt-circuit around the electric-switch magnet to reduce the current passing through the switch-magnet.

23. In an electric railway, two conductors to supply current to the motors on the cars, a constant-potential and varying-current dynamo or generating-machine for supplying current to the conductors, two or more electrically-propelled vehicles receiving current from said conductors, and variable resistances or regulating devices on the car to vary the current passing through the motor.

414,050. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor, by mesne assignments, to the Thomson-Houston Electric Company, Boston, Mass. Original application filed Mar. 18, 1886, Serial No. 195,762. Divided and another application filed Feb. 20, 1888, Serial No. 300,585. Again divided and this application filed Apr. 6, 1889. Serial No. 306,302. (No model.)



Claim.—1. In an electric railway, the combination of the main or traffic rails, a slotted conduit, one or more longitudinal working-conductors arranged along the railway within the conduit and divided into sections, one or more continuous main or supply conductors normally connected with each of said sections of working-conductors, a source of electric supply connecting with the main conductor, and a motor mounted upon a car traveling upon said traffic-rails and provided with suitable current-collecting devices extending into the conduit and bearing upon said longitudinal working conductor or conductors.

2. In an electric railway, the combination of the main or traffic rails, a slotted conduit, a longitudinal working-conductor arranged parallel to but independent of the traffic-rails and located within the conduit, a supply or main conductor also extending longitudinally along the railway, electrical connections between the main and working conductors and independent of the traffic-rails, and an electric motor mounted on a car traveling upon the traffic-rails and provided with suitable current-collecting devices extending into the conduit and bearing against the longitudinal working-conductor.

3. In an electric railway, the combination of the main or traffic rails, a longitudinal sectional working-conductor arranged parallel to but independent of the traffic-rails, a supply or main conductor also extending longitudinally along the railway, electrical connections between the main conductor and each section of working-conductor and independent of the traffic-rails, switches for connecting either of two adjacent sections of working-conductor with the supply-conductor, and an electric motor mounted on a car traveling upon the traffic-rails and provided with suitable current-collecting devices bearing against the longitudinal working-conductor sections.

4. In an electric railway, the combination of electric conductors extending along the line of the railway, traveling electrically-propelled vehicles receiving current from said conductors, two or more stationary electric generators for supplying electric current to the electric conductors, and switches and circuits for coupling said generators in series or multiple with respect to each other, and at all times maintain them in series with the electric conductors extending along the railway and electrically-propelled vehicles receiving current therefrom.

5. In an electric railway, the line-conductors in combination with two or more stationary electric generators, and switches for coupling said generators up in multiple or in series with each other and with line-conductors, and resistances controlled by said switches and adapted to be thrown into circuit when said generators are coupled in series.

6. In an electric railway, the line-conductors in combination with two or more stationary electric generators, and switches for coupling said generators up in multiple or in series with each other and with

the line-conductors, and resistances controlled by said switches and adapted to be thrown into circuit when said generators are coupled in series, and means to vary the amount of said resistances, substantially as and for the purpose specified.

7. In an electric railway, the line-conductors in combination with two or more stationary electric generators, and electrically-actuated switches controlling the variations in the line-current for coupling said generators up in multiple or in series with each other and with the line-conductors upon the line-current becoming unsuited to the variations in resistance put upon the line, substantially as and for the purpose specified.

8. In an electric railway, the line-conductors in combination with two or more electric generators, switches for coupling said generators up in multiple or series, resistances thrown in or out of circuit by said switches, and electrical devices to actuate said switches controlled by the varying resistances on the line, substantially as and for the purpose specified.

9. In an electric-railway system, the combination of continuous main conductors and working-conductors normally connected with said main conductors, from which working-conductors the current is taken by the motors, a pair of electro-magnets respectively in electrical circuit with the working-conductors of two adjacent sections, and the return or opposite main conductor, and an armature adapted to be actuated by said magnets to close a second electric connection with the main conductor and its adjacent section to supply an increased current to the working-conductors when in circuit with a passing motor, substantially as and for the purpose specified.

10. In an electric-railway system, the combination of continuous main conductors and working-conductors, normally connected with said main conductors, from which working-conductors the current is taken by the motors, a pair of electro-magnets respectively in electrical circuit with the working-conductors of two adjacent sections, and the return or opposite main conductor, and an armature adapted to be actuated by said magnets to break the circuit of one magnet and also close a second electric connection with the main conductor and its adjacent section to supply an increased current to the working-conductors when in circuit with a passing motor, substantially as and for the purpose specified.

11. The combination of the line-conductors A B, working-conductors P P', electro-magnets Q Q, armature O for closing an auxiliary circuit from conductor A to working-conductor P, branch circuits *q*, containing said electro-magnets Q Q, wire O', and circuit-breakers *q' o*, to control the circuits *q O'*, substantially as and for the purpose specified.

12. In an electric railway, the line or main conductors in combination with a sectional conductor, a branch connecting one main conductor with one section of the working-conductor, a second branch connecting the section with the other main conductor and containing an electro-magnet, and an auxiliary circuit-closer actuated by said electro-magnet to supply a stronger current to the section when the motor is upon it, substantially as and for the purpose specified.

13. In an electric railway, the combination of an electrically-propelled vehicle, a sectional working-conductor, a continuous line-conductor, interposed resistances between the line and working conductor sections, and automatic devices controlled by a vehicle making contact with a section of working-conductor to reduce the resistance between the line and working conductor sections.

14. In an electric railway, the combination of an electrically-propelled vehicle, a sectional working-conductor, a continuous line-conductor, interposed resistances between the line and working conductor sections, said resistances increasing as they are nearer to the generator to make the current passing over them equal, and automatic devices controlled by a vehicle making contact with a section of working-conductor to reduce the resistance between the line and working conductor section.

15. In an electric railway, a main conductor and a sectional working-conductor, in combination with permanent electrical connections between main-conductor and working-conductor sections, additional circuits between the main-conductor and working-conductor sections, and switches in said additional circuits.

16. In an electrical railway, a main conductor connecting with a source of electric supply, and a sectional working-conductor, in combination with permanent electrical connections between the main-conductor and working-conductor sections, having increasing resistances as they approach the source of electric supply, additional circuits between the main-conductor and working-conductor sections, and switches in said additional circuits.

17. In an electric railway, a main conductor and a sectional working-conductor, in combination with permanent electrical connections between the main-conductor and working-conductor sections, additional circuits between the main-conductor and working-conductor sections, and electro-magnetic switches in said additional circuits.

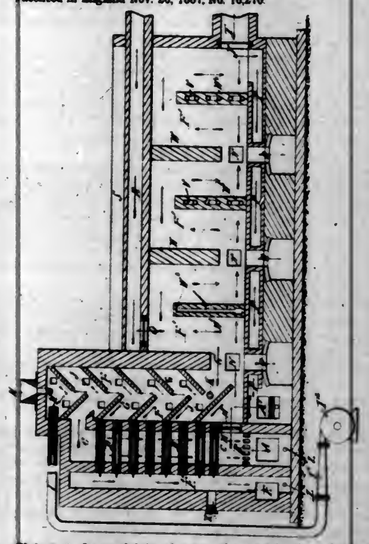
18. The combination of two main conductors with two lines of sectional working-conductors, electrical connections between said main-line conductors, respectively, with one of said lines of sectional working-conductors, a circuit-controlling switch in said connecting-circuits with one of said line of working-conductors, an electro-magnet to operate said switch, and a circuit connecting said main conductors and including the electro-magnet.

19. The combination of a main or supply conductor, a sectional working-conductor therefor, a return-circuit, a source of electric supply connecting with the main conductor and return-circuit, an electrically-propelled vehicle receiving current from the working-conductor and return-circuit, connecting-circuits between the main conductor and sections of working-conductor, and electro-magnetic switches in parallel connection with the motors on the electrically-propelled vehicles for controlling the current to the sectional working-conductor.

20. The combination of positive and negative conductor arranged along a railway, electrically-actuated cars therefor receiving current from said conductors, a supply-conductor, and electro-magnetic devices in parallel with the motor on the car and controlled by the passage of the car to connect the positive conductor with the supply-conductor to increase the current passing to the car.

21. In an electric railway, the combination of electric conductors extending along the line of the railway, traveling electrically-propelled vehicles receiving current from said conductors, two or more stationary electric generators for supplying electric current to the electric conductors, switches and circuits for coupling said generators in series or multiple with respect to each other and at all times maintain them in series with the electric conductors extending along the railway, and the electrically-propelled vehicles receiving current therefrom, and resistances located close to the generators and adapted to be thrown into and out of circuit to compensate for variation in the current passing to the conductors of the railway.

414,051. FURNACE FOR CALCINING ORES. HENRY HUTCHINSON, London, England. Filed Mar. 16, 1889. Serial No. 303,535. (No model.) Patented in England Nov. 26, 1887, No. 16,270.



Claim.—1. In a calcining-furnace, the combination of a vertical calcining-chamber, a vertical heating-chamber communicating at its upper end with the upper part of said calcining-chamber, gas and air inlet ports arranged at the lower end of said heating-chamber, and air-conduits located in said air-heating chamber and arranged to deliver heated air to said calcining-chamber, substantially as herein described.

2. In a calcining-furnace, the combination of a vertical calcining-chamber, a vertical heating-chamber communicating at its upper end with the upper part of said calcining-chamber, gas and air inlet ports arranged at the lower end of said heating-chamber, a vertical air-chamber, and a series of air-conduits arranged to traverse said heating-chamber, so as to be heated by the combustion of gaseous fuel therein, and each in communication at one end with said air-chamber and at the other end with the interior of said calcining-chamber, substantially as herein described, for the purposes set forth.

3. In a calcining-furnace, the combination of a vertical calcining-chamber provided with a series of inclined surfaces or shelves, a vertical heating-chamber communicating at its upper end only with said calcining-chamber, gas and air inlet ports located at the lower part of said heating-chamber, a series of air-conduits traversing said heating-chamber and each in communication at one end with said calcining-chamber and at the other with an air-supply, and an inlet for ore or other substance, located at the upper part of said calcining-chamber, substantially as herein described, for the purposes set forth.

4. In a calcining-furnace, the combination of a vertical calcining-chamber provided with a series of inclined surfaces or shelves, a vertical heating-chamber connected at its upper part with the upper part of said calcining chamber, gas and air inlet ports located at the lower part of said heating-chamber, a series of air-conduits traversing said heating-chamber and in communication with said calcining-chamber, and a settling-chamber in communication with the lower end of said calcining-chamber, substantially as herein described, for the purposes set forth.

5. In a calcining-furnace, the combination of a vertical calcining-chamber, an air-heating chamber in communication with the upper end of said calcining-chamber, a settling-chamber in communication with the lower end of said calcining-chamber, a flue located above and arranged to be placed in communication with said settling-chamber, a valve or door for controlling the communication between said flue and settling-chamber, and a drying-floor located above said flue, substantially as hereinabove described, for the purposes set forth.

6. In a calcining-furnace, the combination of a calcining-chamber, an air-heating chamber in communication with the upper end thereof, a settling-chamber in communication with the lower end of said calcining-chamber, a flue located below the floor of said settling-chamber, and a combustion-chamber in communication with said flue, for the purpose set forth.

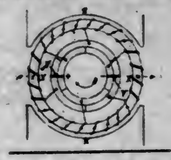
7. In a calcining-furnace, the combination of a vertical calcining-chamber having an inlet at its upper part for material to be treated, a heating-chamber in communication with the upper end of said calcining-chamber, gas and air inlet ports at the lower end of said heating-chamber, air-conduits traversing said heating-chamber and arranged to deliver heated air into said calcining-chamber, a settling-chamber in communication with the lower part of said calcining-chamber, a passage connecting the lower part of said calcining-chamber with said heating-chamber, and a valve or damper for controlling said passage, substantially as herein described, for the purpose set forth.

8. In a calcining-furnace, the combination of a vertical calcining-chamber provided with a series of inclined surfaces or shelves and with an inlet at its upper part for material to be treated, a vertical heating-chamber communicating at its upper end with said calcining-chamber, inlet-ports arranged to deliver air and combustible gas into the lower part of said heating-chamber, a series of air-conduits traversing said heating-chamber and communicating with said calcining-chamber, and a pipe or passage arranged at the lower part of said calcining-chamber for the introduction of common salt to the lower part of said calcining-chamber.

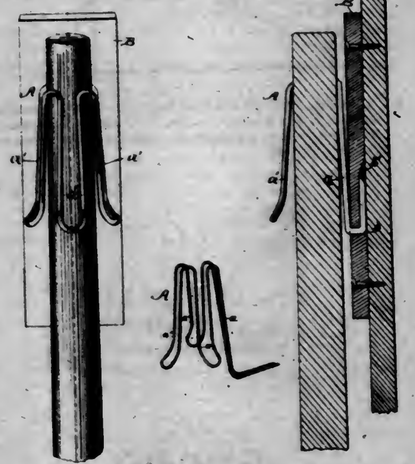
9. In a calcining-furnace, the combination of a vertical calcining-chamber provided with a series of inclined surfaces or shelves and with an inlet at its upper part for material to be treated, a vertical heating-chamber in free communication at its upper end with the upper end of said calcining-chamber, a passage located between the lower ends of said calcining and heating chambers, a valve that normally closes said passage, a series of horizontal air-conduits traversing said heating-chamber and each in communication at one end with an air-chamber and at the other end with the calcining-chamber, ports for admission of air and combustible gas to the lower end of said heating-chamber, a settling-chamber in communication with the lower end of said calcining-chamber, and provided with walls or divisions extending alternately from the floor and roof of said settling-chamber, a flue located above said settling-chamber and arranged to be placed in communication therewith, a valve for controlling said communication, a drying-floor located above said flue, a lower flue located below said settling-chamber, and a combustion-chamber in communication with said lower flue, all substantially as herein described, for the purposes specified.

414,052. METHOD OF REGULATING ELECTRIC MOTORS. MORITZ IMMISCH, London, County of Middlesex, England. Filed Feb. 2, 1888. Serial No. 262,718. (No model.) Patented in England Mar. 2, 1886, No. 2,956; in France Mar. 24, 1886, No. 174,996; in Belgium Mar. 26, 1886, No. 72,496; in Canada Feb. 17, 1887, No. 26,080; in Victoria Feb. 18, 1887, No. 4,867; in New Zealand May 26, 1887, No. 2,354, and in India June 14, 1887, No. 37.

Claim.—The method herein described of operating electric motors with constant load, which consists in short-circuiting opposite armature-coils successively and maintaining a continuous operative electrical connection between the terminals thereof during the entire time said coils are passing at the neutral zone through an arc equal to the length of one coil-section of the armature, whereby as the positions of the polar points of the field-magnets change with varying load and speed the short-circuited coils will themselves generate currents acting to correct distortion of the field of force, substantially as described.



414,053. HOLDER FOR BROOMS, &c. HORACE D. JOHN, Germany, Ohio, assignor of one-half to Peter Brubaker, same place. Filed July 31, 1889. Serial No. 319,337. (No model.)



Claim.—A new article of manufacture consisting in a single length of flexible wire bent into the particular shape herein figured and described, so as to form an inverted socket A, having a straight back a and three clasps *a'*, said clasps being flared at their lower ends, the whole constructed and arranged for the purpose of receiving and securely holding any straight-handled implement, as hereinbefore set forth.

414,054. PENDANT-SET WATCH. ABOU B. KEHFORT, Reading, Pa., assignor of two-thirds to Gustavus A. Schlechter and James M. Burkhart, both of same place. Filed Feb. 23, 1889. Serial No. 301,465. (No model.)



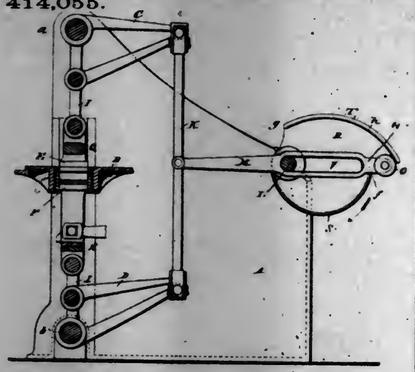
Claim.—A stem winding and setting watch having an axially-moving pendant-knob, substantially as described, and a pendant-bow with chain-eye F, and a bar G, arranged to engage said knob, substantially as and for the purpose set forth.

414,055. BRICK-MACHINE. LEWIS B. KENNEDY, St. Louis, Mo., assignor to the Kennedy Dry Press Brick Machine Manufacturing Company, Pueblo, Colo. Filed Sept. 5, 1888. Serial No. 283,994. (No model.)

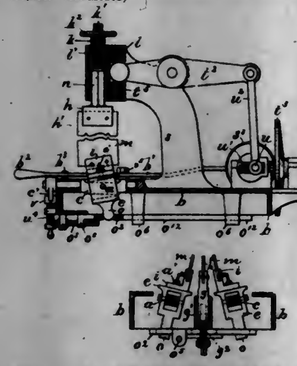
Claim.—1. In a brick-machine of the character described, the compression-plungers attached to the bell-crank levers by means of links, said levers being connected at their outer ends by toggle-levers operated from a continuously-rotated shaft, as set forth.

2. In a brick-machine, the angle or bell-crank levers C and D, pivoted in the sides of the machine, said levers being connected to the plungers by means of links which yield in opposite directions, the outer ends of the angle or bell-crank levers operated from a continuously-revolving shaft.

414,055.



414,056. CURVED-MOLDING MACHINE. ARBON O. KITTREDGE, Slate Hill, N. Y., and THOMAS S. CRANE, East Orange, N. J., assignors to the Vulcan Company, of Pennsylvania. Filed Feb. 6, 1889. Serial No. 299,796. (No model.)



Claim.—1. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of lateral bending-dies connected together and adapted to be moved simultaneously upon opposite sides of the crimping-dies, substantially as set forth.

2. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of lateral bending-dies provided with movable carriers, and a connection between said carriers for moving the lateral dies simultaneously, substantially as set forth.

3. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of lateral bending-dies provided with carriers supported each upon two pivots and thereby adapted to rock in two different directions, and a connection between said carriers for rocking them simultaneously, substantially as set forth.

4. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of lateral bending-dies provided with carriers supported each upon two pivots and thereby adapted to rock in two different directions, die-holders adjustable laterally upon the said carriers, and a connection between said carriers for rocking them simultaneously.

5. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of lateral bending-dies connected together and adapted to be moved simultaneously, and means, substantially as described, for adjusting the crimping-dies toward one another, as and for the purpose set forth.

6. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of lateral bending-dies connected together and adapted to be moved simultaneously, means for adjusting the crimping-dies toward one another to vary the pressure upon the sheet metal, and means for vertically adjusting the stationary crimping-die in relation to the lateral bending-dies to vary the curvature of the sheet metal, substantially as herein set forth.

7. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of lateral bending-dies connected together and adapted to be moved simultaneously, and means, substantially as described, for adjusting the crimping-dies toward one another while in operation.

8. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of lateral bending-dies connected together and adapted to be moved simultaneously, a vibrating carrier for the movable crimping-die, and a die-holder fitted adjustably upon said carrier and movable thereon while in operation.

9. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of lateral bending-dies connected together and adapted to be moved simultaneously, a sliding carrier for the movable crimping-die, a movable die-holder fitted to a socket therein, and a screw movable with the carrier and adapted to adjust the holder and die upon the carrier, as and for the purpose set forth.

10. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of lateral bending-dies connected together and adapted to be moved simultaneously, a bed supporting the fixed dies and carrying the driving mechanism, a goose-neck column sustaining a movable carrier for the movable crimping-die, means for reciprocating the carrier upon the goose-neck, and a die-holder adjustable upon the carrier, as and for the purpose set forth.

11. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of a frame sustaining the fixed die removably, a pivoted bar mounted at each side of the fixed die, and a rocking carrier pivoted upon each bar and thereby adapted to rock longitudinally and transversely to the bar, as and for the purpose set forth.

12. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of a frame sustaining the fixed die removably, a pivoted bar mounted at each side of the fixed die, a rocking carrier pivoted upon each bar, a connection between the carriers to rock them simultaneously, and die-holders adjustable upon the carriers, substantially as set forth.

13. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of a frame sustaining the fixed die removably, a pivoted bar mounted at each side of the fixed die, a rocking carrier pivoted upon each bar, a connection between the carriers to rock them simultaneously, and a connection between the bars to rotate them in opposite directions, as and for the purpose set forth.

14. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of a frame sustaining the fixed die removably, a pivoted bar mounted at each side of the fixed die, a rocking carrier pivoted upon each bar, tail-pieces upon the carriers, an adjustable guide slotted to receive the tail-pieces, and toothed segments fitted to the pivoted bars and connected to rotate them in opposite directions, as and for the purpose set forth.

15. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of a frame sustaining the fixed die removably, a pivoted bar mounted at each side of the fixed die, a rocking carrier pivoted upon each bar, tail-pieces upon the carriers, an adjustable guide slotted to receive the tail-pieces, toothed segments fitted to the pivoted bars and connected to rotate them in opposite directions, and means for moving one or both of the segments to rock the lateral dies in opposite directions, as and for the purpose set forth.

16. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of a frame sustaining the fixed die removably, a pivoted bar mounted at each side of the fixed die, a rocking carrier pivoted upon each bar, tail-pieces upon the carriers, an adjustable guide slotted to receive the tail-pieces, toothed segments fitted to the pivoted bars and connected to rotate them in opposite directions, and means for clamping one or both of the bars when adjusted, as and for the purpose set forth.

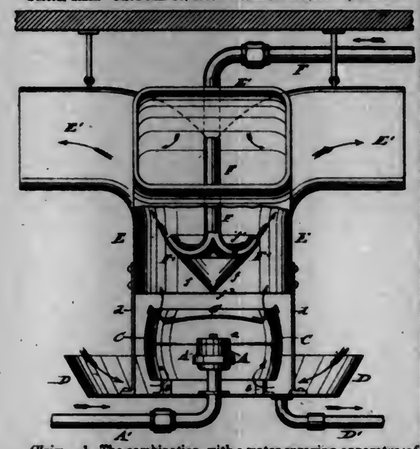
17. In a sheet-metal-molding machine, the combination, with fixed and movable crimping-dies, of pivoted carriers arranged at opposite sides of the fixed crimping-die, and holders for lateral dies fitted to seats upon said carriers and movable to and from the crimping-die and rotary upon the said seats to set them at an angle with the crimping-die.

18. In a sheet-metal-molding machine, the combination, with fixed and movable crimping-dies, of pivoted carriers arranged at opposite sides of the fixed crimping-die, lateral die-holders provided each with a fulcrum-pin upon its under side and a slot in its foot, a groove in each carrier transverse to the fixed crimping-die to receive the fulcrum-pin, and a bolt and nut fitted to the groove and slot and operated to clamp the holder upon the carrier, as and for the purpose set forth.

19. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of lateral bending-dies connected together and adapted to be moved simultaneously, a bed supporting the fixed dies, a rotary driving-disk supported upon said bed, mechanism for vibrating the movable crimping-die, a friction-wheel for driving said mechanism, and a hand-lever for moving said friction-wheel to and from the center of the driving-disk while in operation to vary the speed of the movable die, substantially as herein set forth.

20. In a sheet-metal-molding machine, the combination, with movable and fixed crimping-dies, of lateral bending-dies connected together and adapted to be moved simultaneously, a bed supporting the fixed dies, a rotary driving-disk supported upon said bed, adjustable mechanism for vibrating the movable crimping-die with a variable stroke, a friction-wheel for driving said mechanism, and a hand-lever for moving said friction-wheel to and from the center of the driving-disk while in operation to vary the speed of the movable die, substantially as herein set forth.

414,057. APPARATUS FOR MOISTENING AIR. EMILE KLAESS, Boston, Mass. Filed Jan. 16, 1889. Serial No. 296,569. (No model.)



Claim.—1. The combination, with a water-spraying apparatus, of an annular concavo-convex air-nozzle located above the spraying apparatus, an air-supply pipe connecting the center of the nozzle with a suitable air-forcing apparatus, and an inverted cone attached to the under side of the nozzle, substantially as set forth.

2. The combination, with a water-spraying apparatus, of an annular air-supply nozzle the mouth of which is located above the spraying apparatus, an air-supply pipe connecting said annular air-nozzle with a suitable air-forcing apparatus, and an air-flue encircling said nozzle and provided with discharge-nozzles, substantially as set forth.

3. The combination of a water-spraying apparatus formed of a spray-nozzle having radial jet-openings, a dispersion-vessel surrounding said nozzle, a drip-pan below said spray-nozzle, an annular air-supply nozzle the mouth of which is located above the water-spraying-device, an air-supply tube connecting said nozzle with a suitable air-forcing apparatus, and an air-flue surrounding said air-supply nozzle and provided with discharge-nozzles, substantially as set forth.

4. The combination, with a water-spraying apparatus, of an annular concavo-convex air-nozzle located above the spraying apparatus, an air-supply pipe connecting the center of the nozzle with a suitable air-forcing apparatus, a drip-collecting cone attached to the under side of the nozzle and provided with a discharge-opening in its apex, and a drip-pipe passing through the lowest part of the nozzle, substantially as set forth.

414,058. POCKET-LAMP. ELIAS B. KOOPMAN, New York, N. Y. Filed Apr. 24, 1889. Serial No. 308,356. (No model.)



Claim.—1. In a lighting device, a light-producing apparatus, combined with an automatically-revoluble carrier and a removable disk provided with drops or bits of explosive material and applied to said carrier, and a scratcher against which the explosive material is forced and by which it is ignited as the carrier is revolved, substantially as described.

2. In a lighting device, a light-producing apparatus, combined with a rotary carrier provided with teeth, a disk of ignitible pellets applied thereto, a spring-pawl to engage said teeth on the carrier and rotate it tooth by tooth to ignite successive pellets, and a scratcher, substantially as described.

3. In a lighting device, a light-producing apparatus, a case containing it, and a spring arranged in and fastened to said case and having one end formed as a pawl and provided with a button to move it, combined with a rotary fulminate-carrier arranged in said case and constructed with ratchet-teeth adapted to be engaged by said pawl, a disk of ignitible pellets applied to said carrier, and a scratcher, substantially as described.

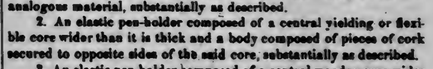
4. In a lighting device, a light-producing apparatus, a case containing it, and a spring arranged in and fastened to said case and having one end formed as a pawl and provided with a button to move it, combined with a rotary fulminate-carrier arranged in said case and constructed with ratchet-teeth adapted to be engaged by said pawl, a disk of ignitible pellets applied to said carrier, a projection from the spring to dog said carrier by engagement with its teeth, and a scratcher, substantially as described.

5. In a lighting device, the lamp proper, a case containing it, a cover hinged to said case, a rotary fulminate-carrier provided with ratchet-teeth, a disk of ignitible pellets applied to said carrier, and a scratcher, combined with a spring having one end formed as a pawl to engage the ratchet-teeth of the carrier to rotate it, and also constructed with a detent for the carrier, and also having its other end in engagement with the cover to throw it open as the pawl is actuated to rotate the carrier, substantially as described.

6. A lighting device composed of a case, a hinged side containing the lamp proper, and a scratcher thereon, a rotary toothed fulminate-carrier, a fulminate-disk applied to said carrier, a cover for the case, and a spring comprising a pawl and a detent for the carrier, and a cover-opener, substantially as described.

7. In a lighting device, a light-producing apparatus, combined with a carrier adapted to receive a removable disk of ignitible pellets and provided with a ratchet, a pawl to engage the said ratchet to move it and the carrier tooth by tooth, a detent for the ratchet, and a scratcher against which the ignitible pellets are forced and by which they are ignited as the carrier is revolved, substantially as described.

414,059. CORK-WOOD PEN-HOLDER. FREDERICK M. LIBBY, Portland, Me. Filed Oct. 29, 1888. Serial No. 289,404. (No model.)

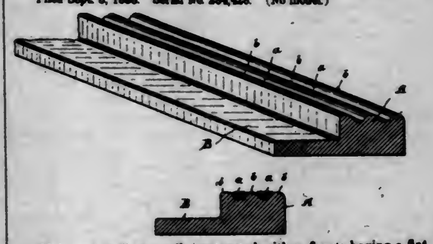


Claim.—1. An elastic pen-holder composed of a central yielding or flexible core made wider than it is thick and a body of cork or analogous material, substantially as described.

2. An elastic pen-holder composed of a central yielding or flexible core wider than it is thick and a body composed of pieces of cork secured to opposite sides of the said core, substantially as described.

3. An elastic pen-holder composed of a central wooden core wider than it is thick and a body composed of pieces of cork secured to opposite sides of the said core, substantially as described.

414,060. STREET-RAILROAD. HOSEA W. LIBBEY, Boston, Mass. Filed Sept. 3, 1888. Serial No. 284,423. (No model.)



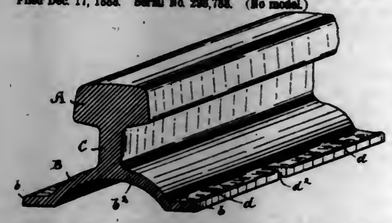
Claim.—A railway-rail constructed with a flange having a flat upper surface and a tread projecting therefrom, the upper surface of said tread having continuous longitudinal grooves and projections extending the whole length of the rail, substantially as and for the purposes set forth.

414,061. RAIL FOR STREET-RAILWAYS. HOSEA W. LIBBEY, Boston, Mass. Filed Sept. 3, 1888. Serial No. 284,629. (No model.)



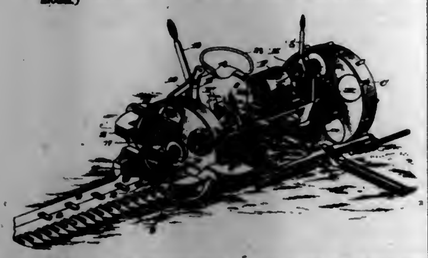
Claim.—A railway-rail constructed with a flange having a series of semi-spherical projections and a tread projecting therefrom, the upper surface of the tread being above the semi-spherical projections to allow the flange of the car to pass over them, substantially as shown and described.

414,062. RAILROAD-RAIL. HOSEA W. LIBBEY, Boston, Mass. Filed Dec. 17, 1888. Serial No. 293,788. (No model.)



Claim.—A railroad-rail consisting of a head and a lower flange arched in the center and flat at its outer edges, said flat edges being provided with oblong holes or slots, substantially as shown and described.

414,063. MOWING-MACHINE. PHILIP LORENZ and LEWIS P. LORENZ, Rimersburg, Pa. Filed May 16, 1889. Serial No. 310,951. (No model.)



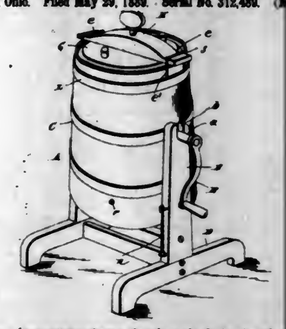
Claim.—1. The combination of the axle having the tubular spindle, a bracket mounted longitudinally in the line of motion of the machine upon said axle, the adjusting-frame pivoted to the rear end of said bracket and having a shoe at its lower end, mechanism for adjusting the front end of said frame, the cutting apparatus hinged in said shoe, mechanism for raising said cutting apparatus and retaining it in an approximately horizontal position, and a pitman arranged in the tubular spindle and connected with the reciprocating cutter-bar, substantially as herein set forth.

2. In a mowing-machine, the combination of the axle having a tubular spindle at one end, the horizontal bracket mounted upon said axle, the adjusting-frame connected pivotally with the rear end of said bracket, means for adjusting the front end of said frame vertically, the cutting apparatus mounted pivotally in a shoe at the lower end of said adjusting-frame, mechanism for raising the said cutting apparatus to and retaining it in an approximately vertical position, a transversely-reciprocating pitman having a bearing in the tubular spindle of the axle, mechanism for transmitting motion to said pitman from the driving-wheel of the machine, and a link connecting the outer end of said pitman with the transversely-reciprocating cutter-bar, substantially as and for the purpose herein set forth.

3. In a mowing-machine, the combination, with the axle having a tubular spindle, of the longitudinal bracket mounted upon the said axle, the adjusting-frame connected pivotally to the rear end of said bracket and having at its front end an arm extending laterally through a segmental slot in the front end of the said bracket, a lever connected pivotally to the inner side of the said bracket and having a spring-latch engaging with a segmental rack formed upon the said bracket, a link connecting said lever pivotally with the arm extending from the adjusting-frame, a shoe formed at the lower end of the latter, the cutting apparatus mounted pivotally in the said shoe, and a link connecting the transversely-reciprocating cutter-bar with an arm extending downwardly from the outer end of a pitman arranged to reciprocate in the tubular spindle of the axle, and mechanism for transmitting motion to the said pitman from the driving-wheel of the machine, substantially as and for the purpose set forth.

4. In a mowing-machine, the combination of the axle having a tubular spindle at one end, a bracket mounted longitudinally upon the said axle, the adjusting-frame connected pivotally to the rear end of said bracket, mechanism for adjusting the front end of said frame vertically, the cutting apparatus mounted pivotally in a shoe in the lower end of said adjusting-frame, a link connecting the cutter-bar with a pitman arranged to reciprocate in the tubular spindle of the axle, means for transmitting motion to said pitman from the driving-wheel of the machine, a standard rising vertically from the axle, a bell-crank lever at the upper end of said standard, a link connecting one arm of said bell-crank with the finger-bar of the cutting apparatus, a hand-lever connected pivotally to the standard and adapted to engage a series of teeth or ratchets formed thereon, and a link connecting said hand-lever with the vertical arm of the said bell-crank, all constructed and operating substantially in the manner and for the purpose herein shown and specified.

414,064. CHURN. HARRY H. LOTH and CHRISTIAN ZIMMER, Wapakoneta, Ohio. Filed May 29, 1889. Serial No. 312,469. (No model.)



Claim.—In a rotary churn, the churn-body having the perforated hoop C, located about midway of the length of the churn-body, and the journals *a*, having heads *c* and projecting through the perforations in said hoop, the heads *c*, resting between the churn-body and the hoop, whereby they are securely bound to the churn when the hoop is driven to its seat, substantially as set forth.

414,065. FOLDING TABLE. HENRY A. LOFT, New York, N. Y. Filed Feb. 28, 1889. Serial No. 301,502. (No model.)



Claim.—1. The combination of the leg-frame having a top shelf, the table-top composed of jointed side sections and a central section hinged, adjacent to the middle of its length, to the top shelf and adapted to abut the leg-frame when turned to a vertical position, and adjustable brackets adapted to rest against the leg-frame to support the side sections in a horizontal position and movable to a position upon the upper side of the top shelf to bear directly against the central section and thereby brace the latter in a vertical position, substantially as described.

2. A table consisting of a leg-frame having a series of shelves arranged one above the other, a table-top composed of jointed side sections and a central section hinged, adjacent to the middle of its length, to the edge of the top shelf, and two side brackets hinged, respectively, to opposite edges of the top shelf and adapted to rest against the leg-frame to support the side sections in a horizontal position and to swing into a position upon the upper side of the top shelf and bear directly against the central section to brace the latter in a vertical position, substantially as described.

414,066. MACHINE FOR FILLING THE TICKS OF MATTRESSES. GEORGE LYON, Chicago, Ill. Filed Mar. 14, 1889. Serial No. 303,205. (No model.)



Claim.—1. In a mattress-machine, the combination, with the frame and the nozzle, of a movable bed, a follower, a series of slats adapted to rest upon the material on the bed, a rock-shaft, to which said slats are secured, and hand mechanism for operating said shaft, and by which they are alone operated, substantially as set forth.

2. In a mattress-machine, the combination, with the frame and the nozzle, of the movable bed, the follower, a rock-shaft, a series of slats all separately and removably attached to said rock-shaft, and hand mechanism for turning said shaft and thereby moving said slats, and by which they are alone operated, substantially as set forth.

3. In a mattress-machine, the combination, with the frame and the nozzle, of a movable bed, a follower, a non-circular rock-shaft, and slats, each slotted at one end and slipped onto said rock-shaft, whereby it may be separately removed and replaced, substantially as set forth.

4. In a mattress-machine, the combination, with the frame and the nozzle, of a bed, a follower, the slats 41, the rock-shaft 37, to which said slats are secured, the segment 38 on said rock-shaft, the pinion 39, gearing with said segment, and the crank 40, substantially as set forth.

5. In a mattress-machine, the combination, with the frame and the nozzle, of the movable bed consisting of a belt, and a follower actuated by said belt, said bed and follower co-operating to expel the filling material from the nozzle, substantially as set forth.

6. In a mattress-machine, the combination, with the frame and the nozzle, of a movable bed consisting of a belt, and a follower removably attached to said belt, substantially as set forth.

7. In a mattress-machine, the combination, with the frame and the nozzle, of a movable bed, and a follower actuated by said bed, said follower being sufficient in length to extend to the outer end of the nozzle when it has reached the limit of its movement, whereby the last bit of the charge of filling material is discharged from said nozzle, substantially as set forth.

8. In a mattress-machine, the combination, with the frame and the nozzle, of an endless belt constituting a movable bed, a follower attached to said belt, and slats adapted to rest upon the material on the bed, substantially as set forth.

9. In a mattress-machine, the combination with the frame and the nozzle, of an endless belt constituting a movable bed, a follower attached to said belt, slats adapted to rest upon the material on the bed, and the feed-roller 20, substantially as set forth.

10. In a mattress-machine, the combination, with the frame and the nozzle, of the rollers 2 and 3, a belt embracing them, a chain to which said belt is secured, and a follower attached to said chain, substantially as set forth.

11. In a mattress-machine, the combination, with the frame and the nozzle, of the rollers 2 and 3, the belt embracing them, the sprocket-wheels 4 4, the chains 7 7, embracing said wheels and to which said belt is secured, and the follower attached to said chains, substantially as set forth.

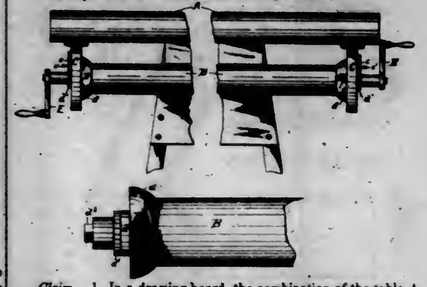
12. In a mattress-machine, the combination, with the frame and the nozzle, of the rollers 2 and 3, the belt embracing them, the sprocket-wheels 4 4 and 5, the chains 7 7 and 8, embracing said wheels and to which said belt is secured, and the follower attached to said chains, substantially as set forth.

13. In a mattress-machine, the combination, with the frame and the nozzle, of the rollers 2 and 3, the belt embracing them, the chains having lips to which said belt is secured, and the follower actuated thereby, substantially as set forth.

14. In a mattress-machine, the combination, with the frame and the nozzle, of the movable bed, the follower, and the angle-iron 19, situated between the bed and nozzle, substantially as set forth.

15. In a mattress-machine, the combination, with the frame, the nozzle, and an endless belt constituting the bed, of an adjustable side board, arms to which it is secured, and slides to which said arms are secured, said slides extending inward across the machine and between the two laps of the belt, substantially as set forth.

414,067. DRAWING-BOARD. JOHN L. MOORE, Washington, D. C. Filed Sept. 16, 1889. Serial No. 324,119. (No model.)

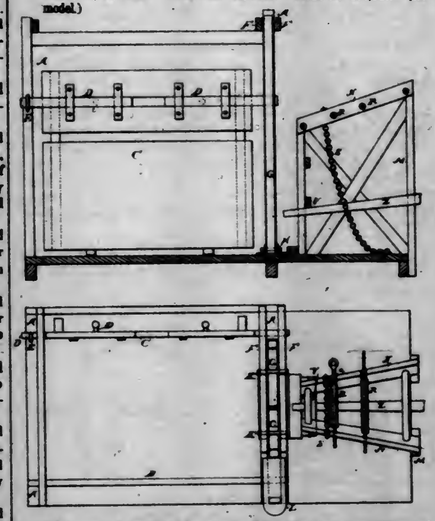


Claim.—1. In a drawing-board, the combination of the table A, bearing-plates C, having a pawl *c*, and the rollers B B', having ratchet *d'* on their end, substantially as set forth.

2. In a drawing-board, the combination of the table A, bearing-plates C, having a pawl *c*, and the rollers B B', revolving in said bearing-plates and having a cap D, provided with a shoulder *d*, ratchet *d'*, and projecting end d^3, substantially as set forth.

3. In a drawing-board, the combination of the table A, bearing-plates C, having a pawl *c*, rollers B B', having a cap D, provided with a shoulder *d*, which abuts against the inner side of the bearing-plate, a ratchet *d'*, projecting through and beyond the bearing-plate, and a squared projecting end d^3, and the key E, substantially as shown and described.

414,068. CHUTE FOR DEHORNING CATTLE. JAMES MOORE-HOUSE, Clyde, Kans. Filed Jan. 28, 1889. Serial No. 297,847. (No model.)



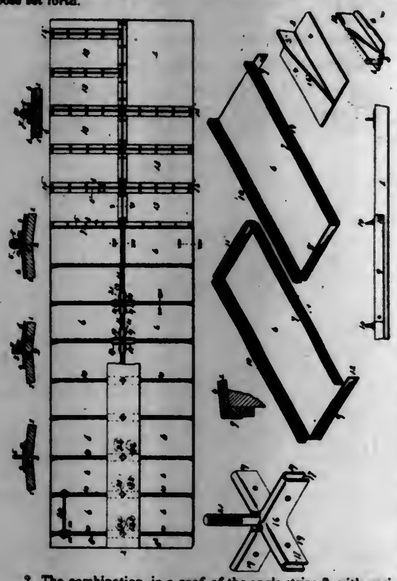
Claim.—1. A head-holding device for cattle chutes, consisting of the inclined flaring cheek-boards supported upon a frame and having perforations, the adjustable rest-rods, the fulcrum-bearings, lever, and chain, substantially as specified.

2. The combination, with the cattle-chute having the hinged folding side gate and the pivoted upwardly-extending neck-bars, of the head-holding frame, the inclined flaring cheek-bars supported thereon, and the adjustable rest-rods, substantially as specified.

3. The combination, with a cattle-chute having a side gate and pivoted neck-bars, of a head-holding receiver, its rest-rods, chain, and lever-bar, substantially as specified.

414,069. CAR-ROOF. PETER H. MURPHY, East St. Louis, Ill. Filed Aug. 3, 1889. Serial No. 319,684. (No model.)

Claim.—1. The combination, in a roof, of the angle-strips 3, adapted to be secured to the sheeting 1 and having a flange 5, and the plates 6, having flanges 7 and 10, substantially as and for the purpose set forth.



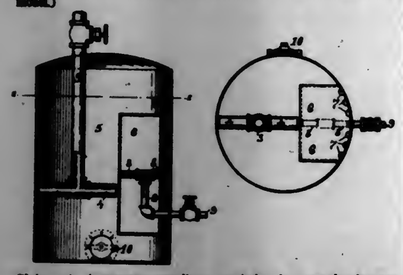
2. The combination, in a roof, of the angle-strips 3, with upright flanges 5, and the plates 6, having flanges 7, 8, 10, and 11, adapted for attachment to the angle-strips, substantially as set forth.

3. The combination, in a car-roof, of the angle-strips 3, the plates 6, having the flanges 7, 8, 10, and 11, and the corner-caps 16, all constructed and adapted to each other substantially as set forth.

4. The combination, in a roof, of the angle-strips 3, adapted for attachment to sheeting 1, and the plates 6, having marginal flanges adapted for engagement with the angle-strips, substantially as set forth.

5. The combination, in a car-roof, of the angle-strips 3, adapted for attachment to the sheeting 1, the plates 6, with marginal flanges adapted for engagement with the strips 3, and the corner-caps 16, having the studs 21, for engagement with the walk-sleepers, substantially as set forth.

414,070. PRESSURE-EQUALIZER FOR GAS-MAINS. PATRICK MCGEE, Providence, R. I. Filed July 1, 1889. Serial No. 316,181. (No model.)



Claim.—1. A pressure-equalizer consisting in a supply-pipe provided with lateral outlets opening into a large chamber, a smaller chamber connected with the larger by a series of openings, and a discharge-pipe having lateral openings in the small chamber, as described.

2. In a pressure-equalizer placed intermediate between a gas-engine and the gas-supply pipe, the combination, with the pipe 3, provided with the lateral outlets 4 4 and the chamber 5, of the chamber 6, provided with the openings 7, and the pipe 9, having the lateral inlets 8, as described.

3. The combination, with the chamber 5, of the pipe 3 and lateral outlets 4, constructed to discharge the gas radially, the chamber 6, provided with the openings 7, and the pipe 9, having the lateral inlets constructed or placed so as to receive the gas through an annular opening at their ends, as described.

414,071. FASTENER FOR ENVELOPES. GEORGE W. MCGILL, Riverdale, N. Y. Filed June 22, 1889. Serial No. 315,174. (No model.)



Claim.—The duplex-pronged fastener herein described, consisting of two pairs of prongs projecting in the same direction from one side of a head composed of two superposed layers formed integral and the prongs of each pair respectively in close parallel contact, each layer of the head carrying a pair of the prongs, substantially as described.

414,072. FASTENER FOR ENVELOPES. GEORGE W. MCGILL, Riverdale, N. Y. Filed June 22, 1889. Serial No. 315,175. (No model.)



Claim.—The duplex fastener herein described, having two pairs of vertical prongs extending, respectively, from the opposite ends of a head composed of a strip of metal folded into two superposed layers, said head adapted to rest upon and parallel to the surface of the paper or other material to be secured and constituting a limiting abutment to the passage of both pairs of prongs laterally through the paper or other material, each pair of prongs adapted to be folded down, respectively, in planes parallel with the fastener-head, substantially as shown and specified.

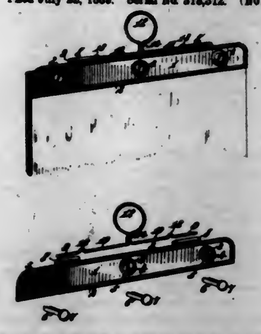
414,073. FASTENER FOR ENVELOPES, &c. GEORGE W. MCGILL, Riverdale, N. Y. Filed June 22, 1889. Serial No. 315,176. (No model.)



Claim.—1. The fastening device herein described and shown, consisting of two duplex-pronged T-shaped fasteners having their heads formed integral with each other and placed back to back with the duplex prongs extending in reverse directions, and each pair of prongs adapted to be spread laterally to secure papers or other articles, substantially as set forth.

2. A fastening device consisting of two duplex-pronged T-shaped fasteners formed integral with a longitudinally-folded portion forming two heads placed back to back with the duplex prongs of one head extending in a direction opposite to the duplex prongs of the other head and both pairs of prongs adapted to be spread laterally, substantially as described.

414,074. SUSPENDING DEVICE. GEORGE W. MCGILL, Riverdale, N. Y. Filed July 22, 1889. Serial No. 318,312. (No model.)



Claim.—1. A suspending device consisting of a plate having a suspension ring or loop and a series of orifices or slots between its edges, and detachable duplex-pronged fasteners to pass through the article to be suspended and be spread laterally in opposite directions in the plane of the plate, substantially as described.

2. A suspending device consisting of a plate having a suspension ring or loop and formed with the annular beads 3, and seats 4, having orifices or slots 5, and detachable duplex-pronged fasteners having heads adapted to said seats, substantially as described.

3. A suspending device consisting of a plate having tubular portions and fasteners for securing the article to be suspended, and a hinged suspension ring or loop comprising a twisted neck or shank, and two arms respectively engaging the tubular portions, substantially as described.

4. A suspending device consisting of a plate having a series of orifices or slots and a pair of tubular portions, the duplex-pronged fasteners having heads and adapted to be removed and replaced, and a ring or loop having two arms extending along the plate, journaled in the tubular portions, and having shoulders to respectively bear against the latter and prevent undue lengthwise movement of the arms, substantially as described.

414,075. DEVICE FOR BRANDING CIGARS. IRVING PAINE, Hornellsville, N. Y. Filed Dec. 26, 1882. Serial No. 204,664. (No model.)



Claim.—1. In a device of the class described, the combination of two hinged sections, the lower one being provided with an adjustable die and the upper with a cigar-receiving opening or mold and adapted to press a cigar against the die, substantially as specified.

2. In a device of the class described, the combination of an upper and lower section, the latter provided with a die and a superimposed slotted spring and the former having a cigar-receiving mold and being adapted to press the cigar against the die, substantially as specified.

3. In a device of the class described, opposite hinged sections, one of which is provided with a die and a fixed knife and the other of which is designed to receive and press a cigar against the die, and is provided with a movable knife adapted to act with the fixed knife when the sections are closed, substantially as specified.

4. In a device of the class described, the combination, with a lower section having an opening and opposite longitudinal bores, of a die arranged in the opening and adjusting-rods arranged in the bores and adapted to adjustably support the die, substantially as specified.

5. In a device of the class described, the combination, with two hinged sections, one of which carries a die, of a superimposed spring slotted for the passage of the die and provided with a thimble adapted to receive the tack end of a cigar and compress or tack the same, substantially as specified.

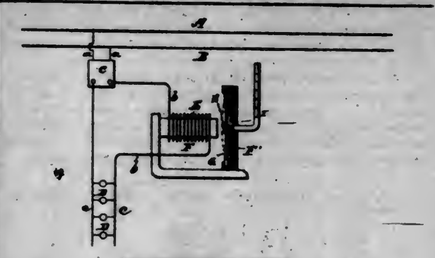
6. In a device of the class described, the combination, with two hinged sections, one of which carries a die, of a superimposed spring slotted for the passage of the die and provided with a slotted overlapping thimble adapted to receive the tack end of a cigar and be compressed by the weight of the upper section, substantially as specified.

7. The bottom section 1, having the mold 5, in combination with the lower section 2, having the die 7, and the spring 17, bent at its ends, as at 18, and having the slot 19, substantially as specified.

8. The sections 1 and 2, the latter recessed, as at 6 and 9, in combination with the die 7, having the inclined walls 8, the intermediate depending stem 7×, mounted in the recess 6, and the opposite adjusting-rods 10, mounted in the recesses 9, and having beveled ends adapted to support and adjust the die by coacting with the inclined walls thereof, substantially as specified.

414,076. ELECTRIC-CURRENT INDICATOR. GUSTAV PFANHUSER, Cleveland, Ohio. Filed July 30, 1888. Serial No. 319,167. (No model.)

Claim.—In an electric-current indicator, the combination, with a magnet included in a circuit conveying an alternating, pulsating, or intermittent electric current, of a liquid-receptacle, an elastic diaphragm provided with an armature and connected with the liquid-receptacle, and an indicating-tube connected with the liquid-receptacle, said diaphragm and tube being arranged in a vertical position, substantially as set forth.



414,077. PACKING-BOX. PATRICK D. PIER, Brooklyn, N. Y. Filed Apr. 15, 1889. Serial No. 307,260. (No model.)



Claim.—A collapsible box composed of two parts A and B, both transversely grooved or creased and folded on four lines with overlapping ends, one part being placed within the other, with the overlapping flaps lying on contiguous exterior faces of the box, whereby when the box is closed the flaps may be held in closed condition by a suitable fastening, substantially as described.

414,078. TOOL-HOLDER. GEORGE RESPESS, MARTIN G. RESPESS, and JOHN G. RESPESS, Philadelphia, Pa., assignors to Henry D. Justi, same place. Filed Apr. 29, 1889. Serial No. 308,961. (No model.)



Claim.—1. A tool-holder consisting of a coiled spring connected with a casing and adapted to receive a tool and hold the same by contraction thereon, substantially as described.

2. A tool-holder consisting of a coiled spring, a casing containing said spring, and means for uncoiling or expanding the same, substantially as described.

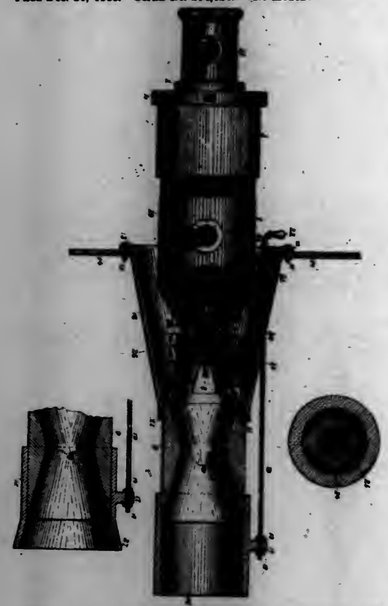
3. In a tool-holder, a coiled spring and a rotatable sleeve connected therewith, in combination with a sliding sleeve which engages with said rotatable sleeve, the contiguous edges of the sleeves being spiral, substantially as described.

4. A coiled spring held at one end within a casing and connected at the other end with a rotatable sleeve, in combination with a sliding sleeve which engages with said rotatable sleeve, and a follower or plunger fitted to the casing adapted to operate said sliding sleeve, substantially as described.

5. A tool-holder consisting of a casing, a coil-spring having one end stationary, a rotary sleeve to which the other end of the coil is attached, and mechanism, substantially as described, for rotating said sleeve, said parts being combined substantially as described.

6. A tool-holder consisting of a casing, a threaded follower working in said casing, a sliding sleeve operated by movement of said follower, a rotary sleeve, said sliding and rotary sleeves having spiral contact edges, and a coil-spring having one end attached to said rotary sleeve and the other end bearing against a collar on the inner side of the casing, said parts being combined substantially as described.

414,079. **HYDROCARBON-BURNER.** JOSEPH REID, Oil City, Pa. Filed Dec. 26, 1888. Serial No. 294,626. (No model.)



Claim.—1. In a hydrocarbon-burner, the combination, with the furnace door or wall and the injector-nozzle projecting therethrough, of a supplemental nozzle forming a mixing-chamber secured to the inner end of said injector and having the stricture 10 remote from its ends, an adjustable sleeve or extension fitted to slide on said supplemental nozzle, and an operating-rod secured to said extension and projecting through said door or wall, substantially as set forth.

2. In a hydrocarbon-burner, the combination, with the furnace door or wall and the injector-nozzle for steam and oil projecting therethrough, of a supplemental nozzle secured to the inner end of said nozzle and having the stricture 10, a sleeve or extension fitted to reciprocate on said supplemental nozzle, and an operating-rod secured to said extension and adapted to project it beyond the end of the supplemental nozzle for increasing or to withdraw it even with the end of the supplemental nozzle for decreasing the length of the flame, substantially as set forth.

3. In a hydrocarbon-burner, the combination, with the furnace door or wall and the steam and oil injector nozzle projecting therethrough, of a supplemental nozzle secured to the inner end of said injector and having a flaring mouth and an adjustable sleeve or extension, also having a flaring mouth, fitted to reciprocate on said supplemental nozzle and adapted to be withdrawn on the supplemental nozzle to cause the two flaring mouths to meet or to be projected forward to increase the length of the flame, substantially as set forth.

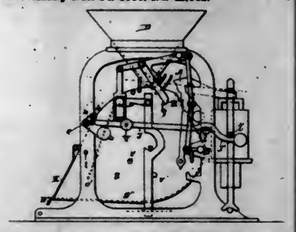
4. In a hydrocarbon-burner, the combination, with the injector-nozzle for steam and oil, of the supplemental nozzle 9, secured thereto, a sleeve or extension fitted to reciprocate on said supplemental nozzle, the fixed guide 21, an operating-rod projecting through said guide and secured to said extension, and a shoulder on said rod for abutting against said guide to limit the movement of said extension, as set forth.

5. The combination, with the furnace door or wall having an orifice therein and the injector projecting therethrough, of a supplemental nozzle or extension secured to said injector and having a stricture at its mid-length and air-ports between said stricture and the end of said injector, a funnel extending from said supplemental nozzle backward over said ports and secured to said door or wall, an adjustable sleeve on said supplemental nozzle, a guide on said injector, and a rod projecting through said guide and funnel and secured to said sleeve, substantially as set forth.

6. The combination, with the furnace-door having an orifice and an injector projecting therethrough, of the supplemental nozzle or extension secured to said injector and having the air-ports 8 within the furnace and screw-threaded portion 11, and a funnel having a flange at its rear end secured to said door and internal screw-threads at its inner end engaging the threaded portion 11 between the inner end of said supplemental nozzle and the air-ports 8 therein, as set forth.

7. The combination, with the steam and oil pipes of a hydrocarbon-burner, arranged one within the other and each having the conical portions 31 32, tapering toward the mouth of the burner, and the cylindrical portion 33 intervening, of elongated ribs on the cylindrical portion of said inner pipe resting in the cylindrical portion of the outer pipe and having their ends beveled at an angle equal to the angle of the conical or bevel portion 32, against the inside of which in the outer pipe said beveled ends of said ribs are adapted to abut, whereby said pipes may be adjusted relatively to each other, and the inner pipe will always have bearing upon the cylindrical portion of the outer one, substantially as set forth.

414,080. **AUTOMATIC WEIGHING APPARATUS.** MICHAEL E. REISERT, Hennef, Prussia, Germany, assignor to the Rheinische Maschinen-Fabrik C. Reuther & Reisert, same place. Filed Feb. 13, 1889. Serial No. 299,808. (No model.) Patented in England June 5, 1888, No. 7,554, and in Germany Dec. 24, 1886, No. 42,602.



Claim.—1. In an automatic weighing apparatus, the combination, with the frame, of the pivoted receptacle, the lever J J', fulcrumed on said frame, the weight C, with which said lever engages, and the overcharging-weight H, pivoted to said frame and engaging the end of said lever, substantially as set forth.

2. In an automatic weighing apparatus, the combination, with the frame, of the pivoted receptacle, the lever J, fulcrumed on said frame and having a weight at one end, and the overcharging-weight H, pivoted to said frame and having a roller at one end bearing on said lever, substantially as set forth.

3. In an automatic weighing apparatus, the combination of the pivoted receptacle, the hopper, the upper supply-flap, the scale-beam, the lever weighted at one end, and the pivoted weight H, engaging the other end of said lever, substantially as set forth.

414,081. **DIAPHRAGM FOR GALVANIC BATTERIES.** ISAIAH L. ROBERTS, Brooklyn, assignor to the Roberts-Brevoort Electric Company, (Limited,) New York, N. Y. Filed May 5, 1887. Serial No. 237,259. (No model.)



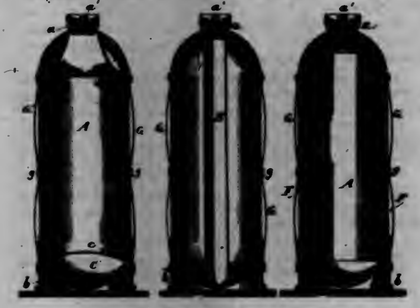
Claim.—1. A separating diaphragm or partition for an electric battery partially or wholly of mineral gelatinous material, substantially as described.

2. A separating partition or diaphragm for an electric battery, consisting of mineral gelatinous material combined with a holder, substantially as described.

3. A separating partition or diaphragm for an electric battery, consisting of a porous substance impregnated with mineral gelatinous material.

4. A separating partition or diaphragm for an electric battery, consisting of a porous substance having its pores closed with gelatinized silicate of soda or potash.

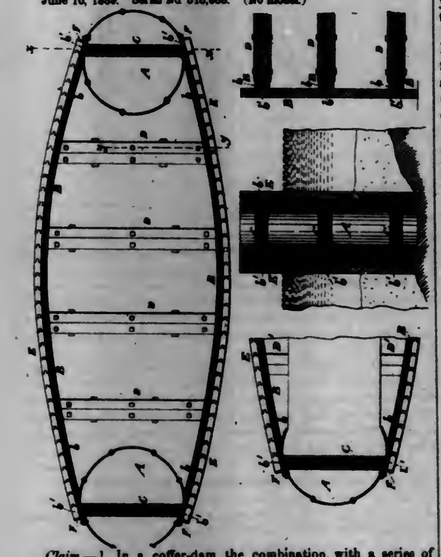
414,082. **CARRIER FOR HYDRAULIC TRANSIT.** JOHN E. ROBINSON, Philadelphia, Pa. Filed Mar. 8, 1889. Serial No. 302,652. (No model.)



Claim.—1. As a carrier for use in hydraulic transit, a can having a space for the reception of matter to be transported and a space forming a dead-air chamber, substantially as specified.

2. A can having curved springs on its exterior surface, said springs being secured at one end of the can and free to move longitudinally at the other end by compression, substantially as set forth.

414,083. **COFFER-DAM.** JOHN E. ROBINSON, Philadelphia, Pa. Filed June 10, 1889. Serial No. 313,683. (No model.)



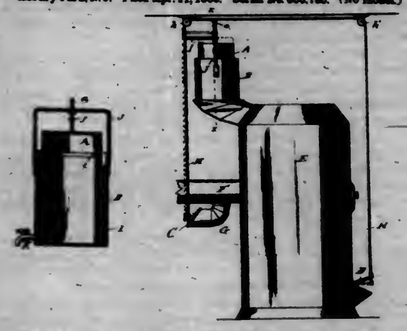
Claim.—1. In a coffer-dam, the combination, with a series of cylinders at a distance from each other, of arched whaling-pieces bolted to said cylinders on opposite sides and piling driven against the face of the whaling-pieces, substantially as described.

2. In a coffer-dam, the combination, with a series of cylinders at a distance from each other, of arched whaling-pieces bolted to said cylinders on opposite sides, piling driven against the face of the whaling-pieces, and braces extending from the whaling-pieces on one side to those opposite, substantially as specified.

3. In a coffer-dam, the combination, with a series of cylinders at a distance from each other, said cylinders being made of vertical sections bolted together, of arched whaling-pieces secured to said cylinders on opposite sides thereof, braces extending across the cylinders opposite the whaling-pieces, and piling driven against the face of the whaling-pieces, substantially as specified.

4. In a coffer-dam, the combination, with a series of cylinders at a distance from each other, of arched whaling-pieces bolted to said cylinders on opposite sides thereof, piling driven against the face of the whaling-pieces, and angle-irons to form an abutment for the end piles, substantially as specified.

414,084. **DRAFT-REGULATING DEVICE.** JOHN ROCKAFELLER, Asbury Park, N. J. Filed Apr. 11, 1889. Serial No. 306,763. (No model.)

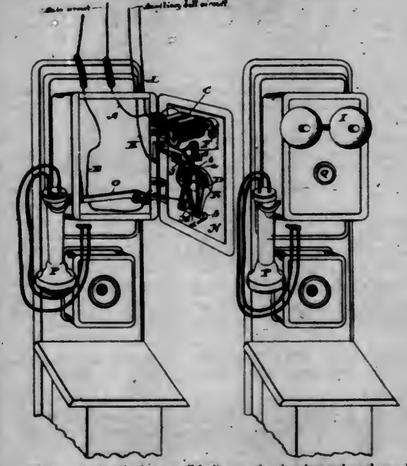


Claim.—1. The combination, with the furnace having the dampers C and D and the wire H, connecting the said dampers, of the regulator placed close to and operated by the varying change of temperature of the said furnace, composed of the drums A and B, the drum B having an inner and an outer shell, between which a space I is left, and the drum A inverted and working in the said space I, which is filled with liquid to form a seal, the guide-yoke J, secured to drum B, the stem *a*, projecting from drum A and working through guide-yoke J, and the arm *j*, connecting stem *a* with the wire H, substantially as described.

2. The herein-described regulator, composed of two drums A and B, the drum B comprising two shells, between which a liquid seal is formed, the drum A being inverted and the upper edge of the inner shell of drum B being turned out or flared to guide the drum A in its movements and prevent splashing of the liquid into the inner shell of drum B, substantially as described.

3. The combination, with the regulator comprising the two drums A and B, the drum B having two shells, between which a liquid seal is formed, of the drain-cock K, connected with the inner shell of drum B, substantially as described.

414,085. **ELECTRIC MECHANISM FOR OPERATING TELEPHONE CALL-BELLS.** FREDERICK W. A. SCHNEIDER, Toronto, Ontario, Canada. Filed Mar. 11, 1889. Serial No. 303,763. (No model.)



Claim.—1. A telephone call-bell, a main circuit passing through the coil of the magnet thereof, an auxiliary call-bell at a point remote from the telephone-bell, and a branch circuit leading from the telephone to the auxiliary call-bell, in combination with an automatic switch for directing the current from the main call-bell to the auxiliary call-bell, and a switch operated by the weight of the receiver for returning the current to its original course, substantially as described.

2. A telephone call-bell, a main circuit passing through the coil

of the magnet thereof, and a branch circuit to an auxiliary call-bell, in combination with a switch for automatically directing the current from the main call-bell to the auxiliary call-bell, and means, as the levers O G, for automatically changing the current back to its original course, substantially as described.

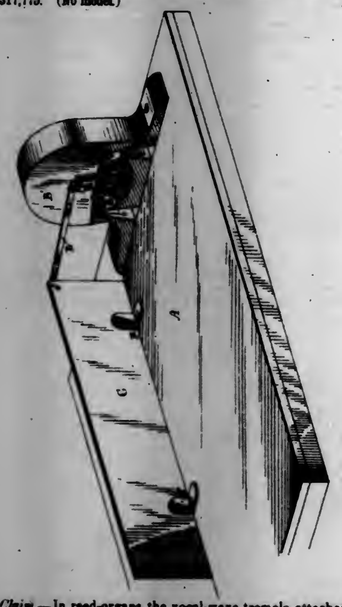
3. The wire A and wire L, connected to the magnet C, and the wire B, connected to the plate D, the spring E, arranged to form an electrical connection with the lever G and wire F, and the magnet C, in combination with the armature H, lever G, pin J, and wire K, arranged substantially as and for the purpose specified.

4. The wire A and wire L, connected to the magnet C, and the wire B, connected to the plate D, and the spring E, arranged to form an electrical connection between the plate D and the magnet C, in combination with an armature H, lever G, pin J, wire K, and air or oil cushion formed by the cylinder M, arranged substantially as and for the purpose specified.

5. The pivoted lever O and the pivoted lever G, arranged to engage with a notch in the armature H and to project over the pivoted lever O, in combination with the circuit making and breaking spring E, arranged substantially as and for the purpose specified.

6. The pivoted indicating-plate R, having a weighted arm S fixed to it and designed to extend over the pivoted lever O, in combination with the pins *a* and *b*, arranged substantially as and for the purpose specified.

414,086. VOCAL-WAVE TREMOLO FOR REED-ORGANS. FRANK T. SHEARER, Clinton, Ontario, Canada. Filed July 17, 1889. Serial No. 317,775. (No model.)



Claim.—In reed-organs, the vocal-wave tremolo attached to the reed-board by flexible hinges and to the crank of the fan by a connecting-rod, all substantially as and for the purpose described.

414,087. WASHING-MACHINE. HAMILTON R. SMITH, New York, N. Y. Filed May 17, 1888. Serial No. 274,214. (No model.)



Claim.—1. The combination, with the casing A and its cover, of a fixed rack secured to the casing, and a gear-wheel on said cover engaging with the rack, whereby the rotation of the gear opens or closes the cover, substantially as shown and described.

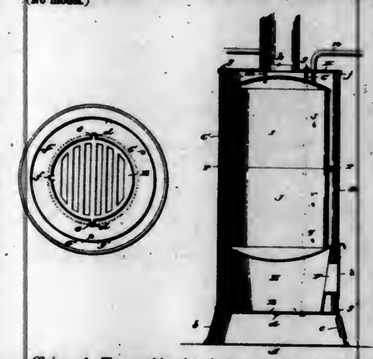
2. The combination, with the casing A, having curved ways formed therein and a curved cover guided in said ways, of a rack formed on the casing, a shaft having bearings on the cover, and gear-wheels rigidly mounted on said shaft and engaging with said rack, substantially as shown and described.

3. The combination, with the casing A and its cylinder B, of the overflow-pipe K, having a connection with the interior of the casing in the periphery thereof, substantially as shown and described.

4. The combination, with the casing A, of the horizontal overflow-pipe K and the branches *l* thereof, connecting with the interior of the casing at its periphery, substantially as shown and described.

5. The combination, with the casing A, of the horizontal overflow-pipe K and the branches *l* thereof, connecting with the interior of the casing and with the highest portion of the overflow-pipe, substantially as shown and described.

414,088. AGRICULTURAL BOILER. HOSEA B. STAFFORD and HENRY W. SALS, Manson, Iowa. Filed July 26, 1888. Serial No. 318,967. (No model.)



Claim.—1. The combination, in an agricultural boiler, of a base-casting suspended upon a flange forming an ash-pit, and centrally perforated and notched, as described, of a grate having lugs to engage said notches, and an independent fire-box resting on said base and spanning said notches, substantially as set forth.

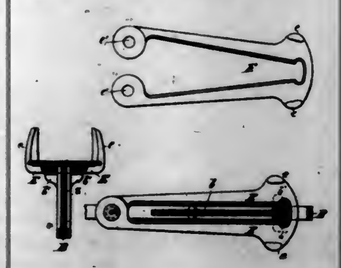
2. The combination, in an agricultural boiler, of a base having a grate-opening and grate mounted thereon, a casing secured to said base by vertical internal rods secured to said base, and an independent fire-box resting on said base and positioned by said rods, substantially as set forth.

3. The combination, in an agricultural boiler, of a base having a grate-opening, a vertical cylindrical casing supported thereon, a top plate, and vertical rods internally securing said casing to said base, and a boiler suspended from the top plate, substantially as set forth.

4. The combination, in an agricultural boiler, of a base and cylindrical casing mounted thereon, a top plate, and vertical rods securing the plate and casing to said base, and a fire-box and suspended boiler positioned by said rods, substantially as set forth.

414,089. SKATE. WILLIAM A. SUTTON, New York, N. Y. Filed Aug. 7, 1889. Serial No. 320,050. (No model.)

Claim.—1. The combination, in a skate, of a forked heel-clamp, the shanks of which are passed over the rear portion of the runner and then riveted together, with a heel-plate cast in one piece with the runner and sole-plate, substantially as set forth.



414,089.



2. In a skate, the combination of a forked heel-clamp, the shanks of which are passed over the rear portion and then riveted together, with the lever-and-clamp device for the sole and heel plates, substantially as set forth.

3. The forked heel-clamp for skates, having shanks provided at their terminating ends with eyes, substantially as set forth.

4. In a skate, the combination of the lever, riveted with an ordinary rivet to the front end of the heel-clamp, and also riveted with an ordinary rivet to the flattened end of the screw-bolt connecting the sole-clamps, substantially as set forth.

414,090. DRAW-PLATE. WILLIAM TAYLOR, Allegheny, Pa. Filed Dec. 12, 1888. Serial No. 293,411. (No model.)



Claim.—1. For the purpose of manufacturing wire by successive passes, a draw-plate provided with a series of separate holes each differing from the other in shape or form and having the same diameter or breadth between the widest-separated portions or extreme points of outline.

2. For the purpose of manufacturing wire by successive passes, a draw-plate provided with a series of separate holes each differing from the other in shape or form and having the same extent of outline and the same diameter or breadth between the widest-separated portions or extreme points of outline.

3. For the purpose of manufacturing wire by successive passes, a draw-plate provided with a series of separate holes each of the same diameter and having parts which conform to the shape of the initial wire and other intermediate parts which vary from said shape and successively vary from each other in their widths.

4. For the purpose of manufacturing wire by successive passes, a draw-plate having a series of holes bounded partly by segments of a circle with intermediate parts of other and different shape which successively vary from each other in their widths.

5. For the purpose of manufacturing wire by successive passes, a wire-drawing mechanism having a series of apertures of which one or more have walls with parts thereof conforming to the initial form of the wire and parts intermediate of those aforesaid which are nearer together than the corresponding parts of the initial wire, substantially as set forth.

6. For the purpose of manufacturing wire by successive passes, a wire-drawing mechanism having a series of apertures each formed with walls having parts which conform to the shape of the initial wire and other intermediate parts which vary from the said shape, the said intermediate parts varying successively from each other in their width, substantially as set forth.

7. For the purpose of manufacturing wire by successive passes, a wire-drawing mechanism having a series of apertures of which one is circular in section, another is triangular, and one or more others are bounded partly by the arcs of a circle and partly by intermediate lines which when extended form a triangle, substantially as set forth.

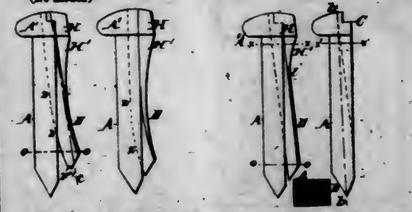
414,091. WAGON-LOCK. FREDERICK M. TWEAT, Shiloh, Ga. Filed Mar. 18, 1889. Serial No. 303,725. (No model.)



Claim.—1. A wagon-lock consisting of the hollow slide-bearing block adapted to be connected to a chain and having at its lower end a pivoted hook provided with a curved extension, a locking slide-bar in said slide-bearing block, and a bent lever connected to the locking-bar, substantially as specified.

2. The combination, with the hollow slide-bearing block and its pivoted hook having a curved extension, of the locking slide-bar slotted at its upper end, and the lever pivoted in said slot and having the handle-arm extending upward and the catch-arm extending toward the slide-bearing block, substantially as specified.

414,092. RAILROAD-SPIKE. WILLIAM D. TWEEDDALE and ROBERT M. GOODWYN, Forsyth, Ga. Filed Jan. 31, 1889. Serial No. 298,257. (No model.)



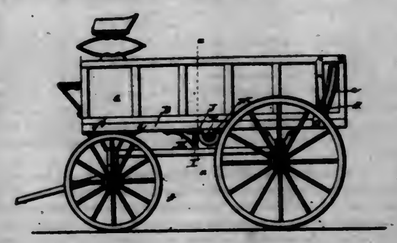
Claim.—1. A spike or nail consisting of a main nail having a groove in one side thereof and a key partially resting within the groove, the longitudinal axis of the main nail and key being at an angle with each other, as and for the purpose described.

2. A spike or nail consisting of a main nail having a groove in one side thereof, the bottom of the said groove being at an angle with the axis of the main nail and of a key partially resting within the said groove, as and for the purpose described.

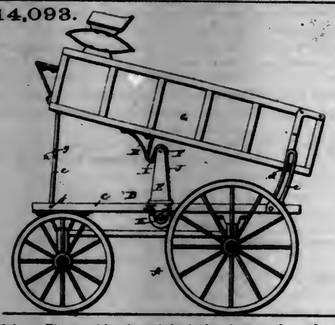
3. A spike or nail consisting of a main nail having a groove in one side thereof and a key partially resting within the said groove, the longitudinal axis of the main nail and key being at an angle to each other, the said parts having shoulders and ears respectively formed thereon, as and for the purpose described.

4. A spike or nail consisting of a main nail having a groove in one side thereof and a key partially resting within the said groove, the longitudinal axis of the main nail and the key being at angles to each other, and the said groove having a leg in the bottom thereof and a corresponding recess in the key, as and for the purpose described.

414,093. DUMPING-WAGON. JAMES P. VAN WYCK, Hudson, N. Y. Filed July 24, 1888. Serial No. 318,544. (No model.)

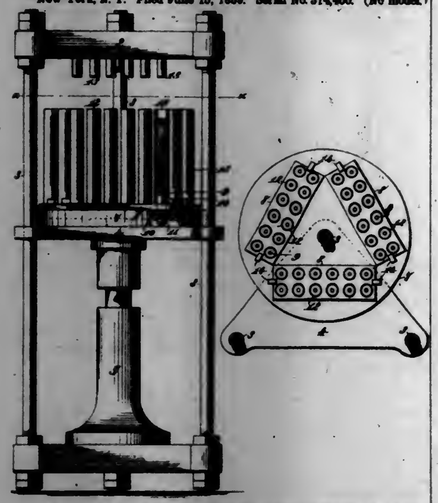


414,093.



Claim.—The combination of the bed or bottom frame having side standards E and bearings or boxes for the revolving shaft L L', the hoisting-shaft L L', constructed as described, and provided with hoisting-drums K K, the hoisting-chains J, the movable wagon box or body provided with the hangers H, the curved end guides *e*, adapted to engage guide-bolts projecting from opposite sides of the wagon box or body, and the forward jointed braces *e*, all constructed and combined to operate substantially in the manner and for the purpose shown and set forth.

414,094. MACHINE FOR CHARGING FIRE-WORKS. Claudius Wadsworth, Brooklyn, assignor to the Unexcelled Fireworks Company, New York, N. Y. Filed June 15, 1889. Serial No. 314,400. (No model.)



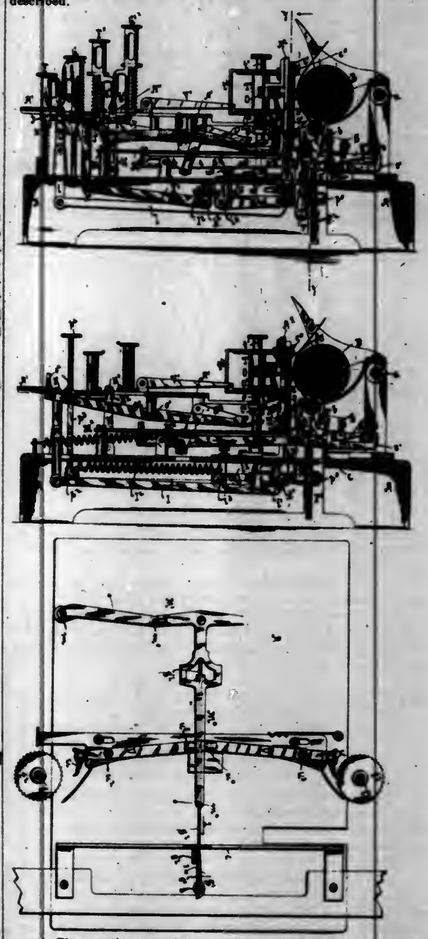
Claim.—A machine for charging fire-works, consisting of a head-plate having a row of rammers, standards supporting the head-plate, a platen rising and falling on the standards, a rotating table journaled on one of the standards, a series of lifting-plates arranged in a triangle on the rotating table, and a series of spindles secured in a fixed position to the rotating table and loosely passing through each one of the lifting-plates, substantially as described.

414,095. TYPE-WRITING MACHINE. Frank X. Wagner, New York, N. Y. Filed July 26, 1888. Serial No. 281,101. (No model.)

Claim.—1. The combination, with a type-carrier movable in a right line, of the lever system M M°, the cam-levers L L', engaging said lever system, a connection between the lever system and the type-carrier, and a key for each cam-lever, whereby the depression of a key actuates the type-carrier, substantially as shown and described.

2. The combination, with a type-carrier containing two or more rows of type, of a main key-rod connected with the carrier, as described, and a secondary key-rod connected with the main rod, and keys engaging with said rods, whereby the movement of the secondary key-rod is conveyed to the main rod, substantially as described.

3. The combination, with a carrier containing two or more rows of type, of guides C C, for guiding the carrier in a rectilinear path, the arms J J', and the lever-frame i^3, supporting said guides, a rod H, carried by pivoted arms A, keys F G, &c., provided with cam-faces *f* and *g*, respectively, the lever *i*, and slide I, provided with inclined slot engaging a rod on the lever-frame i^3, substantially as shown and described.



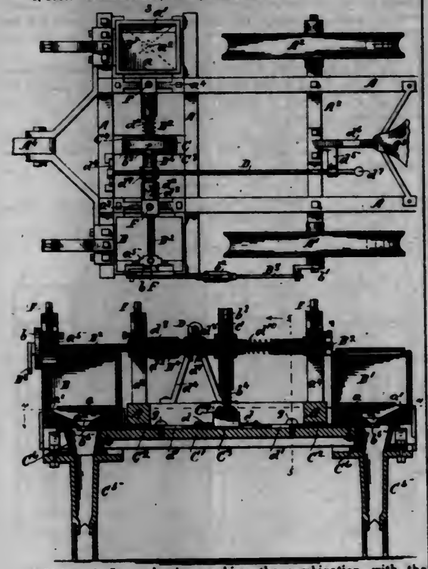
4. The combination, with a carrier provided with movable types and guided to move in a right line, of a hammer guided in bearings at right angles to the carrier, the key-rod H, a lever O', engaging said hammer, and a lever O^3, having cam-surfaces o^3 o^3, engaging with the key-rod and with the lever O', substantially as shown and described.

5. The combination, with the type-carriers D D' and the guides C C' for the same, of the slides P and Q, the shifter R, engaging the guide C' and engaged by the slide P, sockets q^3 q^3 on the slide Q, engaging the carrier, and means for imparting a reciprocating movement to one of the slides, substantially as shown and described.

6. The combination, with the ribbon-spools and the toothed wheels connected therewith, of the pawl-bearing levers U U', mounted on an adjustable carrier and united by a common pin u^4, and a reciprocating slide S^2, engaging with said pin, substantially as shown and described.

7. In a type-writing machine, the combination of two rising and falling parallel guides C C, a type-carrier fitted to said guides to move in a right line thereupon and having a series of type-bars, each containing two types, and two sets of keys, F and G, and connections, substantially as described, for respectively moving the type-carrier back and forth in a right line on the guides and lowering and raising the same to bring the upper and lower rows of type into the printing-line.

414,096. AUTOMATIC SEED-PLANTER. William J. Waller, Chicago, Ill., assignor of one-half to Henry Wulf, same place. Filed Jan. 8, 1889. Serial No. 295,797. (No model.)



Claim.—1. In a planting-machine, the combination, with the driving-shaft, of a sleeve-hub loosely mounted thereon, the disk-wheel rigidly mounted on said sleeve, the pin or pins projecting from the periphery of said wheel, the spring lying in the pathway of the disk-wheel and adapted to be compressed by the contact of said pin or pins, the seed-slides and spring, and the clutch mechanism for controlling the action of the disk-wheel, substantially as and for the purpose set forth.

2. In a planting-machine, the combination, with a rotating disk or operating-wheel provided with one or more projecting pins, as described, of an elliptic spring located underneath and in the pathway of said wheel, the seed-slides, the links for pivotally connecting said spring and slides, whereby the contact of the pin or pins set in the disk-wheel has the effect of compressing the spring and moving the slide to uncover the seed-openings in the bottoms of the seed-boxes, substantially as and for the purpose set forth.

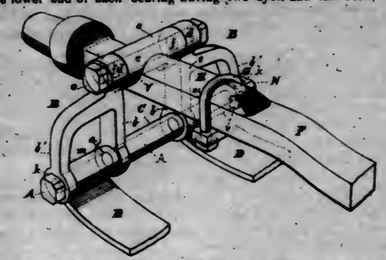
3. In a two-row planting-machine, the combination, with the seed-boxes of the seed-slides, the outer ends of which pass under the exterior bottom of said boxes and normally close the seed-apertures in the same, of the elliptic spring and the links pivotally connecting said slides and spring, whereby the spring when compressed moves the slides to uncover the seed-openings and normally closes the same when the pressure is removed, substantially as and for the purpose set forth.

4. In a planting-machine, the combination, with the seed-boxes, of the transverse bar connecting the same, the seed-slides rabbeted in the upper side of said bar, the plate C^3, the elliptic spring, the links *d d d d*, the disk-wheel provided with projecting pins, as described, the sleeve on which said wheel is mounted, and the driving-shaft, substantially as and for the purpose set forth.

5. In a planting-machine, the combination, with the driving-shaft, of the screw-threaded bolts for the vertical adjustment of said shaft, a crank-wheel rigidly secured on said shaft, the sulky-wheel and a crank-wheel rigidly secured to the hub thereof, the rod formed in two parts and connecting said crank-wheels, and the right and left threaded nut for adjustably joining the inner ends of said rod, substantially as and for the purpose set forth.

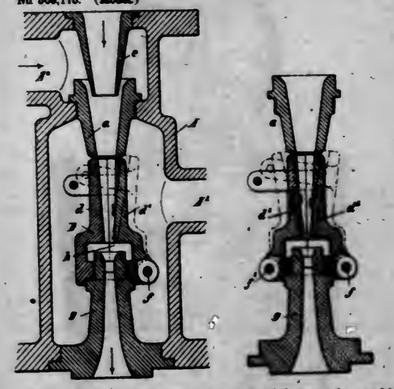
414,097. SPRING-HANGING DEVICE. James Wiser, Springfield Centre, N. Y. Filed June 20, 1889. Serial No. 316,099. (No model.)

Claim.—The duplex spring-hanger consisting of the notched T-shaped attachment, its cross portion being hollow or tubular, the end bifurcated pendent bearings, each bearing comprising two arms or pendants, one extending laterally from the other and downwardly, and the upper end of each pendent bearing having a single eye, and the lower end of each bearing having two eyes, and the bolts, one



passing through the upper eyes of the said bearings and the tubular portion of said T-shaped attachment, and the other bolt passing through the lower eyes of said bearings and the sleeve or tube interposed between the inner arms of said bearings, substantially as set forth.

414,098. INJECTOR. Otto Westphal, Hamburg, Germany, assignor to Weber & Westphal, same place. Filed May 1, 1889. Serial No. 309,175. (Model.)



Claim.—1. As an improvement in steam-injectors, the combination, with the lifting and discharging cones, of the combining-cone having a pivoted section secured at its lower end to said discharging-cone and extending to said lifting-cone, substantially as set forth.

2. As an improvement in steam-injectors, the combination, with the lifting and discharging cones, of the sectional combining-cone having a hinged part or parts secured at their lower ends to the upper end of said discharge-cone, substantially as set forth.

414,099. COMBINATION TRUNK-STRAP AND CATCH. Samuel J. White, Wellsborough, Pa. Filed Apr. 12, 1889. Serial No. 306,996. (No model.)



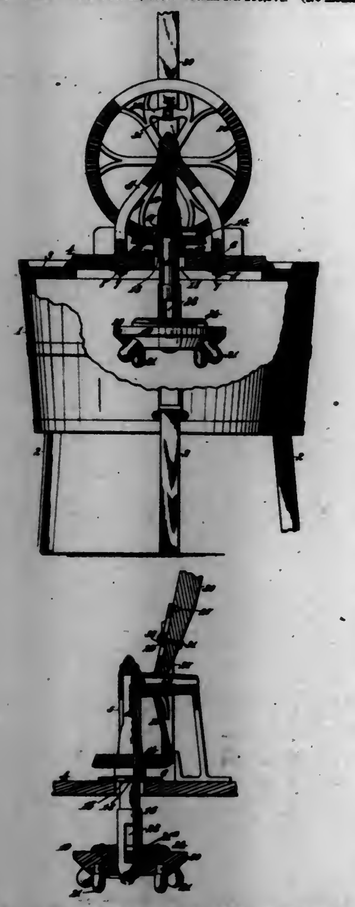
Claim.—1. A trunk-strap fixed to the surface of the trunk with a hinge between its ends, and having a housing provided with a pivoted hooked catch fixed at one end of said strap, in combination with a slotted bolt fixed at the other end of said strap, substantially as specified.

2. A trunk-strap having a slotted housing fixed at one end thereof, a hooked catch pivoted thereto adapted to project into said slot and having flat faces, and a spring pressing against said end to hold it closed or open, as described, in combination with a second housing fixed to the other end of said strap, and a slotted bolt fixed therein, said slot located to register with that in the first housing, substantially as specified.

3. A strap or band attached to a trunk by suitable securing devices, and a slotted housing fixed at one end thereof, a hooked catch pivoted therein adapted to project into said slot and having flat faces, and a spring pressing against said faces to hold it open or closed, as described, in combination with a second housing fixed to the other end of said strap, and a slotted bolt fixed therein, said slot located to register with that in the first housing, substantially as specified.

4. The combination, with the strap, of the bolt D, secured to one end of the strap and having a lug D' fitting a hole in the strap, the housing C², secured to the strap and bolt, the housing C, secured to the other end of the strap, and the spring-actuated catch pivoted in the housing C, substantially as described.

414,100. WASHING-MACHINE. ALBERT C. F. WICHMAN, Fort Wayne, Ind. Filed Feb. 12, 1889. Serial No. 299,571. (No model.)

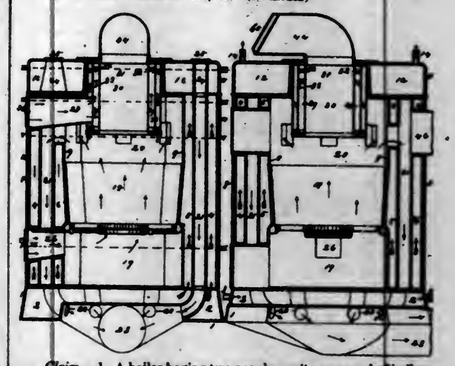


Claim.—1. The combination, with the lid of a washing-machine, of the arch secured to the lid and cast integral with the lateral journal, the metallic shaft cast integral with the miter-gear and the socket and having its upper end journaled in the center of the arch, the metallic plate on the lid serving as a bearing for the lower end of the metallic shaft, the wooden dasher-carrying shaft having its upper end secured in the socket of the shaft cast with the miter-gear, and the miter-gear mounted loosely on the journal cast with the arch, substantially as described.

2. The combination, with the lid of a washing-machine having an attached metallic plate provided with a central orifice, of the arch cast integral with a central vertical socket-bearing and a horizontally-projecting journal, the metallic shaft seated at its upper end in the socket of the arch and cast integral with the miter-gear, the central vertical socket, the annular collar and the annular shoulder, and the miter-gear loosely mounted on the journal cast with the arch, substantially as described.

3. The combination, with the tub and lid of a washing-machine, of the arched frame 5, cast integral with the horizontal journal 25, the shaft 10, journaled at its upper end in the arched frame and cast integral with the miter-gear 14 and vertical socket 12, dasher-carrying shaft 16, secured within said socket, and the miter-gear 26, loosely mounted on the journal cast with the arched frame, substantially as described.

414,101. BOILER. JACOB S. WILLIAMS, St. Louis, Mo. Filed Apr. 24, 1888. Serial No. 271,722. (No model.)



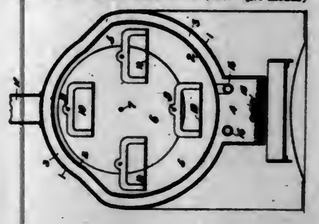
Claim.—1. A boiler having two annular walls composed of hollow sections, water-chambers above and below communicating with the chambers in the sections, and an annular flue between the walls for the passage of the products of combustion.

2. The combination, in a boiler, of two concentric walls containing water-chambers, in connection with water-spaces above and below, and an annular descending flue between the walls, substantially as set forth.

3. The combination, in a boiler, of two concentric annular walls, each composed of similar hollow sections, the sections having parallel curved inner and outer sides and fitted together at the edges with vertical joints, an annular flue between the two walls for the passage of the products of combustion, and water-chambers above and below in communication with the chambers within the sections.

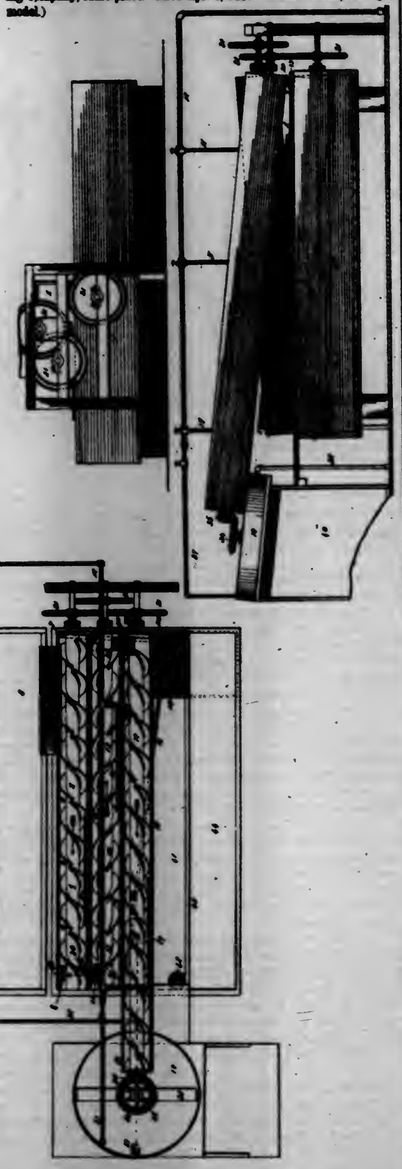
4. The combination, in a boiler, of a central magazine for the downward feed of the fuel, two annular walls formed of similar hollow sections concentric with the magazine, and the walls so far set asunder and from the magazine as to form annular flues between the two walls and the inner wall and magazine, the lower end of the outer flue being in communication with the chimney, and the lower part of the inner flue being in communication with the combustion-chamber, and the flues being in communication with each other at top, and water-chambers above and below in communication with the chambers of the hollow sections, all substantially as set forth.

414,102. BAKE-OVEN. JAMES M. WRIGHT, McKee's Rocks, Pa. Filed May 13, 1889. Serial No. 311,236. (No model.)



Claim.—The combination of the exterior combustion-chamber 3, the interior baking-chamber 5, the inclosed rotary frame carrying baking-pans, the furnace at the base of the heating-chamber, a flue 15 for the waste products of combustion, air-inlet pipes 16 traversing the combustion-chamber in opposite directions and entering the bottom of the baking-chamber at opposite ends thereof, an outlet-pipe 17 leading from the top of the baking-chamber at or near the middle thereof and entering the said flue 15, and a damper controlling the outlet-pipe 17, substantially as and for the purpose described.

414,108. MACHINE FOR WASHING ORES. HENRY WUERDE, St. Louis, Mo., assignor to the Page & Krauss Manufacturing and Mining Company, same place. Filed Apr. 1, 1889. Serial No. 305,592. (No model.)



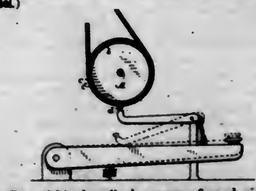
Claim.—1. In a machine for washing ores, &c., the combination of troughs provided with conveyers and inclined in opposite directions, and pipes for discharging the water into the troughs, substantially as and for the purpose set forth.

2. In a machine for washing ores, &c., the combination of the troughs inclined in opposite directions, conveyers located within the troughs, pipes for discharging water into said troughs, and discharge-pipes extending a distance into the troughs, whereby the water in the troughs is maintained at a given level and the ore kept constantly immersed, substantially as and for the purpose set forth.

3. In a machine for washing ores, &c., the combination of the oppositely-inclined troughs, conveyers located in the troughs, and pipes for discharging water into the troughs and conveying it therefrom, said troughs having direct communication with each other at opposite ends, whereby the ore is kept constantly on the ascent against the action of the water, substantially as and for the purpose set forth.

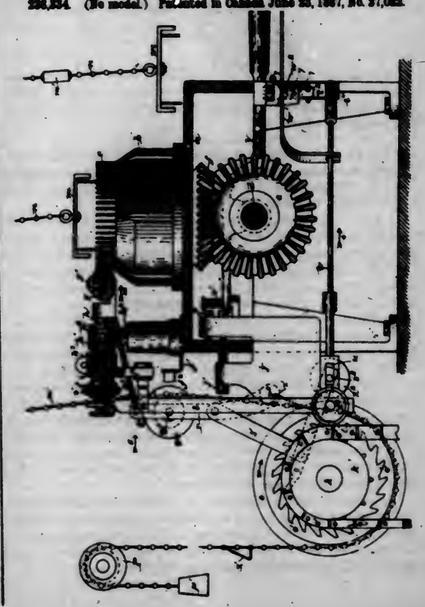
4. In a machine for washing ores, &c., the combination of the oppositely-inclined troughs having communication with each other, conveyers located within the troughs, pipes for discharging water into and conveying it from the troughs, and a sieve into which the pipes carrying the water from the troughs deliver, substantially as and for the purpose set forth.

414,104. METHOD OF PRODUCING STENCILS, &c. WILLIAM H. COTTRELL, Farmington, Me. Filed Jan. 15, 1889. Serial No. 296,695. (No model.)



Claim.—The within-described process of producing a stencil or pattern for printing or marking, which consists in placing on a roller provided on its surface with points, projections, or other cutting-edges a waxed or other suitable paper and over that a thick paper, and then by the blows of the type apparatus of an ordinary type-writer perforating the inner paper with the desired letters, figures, or other patterns, substantially as described.

414,105. CIRCULAR-KNITTING MACHINE. EDGAR C. COVELL and ELISHA S. CRAM, Laconia, N. H. Filed May 16, 1887. Serial No. 238,234. (No model.) Patented in Canada June 28, 1887, No. 37,022.



Claim.—1. The combination, with the needles and their cylinder or head, of a stitch-wheel, a supporting-rod for the same, a spring for normally holding said stitch-wheel and its supporting-rod pressed toward the needles, a lever *l*, engaging at one end the stitch-wheel-supporting rod, a sprocket-wheel, a pattern-chain on said wheel adapted to engage the other end of said lever and draw the stitch-wheel backward from the needles, and means for rotating the needle cylinder or head and said sprocket-wheel, substantially as and for the purposes set forth.

2. The combination, with the needle-cylinder and needles, of the stitch-wheel, means, substantially as described, for gradually varying the position of the stitch-wheel with respect to the needles, and a knocking-over wheel and its support, and a spring for holding the knocking-over wheel pressed yieldingly toward the needles, as set forth.

3. The combination, with the needle-cylinder and needles, of a take-up head, a pull-up cord or chain attached to said take-up head, a pulley over which said chain or cord runs, and a weight *m'*, attached to said cord or chain above the take-up head and between the latter and said pulley, substantially as set forth.

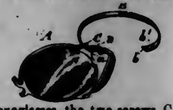
4. The combination, with the bed or frame and the needle-cylinder and needles, of a pull-up cord or chain, a wheel *o*, around which said cord or chain is adapted to pass, said wheel having a rim provided with notches *o'*, an arm *r*, pivoted to the frame and provided with a wheel or bowl *q*, a spring *n'*, a pawl *s*, and link *s'*, connecting said pawl with said arm, as set forth.

5. The combination, with the bed or frame, the needle-cylinder and needles, of a pull-up cord or chain, lever or arm *r*, pivoted to the bed or frame and provided with roller or wheel *q*, a spring *n'*, and a finger *f''*, as set forth.

6. The combination, with the bed or frame, the needle-cylinder and needles, gear *f* on the needle-cylinder, the driving-shaft, gearing connecting said gear *f* with the driving-shaft, and shipping mechanism for disconnecting said gear *f* from the driving-shaft, of a pull-up cord or chain, a wheel *o*, provided with ratchet-notches *o'*, arm *r*, bowl or roller *q*, pawl *s*, link *s'*, spring *n'*, forked rod *t*, and mechanism intermediate of said rod and said shipping mechanism, as set forth.

7. The combination, with the needle-cylinder and needles, the stitch-wheel and its supports, a spring for holding it yieldingly pressed toward the needles, pull-up cord or chain *n*, bracket *j*, wheel *o*, shaft *k*, wheel *k'*, chain *o'*, and lever *l*, provided on its lower end with roller or bowl *P*, and connected at its upper end with the stitch-wheel support, as set forth.

414,106. EYEGLASSES. ALBERT A. COWING, Watkins, N. Y. Filed June 21, 1889. Serial No. 315,109. (No model.)



Claim.—In eyeglasses, the two screws C D, working in projections *a a* of the eye-frames, in combination with a spring B, having a slot *b* and an adjacent screw-hole *b'* on each end thereof, as and for the purpose set forth.

414,107. STORE-SERVICE APPARATUS. JAMES T. COWLEY, Lowell, Mass., assignor, by mesne assignments, to the Lamson Consolidated Store Service Company, of New Jersey. Filed May 27, 1887. Serial No. 239,553. (No model.)

Claim.—1. In a store-service apparatus, the combination, with a way and a car supported by said way, of a pivoted spring-actuated propelling-arm adapted to impart a propulsive force to the car, a catch for coupling the arm and car together, and a retractor for simultaneously drawing back the arm and car previous to propelling the latter over the way, substantially as described.

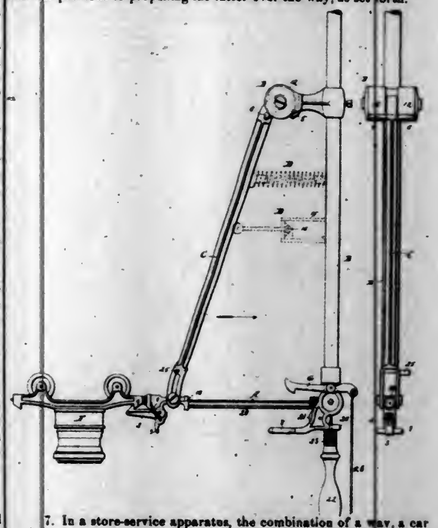
2. In a store-service apparatus, the combination, with a way and a car supported by said way, of a pivoted spring-actuated propelling-arm carrying a catch for engagement with the car and adapted to impart a propulsive force to the car, substantially as described.

3. In a store-service apparatus, the combination, with a way and a car supported by said way, of a pivoted spring-actuated propelling-arm carrying a slide running on said way, against which slide the car abuts, said arm being adapted to impart a propulsive force to the car, a catch for coupling the slide and car together, and a retractor for simultaneously drawing back the arm and car previous to propelling the latter over the way, as set forth.

4. In a store-service apparatus, the combination, with a way and a car supported by said way, of a pivoted spring-actuated propelling-arm carrying a slide mounted on the way, said slide having a catch for engagement with the car, and said arm adapted to impart a propulsive force to the car, substantially as described.

5. In a store-service apparatus, the combination of a way, a car supported by said way, a pivoted spring-actuated propelling-arm adapted to impart a propulsive movement to the car, a catch for coupling the arm and car together, a catch for temporarily holding said arm in its retracted position, and a retractor for simultaneously drawing back the arm and car previous to propelling the latter over the way, as set forth.

6. In a store-service apparatus, the combination of a way, a car supported by said way, a pivoted propelling-arm, and an impelling device by which the arm is vibrated in one direction to impart a propulsive movement to the car, a catch for coupling the arm and car together, and a retractor for simultaneously drawing back the arm and car previous to propelling the latter over the way, as set forth.



7. In a store-service apparatus, the combination of a way, a car supported by said way, a pivoted propelling-arm, and a spring by which the arm is vibrated in one direction to impart a propulsive movement to the car, a catch for coupling the arm and car together, and a retractor, whereby the arm and car are simultaneously retracted previous to propelling the car over the way, as set forth.

8. The combination, with the way and a car running on said way, of a pivoted arm C, carrying at its free end a slide 10, mounted on the way and having a pivoted catch-arm for engagement with the car, a cord extending in position to be grasped by the attendant and adapted to vibrate the arm in one direction, and an impelling means for exerting energy upon said arm, substantially as described.

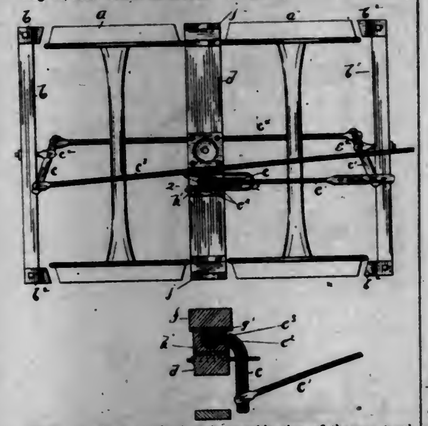
9. The combination, with the way and a car running on said way, of a pivoted arm C, carrying at its free end a slide 10, mounted on the way and having a pivoted catch-arm for engagement with the car, a cord extending in position to be grasped by the attendant and adapted to vibrate the arm in one direction, a catch for holding the arm in its retracted position, and an impelling means for exerting energy upon said arm, substantially as described.

10. In a store-service apparatus, the combination, with a way and a car supported by said way and adapted to travel thereon, of a pivoted spring-actuated arm adapted to act as a buffer to arrest the momentum of the car and to impart a propulsive force to the car, a catch 2, for holding the car in connection with the arm, and a tripper for releasing the catch, whereby the car is impelled over the way, substantially as described.

11. In a store-service apparatus, the combination, with a way and a car supported by said way and adapted to travel thereon, of a pivoted spring-actuated arm adapted to act as a buffer to arrest the momentum of the car and to impart a propulsive impulse to the car, a catch for holding the arm and car together, a tripper for releasing the car from the arm, and a second catch for holding the arm and car in their rearward position, substantially as described.

12. In a store-service apparatus, the combination of a way, a car traveling on said way, a spring-actuated arm pivotally mounted at one end, its other or free end adapted to be vibrated in the direction of the way to impart a propulsive impulse to the car and to act as a buffer to arrest the momentum of the car, a catch 2 to hold the car in connection with and in position to be acted upon by said arm, and a tripper for releasing the car upon the propulsive movement of the arm, substantially as set forth.

414,108. CAR-BRAKE. THERON S. R. DIXON, Chicago, Ill. Filed Aug. 10, 1889. Serial No. 320,382. (No model.)



Claim.—1. In a car-brake, the combination of the car-truck with a lever attached between its ends to a brake-beam and having one end connected to a rod, chain, or bar by which exterior power is transmitted to set the brakes and the other end connected to a device held in normal position by the weight or a portion of the weight of the car and adapted to yield when the force applied to it attains a predetermined relation to said weight, whereby the exterior power transmitted to set the brakes is limited in its effect to a maximum determined by the weight of the car, substantially as described.

2. In a car-brake, the combination of the truck and brake-beams with a first and second lever by which exterior power is applied to set the brakes, the end of the second lever being secured by a yielding attachment which yields when the force applied thereto attains a predetermined relation to the weight, whereby the exterior power transmitted to set the brakes is limited in its effect to a maximum determined by the weight of the car resting on the truck, substantially as described.

3. In a car-brake, the combination of the car, the truck, and the brake-beams with a series of connected brake-levers which transmit exterior power applied to set the brakes from one to another, and thus divide and equalize it, as described, and means whereby the last lever of the series is held to its work by the weight of the car resting on the truck, but permitted to yield when the force applied to it attains a predetermined relation to such weight, whereby the exterior power transmitted to set the brakes is limited in its effect to a maximum determined by the weight of the car, substantially as described.

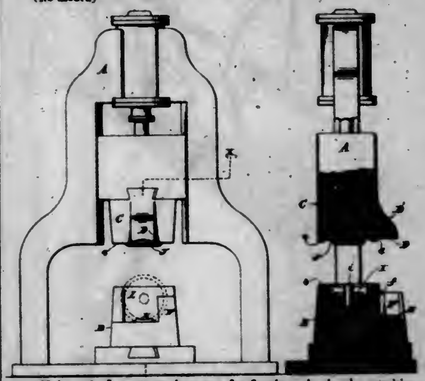
4. In a car-brake, the combination of the car, the truck, the brake-beams, and the brake-levers with a bell-crank lever having its short arm arranged to pry the car and truck apart and its long arm actuated by the brake mechanism through which exterior power is transmitted to set the brakes, and whereby the car-wheels are relieved from excessive pressure by the yielding of the car, substantially as described.

5. In a car-brake, the combination of the car, the truck, the brake-beams, and the brake-levers with a cam-lever arranged between the car and truck-bolster and when operated in the act of setting the brakes tending to force them apart by its cam-power and its lever-power, and thereby to relieve the car-wheels from excessive brake-pressure, substantially as described.

6. In a car-brake, the combination of the following elements, viz: a metal plate or casting attached to the under side of the car-bolster, a metal plate or casting attached to the upper side of the truck-bolster directly beneath the plate or casting first mentioned and having a recess formed therein to accommodate the end of the lifting-lever, and a lifting-lever having its short arm retained in said recess and lying between said plates, so as to pry them apart and lift the car to relieve the car-wheels from excessive brake-pressure, substantially as described.

7. In a car-brake, the combination of the truck and brake-levers which transmit exterior power to set the brakes, with an additional lever which affords by its connection a fulcrum in the system of brake-levers and is itself so fulcrumed as to tend to lift the car, whereby the system of brake-levers transmits and applies the braking-power and the additional lever limits the maximum of power applied in proportion to the weight of the car, substantially as described.

414,109. STEAM-HAMMER FOR FORGING STEEL WHEELS. JAMES A. FAGER, Philadelphia, Pa. Filed May 8, 1889. Serial No. 310,086. (No model.)



Claim.—1. In a steam-hammer for forging wheels, the combination of the hammer-die and anvil-die having recessed surfaces corresponding to the shape of the sides of the finished wheel, a projection upon one side of said hammer-die, and supporting devices to support the blank in an upright position against the vertical face of the anvil-die and under the projection on the hammer-die, substantially as and for the purpose specified.

2. In a steam-hammer for forging wheels, the combination of a hammer and an anvil die having their surfaces formed to correspond to the shape of the finished wheel when the dies are in contact, a projection carried by said hammer-die, and supporting devices to support the blank in an upright position under said projection.

3. Dies for forging steel wheels, consisting of the combination of an anvil-die having a large depression or recessed portion upon its face adapted to receive the entire wheel-blank, including the flange, in combination with a hammer-die formed with a small depression upon its face corresponding only to the side of the wheel and corresponding with the recessed portion in the anvil-die to shape the blank into a finished wheel, and provided on its front part with a projecting hammer part arranged above the support on the anvil-die and shaped to correspond to the tread and flange of the wheel.

4. Dies for forging steel wheels, consisting of the combination of an anvil-die having a large depression or recessed portion upon its face adapted to receive the entire wheel-blank, including the flange, and a support in front and at a lower level than its face and formed to correspond to the tread of the wheel, including a groove for the flange, and also with a lateral support for the wheel when resting upon the front supports, and removable pin or part detachably connected with the anvil-die opposite to the lateral support to hold the wheel-blank in position while being turned, in combination with a hammer-die formed with a small depression upon its face corresponding only to the side of the wheel and corresponding with the recessed portion in the anvil-die to shape the blank into a finished wheel.

414,110. SNOW-SCRAPER. ELIAS GAYER, Connaeie, N. Y. Filed Apr. 3, 1889. Serial No. 305,652. (No model.)

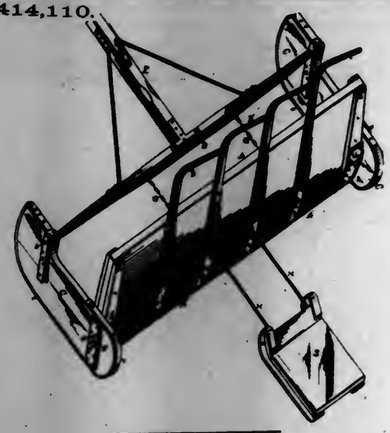
Claim.—1. The combination, in a snow-scraper, with the scraper A, having handles B B' and pivot-bolts *a a*, of the sled-runners C C, having vertical slots *f''*, pole D, secured to the top front end of the runners C C, tongue E, and connecting-chains G G, all constructed and arranged to operate substantially as described, for the purposes specified.

2. In a snow-scraper, the combination, with the scraper A, having the pivot-bolts *a a* at its lower front ends, of the runners C C, having irons *c*, and straps *e* and *f'*, the strap *f'* having a slot *f''*, pole D, and tongue E, substantially as and for the purposes described and shown.

3. In a snow-scraper, the combination, with the scraper A, pivoted to the runners C C, and having handles B B', of the sled S, attached to the rear of the scraper A by rods H, as described, for the purposes specified.



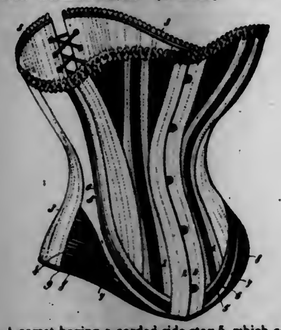
414,110.



414,111. IMPREGNATING WOOD, &c., WITH COPPER. ANDREW J. GOODWIN, New Smyrna, Fla. Filed Aug. 12, 1889. Serial No. 320,523. (No specimens.)

Claim.—In the preservation of wood or other substances by means of the mineral known as "copper," the process of depositing the copper in them by the action of grape-sugar or glucose, which consists in supplying the copper with suitable auxiliary elements in solution, as specified, then by passing said solution through their pores and interstices, and subsequently bringing in contact therewith a solution of grape-sugar or glucose in the proportions specified, all substantially as described.

414,112. CORSET. JOSEPH H. HAVILAND, Woodsport, N. Y., assignor to the Woodsport Skirt and Dress Company, same place. Filed June 29, 1889. Serial No. 316,088. (No model.)

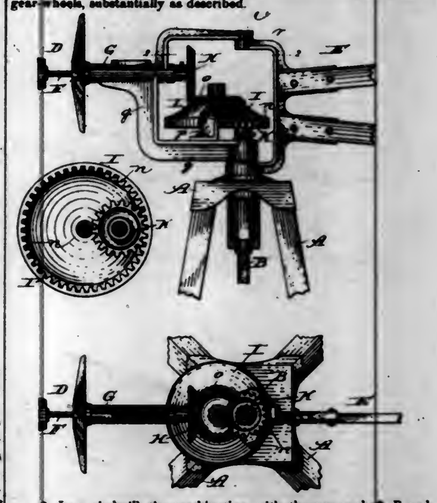


Claim.—A corset, having a corded side stay 5, which commences at the top, passes in an approximately vertical line down to the hip, and then curves downward and forward to the inner edge of the front clasp, said stay having the convex rear edge 7 to its downward and forward curved part joined to the concave front edge of a gore-piece 8, formed of a single piece, having filling-cords extending continuously across the same substantially at right angles to its vertical rear edge, which is attached to the vertical edge 4 of the rear corset-section to perfect the outline of the lower edge of the corset, substantially as described.

414,113. WINDMILL. JOHN T. HOSTLER, Kalamazoo, Mich. Filed Feb. 25, 1889. Serial No. 301,005. (No model.)

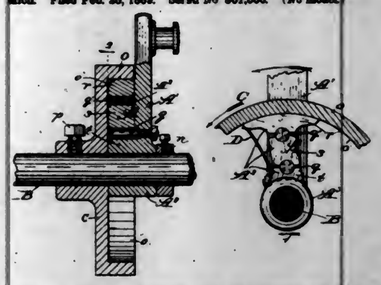
Claim.—1. In a windmill, the combination, with the power-shaft B, having a gear-wheel near its upper end, and the revoluble support carrying the vane and the wind-wheel with its gear-wheel, of suitable horizontally-disposed gearing on the said revoluble support and interposed between and in mesh with the said gear-wheels, the vertical centers of the said interposed gearing and gear-wheel on the power-shaft being on perpendicular lines parallel to each other and both being revoluble in the same direction, substantially as described.

2. In a windmill, the combination, with the power-shaft B and a revoluble frame C, supporting the vane and wind-wheel, of a gear-wheel on the shaft B, a gear-wheel on the wind-wheel shaft, and a hollow gear-wheel I, supported on the frame C and extending over the gear on the power-shaft and provided externally and internally with gear-teeth respectively in mesh with the wind-wheel and power-shaft gear-wheels, substantially as described.



3. In a windmill, the combination, with the power-shaft B and the revolable frame C, supporting the vane and wind-wheel, of a gear-wheel K on the shaft B, a beveled gear-wheel H on the wind-wheel shaft, a hollow gear wheel I, supported on the frame C and extending over the wheel K, beveled teeth o around the narrower exterior surface of the wheel I, in mesh with the wheel H, and teeth n around its wider interior surface, in mesh with the wheel K, the whole being constructed and arranged to operate substantially as described.

414,114. INTERMITTENT GRIP. JOHN T. HOSTLER, Kalamazoo, Mich. Filed Feb. 25, 1889. Serial No. 301,006. (No model.)



Claim.—1. In an intermittent grip, the combination of a shaft, a lever fulcrumed on the shaft and having a rigid arm A', provided with a sleeve portion A^3, and a jointed arm A^2, extending out of direct radial line from the shaft, comprising an inner section t integral with the sleeve A^3, a shoe r, and an intermediate block s, hinged at opposite extremities to the section t and shoe, and a wheel C, supported to encircle the jointed arm, whereby the oscillation of the rigid arm causes the shoe to engage the inner periphery of the wheel intermittently and rotate it in one direction, substantially as described.

2. In an intermittent grip, the combination of a shaft, a lever fulcrumed on the shaft and having a rigid arm A', provided with a sleeve portion A^3, and a jointed arm A^2, extending out of direct radial line from the shaft, comprising an inner section t integral with the sleeve A^3, a shoe r, and an intermediate block s, hinged at opposite extremities to the section t and shoe, and a spring-finger D, rigid with the arm A' and projecting normally into contact with the shoe on the side of the latter toward which the arm A^2 inclines, and a wheel C, supported to encircle the jointed arm, whereby the oscillation of the rigid arm causes the shoe to engage the inner periphery of the wheel intermittently and rotate it in one direction, substantially as set forth.

3. In an intermittent grip, the combination of a shaft B, a lever A, fulcrumed on the shaft and having a rigid arm A' and a jointed arm A^2, carrying a shoe r and extending out of direct radial line from the shaft, a wheel C, supported to encircle the jointed arm, and shifting mechanism for retracting and advancing the shoe with relation to the inner periphery of the wheel, whereby the arm A^2 may be inclined at will to the opposite side of the radius, substantially as and for the purpose set forth.

4. In an intermittent grip, the combination of a shaft B, a lever A, fulcrumed on the shaft and having a rigid arm A' and a jointed arm A^2, a wheel C, supported to encircle the jointed arm, and a sleeve E, surrounding the shaft eccentrically and confined between the said shaft and lever, whereby, by turning the eccentric-sleeve upon the shaft independently of the lever A, the jointed arm may be adjusted into and out of frictional contact with the inner surface of the wheel, substantially as and for the purpose set forth.

5. In an intermittent grip, the combination of a shaft B, a lever A, fulcrumed on the shaft and having a rigid arm A' and a jointed arm A^2, a wheel C, supported to encircle the jointed arm, a sleeve E, surrounding the shaft eccentrically and confined between the said shaft and lever, a handle E', connected with the eccentric-sleeve and projecting normally longitudinally of the arm A', and a holder m upon the arm A', to secure the handle in its normal position, whereby, by swinging the handle to turn the eccentric-sleeve upon the shaft independently of the lever A, the jointed arm may be adjusted into and out of frictional contact with the inner surface of the wheel, substantially as and for the purpose set forth.

6. In an intermittent grip, the combination of a shaft B, a lever A, fulcrumed on the shaft and having a rigid arm A' and a jointed arm A^2, a wheel C, supported to encircle the jointed arm, a sleeve E, surrounding the shaft eccentrically and confined between the said shaft and lever, a handle E', connected with the eccentric-sleeve and projecting normally longitudinally of the arm A', and a holder m upon the arm A', to secure the handle in its normal position and laterally adjustable thereon to change the normal position of the handle, whereby, by swinging the handle to turn the eccentric-sleeve upon the shaft independently of the lever A, the jointed arm may be adjusted into and out of frictional contact with the inner surface of the wheel, and by adjusting the holder m the said frictional contact may be increased or diminished, substantially as and for the purpose set forth.

414,115. SANDPAPERING-ROLLER. JOSEPH S. KENYON, South Bend, Ind. Filed Jan. 17, 1889. Serial No. 296,612. (No model.)



Claim.—1. The combination of the cylinder and spring-controlled gripper at one end thereof with the continuous abrading-strip secured to one end of the cylinder, wrapped loosely and spirally around the same, and having its opposite end attached to said gripper, substantially as and for the purpose described.

2. The combination of the cylinder having a fixed clamp in one end and a spring carrying a gripper in its opposite end with an abrading-strip secured at one end to the fixed clamp, wrapped spirally around the cylinder, and secured by its other end to the gripper, substantially as set forth.

3. The combination of the cylinder and the convolute spring in one end thereof with a jointed gripper connected to said spring and an abrading-strip connected to the cylinder at one end, wrapped spirally around the same, and connected at its other end to said gripper, all substantially as and for the purpose specified.

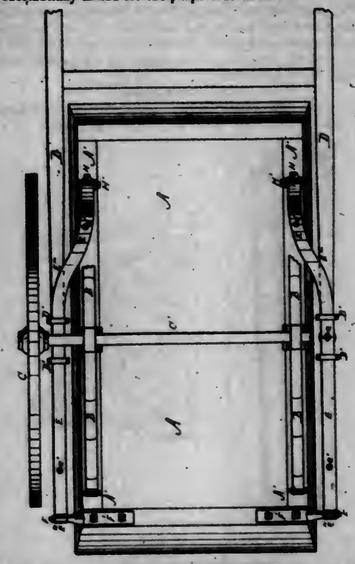
414,116. COMPOSITION FUEL. ADOLPH MAYER, Chicago, Ill. Filed Apr. 6, 1889. Serial No. 306,355. (No specimens.)

Claim.—As a new article of manufacture, a lump or block fuel composed of coal or coke screenings, flour, gum, and lard or other oleaginous substance, in the proportions substantially as described.

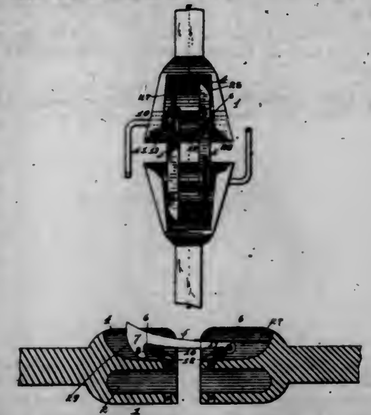
414,117. TWO-WHEELED VEHICLE. JAMES NEAL and CHARLES F. BOLLES, Amesbury, Mass. Filed July 3, 1889. Serial No. 316,451. (No model.)

Claim.—1. In a two-wheeled carriage, the combination, with the shafts D and carriage-body A, of the shaft-springs E, secured to said shafts at about the centers of the springs over the axle, and secured at their ends to the carriage near the forward and rear ends of the same, said springs being bent inward at E'' to avoid the shafts, substantially as and for the purpose set forth.

2. The combination, with the shafts D and carriage-body, of the shaft-springs E, secured to the shafts at D', attached at their rear ends to the carriage-body by bolts F, and plates F', bent inward at E'', and secured at their front ends to the carriage-body by joints H' and plates H, substantially as and for the purpose described.



414,118. CAR-COUPLING. HENRY NIEMANN, Denver, Colo., assignor of one-half to Frederick L. Rohling, same place. Filed Jan. 31, 1889. Serial No. 298,967. (No model.)



Claim.—1. The combination of a coupling-head or draw-bar having an open-topped recess 4 above the ordinary link-recess, a coupling-bar having a beveled and undercut hook end and independently pivoted in the upper recess, a lesser cam taking beneath such bar, a larger cam adapted to take beneath the coacting coupling-bar of the adjacent coupler, a pintle or shaft upon which such cams are secured pivoted in the walls of the upper recess and beneath the line of pivoting of the coupling-bar, and means, substantially as described, for lifting the cams to simultaneously disengage both coupling-bars, substantially as set forth.

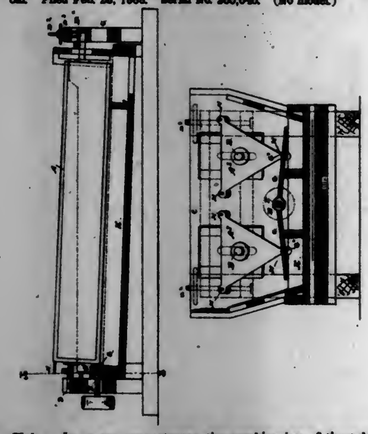
2. The combination of a coupling-head having top recess 4, the coupling-bar 5, having the top beveled and undercut hook-head 7, the pin 6, the pintle 10, having crank-arm 11, the cam-surfaces 12 13, secured thereto, and the cords or chains 14 15, substantially as set forth.

3. The combination of coupling-head 1, the coupling-bar 5, having

the top beveled and undercut hook end 7, the pin 6, the pintle 10, having projecting crank-arm 11, the cams 12 13, secured upon each pintle, the cords or chains 14 15, and levers 20 21, substantially as set forth.

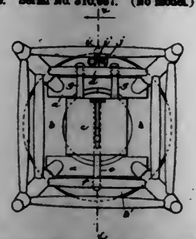
4. The combination of coupling-head 1, coupling-bar 5, pivoted in a recess therein and having the undercut hook end 7, with side bevel 26, spring 27, pin 6, pintle 10, with projecting crank-arm 11, cam-surfaces 12 13, secured upon the pintle, and the cords or chains 14 15, substantially as set forth.

414,119. ORE-CONCENTRATOR. ALMARIN B. PAUL, San Francisco, Cal. Filed Feb. 23, 1888. Serial No. 265,040. (No model.)



Claim.—In an ore-concentrator, the combination of the table A, triangular in cross-section and having the plane surfaces A' A', provided with ledges, as shown, and having also the journals B B, the stationary frame C, the journal-boxes D and $D^{\times}$ in said frame for receiving said journals, and the mechanism for imparting oscillating motion to the table, consisting of rotating shaft E, having an eccentric F thereon, the connecting-rod G, attached to one of the heads of the table, and the trough K, arranged beneath the table, substantially as described.

414,120. BABY-WALKER. ADOLPH PETERSEN, Brooklyn, N. Y. Filed May 13, 1889. Serial No. 310,667. (No model.)



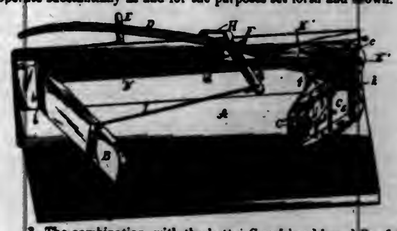
Claim.—1. The combination, with the baby-walker stool having the centrally-open and opening and closing table-top, of the seat below having support at one side on a pivotal rung of the stool and at the other side by the slide-bolt of the seat detachably connecting with the opposite rung, substantially as described.

2. The combination, with the baby-walker stool having the centrally-open and opening and closing table-top, of the seat below having support at one side on and sliding connection with a pivotal rung of the stool and at the other side by the slide-bolt of the seat detachably connecting with the opposite rung, said bolt also having detachable connection with the stool-rung below the pivot-rung to secure the seat in the position of disuse, substantially as described.

414,121. ATTACHMENT FOR HARVESTERS. AMOS J. PECK, Butler, Ind. Filed Oct. 23, 1888. Serial No. 288,743. (No model.)

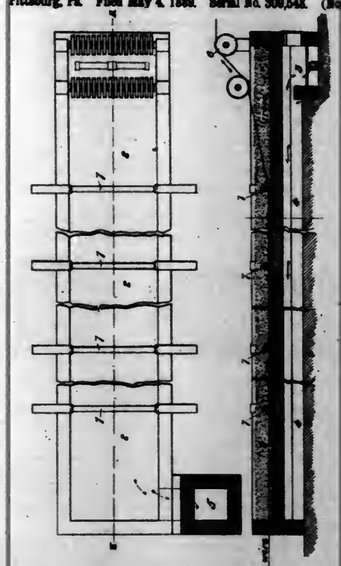
Claim.—1. The combination, in a grain-adjuster, with the head-board B and butter C, of the operating-bar D, pivotally connected at *d* to the butter and having a slot *d* therein, guide E, support H, bar G, pivoted at *g* to the support H, and passing through the slot *d* of the bar D, whereby the movement of the said bar D is communicated to the bar G, and link I, pivotally connected to the head-board B, as described, for the purposes specified.

2. The combination, with the adjusting-bar D, having a direct pivotal connection with the top of the butter, and shield K', also secured to the top of the butter, of said butter C, composed of the curved top bar 1 and bottom bar 2, rods 3 4, face-plate C', with teeth *t*, rod *o*, shaft *e*, bar *l*, and bracket *m*, all constructed and adapted to operate substantially as and for the purposes set forth and shown.



3. The combination, with the butter C and head-board B, of the shield made in two parts K and K', the part K fixed upon a stationary part of the frame, and the part K' secured to and movable with the butter C, as described, for the purposes specified.

414,122. PROCESS OF ANNEALING WIRE. HENRY ROSENTH, Pittsburg, Pa. Filed May 4, 1889. Serial No. 309,542. (No model.)



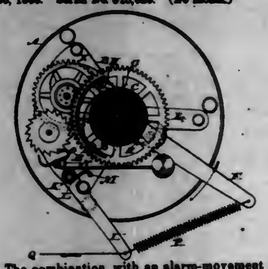
Claim.—An improvement in the art of annealing wire, which consists in passing the wire through a heated body containing small lumps or pieces of abrasive material—such as gravel—whereby the wire is simultaneously annealed and polished, substantially as and for the purposes described.

414,123. CALL-BELL. ALBERT F. ROCKWELL, Bristol, Conn., assignor to the New Departure Bell Company, same place. Filed May 20, 1889. Serial No. 312,372. (No model.)



Claim.—A call-bell composed of ordinary metallic call-bell mechanism, having combined with it, so as to cover it from view, a standard, a cap or canopy, and an operating thumb-piece, each of vegetable ivory, celluloid, hard rubber, or similar substance adapted to be made and kept ornamental, substantially as set forth.

414,124. DOOR OR ALARM BELL. ALBERT F. ROCKWELL, Bristol, Conn., assignor to the New Departure Bell Company, same place. Filed June 26, 1889. Serial No. 315,020. (No model.)

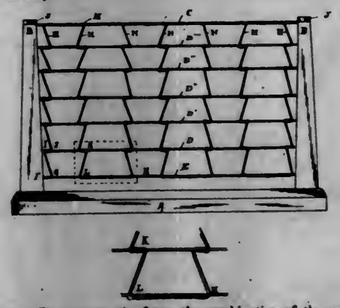


Claim.—1. The combination, with an alarm-movement provided with a mainspring for operating it, of a stop for normally engaging with the movement and preventing its operation, mechanism for moving the stop, releasing the alarm-movement, and ringing the bell by the pull of the bell-wire, and mechanism having a yielding connection with the stop-releasing mechanism for winding up the mainspring by the pull that releases the alarm-movement, whereby the bell is caused to ring ordinarily as long as the pull upon the bell-wire is continued and is silenced by the discontinuance of the pull, like an electric bell, substantially as set forth.

2. The combination, with the alarm-movement provided with its mainspring, of the levers F and I, connected together at their free ends by a spring, the pawl and ratchet operated by the lever F to wind up the mainspring, and the pivot-post K, its spring L, and the arm N, arranged substantially as and for the purpose set forth.

3. The combination, with an alarm-movement having a mainspring for operating it, of a stop for normally engaging with the movement and preventing its operation, the lever F, operatively connected with the mainspring-arbor, so as to turn it and wind the mainspring, the lever I, connected with the stop, so as to move it and release the alarm mechanism, and a yielding connection between the free ends of the levers, whereby the lever I may be operated without operating the lever F when the mainspring becomes fully wound, substantially as set forth.

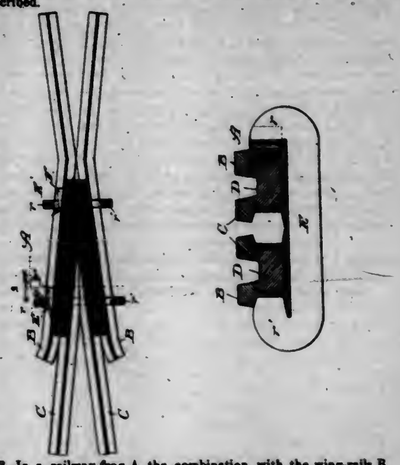
414,125. WIRE FENCE. PETER SOMMER, JOHN SOMMER, and PETER W. SOMMER, Dilon, Ill. Filed June 7, 1889. Serial No. 313,422. (No model.)



Claim.—In a woven-wire fence, the combination of the continuous cable C, the horizontally-parallel frame-wires D D' D'' D''' D'''' E, forming the frame-work on which the keystone meshes composing the netting are woven, the continuous wire H, twisted with the frame-wires at the intersecting points into short cables, by means of which the said meshes are firmly retained in their original shape, all substantially as hereinbefore described.

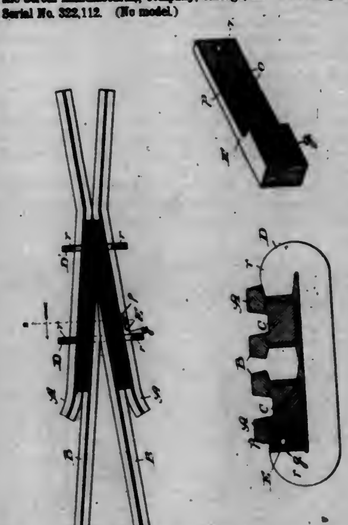
414,126. RAILWAY-FROG. AXEL A. STROM, Austin, assignor to the Strom Manufacturing Company, Chicago, Ill. Filed Aug. 22, 1888. Serial No. 321,630. (No model.)

Claim.—1. In a railway-frog A, the combination, with the wing-rails B and point-rails C, braced intermediately by filling D or the like, of clamps E and E', each comprising a metal bar having its ends turned edgewise of the bar toward each other and affording the hook-shaped extremities *r* and *r'*, the said clamps embracing the frog across its base, respectively, near the ends of its wider and narrower portions, the keys F, driven directly between the extremities of the clamps and side of a wing-rail and bent at their protruding tapering ends toward the respectively adjacent sides of the clamps, substantially as described.



2. In a railway-frog A, the combination, with the wing-rails B and point-rails C, braced intermediately by filling D or the like, of clamps E and E', each comprising a metal bar having its ends turned edgewise of the bar toward each other and affording the hook-shaped extremities *r* and *r'*, the said clamps embracing the frog across its base, respectively, near the ends of its wider and narrower portions, the keys F split toward their tapering extremities and driven between the extremities of the clamps and side of a wing-rail, and each having the outer portion of its protruding split end bent toward the adjacent side of a clamp, substantially as described.

414,127. RAILWAY-FROG. AXEL A. STROM, Austin, assignor to the Strom Manufacturing Company, Chicago, Ill. Filed Aug. 27, 1889. Serial No. 322,112. (No model.)



Claim.—1. A railway-frog having its parts secured together by clamps D and D', embracing the frog across its base, with their hook ends bearing directly and solely against the outer sides of the wing-

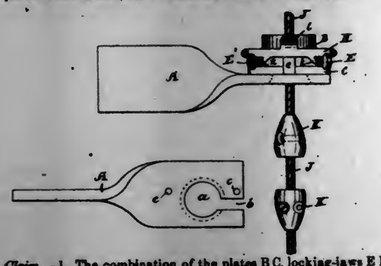
rails, whereby the wedge shape of the frog alone serves for wedging the clamps in their operative positions, substantially as described.

2. A railway-frog having its parts secured together by clamps D and D', embracing the frog across its base, with their hook ends bearing directly and solely against the outer sides of the wing-rails, whereby the wedge shape of the frog alone serves for wedging the clamps in their operative positions, and stops provided on the frog against the rear sides of the clamps, substantially as and for the purpose set forth.

3. A railway-frog having its parts secured together by clamps D and D', embracing the frog across its base, with their hook ends bearing directly and solely against the outer sides of the wing-rails, whereby the wedge shape of the frog alone serves for wedging the clamps in their operative positions, and stops adjustably secured to the wing-rails against the clamps, substantially as and for the purpose set forth.

4. A railway-frog having its parts secured together by clamps D and D', embracing the frog across its base, with their hook ends bearing directly and solely against the outer sides of the wing-rails, whereby the wedge shape of the frog alone serves for wedging the clamps in their operative positions, and adjustable stops E, each having a head *q* and perforated tail-piece *p*, through which it is bolted to the wing-rail against a clamp, substantially as and for the purpose set forth.

414,128. LOCKING DEVICE FOR ELEVATORS. CORNELIUS F. SULLIVAN, Boston, Mass., assignor of one-half to Frank W. Lowe, same place. Filed Feb. 15, 1889. Serial No. 299,993. (No model.)



Claim.—1. The combination of the plates B C, locking-jaws E E', springs G, and drop-latch H, having the jaw-holding ears, all constructed and arranged substantially as and for the purposes set forth.

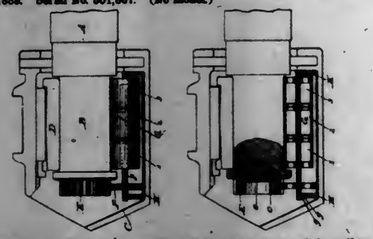
2. The plate B, having a circular hole a^2, slot *d*, and lug *e*, in combination with the plate C, having a circular hole a^2, slot *f*, and lug *g*, whereby the plates can be readily placed around the rope and then locked together, substantially as set forth.

3. The bracket A, consisting of a flat piece of metal bent or twisted so that its ends stand at right angles with each other, and one end having a circular hole *a* and slot *b*, in combination with plates B C, locking-jaws E E', springs G, and drop-latch H, having the holding-ears, substantially as and for the purposes described.

4. Two locking-jaws pivoted and held together at their rear end by lugs in one of which is a slot and in the other a pin fitting in said slot, so that when either jaw is operated the two jaws move simultaneously, but in opposite directions, in combination with plates B C, drop-latch H, having the jaw-holding ears, and springs G, substantially as shown and described.

5. The combination, with the shifting-rope of an elevator-car provided with stops K, of the locking-jaws, springs G, plates B C, and drop-latch H, having the jaw-holding ears, substantially as shown and described.

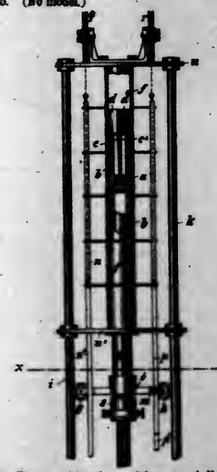
414,129. CAR-AXLE LUBRICATOR. HENRY VAN DEGAR, East Albany, assignor of one-half to Aaron Fryer, Bath, N. Y. Filed Mar. 5, 1889. Serial No. 301,867. (No model.)



Claim.—1. The combination, with the journal end of the railway-axle provided with the central end perforation *a*, of the gear E, constructed as described, and provided with a central projection or stem *c*, corresponding in diameter and form with the central perforation and provision for holding the gear from turning in relation to the end of the journal, substantially as and for the purposes set forth.

2. The combination, with the journal end of the railroad-axle, of a lubricating-cylinder composed of two or more independent and separate sections which can at will be applied to a common shaft and revolved in contact with the lower side of the journal of the axle, gear E, secured to the end of the axle so as to revolve with the same, and gear F, secured to the shaft on which the several sections of the lubricating-cylinder are mounted, substantially as and for the purposes set forth.

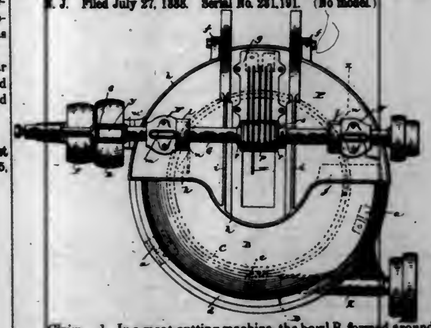
414,130. ARC LAMP. FRIEDRICH W. R. SEIFERT, Altona, assignor to Otto Lindemann, Hamburg, Germany. Filed June 27, 1888. Serial No. 315,725. (No model.)



Claim.—1. The combination, with a coaxially-arranged solenoid and the central diamagnetic tube, of the core pending in said tube and the two iron jaws connected to and projecting above the upper end thereof and bearing against said tube, as set forth.

2. The combination, with a coaxially-arranged solenoid and the central diamagnetic tube, of the core pending in said tube, the two semi-cylindrical or globular jaws in contact with said core, and the springs or articulated rods connected at their lower ends to said core and at their ends to said jaws, substantially as set forth.

414,131. MEAT-CUTTING MACHINE. PETER WILKIE, Trenton, N. J. Filed July 27, 1888. Serial No. 281,101. (No model.)



Claim.—1. In a meat-cutting machine, the bowl B, formed around its upper edge with a continuous depending bearing-flange and having the hinged lid or cover formed around its edges with a continuous raised flange and across its top with corresponding flanges, substantially as described.

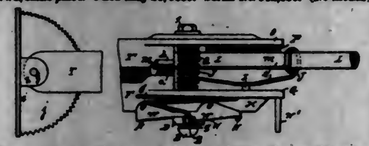
2. In a meat-cutting machine, the combination, with the supporting-frame formed around its upper edge with a continuous flange in which is formed a groove, of the bowl B, formed around its upper edge with a flange fitting in said groove and provided on its under side with a continuous surrounding worm-gear, said bowl being also provided with the hinged lid formed at one point of its front edge with the bevel indicated at *j*, substantially as described.

3. In a meat-cutting machine, the combination, with the supporting-frame, of the bowl B, having the hinged lid provided with the raised flanges and the inward slant *j*, and means for rotating said bowl, substantially as described.

4. In a meat-cutting machine, the hinged lid or cover formed around its edges with a continuous raised flange and having two corresponding flanges extending across the same, substantially as shown, and for the purpose described.

5. In a meat-cutting machine, the hinged lid having the raised flanges and formed at one point of its front edge with an inward slant or bevel, as indicated at *j*, substantially as described.

414,132. TELEPHONE-SUPPORTING DEVICE. SAMUEL J. ADAMS, Detroit, Mich., assignor of three-fourths to Jacob Brown and Arthur Brown, same place. Filed May 26, 1888. Serial No. 312,269. (No model.)

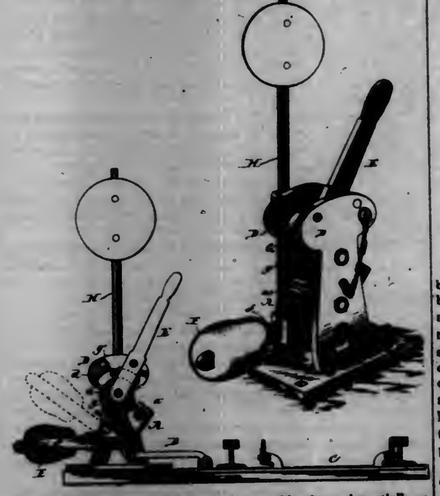


Claim.—1. In a telephone-supporting device, the combination, with two jaws adapted to clamp a movable supporting-rod between them, of a rotatable disk carrying thereon a cam adapted to press the jaws together, a movable lever adapted to engage with the disk in one direction, and a spring adapted to hold said lever normally in one position, substantially as shown and described.

2. In a telephone-supporting device, the combination, with two jaws adapted to clamp a supporting-rod between them, of a rotatable disk carrying thereon a cam adapted to press the jaws together, a movable lever adapted to engage with the disk in one direction, a spring adapted to hold said lever normally in one position, and a stop-pin secured to one of the jaws in the path of the lever, substantially as and for the purposes set forth.

3. The combination of the movable jaws C and G, the rod L, the pivoted support K, encircling said rod L at the end of said support, and the arc M, connected with said support and passing between the movable jaws, substantially as shown and described.

414,133. RAILWAY-SWITCH STAND. CHARLES ALKIRE, Muskegon, Mich., assignor to Henrietta Alkire, same place. Filed Sept. 24, 1888. Serial No. 286,261. (No model.)



Claim.—1. In a switch-stand, the combination, substantially as hereinbefore set forth, of a vibratory switch-lever pivoted upon a stationary bearing on the stand and arranged for connection with a switch, a hand-lever pivoted upon a stationary bearing on the switch-stand and hung separately from and operative independently of said switch-lever, and a temporary connecting device intermediate of said two levers and comprising a movable stop or abutment which is independent of the hand-lever and connected with the switch-lever, said movable stop being arranged with relation to the hand-lever so that the latter may, when swung in one direction only, engage and move said abutment, for the purpose described.

2. The combination, substantially as hereinbefore set forth, with a weighted switch-lever to connect with a switch, of a hand-lever, and an intermediate power-transmitting connection consisting of a lever engaging the switch-lever and pivoted to swing independently of the hand-lever when the latter is thrown to one side, for the purpose described.

3. The combination, with the switch-lever that is to connect with a switch, of the hand-lever E, and an intermediate power-transmitting connection consisting of the lever G, connected with the switch-lever and having an abutment with which the hand-lever can engage, substantially as and for the purpose described.

4. The combination, in a railway-switch stand, of a vibratory rocker or switch-lever A, a hand-lever hung to vibrate independently of said switch-lever, a temporary connection intermediate of said levers and consisting of a movable abutment arranged so that when the hand-lever is thrown to one side and locked the switch-lever may freely vibrate, and the vibratory weighted arm arranged to normally rest upon the switch-lever, but pivoted so that it can be lifted independently thereof, substantially as and for the purpose described.

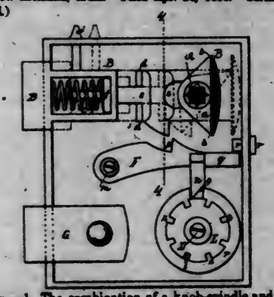
5. The combination, with the weighted switch-lever, which is connected with a switch, of the lever G, gear-connected with the switch-lever, the signal-rod H, connected with the lever G, and the hand-lever arranged for engagement with and disengagement from the lever G, substantially as described.

6. The combination, substantially as hereinbefore set forth, of the vibratory rocker or switch-lever A, pivoted between the upright side plates D of a switch-stand, the vibratory weighted arm arranged to normally rest upon said switch-lever, but pivoted to allow it to be lifted independently of the same, and a short vibratory lever G, which is confined between the side plates of the switch-stand and gear-connected with the rocker or switch-lever A, for the purpose described.

414,134. PROCESS OF REFINING IRON. GEORGE ARCHBOLD, New York, N. Y., assignor to Hiram Gilbert Bond, same place. Filed Sept. 20, 1888. Serial No. 284,564. (No specimens.)

Claim.—The method, substantially as herein described, of eliminating the phosphorus or phosphorus and sulphur from iron, which consists in treating it in the presence of the cyanide of barium.

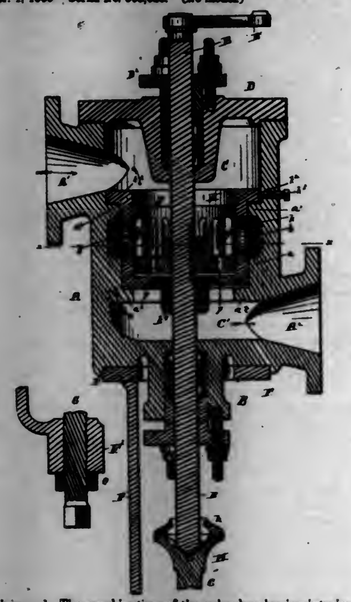
414,135. PERMUTATION-LOCK. OLE S. BAKKE and OLE HALGRIMSEN, New Richland, Minn. Filed Apr. 20, 1888. Serial No. 271,208. (Model.)



Claim.—1. The combination of a knob-spindle and divided lock-bolt adapted to be operated thereby, the inner section of said lock-bolt embracing said knob-spindle and adapted to slide thereon by means of a slot *c* formed in said inner section, a rectangular longitudinal groove formed in the rear face of said inner section, adapted to slide upon a similarly-shaped leg formed upon the back of the lock-case, lugs *d d* on the outer end of said inner section, a T-shaped arm extending from the inner end of the outer section of the lock-bolt and adapted to be received between and behind said legs, a latch-lever for locking said inner section of the lock-bolt, and a series of tumblers for operating said latch-lever, substantially as and for the purpose herein specified.

2. The combination, with a knob-spindle carrying cam *a* and divided lock-bolt adapted to be operated thereby, of a latch-lever adapted to engage with and lock the inner section of said divided lock-bolt, a series of tumblers for operating said latch-lever, an arm *q* on said latch-lever, and a movable stop *r*, for retaining said latch-lever when engaged by said tumblers substantially as and for the purpose herein specified.

414,186. VALVE. VIRGIL W. BLANCHARD, New York, N. Y. Filed Apr. 1, 1889. Serial No. 305,633. (No model.)



Claim.—1. The combination of the valve-box having interior upper and lower flanges $a' a^2$, substantially as described, and a removable cup-shaped valve-seat having a rim b^2, and supported therein upon said flanges and laterally perforated, with a cup-shaped valve laterally perforated and fitted to said seat, and the vertically-adjustable valve-stem carrying said valve, all substantially as set forth.

2. The combination of a valve-box having ribs and flanges a a' a^2, vertical passages b, and a fixed laterally-perforated valve-seat supported on flanges a' a^2, with a laterally and vertically perforated oscillating valve, substantially as described.

3. The combination of a valve-box having chambers C C' communicating with inlet and outlet ports, an annular series of vertical passages b between said chambers, and a laterally-perforated valve-seat to the inside of said passages, with a vertically-adjustable laterally-perforated oscillating valve fitted in said seat, substantially as described.

4. A valve-box having an inlet leading into a chamber C and an outlet leading from a chamber C', vertical ribs, horizontal flanges, and stuffing-boxes in its heads, in combination with a fixed laterally-perforated valve-seat flanged and cup-shaped, as described, the vertically and laterally perforated oscillating valve, also cup-shaped, and a vertically-adjustable valve-stem, to which said valve is secured, all constructed substantially as and for the purpose specified.

414,187. FURNACE. VIRGIL W. BLANCHARD, New York, N. Y. Filed June 21, 1889. Serial No. 315,073. (No model.)

Claim.—1. The combination, in a furnace, of the ash-pit, a dome above the same, a water-containing vessel in said dome, incased with fire-brick and non-conducting material, and the water-circulating pipes connected to said vessel, substantially as described.

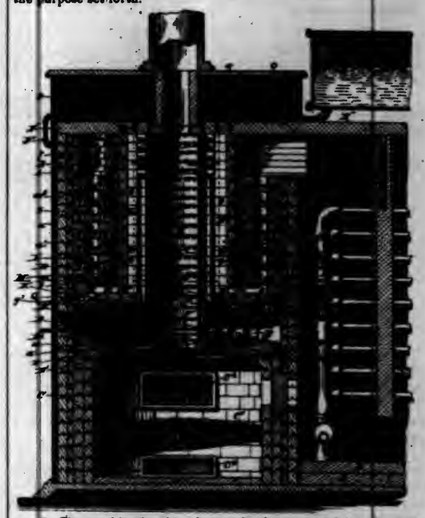
2. The combination, in a furnace, of a water-holding vessel suspended above the fire-chamber thereof, a fire-brick dome below said vessel, and the fire-brick walls and mixing-chambers supported thereon, substantially as specified.

3. The combination, in a furnace, of the channeled and perforated fire-bricks I J, arranged above the fire-chamber thereof, and the water-circulating pipes passing through said fire-bricks, but not exposed to the fire, substantially as specified.

4. The combination of the fire-chamber, its fire-brick dome, a water-holding vessel above said dome, and the channeled and chambered fire-bricks above said vessel, with the pipes connected to said vessel and rising through said fire-bricks, as and for the purpose specified.

5. The combination, in a furnace, of a water-holding vessel suspended above the fire-chamber and the fire-brick suspended from said vessel, substantially as described.

6. The combination, in a furnace having a fire-chamber, a dome above said chamber, a central flue, perforated and channeled fire-bricks surrounding said flue, and descending flues exterior thereto, with a water-holding vessel in said dome protected by the fire-bricks thereof, and the water-pipes rising therefrom through said bricks, as and for the purpose set forth.



7. The combination, in a furnace having a central flue above the fire-chamber, and a wall of perforated and channeled fire-brick surrounding the same, the descending flues exterior thereto, and the fire-brick wall inclosing said descending flues, with a water-circulating coil exterior to said wall and its inclosing fire-brick, all substantially as set forth.

8. The combination, in a furnace having a central flue, perforated and channeled fire-brick walls surrounding the same, exterior descending flues, and a series of ascending mixing-chambers, with a water-circulating coil inclosed in fire-brick walls between the descending flues and mixing-chambers, and a water-circulating coil exterior to said chambers, substantially as set forth.

9. The combination of the furnace having a fire-brick dome, water-holding vessel above the same protected by fire-brick, and a series of channeled and chambered fire-bricks above said vessel, with a water-holding tank above said fire-brick, and the pipes extending through said bricks and communicating with the tanks and vessel, all substantially as described.

10. The combination, in a furnace, of a fire-brick dome, a water-holding vessel therein, an air-chamber above said vessel, and the ascending and descending flues, and the mixing-chambers, constructed and arranged substantially as and for the purpose set forth.

11. In a furnace, the combination of a series of bricks J, constructed substantially as described, with vertical openings and lateral channels and passages, with a series of vertical water-pipes passing through said bricks, as and for the purpose specified.

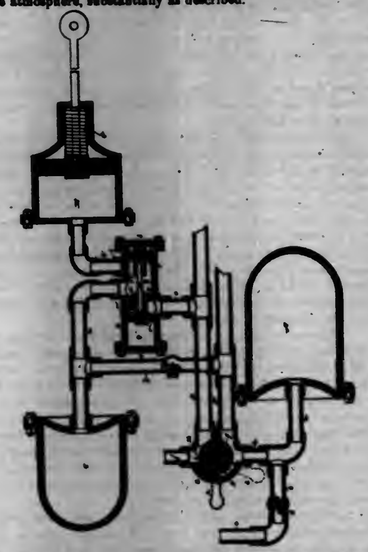
12. In a furnace, the combination of a series of bricks I, having vertical openings and lateral passages and channels, substantially as described, and the series of water-pipes passing through the vertical openings in said bricks, as and for the purpose set forth.

13. The combination, in a furnace, of the casing having an outer metal shell, an inner and outer fire-brick wall, and a water-circulating coil B between said walls, substantially as set forth.

14. The combination, in a furnace, of a water-holding vessel suspended above the fire-chamber thereof with a series of fire-bricks suspended from and protecting said vessel, as and for the purpose set forth.

414,188. STRAIGHT-AIR AUTOMATIC BRAKE. ALBERT R. BOLTON, Norwood, Ohio, assignor of one-half to Harvey J. Ubert, New York, N. Y. Filed June 26, 1889. Serial No. 315,468. (No model.)

Claim.—1. A straight-air automatic brake comprising a main reservoir, two lines of pipes, an engineer's valve interposed between the main reservoir and the two lines of pipes and having a port to open communication between the main reservoir and one or both lines of pipes and another port to open communication between one line of pipe only and the atmosphere, an auxiliary reservoir, a triple valve comprising two pistons moving together and of unequal area and arranged in isolated chambers, the smaller piston and chamber communicating directly with one of the lines of pipes and the auxiliary reservoir and with the brake-cylinder, and the other chamber containing the larger piston communicating with the other line of pipe and the atmosphere, substantially as described.



2. A triple valve comprising a shell divided into two compartments isolated from one another and of unequal area and pistons of corresponding inequality as to area arranged in the said compartments or chambers and rigidly connected by a stem common to both, combined with two lines of pipes, both of which are adapted to be put into open communication with a main reservoir, and one of which is always in such communication, and is also open to the smaller chamber of the triple valve, and thence to the brake-cylinder to set the brakes, and the other of which opens into the larger chamber of the triple valve and may be opened to the main reservoir to release the brakes and then opened to the atmosphere to permit the escape of the air for permitting the setting of the brakes, substantially as described.

3. A straight-air automatic brake comprising a main reservoir, two lines of pipes, an engineer's valve interposed between the main reservoir and the two lines of pipes and having a port to open communication between the main reservoir and one or both lines of pipes, and another port to open communication between one line of pipe only and the atmosphere, an auxiliary reservoir, a check-valve interposed in a branch pipe connecting the auxiliary reservoir with the main line of pipe, a triple valve comprising two pistons moving together and of unequal area and arranged in isolated chambers, the smaller piston and chamber communicating directly with one of the lines of pipes and the auxiliary reservoir and with the brake-cylinder, and the other chamber containing the larger piston communicating with the other line of pipe and the atmosphere, substantially as described.

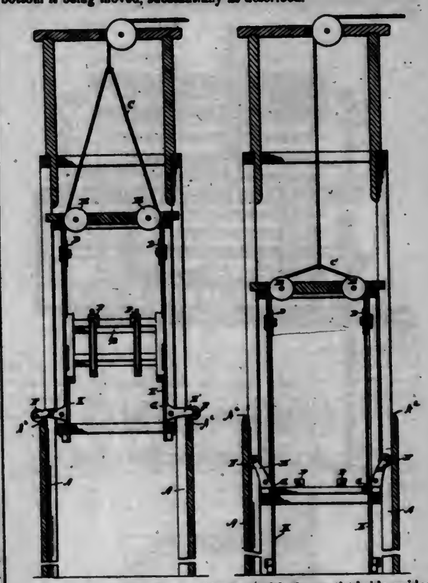
414,189. COAL-CAGE. RALPH R. CAMPBELL, Streator, Ill. Filed Dec. 18, 1888. Serial No. 294,011. (No model.)

Claim.—1. In a coal-hoist, the combination, with the cage having the movable false bottom and the hoisting-rope connected to said bottom, of the locking mechanism for retaining said bottom depressed while the cage is being raised or lowered, substantially as described.

2. In a coal-hoist, the combination, with the cage having the movable false bottom and the hoisting-rope connected to said bottom, of the dogs or catches engaging the side guides and projecting above the false bottom to retain the same depressed while being raised or lowered, substantially as described.

3. In a coal-hoist, the combination, with the cage having the movable false bottom and the hoisting-rope connected thereto, of the dogs or catches pivoted on the cage, one arm of each of said dogs engaging the side guides and the other projecting above the false bottom to retain the same depressed while being raised or lowered, substantially as described.

4. In a coal-hoist, the combination, with the side guides having the substantially horizontal bearings at the top, and the cage having the movable false bottom, of the dogs engaging the side guides and projecting above the false bottom to retain the same depressed while rising or lowering, and also engaging the substantially horizontal bearings at the top of the side guides to support the cage while the false bottom is being moved, substantially as described.



5. In a coal-hoist, the combination, with the vertical side guides having the substantially horizontal bearings at the top, the cage having the pivoted false bottom to which the hoisting-rope is connected, and bearings for the inner ends of the dogs at the side of said bottom, of the dogs pivoted on the cage, each dog having an arm projecting above the false bottom and another arm engaging the vertical side guides to retain the false bottom depressed while the cage is being raised or lowered, and also engaging the substantially horizontal bearings, and the side bearings on the false bottom to support the cage while the false bottom is being tilted, substantially as described.

6. In a coal-cage, the combination, with the vertically-movable false bottom and the locking mechanism to retain the bottom depressed while in the shaft, of the horizontal bearings at the top of the shaft, with which dogs on the cage engage to support the cage in elevated position, substantially as and for the purpose specified.

7. In a coal-cage, the combination, with the movable false bottom and the locking mechanism to retain the bottom depressed while in the shaft, of the horizontal bearings, with which dogs on the cage engage to retain the cage elevated, and the segments secured to the false bottom to keep the dog in engagement with the horizontal bearings while the false bottom is elevated, substantially as described.

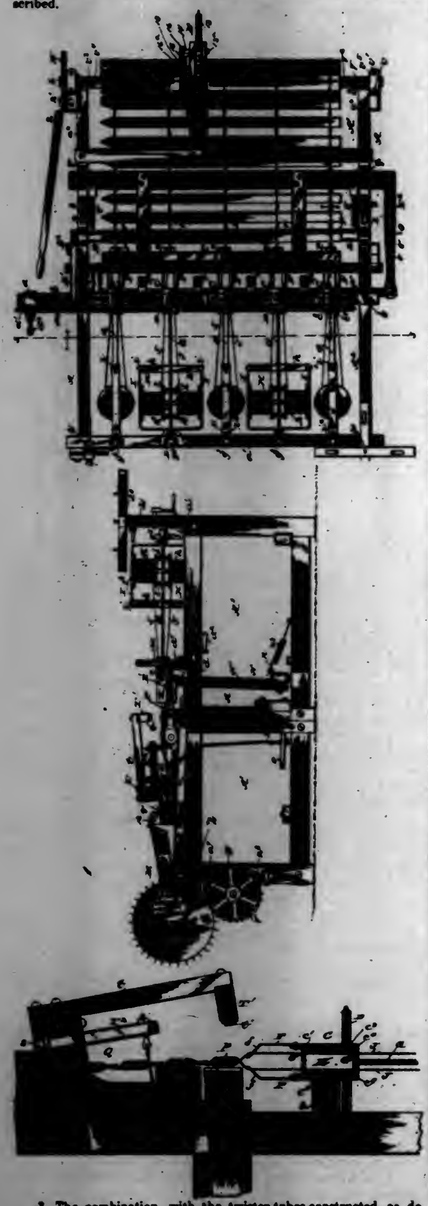
8. In a coal-hoist, the combination, with the cage having the movable false bottom, of the downward extensions secured to said bottom at one side, and the pivots at the end of said extensions, below the top level of the supporting-timbers, whereby when the bottom is tilted the edge of the bottom will be projected beyond the pivotal point to dump the coal away from the shaft, substantially as described.

414,140. FENCE-MACHINE. ERNEST W. CRAMBELL, Waco, Tex., assignor of two-thirds to Jesse P. Hodge, same place. Filed Aug. 16, 1889. Serial No. 321,042. (No model.)

Claim.—1. In a fence-making machine, essentially as described, the combination, with the twister disks or tubes provided with extended hubs having radial notches, of the spool-holding frame detachably journaled at one end in the main frame, its opposite end provided with radial projections adapted to fit the radial notches in the said disk-hub, substantially as and for the purpose described.

2. In a fence-making machine, essentially as described, the combination, with the twisting devices consisting each of a hollow tube journaled to the main frame, provided at one end with a cross-bar having wire passages, spring-arms projecting forward from said tube, their inner ends bent toward each other and provided with wire passages, a drive-wheel secured upon said tube, the rear end of said tube

extended and provided with notches in its outer end, of the spool-supporting frame consisting of a main bar provided at its forward end with a disk having radial extensions fitting the notched end of the tube, the opposite end journaled in the main frame, and yokes secured to said main bar adapted to support the spools, and means for operating the twister devices and the spools, substantially as shown and described.



3. The combination, with the twister-tubes constructed as described, of the spool-supporting frames consisting of a main or supporting bar detachably connected at one end to the twister-tube to turn therewith, the opposite end journaled in the main frame, arms extending laterally in opposite directions from said supporting-bar, spring-arms hinged at one end to the outer ends of said lateral arms, their free ends adapted to engage locking-lugs on the supporting-bar, pintles formed on the inner faces of the supporting-bar and hinged arms, and the spools journaled on said pintles between said bar and arms, substantially as shown and described.

4. In a fence-making machine, essentially as described, the spool-supporting frame consisting of the main bar, the lateral fixed arms, and the hinged arms, said arms and bar provided with short pintles projecting inwardly, in combination with the spools provided with end recesses fitting on said pintles, and coiled or buffer springs secured between the disks and the supporting-bar, substantially as and for the purpose shown and described.

5. In a fence-making machine, essentially as described, the combination, with the wire feeding and twisting devices constructed substantially as shown and described, and the vertical picket-supporting posts arranged in front of the twisting-tubes, of a pusher-frame consisting of a transverse bar adjustably pivoted to the lower timbers of the main frame, vertical arms secured to said bar and extended upward between the twister-tubes, the upper ends of said arms provided with L-shaped picket-rests, a spring for normally holding said vertical arms between the twister-tubes, and a foot-lever connected to the said transverse bar of the pusher-frame, said pusher-frame adapted to force the picket onto the picket-supporting posts when the lever is depressed, as and for the purpose described.

6. The combination, with the wire feeding and twisting tubes, essentially as described, and the picket-supporting posts arranged in front of said tubes, of a pusher-frame pivoted at its lower end to the main frame, the upper end disposed between the twister-tubes, a foot-lever connected to said pusher-frame, a hammer-frame pivoted at its front end to the main frame, its forward end disposed over the picket-supporting posts, a connection between said hammer-frame and the aforesaid foot-lever, and means for normally holding the hammer-frame elevated above said picket-posts, said pusher-frame and hammer-frame operated simultaneously by a single movement of the foot-lever, substantially as shown and described.

7. The combination, with the wire-feeding and wire-twisting devices and the picket-supporting posts, of a hammering device consisting of a transverse bar adjustably journaled to the frame of the machine to or from the picket-supporting posts, rearwardly-projecting arms, and a transverse hammer-bar secured to the outer ends of said arms, provided with a metal-hammering face or faces, said hammer-bar disposed normally above the picket-supporting posts, a spring for holding it in such position, and means for operating said hammering device, substantially as shown and described.

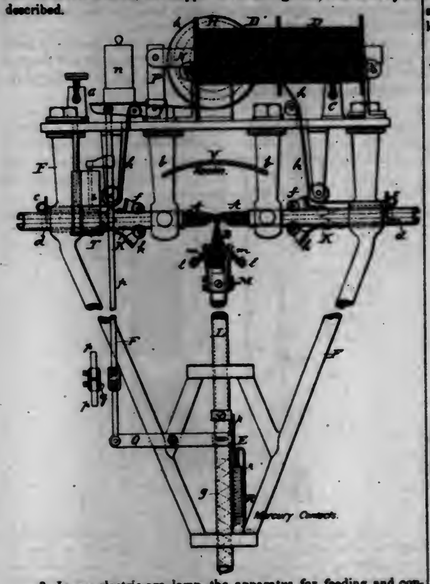
8. In a fence-making machine, essentially as described, the combination, with the winding-shaft V, detachably journaled in the main frame, as shown, and provided with a projecting bolt v^4, of the bar V^3, provided with a notch v^2 at one end engaging the bolt v^4, its opposite end bolted to the shaft, as at v^3, substantially as and for the purpose described.

9. In a fence-making machine, essentially as described, a registering device consisting of an arm or frame hinged to the main frame and projected over the finished fence-section, a wheel journaled in the outer end of said arm, provided with a series of radial teeth engaging the moving pickets, whereby said wheel is revolved, the shaft of said wheel provided with a lateral projection, a toothed disk formed on one face of a dial-wheel loosely mounted on a fixed shaft, said tooth-wheel adapted to be turned by the said lateral projection, and a pointer-arm secured on the outer end of said fixed shaft and projected over the dial-face, substantially as and for the purpose described.

414,141. ARC LAMP. FREDERIC G. CHAPMAN and FRED M. DEARDEN, London, England, assignors of one-third to William George Chapman, same place. Filed Sept. 27, 1888. Serial No. 286,497. (No model.) Patented in England May 13, 1887, No. 7,042; in France Mar. 13, 1888, No. 189,332; in Belgium Mar. 13, 1888, No. 81,012, and in Germany Apr. 4, 1888, No. 46,725.

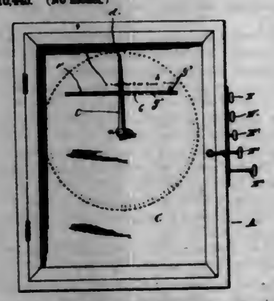
Claim.—1. In combination with a vertical negative carbon, its guide and feeding and adjusting devices, a two-part positive carbon provided with notches in its outer ends, tubular horizontal guides for the same, each provided near the arc position with a pair of contact-rollers, one of which is spring-pressed, plugs working in said guides having wedge-shaped ends fitted to said notches, a feed-drum and connections, and conducting-supports for said guides, substantially as described.

2. In combination with a vertical negative carbon, its guide and feeding and adjusting devices, the two-part cylindrical positive carbon having a skin-preventing groove along its top and provided with notches in its outer ends, and tubular horizontal guides for the same extending laterally from points near the arc position, plugs working in said guides having wedge-shaped ends fitted to said notches, a feed-drum and connections, and supports for said guides, substantially as described.



3. In an electric-arc lamp, the apparatus for feeding and controlling the negative pole, consisting of guide-tube L, adjustable retaining device M *m m*, mercury contacts E, and feed-spring *g*, the whole tube operated for adjustment by the solenoid D D′ and connections, substantially as described.

414,142. DEVICE FOR COUNTING STAMPS. WARREN A. CROCKETT and JUDSON N. HATCHER, Americus, Mo. Filed May 11, 1889. Serial No. 310,445. (No model.)

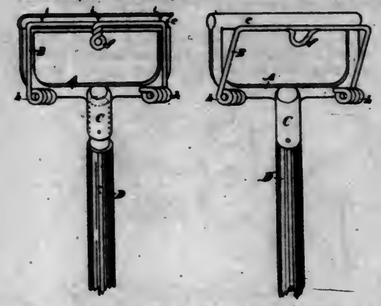


Claim.—1. The combination, with the graduated or numbered plate or dial, having the slide provided with a pin or projection and an index or pointer, of the pointer or index carried by a ratchet or tooth-wheel and having upon one side a shoulder engaging said pin or projection and a series of keys of proportionately increased or graduated lengths, a lever acted upon by said keys, and a pawl engaging said ratchet or tooth-wheel, substantially as set forth.

2. The combination, with the graduation or numbered plate or dial having the slide provided with a series of pins or projections arranged to project through a slot in said dial, which slot is of greater length than said slide, and a pointer or index, of the index or pointer carried by a ratchet or tooth-wheel and having a shoulder successively engaging said pins or projections of the slide, the graduated keys, and mechanism for the actuation of said ratchet or wheel through said keys, substantially as set forth.

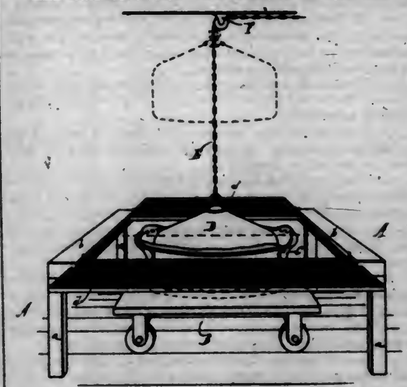
3. The combination of the graduated plate or dial, the slide arranged in a slot in said dial and carrying a series of pins or projections arranged to project through a slot in said dial, which slot is of greater length than said slide, and a pointer or index, the ratchet or tooth-wheel actuated by a lever-pawl and carrying an index or pointer having a shoulder successively engaging the pins of said slide, and the series of graduated keys of proportionately increased or graduated lengths and acting upon said lever and pawl, substantially as set forth.

414,143. MOP-HEAD. CHARLES R. CURTIS, Bangor, Me., assignor of one-half to Eugene M. Harvey, same place. Filed Jan. 7, 1889. Serial No. 295,663. (No model.)



Claim.—An improved mop-head consisting of the D-shaped casting having a handle-socket projecting from the portion opposite its straight side, and a spring-wire clamp bent to conform to the shape of the casting and having its ends formed in spiral springs and rigidly confined to the said casting, substantially as shown, and for the purpose described.

414,144. PROCESS OF MAKING HOLLOW GLASSWARE. JOHN R. CURTIS, Cambridge, assignor of one-half to Charles F. Martins, Boston, Mass. Filed June 11, 1888. Serial No. 276,715. (No specimens.)



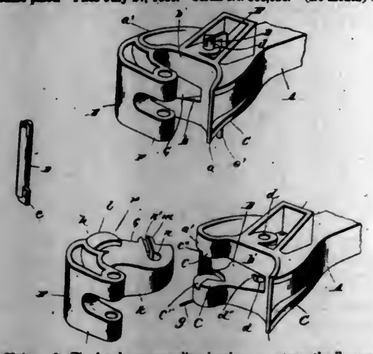
Claim.—The process of making hollow glassware direct from the molten-glass composition, which consists in rolling the molten-glass metal material into a flat blank of uniform thickness, and then placing said blank, before cooling and while in a plastic condition, onto a former or mold and permitting it to cool and contract on said former, whereby it assumes the shape of the former, and finally removing the so-shaped blank from the former and annealing it, substantially as described.

414,146. FOOT-BRUSH. FREDERICK H. CURRIER, Oswego, N. Y. Filed Apr. 12, 1889. Serial No. 306,994. (No model.)



Claim.—As an improved article of manufacture, a foot-brush composed of the elongated base A, cross-walls *c c*, resting with their bases across the entire width of the base A and rigidly attached thereto to brace the same, two longitudinal walls *b b*, one of which is rigidly secured to the cross-walls and the other is inserted removably between the cross-walls, the broom inserted vertically in the space surrounded by the aforesaid walls, and ties *t t*, extending transversely through the longitudinal walls, substantially as described and shown.

414,146. CAR-COUPLING. ROBERT H. DOWLING, Newark, Ohio, assignor of two-thirds to Charles Follett and Charles H. Follett, both of same place. Filed July 27, 1889. Serial No. 318,020. (No model.)



Claim.—1. The hook car-coupling having an automatically-opening hook provided with an arc groove, in combination with the locking-key having an offset or stop at its lower end, the lower end of said key when elevated engaging said groove, substantially as specified.

2. The hook car-coupling having a spring-actuated automatically-opening hook, in combination with the locking-key, and the guide-rod having a laterally-extended upper end connected to the upper end of said key, substantially as specified.

3. The hook car-coupling having a spring-actuated hook, in combination with the locking-key and its uncoupling and guide rod, substantially as specified.

4. In a hook car-coupling, the hook locking-key provided with a detachable uncoupling and guide rod projecting below the draw-head, substantially as specified.

5. In a car-coupling, the combination, with a draw-head having stepped bearings facing outward in its cavity or chamber, and having on their inner sides angular stops, of the knuckle-hook having its concave shoulder-bearings and trunnion-bearings facing inwardly to engage the bearings of said draw-head, said trunnion ends being engaged by said angular shoulders, substantially as specified.

6. In a car-coupling, the draw-head having the oblique horn and rounded bearings oppositely disposed at the sides thereof, and the knuckle having the concave shoulder-hook portions, and the oblique convex edge-pressure arm extending backward and inward therefrom, in combination with a locking-key, substantially as specified.

7. In a car-coupling, the combination, with the draw-head having the oblique horn and rounded bearings oppositely disposed, of the knuckle having the concave shoulder-hook and tapered pressure-arm extending inward at an angle of forty-five degrees therefrom, the locking-key, its guide-rod, and opening-spring, substantially as specified.

8. In a car-coupling, the combination, with the draw-head having the stepped bearings and tapered cavity, of the concave-shouldered knuckle-hook, having the tapered perforated and grooved pressure-arm, the locking-key, and its guide-rod, substantially as specified.

414,147. PAPER-FEEDING MECHANISM. EDWARD DURKEE, Auburndale, Mass. Filed Apr. 30, 1887. Serial No. 236,732. (No model.)

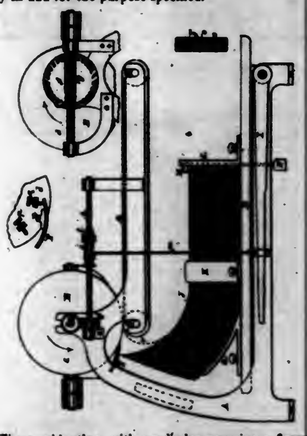
Claim.—1. In a machine for feeding paper, the combination of a shaft *b*, two disks *c* and *d*, adjustable thereon, and a finger F, pivoted between said disks, substantially as specified.

2. The combination of a shaft *b*, two disks *c* and *d* thereon, a finger F, pivoted to said disks, and devices, as the set-screws *p* and *q*, for gaging the distance through which the finger may swing, substantially as set forth.

3. In a paper-feeding machine, a finger F, pivoted to a cylinder and adjustable in a direction transverse to its shaft or pivot-pins, said finger being provided with an exterior friction-surface, substantially as and for the purpose set forth.

4. In combination with a finger F and carrier therefor, means as the toothed wheel *f* and toothed cylinder *g*, for imparting a varying movement to said carrier, said finger being provided with an exterior friction-surface, substantially as specified.

5. In combination with a cylinder E, carrying a finger F, a table D, for supporting a bank of paper in such relation to the cylinder that the finger will come in contact with the edge face of the sheet, substantially as and for the purpose specified.



6. The combination, with a cylinder carrying a finger F and a roller G to co-operate with said cylinder as a gripper, of a table D, for supporting a bank of paper in such relation to the cylinder that the finger will engage with the edge face of the sheet, substantially as set forth.

7. The combination of a cylinder carrying a finger F, a roller G to coact with said cylinder as a gripper, a roller H, tapes or bands *e*, extending around said rollers, and a table D, located under the roller G and said tapes or bands, substantially as and for the purpose set forth.

8. In combination with a support for a bank of paper, a finger and carrier therefor, whereby the finger is caused to touch the edge face of the sheet and carry the edge of the sheet, substantially as specified.

9. In combination with a pivoted table D, for supporting a bank of paper, a finger and carrier therefor, whereby the inclination of the bank is changed and the finger is caused to touch the edge face of each sheet and carry and bend the sheet, substantially as specified.

10. In combination with a finger and carrier therefor, a table so located as to present an edge face of a sheet to said finger, said table being provided with a raised portion or block O, to form or maintain a bend or curve in the bank of paper, substantially as specified.

11. The combination, with a finger and carrier therefor, of a table so located as to present an edge face of a sheet to said finger, said table being provided with a raised portion or block O, for supporting a curved bank, and with a bracket or gage L, substantially as and for the purposes specified.

12. The combination of a cylinder E, bearing a finger F, pivoted table D, for supporting and moving the bank, a chain or rope *m*, a shaft *h*, bearing a drum *i*, on which said chain or rope winds, and a worm *k* and gear *j*, substantially as described.

13. In a paper-feeding machine, a table D, provided with a raised part to support the bank of paper at or near the end and with a bracket L, whereby the bank is maintained in a bent or curved form, the upper sheet prevented from sliding under the action of a finger pressing against its edge face, and so that an edge of each sheet projects or extends beyond the corresponding edge of the adjacent sheet, substantially as set forth.

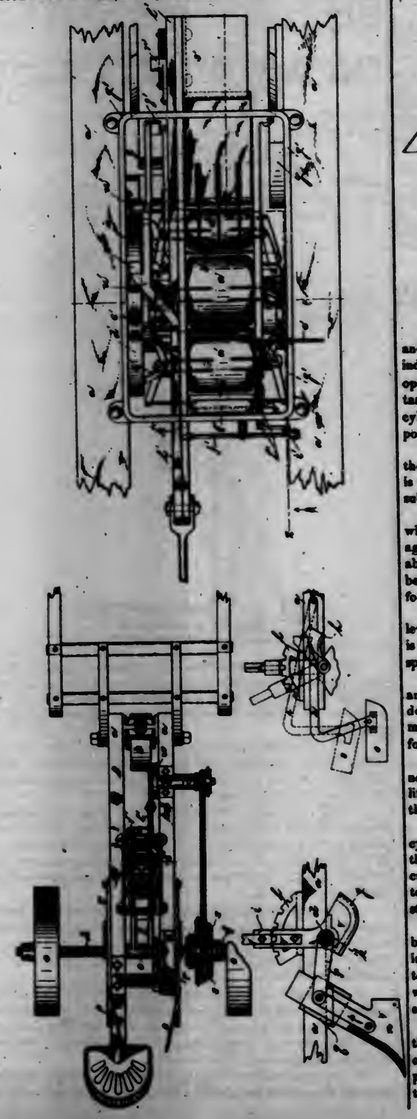
14. In a paper-feeding machine, a movable instrument herein called a "finger," in combination with a support or table for a bank of paper located with reference to said instrument so as to present an edge of a sheet of said bank to the same, substantially as and for the purpose set forth.

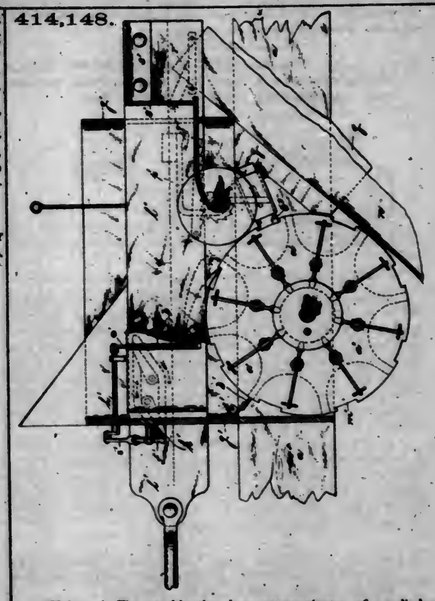
15. In combination with an instrument herein called a "finger," a support located with reference to said instrument so as to present the edge face of a sheet of paper to the same, said instrument being movable, whereby it will engage with said edge face, and adjustable, whereby the pressure on said edge face may be gaged, substantially as set forth.

16. In combination with an instrument, herein called a "finger," a support located with reference to said instrument so as to present the edge face of a sheet of paper to the same, said instrument being automatically adjustable (in position) with reference to said edge face and movable transversely with reference to the edge of said sheet, whereby it will touch said edge face and carry and bend the sheet, substantially as specified.

17. In combination with an instrument herein called a "finger," a support located with reference to said instrument so as to present an edge face of a sheet to the same, said instrument being movable, its movement being variable, whereby it will engage with said edge face and while in contact therewith have a comparatively slow motion, substantially as set forth.

414,148. POTATO-PLANTER. SAMUEL H. PERE, Hinsdale, assignor of one-half to Henry C. Hitchcock, Clarendon Hills, Ill. Filed Nov. 8, 1884. Serial No. 147,493. (No model.)





Claim.—1. The combination, in a potato-planter, of a cylinder and means for driving the same step by step, forks carried by the cylinder and operated by cams, tongues carried by the cylinder and operated by a cam *d'*, and means for moving said cam *d'* a short distance, whereby the tongue most advanced is drawn back before the cylinder begins to move at each step, substantially as and for the purpose specified.

2. The combination, with the cam *d'*, provided with the lug, of the piece *d''*, carried by the reciprocating slide, whereby the said cam is moved back and forth a short distance as the slide reciprocates, substantially as and for the purpose specified.

3. The combination, in a potato-planter, with a cylinder provided with pockets and means for driving said cylinder step by step, of an agitator turned automatically inwardly to enlarge the pocket that is about to be filled, and means for turning said agitator outwardly just before the cylinder begins to move at each step, substantially as and for the purpose specified.

4. The agitator carried by the crank-shaft, the link and pivoted lever, and the cam *k'* in the reciprocating slide, whereby the agitator is turned outwardly and inwardly, substantially as and for the purpose specified.

5. The dog *o'*, in combination with the weighted bell-crank lever and the movable cam carried by the reciprocating slide, whereby the dog is disengaged from the cylinder at the beginning of the movement of the slide toward the rear of the machine, substantially as and for the purpose specified.

6. The combination, with the cylinder turned step by step, of the notches *m'* and the dog or detent *o'*, and means whereby the dog is lifted from one notch and forced into the next notch at each step of the cylinder, substantially as and for the purpose specified.

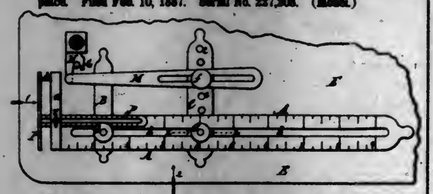
7. The combination, with the cylinder, of means for moving said cylinder step by step, and the agitator mounted upon the crank-shaft, the pivoted lever operated by cam *k'*, and the link connecting said crank-shaft with the pivoted lever, whereby the pocket that is about to be filled is enlarged and the potatoes caused to fall therein, substantially as and for the purpose specified.

8. The combination, with the slide and means for driving the same back and forth, of the bearings for said slide, provided in the casting which supports the hopper, the cylinder provided with forks and tongues, and mechanism carried by the said slide for giving the cam which operates the tongues a movement at each stroke of the slide, substantially as and for the purpose specified.

9. The combination, with the main lever, of cam *g*, provided thereon, the pivoted bell-crank lever provided with the bifurcated end or clutch which rests in the groove *n*, provided in the hub of a wheel placed upon the main shaft, said wheel, and a clutch secured rigidly to the driving-wheel, whereby the said wheel may be held so as to be

drives by said wheel or thrown out of gear therewith, as desired, substantially as and for the purpose specified.

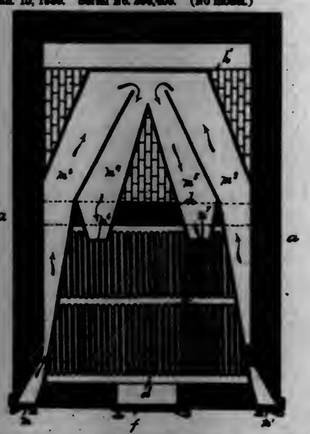
414,149. TUCKING-GUIDE FOR SEWING-MACHINES. HAYMAN FREEDMAN, Rochester, N. Y., assignor of one-half to Nathan Stein, same place. Filed Feb. 10, 1887. Serial No. 227,908. (Model.)



Claim.—1. In a tucker for sewing-machines, the combination of the bar A, slotted so as to be adjusted forward and back, the cross-head *a* on one end of the bar extending inward at right angles to a point nearly opposite to the needle and provided on its under side with a shoulder *a'*, that forms the guide on the inner side of the tuck, and the guide-bar P, consisting of a slotted shank *p*, passing through a slot of the cross-head *a*, and an outer cross-head of the same length and parallel to the cross-head *a*, forming the guide on the outer side of the tuck, as herein shown and described.

2. In a tucker for sewing-machines, the combination of the bar A, provided with the right-angled cross-head *a*, the guide-bar P, provided with a cross-head parallel to cross-head *a*, the bars B and C, attached to plate A and adjustable out and in, and the spring M, attached to bar C and resting on the toe of the cloth-presser, as shown and described, and for the purpose specified.

414,150. FURNACE. GEORGE F. GALLAGHER and THOMAS B. MOORE, Rochester, N. Y., assignors of one-third to Henry Gallagher, same place. Filed Jan. 15, 1889. Serial No. 296,403. (No model.)



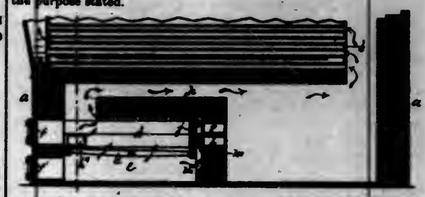
Claim.—A furnace provided with the usual fire-box, ash-pit, and combustion-chamber, and having air-passages extending through the fire-box and combustion-chamber to the rear vertical flue or passage for conducting air from the outside to the rear of the combustion-chamber and thence to the fire-box, where it is discharged either at the front or back in a highly-heated state, substantially as and for the purpose stated.

414,151. FURNACE. GEORGE F. GALLAGHER and THOMAS B. MOORE, Rochester, N. Y., assignors of one-third to Henry Gallagher, same place. Filed Jan. 16, 1889. Serial No. 296,474. (No model.)

Claim.—1. In a furnace, air-passages, as shown, for conveying the air from the outside to the rear of the fire-box and discharging it therein in a heated state, such passages starting at the sides of the fire-box and returning at the center, substantially as shown and described.

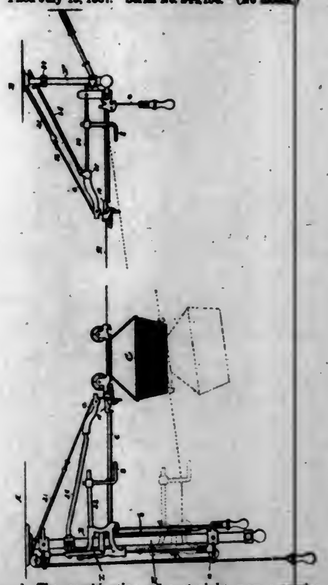
2. The furnace having the ash-pit *c*, bridge-wall *m*, inner wall *j*, with passage *m'* between said walls and connecting the ash-pit and fire-box, and the arch *k* over the fire-box, substantially as and for the purpose stated.

3. In a furnace, the combination, with the air-passages *g h g' K*, arranged as shown, of the bridge-wall *m*, inner wall *j*, with passage *m'* between, and the arch *k* over the fire-box, substantially as and for the purpose stated.



4. In a furnace, air-passages, as shown, for conveying the air from the outside to the rear of the fire-box and discharging it therein in a heated state, such passages starting at the center of the fire-box and returning at the sides, substantially as shown and described.

414,152. STORE-SERVICE APPARATUS. EDWIN L. GILES, Lowell, Mass. Filed July 13, 1887. Serial No. 244,156. (No model.)



Claim.—1. The combination of a straight way, a carrier supported thereon, a propelling device movable in a line parallel to the way and supported in a position above and connected with the way, and means for raising and lowering the end of the way, substantially as described.

2. The combination of a way, a carrier supported thereon, a propelling device supported above the way and provided with a slide mounted on the way, and means for raising and lowering the end of the way, substantially as described.

3. The combination, with the standard, a carriage adjustably mounted thereon and supporting one end of a way, of a carrier-impelling device located at that end of the way, and a connection, such as the cord *d*, between the carriage and the impelling device to cause the latter to adjust itself when the position of the carriage is adjusted, substantially as described.

4. The combination of a way, an adjustably-mounted carriage supporting one end of the way, an impelling device, also connected to said carriage, and a slide 10, connected to the impelling device and adapted to move with the adjusting movement of the carriage, substantially as described.

5. The combination of a way, an adjustably-mounted carriage supporting one end of the way, an impelling device, also connected to said carriage, and a slide 10, connected to the impelling device and mounted on the way, to move therewith in the adjusting movement of the carriage, substantially as described.

6. The combination of a way, a support, a carriage adjustably mounted thereon and carrying one end of the way, a rod, as 22, carried by said carriage, and a stop adjustably mounted on said rod, substantially as described.

7. The combination of a way, a support, an arm 24, mounted on said support, a carriage adjustably mounted on the support and carrying one end of the way, a stop, as 8, also carried by said carriage, and a carrier-impelling device, substantially as described.

8. The combination of a standard, a way, a carriage mounted on the standard and supporting one end of the way, and a bifurcated lever-catch pivoted to the carriage and adapted to straddle the standard, substantially as described.

9. The combination of a way, a bracket, as arm, as 31, supported thereby and having a pivoted end piece to which one end of the way is secured, an impelling device, the horizontal arm 34, providing a guide for one portion of said device and adjustably connected to said arm 31, and the adjustable brace-bar 36, substantially as described.

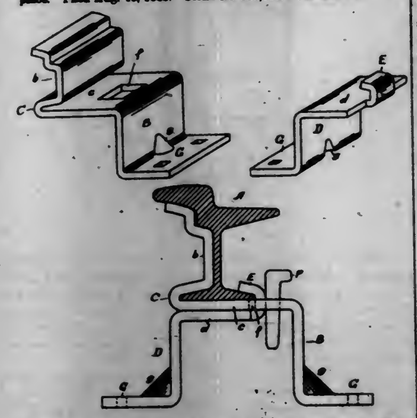
10. The combination of a way, a bracket for supporting one end thereof, an impelling device, the horizontal arm 34 and pivoted brace-bar 36, and the adjustable supports 35 37, substantially as described.

11. The combination of the pulleys 7, slide 10, propelling-cord, and the yokes 39 40, substantially as described.

12. The combination of a way, a carrier supported thereby, propelling-cord C, a propelling-spring, and a yoke 39, connecting the cords to the spring, substantially as described.

13. The combination of the pulleys 7, propelling-cords passing thereover, a propelling-spring, and a yoke 39, connecting the ends of the cords to the spring, substantially as described.

414,153. TWO-PART CHAIR FOR RAILROAD-RAILS. HENRY S. GOODSPEED, Johnstown, Pa., assignor to the Johnson Company, same place. Filed Aug. 16, 1889. Serial No. 320,966. (No model.)

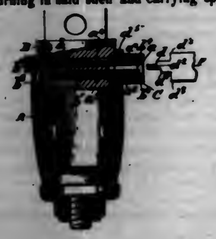


Claim.—A two-part rail-chair provided with a main and auxiliary base, the two parts interlocked by a clip and key.

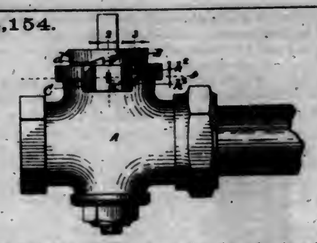
414,154. LOCK FOR SHUT-OFF VALVES. GEORGE B. HAINES, Chicago, Ill., assignor of one-half to Edwin T. Brooks, same place. Filed Oct 23, 1888. Serial No. 288,980. (No model.)

Claim.—1. In a shut-off valve, the valve-shell, provided with the internal segmental groove *g*, in combination with the valve-plug turning in said shell, and carrying locking-bolts in line with the passage therethrough adapted to enter the groove, said groove being of sufficient length to permit the valve-plug to be turned from an open to a closed position without unlocking the same, substantially as described.

2. In a shut-off valve, the valve-shell, provided with the internal segmental groove *g*, having key-apertures at one end, in combination with the valve-plug turning in said shell and carrying spring-seated



414,154.



locking-bolts in line with the passage therethrough, adapted to enter the groove, said groove being of sufficient length to permit the valve-plug to be turned from an open to a closed position, whereby the plug may be locked in such position as to be either open or closed, and, by the insertion of a key in the apertures, may be unlocked and given a further movement, substantially as described.

3. In a shut-off valve, the valve-shell, provided with a recessed projection C on one side, carrying bolt-sections of different lengths and having a key-hole therein, the shell being also provided with an internal segmental recess *g* with key-apertures at one end, in combination with the valve-plug, carrying spring-seated locking-bolt sections of equal length in line with the opening therethrough, substantially as and for the purpose set forth.

4. In a shut-off valve, the valve-shell, having the internal segmental groove *g* with key-apertures at one end, and provided with the recessed projection C on one side, having a key-hole therein, in combination with the valve-plug, turning within the shell and carrying spring-seated locking-bolts in line with the opening therethrough, the internal groove being of such length as to permit the plug to be turned from an open to a closed position when the locking-bolts are in engagement therewith, and the recessed projection C being located on the side of the shell, so that when the locking-bolts are in engagement therewith the plug will be locked in a closed position, substantially as described.

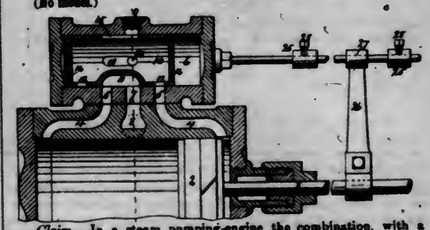
414,155. ELECTRIC FIRE-SIGNAL. CHARLES B. HEAD, Allegheny, Pa. Filed Apr. 15, 1889. Serial No. 307,223. (No model.)



Claim.—1. In an electrical signaling apparatus, the combination, with an electric circuit embracing a battery and signaling device, of two rigid terminals, one of which is provided with a cup into which the other terminal dips, an interposed insulator which separates the rigid terminals, and an interposed fusible plug, substantially as and for the purposes described.

2. In an electrical signaling apparatus, the combination, with an electric circuit embracing a battery and signaling device, of two rigid terminals, one of which is provided with a perforated cup into which the other terminal dips, an interposed insulator which separates the rigid terminals, and an interposed fusible plug, substantially as and for the purposes described.

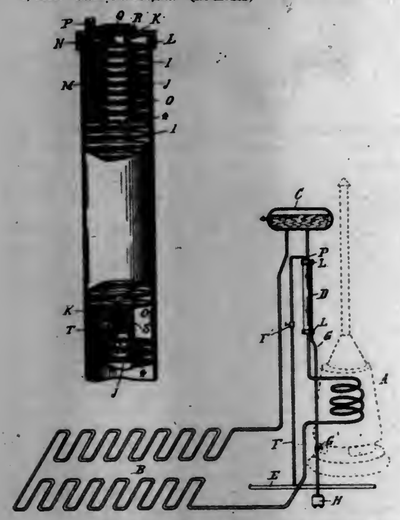
414,156. STEAM PUMPING-ENGINE. CHARLES L. MARRINER, Columbus, Ohio, assignor of two-thirds to John D. Wells and Wm. H. Wetzman, both of same place. Filed July 16, 1888. Serial No. 317,710. (No model.)



Claim.—In a steam pumping-engine, the combination, with a main valve-chest having live-steam ports and an exhaust-port and a hollow valve within the same provided with main steam-ports and having holes in its ends, of a smaller auxiliary valve-chest 18, having channels 17 at its ends, which connect with the ends of said valve-chest and one exhaust-channel 22 at its middle, which directly connects with the exhaust-channel of the main valve-chest, and a solid

cylindrical valve 23 within said auxiliary valve-chest and provided with a rod 24, directly connected to the operating parts of the engine to be reciprocated by the same, substantially as described.

414,157. WATER-HEATER. JAMES F. MCILROY, Albany, N. Y., assignor to the McIlroy Car Heating Company, same place. Filed July 1, 1889. Serial No. 316,240. (No model.)



Claim.—1. In combination with a hot-water-circulating apparatus, a water-heater consisting of a series of hollow annular plates axially arranged, having connections at their inner edges arranged in the line of circulation, an outer casing, and a steam-space between and a suitable steam inlet and exit connection to said steam-space, substantially as described.

2. A water-heater adapted to be used with a hot-water-circulating apparatus, consisting of an outer casing having caps, steam inlet and outlet openings in said caps, and an inner water-chamber having nipples at the ends secured in apertures in the said caps, said water-chambers consisting of a series of hollow annular plates and secured together at their inner edges, with the apertures in line, having the water-spaces *a*, connecting with said central apertures, substantially as described.

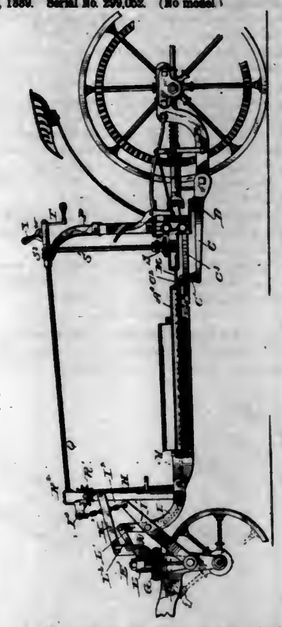
414,158. FLUSHING-VALVE FOR WATER-CLOSETS. ALEXANDER MCKAY, Detroit, Mich. Filed May 18, 1889. Serial No. 311,321. (No model.)



Claim.—1. The combination of the cistern, the valve-case consisting of two parts each having screw-threaded engagement, the discharge-port and valve-seat located in the upper part, the induct-port in the under part, the cylinder suspended in said induct-port, the valve-stem carrying a piston-head at its lower end and a valve near its center, the coiled spring encircling the valve-stem, and the yoke supporting the lower end of said spring, the aperture *i* in said stem, and aperture *i'* communicating therewith and opening horizontally through the valve-stem and communicating with the cistern, substantially as specified.

2. In combination with the cistern, the valve-case suspended therefrom, said valve-case consisting of two parts, the upper part having the fixed collar, discharge-port, the valve-seat, the threaded part *a*, the screw-threaded collar *c*, the lower part having the induct-port, the cylinder suspended in said induct-port being formed integral with the lower part of the valve-case, which is also internally screw-threaded at *a'*, as and for the purposes set forth.

414,159. HARVESTER-FRAME AND MEANS FOR RAISING AND LOWERING THE SAME. MARION L. NICHOLS, New York, N. Y. Filed Feb. 7, 1889. Serial No. 299,052. (No model.)



Claim.—1. The combination of the master-wheel-supporting frame, the main frame, to which the same is connected by a pivotal connection, the master-wheel frame having a forwardly-extending reach engaging a trackway on the main frame, and mechanism connected to the front-supporting-wheel holder to engage the forwardly-extending reach on one side only of the pivotal connection of the main frame, substantially as and for the purpose set forth.

2. The combination, with the master-wheel frame supported at one end on a trackway on the main harvester-frame and carrying at the other the master-wheel and having a pivotal connection with the main frame between its support on the main frame and the axle of the master-wheel, of a locking device connected through arms and levers with the front-supporting-wheel holder and arranged to engage and lock the master-wheel frame in one direction only, substantially as described.

3. The combination of the front-supporting-wheel holder, a lever for controlling the movements of the master-wheel rigidly connected to said holder, a rod connected to said lever at one end and at its other to a dog, a dog mounted on the harvester-frame, and a master-wheel frame having a pivotal connection with the harvester-frame, and having a forward extension to be engaged by the dog, substantially as and for the purpose set forth.

4. The combination of the front-supporting-wheel frame, the lever rigidly connected therewith, the upright rocking lever, the link connecting these two levers, the rod connected to the rocking lever at one end and connected to a pivoted locking-dog at the other, and a laterally-swinging master-wheel frame pivoted to the machine-frame, and having a forwardly-extending reach to engage a trackway on the machine-frame and to be engaged by the dog, substantially as and for the purpose set forth.

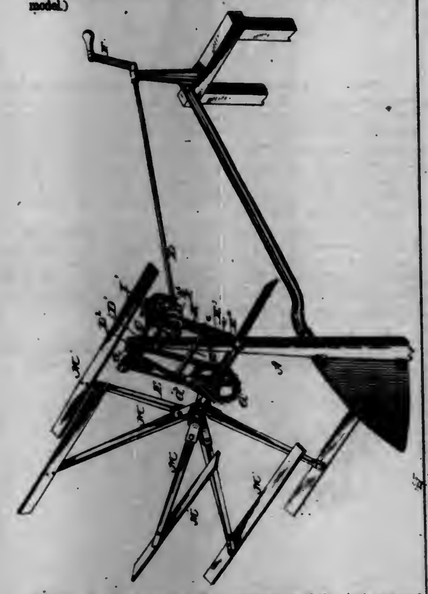
5. The combination of the front-supporting-wheel holder, having the tongue pivoted thereto, a saddle with which the wheel-holder is pivotally connected, levers connecting the saddle with the main harvester-frame, and lifting-chains connected with said levers and the main frame, and the link connecting the saddle with the harvester-frame, substantially as described.

6. The combination of the shaft for controlling the height of the cutters in relation to the ground, a gear fixed thereto, a gear and crank loosely mounted thereon, and mechanism for connecting the crank either with the shaft or with the loose gear, or all together, substantially as described, whereby the frame may be adjusted at each end simultaneously or either end independently of the other by a single operating-lever, as set forth.

7. In a lifting device for controlling the height of cut in harvesting and binding machines, the combination of the operating-shaft carrying at one end a worm or gear fixed thereto and at its other a worm or gear and crank loosely mounted thereon, and said shaft having a groove formed therein at the end on which the crank is mounted, the crank-hub and gear or worm having their abutting ends notched, and a two-armed pawl pivoted on the hub of the crank and adapted by engaging the notch in the hub of the gear and grooved shaft either to lock the gear to the shaft or the crank to the gear, or all together, as set forth.

8. In harvesting and binding machines, the combination of the machine-frame, the front-supporting-wheel saddle, to which the front supporting-wheel is connected, the operating-shaft having a worm or gear rigidly secured to one end to control the movements of the frame in relation to the front wheel, a perpendicularly-arranged shaft, to which the chain controlling the movements of the grain-wheel is connected, having a gear mounted on its upper end, a worm or gear loosely mounted on the operating-shaft to engage the gear on the perpendicular shaft, a crank also loosely mounted on the operating-shaft adjacent to the loose gear, and a two-armed pawl pivoted on the hub of the crank, substantially as and for the purpose set forth.

414,160. REEL FOR HARVESTING-MACHINES. MARION L. NICHOLS, New York, N. Y. Filed Feb. 7, 1889. Serial No. 299,054. (No model.)



Claim.—1. In a harvester, the combination of the reel-post and the head mounted thereon, provided with bearings for the supporting and adjusting shaft, and also for the shaft carrying the adjusting mechanism for the gear, formed in one piece, substantially as described.

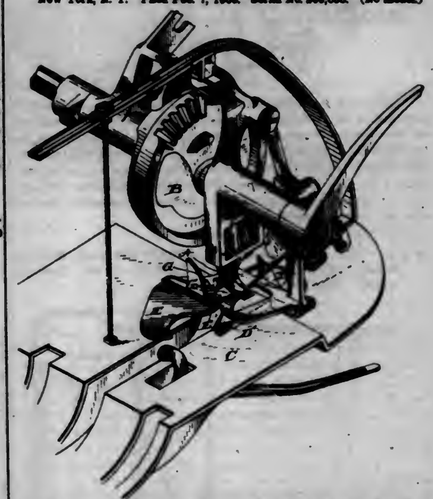
2. In a harvester, the combination of the reel-post head, the reel-supporting shaft journaled in the head and having the reel-supporting frame secured thereto, the reel-adjusting wheel rigidly secured to the frame, the bevel-pinion mounted loosely on the shaft, the sprocket-wheel secured to said pinion, the reel-shaft journaled in said frame, the sprocket-wheel mounted thereon, and the pinion mounted on the driving-shaft in the reel-post engaging the pinion on the supporting-shaft, substantially as described.

3. In a harvester, the reel-spider composed of a series of separate heads provided with two arms located in line with each other, and a separate beater connected with each of said arms, and devices, substantially as described, for holding the several heads either in line or at angles to each other, as set forth.

4. In a harvester, the reel-spider composed of the hollow sleeved shaft mounted on the reel-shaft and provided with arms or plates, and the heads mounted on said sleeved shaft, also provided with arms or plates, devices for connecting the hollow sleeved shaft to the reel-shaft, and means for holding the end head engaged with the hollow sleeve and all the heads in a fixed relation to each other, substantially as described.

5. In a harvester, the hollow sleeved shaft mounted on the reel-shaft, having two of the reel-supporting plates or sockets formed therewith, the hubs mounted on the sleeved shaft and provided with the other plates or sockets, said hubs provided with notches and lugs to engage each other, and the set-screws for securing the sleeved shaft to the reel-shaft and the hubs in relation to each other, as set forth.

414,161. TUCKER FOR GRAIN-BINDERS. MARION L. NICHOLS, New York, N. Y. Filed Feb. 7, 1889. Serial No. 299,055. (No model.)

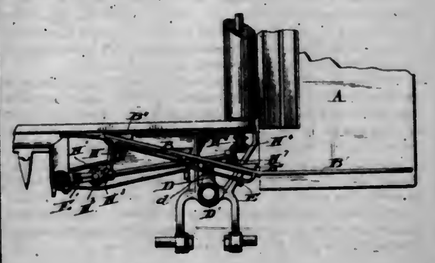


Claim.—1. The shield or breast-plate provided with the raised overlaying lip or flange, arranged upon one side of the slot formed therein, in combination with a tucker pivoted on the opposite side of the slot in such position as to have its point or toe move under the lip or flange in carrying the twine to the knotter, substantially as described.

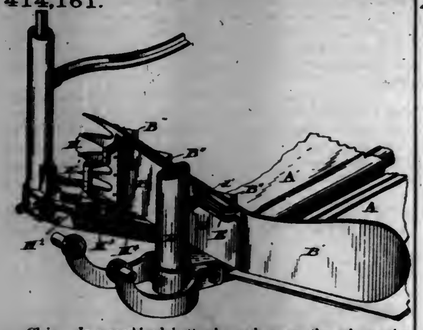
2. The combination of the shield or breast-plate having the twine-slot curved backward at a point under the knotter, the raised overlaying lip or flange on one side of the slot having its edge adjacent to the slot formed on an angle corresponding to the angle of the slot, the tucker pivoted on the opposite side of the slot, and a twine-guide and stripper for actuating said tucker, substantially as described.

3. The combination of the shield or breast-plate having the raised overlaying lip or flange arranged at one side of the slot formed therein, the tucker pivoted at the opposite side thereof, having the enlarged heel end to extend over the slot, and the toe to move under the lip, substantially as described.

414,162. BUTT RAKE AND EVENER FOR GRAIN-BINDERS. MARION L. NICHOLS, New York, N. Y. Filed Feb. 7, 1889. Serial No. 299,056. (No model.)

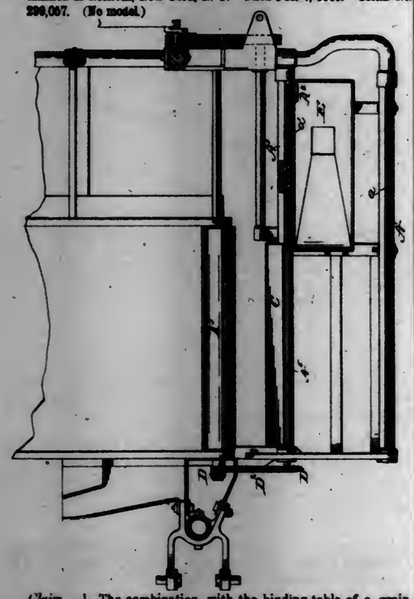


414,161.



Claim.—In a combined butt rake and evener, the rake portion arranged to act on the grain at the discharge end of the canvas, and the extension or evener rigidly connected thereto, extending over the binding-table, said parts having a pivotal connection with the harvester-frame near their point of union, and devices connected near one end for actuating the same, substantially as described, whereby both a vibratory and reciprocating movement is imparted to the butt rake and evener, as set forth

414,163. GRAIN-SAVING ATTACHMENT FOR GRAIN-BINDERS. MARION L. NICHOLS, New York, N. Y. Filed Feb. 7, 1889. Serial No. 299,057. (No model.)



Claim.—1. The combination, with the binding-table of a grain-binder, of an open-sided hollow bar located under the edge of the table into which the grain is guided, a conveyer located therein, and a box or receptacle to which the loose grain is carried by the conveyer through the hollow bar or tube, substantially as set forth.

2. The combination, with the binding-table of a grain-binder, of an open-sided hollow frame-bar located under the edge of the table into which the grain is guided, a conveyer located therein, and a box or receptacle to which the loose grain is carried by the conveyer through the hollow frame-bar, substantially as set forth.

3. The combination, with the binder-table, the inclined board extending over the receiving-edge of the same, the open-sided hollow frame-bar, the apron for directing the loose grain thereto, the conveyer located in the same, and a box or receptacle to which the loose grain is conveyed by the conveyer, substantially as and for the purpose set forth.

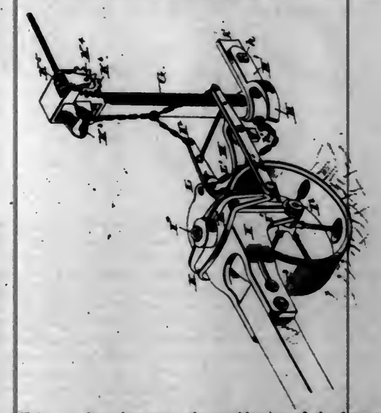
414,164. HARVESTING-MACHINE. MARION L. NICHOLS, New York, N. Y. Filed Feb. 12, 1889. Serial No. 299,506. (No model.)



Claim.—1. In a harvester, the combination of the saddle, the lifting-levers pivoted to the main frame and having pivotal connections with the saddle, lifting devices connected to the levers, a front supporting-wheel holder having a swivel-connection with the saddle, a gear mounted on the wheel-holder, and a tongue carrying a gear to actuate the gear on the front-supporting-wheel holder, substantially as described, whereby the main frame may be raised and lowered relatively to the front supporting-wheel, while permitting the front supporting-wheel to be turned, as set forth.

2. In a harvester, the combination of a swiveling front supporting-wheel, a tongue, gearing actuated by the tongue for controlling the movements of said front supporting-wheel provided with engaging delay-surfaces, substantially as described, whereby the tongue shall have sufficient side play consequent to the movement of the team without acting on the wheel, as set forth.

414,165. HARVESTING-MACHINE. MARION L. NICHOLS, New York, N. Y. Filed Feb. 12, 1889. Serial No. 299,507. (No model.)

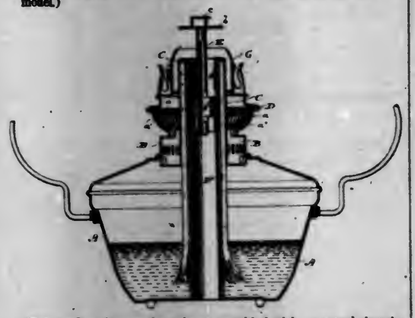


Claim.—1. In a harvester, the combination of the front supporting-wheel frame, a saddle with which the front-wheel frame has a swivel-connection, and levers connected to the saddle and to the main frame for changing the relation of the cutters to the ground.

2. In a harvester, the combination of the master-wheel frame having a rigid connection with the main frame, a front supporting-wheel frame having the tongue rigidly connected thereto, a saddle to which the front supporting-wheel frame is swiveled, and levers connected to the saddle and to the main frame for changing the relation of the cutters to the ground, substantially as set forth.

3. In a harvester, the combination of the front supporting-wheel frame, a saddle to which the wheel-frame is swiveled, and levers connecting the main frame and saddle for raising and lowering the cutters, and a stay-chain uniting the main frame and wheel-frame for limiting the swivel movement of the wheel-frame relative to the saddle, substantially as set forth.

414,166. LAMP-BURNER. JOHN NICKELS, Milwaukee, Wis., assignor, by direct and mesne assignments, of one-half to Frederick C. Hanford, Joseph C. Cordes, Horace M. Battin, Thomas A. McCarthy, and Deming H. Hatfield, same place, Frank W. Wood, Racine, and Daniel P. Sanford, Madison, Wis. Filed May 24, 1888. Serial No. 274,922. (No model.)



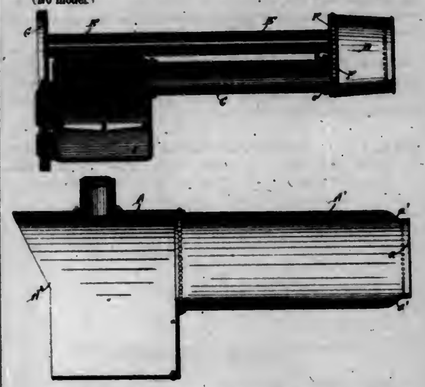
Claim.—In a burner for a lamp provided with a central air-tube, the combination of a tube centered in said air-tube and rising above the same, with a barrel surrounding the lower end of said inner tube, having its sides slitted both vertically and horizontally and secured to the periphery of said inner tube, a deflector surrounding the upper end of the last-named tube and of greater diameter than that of the air-tube of the lamp, and a smaller disk supported on legs rising from the last-named deflector and serving as a deflector for the air passing up through the said inner or smaller tube, substantially as set forth.

414,167. BOILER. WILLIAM J. RANTON, Syracuse, N. Y., assignor to the Porter Manufacturing Company, (Limited,) same place. Filed July 3, 1889. Serial No. 316,433. (No model.)



Claim.—In a boiler, the combination of a boiler-extension A', having the material of its outer extremity bent inward and forming a contracted opening, with the adjacent metal thereof conically inclined rearwardly therefrom, and a conical smoke-box adapted to be inserted from the rear of said boiler and formed with its rearward end of slightly less diameter than the interior of the boiler, whereby a great number of flues may be connected therewith, and formed with its smaller end at the front, whereby its insertion is greatly aided, said forward end of the smoke-box inclining in substantially the same angle as the metal of said contracted opening, whereby a tight joint is effected, substantially as and for the purpose set forth.

414,168. PROCESS OF CONSTRUCTING BOILERS. WILLIAM J. RANTON, Syracuse, N. Y., assignor to the Porter Manufacturing Company, (Limited,) same place. Filed July 3, 1889. Serial No. 316,434. (No model.)



Claim.—1. The herein-described process of constructing boilers, the same consisting of forming the outer shell, then securing together the interior parts of the boiler, and finally forcing said interior parts into operative position within said shell, substantially as described.

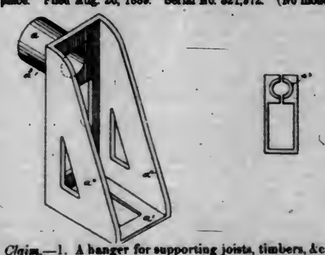
2. The herein-described process of constructing boilers, the same consisting in forming the outer shell, securing together the interior parts of the boiler, securing the flues in operative position, and then forcing the interior parts of the boiler to their operative position within the shell, substantially as described.

3. The herein-described process of constructing boilers, the same consisting of calking the flue before its placing within the boiler-shell, substantially as described.

4. The herein-described process of constructing boilers, the same consisting of forming the outer shell, securing together the interior parts of the boiler, securing the flues to the flue-sheets, calking the fire-flue from the outside thereof, and then securing said interior parts within the boiler-shell, substantially as described.

5. The herein-described process of constructing boilers, the same consisting of forming the outer shell, bending inward the forward extremity of said shell and forming a contracted opening, bending or turning a boiler-plate into a conical-shaped smoke-box, securing flues in the crown-sheet at the rearward large extremity of said conical-shaped smoke-box, placing the fire-box in relative position in relation to said smoke-box, securing the fire-flue to said fire-box and crown-sheet in the smoke-box, then forcing the said parts within the outer shell, and finally riveting the forward small extremity of the conical-shaped smoke-box to the contracted opening at the forward extremity of the boiler-shell, substantially as and for the purpose set forth.

414,169. HANGER FOR JOISTS. WILLIAM REUSCHEL, Cleveland, Ohio, assignor to Israel J. Lehman and Theodor Schmitt, both of same place. Filed Aug. 26, 1889. Serial No. 321,972. (No model.)



Claim.—1. A hanger for supporting joists, timbers, &c., the same comprising a vertical plate or frame having a boss or projecting member on the one side and below the upper edge thereof for attaching

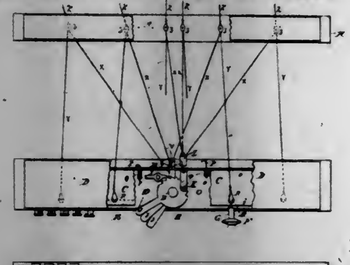
the hanger to the supporting part of the structure, the opposite side of the hanger being provided at a point below the boss with a seat for receiving the joist or timber to be supported, substantially as set forth.

2. A hanger for supporting joists, &c., the same comprising a vertical plate or frame, a hollow cylindrical boss projecting from one side thereof, and a seat projecting from the other side of said frame, the said seat being in a plane below the boss, substantially as set forth.

3. A hanger for supporting joists, &c., the same comprising a vertical plate or frame, a cylindrical boss projecting from one side thereof and provided with ribs, and a seat projecting from the other side, the said seat being in a plane below the plane of the boss, substantially as set forth.

4. A hanger for supporting joists, &c., the same comprising a vertical frame the upper section of which is in two sections, a sectional cylindrical boss formed on one side of the upper section of the frame, and a seat projecting from the opposite side of the lower portion of the frame, substantially as set forth.

414,170. MECHANICAL-TELEPHONE EXCHANGE. GEORGE F. SHAVER, New York, N. Y., assignor to the Shaver Corporation, same place. Filed Mar. 11, 1889. Serial No. 302,936. (No model.)



Claim.—1. A movable vibrator L, for connecting mechanical-telephone lines, consisting of a spring *l*, terminating in a hook at either end and provided with a damper *l'*, in combination with a tension-setting device and a series of mechanical-telephone line-terminals, whereby parallel lines may be connected together through the vibrator for intercommunication without loss of power or distinctness of articulation, substantially as herein set forth.

2. In a mechanical-telephone exchange apparatus, a vibrator L, consisting of a spring, a vibrator M, consisting of a bar hooked at one end and provided with a button-shaped head resting upon an elastic cushion, and a vibrator N, consisting of a bar terminating in hooks and perforated at its center to receive a supporting-bolt *n*, a supporting-shaft B, common to all the vibrators, tension-setting devices H I J K, and a series of mechanical-telephone lines and auxiliary-line terminals, substantially as herein set forth.

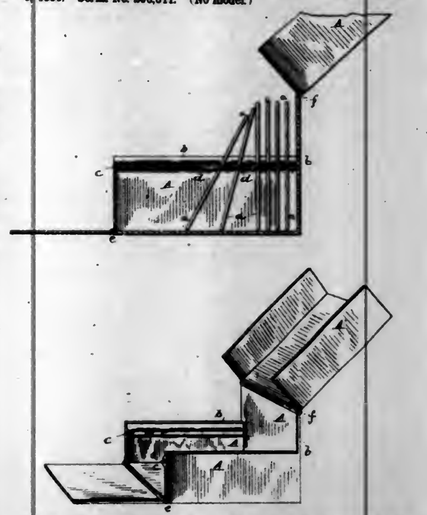
3. A device for connecting mechanical-telephone lines together for intercommunication through a central office or exchange, consisting of auxiliary terminal wires X-X, one end of each being permanently attached to the main-line wires at a point distant from the ends thereof and the other end being movable, in combination with the said main-line wires and a vibrator and tension-setting device, whereby communication may be established between any pair of main lines by attaching their respective auxiliary terminal wires to a vibrator and imparting tension to the same, substantially as herein set forth.

4. In an apparatus for connecting mechanical-telephone lines, a tension-setting-device consisting of a ratchet H, pawl I, and yoke K, and lever J, mounted upon a shaft B, in combination with a series of mechanical-telephone lines and a vibrator adapted to engage with and transmit vibrations from one connected line to another, substantially as herein set forth.

5. In a mechanical-telephone exchange apparatus, an adjustable support for the entering wires, consisting of a loop *z*, interposed in and forming a part of the said wires, in combination with a supporting-wire *z'*, passing through the said loop, whereby the said line-wire may be free to move upon its support during the action of setting tension upon connected wires, substantially as set forth.

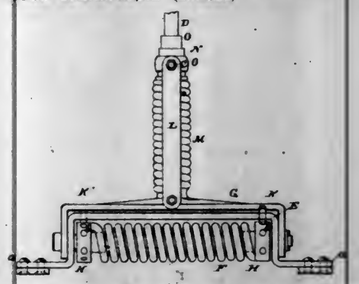
6. In a mechanical-telephone exchange, a support for auxiliary-line terminals, consisting of a frame or rack o, having a series of pins P mounted thereon and passing loosely through said frame, the said pins terminating at one end in a hook and at the other end in a flattened head *p*, in combination with a retracting-spring Q, interposed between the head *p* and rack o, whereby the said auxiliary-line terminals are kept taut by the action of the spring and crossing of the line-terminal wires is prevented, substantially as herein set forth and described.

414,171. PHOTOGRAPH-CABINET. SIDNEY G. SHERWOOD, Buffalo, N. Y., assignor of one-half to Joseph E. Barnard, same place. Filed Feb. 6, 1889. Serial No. 298,811. (No model.)



Claim.—As a new article of manufacture, a photograph cabinet or holder consisting of the oblong box A, having the hinged front and top, the cabinet having on its inner sides slots or grooves *c*, in combination with the photograph cases or frames *a*, having pins or projections *d* on their sides adapted to slide in the grooves *c* of the cabinet, substantially as described.

414,172. ELECTRIC RAILWAY. FRANK J. SPRAGUE and PATRICK F. O'SHAUGHNESSY, New York, N. Y., assignors to the Sprague Electric Railway and Motor Company, same place. Original application filed Jan. 22, 1889, Serial No. 297,216. Divided and this application filed Sept. 7, 1889. Serial No. 323,271. (No model.)



Claim.—1. The combination, with an electric-railway car, of a contact device carried thereby, a support for said contact device, and two springs forming parts of said support, one permitting longitudinal inclination and the other transverse inclination of said support, and a stop for said last-named spring, preventing the yielding thereof longitudinally of the car, substantially as set forth.

2. The combination, with an electric-railway car and a contact device carried thereby, of a horizontally-placed spiral spring and a vertically-placed spiral spring supporting said contact device, substantially as set forth.

3. The combination, with an electric-railway car, of a contact device, a pole carrying said contact device, a vertically-placed spiral spring carrying said pole, a pivoted support for said spiral spring, and a horizontally-placed spiral spring exerting a pressure upon said pivoted support, substantially as set forth.

4. The combination, with an electric-railway car, of a contact device, a pole carrying said contact device, a vertically-placed spiral spring supporting said pole, and a stop limiting the movement of said spring, substantially as set forth.

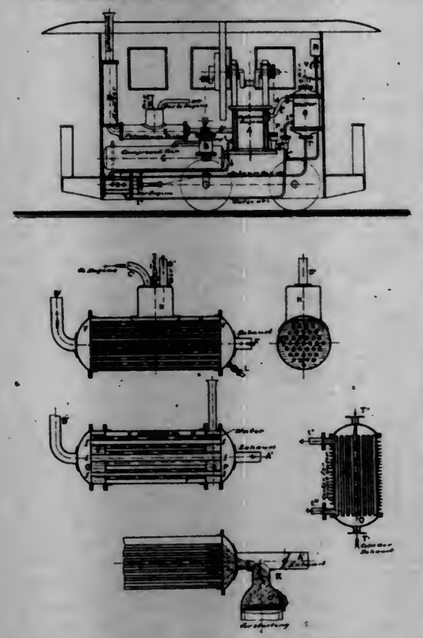
5. The combination, with an electric-railway car and a contact device, of a pole carrying said contact device, pivoted links supporting said pole, and a vertically-placed spiral spring connected with said pole and said links, substantially as set forth.

6. The combination, with an electric-railway car and a contact device, of a pole carrying said contact device, a vertical spiral spring carrying said pole, a horizontal bar supporting said spring, and a horizontally-placed spiral spring exerting a pressure on said bar, substantially as set forth.

7. The combination, with an electric-railway car, of a transverse horizontal spindle, a spiral spring coiled thereon, a pivoted transverse bar, turning sleeves on said spindle carrying said bar, with which sleeves said spring is connected, a pole carried by said bar, and a contact device carried by said pole, substantially as set forth.

8. The combination, with an electric-railway car, of a transverse horizontal spindle, a spiral spring coiled thereon, a pivoted transverse bar, adjustable turning sleeves on said spindle carrying said bar, with which sleeves said spring is connected, a pole carried by said bar, and a contact device carried by said pole, substantially as set forth.

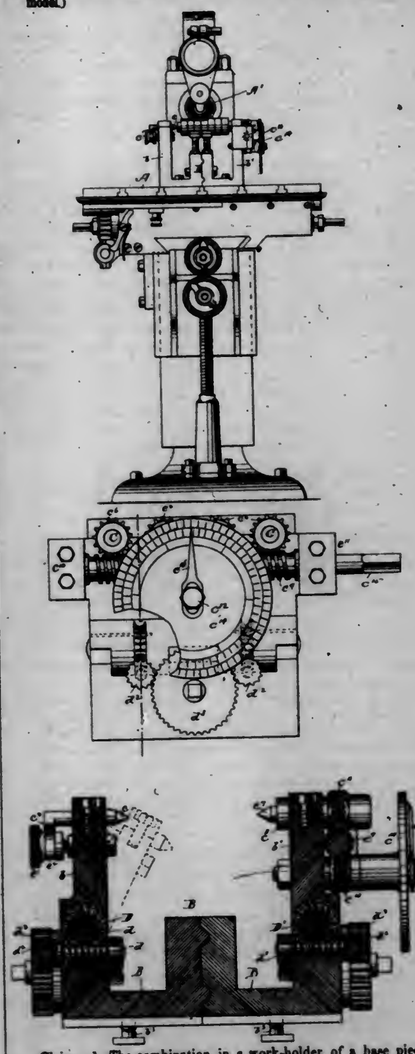
414,173. COMBINED GAS AND COMPRESSED-AIR ENGINE. EMANUEL STEVENS, Brussels, Belgium, assignor of one-half to James Morison Burnup, London, England. Filed Nov. 6, 1888. Serial No. 290,143. (No model.) Patented in Belgium Mar. 16, 1887, No. 76,731; in England Mar. 31, 1887, No. 4,843; in France Sept. 15, 1887, No. 185,874, and in Germany Oct. 7, 1887, No. 43,059.



Claim.—1. The combination of a gas-motor A, having one or more jacketed cylinders and driving an air-compressing pump B, an air-motor D, also having one or more jacketed cylinders, and a refrigerator O, also jacketed, wherein cold is produced by the expansion of the exhaust-air from the air-motor, the jackets of the cylinders aforesaid and of the refrigerator being in connection, whereby a current of water may be caused to flow through the said jackets, the whole combined and acting substantially as and for the purposes described and set forth.

2. The combination, with the motor comprising the apparatus A, B, D, and O, as set forth, of a carburetor consisting of a tubular boiler E, wherein the evaporation of the carbureting liquid may be effected by the exhaust gases from the gas-motor A, and comprising the tubes F or the tubes F and *f*, substantially as and for the purpose set forth.

414,174. WORK-HOLDER FOR MILLING-MACHINES. CHARLES H. TRASK, Lynn, Mass. Filed Mar. 12, 1888. Serial No. 266,936. (No model.)



Claim.—1. The combination, in a work-holder, of a base piece or frame having supports, an arbor sustained by said supports and having a worm-wheel c^2, a worm c^3, an independent worm-wheel c^{12}, a rotary dial connected with the last-named worm-wheel, and a stationary index co-operating with said dial.

2. The combination, in a work-holder, of a base piece or frame B, having an adjustable support hinged thereto above the bottom of said base-piece, a worm-wheel *d*, rigid with said hinged support, and a worm d', journaled in the said base-piece and engaging said worm, whereby by turning said worm the said support may be adjusted to different angular positions.

3. The combination, in a work-holder, of the base piece or frame having the supports b-b', provided with the centers c-c^2, and the arbor carried by said supports, both of the latter being adjustable from a vertical position to vary the angle of the said arbor, substantially as set forth.

4. The combination, in a work-holder, of a support, one or more

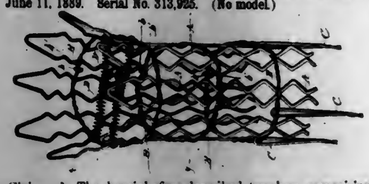
centers mounted thereon, the worm-wheels rigidly secured thereto, the said support being hinged to a base-piece, the worms d', carried by said base-piece, the gear-wheels d^2, and a common actuating-gear d^3, substantially as described.

5. The combination, in a work-holder, of a support b, one or more centers c, carried thereby, the said support being hinged to a base-piece, the support b', supporting one or more centers c^2, hinged to a base-piece and movable from a perpendicular position, devices for moving said supports b b' from a vertical to an inclined position, and for locking them in such position, the arbors carried by said center, and devices for turning and locking said arbors, substantially as described.

6. The combination of the support b', a base-piece to which said support is hinged, and devices for moving said support from a perpendicular to an inclined position and for holding it in such position, the centers c^2, carried thereby, the worm-wheels c^4, the worm c^5, the worm c^{12}, the indicator c^{11}, and dial c^{13}, carried by said movable support b', with the support b, hinged to a block or base-piece and movable from a perpendicular to an inclined position, and supporting one or more centers c, substantially as described.

7. The combination, in a work-holder, of the supports b b', carrying one or more centers c c^2, and the base-piece B, having the slots E E', with the block c, having the extension or foot c', and the intermediate block c^3, connected with the holder, and having slots corresponding to the slots E E', and the bolts or clamps connecting the holder with the bed of the milling-machine, substantially as described.

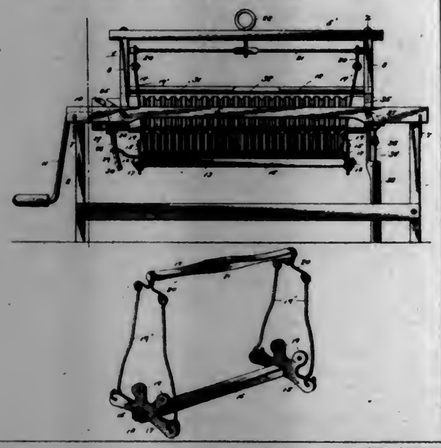
414,175. TREE-BOX. HARRY M. WHITTAKER, Beaver Falls, Pa., assignor of two-thirds to Edward P. Shellaberger, same place. Filed June 11, 1889. Serial No. 313,925. (No model.)



Claim.—1. The hereinbefore-described tree-box, comprising the vertical pickets, the encircling cables having their strands loosely twisted about the said pickets, and having hooks at their ends by which to fasten the cables together, the slotted anchoring-pins having the lowest cable passing through the slot in each pin, and the elastic loop-keepers D and D' for embracing the tree on opposite sides and expanding with the growth of the tree, substantially as set forth.

2. The combination, with the tree-box, of the slotted anchoring-pins having a portion of the box passing through the slot in each pin, whereby the box can be fastened to the ground and will be free to sway with the tree without doing injury thereto, substantially as described.

414,176. WASHING-MACHINE. ELI ZIMERMAN, Pamelia Four Corners, assignor to Charles E. Makepeace, Watertown, N. Y. Filed May 25, 1889. Serial No. 312,098. (No model.)

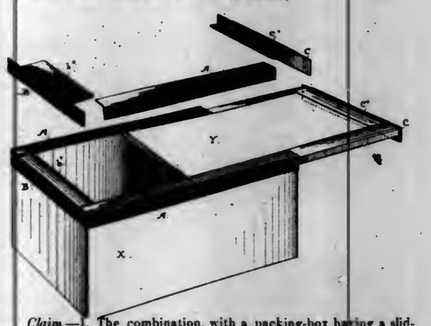


Claim.—1. In a washing-machine, the combination of a driving-shaft carrying a presser-roll and a cam, a spring pressure-bar arranged longitudinally above said shaft, a vibratory frame arranged below the presser roll on the driving-shaft and suspended from said pressure-bar, a pair of lower presser-rolls journaled in said vibratory frame, and a lever operated by the cam and connected to the vibratory frame to reciprocate the latter endwise, all arranged and combined for service, substantially as described, for the purpose set forth.

2. In a washing-machine, the combination of a removable frame adapted to be detachably secured to a wash-tub, a driving-shaft journaled in said removable frame and having an upper presser-roll and a grooved cam, a vibratory frame arranged below said upper roll and carrying a pair of spaced lower rolls, a lever pivoted on the removable frame and having a friction-roller which rides in the groove of the rotary cam, a connecting-arm secured to the vibratory frame and having a sliding connection with said lever, a longitudinal spring-bar suspended in the removable frame above the upper presser-roll, and vertical links intermediate of said spring-bar and the vibratory frame to suspend the latter, substantially as and for the purpose described.

3. In a washing-machine, the combination of a removable frame having the longitudinal rails adapted to be seated in notches in a wash-tub and detachably held in place thereon by suitable locking devices, substantially as described, a driving-shaft journaled in the removable frame, a longitudinal spring-bar connected to said removable frame by an adjusting-screw, a vibratory frame below said driving-shaft, the suspending-links intermediate of said spring-bar and the vibratory frame, the presser-rolls carried by said driving-shaft and vibratory frame, a cam fixed to the driving-shaft near one end, a lever operated by said cam and connected to the vibratory frame, a stationary perforated trough arranged longitudinally within the removable frame above the presser-rolls, and a depending pump suspended from the removable frame to communicate with said trough, and having its piston connected to a crank on the driving-shaft, whereby all the operating parts of the machine are carried by the removable frame, and the vibratory frame and pump are actuated from a common shaft, all arranged and combined substantially as herein shown and described, for the purpose set forth.

414,177. PACKING-BOX. WILLIAM H. SNOW, Oakland, Cal. Filed Feb. 18, 1889. Serial No. 300,372. (No model.)



Claim.—1. The combination, with a packing-box having a sliding cover and longitudinal angle-plates forming guides for said cover, of the angle-plate connected exteriorly to one end of said box and projecting inwardly over and at a distance from the edge of said box end, and provided with a spring-lip which is depressed below the plane of the upper side of the cover and upturned at its end above that plane to receive and clasp the cover, substantially as described.

2. In a packing-box, the combination of the body X, the sliding cover, the longitudinal angle-plates A A, attached to the outer sides thereof near the edge, so as to project inwardly over and at a distance from the edges to form guides for the sliding cover, and the angle-plate B, connected exteriorly to one end of said box and projecting inwardly over and at a distance from the edge of said box end, and provided with a spring-lip $b^\times$, which is depressed below the plane of the upper side of the cover and upturned at its end above that plane to receive and clasp the cover, substantially as described.

3. The combination of the packing-box, the sliding cover provided with the angle-plate C, whose member $c^\times$ is secured to the top edge of the cover, the longitudinal angle-plates A A, attached to the outer sides of the box near the edges, so as to project inwardly over the edges to form guides for the sliding cover, and the angle-plate B, connected exteriorly to one end of said box and projecting inwardly over and at a distance from the edge of said box end, and provided with a spring-lip $b^\times$, all substantially as described.

N. PETERS, Photo-Lithographer, Washington, D. C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

OLIVER *v.* EVERITT.

Decided October 18, 1889.

1. INTERFERENCE—CONNECTION BETWEEN AN EARLIER APPLICATION DISCLOSING THE SUBJECT-MATTER CLAIMED IN A LATER APPLICATION INVOLVED IN INTERFERENCE FILED UNDER ANOTHER NAME.

Where it appeared that an earlier application disclosed the subject-matter claimed in a later application involved in interference, and the earlier application was filed in a name different from that under which the later application was filed, and the claim was made that both applications were by the same inventor, *Held* the only manner in which applicant could have the benefit of the earlier application was by way of testimony in the case.

2. SAME—BURDEN OF PROOF—RULE 116.

The object of ascertaining which of two contesting applicants first disclosed in a completed application the invention in controversy is to determine not only upon whom should rest the burden of proof under Rule 116, but also in whose favor a judgment may be rendered upon the record, in case the opposite party fail to file a preliminary statement or such statement fail to overcome the *prima facie* case made by the respective dates of application. (Rule 114.)

3. SAME—JUDGMENT ON THE RECORD.

An earlier application, in order to entitle a junior party to judgment on the record, must be upon its face an application in behalf of the same person who filed the application immediately in interference.

APPEAL on motion.

COMPLETING ELECTRIC CIRCUITS.

Application of William Samuel Oliver filed October 6, 1887, No. 251,650. Application of Percival Everitt filed February 2, 1887, No. 226,250.

Mr. James L. Norris for Oliver.
Messrs. J. J. Halsted & Son for Everitt.

MITCHELL, *Commissioner:*

When this case was last before the late Commissioner an opinion was rendered by him containing the following language:

Oliver will be permitted, however, to file a motion before the Examiner of Interferences that his prior application may be used as evidence, and the provisions of the rule (154, paragraph 7) that notice of such motion shall be given before the closing of the testimony will not be enforced against him.

When this motion shall be filed it is suggested that the Examiner of Interferences consult with the Primary Examiner upon the question as to whether the matter claimed in the application of Oliver involved in this interference was a part of the subject-matter involved in his application filed January 22, 1887, patented October 25, 1887. The burden of proof will then be adjusted in accordance with the final decision of this question.

Thereafter, in accordance with the foregoing instructions, the Examiner of Interferences admitted the previous application as evidence, but denied Oliver's motion to change the record date to the date of filing of such previous application—to wit, January 22, 1887—upon the ground that the application immediately in interference was not so connected with the earlier application as to entitle Oliver to the benefit of the earlier record date.

The Examiner of Interferences says:

In conformity with the instructions of the Commissioner the Examiner of Interferences has considered the question and consulted with the Primary Examiner as to whether the first-mentioned application is a division of the present one or discloses the subject-matter involved in the interference, and while it appears that the first-mentioned application discloses the subject-matter involved in the interference, there is nothing to show that the later application is a divisional one springing out of the former, and there is no evidence to show that the present applicant, William S. Oliver, is the same person as William Oliver, by whom the first application was filed.

It appears from the record that Oliver's pending application involved in this interference was filed October 6, 1887, in the name of William Samuel Oliver. The previous application was filed under the name of William Oliver on January 22, 1887, and discloses the subject-matter of the invention in the William Samuel Oliver application. This application of William Oliver was pending when the application of William Samuel Oliver was filed. Under dates of April 15 and 22, 1887, the Office required William Oliver to put his application in condition for a prospective interference. He thereupon amended his application, and on May 23, 1887, the examiner informed him that his application as then amended would probably not be involved in interference. On the 9th of June, 1887, William Oliver canceled that part of the specification and drawings filed January 22, 1887, which disclosed the subject-matter of the application of William Samuel Oliver. Thereafter an interference was declared between the William Samuel Oliver application and the application of Everitt, filed February 2, 1887. In declaring the interference William Samuel Oliver was made the junior applicant, the date of his application immediately in interference being later than that of Everitt.

It thus becomes apparent that, although the earlier application disclosed the invention in interference, it was filed by William Oliver instead of by William Samuel Oliver, and according to the opinion of the Examiner of Interferences "there is nothing to show that the later application is a divisional one springing out of the former." The Examiner of Interferences therefore denies the motion to change Oliver's record date, but allows him forty days from the final determination of this motion within which to take testimony to show that the present applicant, William Samuel Oliver, and William Oliver, by whom the application of January 22, 1887, was filed, are one and the same person. Everitt is also to be allowed sufficient time within

which to take testimony in rebuttal. As a reason for denying the motion to change the record date the Examiner of Interferences says:

> According to the established practice of the Office, for the purpose of giving an applicant in an interference proceeding the benefit of an earlier application date, there must be some connecting link in the later application by which it may be identified as a continuation or division of the former one, and unless the applications are so connected the original application may be used as evidence to show that the invention was made at the date thereof, but not for the purpose of establishing a *prima facie* date of invention prior to the date of the application involved in the interference.

The Examiner of Interferences cites authorities which he believes to support the conclusion which he reaches. I do not, however, deem it necessary in deciding the question at present under consideration to determine whether or not an express reference is required in the divisional application to the parent application, in order to establish the requisite connection, where, as in this case, it is found as a fact that the earlier application out of which the second application sprang does in fact disclose the controverted invention.

So far as this question is concerned the parties have had their day in court before the former Commissioner, and it was decided by him that the burden of proof should be determined by first ascertaining "whether the matter claimed in the application of Oliver involved in this interference was a part of the subject-matter disclosed in his application filed January 22, 1887."

The decision of the Examiner of Interferences must, however, be sustained upon another ground. The object of ascertaining which of two contesting applicants first disclosed in a completed application the invention in controversy is to determine not only upon whom should rest the burden of proof, under Rule 116, but also in whose favor a judgment may be rendered upon the record, in case the opposite party fail to file a preliminary statement or such statement fail to overcome the *prima facie* case made by the respective dates of application. (Rule 114.) Otherwise stated, the principal object is to ascertain who is entitled to have judgment upon the record in the entire absence of testimony.

It is clear that judgment could not be rendered in favor of William Samuel Oliver on inspection of a previous application of William Oliver, and it is equally clear, inasmuch as a judgment upon the record is a judgment in the absence of testimony, that evidence cannot be received to prove that the junior applicant has filed a previous application in another name in aid of such a judgment. Judgment upon the record follows directly upon inspection of the record. Testimony that persons bearing different names are one person in fact can only be presented as part of a body of proof intended to secure a judgment upon evidence. Without deciding, therefore, whether the connecting link of reference is necessary in a later application, otherwise divisional, in order to give the applicant the benefit of a parent application filed in the same name, I hold that an earlier application, in order to benefit a junior party, must be upon its face an application in behalf of the same person who filed the application immediately in interference, and that the only way in which an applicant can have the benefit of an earlier application which he claims to have been filed by himself, although in another name, is by way of testimony in the case.

The decision of the Examiner of Interferences is therefore affirmed.

EX PARTE TODD.

Decided October 21, 1889.

AMENDMENT MADE WITHIN TWO YEARS TO SAVE APPLICATION FROM ABANDONMENT—WHAT IS PROPER ACTION—REVISED STATUTES, SECTION 4894.

Where it appeared that on the last day upon which an application could be prosecuted without forfeiture under Revised Statutes, section 4894, amendments apparently of no considerable importance were offered, including one or two formal corrections in the claims which had been required by the examiner, and that such amendments were made in good faith for the purpose of prosecuting the application, *Held* that the action, so far as it went, was a proper action, and there was not such utter failure to prosecute within the two years as would warrant a judgment forfeiting rights.

ON PETITION.

COTTON-HARVESTERS.

Application of George N. Todd filed November 15, 1886, No. 218,853.

Messrs. Elliott & Omohundro for the applicant.

MITCHELL, *Commissioner:*

This is a proceeding to determine whether the application has become abandoned.

The examiner's statement contains the following presentation of facts:

> This application was filed November 15, 1886, and was first acted upon by the examiner on January 17, 1887. The objections raised by the examiner in this letter were of three classes: first, certain defects in the drawings were pointed out and additional illustration required; second, certain informalities in the specification and claims were indicated, and, third, a number of the claims were rejected on references.
>
> No action was taken by the applicant in response to that of the Office until January 17, 1889, the last day on which an amendment could be made under the statute. This amendment did not refer in any manner to any of the various objections of the first and third classes above mentioned, but merely changed two or three words in the claims, which change was not required and did not effect their merits, and also made one or two of the formal corrections required in the claims. This amendment of January 17, 1889, was followed on January 24, 1889, after the two years had expired, by another, which, if filed in time, would have been a proper amendment, but, being too late, could not be considered.
>
> On February 16, 1889, the applicant was informed that the amendment of January 17, 1889, was not a proper action within the rules to save the case from abandonment, and that as the amendment of January 24, 1889, was not filed until after the expiration of two years from the date of the last official action the case must be considered abandoned, and this action was repeated on September 25, 1889.

It appears from the communication of January 17, 1889, that amendments were tendered to eight different claims of the application as originally filed. These amendments are apparently not of considerable importance, but there is nothing to show that they were not made in good faith and for the purpose of prosecuting the application. That the intent was to prosecute the application in good faith is still further evidenced by the amendment of January 24, 1889, bearing date Chicago, Ill., January 19, which need not be critically consided, inasmuch as the examiner states that the later amendment, if filed in time, would have been a proper amendment entitled to consideration.

It is true that the somewhat informal action taken by the applicant does not conform in all respects to the requirements of the rules to entitle the applicant to reconsideration; but the question now involved is whether the amendment offered in good faith constituted, so far as it went, a proper action under the rules to prevent the application from being abandoned through utter failure to prosecute for more than two years. Both law and justice lean against forfeiture. Here was certainly an attempt to prosecute within the two years prescribed by statute, and the action, so far as it went, was a proper action, and it is conceded that one or two of the formal corrections in the claims had been required by the examiner.

I do not think I should be justified in holding that there is in this case such utter failure to prosecute within the two years as would warrant a judgment forfeiting rights.

The petition is granted.

EX PARTE HUNTER.

Decided October 23, 1889.

SUFFICIENCY OF AFFIDAVIT UNDER RULE 75.

Where an affidavit filed under Rule 75 showed that the applicant had conception of the invention prior to the dates of the references, but there was no complete reduction to practice until after said dates, and also stated that he had used "every diligence possible in putting the invention into use," without setting forth facts tending to show such diligence, *Held* not to be a sufficient compliance with the rule.

ON PETITION.

ELECTRICALLY-PROPELLED VEHICLES.

Application of Rudolph M. Hunter filed June 5, 1889, No. 313,217.

FISHER, *Acting Commissioner:*

The question involved in this petition is the sufficiency of an oath filed under Rule 75 to overcome the force of references, showing but not claiming the invention claimed by the petitioner. There is no controversy as to the fact that the invention claimed is disclosed in the references. The only question is whether the petitioner has set forth "facts showing a completion of the invention in this country before the filing of the application on which the domestic patent issued, or * * * before the date of the printed publication."

As to what facts are necessary to show completion of the invention within the meaning of Rule 75, the Office has ruled in *ex parte Gasser* (C. D., 1880, 94) and *ex parte Saunders*, (C. D., 1883, 23.)

In the Gasser case Mr. Commissioner Paine said:

> The applicant must state on oath facts showing either that a reduction to practice had been made before the filing of the application on which the patent was granted, or that the invention had been conceived before that time and by due diligence connected with a subsequent reduction to practice.

This interpretation of Rule 75 by Mr. Commissioner Paine is doubly valuable from the fact that the rule was made by him, and it is therefore to be presumed that he was fully advised as to its scope.

In the Saunders case Mr. Commissioner Marble cited the Gasser case with approval, and said:

> In any event I think that the applicant should be required at least to make a *prima facie* showing of an invention complete in a patentable sense before the date of the patent or publication. * * * He should show that he had before that time completed the invention and disclosed information of the same to others as full, accurate, and exact as that afforded by the patent or publication, and also that he has since preserved his right to a patent by a diligent prosecution of the same.

So far as I am able to discover these rulings have not been modified by any subsequent Commissioner and still govern the practice of the Office.

The question then to be determined is whether the affidavit submitted by the petitioner complies with the requirements thus laid down. It appears that he has been rejected upon references consisting of a publication bearing date 1887, and two patents, the applications for which were filed, respectively, July 30, 1887, and March 5, 1888. To overcome these dates the affidavit states that the invention was completed prior to the year 1884, and a photograph of a sketch is produced which is signed by the petitioner and several witnesses within dates running from January 24 to April 30, 1883. This sketch appears to disclose the invention in controversy, but so far as relates to the matters claimed is unaccompanied by any description. The affidavit also states that the invention thus shown was embodied in a car constructed in the year 1887, and that other cars embodying it were begun in the early spring of 1888 and have been used since September 4, 1888. It therefore appears, if it be conceded that the drawing discloses the invention, and of this there seems to be no doubt, that in 1883 petitioner had a conception of the invention, but that there was no complete reduction to practice of the same until after the dates of the references. The invention in controversy therefore cannot be said to have been completed before such reference dates. If the petitioner is entitled to his patent in the face of the disclosure of the references, it must therefore appear, as was stated by Mr. Commissioner Paine, that he has connected his prior conception by due diligence with his subsequent reduction to practice. Such diligence has not been shown. It is true that petitioner avers he has used "every diligence possible in putting the invention into use;" but a mere statement of this character unaccompanied by any facts which tend to show such diligence is not a sufficient compliance with the rule as interpreted by the Office. To this extent then the examiner is right in refusing to accept the affidavit as sufficient to overcome the force of the references. Petitioner, however, may be given such opportunity as he desires to complete the necessary showing.

The case is therefore returned to the Primary Examiner for action in accordance with this decision.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the District of Columbia.

MORRISON *et al. v.* THE CANTON SURGICAL AND DENTAL CHAIR COMPANY *et al.* No. 10,757. THE S. S. WHITE DENTAL MANUFACTURING COMPANY *v.* THE CANTON SURGICAL AND DENTAL CHAIR COMPANY *et al.* No. 10,758.

Decided September 23, 1889.

1. JURISDICTION OF SUPREME COURT OF THE DISTRICT OF COLUMBIA.

   Where a non-resident defendant corporation had appeared in a suit for infringement of Letters Patent, filed an answer, gone to proof, and submitted the case for final hearing, it was *Held* the court had jurisdiction to entertain the suit.

2. MORRISON—DENTAL CHAIRS—ANTICIPATION.

   Letters Patent No. 369,295, issued to James B. Morrison August 30, 1887, for improvement in dental chairs, not anticipated either by patent to one Bauder or to one Travis, in neither of which is there a platform for the foot such as patentee's chair

has, it being simply a slide below the bottom of the seat, upon which the leg may rest, in both cases, and the rest, when it is turned rearward, instead of being used as a rest for the foot, simply folds up flat with the body of the chair or platform, and therefore it does not serve the purpose of a rest at all.

3. SAME—INFRINGEMENT.

Said patent *Held* to be infringed by chair manufactured and offered for sale by the defendant, in which chair were to be found substantially the same contrivances as those of patentee's chair, with a slight difference simply as to the angle of elevation of the foot-rest when turned rearward.

4. WILKERSON—DENTAL CHAIRS—ANTICIPATION.

Letters Patent No. 197,441, issued to Basil M. Wilkerson November 20, 1877, for improvement in dental chairs, are not anticipated by the invention of Groff and Wilson, who invented improvements in a pneumatic pad for saddles and harness, which was an elastic pad, the object of which was to simply absorb moisture, while the patentee's pad was a stiff one to hold the head in place.

5. SAME—INFRINGEMENT.

Said patent *Held* to be infringed by defendant, who used the same device with the exception that, instead of using two of these devices in a series, as patentee did, one only is used, and in place of the other there is used an old contrivance. Said Letters Patent held also to be infringed by a chair in which the pad is exactly the same as that of patentee's chair.

6. INFRINGEMENT OF COMBINATION.

When the same thing is used in a series this should be considered as one entire thing and not a mere combination, and therefore the appropriation of any one of these things is an infringement of the whole.

7. NEWBROUGH—DENTAL CHAIRS—INFRINGEMENT.

Letters Patent No. 170,012, granted November 16, 1875, to John B. Newbrough, for improvement in dental chairs, *Held* not to be infringed by a device used by the defendant, which simply operates to regulate the tilt of the back of the chair and not to tilt the body of the chair, which was the object of patentee's invention, and where it appears that the tilting of the back of the chair in the complainant's case is made by a different apparatus entirely from that used by defendant.

The three patents sued under are: No. 369,295, to James B. Morrison, dated August 30, 1887; No. 197,441, to Basil M. Wilkerson, dated November 20, 1877, and No. 170,012, to John B. Newbrough, assignor to Samuel S. White, dated November 16, 1875.

Mr. Joseph C. Fraley and *Mr. Joseph K. McCammon* for the complainants.

Mr. Frankland Jannus for the defendants.

Mr. Justice COX delivered the opinion of the court.

I have had under consideration the case of Morrison and The S. S. White Dental Manufacturing Company against The Canton Surgical and Dental Chair Company and others and the case of The S. S. White Dental Manufacturing Company against the same. The substantial complaint is the same in both cases, claiming as assignee—that is, The S. S. White Dental Manufacturing Company. The suit is brought for an infringement of certain patents for improvements in dental chairs. The infringement alleged consists of offering 1 chair for sale, on the occasion of a dental convention in this city, which was said to embody patented improvements.

Both of these corporations are non-residents. At first a question arises as to the jurisdiction of this court to entertain the suit. Section 787 of the Revised Statutes relating to the District of Columbia provides:

No action or suit shall be brought in the supreme court by original process against any person who shall not be an inhabitant of or found within the District, except as otherwise specially provided.

Of course we know that at common law a corporation has no existence except in the jurisdiction where it was created. So that a non-resident corporation could neither be a resident nor be found within this District. According to common law, it could only be sued in the jurisdiction where it was created by service on its principal officer. The difficulty in entertaining jurisdiction is not as to the subject-matter. It is not because this court or any other court cannot entertain jurisdiction of a controversy in which a foreign corporation is a party; but the difficulty consists entirely in bringing the corporation within the reach of the process of the court.

There is a statute now found embodied in section 790 of the Revised Statutes, which provides that—

In actions against foreign corporations doing business in the District all process may be served on the agent of said corporation or person conducting its business, or, in case he is absent or cannot be found, by leaving a copy at the principal place of business in the District, and such service shall be effectual to bring the corporation before the court.

A doubt naturally arises as to the meaning of the term "doing business in the District." The only business done in this case was the sale or attempted sale of a single chair by this non-resident corporation, and the question would be whether that was doing business within the meaning of the statute, or whether the statute does not apply to an established permanent business, represented by permanent agents. I do not, however, think it necessary to resolve that doubt, because there can be no doubt that while service cannot be made upon a non-resident individual he could come within the District and submit himself to the jurisdiction of the court, and I do not see why a non-resident corporation cannot do the same thing. In this case the non-resident defendant has appeared in the case, filed an answer, gone to proof, and submitted the case for final hearing. Under these circumstances I do not think that any room remains for doubt as to the entertaining of the jurisdiction by this court.

The claim, then, is that the defendant has infringed 3 patents owned by the complainant as assignee, The S. S. White Dental Manufacturing Company. The first one is a patent issued to Morrison for improvements in dental chairs, and the claim allowed him, which is said to be infringed, is:

In combination with a chair-body having a platform or step attached thereto, a supplemental foot-rest, and arms to sustain said rest pivoted to the platform to swing forward and backward to a limited extent, and interlocking with said platform in an upright operative position when turned rearward as well as forward, whereby said arms are adapted to sustain the rest in either of two operative positions at different distances from the chair-seat.

I find in the chair manufactured by the defendant, which has been exhibited, substantially the same contrivances, with a slight difference simply as to the angle of elevation of the foot-rest when turned rearward; and the identity of the device for the purpose for which it is employed is made very plain by the fact that there are lugs placed upon the frame, which are, exactly as in the other, for the very purpose of preventing the rest from going down to a level with the platform and for the purpose of keeping it in position where it can operate as a foot-rest.

Two patents have been cited as anticipating the invention, one of Bauder and the other of Travis; but there are two differences between them and the present device. In these there is no platform for the foot. It is simply a slide below the bottom of the seat, upon which the leg may rest, in both cases, and in the next place, the rest, when it is turned rearward instead of being used as a rest for the foot, simply folds up flat with the body of the chair or platform, and therefore it does not serve the purpose of a rest at all. There has been discussion as to the meaning of the term "upright" in patentee's claim for the use of this rest in an "upright operating position." It is said that in the defendant's chair the rest, when turned rearward, is not upright, but more horizontal than otherwise. But the term "upright," it seems to me from the history of the application in the Patent Office, is simply used to distinguish this case from the two other cases I have already referred to, in which, when folded back, the rest was folded into the body of platform or went down immediately upon it and was not sufficiently elevated from it to be used at all. It is claimed on the part of the defendant that the word "upright" means vertical; but it never was intended that this rest should be used vertically in the device of the complainant. It means at an angle with a horizontal plane. I think it means upright in the sense of being elevated above the level of the platform and being susceptible of being used as a foot-rest. It seems to me, therefore, that an infringement exists in that case.

The next patent of which it is claimed there is an infringement is the patent issued to Wilkerson. There are 2 claims said to be infringed. The first claim is No. 24:

24. A head-rest support formed of links or sections united by conical or tapering pivots seated in correspondingly-shaped sockets capable of expanding and contracting, and bounded in part by movable blocks which transmit the movement from one cone and socket to the next, throughout the series, whereby its several joints will be tightened by the operation of a single device, substantially as set forth.

Now, the essential novelty in this case consists of this: The head-rest is fastened to a shank with a little ball at the end of it, and that ball rests in a socket, and this contrivance, the socket, is made in part by a sliding block, in grooves, concave at one end, so as to fit exactly upon the ball, so that when pressed upon the ball it will keep it in place; and at the other end of the sliding block there is a cone-shaped pivot which, when forced down, tightens the sliding block upon the ball, and thereby keeps this in its place. A simple movement of the lever-handle produces this result. By turning a screw on the pivot it draws it down into place and tightens the sliding block and the ball. The patentee, however, contemplates the use of more than one of these devices. He uses at least two, and he calls them a series. The two pivots are parallel to each other, and the tightening of one tightens the whole. It gives more range for play of the head-rest, as will be seen upon inspection. In fact, the more there are used the more it can be moved about. Now, it is substantially admitted in argument that this device of locking the ball with a sliding block and conical pivot is a novelty. But in the chair of the defendant this same device is used with this exception, viz., that instead of using 2 of these devices 1 only is used, and in place of the other there is what is called the "dummy-link" an old contrivance, and the lever or handle is between the two. The argument for the defendant is however that the complainant claims for a combination, and that it is not infringement of a combination patent to use one or more or any number less than the whole of the elements making up the combination, and that as the defendant only uses 1 of these contrivances instead of a series, two or more, as contemplated by the complainant or patentee, it is no infringement. I think, however, that the answer to that would be found in several authorities, to which I will call attention.

In Curtis on Patents, section 332, the law is said to be:

Where a patent is for a combination alone, it is no infringement to use any of the parts or things that go to make up the combination, provided the combination itself is not used. In a recent English case, however, it has been decided that a valid patent for an entire combination for a process gives protection to each part thereof that is new and material to that process, without any express claim of particular part, and notwithstanding that some parts of the combination are old.

In *Smith* v. *London and N. W. R. R.* the court said:

Where a patent is for the combination of two, three, or four old inventions a user of any one of them would not be an infringer of the patent; but where there is an invention consisting of several parts the imitation or pirating of any part of the invention is an infringement of the patent. Suppose that a man invents a machine consisting of three parts, of which one is a very useful invention and the two others are found to be of less practical use, surely it could not be said that it was free to any person to use the useful part so long as he took care to substitute some other mode of carrying out the less useful parts of the invention. We should be sorry to throw any doubt upon the question of an infringement of a material part of such an invention being an infringement upon which an action is sustainable by granting a rule to show cause upon such a point.

The same law is laid down in the case of *Sharp* v. *Tifft* (18 *Blatchf.*, 132) by Judge Wheeler in the following language:

Generally where a patent is for a combination of known parts, materials, or elements, it is not infringed by the use of any number of the parts, materials, or elements less than the whole, for the patent, in every such case is for that identical combination, and nothing else, and a combination of any less number of parts is a different thing. (*Prouty* v. *Ruggles*, 16 Pet., 336.) But where some of the parts of the combination are new, and those parts are taken and used in the same manner, but with different things from the rest of the combination patented, a part of the patented invention is taken, although the whole is not, and is an infringement to that extent. (*Sellers* v. *Dickinson*, 6 Eng. Law & Eq., 544; *Union Sugar Refining* v. *Matthiesen*, 2 Fish., 601.)

Besides this it does not seem to me that this rule about the use of less than the whole of a combination ought to apply to a case of this sort. What we understand by a combination ordinarily is the combination of things different in character, all working to the same result; but a series of the same identical things is quite a different matter. It might be illustrated in this way: Suppose a man invents a new form of link for a chain-cable, of course he expects that it will be used in a series to make up the cable; but it assuredly could not be said that anybody who employed it for every alternate link in his cable does not infringe that patent, or even if he employed one. When the same thing is used in a series, this should be considered as one entire thing and not a mere combination, and therefore the appropriation of any one of these things is an infringement of the whole. Therefore I think that the defense in this case fails to show that there is no infringement of this claim.

The 28th claim is:

28. A head-rest for a dental chair, consisting of a pair of pads connected by means of a slack strap, as set forth.

There are two fixed pads, and the object is that the side of the head and the back shall be sustained by these pads, while the connecting-strap on a different level does not interfere with the back hair of a lady who may be a patient. This is supposed to be anticipated by the invention of Groff and Wilson, who invented certain improvements in a pneumatic pad for saddles and harness.

Their patent states:

The object of our invention is to produce a cooling, anti-friction, and elastic cloth-pad for the double purpose of reducing the temperature and absorbing the moisture, the more effectually to prevent the galling or excoriation of horses by means of an elastic air-chamber in combination with a pocket or cushion stuffed with chamois leather.

What we claim as our invention, and desire to secure by Letters Patent, is—

An elastic pneumatic pad when combined of a hollow chamber A and pocket C and stuffed with chamois leather G, substantially as and for the purpose specified.

Now, that would not answer the object that is sought in this invention. An elastic pad which simply absorbs moisture there is not what is wanted here. This is a stiff pad to hold the head in place. There I find it an infringement in that respect, because it is hardly denied that the pads in both chairs are exactly the same.

The last patent said to be infringed is one issued to Newbrough. The object of the invention is expressed thus:

In order to regulate the rocking or tipping of the chair, I suspend it from the turning-frame D by means of uprights or arms E, on which the arms of the chair are pivoted, so as to allow the chair to rock on pivots *e*, which are at or above the center of gravity of the person occupying the chair, thus preventing the tendency to tip over.

To hold the chair at any desired inclination, a link or rack F, pivoted to the back of the chair, passes down through a hole in the rearwardly-projecting portion of the frame D, and is held at the desired point by a set-screw *f*, or its equivalent fastening.

The frame of the chair, as well as the foot-rest, may be made jointed or adjustable, if desired, in well-known ways.

The third claim is:

3. The combination of the supporting-frame, the horizontally-turning frame, the chair pivoted near the line of its arms to uprights on said turning-frame, and the adjustable link connecting the chair-back with the turning-frame, these members being constructed and operating substantially as set forth.

That is to say, in the first place, there is a frame at the bottom which supports the whole, and on that there is a round turning-frame, as seen in this frame here, (indicating a chair in the court-room,) and on the arms of that turning-frame the main chair is pivoted so as to balance.

The first weakness about this claim of the complainant is, however, that it seems to have abandoned this invention entirely. The claim is for a combination of certain elements. There are two of these important elements which are entirely omitted in the chairs manufactured for sale by the complainant. Instead of having a piece pivoted and suspended to the arms of the turning-frame, in this chair the turning-frame itself is the seat, and the device claimed, which is the bar, called a "link," pivoted to the back of the chair and fastened by running through the turning-frame, is wanting entirely. It was said in argument that three thousand of these chairs have been sold, and the trade circular of the complainant was also put in evidence. In none of the illustrations does this device appear at all. It seems, therefore, to have been practically abandoned and something entirely different substituted for it.

The device resorted to for tilting this chair is a spring arrangment in the seat itself, worked by a pedal and interlocking automatically, so as to keep the chair at any desired angle.

We find this in Curtis on Patents, section 237:

There is one case where it seems to have been held that an improved mode of working his machine by the patentee, different from the specification of his patent, casts upon him the burden of showing that he made the improvement subsequently to the issuing of his patent; otherwise it will be presumed that he did not disclose in his specification the best method known to him.

In this case it is very apparent that the device actually used for tilting this chair operates much better than the one described in this specification, and the one so described is not used. Of course that weakens the claim of the complainant to recover damages for the infringement of the invention described in his specification; but, besides that, it is apparent from the claim herein that the object of this link or bar is to tilt the whole chair. It says:

In order to regulate the rocking or tipping of the chair, I suspend it, &c.

The device used by the defendant has not that object at all. It is simply to tilt the back and regulate the angle of the back to the seat, which is an entirely different thing from tilting the whole chair. It is true that the patentee, Newbrough, says that the frame of the chair, as well as the foot-rest, may be made jointed or adjustable, if desired, in well-known ways. Therefore it is argued that this claim relates to a part of as well as to the whole of the chair; but it does not state in what manner it can be made jointed, and it is very apparent that if jointed like the defendant's chair the device would not operate at all for the object mentioned, which is to tilt the whole body of the chair. It would only tilt the back.

As further evidence that the tilting of the entire chair was contemplated, we find the fact that the tilting of the back of the chair in the complainant's case is made by a different apparatus entirely. The back is pivoted to the frame and is moved by different apparatus entirely from that which is described in the specification, which is evidence that the patentee did not contemplate the use of that contrivance for merely tilting the back of the chair, but for tilting the whole body of the chair.

Now, when we come to look at the contrivance of the defendant we find that it is not a straight bar at all like that described by the complainant. It is not pivoted to the back of the chair. It is pivoted at the side of the chair and at the bottom, and is a curved bar instead of a straight one. It works in certain respects differently from the invention described in the specification and performs an entirely different office. It simply operates to regulate the tilt of the back of the chair and not to tilt the body of the chair, which was the object of the patentee in his invention.

I therefore am not satisfied that any infringement is made out of the Newbrough patent. I think it is made out with reference to the other patents which I have already mentioned. That is all that it is necessary to say, and counsel can draw a decree accordingly.

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